MEARNS CONSULTING LLC
ENVIRONMENTAL CONSULTANTS
RISK ASSESSORS

738 Ashland Avenue, Santa Monica, California 90405
Cell 310.403.1921
Tel 310.396.9606 Fax 310.396.6878
Mearns@MearnsConsulting.com
www.MearnsConsulting.com

Human Health Risk Assessment
29508 Roadside Drive
Agoura Hills, California 91301

December 23, 2015

Prepared for:

Agoura Hills HHG Hotel Development LP
105 Decker Court, Suite 105
Irving, Texas 75602

Prepared by:

Mearns Consulting LLC
738 Ashland Avenue
Santa Monica, California 90405

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December 23, 2015

via email

Ms. Patricia Santini
Agoura Hills HHG Hotel Development LP
105 Decker Court, Suite 105
Irving, Texas 75602

RE: **Human Health Risk Assessment**
29508 Roadside Drive, Agoura Hills, California 91301

Dear Ms. Santini:

I am pleased to present this Human Health Risk Assessment (HRA) for the 5.65-acre property located at 29508 Roadside Drive in Agoura Hills, California (the site) pursuant to your authorization. The site is planned for a three-story hotel development.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC 2013), U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP October 31, 2002), the DTSC LeadSpread 8.0 Model and the DTSC modified Johnson & Ettinger groundwater screen, USEPA version 3.0 model (April 2003), modified by DTSC Office of Human and Ecological Risk (HERO) December 2014.

This human health risk assessment assessed the potential risk and hazard attributable to exposure to 21 constituents, including lead.

DTSC's LeadSpread 8.0 Model results indicate that lead does not pose an unacceptable hazard to adults and children in a residential exposure scenario.

The Johnson & Ettinger groundwater screen model results indicate that the volatile organic compounds: benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene detected in perched shallow discontinuous groundwater do not pose an unacceptable hazard to adults and children in a residential exposure scenario or to adults in a commercial scenario. The J&E model does indicate the estimated risk due to inhalation of benzene detected in perched shallow discontinuous groundwater is slightly greater than the target threshold for a residential scenario and less than the target threshold for the commercial scenario.

Even though the noncarcinogenic constituents impact different target organs the estimated hazard quotients of each constituent were summed to provide a hazard index. The results of the HRA indicate that the estimated individual hazard quotients of the noncarcinogenic constituents detected in the soil matrix is less than 1, the target hazard threshold.

The results of the HRA indicate that the estimated individual and summed risks of the carcinogenic constituents detected in the soil matrix are less than 1×10^{-6} the target risk threshold for all residential populations and less than 1×10^{-5} the target risk threshold for the commercial and construction worker populations.

Therefore this site does not pose an unacceptable adverse impact to future extended-stay or short-term stay hotel guests, commercial workers or future construction workers. Additionally, the soil onsite is not hazardous and does not need to be removed from the site.

Should you have any questions or desire additional information, please do not hesitate to contact me at 310.403.1921.

Sincerely,

X*Susan Mearns*

Susan L. Mearns, Ph.D.

Mearns Consulting LLC

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EXECUTIVE SUMMARY

The objective of this Human Health Risk Assessment (HRA) is to evaluate potential health risks to human receptors posed by concentrations of constituents detected at least one time in the soil matrix and shallow perched groundwater underlying the 5.65-acre property located at 29508 Roadside Drive in Agoura Hills California (the site). A three-story hotel with surface level parking and below ground swimming pool is the planned development onsite.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC 2013), U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, October 2011), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP October 31, 2002), the DTSC LeadSpread 8.0 Model and the DTSC modified Johnson & Ettinger groundwater screen, USEPA version 3.0 model (April 2003), modified by DTSC Office of Human and Ecological Risk (HERO) December 2014.

As the property is to be developed as a hotel development including an extended stay hotel, the maximum detected concentrations of the constituents detected in the soil matrix and in the perched shallow discontinuous groundwater at 8-feet below ground surface (bgs) were selected as the exposure point concentrations, for the residential receptor scenario. The maximum detected concentrations of the volatile organic compounds detected in the perched shallow groundwater were selected as the exposure point concentrations for the commercial scenario. The maximum detected concentration or the upper confidence level of the constituents detected in the soil matrix, whichever was lower pursuant to the ProUCL guidance (USEPA 2004), was used as the exposure point concentration for the commercial worker and construction worker scenarios. Those chemicals of concern that had both reference doses or reference concentrations and slope factors or unit risk factors available, were assessed as both noncarcinogenic and carcinogenic compounds.

DTSC's LeadSpread 8.0 Model estimates the hazard due to exposure to lead in air and onsite soils/dust for adults and children within a residential scenario. Typically lead concentrations in air are not measured onsite. Therefore the model extrapolates these concentrations from the measured concentrations of lead in onsite soils. The percentile blood lead concentration is estimated by the model to provide an estimate of the percentage of a population of children and adults that would be expected to have blood lead levels that exceed the threshold value for a residential exposure scenario.

DTSC's LeadSpread 8.0 Model results indicate that lead does not pose an unacceptable hazard to children or adults in a residential exposure scenario.

The Johnson & Ettinger groundwater screen model modified by DTSC HERO (December 2014) was used to assess the potential risks and hazards due to exposure to the maximum concentrations of the volatile organic compounds (VOCs): benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene detected in the discontinuous shallow groundwater (at 8-feet bgs) for residential and commercial exposure scenarios. The Johnson & Ettinger model estimated a risk of $1.4x10^{-6}$ (slightly greater than the residential threshold $1x10^{-6}$) and a hazard less than the threshold of 1 for the residential

scenario. The estimated risk and hazard for the commercial scenario were less than the thresholds of $1x10^{-5}$ and 1 indicating these VOCs do not pose an unacceptable risk or hazard to children or adults in a residential scenario or to commercial or construction workers.

Even though the noncarcinogenic constituents impact different target organs the estimated hazard quotients (HQ) of each constituent detected in the soil matrix were summed to provide a hazard index. The results of the HRA indicate that the estimated summed hazard index (HI) of the noncarcinogenic constituents did not exceed the target hazard threshold for the residential adult, commercial worker and construction worker scenarios.

The results of the HRA indicate that the estimated individual risks of the carcinogenic constituents detected in the soil matrix are less than 1×10^{-6} the target risk value for the residential scenarios and less than 1×10^{-5} the target risk threshold for the commercial and construction worker scenarios.

Although arsenic was detected in onsite soils, based on a comparison to DTSC-accepted background concentrations in Southern California soils it was determined that arsenic detected in onsite soils is naturally occurring and therefore arsenic was eliminated as a chemical of concern and not quantitatively assessed in this HRA.

Therefore this site does not pose an unacceptable adverse impact to future long-term or short-term hotel occupants, future construction workers or future commercial workers.

1.0 INTRODUCTION

This report presents the results of a Human Health Risk Assessment (HRA) for the 5.65-acre property located at 29508 Roadside Drive in Agoura Hills, California (the site) (Figure 1).

The purpose of this human health risk assessment is to evaluate the potential adverse health impacts due to exposure to concentrations of constituents detected in the soil matrix and shallow perched discontinuous groundwater underlying the site. If a constituent was detected one time in the soil matrix or shallow perched groundwater, it was retained and quantitatively assessed in this human health risk assessment. This human health risk assessment assessed the potential risk and hazard attributable to exposure to five carcinogenic constituents and 16 noncarcinogenic constituents, including lead.

This HRA followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC 2013), U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, October 2011), the Massachusetts Department of Environmental Protection (MADEP) *Characterizing Risks posed by Petroleum Contaminated Sites* manual (MADEP October 31, 2002), the DTSC LeadSpread 8.0 Model and the DTSC modified Johnson & Ettinger groundwater screen, USEPA version 3.0 model (April 2003), modified by DTSC Office of Human and Ecological Risk (HERO) December 2014.

As the USEPA and the State of California Office of Environmental Health Hazard Assessment (OEHHA) have not published toxicity values, i.e., Reference Doses (RfDs), for total petroleum hydrocarbons the guidance in the Massachusetts Department of Environmental Protection approach to characterizing risks posed by petroleum contaminated sites and in DTSC's PEA Manual (DTSC 2013) were used to obtain surrogate RfDs for C18-C28, C28-C36 and C36-C40 (MADEP 2002, DTSC 2013). The potential adverse health impacts due to exposure to C18-C28, C28-C36 and C36-C40 in onsite soils were then assessed by following the appropriate ingestion and dermal contact equations (DTSC 2013).

2.0 SITE BACKGROUND

Background

The 5.65-acre site is undeveloped irregularly shaped land bounded by Roadside Drive and the 101 Freeway to the north, a construction equipment rental company to the east, the Los Angeles County Animal Shelter to the west and by Agoura Road to the south. The site is located in a historical stream drainage area (Geocon 2015). Several natural terraces are located throughout the site; surface water drainage appears to be by stream flow from the west along existing channels to the center of the site where a concrete flood control structure has been constructed. Onsite vegetation consists of oak trees and shrubs.

The site was developed in the 1970s for commercial use; a building in the northeast portion of the site housed a wine retail store in 1985. The structure was demolished in the 1990s and the site has remained vacant undeveloped land. The area surrounding the site is developed with commercial and industrial enterprises (Hillmann Consulting May 13, 2015). The northwestern portion of the site is graded to street level but the east, west and southern portions of the site have an 8-foot slope (Hillmann Consulting May 13, 2015).

The proposed development will consist of a three-story hotel surrounded by paved parking. The center of the proposed hotel development will have a recreation area and below ground swimming pool (Figure 2).

Previous Environmental Investigations

A Phase I Environmental Site Assessment (Phase I ESA) was completed in November 2006 (Geocon 2006). Geocon observed a large soil stockpile consisting of debris, including concrete, asphalt, piping and wood, in addition to soil (estimated to be between 5,000 and 10,000 cubic yards) on the central and northeastern portions of the site (Figures 3 & 4). Geocon identified the soil stockpile as a potential recognized environmental condition.

Limited soil sampling to characterize the soil stockpile was performed using a hydraulic push drill rig to continuous core to a maximum depth of 10 feet below ground surface (bgs) (Geocon January 2007). Six soil borings were advanced and soil samples were collected in 2-inch diameter acetate liners. The acetate was cut at desired sampling depths, sealed with Teflon sheets and plastic end caps, labeled, placed in a cooler with ice until delivered under chain of custody to Advanced Technology Laboratories, a NELAC certified laboratory located in Signal Hill, California for analysis of arsenic and lead by EPA method 6010, extended range total petroleum hydrocarbons (carbon range C8 through C40) by modified EPA method 8015B, and organochlorine pesticides by EPA method 8081A. Analytical data is included as Appendix A.

The analytical results are summarized below and presented in Tables 1 & 2:

- Arsenic was reported in seven of the fifteen samples at concentrations ranging from 3.1 to 9.8 milligrams per kilogram (mg/kg).
- Lead was reported in eleven of the fifteen samples at concentrations ranging from 1.1 to 6.1mg/kg.
- Total TPH (C8-C40) was reported in eight of the fifteen samples at concentration ranging from 35 to 100mg/kg.
- Pesticides were not reported at concentrations equal to or greater than the reporting limits of 1.0, 2.0 or 8.5 micrograms per kilogram (µg/kg).

Geocon identified three neighboring properties to the east of the site that had leaking underground storage tanks: (1) Agoura Equipment Rental, (2) Hillside Rubbish and (3) Agoura Building Materials (Geocon 2007). The Los Angeles Regional Water Quality Control Board (LARWQCB) closed all three leaking

underground storage tank cases in 1996, 1997 and 2004 using the following rationale - the sites are not located above any aquifers, there is no possibility of surface discharge, the subsurface lithology consists of sandy clays and bedrock, and it does not appear that contamination has migrated vertically beneath the bedrock barrier. Geocon concluded that there was no evidence these three properties had adversely impacted the site.

A Phase I ESA was completed in May 2015 (Hillmann Consulting May 13, 2015). Hillmann identified fill material deposited onsite in the 1970s, 1980s and 1990s, particularly in the southern portion of the site. Additionally Hillmann identified adjacent properties east of the site that had historic leaking underground storage tanks and that had closure from the LARWQCB in 1996, 1997 and 2004.

3.0 SUMMARY OF FIELD ACTIVITIES

Hillmann Consulting installed eight soil borings using a hollow stem auger to depths ranging from 15 to 30 feet bgs (Hillmann Consulting December 18, 2015). Borings B7 and B8 were installed along the east site boundary; within the northern soil pile and former stream bed fill, respectively (Figure 4). Borings B9 and B10 were installed in the stream bed area and borings B11-B14 were installed in the soil pile (Figure 4).

During drilling, soil samples were collected at select intervals for laboratory analysis. A California Professional Geologist used a photo-ionization detector (PID) to screen the soil samples in the field for the presence of volatile organic compounds (VOCs). The soil samples were preserved for analysis using the EnCore sampling method (EPA Method 5035). Hillmann selected soil samples and submitted them for analysis of carbon chain hydrocarbons, VOCs, and heavy metals by Cal Tech Environmental Laboratories, Inc. (ELAP ID 2424) of Paramount, California (Hillmann Consulting December 18, 2015).

Hillmann placed a temporary PVC casing in each boring at maximum depth and allowed groundwater (if any) to accumulate for at least 2 hours for sampling. Sufficient groundwater accumulated in only two of the eight borings, B7 and B10, both drilled at lower elevations onsite. Grab groundwater samples were collected from the borings using a Teflon bailer. The temporary casings were removed from the borings and each bore hole was sealed with a mixture of bentonite and cuttings. Hillmann installed a soil gas sampling probe at depths ranging from 5 to 15 feet bgs after completion of soil and groundwater sampling (Hillmann Consulting December 18, 2015).

The analytical results indicated none of the soil samples had levels of carbon chain hydrocarbons or VOCs detected at concentrations greater than their respective detection limits. Ten metals were detected, however, only arsenic and cadmium were detected at concentrations greater than the USEPA Region IX Regional Soil Screening Levels for residential land use (USEPA November 2015).

The analytical results of in-situ groundwater grab sampling indicated low concentrations of benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and metals (Table 3).

The soil vapor analytical results indicated VOCs were not detected in concentrations greater than their respective detection limits of 0.5, 1.0, 10 or 50 µg/L. Analytical results are included as Appendix B.

4.0 CONCEPTUAL SITE MODEL

A conceptual site model was developed to identify the potential complete exposure pathways by which constituents detected in soil could impact human health (Figure 5).

The conceptual site model identifies potential sources, environmental release mechanisms, potential migration pathways, potential exposure pathways, potential exposure routes and potential human receptors onsite.

The conceptual site model identified the following potential complete exposure pathways:

- Future onsite commercial worker
  - ingestion/dermal contact with surface soil
  - inhalation of dust from soil in outdoor air

- Future construction worker
  - ingestion/dermal contact with surface and subsurface soil
  - inhalation of dust from soil in outdoor air

- Future onsite resident
  - ingestion/dermal contact with surface and subsurface soil
  - inhalation of dust that has migrated to indoor air
  - inhalation of groundwater vapor that has migrated to indoor air

Consumption of fruit or vegetables grown in soil is not considered to be a complete potential exposure pathway under future site conditions because the site will be developed as a three-story hotel with below ground pool and concrete parking.

Potential direct exposures (ingestion and dermal contact) to groundwater are not complete pathways as drinking water is provided by a remote municipal water supply, so there is little chance of incidental exposure. Discharge of groundwater to surface water also is not considered to be a complete migration pathway since there are no surface water bodies that are recharged by artesian flow or groundwater seepage in the vicinity of the site.

The potential for chemicals in soil to leach to underlying groundwater used as a drinking water source is considered very low as several aquitards or aquicludes exist below the maximum depth of impacted soils and groundwater used as a drinking water source.

There is very limited ecological habitat at and near the site. Wetlands were not observed onsite or at adjacent sites. Also no pits, ponds or lagoons were observed onsite. There are no natural or undisturbed areas onsite. Based on the lack of viable ecological habitat at and near the site, there are no complete ecological pathways onsite.

5.0 IDENTIFYING CHEMICALS OF CONCERN

All constituents detected at least one time in the soil matrix and shallow perched discontinuous groundwater underlying the site were quantitatively assessed using the appropriate exposure pathway in this risk assessment except arsenic which was detected within Southern California regional background concentrations.

Pursuant to the following guidance documents, *Selecting Inorganic Constituents as Chemicals of Concern for Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC 1997), *Background Metals at Los Angeles Unified School Sites – Arsenic* (DTSC 2005) and *Arsenic Strategies, Determination of Arsenic Remediation, Development of Arsenic Cleanup Goals* (DTSC 2009) the concentrations of arsenic detected in the soil matrix onsite were found to be within Southern California background concentrations of 12mg/kg.

The conclusion therefore is reached that arsenic is present at the site at concentrations consistent with background concentrations and therefore was eliminated as a chemical of concern and was not quantitatively assessed in the risk assessment.

6.0 TOXICITY ASSESSMENT

Toxicity values are combined with exposure factors to estimate noncancer adverse health effects and cancer risks. Toxicity values include reference doses (RfDs), reference concentrations (RfCs), unit risk factors (URFs) and slope factors (SFs) that are used to evaluate noncancer adverse health effects and cancer risks. USEPA (1989) has developed the following hierarchical toxicity identification protocol:

- Integrated Risk Information System (IRIS, USEPA 1999b)
- Health Effects Assessment Summary Tables (HEAST, USEPA 1997b)
- National Center for Environmental Assessment (NCEA)

The State of California Office of Environmental Health Hazard Assessment (OEHHA) and the State of California Department of Toxic Substances Control (DTSC) Office of Human and Ecological Risk (HERO) have developed URFs SFs, RfCs and RfDs. Pursuant to regulatory agency guidance OEHHA's and HERO's values are preferentially used instead of USEPA's when available, as OEHHA's and HERO's values are generally more conservative than USEPA's (DTSC 2013, USEPA 2004).

If a constituent had both a risk factor and a reference concentration it was assessed as a carcinogen and as a noncarcinogen. The unit risk factors and reference concentrations were obtained from DTSC HERO (DTSC 2014), ATSDR, IRIS, OEHHA, PPRTV as listed in USEPA's Regional Screening Levels (November 2015).

The slope factors for nickel were obtained from OEHHA. The reference doses and or reference concentrations barium and zinc were obtained from USEPA, IRIS.

The reference concentration for the inhalation exposure route for barium and the reference dose for the oral exposure route for copper are from USEPA, HEAST. The reference dose for vanadium is derived by USEPA within Section 5, Regional Screening Levels (USEPA 2008). The reference doses for C18-C28, C28-C36 and C36-C40 are from MADEP and DTSC.

The exposure point concentrations, the slope factors and reference doses for the constituents detected in the soil matrix and quantitatively assessed are presented in Table 4.

6.1 Types of Toxicity Values

USEPA recognizes that fundamental differences exist between noncarcinogenic and carcinogenic effects of chemicals. As a result of these differences, the evaluation of potential human health effects associated with noncarcinogenic and carcinogenic chemicals is conducted separately. As summarized in IRIS (USEPA 1999b) and HEAST (USEPA 1997b), USEPA has developed reference doses to evaluate noncancer effects and slope factors to evaluate carcinogenic effects. If a chemical is considered to cause both noncancer health effects and cancer risks, both reference doses and slope factors may be listed for the chemical. Other chemicals may have only reference doses or slope factors developed, depending on the observed toxic effects.

6.1.1 Reference Doses and Reference Concentrations

Noncancer health effects are evaluated using a reference dose, which is expressed in units of milligrams per kilogram body weight per day (mg/kg-day). A reference dose represents a USEPA-developed, estimated

daily exposure level (dose) to which humans may be exposed for a portion of their lifetime (in the case of subchronic reference doses) or for their entire lifetime (in the case of chronic reference doses), without expectation of adverse health effects. USEPA assumes the existence of a threshold concentration for noncancer effects. Below this concentration toxic effects are not expected to occur (USEPA 1989).

Reference doses are often based on animal laboratory studies, from which data are then extrapolated to a chemical concentration considered "safe" for humans. The threshold of observed effects in test animals is divided by uncertainty factors (UFs). Separate uncertainty factors, each of which may be up to 10, are used to account for each of the following:

- Protection of sensitive individuals within the receptor population.
- Extrapolation of toxicity data from animals to humans.
- Extrapolation of subchronic toxicity data to chronic exposure durations.
- Extrapolation from a lowest-observed adverse effect level (LOAEL) to a no-observed adverse effect level (NOAEL) to assess toxicity.

The uncertainty factors for a given chemical are then multiplied together to provide a total uncertainty factor, which is then used to derive a chronic reference dose. In order to derive a reference dose protective of the most sensitive members of the human population, the uncertainty factor may range from one to 10,000. The higher the total uncertainty factor, the more uncertainty and degree of conservativeness there are in the resultant chronic reference dose.

The chronic reference dose is the USEPA-established dose used to evaluate health effects associated with long-term (chronic) exposures of at least seven years (USEPA 1989). The subchronic reference dose is the dose used to evaluate health effects associated with exposures less than seven years (USEPA 1989).

USEPA has developed route-specific reference doses for the oral and inhalation routes of exposure. However, USEPA has not developed reference doses to specifically evaluate possible impacts from dermal (skin) exposure. For this reason, oral reference doses are typically used to estimate possible noncancer health effects from dermal exposure consistent with USEPA (1989) guidance.

USEPA defines a reference concentration as an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be at appreciable risk of deleterious effects during a lifetime (USEPA 2009). The reference concentration is derived after a review of the health effects database for a chemical and identification of the most sensitive and relevant endpoint along with the principal study or studies demonstrating that endpoint. Uncertainty factors are used to account for uncertainties in the extrapolations from the experimental data conditions to an estimate appropriate to the exposed human scenario (USEPA 2009). The reference concentrations are derived from the following formula:

$$RfC = NOAEL_{[HEC]} / (UF)^1$$

Where: RfC (mg/m^3) = reference concentration
$NOAEL_{[HEC]}$ (mg/m^3) = The NOAEL or analogous exposure level obtained with an alternate approach, dosimetrically adjusted to an HEC
UF = uncertainty factor(s) applied to account for the extrapolations required from the characteristics of the experimental regimen

6.1.2 Cancer Slope Factors and Unit Risk Factors

USEPA has developed route-specific slope factors for chemicals that are known or potential human carcinogens. USEPA (1989) defines a slope factor and a unit risk factor as a plausible upper-bound estimate of the probability of a carcinogenic response in human populations per unit intake of a chemical (averaged over an expected lifetime of 70 years). Slope factors are used to estimate cancer risks and are expressed in units of risk per dose in mg/kg-day ([mg/kg-day] $^{-1}$).

Most slope factors and unit risk factors are based on a continuous exposure, linear non-threshold extrapolation model (generally the linear multistage model) which is predicated on the assumption that any level of exposure to a carcinogen will result in some degree of carcinogenic risk, however minute (i.e., no threshold is assumed to exist). The extrapolation model derives a mathematical relationship between the generally high chemical doses and resulting effects measured in laboratory animals or epidemiological (human) studies, and applies that relationship to extrapolate effects for the generally lower doses that occur in the environment.

This low-dose extrapolation is generally regarded as a very conservative (health protective) approach. The resulting slope factor typically represents at least the upper 95th percentile of the measured dose-response relationship. USEPA has developed slope factors for oral and inhalation exposure routes but not for the dermal route. Therefore, oral slope factors are typically used to evaluate potential effects from dermal exposure (USEPA 1989).

7.0 EXPOSURE ASSESSMENT

The exposure assessment provides a scientifically defensible basis for the identification of potentially exposed human receptors and the most likely ways they might be exposed to chemicals of concern at the site. As defined by USEPA (1989), the following four components are necessary for chemical exposure to occur:

- A chemical source and a mechanism of chemical release to the environment
- An environmental transport medium (e.g., soil) for the released chemical
- A point of contact between the contaminated medium and the receptor (i.e., the exposure point)
- An exposure route (e.g., ingesting chemically-impacted soil) at the exposure point

All four of these elements must be present for an exposure pathway to be considered complete and for chemical exposure to occur (USEPA 1989).

This HRA evaluated the potential for residential receptors to be exposed to the maximum detected concentrations of the constituents detected in the soil matrix and the perched shallow discontinuous groundwater. The maximum detected concentrations of the VOCs in the perched shallow discontinuous groundwater were used to assess potential health impacts via inhalation in the commercial scenario. The exposure point concentrations for commercial workers and construction workers were either the maximum detected concentrations or the upper confidence level (UCL), whichever value was less, pursuant to the ProUCL User's Guide (USEPA 2004), of the chemicals of concern detected at least one time in the media onsite. The upper confidence levels statistically derived using ProUCL version 5.0 used as the exposure point concentrations include: (1) 95% Student's-t UCL, (2) 95% KM Chebyshev UCL, (3) 95% KM (t) UCL, (4) 95% KM (Percentile Bootstrap) UCL and (5) 95% KM (BCA) UCL. The ProUCL model output is included as Appendix C.

Data collected from the soil matrix onsite and perched shallow groundwater during the various investigations were used in the risk assessment. Exposure point concentrations are presented in Table 4.

7.1 Average and Reasonable Maximum Exposures

Typically two types of exposure scenarios are evaluated in a risk assessment; an average exposure scenario, and a reasonable maximum exposure (RME) scenario. The average exposure scenario represents a more typical exposure, believed to be most likely to occur, while the reasonable maximum exposure scenario represents a plausible worst case situation - one that is not very likely to occur. USEPA guidance (1989) recommends evaluating a reasonable maximum exposure scenario. The reasonable maximum exposure scenario estimates the exposure a receptor might receive using highly conservative intake assumptions (e.g., 90^{th} or 95^{th} percentile for most intake assumptions) and the upper confidence limit (UCL) on the mean of the chemical concentrations. It is assumed that by evaluating a reasonable maximum exposure scenario potential health risks to extremely sensitive individuals within a particular receptor population will be adequately addressed. As an added measure of conservatism, only a reasonable maximum exposure scenario was evaluated in this HRA.

The DTSC PEA and USEPA guidance contain formulae that incorporate default values which were selected to be health protective. Some of these default values, such as, the exposure frequency, exposure time and exposure duration, were modified when evaluating the commercial worker and construction worker scenarios (DTSC 2013, USEPA 2004).

8.0 RISK CHARACTERIZATION

The risk characterization process incorporates data from the exposure and toxicity assessments. The exposure assessment information necessary to estimate risks and hazards includes the estimated chemical intakes, exposure modeling assumptions, and the exposure pathways assumed to contribute to the majority of exposure for each receptor over a given time period (USEPA 1989a). The exposure parameters for assessing the constituents detected in the soil matrix are included as Table 5.

The method by which chemicals with carcinogenic and/or noncarcinogenic effects are evaluated to determine whether they pose a risk or an adverse impact to human health is discussed below, relative to the exposure pathways by which the receptors may be exposed to the exposure point concentrations of the chemicals of concern.

8.1 Ingestion and Dermal Contact Pathways

To provide an evaluation of chronic risk along the ingestion and dermal contact pathways the following equations for risk and hazard were used consistent with PEA guidance (DTSC 2013).

$$Risk_{soil} = SF_o \times C_s \times \frac{IR_s \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times EF} + SF_o \times C_s \times \frac{SA \times AF \times ABS \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times EF}$$

$$Hazard_{soil} = (1/RfD_o) \times C_s \times \frac{IR \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times 250\ days/year} + (1/RfD_o) \times C_s \times \frac{SA \times AF \times ABS \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times EF}$$

Where:
SF_o = oral cancer slope factor $(mg/kg\text{-}day)^{-1}$
C_s = concentration in soil (mg/kg)
RfD_o = oral reference dose (mg/kg-day)
ABS = absorption fraction (dimensionless):
Exposure Duration (ED) - years
Exposure Frequency (EF) - days/year

Body Weight (BW) - kg
Incidental Soil Ingestion Rate (IR_s) - mg/day
Exposed Skin (SA) - cm^2
Soil to Skin Adherence Factor (AF) – mg/cm^2
Averaging Time (AT) - years

Chemical specific values for the absorption fractions (ABS) parameter were obtained from USEPA and DTSC (USEPA, June 2015; DTSC 2013). Toxicity and exposure point concentrations are found in Table 4. Exposure parameters for assessing constituents detected in the soil matrix are presented in Table 5. The maximum concentrations of the constituents detected in the soil matrix and perched shallow discontinuous groundwater were evaluated in this risk assessment for the residential scenario. The maximum concentrations of the VOCs detected in the perched shallow discontinuous groundwater were evaluated in this risk assessment for the commercial scenario. The maximum concentration or the upper confidence level, whichever was less, of the constituents detected in the soil matrix were evaluated in this risk assessment for the commercial worker and construction worker scenarios.

The exposure factors presented in Tables 4 and 5 provide a conservative estimate of chronic risk and hazard to human health due to exposure to the chemicals of concern detected in the soil matrix via the ingestion and dermal contact routes of exposure. The calculated estimates of risk and hazard due to exposure to constituents detected in the soil matrix are provided in Tables 6-10.

8.2 Inhalation Pathway Soil Matrix

To provide an evaluation of chronic risk along the inhalation pathway the following equations (DTSC 2013, USEPA 2009) for estimating risk and hazard due to exposure to constituents of concern detected in the soil matrix were used consistent with PEA guidance (DTSC 2013, USEPA 2009).

Semi-volatile organic compounds and metals in soil are evaluated in outdoor air using particulate emission factors (PEFs) to obtain concentrations of chemicals in dust. PEFs are used to develop an estimate of the concentration of a chemical in dust based on its concentration in soil. It assumes that the dust from the site is caused by the wind and not created by mechanical means (e.g. construction activities, tilling, automobile traffic, etc.) (DTSC 2013).

A default PEF of 1.32E+09 (m^3/kg) is used, because this is the same default value used by the USEPA in their Soil Screening Guidance (USEPA 2009). It assumes an infinite source of chemicals, a vegetative cover of 50%, and a mean annual wind speed of 4.69 m/s. This is equivalent to a dust concentration of 0.76 g/m^3 at the receptor. The default dispersion term (Q/C) of 90.80 (g/m2-s per kg/m3) is based on a site of 0.5 acres and dispersion modeling runs of 29 sites across the United States. The default Q/C provides a conservative estimate of the long-term exposure to dust (DTSC 2013).

$$C_a = (C_s/PEF) \times 1000\mu g/mg$$

Where:

C_a = concentration in air, mg/m^3
C_s = concentration in soil, mg/kg
PEF = 1.32E09 (default value)

Chronic and SubChronic Exposure

$$EC = CA \times [(ET \times EF \times ED)/AT]$$

Where:

EC = exposure concentration (mg/m^3)
CA = contaminant concentration in air (mg/m^3)

ET = exposure time
EF = exposure frequency
ED = exposure duration
AT = averaging time (varies by receptor and for noncarcinogens and carcinogens)

$$Risk = EC \times IUR$$

Where:

Risk = estimated risk
EC = exposure concentration ($\mu g/m^3$)
IUR = inhalation unit risk factor $(\mu g/m^3)^{-1}$

$$HQ = EC/Toxicity\ value$$

Where:

HQ = hazard quotient
EC = exposure concentration (mg/m^3)
Toxicity value = inhalation reference concentration (mg/m^3)

The risk and hazard for the air pathway are based on either the exposure to volatile emissions for VOCs or the exposure to fugitive dust emissions for non-VOCs. The Office of Scientific Affairs defines a VOC as a chemical with a vapor pressure of 0.001 mm mercury or higher and a Henry's Law Constant of 1×10^{-5} or higher. Exposure to a chemical via the air pathway can be adequately performed using either volatilization or fugitive dust scenarios; it is not necessary to do both (DTSC 2013).

For this risk assessment exposure to non-VOCs detected in the soil matrix via the inhalation pathway was performed using the fugitive dust scenario.

As the exposure duration was 1 year for construction workers the subchronic exposure was estimated instead of acute exposure, pursuant to USEPA guidance (USEPA 2009). The commercial worker and residential receptors were assessed for chronic exposure.

8.3 The DTSC modified Johnson and Ettinger Model – Groundwater screen, version 3.0 (April 2003; modified by DTSC HERO December 2014)

The maximum detected concentrations of the VOCs: benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene detected in the perched shallow (8-feet bgs) discontinuous groundwater was assessed by the DTSC modified Johnson & Ettinger Model groundwater screen, version 3.0 (April 2003; modified by DTSC HERO December 2014) for the residential and commercial scenarios.

The Johnson and Ettinger Model has the following conservative assumptions: (1) steady state conditions exist, (2) an infinite source of contamination exists, (3) the subsurface is homogenous, (4) air mixing within the building is uniform, (5) preferential pathways do not exist, (6) biodegradation of vapors does not occur, (7) contaminants are homogenously distributed, (8) contaminant vapors enter the building primarily through cracks in the foundation and walls, (9) buildings are constructed on slabs or with basements, (10)

ventilation rates and pressure differences are assumed to remain constant and (11) the receptors are exposed to these constituents for 350 days per year for 30 years (residential scenario) or 250 days per year for 25 years (commercial scenario).

The Johnson & Ettinger Model was used to calculate incremental risks and hazards by the following equations imbedded within the model:

$$\text{Risk} = \frac{\text{URF} \times \text{EF} \times \text{ED} \times C_{building}}{AT_c \times 365 \text{ days/year}}$$

Where:
URF = unit risk factor $\mu g/m^3$; comparable to a SF
EF = exposure frequency = 350 days/year
ED = exposure duration = 30 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per µg/kg soil; calculated by the model
AT_c = averaging time for carcinogens; default value = 70

$$\text{Hazard Quotient} = \frac{\text{EF} \times \text{ED} \times 1/\text{RfC} \times C_{building}}{AT_{nc} \times 365 \text{ days/year}}$$

Where:
RfC = Reference Concentration mg/m^3; comparable to a RfD
EF = exposure frequency = 350 days/year
ED = exposure duration = 30 years
$C_{building}$ = vapor concentration in the building, milligrams per cubic meter (mg/m^3) per µg/kg soil; calculated by the model
AT_{nc} = averaging time for noncarcinogens; default value = 25

Site specific variables input into the model include the following:

- The depth at which groundwater was detected by Hillmann Consulting after placing a PVC pipe in a shallow soil boring and waiting for at least 2 hours for groundwater to accumulate was 8-feet bgs. Consequently the depth of groundwater was changed to 244 centimeters (cm).
- The soil type in boring 7 identified by Hillmann Consulting (please see the boring logs included as Appendix D) was silty sand which equates to loamy sand in the model. Consequently the soil type was changed to reflect loamy sand, SL.
- The temperature of groundwater was changed pursuant to the map in the Johnson & Ettinger User's Manual (page 46) to reflect Southern California temperatures of 62°F or 17°C.

The results of the Johnson & Ettinger model for the residential scenario are presented below and in Appendix E. The estimated risk $1.4x10^{-6}$ is slightly greater than the threshold $1x10^{-6}$. The estimated hazard of 0.08 is less than the threshold of 1; indicating the VOCs detected in the perched shallow discontinuous groundwater underlying the site do not pose an adverse impact to future hotel occupants.

RESIDENTIAL SCENARIO

	Groundwater concentration µg/L	Indoor Air Concentration µg/m^3	Estimated Risk	Estimated Hazard
Benzene	9.8	1.4E-01	1.4E-06	4.5E-02
Toluene	57	4.2E+00	NA	1.3E-02
Ethylbenzene	6.2	8.7E-02	7.7E-08	8.3E-05
m-Xylene	44	5.6E-01	NA	5.4E-03
o-Xylene	18	1.7E-01	NA	1.7E-03
p-Xylene	44	5.4E-01	NA	5.2E-03
1,2,4-TMB	8.1	7.6E-02	NA	1.0E-02
1,3,5-TMB	5.1	6.5E-02	NA	1.8E-03

The results of the Johnson & Ettinger model for the commercial scenario are presented below and in Appendix F. The estimated risk $1.8x10^{-7}$ is less than the threshold $1x10^{-5}$. The estimated hazard of 0.009 is less than the threshold of 1; indicating the VOCs detected in the perched shallow discontinuous groundwater underlying the site do not pose an adverse impact to future hotel occupants, commercial workers or construction workers.

COMMERCIAL SCENARIO

	Groundwater concentration µg/L	Indoor Air Concentration µg/m^3	Estimated Risk	Estimated Hazard
Benzene	9.8	7.0E-02	1.7E-07	5.3E-03
Toluene	57	4.0E-01	NA	3.1E-04
Ethylbenzene	6.2	4.3E-02	8.8E-09	9.9E-06
m-Xylene	44	2.8E-01	NA	6.4E-04
o-Xylene	18	8.6E-02	NA	2.0E-04
p-Xylene	44	2.7E-01	NA	6.2E-04
1,2,4-TMB	8.1	3.8E-02	NA	1.2E-03
1,3,5-TMB	5.1	3.3E-02	NA	2.1E-04

8.4 DTSC's LeadSpread 8.0 Model

DTSC's LeadSpread 8.0 Model estimates the hazard due to exposure to lead in air and onsite soils/dust for adults and children within a residential exposure scenario. Typically, lead concentrations in air are not measured onsite. Therefore the model extrapolates these concentrations from the measured concentrations of lead in onsite soils.

DTSC's LeadSpread 8.0 Model results indicate that lead does not pose an unacceptable hazard to adults or children exposed to the maximum detected concentration of lead in site soils, 11mg/kg, used in the model as the exposure point concentration. These results are provided in Table 11.

8.5 Noncancer Adverse Health Effects

Noncarcinogenic effects or hazards are typically evaluated by comparing an exposure level over a specified time period (e.g., a lifetime or 25 years), with a reference dose based on a similar time period.

Hazard quotient values less than 1 indicate that potential exposures to noncarcinogenic COCs are not expected to result in toxicity (USEPA 1989). Summing the hazard quotient values to derive a hazard index (HI) provides an estimation of the total potential hazard due to a simultaneous exposure to all the noncarcinogenic COCs. However, summing hazard quotient values is not necessary when the chemicals of concern target different organs within the body (USEPA 1989, DTSC 2013). Although the noncarcinogenic chemicals of concern quantitatively assessed in this risk assessment target different organs within the body, the estimated hazard quotients were summed to derive a HI.

8.6 Lifetime Excess Cancer Risk

Slope factors are used to estimate the potential risk associated with exposure to individual COCs. The slope factor is multiplied by the chronic daily intake averaged over 70 years to estimate lifetime excess cancer risk. "excess" or "incremental" cancer risk represents the probability of an individual developing cancer over a lifetime as a result of chemical exposure, over and above the baseline or "background" cancer risk in the general population. Cancer risks and noncancer health hazards estimated in the HRA are regarded as estimated or theoretical results developed on the basis of the toxicity factors, chemical fate and transport, exposure assumption, and other inputs previously described. Cancer risks do not represent actual cancer cases in actual people. Rather, risks are calculated on the basis of an entirely hypothetical set of conditions. This assumed "exposure scenario" is developed to protect human health, and is based on standard USEPA and Cal-EPA methods and assumptions.

USEPA characterizes theoretical excess lifetime cancer risks below one in one million (10^{-6}) as not of concern and has stated that risks between 10^{-6} and one in 10,000 (10^{-4}) are "safe and protective of public health" (Federal Register 56(20):3535, 1991). Remedial action is not generally required by USEPA for sites with a theoretical lifetime excess risk of less than 10^{-4}.

The more stringent target risk of 10^{-6} is typically applied to residential receptors. To provide perspective, a total theoretical lifetime excess cancer risk of one in 100,000 (10^{-5}) is frequently accepted by Cal-EPA for worker receptors at California sites, and the target risk for chemicals evaluated under State Proposition 65 regulations is 10^{-5} (22CCR 12703).

8.7 Multipathway Cancer Risk

Based on regulatory guidelines, it is appropriate to combine risk estimates across exposure pathways for a given receptor. At the same time, exposure to multiple carcinogenic COCs is also typically considered to be additive. For exposures to multiple pathways and chemicals, the following equation was used to estimate total theoretical lifetime excess carcinogenic risks:

$$\text{Total Risk} = \sum_{p=1}^{m} \sum_{i=1}^{n} CR_{i,p}$$

Where:

Total Risk = Excess cancer risk from exposure to n chemicals via m pathways

m	=	Number of exposure pathways
n	=	Number of chemicals
$CR_{i,p}$	=	Potential cancer risk from exposure to chemical i via pathway p

This equation was used to estimate the total potential cancer risks due to exposure to the carcinogenic COCs via the ingestion, dermal contact and inhalation routes of exposure. The estimated risks, total risk, estimated hazards and hazard index are presented in Table 10.

8.8 Estimation of Risks and Hazards

A total of 21 chemicals of concern were quantitatively assessed in the risk assessment. These chemicals of concern include: C18-C28, C28-C36, C36-C40, benzene, toluene, ethylbenzene, m,p-xylenes, o-xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, barium, cadmium, chromium, hexavalent chromium (by estimating the detected concentration pursuant to regulatory guidelines, 1/6 the detected concentration of total chromium), cobalt, copper, lead, nickel, vanadium, and zinc.

Residential Scenario Child – Soil Matrix

Estimated Risk Inhalation - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 2.26×10^{-7} less than the target threshold 1×10^{-6}.

Hazard Quotients Ingestion and Dermal Contact - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 1.6, which is greater than 1, the target hazard value.

Hazard Quotients Inhalation - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 0.006, which is less than 1, the target hazard value.

Summed Risk - The total risk, summed across all exposure pathways for all carcinogenic chemicals of concern in the soil matrix, is 2.26×10^{-7}, less than the target risk.

Hazard Index – The total hazard, summed across all exposure pathways for all noncarcinogenic chemicals of concern in the soil matrix is 1.6, greater than the target hazard value. These estimated risk and hazards values are presented in Table 6.

Residential Scenario Adult – Soil Matrix

Estimated Risk Inhalation - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 2.34×10^{-7} less than the target threshold 1×10^{-6}.

Hazard Quotients Ingestion and Dermal Contact - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.13, which is less than 1, the target hazard value.

Hazard Quotients Inhalation - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 0.006, which is less than 1, the target hazard value.

Summed Risk - The total risk, summed across all exposure pathways for all carcinogenic chemicals of concern in the soil matrix, is 2.34×10^{-7}, less than the target threshold 1×10^{-6}.

Hazard Index – The total hazard, summed across all exposure pathways for all noncarcinogenic chemicals of concern in the soil matrix is 0.14, less than the target hazard value. These estimated risk and hazards values are presented in Table 7.

Construction Worker Scenario – Soil Matrix

Estimated Risk Inhalation - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 7.24×10^{-8} less than the target threshold 1×10^{-5}.

Hazard Quotients Ingestion and Dermal Contact - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.01, which is less than 1, the target hazard value.

Hazard Quotients Inhalation - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 0.006, which is less than 1, the target hazard value.

Summed Risk - The total risk, summed across all exposure pathways for all carcinogenic chemicals of concern in the soil matrix, is 7.24×10^{-8}, less than the target threshold 1×10^{-5}.

Hazard Index – The total hazard, summed across all exposure pathways for all noncarcinogenic chemicals of concern in the soil matrix is 0.023, less than the target hazard value. These estimated risk and hazards values are presented in Table 8.

Commercial Worker Scenario – Soil Matrix

Estimated Risk Inhalation - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 4.31×10^{-8} less than the target threshold 1×10^{-5}.

Hazard Quotients Ingestion and Dermal Contact - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.1, which is less than 1, the target hazard value.

Hazard Quotients Inhalation - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 0.001, which is less than 1, the target hazard value.

Summed Risk - The total risk, summed across all exposure pathways for all carcinogenic chemicals of concern in the soil matrix, is 4.31×10^{-8}, less than the target threshold 1×10^{-5}.

Hazard Index – The total hazard, summed across all exposure pathways for all noncarcinogenic chemicals of concern in the soil matrix is 0.11, less than the target hazard value. These estimated risk and hazards values are presented in Table 9.

9.0 UNCERTAINTY ANALYSIS

The uncertainty analysis characterizes the propagated uncertainty in health risk assessments. These uncertainties are driven by variability in:

- The chemical data selection and assumptions used in the models with which concentrations at receptor locations were estimated.
- The variability of receptor intake parameters.
- The accuracy of toxicity values used to characterize exposure, hazards and cancer risks.

Additionally, uncertainties are introduced in the risk assessment when exposures to several substances across multiple pathways are summed.

Quantifying uncertainty is an essential element of the risk assessment process. According to USEPA's Guidance on Risk Characterization for Risk Managers and Risk Assessors, point estimates of risk "do not fully convey the range of information considered and used in developing the assessment" (USEPA 1992). The following components of the risk assessment process can introduce uncertainties:

- Data Collection and Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

9.1 Data Collection and Evaluation

The techniques used for data sampling and analysis and the methods used for identifying chemicals for evaluation in this risk assessment, may result in a number of uncertainties. These uncertainties are itemized below in the form of assumptions.

- It was assumed that the nature and extent of chemical impacts on and near the site have been adequately characterized. If this assumption is not valid, then potential health impacts may be over- or underestimated.

- Systematic or random errors in the chemical analyses may yield erroneous data. These types of errors may result in a slight over- or underestimation of risk.

9.2 Exposure Assessment

A number of uncertainties are associated with the exposure assessment, including estimation of exposure point concentrations and assumptions used to estimate chemical intakes. Key uncertainties associated with these components of the HRA are summarized below.

9.2.1 Exposure Pathways

The exposure pathways evaluated in this HRA are expected to represent the primary pathways of exposure, based on the results of the chemical analyses, and the expected fate and transport of these chemicals in the environment. Minor or secondary pathways may also exist, but often cannot be identified or evaluated using the available data. The contribution of secondary pathways to the overall risk from the site is not

likely to be significant. In addition, intake assumptions are reflective of trends (usually for the most sensitive individual within an entire population), and as such are subject to intrinsic variability. In both cases, their presence introduces a level of uncertainty to this risk assessment process.

9.3 Toxicity Assessment

Toxicity information for many chemicals is often limited. Consequently, there are varying degrees of uncertainty with the calculated toxicity values. Sources of uncertainty associated with toxicity values include:

- Using dose-response information from effects observed at high doses to predict the adverse health effects that may occur following exposure to the low levels expected from human contact with the agent in the environment.
- Using dose-response information from short-term exposures to predict the effects of long-term exposures.
- Using dose-response information from animal studies to predict effects in humans.
- Using dose-response information from homogeneous animal populations or human populations to predict the effects likely to be observed in the general population consisting of individuals with a wide range of sensitivities.

To compensate for these uncertainties, USEPA typically applies a margin of safety when promulgating human toxicity values. Therefore, use of USEPA toxicity values likely results in an overestimation of potential hazard and risk.

9.4 Risk Characterization

The reasonable maximum exposure scenario risk characterization represents an over-estimation of risk. Site-specific information regarding depth below ground at which the constituents of concern were detected was not used in the equations. The reasonable maximum exposure scenario estimated the risk to the receptors based on the maximum detected concentrations or the UCLs for the constituents quantitatively assessed in this risk assessment.

9.5 Summary of Risk Assessment Uncertainties

The analysis of the uncertainties associated with this risk assessment indicates that the estimated risks and hazards derived from the equations in the PEA Manual (DTSC 2013), the RAGs Manual (USEPA 2009), the LeadSpread Model (DTSC) and the J&E Model for the reasonable maximum exposure scenario represent an over-estimation of risk. Although as outlined in the sections above, many factors can contribute to the over- or underestimation of risk, in general, a mixture of conservative and upper-bound input values were identified to estimate potential exposures. Compounding conservative and upper-bound input values in the risk assessment process are intended to lead to reasonable, maximum, health-conservative estimates. The actual impacts to human health are most likely less than those estimated in this HRA for the evaluated receptors and pathways.

10.0 REFERENCES

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TABLES

Table 1 - TPH Analytical Results in Soil

SAMPLE ID	DATE SAMPLED	C8-C10 mg/kg	C10-C18 mg/kg	C18-C28 mg/kg	C28-C36 mg/kg	C36-C40 mg/kg
SB1-2	1/3/07	<10	<10	15	17	16
SB1-6	1/3/07	<10	<10	12	14	15
SB1-10	1/3/07	<10	<10	<10	<10	<10
SB2-4	1/3/07	<10	<10	13	15	16
SB2-8	1/3/07	<10	<10	<10	<10	<10
SB3-2	1/3/07	<10	<10	20	35	45
SB3-5	1/3/07	<10	<10	<10	<10	<10
SB4-4	1/3/07	<10	<10	19	45	26
SB4-8	1/3/07	<10	<10	<10	<10	<10
SB4-10	1/3/07	<10	<10	<10	<10	<10
SB5-2	1/3/07	<10	<10	<10	<10	<10
SB5-6	1/3/07	<10	<10	14	19	16
SB6-4	1/3/07	<10	<10	23	38	27
SB6-8	1/3/07	<10	<10	<10	<10	<10
SB6-10	1/3/07	<10	<10	11	22	18

Notes:
mg/kg = milligrams per kilogram
Analytical results are included as Appendix A
SB1-2 = Soil Boring 1, 2-feet into the area of the soil stockpile

Table 2 - Metals Analytical Results in Soil

SAMPLE ID	DATE SAMPLED	As mg/kg	Ba mg/kg	Cd mg/kg	Co mg/kg	Cr mg/kg	Cu mg/kg	Pb mg/kg	Ni mg/kg	V mg/kg	Zn mg/kg
RSL*r*		0.68	15000	4.6	23	120000	3100	80	820	390	23000
SB1-2	1/3/07	3.4						4.9			
SB1-6	1/3/07	<1.0						1.2			
SB1-10	1/3/07	<1.0						<1.0			
SB2-4	1/3/07	<1.0						1.1			
SB2-8	1/3/07	4.1						5.2			
SB3-2	1/3/07	<1.0						1.6			
SB3-6	1/3/07	4.8						4.9			
SB4-4	1/3/07	3.1						6.1			
SB4-8	1/3/07	3.5						3.4			
SB4-10	1/3/07	4.1						4.8			
SB5-2	1/3/07	9.8						6.1			
SB5-6	1/3/07	<1.0						1.3			
SB6-4	1/3/07	<1.0						<1.0			
SB6-8	1/3/07	<1.0						<1.0			
SB6-10	1/3/07	<1.0						<1.0			
B7-5	6/11/15	6	130	5.9	18	47	28	4.8	56	68	71
B8-5	6/11/15	9.9	110	6.2	14	38	27	7	43	65	75
B9-5	6/11/15	2.5	77	<1.0	20	45	20	2.3	50	42	39
B10-5	6/11/15	8.5	110	7.6	12	27	30	11	49	53	92
B11-5	6/11/15	3.2	78	34	2.4	2.1	5.5	1.4	8.5	12	16
B12-5	6/11/15	<1.0	57	1.8	8.3	12	12	2	15	21	17

Notes:
mg/kg = milligram per kilogram
As = arsenic, Ba = barium, Cd = cadmium, Co = cobalt, Cr = chromium, Cu = copper, Pb = lead, Ni = nickel, V = vanadium, Zn = zinc
SB1-2 = Soil Boring 1, 2 feet into soil stockpile; SB1-2 through SB6-10 were collected from the area covered by the soil stockpile
B7-5 = Boring 7, 5 feet below ground surface (bgs). B7-5 through B12-5 were collected from soil borings.
Analytical results are included as Appendices A & B
Only detected concentrations of metals are presented in this table. All other metals were ND.
Blank cell indicates analyte was not analyzed by laboratory.
RSL*r* = USEPA Regional Screening Level for residential soils (November 2015); Cd and Pb RSL values are from DTSC HHRA Note 3

Table 3 - Groundwater Analytical Results

SAMPLE ID	DATE SAMPLED	Benzene ug/L	Toluene ug/L	Ethylbenzene ug/L	m,p-Xylene ug/L	o-Xylene ug/L	1,3,5-TMB ug/L	1,2,4-TMB ug/L
B7-W	6/12/15	9.8	57.0	6.2	44.0	18.0	5.1	8.1
B10-W	6/12/15	4.5	28.0	2.5	19.0	7.9	2.6	4.1

Notes:
ug/L = micrograms per liter
B7-W = Soil Boring 7, groundwater collected from PVC pipe placed in boring for at least 2 hours for groundwater accumulation
Analytical results are included as Appendix B
Only detected concentrations of VOCs are presented in this table. All other VOCs were ND.
TMB = trimethylbenzene

Table 4
Exposure Point Concentrations, Slope Factors and Reference Doses

	Residential	Commercial				
ANALYTE	**EPC**	**EPC**	**SFo**	**IUR**	**RfDo**	**RfCi**
C18-C28	23	15			2.00E+00	
C28-C36	45	23.27			2.00E+00	
C36-C40	45	21			2.00E+00	
barium	130	116.1			2.00E-01	5.00E-04
cadmium	34	31.8		1.80E-03	1.00E-03	1.00E-05
cobalt	20	17.76			3.00E-04	6.00E-06
chromium	47	43.58			1.50E+00	
hexavalent chromium	7.83	7.26	5.00E-01	8.40E-02	3.00E-03	1.00E-04
copper	30	28.53			4.00E-02	
lead	11					
nickel	56	53.39		2.60E-04	2.00E-02	5.00E-04
vanadium	68	62.45			5.00E-03	1.00E-04
zinc	92	78.14			3.00E-01	

Notes:

EPC = Exposure Point Concentration; either the maximum detected concentration of the analyte in the soil matrix for Residential receptors or the UCL for Commercial receptors.

UCL calculated using ProUCL version 5.0. Units are expressed in mg/kg

Lead was assessed with DTSC's LeadSpread 8.0 Model using the maximum concentration as the EPC

SFo = Slope Factor, oral route of exposure $(mg/kg\text{-}day)^{-1}$

IUR = inhalation unit risk factor, inhalation route of exposure $(\mu g/m3)^{-1}$

USEPA RSLs November 2015

RfDo = Reference Dose, oral route of exposure (mg/kg-day)

RfCi = Reference Concentration, inhalation route of exposure (mg/m^3)

The SFs for nickel are from OEHHA

The RfDs and/or RfCs for barium, trivalent chromium and zinc are from USEPA IRIS

The RfCi for barium and the RfDo for copper are from Heast

The RfD for vanadium is derived by USEPA within Section 5, Regional Screening Levels (USEPA 2015)

The RfDs for TPH-g and TPH-o are from MADEP (October 2002) and DTSC (2013)

Blank cell indicates a SF or RfD are not available for the analyte

Table 5 - Exposure Parameters

Exposure Parameter	Notation	Receptor Populations				Units	Reference
		Commercial Worker	Construction Worker	Residential User			
				Adult	Child		
General Parameters							
Body Weight	BW	70	70	70	15	kg	DTSC
Exposure Duration	ED	25	1	24	6	years	DTSC
Site Visit Duration	SVD	8	8	24	24	hours/day	
Soil Ingestion Pathway							
Exposure Frequency	EF	250	365	350	350	days/year	
Averaging Time c 70 yrs x 365 days	ATc	25,550	25,550	25,550	25,550	days	DTSC
Averaging Time nc 6 yrs x 365 days child	ATnc	25,550	25,550	25,550	2,190	days	DTSC
Soil Ingestion Rate	IR	100	330	100	200	mg/day	DTSC
Dermal Contact with Soil							
Averaging Time c 70 yrs x 365 days	ATc	25,550	25,550	25,550	25,550	days	DTSC
Averaging Time nc 6 yrs x 365 days child	ATnc	25,550	25,550	25,550	2,190	days	DTSC
Skin Surface Area	SA	3,300	3,300	5,700	2,900	cm^2/event	OEHHA
Soil-to-Skin Adherence factor	AF	0.2	0.2	0.07	0.21	mg/cm^2	OEHHA
Fraction of Chemical Dermally Absorbed	ABS	chem specific	chem specific	ch sp	ch sp	unitless	DTSC
Inhalation of Outdoor Air							
Exposure Frequency	EF	250	365	350	350	days/year	
Averaging Time 365 d/yr x 70 yr x 24 hr/d	Atc	613,200	613,200	613,200	613,200	hours	DTSC
Averaging Time 365 d/yr x 6 yr x 24 hr/d child	Atnc	613,200	613,200	613,200	52,560	hours	DTSC

Notes:

ABS = 0.1 for VOCs, 0.13 for naphthalene, 0.01 for most metals (DTSC 2013; USEPA RSL November 2015)

Table 6
Estimated Risks and Hazards SOIL - Residential Child Scenario

ANALYTE	RISKo	RISKi	HAZARDo	HAZARDi
C18-C28			1.92E-04	
C28-C36			3.75E-04	
C36-C40			3.75E-04	
barium			8.56E-03	1.89E-04
cadmium		1.05E-08	4.36E-01	2.47E-03
chromium			4.15E-04	
chromium 6		2.05E-07		5.69E-05
cobalt			8.78E-01	2.42E-03
copper			9.88E-03	
nickel		1.05E-08	3.69E-02	4.52E-04
vanadium			1.79E-01	4.94E-04
zinc			3.64E-03	
SUM RISK		2.26E-07		
SUM HAZARD			1.55E+00	6.08E-03
HAZARD INDEX = 1.6				
SUM RISK = 2.26E-07				

Table 7
Estimated Risks and Hazards SOIL - Residential Adult Scenario

ANALYTE	RISKo	RISKi	HAZARDo	HAZARDi
C18-C28			1.76E-05	
C28-C36			3.45E-05	
C36-C40			3.45E-05	
barium			7.41E-04	1.89E-04
cadmium		1.91E-08	3.74E-02	2.47E-03
chromium			3.59E-05	
chromium 6		2.05E-07		5.69E-05
cobalt			7.60E-02	2.42E-03
copper			8.55E-04	
nickel		1.05E-08	3.19E-03	5.49E-04
vanadium			1.55E-02	2.03E-04
zinc			3.15E-04	
SUM RISK		2.34E-07		
SUM HAZARD			1.34E-01	5.89E-03
HAZARD INDEX = 0.14				
SUM RISK = 2.34E-07				

Table 8
Estimated Risks and Hazards SOIL - Construction Worker Scenario

ANALYTE	RISKo	RISKi	HAZARDo	HAZARDi
C18-C28			1.41E-06	
C28-C36			2.19E-06	
C36-C40			1.96E-06	
barium			9.30E-05	1.76E-04
cadmium		5.94E-09	5.01E-03	2.41E-03
chromium			4.68E-06	
chromium 6		6.33E-08		5.50E-05
cobalt			9.49E-03	2.24E-03
copper			1.14E-04	
nickel		3.13E-09	4.28E-04	4.49E-04
vanadium			2.00E-03	4.73E-04
zinc			3.76E-05	
SUM RISK		7.24E-08		
SUM HAZARD			1.72E-02	5.80E-03
HAZARD INDEX = 0.023				
SUM RISK = 7.24E-08				

Table 9
Estimated Risks and Hazards SOIL - Commercial Worker Scenario

ANALYTE	RISKo	RISKi	HAZARDo	HAZARDi
C18-C28			4.06E-03	
C28-C36			7.87E-03	
C36-C40			1.41E-05	
barium			5.05E-04	3.35E-05
cadmium		3.54E-09	2.61E-02	4.58E-04
chromium			2.54E-05	
chromium 6		3.77E-08		1.05E-05
cobalt			5.15E-02	4.27E-04
copper			6.20E-04	
nickel		1.86E-09	2.32E-03	1.00E-04
vanadium			1.09E-02	1.13E-04
zinc			2.04E-04	
SUM RISK		4.31E-08		
SUM HAZARD			1.04E-01	1.14E-03
HAZARD INDEX = 0.11				
SUM RISK = 4.31E-08				

Table 10 - Summary of Risks and Hazards
SOIL and GROUNDWATER

	Receptor Populations			
			Residential	
	Commercial Worker	Construction Worker	Adult	Child
Hazard Index	0.12	0.023	0.22	1.6
∑ Risk	2.22E-07	7.24E-08	1.70E-06	1.70E-06

Notes:
Hazard Index = J&E model results + estimated risks due to ingestion, dermal contact and inhalation of constituents in soil for Commercial Worker and Residential Adult and Child receptors
∑Risk Residential = J&E model results + estimated risks due to inhalation of constituents adhered to soil for Commercial Worker and Residential Adult and Child receptors

LEAD RISK ASSESSMENT SPREADSHEET 8

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8

INPUT	
MEDIUM	LEVEL
Lead in Soil/Dust (ug/g)	11.0
Respirable Dust (ug/m^3)	1.5

OUTPUT						
Percentile Estimate of Blood Pb (ug/dl)						PRG-90
	50th	90th	95th	98th	99th	(ug/g)
BLOOD Pb, CHILD	0.1	0.1	0.2	0.2	0.2	77
BLOOD Pb, PICA CHILD	0.2	0.3	0.3	0.4	0.5	39

EXPOSURE PARAMETERS		
	units	children
Days per week	days/wk	7
Geometric Standard Deviation		1.6
Blood lead level of concern (ug/dl)		1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day)	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day)	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day)	0.192

PATHWAYS						
CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.8E-5	0.00	1%		0.00	0%
Soil Ingestion	7.0E-3	0.08	99%	1.4E-2	0.15	100%
Inhalation	2.0E-6	0.00	0%		0.00	0%

Click here for REFERENCES

MODIFIED VERSION OF USEPA ADULT LEAD MODEL

CALCULATIONS OF BLOOD LEAD CONCENTRATIONS (PbBs) AND PRELMIINARY REMEDIATION GOAL (PRG)

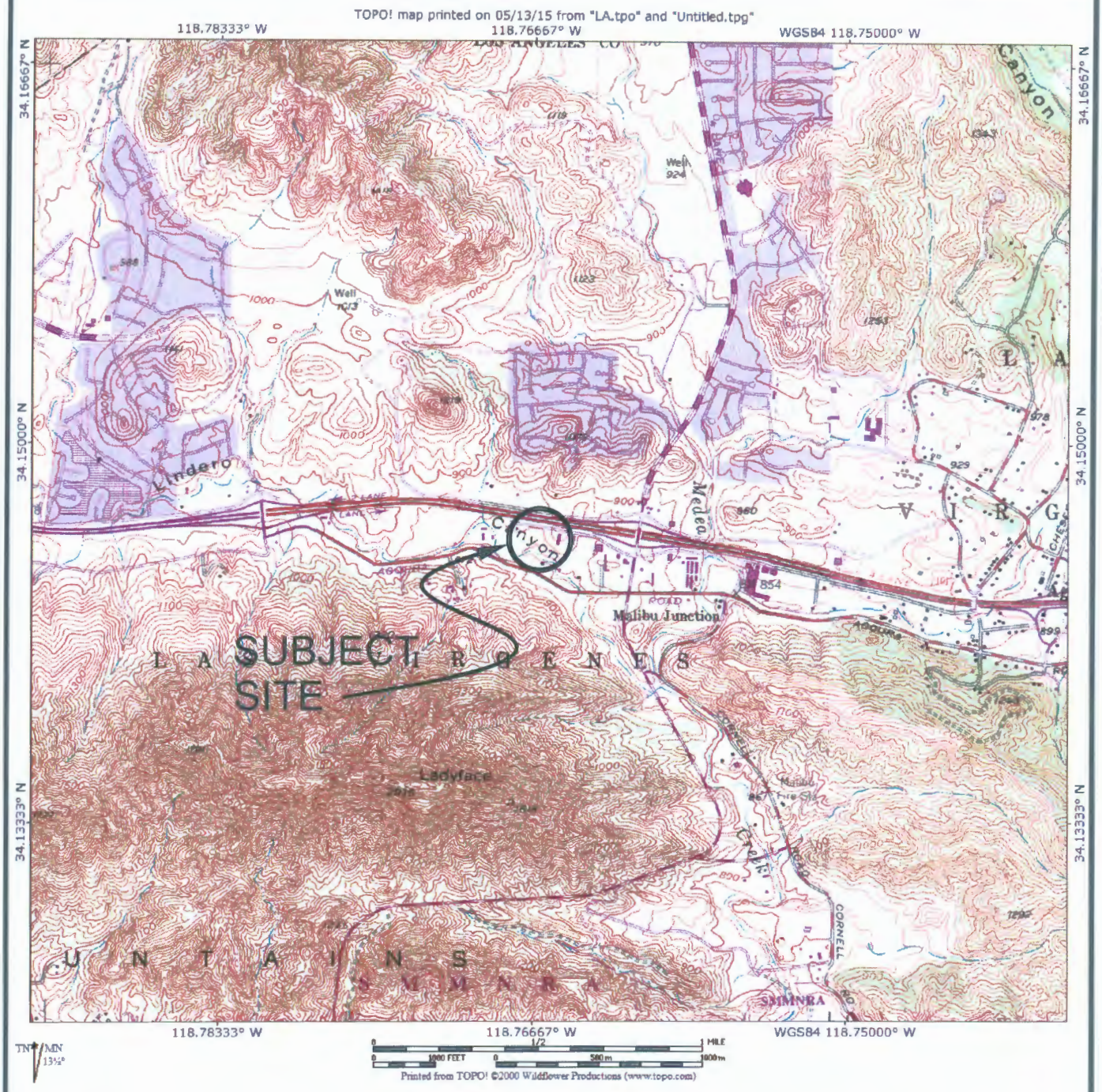
EDIT RED CELL

Variable	Description of Variable	Units	
PbS	Soil lead concentration	ug/g or ppm	11
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.8
PbB_0	Baseline PbB	ug/dL	0.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	250
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**0.0**
$PbB_{fetal, 0.90}$	90th percentile PbB among fetuses of adult workers	ug/dL	0.0
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**1.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distributio**	**%**	**0.0%**

PRG90 **318**

Click here for REFERENCES

FIGURES



REFERENCE:U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, THOUSAND OAKS, CA QUADRANGLE

GEOCON WEST, INC.

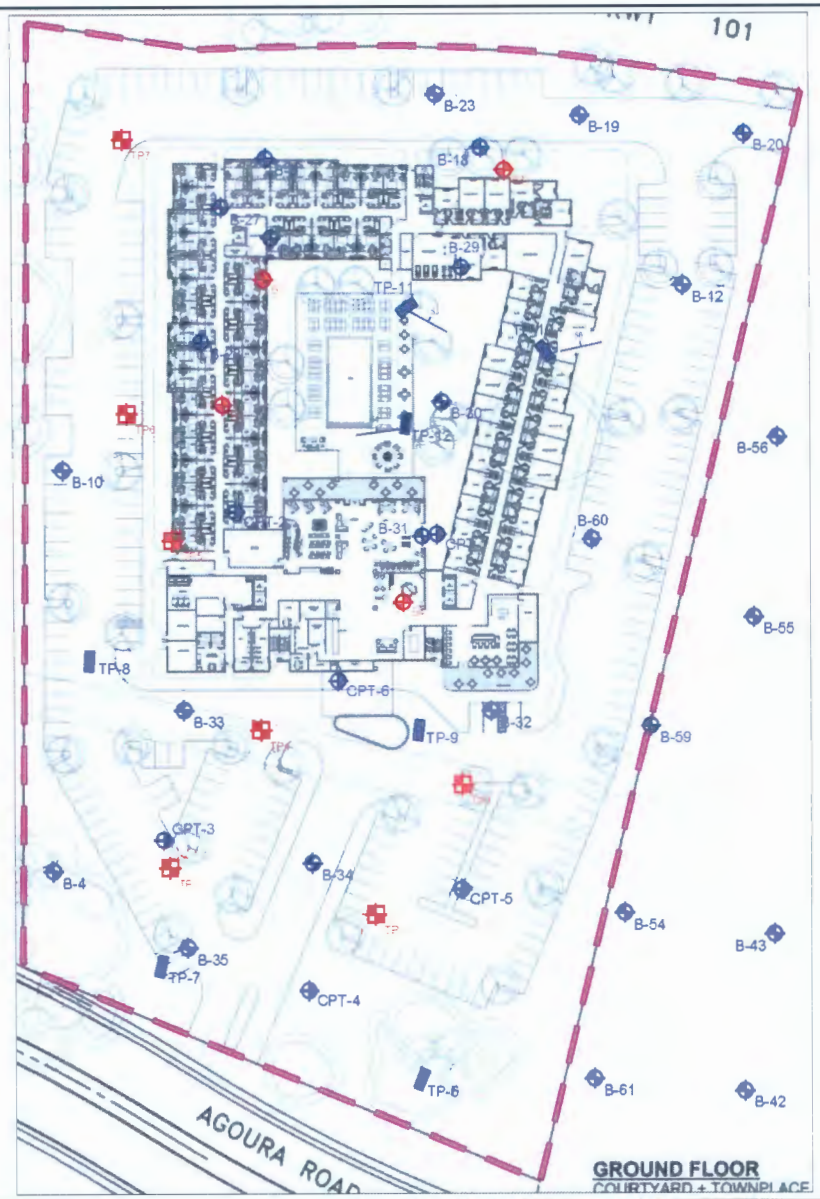
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: RA	CHECKED BY: SFK

VICINITY MAP

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015	PROJECT NO. A8487-06-03	FIG. 1



LEGEND

- B4 — Approximate Location of Borings (Geocon Inland Empire, Inc.)
- TP7 — Approximate Location of Test Pits (Geocon Inland Empire, Inc.)
- B-61 — Approximate Location of Borings (AGS)
- CPT-6 — Approximate Location of CPT (AGS)
- TP-11 — Approximate Location of Borings (AGS)
- 54 — Strike & Dip of Bedding
- Approximate Location of Proposed Development

0 100' 200'

GEOCON WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

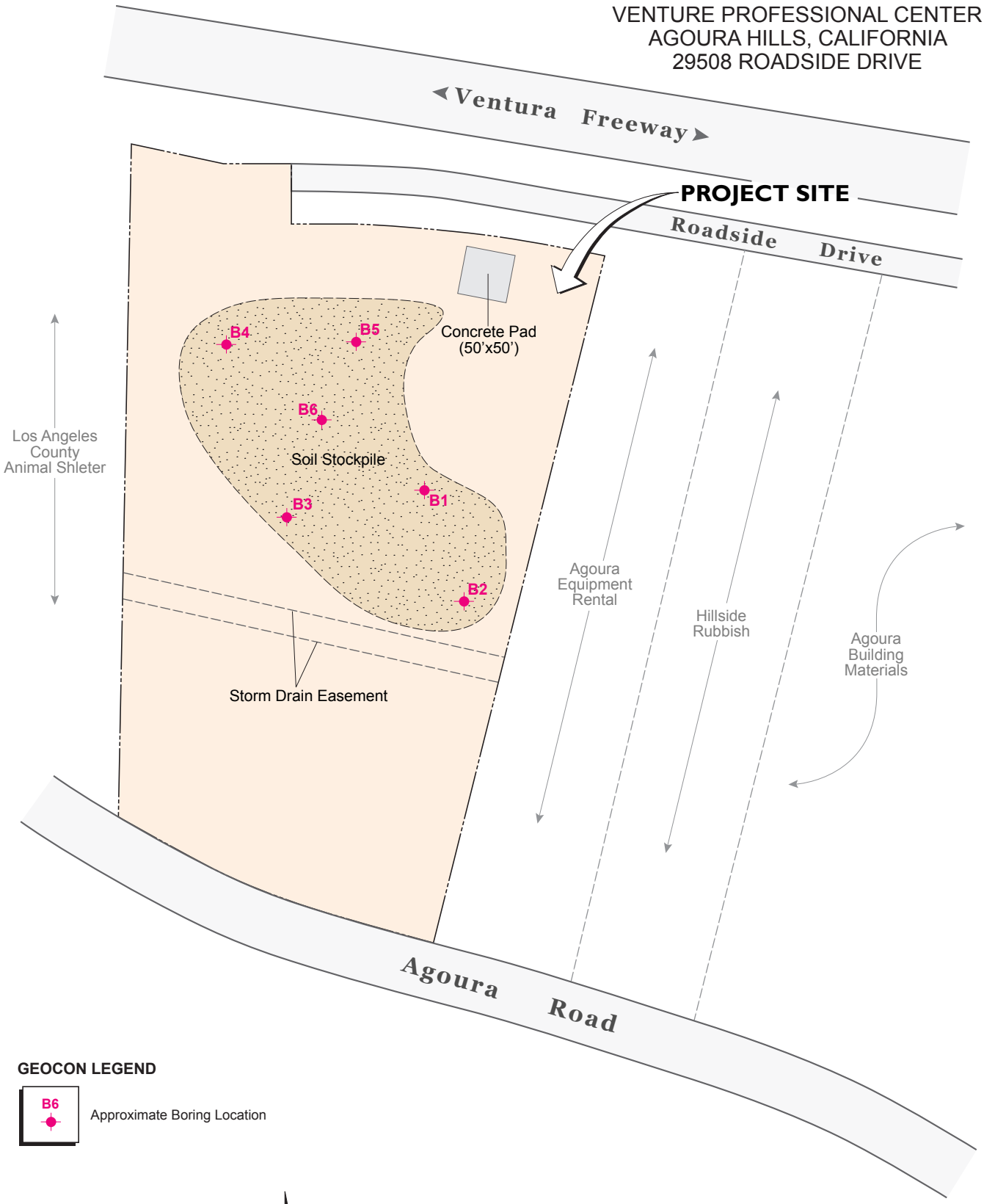
DRAFTED BY: TL | CHECKED BY: HHD

SITE PLAN

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015 | PROJECT NO. A8487-06-03 | FIG. 2

VENTURE PROFESSIONAL CENTER
AGOURA HILLS, CALIFORNIA
29508 ROADSIDE DRIVE



GEOCON LEGEND

B6 Approximate Boring Location

0 65 130 195
Approximate Graphic Scale:
One Inch Equals 130 Feet

North

Note: All locations are approximate

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
3303 N.SAN FERNANDO BLVD-SUITE 100, BURBANK, CA 91504
PHONE 818 841-8388 - FAX 818 841-1704

PROJECT NO. A8487-77-02
FIGURE 3
DATE 1-10-2007

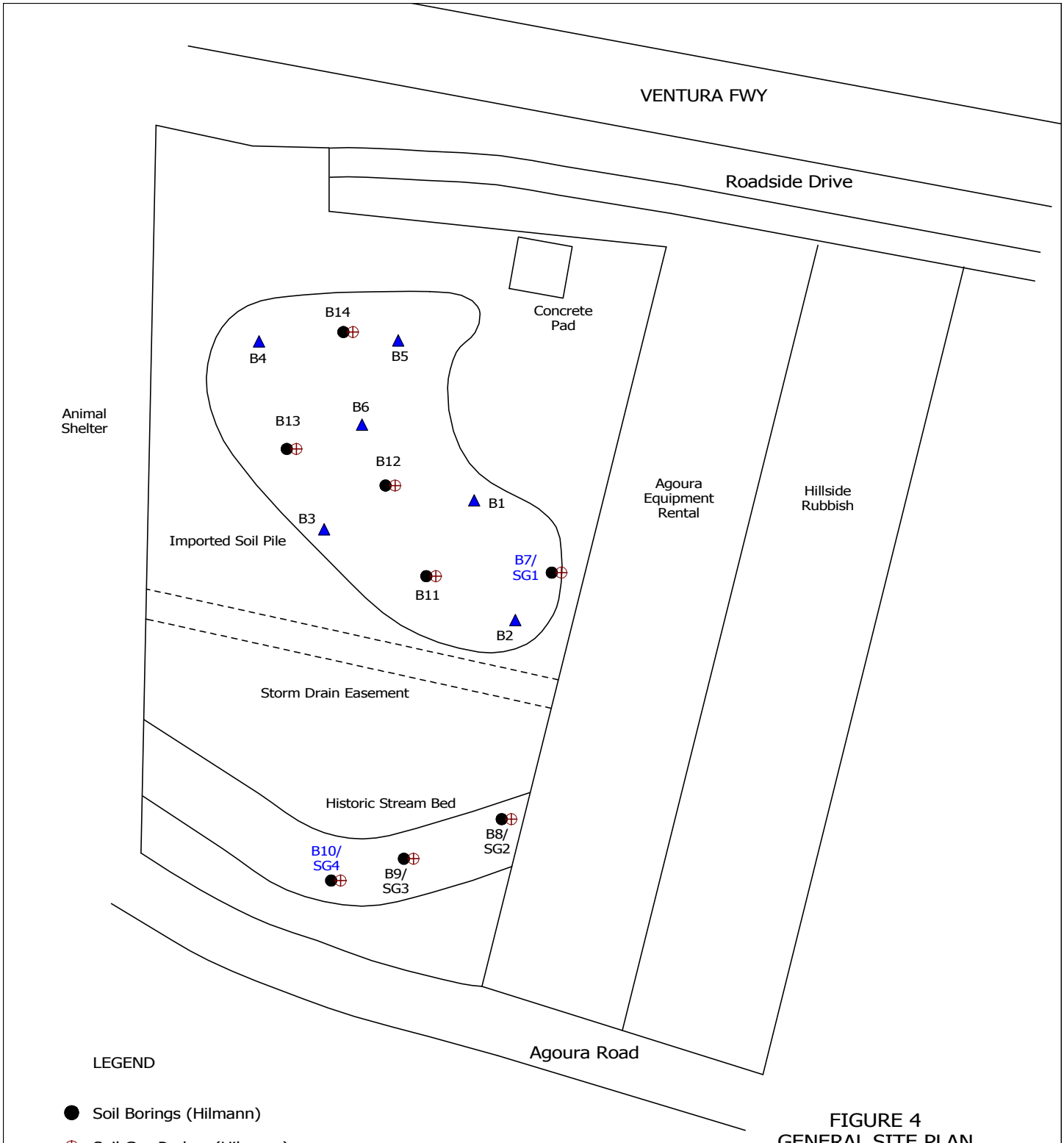


FIGURE 4
GENERAL SITE PLAN
COMMERCIAL PROPERTY
29508 Roadside Drive
Agoura Hills, California

HILLMANN CONSULTING

N
W E
S

APPROXIMATE SCALE IN FEET

0 120 240

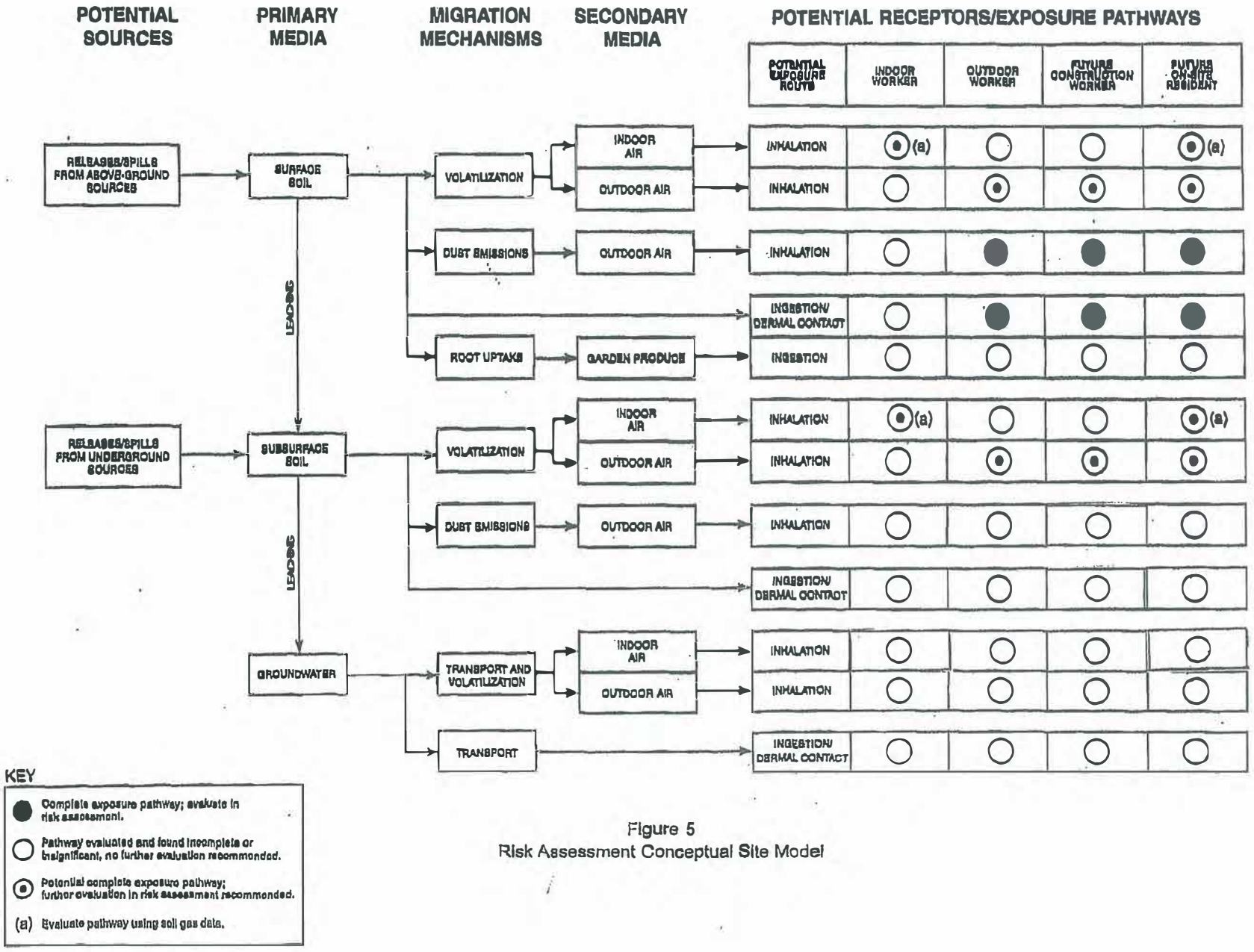


Figure 5
Risk Assessment Conceptual Site Model

APPENDIX A

Soil Matrix Analytical Data
Advanced Technology Laboratories
January 2007

January 10, 2007

Mike Conkle
Geocon Consultants, Inc.
3303 N. San Fernando Blvd., Suite 100
Burbank, CA 91504
TEL: (818) 841-8388
FAX: (818) 841-1704

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
Arizona: AZ0689
CSDLAC No.: 10196
Workorder No.: 088870

RE: VCC, A8487-77-02

Attention: Mike Conkle

Enclosed are the results for sample(s) received on January 03, 2007 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 8:50:00 AM
Lab ID:	088870-001A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	3.4	1.0		mg/Kg	1	1/8/2007
Lead	4.9	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
LUFT				**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	15	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	17	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	16	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	48	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 8:50:00 AM
Lab ID:	088870-001A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:00:00 AM
Lab ID:	088870-003A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	1.2	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	12	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	14	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	15	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	41	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:00:00 AM
Lab ID:	088870-003A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:00:00 AM
Lab ID:	088870-005A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	ND	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
LUFT				**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:00:00 AM
Lab ID:	088870-005A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:45:00 AM
Lab ID:	088870-007A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B			**EPA 6010B**			
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	1.1	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
LUFT			**EPA 8015B(M)**			
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	13	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	15	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	16	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	44	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B			**EPA 8081A**			
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:45:00 AM
Lab ID:	088870-007A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:55:00 AM
Lab ID:	088870-009A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP5_070108C QC Batch: 32629				PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	4.1	1.0		mg/Kg	1	1/8/2007
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	ND	1.0		mg/Kg	1	1/8/2007
Lead	5.2	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
LUFT / **EPA 8015B(M)**						
RunID: GC7_070108A QC Batch: 32634				PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B / **EPA 8081A**						
RunID: GC10_070105A QC Batch: 32599				PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B2-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 9:55:00 AM
Lab ID:	088870-009A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:05:00 AM
Lab ID:	088870-010A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	1.6	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	20	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	45	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	35	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	100	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:05:00 AM
Lab ID:	088870-010A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

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Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:13:00 AM
Lab ID:	088870-012A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	4.8	1.0		mg/Kg	1	1/8/2007
Lead	4.9	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:13:00 AM
Lab ID:	088870-012A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:30:00 AM
Lab ID:	088870-015A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	3.1	1.0		mg/Kg	1	1/8/2007
Lead	6.1	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	19	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	45	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	26	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	90	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:30:00 AM
Lab ID:	088870-015A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:35:00 AM
Lab ID:	088870-017A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	3.5	1.0		mg/Kg	1	1/8/2007
Lead	3.4	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:35:00 AM
Lab ID:	088870-017A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:35:00 AM
Lab ID:	088870-018A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	4.1	1.0		mg/Kg	1	1/8/2007
Lead	4.8	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B4-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:35:00 AM
Lab ID:	088870-018A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B5-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:45:00 AM
Lab ID:	088870-019A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	9.8	1.0		mg/Kg	1	1/8/2007
Lead	6.1	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/8/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/8/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/8/2007
Aldrin	ND	1.0		µg/Kg	1	1/8/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/8/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/8/2007
beta-BHC	ND	1.0		µg/Kg	1	1/8/2007
Chlordane	ND	8.5		µg/Kg	1	1/8/2007
delta-BHC	ND	1.0		µg/Kg	1	1/8/2007
Dieldrin	ND	2.0		µg/Kg	1	1/8/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/8/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/8/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/8/2007
Endrin	ND	2.0		µg/Kg	1	1/8/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/8/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/8/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/8/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/8/2007
Heptachlor	ND	1.0		µg/Kg	1	1/8/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/8/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/8/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B5-2'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:45:00 AM
Lab ID:	088870-019A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/8/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B5-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:53:00 AM
Lab ID:	088870-021A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	1.3	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	14	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	19	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	16	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	48	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B5-6'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 10:53:00 AM
Lab ID:	088870-021A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:07:00 AM
Lab ID:	088870-025A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	ND	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
LUFT				**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	23	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	38	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	27	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	88	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-4'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:07:00 AM
Lab ID:	088870-025A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:15:00 AM
Lab ID:	088870-027A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070108C	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/8/2007
Lead	ND	1.0		mg/Kg	1	1/8/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	ND	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-8'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:15:00 AM
Lab ID:	088870-027A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:15:00 AM
Lab ID:	088870-028A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP5_070109A	QC Batch: 32629			PrepDate:	1/8/2007	Analyst: **RQ**
Arsenic	ND	1.0		mg/Kg	1	1/9/2007
Lead	ND	1.0		mg/Kg	1	1/9/2007
HYDROCARBON CHAIN IDENTIFICATION						
	LUFT			**EPA 8015B(M)**		
RunID: GC7_070108A	QC Batch: 32634			PrepDate:	1/8/2007	Analyst: **CBR**
T/R Hydrocarbons: C8-C10	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C10-C18	ND	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C18-C28	11	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C28-C36	22	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C36-C40	18	10		mg/Kg	1	1/8/2007
T/R Hydrocarbons: C8-C40 Total	51	10		mg/Kg	1	1/8/2007
ORGANOCHLORINE PESTICIDES BY GC/ECD						
	EPA 3550B			**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
4,4´-DDD	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDE	ND	2.0		µg/Kg	1	1/6/2007
4,4´-DDT	ND	2.0		µg/Kg	1	1/6/2007
Aldrin	ND	1.0		µg/Kg	1	1/6/2007
alpha-BHC	ND	1.0		µg/Kg	1	1/6/2007
alpha-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
beta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Chlordane	ND	8.5		µg/Kg	1	1/6/2007
delta-BHC	ND	1.0		µg/Kg	1	1/6/2007
Dieldrin	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan I	ND	1.0		µg/Kg	1	1/6/2007
Endosulfan II	ND	2.0		µg/Kg	1	1/6/2007
Endosulfan sulfate	ND	2.0		µg/Kg	1	1/6/2007
Endrin	ND	2.0		µg/Kg	1	1/6/2007
Endrin aldehyde	ND	2.0		µg/Kg	1	1/6/2007
Endrin ketone	ND	2.0		µg/Kg	1	1/6/2007
gamma-BHC	ND	1.0		µg/Kg	1	1/6/2007
gamma-Chlordane	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor	ND	1.0		µg/Kg	1	1/6/2007
Heptachlor epoxide	ND	1.0		µg/Kg	1	1/6/2007
Methoxychlor	ND	8.5		µg/Kg	1	1/6/2007

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: *10-Jan-07*

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-10'
Lab Order:	088870	**Tag Number:**	
Project:	VCC, A8487-77-02	**Collection Date:**	1/3/2007 11:15:00 AM
Lab ID:	088870-028A	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD						
EPA 3550B				**EPA 8081A**		
RunID: GC10_070105A	QC Batch: 32599			PrepDate:	1/5/2007	Analyst: **VLT**
Toxaphene	ND	85		µg/Kg	1	1/6/2007

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-32629** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **1/8/2007** RunNo: **72631**
Client ID: **PBS** Batch ID: **32629** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **1/8/2007** SeqNo: **1088093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Lead	ND	1.0									

Sample ID: **LCS-32629** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **1/8/2007** RunNo: **72631**
Client ID: **LCSS** Batch ID: **32629** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **1/8/2007** SeqNo: **1088094**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.207	1.0	50.00	0	100	80	120				
Lead	52.922	1.0	50.00	0	106	80	120				

Sample ID: **MB-32629** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **1/8/2007** RunNo: **72646**
Client ID: **PBS** Batch ID: **32629** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **1/9/2007** SeqNo: **1088341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Lead	ND	1.0									

Sample ID: **LCS-32629** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **1/8/2007** RunNo: **72646**
Client ID: **LCSS** Batch ID: **32629** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **1/9/2007** SeqNo: **1088342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.709	1.0	50.00	0	95.4	80	120				
Lead	49.974	1.0	50.00	0	99.9	80	120				

Sample ID: **088870-028AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **1/8/2007** RunNo: **72646**
Client ID: **B6-10'** Batch ID: **32629** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **1/9/2007** SeqNo: **1088343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **088870-028AMS**	SampType: **MS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72646**
Client ID: **B6-10'**	Batch ID: **32629**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **1/9/2007**	SeqNo: **1088343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	75.769	1.0	125.0	0	60.6	61	104				S
Lead	75.385	1.0	125.0	0	60.3	37	128				

Sample ID: **088870-028AMSD**	SampType: **MSD**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72646**
Client ID: **B6-10'**	Batch ID: **32629**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **1/9/2007**	SeqNo: **1088345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	83.335	1.0	125.0	0	66.7	61	104	75.77	9.51	20	
Lead	83.286	1.0	125.0	0	66.6	37	128	75.39	9.96	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

TestCode: 8081_S

Sample ID: **MB-32599**	SampType: **MBLK**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **PBS**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/5/2007**	SeqNo: **1088443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4´-DDD	ND	2.0									
4,4´-DDE	ND	2.0									
4,4´-DDT	ND	2.0									
Aldrin	ND	1.0									
alpha-BHC	ND	1.0									
alpha-Chlordane	ND	1.0									
beta-BHC	ND	1.0									
Chlordane	ND	8.5									
delta-BHC	ND	1.0									
Dieldrin	ND	2.0									
Endosulfan I	ND	1.0									
Endosulfan II	ND	2.0									
Endosulfan sulfate	ND	2.0									
Endrin	ND	2.0									
Endrin aldehyde	ND	2.0									
Endrin ketone	ND	2.0									
gamma-BHC	ND	1.0									
gamma-Chlordane	ND	1.0									
Heptachlor	ND	1.0									
Heptachlor epoxide	ND	1.0									
Methoxychlor	ND	8.5									
Toxaphene	ND	85									

Sample ID: **LCS-32599**	SampType: **LCS**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **LCSS**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/5/2007**	SeqNo: **1088444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aldrin	16.686	1.0	16.67	0	100	81	130				
Dieldrin	15.785	2.0	16.67	0	94.7	78	124				
Endrin	22.374	2.0	16.67	0	134	90	145				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

TestCode: 8081_S

Sample ID: **LCS-32599**	SampType: **LCS**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **LCSS**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/5/2007**	SeqNo: **1088444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
gamma-BHC	16.080	1.0	16.67	0	96.5	82	128				
Heptachlor	16.519	1.0	16.67	0	99.1	72	145				

Sample ID: **MB-32599**	SampType: **MBLK**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **PBS**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/8/2007**	SeqNo: **1088462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4´-DDD	ND	2.0									
4,4´-DDE	ND	2.0									
4,4´-DDT	ND	2.0									
Aldrin	ND	1.0									
alpha-BHC	ND	1.0									
alpha-Chlordane	ND	1.0									
beta-BHC	ND	1.0									
Chlordane	ND	8.5									
delta-BHC	ND	1.0									
Dieldrin	ND	2.0									
Endosulfan I	ND	1.0									
Endosulfan II	ND	2.0									
Endosulfan sulfate	ND	2.0									
Endrin	ND	2.0									
Endrin aldehyde	ND	2.0									
Endrin ketone	ND	2.0									
gamma-BHC	ND	1.0									
gamma-Chlordane	ND	1.0									
Heptachlor	ND	1.0									
Heptachlor epoxide	ND	1.0									
Methoxychlor	ND	8.5									
Toxaphene	ND	85									

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

TestCode: 8081_S

Sample ID: **LCS-32599**	SampType: **LCS**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **LCSS**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/8/2007**	SeqNo: **1088463**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aldrin	16.624	1.0	16.67	0	99.7	81	130				
Dieldrin	15.873	2.0	16.67	0	95.2	78	124				
Endrin	22.714	2.0	16.67	0	136	90	145				
gamma-BHC	16.132	1.0	16.67	0	96.8	82	128				
Heptachlor	16.893	1.0	16.67	0	101	72	145				

Sample ID: **088870-019AMS**	SampType: **ms**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **B5-2'**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/8/2007**	SeqNo: **1088466**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4´-DDT	14.842	2.0	16.67	0	89.0	39	159				
Aldrin	14.829	1.0	16.67	0	89.0	65	140				
Dieldrin	14.453	2.0	16.67	0	86.7	48	158				
Endrin	20.957	2.0	16.67	0	126	75	170				
gamma-BHC	14.194	1.0	16.67	0	85.1	59	145				
Heptachlor	15.451	1.0	16.67	0	92.7	61	156				

Sample ID: **088870-019AMSD**	SampType: **msd**	TestCode: **8081_S**	Units: **µg/Kg**	Prep Date: **1/5/2007**	RunNo: **72653**
Client ID: **B5-2'**	Batch ID: **32599**	TestNo: **EPA 8081A**	**EPA 3550B**	Analysis Date: **1/8/2007**	SeqNo: **1088467**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4´-DDT	14.746	2.0	16.67	0	88.5	39	159	14.84	0.650	30	
Aldrin	14.319	1.0	16.67	0	85.9	65	140	14.83	3.49	30	
Dieldrin	14.095	2.0	16.67	0	84.6	48	158	14.45	2.50	30	
Endrin	20.385	2.0	16.67	0	122	75	170	20.96	2.77	30	
gamma-BHC	13.485	1.0	16.67	0	80.9	59	145	14.19	5.12	30	
Heptachlor	14.830	1.0	16.67	0	89.0	61	156	15.45	4.10	30	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

BatchID: 32634

Sample ID: **MB-32634**	SampType: **MBLK**	TestCode: **8015_S_DM**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72633**
Client ID: **PBS**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**	Analysis Date: **1/8/2007**	SeqNo: **1088136**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	10									
ORO	ND	10									

Sample ID: **LCS-32634**	SampType: **LCS**	TestCode: **8015_S_DM**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72633**
Client ID: **LCSS**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**	Analysis Date: **1/8/2007**	SeqNo: **1088137**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	789.582	10	1000	0	79.0	67	131				

Sample ID: **088870-001AMS**	SampType: **MS**	TestCode: **8015_S_DM**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72633**
Client ID: **B1-2'**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**	Analysis Date: **1/8/2007**	SeqNo: **1088138**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	809.069	10	1000	26.26	78.3	48	143				

Sample ID: **088870-001AMSD**	SampType: **MSD**	TestCode: **8015_S_DM**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72633**
Client ID: **B1-2'**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**	Analysis Date: **1/8/2007**	SeqNo: **1088139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	804.106	10	1000	26.26	77.8	48	143	809.1	0.615	30	

Sample ID: **MB-32634**	SampType: **MBLK**	TestCode: **HC_S_ATL**	Units: **mg/Kg**	Prep Date: **1/8/2007**	RunNo: **72633**
Client ID: **PBS**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**	Analysis Date: **1/8/2007**	SeqNo: **1088165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C8-C10	ND	10									
T/R Hydrocarbons: C10-C18	ND	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 088870
Project: VCC, A8487-77-02

ANALYTICAL QC SUMMARY REPORT

BatchID: 32634

Sample ID: **MB-32634**	SampType: **MBLK**	TestCode: **HC_S_ATL**	Units: **mg/Kg**		Prep Date: **1/8/2007**				RunNo: **72633**		
Client ID: **PBS**	Batch ID: **32634**	TestNo: **EPA 8015B(M**	**LUFT**		Analysis Date: **1/8/2007**				SeqNo: **1088165**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C18-C28	ND	10									
T/R Hydrocarbons: C28-C36	ND	10									
T/R Hydrocarbons: C36-C40	ND	10									
T/R Hydrocarbons: C8-C40 Total	ND	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Pg 1 of #3

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 01/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City BURBANK State CA Zip Code 91504
TEL: (818) 841-8388
FAX: (818) 841-1704

Project Name: VCC
Project #: A8487-77-02
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name)	Date: 1/5/07	Time: 2:00p	Received by: (Signature and Printed Name)	Date: 1-5-07	Time: 2:00p
Relinquished by: (Signature and Printed Name)	Date: 1-3-07	Time: 6:15p	Received by: (Signature and Printed Name)	Date: 1/3/07	Time: 1816
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE (Print Name) 1/3/07 (Date)
(Signature)

Send Report To:
Attn: MIKE CONKLE
Co:
Address
City State Zip

Bill To:
Attn: MIKE CONKLE
Co:
Address
City State Zip

Special Instructions/Comments:
5 DAY T.A.T

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☐
SWRCB ☐
Logcode ____
OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metals)	8015B (GRO) / 8020 (BTEX)	8015B (DRO) EXT (C35-C40)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) LEAD 6010	ARSENIC 6010	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	REMARKS
	088870-1	B1-2'	1/3/07	855	X					X			X	X		X				E	1	T	
	-2	B1-4'		856																		HOLD
	-3	B1-6'		900	X					X			X	X								
	-4	B1-8'		900																		HOLD
	-5	B1-10'		900	X					X			X	X								
	-6	B2-2'		945																		HOLD
	-7	B2-4'		945	X					X			X	X								
	-8	B2-6'		965																		HOLD
	-9	B2-8'		955	X					X			X	X								
	-10	B3-2'		1055	X					X			X	X								

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 01/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City BURBANK State CA Zip Code 91504
TEL: (818) 841-8388
FAX: (818) 841-1704

Project Name: VCC
Project #: A8487-77-02
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name) Date: 1/3/07 Time: 2:00p Received by: (Signature and Printed Name) Date: 1-3-07 Time: 2:00p
Relinquished by: (Signature and Printed Name) Date: 1-3-07 Time: 6:15p Received by: (Signature and Printed Name) Date: 1/3/07 Time: 18:15
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE (Print Name) 1/3/07 (Date)
(Signature)

Send Report To:
Attn: MIKE CONKLE
Co: _____
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: MIKE CONKLE
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
5 DAY T.A.T

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metals)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	6010 LEAD	6010 ARSENIC	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	QA/QC / REMARKS
	088870-11	B3-4'	1/3/07	1005												X				E	1	T	P		HOLD
	-12	B3-6'		1013	X					X			X	X											
	-13	B3-8'		1013																					HOLD
	-14	B4-2'		1030																					HOLD
	-15	B4-4'		1030	X					X			X	X											
	-16	B4-6'		1035																					HOLD
	-17	B4-8'		1035	X					X			X	X											
	-18	B4-10'		1035	X					X			X	X											
	-19	B5-2'		1045	X					X			X	X											
	-20	B5-4'		1055																					HOLD

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 01/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City BURBANK State CA Zip Code 91504
TEL: (818) 841-8388
FAX: (818) 841-1709

Project Name: VCC
Project #: A8487-77-02
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name)	Date: 1/3/07	Time: 2:00p	Received by: (Signature and Printed Name)	Date: 1-3-07	Time: 2:00p
Relinquished by: (Signature and Printed Name)	Date: 1-3-07	Time: 6:15p	Received by: (Signature and Printed Name)	Date: 1/3/07	Time: 1815
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE 1/3/07
Print Name Date
Signature

Send Report To:
Attn: MIKE CONKLE
Co: _____
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: MIKE CONKLE
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
5 DAY TAT

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metals) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | 6010 LEAD | 6010 NICKEL

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	REMARKS
	088870-21	B5-6'	1/3/07	1053	5	1	T P	
	-22	B5-8'		1053				HOLD
	-23	B5-10'		1053				HOLD
	-24	B6-2'		1107				HOLD
	-25	B6-4'		1107				
	-26	B6-6'		1115				HOLD
	-27	B6-8'		1115				
	-28	B6-10'		1115				

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

Diane Galvan

From: Dave Darrow [darrow@geoconinc.com]
Sent: Thursday, January 04, 2007 11:55 AM
To: Bing Roura; Diane Galvan
Cc: Mike Conkle
Subject: modified COCs

Bing,

The attached COCs have been modified as we discussed.

Sincerely,

David C. Darrow, REA II
Senior Environmental Scientist

Geocon Consultants, Inc.
www.geoconinc.com
41571 Corning Place, Suite 101
Murrieta, CA 92562-7065

951.304.2300 phone
951.304.2642 fax
951.704.4491 cell

CHAIN OF CUSTODY RECORD

Pg 1 of 3

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 01/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ | 2. HEADSPACE (VOA) Y☐ N☐ | 3. CONTAINER INTACT Y☐ N☐ | 4. SEALED Y☐ N☐ | 5. # OF SPLS MATCH COC Y☐ N☐ | 6. PRESERVED Y☐ N☐

Client: GeoCon
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City BURBANK State CA Zip Code 91504
TEL: (818) 841-8388
FAX: (818) 841-1304

Project Name: YCC
Project #: A8887-77-02
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name)	Date: 1/3/07	Time: 1:00p	Received by: (Signature and Printed Name)	Date: 1-3-07	Time: 2:00p
Relinquished by: (Signature and Printed Name)	Date: 1-3-07	Time: 6:15p	Received by: (Signature and Printed Name)	Date: 1/3/07	Time: 1816
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE (Print Name) 1/3/07 (Date)
(Signature)

Send Report To: Attn: MIKE CONKLE Co: _____ Address: _____ City _____ State _____ Zip _____

Bill To: Attn: MIKE CONKLE Co: _____ Address: _____ City _____ State _____ Zip _____

Special Instructions/Comments:
5 DAY T.A.T
See Modificaton for TPH analyze for C8 to C40 only

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (VOA)	8270C (BNA)	8015B (TPH)	8015B (GRO) / 8020 (BTEX)	8015B (DRO) EXT (C8-C40)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) LEAD	6010 ARSENIC	TAT	Container(s) #	Container(s) Type	REMARKS
	088870-1	B1-2'	1/3/07	855	X					X		X	X			X	1	E	1	T	P	
	-2	B1-4'		856																		HOLD
	-3	B1-6'		900	X					X		X	X									
	-4	B1-8'		900																		HOLD
	-5	B1-10'		900	X					X		X	X									
	-6	B2-2'		945																		HOLD
	-7	B2-4'		945	X					X		X	X									
	-8	B2-6'		955																		HOLD
	-9	B2-8'		955	X					X		X	X									
	-10	B3-2'		1055	X					X		X	X									

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr | B= Emergency Next workday | C= Critical 2 Workdays | D= Urgent 3 Workdays | E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 01/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City: BURBANK State: CA Zip Code: 91504
TEL: (818) 841-8388
FAX: (818) 841-1724

Project Name: UCC
Project #: A8487-77-07
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name)	Date: 1/3/07	Time: 2:00p	Received by: (Signature and Printed Name)	Date: 1-3-07	Time: 2:00
Relinquished by: (Signature and Printed Name)	Date: 1-3-07	Time: 6:15p	Received by: (Signature and Printed Name)	Date: 1/3/07	Time: 18:15
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE 1/3/07
Print Name / Date
Signature

Send Report To:
Attn: MIKE CONKLE
Co:
Address
City State Zip

Bill To:
Attn: MIKE CONKLE
Co:
Address
City State Zip 1/4/07

Special Instructions/Comments:
5 DAY T.A.T
← modified 1/4/07 DCD

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s) #	Container(s) Type	REMARKS
	07777a - 11	B3-4'	1/3/07	1005	5	1	T	HOLD
	- 12	B3-6'		1013				
	- 13	B3-8'		1023				HOLD
	- 14	B4-2'		1030				HOLD
	- 15	B4-4'		1030				
	- 16	B4-6'		1035				HOLD
	- 17	B4-8'		1035				
	- 18	B4-10'		1035				
	- 19	B5-2'		1045				
	- 20	B5-4'		1050				HOLD

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 1/03/07

Method of Transport: Client ☐ ATL ☑ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GeoCon
Attn: MIKE CONKLE
Address: 3303 N. SAN FERNANDO BLVD #100
City BURBANK State CA Zip Code 91504
TEL: (818) 841-8388
FAX: (818) 841-7309

Project Name: VCC
Project #: 18487-27-02
Sampler: (Printed Name) MIKE CONKLE (Signature)

Relinquished by: (Signature and Printed Name) Date: 1/3/07 Time: 7:00A Received by: (Signature and Printed Name) Date: 1-3-07 Time: 7:00A
Relinquished by: (Signature and Printed Name) Date: 1-3-07 Time: 6:15P Received by: (Signature and Printed Name) Date: 1/3/07 Time: 1815
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
MIKE CONKLE 1/3/07
Print Name Date
Signature

Send Report To:
Attn: MIKE CONKLE
Co:
Address
City State Zip

Bill To:
Attn: MIKE CONKLE
Co:
Address
City State Zip

Special Instructions/Comments:
5 DAY TAT
Modified 1/4/07 DLD

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s) #	Container(s) Type	REMARKS
	058870-21	B5-6'	1/3/07	1053	5	1	T P	
	-22	B5-8'		1053				HOLD
	-23	B5-10'		1053				HOLD
	-24	B6-2'		1107				HOLD
	-25	B6-4'		1107				
	-26	B6-6'		1115				HOLD
	-27	B6-8'		1115				
	-28	B6-10'		1115				

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

APPENDIX B

Soil Matrix Analytical Data
Cal Tech Environmental Laboratories
June 2015

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Matrix: Soil
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15

Laboratory ID:	1506-084-2	1506-084-5	1506-084-9	**Method**	**Units:**	**Detection**
Client Sample ID:	B7-10	B8-10	B9-10			**Limit**
Dilution	1	1	1			
Dichlorodifluoromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl Chloride	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Trichlorofluoromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Iodomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Acetone	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
t-Butyl Alcohol (TBA)	ND	ND	ND	EPA 8260B	mg/Kg	0.02
Methylene Chloride	ND	ND	ND	EPA 8260B	mg/Kg	0.02
Freon 113	ND	ND	ND	EPA 8260B	mg/Kg	0.01
Carbon disulfide	ND	ND	ND	EPA 8260B	mg/Kg	0.005
trans,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Methyl-tert-butyl-ether(MtBE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,1-Dichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl acetate	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Diisopropyl Ether (DIPE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
Methyl Ethyl Ketone	ND	ND	ND	EPA 8260B	mg/Kg	0.01
cis,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromochloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroform	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2,2-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethyl-t-butyl ether (ETBE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,1,1-Trichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Carbon Tetrachloride	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Benzene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
t-Amyl Methyl Ether (TAM)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,2-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Trichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromodichloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chloroethylvinylether	ND	ND	ND	EPA 8260B	mg/Kg	0.005
cis,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
4-Methyl-2-pentanone(MI)	ND	ND	ND	EPA 8260B	mg/Kg	0.01
trans,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Toluene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2-Trichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005

CTEL Project No: CT178-1506084

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Laboratory ID: / **Client Sample ID:**	1506-084-2 B7-10	1506-084-5 B8-10	1506-084-9 B9-10	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromochloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Hexanone	ND	ND	ND	EPA 8260B	mg/Kg	0.01
Tetrachloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1,1,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
m.p-Xylene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
Bromoform	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Styrene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
o-Xylene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Isopropylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chlorotoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
n-Propylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
4-Chlorotoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3,5-Trimethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
tert-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trimethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
sec-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,4-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
p-Isopropyltoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
n-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2 Dibromo-3-Chloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Naphthalene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Hexachlorobutadiene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethanol	ND	ND	ND	EPA 8260B	mg/Kg	0.1

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY			Control Limit
Dibromofluoromethane	88	86	95	70-130
1,2 Dichloromethaned4	102	123	120	70-130
Toluene-d8	96	103	102	70-130
Bromofluorobenzene	104	105	106	70-130

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15
Matrix: Soil

Laboratory ID:	1506-084-13	1506-084-16	1506-084-19	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	B10-10	B11-15	B12-15			
Dilution	1	1	1			
Dichlorodifluoromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl Chloride	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Trichlorofluoromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Iodomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Acetone	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
t-Butyl Alcohol (TBA)	ND	ND	ND	EPA 8260B	mg/Kg	0.02
Methylene Chloride	ND	ND	ND	EPA 8260B	mg/Kg	0.02
Freon 113	ND	ND	ND	EPA 8260B	mg/Kg	0.01
Carbon disulfide	ND	ND	ND	EPA 8260B	mg/Kg	0.005
trans,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Methyl-tert-butyl-ether(MtBE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,1-Dichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl acetate	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Diisopropyl Ether (DIPE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
Methyl Ethyl Ketone	ND	ND	ND	EPA 8260B	mg/Kg	0.01
cis,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromochloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroform	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2,2-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethyl-t-butyl ether (ETBE)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,1,1-Trichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Carbon Tetrachloride	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Benzene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
t-Amyl Methyl Ether (TAM)	ND	ND	ND	EPA 8260B	mg/Kg	0.002
1,2-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Trichloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromomethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromodichloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chloroethylvinylether	ND	ND	ND	EPA 8260B	mg/Kg	0.005
cis,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
4-Methyl-2-pentanone(MI)	ND	ND	ND	EPA 8260B	mg/Kg	0.01
trans,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Toluene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2-Trichloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005

CTEL Project No: CT178-1506084

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Laboratory ID: / **Client Sample ID:**	1506-084-13 B10-10	1506-084-16 B11-15	1506-084-19 B12-15	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromochloromethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Hexanone	ND	ND	ND	EPA 8260B	mg/Kg	0.01
Tetrachloroethene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Chlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,1,1,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
m.p-Xylene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
Bromoform	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Styrene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
o-Xylene	ND	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Isopropylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Bromobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chlorotoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
n-Propylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
4-Chlorotoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3,5-Trimethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
tert-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trimethylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
sec-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,4-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
p-Isopropyltoluene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
n-Butylbenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2 Dibromo-3-Chloropropane	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Naphthalene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichlorobenzene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Hexachlorobutadiene	ND	ND	ND	EPA 8260B	mg/Kg	0.005
Ethanol	ND	ND	ND	EPA 8260B	mg/Kg	0.1

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY			Control Limit
Dibromofluoromethane	87	86	94	70-130
1,2 Dichloromethaned4	117	104	119	70-130
Toluene-d8	93	98	104	70-130
Bromofluorobenzene	114	112	115	70-130

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15
Matrix: Soil

Laboratory ID:	1506-084-20	1506-084-24	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	B13-15	B14-15			
Dilution	1	1			
Dichlorodifluoromethane	ND	ND	EPA 8260B	mg/Kg	0.005
Chloromethane	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl Chloride	ND	ND	EPA 8260B	mg/Kg	0.005
Bromomethane	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
Trichlorofluoromethane	ND	ND	EPA 8260B	mg/Kg	0.005
Iodomethane	ND	ND	EPA 8260B	mg/Kg	0.005
Acetone	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloroethene	ND	ND	EPA 8260B	mg/Kg	0.005
t-Butyl Alcohol (TBA)	ND	ND	EPA 8260B	mg/Kg	0.02
Methylene Chloride	ND	ND	EPA 8260B	mg/Kg	0.02
Freon 113	ND	ND	EPA 8260B	mg/Kg	0.01
Carbon disulfide	ND	ND	EPA 8260B	mg/Kg	0.005
trans,1,2-Dichloroethene	ND	ND	EPA 8260B	mg/Kg	0.005
Methyl-tert-butyl-ether(MtBE)	ND	ND	EPA 8260B	mg/Kg	0.002
1,1-Dichloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
Vinyl acetate	ND	ND	EPA 8260B	mg/Kg	0.005
Diisopropyl Ether (DIPE)	ND	ND	EPA 8260B	mg/Kg	0.002
Methyl Ethyl Ketone	ND	ND	EPA 8260B	mg/Kg	0.01
cis,1,2-Dichloroethene	ND	ND	EPA 8260B	mg/Kg	0.005
Bromochloromethane	ND	ND	EPA 8260B	mg/Kg	0.005
Chloroform	ND	ND	EPA 8260B	mg/Kg	0.005
2,2-Dichloropropane	ND	ND	EPA 8260B	mg/Kg	0.005
Ethyl-t-butyl ether (ETBE)	ND	ND	EPA 8260B	mg/Kg	0.002
1,1,1-Trichloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
1,1-Dichloropropene	ND	ND	EPA 8260B	mg/Kg	0.005
Carbon Tetrachloride	ND	ND	EPA 8260B	mg/Kg	0.005
Benzene	ND	ND	EPA 8260B	mg/Kg	0.001
t-Amyl Methyl Ether (TAM)	ND	ND	EPA 8260B	mg/Kg	0.002
1,2-Dichloropropane	ND	ND	EPA 8260B	mg/Kg	0.005
Trichloroethene	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromomethane	ND	ND	EPA 8260B	mg/Kg	0.005
Bromodichloromethane	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chloroethylvinylether	ND	ND	EPA 8260B	mg/Kg	0.005
cis,1,3-Dichloropropene	ND	ND	EPA 8260B	mg/Kg	0.005
4-Methyl-2-pentanone(MI)	ND	ND	EPA 8260B	mg/Kg	0.01
trans,1,3-Dichloropropene	ND	ND	EPA 8260B	mg/Kg	0.005
Toluene	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2-Trichloroethane	ND	ND	EPA 8260B	mg/Kg	0.005

CTEL Project No: CT178-1506084

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Laboratory ID: / **Client Sample ID:**	1506-084-20 B13-15	1506-084-24 B14-15	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichloropropane	ND	ND	EPA 8260B	mg/Kg	0.005
Dibromochloromethane	ND	ND	EPA 8260B	mg/Kg	0.005
2-Hexanone	ND	ND	EPA 8260B	mg/Kg	0.01
Tetrachloroethene	ND	ND	EPA 8260B	mg/Kg	0.005
Chlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
1,1,1,2-Tetrachloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
Ethylbenzene	ND	ND	EPA 8260B	mg/Kg	0.001
m.p-Xylene	ND	ND	EPA 8260B	mg/Kg	0.001
Bromoform	ND	ND	EPA 8260B	mg/Kg	0.005
Styrene	ND	ND	EPA 8260B	mg/Kg	0.005
o-Xylene	ND	ND	EPA 8260B	mg/Kg	0.001
1,1,2,2-Tetrachloroethane	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichloropropane	ND	ND	EPA 8260B	mg/Kg	0.005
Isopropylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
Bromobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
2-Chlorotoluene	ND	ND	EPA 8260B	mg/Kg	0.005
n-Propylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
4-Chlorotoluene	ND	ND	EPA 8260B	mg/Kg	0.005
1,3,5-Trimethylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
tert-Butylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trimethylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
sec-Butylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
1,3-Dichlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
1,4-Dichlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
p-Isopropyltoluene	ND	ND	EPA 8260B	mg/Kg	0.005
1,2-Dichlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
n-Butylbenzene	ND	ND	EPA 8260B	mg/Kg	0.005
1,2 Dibromo-3-Chloropropane	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,4-Trichlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
Naphthalene	ND	ND	EPA 8260B	mg/Kg	0.005
1,2,3-Trichlorobenzene	ND	ND	EPA 8260B	mg/Kg	0.005
Hexachlorobutadiene	ND	ND	EPA 8260B	mg/Kg	0.005
Ethanol	ND	ND	EPA 8260B	mg/Kg	0.1

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY		Control Limit
Dibromofluoromethane	93	88	70-130
1,2 Dichloromethaned4	116	104	70-130
Toluene-d8	108	109	70-130
Bromofluorobenzene	109	97	70-130

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15 – 06/15/15
Matrix: Solid

Laboratory ID:	1506-084-1	1506-084-4	1506-084-8	**Method**	**Units**	**Detection Limit**
Client Sample ID:	B7-5	B8-5	B9-5			
Dilution	1	1	1			
Carbon Chain (C5~C12)	ND	ND	ND	EPA 8015M	mg/Kg	0.1
Carbon Chain (C13~C24)	ND	ND	ND	EPA 8015M	mg/Kg	1
Carbon Chain (C25~C40)	ND	ND	ND	EPA 8015M	mg/Kg	5

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15 – 06/15/15

Matrix: Solid

Laboratory ID:	1506-084-9	1506-084-12	1506-084-13	**Method**	**Units**	**Detection Limit**
Client Sample ID:	B9-10	B10-5	B10-10			
Dilution	1	1	1			
Carbon Chain (C5~C12)	ND	ND	ND	EPA 8015M	mg/Kg	0.1
Carbon Chain (C13~C24)	ND	ND	ND	EPA 8015M	mg/Kg	1
Carbon Chain (C25~C40)	ND	ND	ND	EPA 8015M	mg/Kg	5

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave. **Phone:(714) 206-3916**
Orange, CA 92868 **Fax: (714) 634-9507**
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am **Matrix: Solid**
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15 – 06/15/15

Laboratory ID:	1506-084-16	1506-084-17	1506-084-18	**Method**	**Units**	**Detection**
Client Sample ID:	B11-15	B11-20	B12-10			**Limit**
Dilution	1	1	1			
Carbon Chain (C5~C12)	ND	ND	ND	EPA 8015M	mg/Kg	0.1
Carbon Chain (C13~C24)	ND	ND	ND	EPA 8015M	mg/Kg	1
Carbon Chain (C25~C40)	ND	ND	ND	EPA 8015M	mg/Kg	5

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15 – 06/15/15
Matrix: Solid

Laboratory ID:	1506-084-19	1506-084-20	1506-084-21	**Method**	**Units**	**Detection Limit**
Client Sample ID:	B12-15	B13-15	B13-20			
Dilution	1	1	1			
Carbon Chain (C5~C12)	ND	ND	ND	EPA 8015M	mg/Kg	0.1
Carbon Chain (C13~C24)	ND	ND	ND	EPA 8015M	mg/Kg	1
Carbon Chain (C25~C40)	ND	ND	ND	EPA 8015M	mg/Kg	5

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15 – 06/15/15
Matrix: Solid

Laboratory ID:	1506-084-24	1506-084-25	1506-084-26	**Method**	**Units**	**Detection Limit**
Client Sample ID:	B14-15	B14-20	B12-6			
Dilution	1	1	1			
Carbon Chain (C5~C12)	ND	ND	ND	EPA 8015M	mg/Kg	0.1
Carbon Chain (C13~C24)	ND	ND	ND	EPA 8015M	mg/Kg	1
Carbon Chain (C25~C40)	ND	ND	ND	EPA 8015M	mg/Kg	5

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/16/15
Matrix: Solid

Laboratory ID: / **Client Sample ID:**	1506-084-1 B7-5	1506-084-4 B8-5	1506-084-8 B9-5	**Method**	**Units**	**Detection Limit**
Title 22 Metals, Solid						
Antimony (Sb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Arsenic (As)	6.0	9.9	2.5	SW846 6010B	mg/Kg	1
Barium (Ba)	130	110	77	SW846 6010B	mg/Kg	0.5
Beryllium (Be)	ND	ND	ND	SW846 6010B	mg/Kg	1
Cadmium (Cd)	5.9	6.2	ND	SW846 6010B	mg/Kg	1
Chromium (Cr)	47	38	45	SW846 6010B	mg/Kg	1
Cobalt (Co)	18	14	20	SW846 6010B	mg/Kg	1
Copper (Cu)	28	27	20	SW846 6010B	mg/Kg	1
Lead (Pb)	4.8	7.0	2.3	SW846 6010B	mg/Kg	1
Mercury (Hg)	ND	ND	ND	SW846 7471	mg/Kg	0.05
Molybdenum (Mo)	ND	ND	ND	SW846 6010B	mg/Kg	1
Nickel (Ni)	56	43	50	SW846 6010B	mg/Kg	1
Selenium (Se)	ND	ND	ND	SW846 6010B	mg/Kg	1
Silver (Ag)	ND	ND	ND	SW846 6010B	mg/Kg	1
Thallium (Tl)	ND	ND	ND	SW846 6010B	mg/Kg	1
Vanadium (V)	68	65	42	SW846 6010B	mg/Kg	1
Zinc (Zn)	71	75	39	SW846 6010B	mg/Kg	1
Acid, Extraction	06/12/15	06/12/15	06/12/15	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT178-1506084
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 09:30 am
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/16/15
Matrix: Solid

Laboratory ID:	1506-084-12	1506-084-16	1506-084-19	**Method**	**Units**	**Detection**
Client Sample ID:	B10-5	B11-15	B12-15			**Limit**
Title 22 Metals, Solid						
Antimony (Sb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Arsenic (As)	8.5	3.2	ND	SW846 6010B	mg/Kg	1
Barium (Ba)	110	78	57	SW846 6010B	mg/Kg	0.5
Beryllium (Be)	ND	ND	ND	SW846 6010B	mg/Kg	1
Cadmium (Cd)	7.6	34	1.8	SW846 6010B	mg/Kg	1
Chromium (Cr)	27	2.1	12	SW846 6010B	mg/Kg	1
Cobalt (Co)	12	2.4	8.3	SW846 6010B	mg/Kg	1
Copper (Cu)	30	5.5	12	SW846 6010B	mg/Kg	1
Lead (Pb)	11	1.4	2.0	SW846 6010B	mg/Kg	1
Mercury (Hg)	ND	ND	ND	SW846 7471	mg/Kg	0.05
Molybdenum (Mo)	ND	ND	ND	SW846 6010B	mg/Kg	1
Nickel (Ni)	49	8.5	15	SW846 6010B	mg/Kg	1
Selenium (Se)	ND	ND	ND	SW846 6010B	mg/Kg	1
Silver (Ag)	ND	ND	ND	SW846 6010B	mg/Kg	1
Thallium (Tl)	ND	ND	ND	SW846 6010B	mg/Kg	1
Vanadium (V)	53	12	21	SW846 6010B	mg/Kg	1
Zinc (Zn)	92	16	17	SW846 6010B	mg/Kg	1
Acid, Extraction	06/12/15	06/12/15	06/12/15	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

Roobik Yaghoubi
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 8015M

Matrix: Soil

Date Analyzed: 6/12/2015

Date Extracted: 6/12/2015

Client: Hillman

Project: 06-084

Batch No: A50612

Inst. ID MSD #1

Lab QC Sample ID: 06-085-01

Perimeters	Conc. ug/Kg		Spike Added	Recovery %		Control Limits		RPD
	MS	MSD		MS	MSD	Rec.	RPD	
TPH - Gasoline	1013	1068	1000	101	107	70-130	30	6
TPH - Diesel	1097	1134	1000	110	113	70-130	30	3

Perimeters	Method Blank	Units	Det. Limit
TPH - Gasoline	ND	ug/Kg	100
TPH - Diesel	ND	ug/Kg	1000

MS: Matrix Spike
MSD: Matrix Spike Duplicate

RPD: Relative Percent Difference of MS and MSD

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 8260B

Matrix: Soil

Date Analyzed: 6/12/2015

Date Extracted: 6/12/2015

Client: Hillman

Project: 06-084
Batch No: A50612
Inst. ID MSD #1

Lab QC
Sample ID: 06-085-01

Perimeters	Conc. ug/Kg		Spike	Recovery %		Control Limits		RPD
	MS	MSD	Added	MS	MSD	Rec.	RPD	
1,1-Dichloroethene	41	42	50	82	84	60-140	30	2
Benzene	46	49	50	92	98	60-140	30	6
Trichloroethene	41	42	50	82	84	60-140	30	2
Toluene	46	47	50	92	94	60-140	30	2
Chlorobenzene	51	50	50	102	100	60-140	30	2
m,p-Xylenes	99	100	100	99	100	60-140	30	1

MS: Matrix Spike
MSD: Matrix Spike Duplicate

RPD: Relative Percent Difference of MS and MSD

Perimeters	Method Blank	Units	Det. Limit
1,1-Dichloroethene	ND	ug/Kg	5
Benzene	ND	ug/Kg	5
Trichloroethene	ND	ug/Kg	5
Toluene	ND	ug/Kg	5
Chlorobenzene	ND	ug/Kg	5
m,p-Xylenes	ND	ug/Kg	5
MTBE	ND	ug/Kg	5
TBA	ND	ug/Kg	100
DIPE	ND	ug/Kg	10
ETBE	ND	ug/Kg	10
TAME	ND	ug/Kg	10
1,2-Dichloroethane	ND	ug/Kg	5
EDB	ND	ug/Kg	5
Ethylbenzene	ND	ug/Kg	5
o-Xylene	ND	ug/Kg	5

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 6010B/7471

Matrix: Soil

Date Analyzed: 6/16/2015

Units: mg/kg

Client: Hillman

Project: 06-084
Batch No: 500616
Inst. ID DV3300

Lab QC
Sample ID: 06-082-13

Perimeters	Method Blank	LCS	LCSD	Spike Added	LCS % Rec.	LCSD % Rec.	Limits	RPD
Arsenic	0	1.02	0.997	1	102	100	70-130	2
Cadmium	0	0.872	0.903	1	87	90	70-130	3
Chromium	0	1.02	1.04	1	102	104	70-130	2
Copper	0	0.94	0.981	1	94	98	70-130	4
Lead	0	0.97	1.01	1	97	101	70-130	4
Mercury	0	0.135	0.142	0.15	90	95	70-130	5
Selenium	0	0.991	0.957	1	99	96	70-130	3
Silver	0	0.47	0.462	0.5	94	92	70-130	2
Zinc	0	1.03	1.01	1	103	101	70-130	2

LCS: Laboratory Control Standard
LCSD: Laboratory Control Standard Duplicate

RPD: Relative Percent Difference of LCS and LCSD

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

Lab Job No. 06-5984 Page 1 of 3

Chain of Custody Record

Client: Hillman Consulting
Contact: Brandon Clements
Address: 1745 W. Orangewood Ave., Ste 110
Orange, CA
Project: Vacant Land - 29508 Riverside, Agoura
Sampled By: Dan Lowe / [signature]
Name/Signature

Phone: (714) 206-3916
Fax:

Turn Around Time
Rush
Normal

Analyses Requested

Lab ID Number	Field ID	Date/Time Sampled	Bottle Type	No.	Preserv.	Matrix	8015(M)	VOCs (EPA)	CAM						Comments
06-5984-1	B7-5	6/11/15 9:30	SS/Encore	3	ICE	Soil	X		X						
2	B7-10	9:35						X							
3	B7-15	9:45													
4	B8-5	10:00					X		X						
5	B8-10	10:05						X							
6	B8-15	10:15													
7	B8-20	10:25													
8	B9-5	11:00					X		X						
9	B9-10	11:10					X	X							
10	B9-15	11:20													

Relinquished: [signature] Date / Time: 6/12/15 Received:

Dispatched : Date / Time: Carrier:

I hereby authorize the performance of the above indicated tests.

[signature]

Date / Time: 6-12-15 / 4:15 Received by lab: R. Taylor

CTELCCR.DOC

Custody seal(s) in tact upon receipt by lab? YES NO NONE

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

Lab Job No. 06-5964 Page 2 of 3

Chain of Custody Record

Client: BRANDON CLEMENTS
Contact: HILLMANN
Address: 1745 W ORANGEWOOD AVE., STE 110
ORANGE, CA
Project: VACANT LAND - 29508 ROADSIDE, AGOURA
Sampled By: DAN LOWRY
Name/Signature

Phone: (714) 206-3916
Fax:

Turn Around Time
Rush
Normal

Analyses Requested

Lab ID Number	Field ID	Date/Time Sampled	Bottle Type	No.	Preserv.	Matrix	TPH (c)	VOC	CAM						Comments
06-0964-11	B9-20	6/11/15 11:40	SS/TEFLON LINE	3	ICE	SOIL									
12	B10-5	12:05					X		X						
13	B10-10	12:10					X	X							
14	B10-15	12:20													
15	B10-20	12:35													
16	B11-15	13:30					X	X	X						
17	B11-20	13:45					X								
18	B12-10	14:25					X								
19	B12-15	14:40					X	X	X						
20	B13-15	15:30					X	X	X						

Relinquished: Date / Time: 6/12/15 8:15 Received:

Dispatched : Date / Time: Carrier:

I hereby authorize the performance of the above indicated tests.

Date / Time: 6-12-15 9:15 Received by lab:

CTELCCR.DOC

Custody seal(s) in tact upon receipt by lab? YES NO NONE

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

Lab Job No. 06-5464 Page 3 of 3

Chain of Custody Record

Client: HILLMANN CONSULTING
Contact: BRANDON CLEMENTS
Address: 1745 W. ORANGEWOOD AVE, STE 110
ORANGE, CA
Project: VACANT LAND - 29508 LOMOSIDE, AGOURA
Sampled By: DAN LOOKS DO [signature]
Name/Signature

Phone: (714) 206-3912
Fax: _____

Turn Around Time
Rush _____
Normal _____

Analyses Requested

Lab ID Number	Field ID	Date/Time Sampled	Bottle Type	No.	Preserv.	Matrix	TPH-d	VOC	CAM						Comments
06-5464-21	B13-20	6/11/15 15:50	ENCORE/SS	3	ICE	SOIL	X								
22	B13-25	16:10	↓	↓	↓	↓									
23	B13-30	16:30													
24	B14-15	17:30					X	X	X						
25	B14-20	17:50	↓	↓	↓	↓	X								
26	B12-6		↓	↓	↓	↓	X								

Relinquished: [signature] Date / Time: 6/12/15 8:15 Received: _____

Dispatched: _____ Date / Time: _____ Carrier: _____

I hereby authorize the performance of the above indicated tests.

_____ Date / Time: 6-12-15 / 8:15 Received by lab: R. Taylor

CTELCCR.DOC

Custody seal(s) in tact upon receipt by lab? YES NO NONE

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT178-1506083
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 18:10 pm
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/12/15
Matrix: Water

Laboratory ID:	1506-083-1	1506-083-2	**Method**	**Units:**	**Detection**
Client Sample ID:	B7-W	B10-W			**Limit**
Dilution	1	1			
Dichlorodifluoromethane	ND	ND	EPA 8260B	ug/L	1
Chloromethane	ND	ND	EPA 8260B	ug/L	1
Vinyl Chloride	ND	ND	EPA 8260B	ug/L	0.5
Bromomethane	ND	ND	EPA 8260B	ug/L	1
Chloroethane	ND	ND	EPA 8260B	ug/L	1
Trichlorofluoromethane	ND	ND	EPA 8260B	ug/L	1
Iodomethane	ND	ND	EPA 8260B	ug/L	1
Acetone	ND	ND	EPA 8260B	ug/L	10
1,1-Dichloroethene	ND	ND	EPA 8260B	ug/L	1
t-Butyl Alcohol (TBA)	ND	ND	EPA 8260B	ug/L	10
Methylene Chloride	ND	ND	EPA 8260B	ug/L	10
Freon 113	ND	ND	EPA 8260B	ug/L	5
Carbon disulfide	ND	ND	EPA 8260B	ug/L	1
trans,1,2-Dichloroethene	ND	ND	EPA 8260B	ug/L	1
Methyl-tert-butyl-ether(MtBE)	ND	ND	EPA 8260B	ug/L	1
1,1-Dichloroethane	ND	ND	EPA 8260B	ug/L	1
Vinyl acetate	ND	ND	EPA 8260B	ug/L	50
Diisopropyl Ether (DIPE)	ND	ND	EPA 8260B	ug/L	1
Methyl Ethyl Ketone	ND	ND	EPA 8260B	ug/L	10
cis,1,2-Dichloroethene	ND	ND	EPA 8260B	ug/L	1
Bromochloromethane	ND	ND	EPA 8260B	ug/L	1
Chloroform	ND	ND	EPA 8260B	ug/L	1
2,2-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Ethyl-t-butyl ether (ETBE)	ND	ND	EPA 8260B	ug/L	1
1,1,1-Trichloroethane	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloroethane	ND	ND	EPA 8260B	ug/L	0.5
1,1-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
Carbon Tetrachloride	ND	ND	EPA 8260B	ug/L	0.5
Benzene	9.8	4.5	EPA 8260B	ug/L	0.5
t-Amyl Methyl Ether (TAM)	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Trichloroethene	ND	ND	EPA 8260B	ug/L	1
Dibromomethane	ND	ND	EPA 8260B	ug/L	1
Bromodichloromethane	ND	ND	EPA 8260B	ug/L	1
2-Chloroethylvinylether	ND	ND	EPA 8260B	ug/L	5
cis,1,3-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
4-Methyl-2-pentanone(MI)	ND	ND	EPA 8260B	ug/L	10
trans,1,3-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
Toluene	57	28	EPA 8260B	ug/L	0.5
1,1,2-Trichloroethane	ND	ND	EPA 8260B	ug/L	1

(Continued)

CTEL Project No: CT199-1506083

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Laboratory ID: / **Client Sample ID:**	1506-083-1 B7-W	1506-083-2 B10-W	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	EPA 8260B	ug/L	0.5
1,3-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Dibromochloromethane	ND	ND	EPA 8260B	ug/L	1
2-Hexanone	ND	ND	EPA 8260B	ug/L	10
Tetrachloroethene	ND	ND	EPA 8260B	ug/L	1
Chlorobenzene	ND	ND	EPA 8260B	ug/L	1
1,1,1,2-Tetrachloroethane	ND	ND	EPA 8260B	ug/L	1
Ethylbenzene	6.2	2.5	EPA 8260B	ug/L	0.5
m.p-Xylene	44	19	EPA 8260B	ug/L	0.5
Bromoform	ND	ND	EPA 8260B	ug/L	1
Styrene	ND	ND	EPA 8260B	ug/L	1
o-Xylene	18	7.9	EPA 8260B	ug/L	0.5
1,1,2,2-Tetrachloroethane	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichloropropane	ND	ND	EPA 8260B	ug/L	1
Isopropylbenzene	ND	ND	EPA 8260B	ug/L	1
Bromobenzene	ND	ND	EPA 8260B	ug/L	1
2-Chlorotoluene	ND	ND	EPA 8260B	ug/L	1
n-Propylbenzene	ND	ND	EPA 8260B	ug/L	1
4-Chlorotoluene	ND	ND	EPA 8260B	ug/L	1
1,3,5-Trimethylbenzene	5.1	2.6	EPA 8260B	ug/L	1
tert-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trimethylbenzene	8.1	4.1	EPA 8260B	ug/L	1
sec-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,3-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
1,4-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
p-Isopropyltoluene	ND	ND	EPA 8260B	ug/L	1
1,2-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
n-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,2 Dibromo-3-Chloropropane	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trichlorobenzene	ND	ND	EPA 8260B	ug/L	1
Naphthalene	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichlorobenzene	ND	ND	EPA 8260B	ug/L	1
Hexachlorobutadiene	ND	ND	EPA 8260B	ug/L	1
Ethanol	ND	ND	EPA 8260B	ug/L	50

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY		Control Limit
Dibromofluoromethane	85	96	70-130
1,2 Dichloromethaned4	84	87	70-130
Toluene-d8	80	80	70-130
Bromofluorobenzene	86	97	70-130

CTEL Project No: CT178-1506083
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID: Vacant Land
Project Name: 29508 Roadside, Agoura

Date Sampled: 06/11/15 @ 18:10 pm
Date Received: 06/12/15 @ 08:15 am
Date Analyzed: 06/16/15
Matrix: Water

Laboratory ID: / **Client Sample ID:**	1506-083-1 B7-W	1506-083-2 B10-W	**Method**	**Units**	**Detection Limit**
Title 22 Metals, Solid					
Antimony (Sb)	ND	ND	SW846 6010B	mg/L	0.01
Arsenic (As)	0.131	ND	SW846 6010B	mg/L	0.01
Barium (Ba)	0.013	0.025	SW846 6010B	mg/L	0.005
Beryllium (Be)	ND	ND	SW846 6010B	mg/L	0.01
Cadmium (Cd)	0.160	ND	SW846 6010B	mg/L	0.01
Chromium (Cr)	0.501	0.020	SW846 6010B	mg/L	0.01
Cobalt (Co)	0.213	ND	SW846 6010B	mg/L	0.01
Copper (Cu)	0.586	ND	SW846 6010B	mg/L	0.01
Lead (Pb)	0.089	ND	SW846 6010B	mg/L	0.01
Mercury (Hg)	ND	ND	SW846 7470	mg/L	0.0002
Molybdenum (Mo)	ND	ND	SW846 6010B	mg/L	0.01
Nickel (Ni)	0.710	0.018	SW846 6010B	mg/L	0.01
Selenium (Se)	ND	ND	SW846 6010B	mg/L	0.01
Silver (Ag)	ND	ND	SW846 6010B	mg/L	0.01
Thallium (Tl)	ND	ND	SW846 6010B	mg/L	0.01
Vanadium (V)	0.917	ND	SW846 6010B	mg/L	0.01
Zinc (Zn)	1.32	0.043	SW846 6010B	mg/L	0.01
Acid, Extraction	06/12/15	06/21/15	SW846 3051	Date	

ND = Not Detected at the indicated Detection Limit

R. Yaghoubi

Roobik Yaghoubi
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 8260B

Matrix: Water

Date Analyzed: 6/12/2015

Date Extracted: 6/12/2015

Client: Hillman

Project: 06-083
Batch No: B50612
Inst. ID MSD #2

Lab QC
Sample ID: 06-090-01

Perimeters	Conc. ug/L		Spike	Recovery %		Control Limits		RPD
	MS	MSD	Added	MS	MSD	Rec.	RPD	
1,1-Dichloroethene	54	53	50	108	106	60-140	30	2
Benzene	47	49	50	94	98	60-140	30	4
Trichloroethene	51	45	50	102	90	60-140	30	12
Toluene	52	46	50	104	92	60-140	30	12
Chlorobenzene	46	43	50	92	86	60-140	30	6
m,p-Xylenes	109	98	100	109	98	60-140	30	11

MS: Matrix Spike
MSD: Matrix Spike Duplicate

RPD: Relative Percent Difference of MS and MSD

Perimeters	Method Blank	Units	Det. Limit
1,1-Dichloroethene	ND	ug/L	1
Benzene	ND	ug/L	0.5
Trichloroethene	ND	ug/L	0.5
Toluene	ND	ug/L	0.5
Chlorobenzene	ND	ug/L	0.5
m,p-Xylenes	ND	ug/L	0.6
MTBE	ND	ug/L	1
TBA	ND	ug/L	10
DIPE	ND	ug/L	1
ETBE	ND	ug/L	1
TAME	ND	ug/L	1
1,2-Dichloroethane	ND	ug/L	0.5
EDB	ND	ug/L	0.5
Ethylbenzene	ND	ug/L	0.5
o-Xylene	ND	ug/L	0.6
TCE	ND	ug/L	1
PCE	ND	ug/L	1

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 6010B/7470

Matrix: AQ

Date Analyzed: 6/16/2015

Units: mg/L

Perimeters	Method Blank	LCS	LCSD	Spike Added	LCS % Rec.	LCSD % Rec.	Limits	RPD
Arsenic	0	0.804	0.817	1	80	82	70-130	2
Cadmium	0	0.854	0.839	1	85	84	70-130	1
Chromium	0	0.831	0.835	1	83	84	70-130	1
Copper	0	0.903	0.877	1	90	88	70-130	2
Lead	0	0.872	0.861	1	87	86	70-130	1
Mercury	0	0.122	0.117	0.15	81	78	70-130	3
Selenium	0	0.806	0.826	1	81	83	70-130	2
Silver	0	0.462	0.442	0.5	92	88	70-130	4
Zinc	0	0.922	0.927	1	93	93	70-130	0

LCS: Laboratory Control Standard
LCSD: Laboratory Control Standard Duplicate

RPD: Relative Percent Difference of LCS and LCSD

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

Lab Job No. 06-093 Page 1 of 1

Chain of Custody Record

Client: HILLMANN CONSULTING
Contact: BRANDON CLEMENTS
Address: 1745 W. ORANGEWOOD AVENUE, STE 110
ORANGE, CA
Project: VACANT LAND – 29508 ROADSIDE, AGOURA
Sampled By: DAN LOVEY / [signature]
Name/Signature

Phone: (714) 206-3916
Fax:

Turn Around Time
Rush
Normal

Analyses Requested

Lab ID Number	Field ID	Date/Time Sampled	Bottle Type	No.	Preserv.	Matrix	8260B	CAM	Comments
06-093-1	B7-W	6/11/15 18:10	VOA/POLY	3	ICE	W	X	X	
2	B8-W	18:30	"	3	"	"	X	X	

Relinquished: [signature] Date / Time: 8:15 6/12/15 Received:

Dispatched : Date / Time: Carrier:

I hereby authorize the performance of the above indicated tests.

[signature]

Date / Time: 6-12-15 / 8:15 Received by lab: [signature]

Custody seal(s) in tact upon receipt by lab? YES NO NONE

CTELCCR.DOC

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT178-1506106
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Date Sampled: 06/15/15 @ 17:30 pm
Matrix: Air
Date Received: 06/15/15 @ 20:10 pm
Date Analyzed: 06/16/15

Laboratory ID:	1506-106-1	1506-106-2	1506-106-3	**Method**	**Units:**	**Detection**
Client Sample ID:	SG1-5	SG2-5	SG3-10			**Limit**
Dilution	1	1	1			
Dichlorodifluoromethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloromethane	ND	ND	ND	EPA 8260B	ug/L	1
Vinyl Chloride	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromomethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloroethane	ND	ND	ND	EPA 8260B	ug/L	1
Trichlorofluoromethane	ND	ND	ND	EPA 8260B	ug/L	1
Iodomethane	ND	ND	ND	EPA 8260B	ug/L	1
Acetone	ND	ND	ND	EPA 8260B	ug/L	10
1,1-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
t-Butyl Alcohol (TBA)	ND	ND	ND	EPA 8260B	ug/L	10
Methylene Chloride	ND	ND	ND	EPA 8260B	ug/L	10
Freon 113	ND	ND	ND	EPA 8260B	ug/L	5
Carbon disulfide	ND	ND	ND	EPA 8260B	ug/L	1
trans,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Methyl-tert-butyl-ether(MtBE)	ND	ND	ND	EPA 8260B	ug/L	1
1,1-Dichloroethane	ND	ND	ND	EPA 8260B	ug/L	0.5
Vinyl acetate	ND	ND	ND	EPA 8260B	ug/L	50
Diisopropyl Ether (DIPE)	ND	ND	ND	EPA 8260B	ug/L	1
Methyl Ethyl Ketone	ND	ND	ND	EPA 8260B	ug/L	10
cis,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromochloromethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloroform	ND	ND	ND	EPA 8260B	ug/L	1
2,2-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Ethyl-t-butyl ether (ETBE)	ND	ND	ND	EPA 8260B	ug/L	1
1,1,1-Trichloroethane	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloroethane	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
Carbon Tetrachloride	ND	ND	ND	EPA 8260B	ug/L	0.5
Benzene	ND	ND	ND	EPA 8260B	ug/L	0.5
t-Amyl Methyl Ether (TAM)	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Trichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Dibromomethane	ND	ND	ND	EPA 8260B	ug/L	1
Bromodichloromethane	ND	ND	ND	EPA 8260B	ug/L	1
2-Chloroethylvinylether	ND	ND	ND	EPA 8260B	ug/L	5
cis,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
4-Methyl-2-pentanone(MI)	ND	ND	ND	EPA 8260B	ug/L	10
trans,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
Toluene	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1,2-Trichloroethane	ND	ND	ND	EPA 8260B	ug/L	1

(Continued)

CTEL Project No: CT199-1506106

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Laboratory ID: / **Client Sample ID:**	1506-106-1 SG1-5	1506-106-2 SG2-5	1506-106-3 SG3-10	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	ND	EPA 8260B	ug/L	0.5
1,3-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Dibromochloromethane	ND	ND	ND	EPA 8260B	ug/L	1
2-Hexanone	ND	ND	ND	EPA 8260B	ug/L	10
Tetrachloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Chlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	ug/L	1
Ethylbenzene	ND	ND	ND	EPA 8260B	ug/L	0.5
m.p-Xylene	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromoform	ND	ND	ND	EPA 8260B	ug/L	1
Styrene	ND	ND	ND	EPA 8260B	ug/L	1
o-Xylene	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1,2,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Isopropylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
Bromobenzene	ND	ND	ND	EPA 8260B	ug/L	1
2-Chlorotoluene	ND	ND	ND	EPA 8260B	ug/L	1
n-Propylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
4-Chlorotoluene	ND	ND	ND	EPA 8260B	ug/L	1
1,3,5-Trimethylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
tert-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trimethylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
sec-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,3-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,4-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
p-Isopropyltoluene	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
n-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,2 Dibromo-3-Chloropropane	ND	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
Naphthalene	ND	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
Hexachlorobutadiene	ND	ND	ND	EPA 8260B	ug/L	1
Ethanol	ND	ND	ND	EPA 8260B	ug/L	50

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY			Control Limit
Dibromofluoromethane	79	78	75	70-130
1,2 Dichloromethaned4	93	91	86	70-130
Toluene-d8	108	110	110	70-130
Bromofluorobenzene	103	109	104	70-130

CTEL Project No: CT178-1506106
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Date Sampled: 06/15/15 @ 18:00 pm
Date Received: 06/15/15 @ 20:10 pm
Date Analyzed: 06/16/15
Matrix: Air

Laboratory ID:	1506-106-4	1506-106-5	1506-106-6	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	SG4-5	SG5-10	SG6-15			
Dilution	1	1	1			
Dichlorodifluoromethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloromethane	ND	ND	ND	EPA 8260B	ug/L	1
Vinyl Chloride	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromomethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloroethane	ND	ND	ND	EPA 8260B	ug/L	1
Trichlorofluoromethane	ND	ND	ND	EPA 8260B	ug/L	1
Iodomethane	ND	ND	ND	EPA 8260B	ug/L	1
Acetone	ND	ND	ND	EPA 8260B	ug/L	10
1,1-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
t-Butyl Alcohol (TBA)	ND	ND	ND	EPA 8260B	ug/L	10
Methylene Chloride	ND	ND	ND	EPA 8260B	ug/L	10
Freon 113	ND	ND	ND	EPA 8260B	ug/L	5
Carbon disulfide	ND	ND	ND	EPA 8260B	ug/L	1
trans,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Methyl-tert-butyl-ether(MtBE)	ND	ND	ND	EPA 8260B	ug/L	1
1,1-Dichloroethane	ND	ND	ND	EPA 8260B	ug/L	0.5
Vinyl acetate	ND	ND	ND	EPA 8260B	ug/L	50
Diisopropyl Ether (DIPE)	ND	ND	ND	EPA 8260B	ug/L	1
Methyl Ethyl Ketone	ND	ND	ND	EPA 8260B	ug/L	10
cis,1,2-Dichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromochloromethane	ND	ND	ND	EPA 8260B	ug/L	1
Chloroform	ND	ND	ND	EPA 8260B	ug/L	1
2,2-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Ethyl-t-butyl ether (ETBE)	ND	ND	ND	EPA 8260B	ug/L	1
1,1,1-Trichloroethane	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloroethane	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
Carbon Tetrachloride	ND	ND	ND	EPA 8260B	ug/L	0.5
Benzene	ND	ND	ND	EPA 8260B	ug/L	0.5
t-Amyl Methyl Ether (TAM)	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Trichloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Dibromomethane	ND	ND	ND	EPA 8260B	ug/L	1
Bromodichloromethane	ND	ND	ND	EPA 8260B	ug/L	1
2-Chloroethylvinylether	ND	ND	ND	EPA 8260B	ug/L	5
cis,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
4-Methyl-2-pentanone(MI)	ND	ND	ND	EPA 8260B	ug/L	10
trans,1,3-Dichloropropene	ND	ND	ND	EPA 8260B	ug/L	1
Toluene	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1,2-Trichloroethane	ND	ND	ND	EPA 8260B	ug/L	1

(Continued)

CTEL Project No: CT199-1506106

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Laboratory ID: / **Client Sample ID:**	1506-106-4 SG4-5	1506-106-5 SG5-10	1506-106-6 SG6-15	**Method**	**Units**	**Detection Limit**
1,2-Dibromoethane(EDB)	ND	ND	ND	EPA 8260B	ug/L	0.5
1,3-Dichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Dibromochloromethane	ND	ND	ND	EPA 8260B	ug/L	1
2-Hexanone	ND	ND	ND	EPA 8260B	ug/L	10
Tetrachloroethene	ND	ND	ND	EPA 8260B	ug/L	0.5
Chlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	ug/L	1
Ethylbenzene	ND	ND	ND	EPA 8260B	ug/L	0.5
m.p-Xylene	ND	ND	ND	EPA 8260B	ug/L	0.5
Bromoform	ND	ND	ND	EPA 8260B	ug/L	1
Styrene	ND	ND	ND	EPA 8260B	ug/L	1
o-Xylene	ND	ND	ND	EPA 8260B	ug/L	0.5
1,1,2,2-Tetrachloroethane	ND	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichloropropane	ND	ND	ND	EPA 8260B	ug/L	1
Isopropylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
Bromobenzene	ND	ND	ND	EPA 8260B	ug/L	1
2-Chlorotoluene	ND	ND	ND	EPA 8260B	ug/L	1
n-Propylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
4-Chlorotoluene	ND	ND	ND	EPA 8260B	ug/L	1
1,3,5-Trimethylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
tert-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trimethylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
sec-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,3-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,4-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
p-Isopropyltoluene	ND	ND	ND	EPA 8260B	ug/L	1
1,2-Dichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
n-Butylbenzene	ND	ND	ND	EPA 8260B	ug/L	1
1,2 Dibromo-3-Chloropropane	ND	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
Naphthalene	ND	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichlorobenzene	ND	ND	ND	EPA 8260B	ug/L	1
Hexachlorobutadiene	ND	ND	ND	EPA 8260B	ug/L	1
Ethanol	ND	ND	ND	EPA 8260B	ug/L	50

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY			Control Limit
Dibromofluoromethane	80	76	76	70-130
1,2 Dichloromethaned4	91	86	86	70-130
Toluene-d8	107	108	108	70-130
Bromofluorobenzene	104	104	109	70-130

CTEL Project No: CT178-1506106
Client Name: Hillman Consulting
1745 W. Orangewood Ave.
Orange, CA 92868
Phone:(714) 206-3916
Fax: (714) 634-9507
Attention: Mr. Dan Louks / Brandon Clements

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Date Sampled: 06/15/15 @ 18:35 pm
Date Received: 06/15/15 @ 20:10 pm
Date Analyzed: 06/16/15
Matrix: Air

Laboratory ID:	1506-106-7	1506-106-8	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	SG7-10	SG8-10			
Dilution	1	1			
Dichlorodifluoromethane	ND	ND	EPA 8260B	ug/L	1
Chloromethane	ND	ND	EPA 8260B	ug/L	1
Vinyl Chloride	ND	ND	EPA 8260B	ug/L	0.5
Bromomethane	ND	ND	EPA 8260B	ug/L	1
Chloroethane	ND	ND	EPA 8260B	ug/L	1
Trichlorofluoromethane	ND	ND	EPA 8260B	ug/L	1
Iodomethane	ND	ND	EPA 8260B	ug/L	1
Acetone	ND	ND	EPA 8260B	ug/L	10
1,1-Dichloroethene	ND	ND	EPA 8260B	ug/L	0.5
t-Butyl Alcohol (TBA)	ND	ND	EPA 8260B	ug/L	10
Methylene Chloride	ND	ND	EPA 8260B	ug/L	10
Freon 113	ND	ND	EPA 8260B	ug/L	5
Carbon disulfide	ND	ND	EPA 8260B	ug/L	1
trans,1,2-Dichloroethene	ND	ND	EPA 8260B	ug/L	0.5
Methyl-tert-butyl-ether(MtBE)	ND	ND	EPA 8260B	ug/L	1
1,1-Dichloroethane	ND	ND	EPA 8260B	ug/L	0.5
Vinyl acetate	ND	ND	EPA 8260B	ug/L	50
Diisopropyl Ether (DIPE)	ND	ND	EPA 8260B	ug/L	1
Methyl Ethyl Ketone	ND	ND	EPA 8260B	ug/L	10
cis,1,2-Dichloroethene	ND	ND	EPA 8260B	ug/L	0.5
Bromochloromethane	ND	ND	EPA 8260B	ug/L	1
Chloroform	ND	ND	EPA 8260B	ug/L	1
2,2-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Ethyl-t-butyl ether (ETBE)	ND	ND	EPA 8260B	ug/L	1
1,1,1-Trichloroethane	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloroethane	ND	ND	EPA 8260B	ug/L	0.5
1,1-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
Carbon Tetrachloride	ND	ND	EPA 8260B	ug/L	0.5
Benzene	ND	ND	EPA 8260B	ug/L	0.5
t-Amyl Methyl Ether (TAM)	ND	ND	EPA 8260B	ug/L	1
1,2-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Trichloroethene	ND	ND	EPA 8260B	ug/L	0.5
Dibromomethane	ND	ND	EPA 8260B	ug/L	1
Bromodichloromethane	ND	ND	EPA 8260B	ug/L	1
2-Chloroethylvinylether	ND	ND	EPA 8260B	ug/L	5
cis,1,3-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
4-Methyl-2-pentanone(MI)	ND	ND	EPA 8260B	ug/L	10
trans,1,3-Dichloropropene	ND	ND	EPA 8260B	ug/L	1
Toluene	ND	ND	EPA 8260B	ug/L	0.5
1,1,2-Trichloroethane	ND	ND	EPA 8260B	ug/L	1

(Continued)

CTEL Project No: CT199-1506106

Project ID:
Project Name: 29508 Agoura – Agoura Hills

Laboratory ID:	1506-106-7	1506-106-8	**Method**	**Units**	**Detection Limit**
Client Sample ID:	SG7-10	SG8-10			
1,2-Dibromoethane(EDB)	ND	ND	EPA 8260B	ug/L	0.5
1,3-Dichloropropane	ND	ND	EPA 8260B	ug/L	1
Dibromochloromethane	ND	ND	EPA 8260B	ug/L	1
2-Hexanone	ND	ND	EPA 8260B	ug/L	10
Tetrachloroethene	ND	ND	EPA 8260B	ug/L	0.5
Chlorobenzene	ND	ND	EPA 8260B	ug/L	1
1,1,1,2-Tetrachloroethane	ND	ND	EPA 8260B	ug/L	1
Ethylbenzene	ND	ND	EPA 8260B	ug/L	0.5
m.p-Xylene	ND	ND	EPA 8260B	ug/L	0.5
Bromoform	ND	ND	EPA 8260B	ug/L	1
Styrene	ND	ND	EPA 8260B	ug/L	1
o-Xylene	ND	ND	EPA 8260B	ug/L	0.5
1,1,2,2-Tetrachloroethane	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichloropropane	ND	ND	EPA 8260B	ug/L	1
Isopropylbenzene	ND	ND	EPA 8260B	ug/L	1
Bromobenzene	ND	ND	EPA 8260B	ug/L	1
2-Chlorotoluene	ND	ND	EPA 8260B	ug/L	1
n-Propylbenzene	ND	ND	EPA 8260B	ug/L	1
4-Chlorotoluene	ND	ND	EPA 8260B	ug/L	1
1,3,5-Trimethylbenzene	ND	ND	EPA 8260B	ug/L	1
tert-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trimethylbenzene	ND	ND	EPA 8260B	ug/L	1
sec-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,3-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
1,4-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
p-Isopropyltoluene	ND	ND	EPA 8260B	ug/L	1
1,2-Dichlorobenzene	ND	ND	EPA 8260B	ug/L	1
n-Butylbenzene	ND	ND	EPA 8260B	ug/L	1
1,2 Dibromo-3-Chloropropane	ND	ND	EPA 8260B	ug/L	1
1,2,4-Trichlorobenzene	ND	ND	EPA 8260B	ug/L	1
Naphthalene	ND	ND	EPA 8260B	ug/L	1
1,2,3-Trichlorobenzene	ND	ND	EPA 8260B	ug/L	1
Hexachlorobutadiene	ND	ND	EPA 8260B	ug/L	1
Ethanol	ND	ND	EPA 8260B	ug/L	50

ND = Not Detected at the indicated Detection Limit

SURROGATE SPIKE	% SURROGATE RECOVERY		Control Limit
Dibromofluoromethane	77	77	70-130
1,2 Dichloromethaned4	90	88	70-130
Toluene-d8	109	109	70-130
Bromofluorobenzene	103	105	70-130

Roobik Yaghoubi
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 8260B / TO15

Matrix: Water / Air

Date Analyzed: 6/16/2015

Date Extracted: 6/16/2015

Client: Hillman

Project: 06-106
Batch No: E50616
Inst. ID MSD #5

Lab QC
Sample ID: 06-109-01

Perimeters	Conc. ug/L		Spike Added	Recovery %		Control Limits		RPD
	MS	MSD		MS	MSD	Rec.	RPD	
1,1-Dichloroethene	53	51	50	106	102	70-130	30	4
Benzene	53	56	50	106	112	70-130	30	6
Trichloroethene	58	59	50	116	118	70-130	30	2
Toluene	52	56	50	104	112	70-130	30	8
Chlorobenzene	47	50	50	94	100	70-130	30	6
m,p-Xylenes	102	105	100	102	105	70-130	30	3

MS: Matrix Spike
MSD: Matrix Spike Duplicate

RPD: Relative Percent Difference of MS and MSD

Perimeters	Method Blank	Units	Det. Limit
1,1-Dichloroethene	ND	ug/L	1
Benzene	ND	ug/L	0.5
Trichloroethene	ND	ug/L	0.5
Toluene	ND	ug/L	0.5
Chlorobenzene	ND	ug/L	0.5
m,p-Xylenes	ND	ug/L	0.6
MTBE	ND	ug/L	1
TBA	ND	ug/L	10
DIPE	ND	ug/L	1
ETBE	ND	ug/L	1
TAME	ND	ug/L	1
1,2-Dichloroethane	ND	ug/L	0.5
EDB	ND	ug/L	0.5
Ethylbenzene	ND	ug/L	0.5
o-Xylene	ND	ug/L	0.6
TCE	ND	ug/L	1
PCE	ND	ug/L	1

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

Lab Job No. 06-106 Page 1 of 1

Chain of Custody Record

Client: HILLMAN CONSULTING
Contact: BRANDON CLEMENTS
Address: 1745 ORANGEWOOD AVE # 110
ORANGE CA 92868
Project: 29508 AGOURA / AGOURA HILLS ROADSIDE RD
Sampled By: D. [signature] Name/Signature

Phone (714) 206 3916
Fax:

Turn Around Time
Rush
Normal ✓

Analyses Requested: 8260B

Lab ID Number	Field ID	Date/Time Sampled	Bottle Type	No.	Preserv.	Matrix	8260B	Comments
06-106-1	SG1-5	6-15-15 17:30	TEDLAR	1		VAPOR	X	B7
2	SG2-5	17:40	"	1		"	X	B8
3	SG3-10	17:50	"	1		"	X	B9
4	SG4-5	18:00	"	1		"	X	B10
5	SG5-10	18:15	"	1		"	X	B11
6	SG6-15	18:25	"	1		"	X	B12
7	SG7-10	18:35	"	1		"	X	B13
8	SG8-10	18:45	"	1		"	X	B14

Relinquished: [signature] Date / Time: 6/15/15 20:10 Received:

Dispatched : Date / Time: Carrier:

I hereby authorize the performance of the above indicated tests.

[signature]

Date / Time: 6-15-15 / 20:10 Received by lab: [signature]

CTELCCR.DOC

Custody seal(s) in tact upon receipt by lab? YES NO NONE

SOIL GAS MONITORING DATA FORM

PROJECT: Commercial Property

LOCATION: 29508 Roadside Drive, Agoura Hills, CA

DATE: June 15, 2015

	VAPOR PROBE INFO							
PROBE ID	**SG1 (B7)**	**SG2 (B8)**	**SG3(B9)**	**SG4(B10)**	**SG5(B11)**	**SG6(B12)**	**SG7(B13)**	**SG8(B14)**
PROBE DEPTH (ft)	5	5	10	5	10	15	10	10
	EXTRACTION DATA							
FLOW (L/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pore Volumes (borehole - sand pack)	3	3	3	3	3	3	3	3
	MONITORING DATA							
OXYGEN (%)								
CARBON DIOXIDE (%)								
VOC by PID (ppm)	<1	<1	<1	<1	<1	<1	<1	<1

REMARKS:

SAMPLED BY: DL

APPENDIX C

ProUCL Statistics

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation	12/22/2015 10:31:57 AM										
5	From File	Metals.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	**Ba**											
12												
13	**General Statistics**											
14	Total Number of Observations	6				Number of Distinct Observations	5					
15						Number of Missing Observations	0					
16	Minimum	57				Mean	93.67					
17	Maximum	130				Median	94					
18	SD	27.28				Std. Error of Mean	11.14					
19	Coefficient of Variation	0.291				Skewness	-0.0161					
20												
21	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
22	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
23	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
24	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
25												
26	**Normal GOF Test**											
27	Shapiro Wilk Test Statistic	0.936				**Shapiro Wilk GOF Test**						
28	5% Shapiro Wilk Critical Value	0.788				Data appear Normal at 5% Significance Level						
29	Lilliefors Test Statistic	0.225				**Lilliefors GOF Test**						
30	5% Lilliefors Critical Value	0.362				Data appear Normal at 5% Significance Level						
31	**Data appear Normal at 5% Significance Level**											
32												
33	**Assuming Normal Distribution**											
34	**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**						
35	95% Student's-t UCL	116.1				95% Adjusted-CLT UCL (Chen-1995)	111.9					
36						95% Modified-t UCL (Johnson-1978)	116.1					
37												
38	**Gamma GOF Test**											
39	A-D Test Statistic	0.348				**Anderson-Darling Gamma GOF Test**						
40	5% A-D Critical Value	0.698				Detected data appear Gamma Distributed at 5% Significance Level						
41	K-S Test Statistic	0.256				**Kolmogrov-Smirnoff Gamma GOF Test**						
42	5% K-S Critical Value	0.332				Detected data appear Gamma Distributed at 5% Significance Level						
43	**Detected data appear Gamma Distributed at 5% Significance Level**											
44												
45	**Gamma Statistics**											
46	k hat (MLE)	13.42				k star (bias corrected MLE)	6.819					
47	Theta hat (MLE)	6.982				Theta star (bias corrected MLE)	13.74					
48	nu hat (MLE)	161				nu star (bias corrected)	81.83					
49	MLE Mean (bias corrected)	93.67				MLE Sd (bias corrected)	35.87					
50						Approximate Chi Square Value (0.05)	61.98					

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					55.78
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					123.7	95% Adjusted Gamma UCL (use when n<50)					137.4
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.93	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.241	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					4.043	Mean of logged Data					4.502
65	Maximum of Logged Data					4.868	SD of logged Data					0.306
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					128.4	90% Chebyshev (MVUE) UCL					128.9
69	95% Chebyshev (MVUE) UCL					144.9	97.5% Chebyshev (MVUE) UCL					167
70	99% Chebyshev (MVUE) UCL					210.4						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					112	95% Jackknife UCL					116.1
77	95% Standard Bootstrap UCL					110.1	95% Bootstrap-t UCL					116.3
78	95% Hall's Bootstrap UCL					109.6	95% Percentile Bootstrap UCL					111.2
79	95% BCA Bootstrap UCL					109.2						
80	90% Chebyshev(Mean, Sd) UCL					127.1	95% Chebyshev(Mean, Sd) UCL					142.2
81	97.5% Chebyshev(Mean, Sd) UCL					163.2	99% Chebyshev(Mean, Sd) UCL					204.5
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					116.1						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	12/22/2015 10:38:57 AM
From File	TPH.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C18-C28

General Statistics

Total Number of Observations	15	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	7
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	11	Minimum Non-Detect	10
Maximum Detect	23	Maximum Non-Detect	10
Variance Detects	18.41	Percent Non-Detects	46.67%
Mean Detects	15.88	SD Detects	4.291
Median Detects	14.5	CV Detects	0.27
Skewness Detects	0.621	Kurtosis Detects	-1.022
Mean of Logged Detects	2.734	SD of Logged Detects	0.264

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.206	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	13.13	Standard Error of Mean	1.144
SD	4.145	95% KM (BCA) UCL	14.93
95% KM (t) UCL	15.15	95% KM (Percentile Bootstrap) UCL	15
95% KM (z) UCL	15.02	95% KM Bootstrap t UCL	15.6
90% KM Chebyshev UCL	16.57	95% KM Chebyshev UCL	18.12
97.5% KM Chebyshev UCL	20.28	99% KM Chebyshev UCL	24.52

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.318	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.716	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.182	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.294	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	16.33	k star (bias corrected MLE)	10.29
Theta hat (MLE)	0.972	Theta star (bias corrected MLE)	1.543
nu hat (MLE)	261.3	nu star (bias corrected)	164.6
MLE Mean (bias corrected)	15.88	MLE Sd (bias corrected)	4.949

51												
52	**Gamma Kaplan-Meier (KM) Statistics**											
53					k hat (KM)	10.04			nu hat (KM)	301.2		
54					Approximate Chi Square Value (301.16, α)	262			Adjusted Chi Square Value (301.16, β)	257.5		
55					95% Gamma Approximate KM-UCL (use when n>=50)	15.1			95% Gamma Adjusted KM-UCL (use when n<50)	15.36		
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62					Minimum	0.234			Mean	10.77		
63					Maximum	23			Median	11		
64					SD	6.699			CV	0.622		
65					k hat (MLE)	1.569			k star (bias corrected MLE)	1.3		
66					Theta hat (MLE)	6.864			Theta star (bias corrected MLE)	8.286		
67					nu hat (MLE)	47.07			nu star (bias corrected)	38.99		
68					MLE Mean (bias corrected)	10.77			MLE Sd (bias corrected)	9.447		
69									Adjusted Level of Significance (β)	0.0324		
70					Approximate Chi Square Value (38.99, α)	25.69			Adjusted Chi Square Value (38.99, β)	24.36		
71					95% Gamma Approximate UCL (use when n>=50)	16.35			95% Gamma Adjusted UCL (use when n<50)	17.24		
72												
73	**Lognormal GOF Test on Detected Observations Only**											
74					Shapiro Wilk Test Statistic	0.943			**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.818			Detected Data appear Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.164			**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.313			Detected Data appear Lognormal at 5% Significance Level			
78	**Detected Data appear Lognormal at 5% Significance Level**											
79												
80	**Lognormal ROS Statistics Using Imputed Non-Detects**											
81					Mean in Original Scale	11.88			Mean in Log Scale	2.375		
82					SD in Original Scale	5.473			SD in Log Scale	0.466		
83					95% t UCL (assumes normality of ROS data)	14.37			95% Percentile Bootstrap UCL	14.11		
84					95% BCA Bootstrap UCL	14.48			95% Bootstrap t UCL	14.97		
85					95% H-UCL (Log ROS)	15.44						
86												
87	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
88					KM Mean (logged)	2.533			95% H-UCL (KM -Log)	15.06		
89					KM SD (logged)	0.281			95% Critical H Value (KM-Log)	1.867		
90					KM Standard Error of Mean (logged)	0.0775						
91												
92	**DL/2 Statistics**											
93					**DL/2 Normal**				**DL/2 Log-Transformed**			
94					Mean in Original Scale	10.8			Mean in Log Scale	2.209		
95					SD in Original Scale	6.383			SD in Log Scale	0.61		
96					95% t UCL (Assumes normality)	13.7			95% H-Stat UCL	15.68		
97	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
98												
99	**Nonparametric Distribution Free UCL Statistics**											
100	**Detected Data appear Normal Distributed at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	**Suggested UCL to Use**											
103	95% KM (t) UCL					15.15	95% KM (Percentile Bootstrap) UCL					15
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											
107	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
108	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
109												

	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation			12/22/2015 10:39:32 AM								
5	From File			TPH.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	**C28-C36**											
11												
12	**General Statistics**											
13	Total Number of Observations					15	Number of Distinct Observations					9
14	Number of Detects					8	Number of Non-Detects					7
15	Number of Distinct Detects					8	Number of Distinct Non-Detects					1
16	Minimum Detect					14	Minimum Non-Detect					10
17	Maximum Detect					45	Maximum Non-Detect					10
18	Variance Detects					142.3	Percent Non-Detects					46.67%
19	Mean Detects					25.63	SD Detects					11.93
20	Median Detects					20.5	CV Detects					0.465
21	Skewness Detects					0.701	Kurtosis Detects					-1.33
22	Mean of Logged Detects					3.152	SD of Logged Detects					0.453
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic					0.865	**Shapiro Wilk GOF Test**					
26	5% Shapiro Wilk Critical Value					0.818	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.244	**Lilliefors GOF Test**					
28	5% Lilliefors Critical Value					0.313	Detected Data appear Normal at 5% Significance Level					
29	**Detected Data appear Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	Mean					18.33	Standard Error of Mean					3.113
33	SD					11.28	95% KM (BCA) UCL					23.2
34	95% KM (t) UCL					23.82	95% KM (Percentile Bootstrap) UCL					23.27
35	95% KM (z) UCL					23.45	95% KM Bootstrap t UCL					25.87
36	90% KM Chebyshev UCL					27.67	95% KM Chebyshev UCL					31.9
37	97.5% KM Chebyshev UCL					37.77	99% KM Chebyshev UCL					49.3
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic					0.49	**Anderson-Darling GOF Test**					
41	5% A-D Critical Value					0.719	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.208	**Kolmogrov-Smirnoff GOF**					
43	5% K-S Critical Value					0.295	Detected data appear Gamma Distributed at 5% Significance Level					
44	**Detected data appear Gamma Distributed at 5% Significance Level**											
45												
46	**Gamma Statistics on Detected Data Only**											
47	k hat (MLE)					5.617	k star (bias corrected MLE)					3.594
48	Theta hat (MLE)					4.562	Theta star (bias corrected MLE)					7.13
49	nu hat (MLE)					89.88	nu star (bias corrected)					57.51
50	MLE Mean (bias corrected)					25.63	MLE Sd (bias corrected)					13.52

51												
52	**Gamma Kaplan-Meier (KM) Statistics**											
53					k hat (KM)	2.643			nu hat (KM)	79.3		
54					Approximate Chi Square Value (79.30, α)	59.78			Adjusted Chi Square Value (79.30, β)	57.7		
55					95% Gamma Approximate KM-UCL (use when n>=50)	24.32			95% Gamma Adjusted KM-UCL (use when n<50)	25.2		
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62					Minimum	0.01			Mean	14.49		
63					Maximum	45			Median	14		
64					SD	15.03			CV	1.037		
65					k hat (MLE)	0.342			k star (bias corrected MLE)	0.318		
66					Theta hat (MLE)	42.33			Theta star (bias corrected MLE)	45.53		
67					nu hat (MLE)	10.27			nu star (bias corrected)	9.55		
68					MLE Mean (bias corrected)	14.49			MLE Sd (bias corrected)	25.69		
69									Adjusted Level of Significance (β)	0.0324		
70					Approximate Chi Square Value (9.55, α)	3.662			Adjusted Chi Square Value (9.55, β)	3.226		
71					95% Gamma Approximate UCL (use when n>=50)	37.79			95% Gamma Adjusted UCL (use when n<50)	42.9		
72												
73	**Lognormal GOF Test on Detected Observations Only**											
74					Shapiro Wilk Test Statistic	0.897			**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.818			Detected Data appear Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.188			**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.313			Detected Data appear Lognormal at 5% Significance Level			
78	**Detected Data appear Lognormal at 5% Significance Level**											
79												
80	**Lognormal ROS Statistics Using Imputed Non-Detects**											
81					Mean in Original Scale	16.84			Mean in Log Scale	2.544		
82					SD in Original Scale	12.98			SD in Log Scale	0.792		
83					95% t UCL (assumes normality of ROS data)	22.74			95% Percentile Bootstrap UCL	22.46		
84					95% BCA Bootstrap UCL	23.55			95% Bootstrap t UCL	24.15		
85					95% H-UCL (Log ROS)	29.14						
86												
87	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
88					KM Mean (logged)	2.756			95% H-UCL (KM -Log)	24.21		
89					KM SD (logged)	0.525			95% Critical H Value (KM-Log)	2.095		
90					KM Standard Error of Mean (logged)	0.145						
91												
92	**DL/2 Statistics**											
93					**DL/2 Normal**				**DL/2 Log-Transformed**			
94					Mean in Original Scale	16			Mean in Log Scale	2.432		
95					SD in Original Scale	13.59			SD in Log Scale	0.858		
96					95% t UCL (Assumes normality)	22.18			95% H-Stat UCL	29.38		
97	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
98												
99	**Nonparametric Distribution Free UCL Statistics**											
100	**Detected Data appear Normal Distributed at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	**Suggested UCL to Use**											
103	95% KM (t) UCL					23.82	95% KM (Percentile Bootstrap) UCL					23.27
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											
107	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
108	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
109												

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation			12/22/2015 10:40:12 AM								
5	From File			TPH.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	**C36-C40**											
11												
12	**General Statistics**											
13	Total Number of Observations			15			Number of Distinct Observations			7		
14	Number of Detects			8			Number of Non-Detects			7		
15	Number of Distinct Detects			6			Number of Distinct Non-Detects			1		
16	Minimum Detect			15			Minimum Non-Detect			10		
17	Maximum Detect			45			Maximum Non-Detect			10		
18	Variance Detects			106			Percent Non-Detects			46.67%		
19	Mean Detects			22.38			SD Detects			10.29		
20	Median Detects			17			CV Detects			0.46		
21	Skewness Detects			1.827			Kurtosis Detects			3.37		
22	Mean of Logged Detects			3.035			SD of Logged Detects			0.387		
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic			0.744			**Shapiro Wilk GOF Test**					
26	5% Shapiro Wilk Critical Value			0.818			Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic			0.29			**Lilliefors GOF Test**					
28	5% Lilliefors Critical Value			0.313			Detected Data appear Normal at 5% Significance Level					
29	**Detected Data appear Approximate Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	Mean			16.6			Standard Error of Mean			2.583		
33	SD			9.358			95% KM (BCA) UCL			21		
34	95% KM (t) UCL			21.15			95% KM (Percentile Bootstrap) UCL			20.8		
35	95% KM (z) UCL			20.85			95% KM Bootstrap t UCL			23.88		
36	90% KM Chebyshev UCL			24.35			95% KM Chebyshev UCL			27.86		
37	97.5% KM Chebyshev UCL			32.73			99% KM Chebyshev UCL			42.3		
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic			0.81			**Anderson-Darling GOF Test**					
41	5% A-D Critical Value			0.717			Detected Data Not Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic			0.29			**Kolmogrov-Smirnoff GOF**					
43	5% K-S Critical Value			0.295			Detected data appear Gamma Distributed at 5% Significance Level					
44	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
45												
46	**Gamma Statistics on Detected Data Only**											
47	k hat (MLE)			6.979			k star (bias corrected MLE)			4.445		
48	Theta hat (MLE)			3.206			Theta star (bias corrected MLE)			5.033		
49	nu hat (MLE)			111.7			nu star (bias corrected)			71.13		
50	MLE Mean (bias corrected)			22.38			MLE Sd (bias corrected)			10.61		

51												
52	**Gamma Kaplan-Meier (KM) Statistics**											
53					k hat (KM)	3.147			nu hat (KM)	94.4		
54					Approximate Chi Square Value (94.40, α)	72.99			Adjusted Chi Square Value (94.40, β)	70.68		
55					95% Gamma Approximate KM-UCL (use when n>=50)	21.47			95% Gamma Adjusted KM-UCL (use when n<50)	22.17		
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62					Minimum	0.01			Mean	12.81		
63					Maximum	45			Median	15		
64					SD	12.96			CV	1.012		
65					k hat (MLE)	0.356			k star (bias corrected MLE)	0.329		
66					Theta hat (MLE)	36			Theta star (bias corrected MLE)	38.92		
67					nu hat (MLE)	10.68			nu star (bias corrected)	9.874		
68					MLE Mean (bias corrected)	12.81			MLE Sd (bias corrected)	22.33		
69									Adjusted Level of Significance (β)	0.0324		
70					Approximate Chi Square Value (9.87, α)	3.863			Adjusted Chi Square Value (9.87, β)	3.413		
71					95% Gamma Approximate UCL (use when n>=50)	32.74			95% Gamma Adjusted UCL (use when n<50)	37.07		
72												
73	**Lognormal GOF Test on Detected Observations Only**											
74					Shapiro Wilk Test Statistic	0.811			**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.818			Detected Data Not Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.27			**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.313			Detected Data appear Lognormal at 5% Significance Level			
78	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
79												
80	**Lognormal ROS Statistics Using Imputed Non-Detects**											
81					Mean in Original Scale	15.38			Mean in Log Scale	2.529		
82					SD in Original Scale	10.74			SD in Log Scale	0.661		
83					95% t UCL (assumes normality of ROS data)	20.26			95% Percentile Bootstrap UCL	19.95		
84					95% BCA Bootstrap UCL	21.82			95% Bootstrap t UCL	22.59		
85					95% H-UCL (Log ROS)	23.25						
86												
87	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
88					KM Mean (logged)	2.693			95% H-UCL (KM -Log)	20.86		
89					KM SD (logged)	0.451			95% Critical H Value (KM-Log)	2.017		
90					KM Standard Error of Mean (logged)	0.124						
91												
92	**DL/2 Statistics**											
93	**DL/2 Normal**								**DL/2 Log-Transformed**			
94					Mean in Original Scale	14.27			Mean in Log Scale	2.37		
95					SD in Original Scale	11.55			SD in Log Scale	0.785		
96					95% t UCL (Assumes normality)	19.52			95% H-Stat UCL	24.19		
97	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
98												
99	**Nonparametric Distribution Free UCL Statistics**											
100	**Detected Data appear Approximate Normal Distributed at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	**Suggested UCL to Use**											
103	95% KM (t) UCL					21.15	95% KM (Percentile Bootstrap) UCL					20.8
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											
107	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
108	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
109												

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	12/22/2015 10:33:29 AM
From File	Metals.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Cd

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
Number of Detects	5	Number of Non-Detects	1
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	1.8	Minimum Non-Detect	1
Maximum Detect	34	Maximum Non-Detect	1
Variance Detects	168.6	Percent Non-Detects	16.67%
Mean Detects	11.1	SD Detects	12.98
Median Detects	6.2	CV Detects	1.17
Skewness Detects	2.076	Kurtosis Detects	4.494
Mean of Logged Detects	1.948	SD of Logged Detects	1.048

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.706	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.406	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	9.417	Standard Error of Mean	5.134
SD	11.25	95% KM (BCA) UCL	19.32
95% KM (t) UCL	19.76	95% KM (Percentile Bootstrap) UCL	18.37
95% KM (z) UCL	17.86	95% KM Bootstrap t UCL	38.46
90% KM Chebyshev UCL	24.82	95% KM Chebyshev UCL	31.8
97.5% KM Chebyshev UCL	41.48	99% KM Chebyshev UCL	60.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.506	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.689	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.333	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.363	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

51	**Gamma Statistics on Detected Data Only**											
52					k hat (MLE)	1.23				k star (bias corrected MLE)		0.625
53					Theta hat (MLE)	9.023				Theta star (bias corrected MLE)		17.75
54					nu hat (MLE)	12.3				nu star (bias corrected)		6.254
55					MLE Mean (bias corrected)	11.1				MLE Sd (bias corrected)		14.04
56												
57	**Gamma Kaplan-Meier (KM) Statistics**											
58					k hat (KM)	0.701				nu hat (KM)		8.409
59					Approximate Chi Square Value (8.41, α)	2.974				Adjusted Chi Square Value (8.41, β)		1.937
60					95% Gamma Approximate KM-UCL (use when n>=50)	26.62				95% Gamma Adjusted KM-UCL (use when n<50)		40.88
61												
62	**Gamma ROS Statistics using Imputed Non-Detects**											
63	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
64	GROS may not be used when kstar of detected data is small such as < 0.1											
65	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
66	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
67					Minimum	0.01				Mean		9.252
68					Maximum	34				Median		6.05
69					SD	12.46				CV		1.347
70					k hat (MLE)	0.469				k star (bias corrected MLE)		0.345
71					Theta hat (MLE)	19.74				Theta star (bias corrected MLE)		26.78
72					nu hat (MLE)	5.625				nu star (bias corrected)		4.146
73					MLE Mean (bias corrected)	9.252				MLE Sd (bias corrected)		15.74
74										Adjusted Level of Significance (β)		0.0122
75					Approximate Chi Square Value (4.15, α)	0.78				Adjusted Chi Square Value (4.15, β)		0.386
76					95% Gamma Approximate UCL (use when n>=50)	49.16				95% Gamma Adjusted UCL (use when n<50)		99.3
77												
78	**Lognormal GOF Test on Detected Observations Only**											
79					Shapiro Wilk Test Statistic	0.923				**Shapiro Wilk GOF Test**		
80					5% Shapiro Wilk Critical Value	0.762				Detected Data appear Lognormal at 5% Significance Level		
81					Lilliefors Test Statistic	0.27				**Lilliefors GOF Test**		
82					5% Lilliefors Critical Value	0.396				Detected Data appear Lognormal at 5% Significance Level		
83	**Detected Data appear Lognormal at 5% Significance Level**											
84												
85	**Lognormal ROS Statistics Using Imputed Non-Detects**											
86					Mean in Original Scale	9.338				Mean in Log Scale		1.517
87					SD in Original Scale	12.39				SD in Log Scale		1.413
88					95% t UCL (assumes normality of ROS data)	19.53				95% Percentile Bootstrap UCL		18.37
89					95% BCA Bootstrap UCL	20.28				95% Bootstrap t UCL		36.62
90					95% H-UCL (Log ROS)	417.4						
91												
92	**UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed**											
93					KM Mean (logged)	1.624				95% H-UCL (KM -Log)		93.62
94					KM SD (logged)	1.122				95% Critical H Value (KM-Log)		4.555
95					KM Standard Error of Mean (logged)	0.512						
96												
97	**DL/2 Statistics**											
98	**DL/2 Normal**									**DL/2 Log-Transformed**		
99					Mean in Original Scale	9.333				Mean in Log Scale		1.508
100					SD in Original Scale	12.39				SD in Log Scale		1.429

	A	B	C	D	E	F	G	H	I	J	K	L
101	95% t UCL (Assumes normality)					19.53	95% H-Stat UCL					456
102	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
103												
104	**Nonparametric Distribution Free UCL Statistics**											
105	**Detected Data appear Gamma Distributed at 5% Significance Level**											
106												
107	**Suggested UCL to Use**											
108	95% KM (Chebyshev) UCL					31.8	95% GROS Adjusted Gamma UCL					99.3
109	95% Adjusted Gamma KM-UCL					40.88						
110	**Warning: Recommended UCL exceeds the maximum observation**											
111												
112	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
113	Recommendations are based upon data size, data distribution, and skewness.											
114	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
115	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
116												

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation	12/22/2015 10:35:01 AM										
5	From File	Metals.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	**Cr**											
12												
13	**General Statistics**											
14	Total Number of Observations	6					Number of Distinct Observations	6				
15							Number of Missing Observations	0				
16	Minimum	2.1					Mean	28.52				
17	Maximum	47					Median	32.5				
18	SD	18.31					Std. Error of Mean	7.475				
19	Coefficient of Variation	0.642					Skewness	-0.552				
20												
21	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
22	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
23	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
24	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
25												
26	**Normal GOF Test**											
27	Shapiro Wilk Test Statistic	0.912					**Shapiro Wilk GOF Test**					
28	5% Shapiro Wilk Critical Value	0.788					Data appear Normal at 5% Significance Level					
29	Lilliefors Test Statistic	0.198					**Lilliefors GOF Test**					
30	5% Lilliefors Critical Value	0.362					Data appear Normal at 5% Significance Level					
31	**Data appear Normal at 5% Significance Level**											
32												
33	**Assuming Normal Distribution**											
34	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
35	95% Student's-t UCL	43.58					95% Adjusted-CLT UCL (Chen-1995)	39.01				
36							95% Modified-t UCL (Johnson-1978)	43.3				
37												
38	**Gamma GOF Test**											
39	A-D Test Statistic	0.507					**Anderson-Darling Gamma GOF Test**					
40	5% A-D Critical Value	0.708					Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic	0.252					**Kolmogrov-Smirnoff Gamma GOF Test**					
42	5% K-S Critical Value	0.338					Detected data appear Gamma Distributed at 5% Significance Level					
43	**Detected data appear Gamma Distributed at 5% Significance Level**											
44												
45	**Gamma Statistics**											
46	k hat (MLE)	1.457					k star (bias corrected MLE)	0.839				
47	Theta hat (MLE)	19.58					Theta star (bias corrected MLE)	33.97				
48	nu hat (MLE)	17.48					nu star (bias corrected)	10.07				
49	MLE Mean (bias corrected)	28.52					MLE Sd (bias corrected)	31.12				
50							Approximate Chi Square Value (0.05)	3.988				

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					2.732
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					72.04	95% Adjusted Gamma UCL (use when n<50)					105.2
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.797	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.274	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					0.742	Mean of logged Data					2.97
65	Maximum of Logged Data					3.85	SD of logged Data					1.202
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					538.1	90% Chebyshev (MVUE) UCL					82.64
69	95% Chebyshev (MVUE) UCL					104.7	97.5% Chebyshev (MVUE) UCL					135.2
70	99% Chebyshev (MVUE) UCL					195.2						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					40.81	95% Jackknife UCL					43.58
77	95% Standard Bootstrap UCL					39.75	95% Bootstrap-t UCL					41.44
78	95% Hall's Bootstrap UCL					37.04	95% Percentile Bootstrap UCL					39.33
79	95% BCA Bootstrap UCL					38.17						
80	90% Chebyshev(Mean, Sd) UCL					50.94	95% Chebyshev(Mean, Sd) UCL					61.1
81	97.5% Chebyshev(Mean, Sd) UCL					75.2	99% Chebyshev(Mean, Sd) UCL					102.9
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					43.58						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation	12/22/2015 10:35:42 AM										
5	From File	Metals.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	**Cu**											
12												
13	**General Statistics**											
14	Total Number of Observations	6					Number of Distinct Observations	6				
15							Number of Missing Observations	0				
16	Minimum	5.5					Mean	20.42				
17	Maximum	30					Median	23.5				
18	SD	9.861					Std. Error of Mean	4.026				
19	Coefficient of Variation	0.483					Skewness	-0.724				
20												
21	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
22	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
23	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
24	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
25												
26	**Normal GOF Test**											
27	Shapiro Wilk Test Statistic	0.895					**Shapiro Wilk GOF Test**					
28	5% Shapiro Wilk Critical Value	0.788					Data appear Normal at 5% Significance Level					
29	Lilliefors Test Statistic	0.248					**Lilliefors GOF Test**					
30	5% Lilliefors Critical Value	0.362					Data appear Normal at 5% Significance Level					
31	**Data appear Normal at 5% Significance Level**											
32												
33	**Assuming Normal Distribution**											
34	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
35	95% Student's-t UCL	28.53					95% Adjusted-CLT UCL (Chen-1995)	25.77				
36							95% Modified-t UCL (Johnson-1978)	28.33				
37												
38	**Gamma GOF Test**											
39	A-D Test Statistic	0.487					**Anderson-Darling Gamma GOF Test**					
40	5% A-D Critical Value	0.701					Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic	0.266					**Kolmogrov-Smirnoff Gamma GOF Test**					
42	5% K-S Critical Value	0.334					Detected data appear Gamma Distributed at 5% Significance Level					
43	**Detected data appear Gamma Distributed at 5% Significance Level**											
44												
45	**Gamma Statistics**											
46	k hat (MLE)	3.554					k star (bias corrected MLE)	1.888				
47	Theta hat (MLE)	5.745					Theta star (bias corrected MLE)	10.81				
48	nu hat (MLE)	42.64					nu star (bias corrected)	22.66				
49	MLE Mean (bias corrected)	20.42					MLE Sd (bias corrected)	14.86				
50							Approximate Chi Square Value (0.05)	12.83				

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					10.27
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					36.05	95% Adjusted Gamma UCL (use when n<50)					45.06
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.835	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.242	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					1.705	Mean of logged Data					2.869
65	Maximum of Logged Data					3.401	SD of logged Data					0.663
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					54.51	90% Chebyshev (MVUE) UCL					38.12
69	95% Chebyshev (MVUE) UCL					45.84	97.5% Chebyshev (MVUE) UCL					56.55
70	99% Chebyshev (MVUE) UCL					77.6						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					27.04	95% Jackknife UCL					28.53
77	95% Standard Bootstrap UCL					26.44	95% Bootstrap-t UCL					27.29
78	95% Hall's Bootstrap UCL					25.11	95% Percentile Bootstrap UCL					26.5
79	95% BCA Bootstrap UCL					25.83						
80	90% Chebyshev(Mean, Sd) UCL					32.49	95% Chebyshev(Mean, Sd) UCL					37.96
81	97.5% Chebyshev(Mean, Sd) UCL					45.56	99% Chebyshev(Mean, Sd) UCL					60.47
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					28.53						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation	12/22/2015 10:36:23 AM										
5	From File	Metals.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	**Ni**											
12												
13	**General Statistics**											
14	Total Number of Observations	6					Number of Distinct Observations	6				
15							Number of Missing Observations	0				
16	Minimum	8.5					Mean	36.92				
17	Maximum	56					Median	46				
18	SD	20.03					Std. Error of Mean	8.178				
19	Coefficient of Variation	0.543					Skewness	-0.832				
20												
21	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
22	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
23	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
24	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
25												
26	**Normal GOF Test**											
27	Shapiro Wilk Test Statistic	0.834					**Shapiro Wilk GOF Test**					
28	5% Shapiro Wilk Critical Value	0.788					Data appear Normal at 5% Significance Level					
29	Lilliefors Test Statistic	0.286					**Lilliefors GOF Test**					
30	5% Lilliefors Critical Value	0.362					Data appear Normal at 5% Significance Level					
31	**Data appear Normal at 5% Significance Level**											
32												
33	**Assuming Normal Distribution**											
34	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
35	95% Student's-t UCL	53.39					95% Adjusted-CLT UCL (Chen-1995)	47.4				
36							95% Modified-t UCL (Johnson-1978)	52.93				
37												
38	**Gamma GOF Test**											
39	A-D Test Statistic	0.709					**Anderson-Darling Gamma GOF Test**					
40	5% A-D Critical Value	0.702					Data Not Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic	0.343					**Kolmogrov-Smirnoff Gamma GOF Test**					
42	5% K-S Critical Value	0.335					Data Not Gamma Distributed at 5% Significance Level					
43	**Data Not Gamma Distributed at 5% Significance Level**											
44												
45	**Gamma Statistics**											
46	k hat (MLE)	2.627					k star (bias corrected MLE)	1.425				
47	Theta hat (MLE)	14.05					Theta star (bias corrected MLE)	25.91				
48	nu hat (MLE)	31.52					nu star (bias corrected)	17.1				
49	MLE Mean (bias corrected)	36.92					MLE Sd (bias corrected)	30.93				
50							Approximate Chi Square Value (0.05)	8.74				

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					6.697
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					72.21	95% Adjusted Gamma UCL (use when n<50)					94.24
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.789	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.341	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					2.14	Mean of logged Data					3.406
65	Maximum of Logged Data					4.025	SD of logged Data					0.786
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					137.4	90% Chebyshev (MVUE) UCL					75.65
69	95% Chebyshev (MVUE) UCL					92.4	97.5% Chebyshev (MVUE) UCL					115.7
70	99% Chebyshev (MVUE) UCL					161.3						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					50.37	95% Jackknife UCL					53.39
77	95% Standard Bootstrap UCL					49.4	95% Bootstrap-t UCL					50.28
78	95% Hall's Bootstrap UCL					45.42	95% Percentile Bootstrap UCL					49.33
79	95% BCA Bootstrap UCL					47.17						
80	90% Chebyshev(Mean, Sd) UCL					61.45	95% Chebyshev(Mean, Sd) UCL					72.56
81	97.5% Chebyshev(Mean, Sd) UCL					87.99	99% Chebyshev(Mean, Sd) UCL					118.3
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					53.39						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

UCL Statistics for Data Sets with Non-Detects		
User Selected Options		
Date/Time of Computation	12/22/2015 10:37:06 AM	
From File	Metals.xls	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

V

General Statistics			
Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	12	Mean	43.5
Maximum	68	Median	47.5
SD	23.04	Std. Error of Mean	9.405
Coefficient of Variation	0.53	Skewness	-0.421

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test		
Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.362	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	62.45	95% Adjusted-CLT UCL (Chen-1995)	57.24
		95% Modified-t UCL (Johnson-1978)	62.18

Gamma GOF Test		
A-D Test Statistic	0.4	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.701	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.218	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.334	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics			
k hat (MLE)	3.141	k star (bias corrected MLE)	1.682
Theta hat (MLE)	13.85	Theta star (bias corrected MLE)	25.87
nu hat (MLE)	37.69	nu star (bias corrected)	20.18
MLE Mean (bias corrected)	43.5	MLE Sd (bias corrected)	33.54
		Approximate Chi Square Value (0.05)	10.98

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					8.642
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					79.92	95% Adjusted Gamma UCL (use when n<50)					101.6
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.872	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.242	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					2.485	Mean of logged Data					3.605
65	Maximum of Logged Data					4.22	SD of logged Data					0.696
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					125.3	90% Chebyshev (MVUE) UCL					82.75
69	95% Chebyshev (MVUE) UCL					99.95	97.5% Chebyshev (MVUE) UCL					123.8
70	99% Chebyshev (MVUE) UCL					170.7						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					58.97	95% Jackknife UCL					62.45
77	95% Standard Bootstrap UCL					57.89	95% Bootstrap-t UCL					60.12
78	95% Hall's Bootstrap UCL					53.93	95% Percentile Bootstrap UCL					57.17
79	95% BCA Bootstrap UCL					56.33						
80	90% Chebyshev(Mean, Sd) UCL					71.71	95% Chebyshev(Mean, Sd) UCL					84.49
81	97.5% Chebyshev(Mean, Sd) UCL					102.2	99% Chebyshev(Mean, Sd) UCL					137.1
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					62.45						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	12/22/2015 10:37:43 AM
From File	Metals.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Zn

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	16	Mean	51.67
Maximum	92	Median	55
SD	32.18	Std. Error of Mean	13.14
Coefficient of Variation	0.623	Skewness	-0.0317

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.891	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.226	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.362	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	78.14	95% Adjusted-CLT UCL (Chen-1995)	73.1
		95% Modified-t UCL (Johnson-1978)	78.11

Gamma GOF Test

A-D Test Statistic	0.472	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.703	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.269	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.466	k star (bias corrected MLE)	1.344
Theta hat (MLE)	20.95	Theta star (bias corrected MLE)	38.44
nu hat (MLE)	29.59	nu star (bias corrected)	16.13
MLE Mean (bias corrected)	51.67	MLE Sd (bias corrected)	44.57
		Approximate Chi Square Value (0.05)	8.053

51	Adjusted Level of Significance					0.0122	Adjusted Chi Square Value					6.108
52												
53	**Assuming Gamma Distribution**											
54	95% Approximate Gamma UCL (use when n>=50))					103.5	95% Adjusted Gamma UCL (use when n<50)					136.4
55												
56	**Lognormal GOF Test**											
57	Shapiro Wilk Test Statistic					0.852	**Shapiro Wilk Lognormal GOF Test**					
58	5% Shapiro Wilk Critical Value					0.788	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.255	**Lilliefors Lognormal GOF Test**					
60	5% Lilliefors Critical Value					0.362	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64	Minimum of Logged Data					2.773	Mean of logged Data					3.729
65	Maximum of Logged Data					4.522	SD of logged Data					0.772
66												
67	**Assuming Lognormal Distribution**											
68	95% H-UCL					180.8	90% Chebyshev (MVUE) UCL					102.6
69	95% Chebyshev (MVUE) UCL					125.1	97.5% Chebyshev (MVUE) UCL					156.4
70	99% Chebyshev (MVUE) UCL					217.8						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76	95% CLT UCL					73.28	95% Jackknife UCL					78.14
77	95% Standard Bootstrap UCL					70.93	95% Bootstrap-t UCL					80.95
78	95% Hall's Bootstrap UCL					67.07	95% Percentile Bootstrap UCL					71.17
79	95% BCA Bootstrap UCL					69.83						
80	90% Chebyshev(Mean, Sd) UCL					91.08	95% Chebyshev(Mean, Sd) UCL					108.9
81	97.5% Chebyshev(Mean, Sd) UCL					133.7	99% Chebyshev(Mean, Sd) UCL					182.4
82												
83	**Suggested UCL to Use**											
84	95% Student's-t UCL					78.14						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
92	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
93												

APPENDIX D

Boring Logs

DRILL/LITHOLOGIC LOG

HILLMANN CONSULTING

BORING/WELL NUMBER B7

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 15 Feet
SURFACE ELEVATION
DEPTH TO WATER 8 Feet
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5			2.4	B7-5		SM	Silty SAND; dark brown, very fine grained, loose, some concrete and brick debris, no odor.
10			<1	B7-10	5/7/10	CL	Silty CLAY; brown, low plasticity, 10% fine gravel, moist, no odor.
15			<1	B7-15	13/15/18	CL	Silty CLAY; dark brown, low plasticity, dense, moist, no odor. Set temporary casing to allow for groundwater accumulation. Groundwater accumulated at about 8 feet bgs. Collect groundwater sample, seal with bentonite to 5 feet. Install Soil Gas Probe SG1 at 5 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.
20							

DRILL/LITHOLOGIC LOG

HILLMANN CONSULTING

BORING/WELL NUMBER B8

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5			1.2	B8-5		SM	Silty SAND; dark brown, very fine grained, loose, 10% fine gravel, no odor.
10			<1	B8-10	8/13/18	ML	Sandy SILT; reddish gray, very fine to fine sand, low plasticity, dense, some clay, dry, no odor.
15			<1	B8-15	10/18/26	CL	Silty CLAY; brown, low plasticity, dense, some gray staining, moist, no odor. Sampler wet, no water accumulation.
20			<1	B8-20	10/24/35	CL	Silty CLAY; brown, low plasticity, very moist, no odor. Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 5 feet. Install Soil Gas Probe SG2 at 5 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

DRILL/LITHOLOGIC LOG

BORING/WELL NUMBER B9

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5			1.1	B9-5		SM	Silty SAND; brown, very fine grained, loose, 20% fine gravel, dry, no odor.
10			<1	B9-10	10/14/18	CL	Silty CLAY; brown, low plasticity, hard, no odor.
15			<1	B9-15	28/24/20	CL	Sandy CLAY; brown, low plasticity, dense, 25% fine to coarse gravel, dry, no odor.
20			<1	B9-20	50/50	SM	Silty SAND; brown, very fine to fine grained, 25% fine gravel, some clay, very hard, no odor. Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 10 feet. Install Soil Gas Probe SG3 at 10 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

DRILL/LITHOLOGIC LOG

HILLMANN CONSULTING

BORING/WELL NUMBER B10

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER 12 Feet
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5			<1	B10-5	18/20/29	SM	Silty SAND; brown, very fine grained, very hard, some fine gravel, dry, no odor.
10			<1	B10-10	50/50	SM	Silty SAND; brown, very fine grained, very hard, 20% fine gravel, dry, no odor.
15			<1	B10-15	17/22/32	SM	Silty SAND; brown, very fine grained, hard, some clay, dry, no odor.
20			<1	B10-20	50/50	ML	SILT; brown, low plasticity, 20% fine gravel, some sand, very hard, no odor. Set temporary casing to allow for groundwater accumulation. Groundwater accumulated at about 12 feet bgs. Collect groundwater sample, seal with bentonite to 5 feet. Install Soil Gas Probe SG4 at 5 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

HILLMANN CONSULTING

DRILL/LITHOLOGIC LOG

BORING/WELL NUMBER B11

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5							
10							Silty SAND Fill.
15			<1	B11-15	18/20/25	CL	Silty CLAY; light brown, low plasticity, hard, no odor.
20			<1	B11-20	15/22/25	ML	Clayey, Sandy, SILT; brown, low plasticity, very hard, no odor.
							Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 10 feet. Install Soil Gas Probe SG5 at 10 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

DRILL/LITHOLOGIC LOG

BORING/WELL NUMBER B12

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5							
6			2.4	B12-6		CL	Silty CLAY; dark gray, medium plasticity, very slight petroleum odor.
10			1.2	B12-10	15/21/30	CL	Gravelly CLAY; gray/brown, low plasticity, very fine to coarse gravel, no odor.
15			0.4	B12-15	12/14/18	CL	Gravelly CLAY; dark gray, low plasticity, very fine to coarse gravel, no odor. Very dense. Refusal at 17 feet – boulder.
20							Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 15 feet. Install Soil Gas Probe SG6 at 15 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

DRILL/LITHOLOGIC LOG

HILLMANN CONSULTING

BORING/WELL NUMBER B13

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 30 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5							
10							
15			<1	B13-15	10/15/26	CL	Gravelly, Silty CLAY; dark brown, low plasticity, 20% fine gravel, no odor.
20			<1	B13-20	15/28/21	SM	Silty SAND; greenish-gray, very fine to fine grained, 25% fine gravel, some clay, no odor.
25			<1	B13-25	17/25/45	CL	Silty CLAY; brown, low plasticity, very hard, moist, no odor.
30			<1	B13-30	18/36/50	CL	Silty CLAY; dark gray, low plasticity, semi-consolidated, dry, no odor. Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 10 feet. Install Soil Gas Probe SG7 at 10 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

HILLMANN CONSULTING

DRILL/LITHOLOGIC LOG

BORING/WELL NUMBER B14

PROJECT Commercial Property
OWNER
LOCATION 29508 Roadside Drive, Agoura Hills, CA
PROJECT NUMBER
DATE DRILLED June 11, 2015
TOTAL DEPTH OF HOLE 20 Feet
SURFACE ELEVATION
DEPTH TO WATER
SCREEN: DIA. **LENGTH** **SLOT SIZE**
CASING: DIA. **LENGTH** **TYPE**
DRILLING COMPANY Aztech Drilling
DRILL METHOD HSA
DRILLER Gilbert
LOG BY Dan Louks

DEPTH (FEET)	WELL CONST		PID (PPM)	SAMPLES		SOIL CLASS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
	PIPE	FILL		NUMBER	BLOW	(USCS)	
5							
10							Silty SAND Fill.
15			<1	B14-15	11/17/21	ML	Clayey, Sandy, SILT; brown, low plasticity, very hard, no odor.
20			<1	B14-20	12/20/35	CL	Silty CLAY; brown, low plasticity, some very fine sand, hard, no odor.
							Set temporary casing to allow for groundwater accumulation. No groundwater. Seal with bentonite to 10 feet. Install Soil Gas Probe SG8 at 10 feet bgs. Seal with bentonite. Sample soil gas on 6/15/15.

APPENDIX E

Johnson & Ettinger Model Results
Residential Scenario

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **1,2,4-Trimethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.22E+03	6.2E-05	7.6E-02	NA	1.0E-02	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
95636	8.10E+00	1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **1,3,5-Trimethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.10E+03	6.0E-05	6.5E-02	NA	1.8E-03	NA	NA

MESSAGE: Risk and/or HQ (or risk-based groundwater concentration) is based on route-to-route extrapolation.
MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
108678	5.10E+00	1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **Benzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.57E+03	8.9E-05	1.4E-01	1.4E-06	4.5E-02	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
71432	9.80E+00	**Benzene**

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **Ethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.28E+03	6.8E-05	8.7E-02	7.7E-08	8.3E-05	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
100414	6.20E+00	Ethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **m-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
8.26E+03	6.8E-05	5.6E-01	NA	5.4E-03	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
108383	4.40E+01	m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **o-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
2.42E+03	7.1E-05	1.7E-01	NA	1.7E-03	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
95476	1.80E+01	o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **p-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
7.94E+03	6.8E-05	5.4E-01	NA	5.2E-03	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
106423	4.40E+01	p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Residential**
Chemical: **Toluene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.04E+04	4.0E-04	4.2E+00	NA	1.3E-02	NA	NA

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
108883	5.70E+01	Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	S	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	1.0E-06	1	70	26	26	350	24	0.5
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

APPENDIX F

Johnson & Ettinger Model Results
Commercial Scenario

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **1,2,4-Trimethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.22E+03	3.1E-05	3.8E-02	NA	1.2E-03	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
95636	8.10E+00	1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **1,3,5-Trimethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES: X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
108678	5.10E+00	1,3,5-Trimethylbenzene

Results Summary

Soil Gas Conc. (C_{source}) (µg/m³)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) (µg/m³)	Cancer Risk	Noncancer Hazard	Risk-Based Groundwater Concentration: Cancer Risk = 10^{-6} (µg/L)	Risk-Based Groundwater Concentration: Noncancer HQ = 1 (µg/L)
1.10E+03	3.0E-05	3.3E-02	NA	2.1E-04	NA	NA

MESSAGE: Risk and/or HQ (or risk-based groundwater concentration) is based on route-to-route extrapolation.
MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **Benzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.57E+03	4.5E-05	7.0E-02	1.7E-07	5.3E-03	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
71432	9.80E+00	**Benzene**

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **Ethylbenzene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.28E+03	3.4E-05	4.3E-02	8.8E-09	9.9E-06	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
100414	6.20E+00	Ethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **m-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
8.26E+03	3.4E-05	2.8E-01	NA	6.4E-04	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
108383	4.40E+01	m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
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Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **o-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
2.42E+03	3.6E-05	8.6E-02	NA	2.0E-04	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
95476	1.80E+01	o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

DTSC Modification
December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **p-Xylene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
7.94E+03	3.4E-05	2.7E-01	NA	6.2E-04	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
106423	4.40E+01	p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END

USEPA GW-SCREEN
Version 3.0, 04/2003

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December 2014

Reset to Defaults

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Groundwater

DATA ENTRY SHEET

Scenario: **Commercial**
Chemical: **Toluene**

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

Results Summary					Risk-Based Groundwater Concentration	
Soil Gas Conc. (C_{source}) ($\mu g/m^3$)	Attenuation Factor (alpha) (unitless)	Indoor Air Conc. ($C_{building}$) ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard	Cancer Risk = 10^{-6} ($\mu g/L$)	Noncancer HQ = 1 ($\mu g/L$)
1.04E+04	3.9E-05	4.0E-01	NA	3.1E-04	NA	NA

MESSAGE: Attenuation factor < 6E-05 is unreasonably low.

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W ($\mu g/L$)	Chemical
108883	5.70E+01	Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
15	244	SL	17	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SL			SL	1.62	0.387	0.103

MORE ↓

Lookup Receptor Parameters

	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	1.0E-06	1	70	25	25	250	8	1
	Used to calculate risk-based groundwater concentration.						(NEW)	(NEW)

END