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February 11, 2010

Indiana Department of Environmental Management
Voluntary Remediation Program
100 N. Senate Avenue
MC 66-30V IGCN N1101
Indianapolis, IN 46204-2251

Attention: Loan Pham, Project Manager

Subject: **Off-Property Vapor Intrusion Evaluation – Soil Investigation Report**
Honeywell Industrial Complex, South Bend, Indiana
IDEM Site Number: 6980601

Dear Ms. Pham:

MACTEC Engineering and Consulting, Inc. (MACTEC), on behalf of Honeywell International, Inc. (Honeywell), is submitting the above-referenced report for your review. Per your request, we have enclosed two (2) hard copies and one electronic copy on CD.

If you have any immediate questions or concerns, please call Steve Murray at 231 922-9050. We look forward to discussing this project with you during the annual update meeting next month.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Steven D. Murray, CPG
Principal Project Manager

Craig Kelly for w/permission
Jay Peters
Principal Project Scientist

Enclosure

cc: Chuck Geadelmann, Honeywell International
Eric Kloss, Honeywell Aerospace
Marc Nelson, St. Joseph County Health Department

MACTEC

MACTEC Engineering and Consulting, Inc.

MEMORANDUM

DATE:	**February 10, 2010**
FROM:	Jay Peters (MACTEC Engineering and Consulting, Inc.)
SUBJECT:	**Off-Property Vapor Intrusion Evaluation – Soil Gas Investigation South Bend, Indiana**
PROJECT #:	33100800028
TO:	Ms. Loan Pham – Indiana Department of Environmental Management
COPY TO:	Chuck Geadelmann (Honeywell International); Craig Kielty, Steve Murray (MACTEC)

INTRODUCTION

Historically, low levels of chlorinated solvents have been detected in shallow groundwater northeast of the Honeywell Complex in South Bend, Indiana. This off-property area is occupied by residential homes and a park (Figure 1). Soils in the off-property residential and park area are not contaminated because releases of chemicals occurred only inside Honeywell's property boundary. The groundwater in this area is 14 to 15 feet below ground surface and is not used as drinking water. The shallow groundwater is too deep to permit direct contact exposures (e.g., via digging into the ground), but is shallow enough to be a potential source of vapors to indoor air. Therefore, persons in the residential area have no contact with contaminated groundwater, but could potentially be exposed to vapors that may migrate from the groundwater to soil gas in the unsaturated zone, which in turn may migrate to indoor air within the residential homes (vapor intrusion [VI]).

To evaluate the potential completeness of the VI exposure pathway, MACTEC Engineering and Consulting, Inc. (MACTEC) performed a soil gas investigation. This memorandum provides the methodology and results of the soil gas investigation, as well as an evaluation of the VI pathway in the off-property residential area.

PURPOSE OF SOIL GAS INVESTIGATION

The Indiana Department of Environmental Management (IDEM) has published Draft Vapor Intrusion Guidance (IDEM Draft Vapor Intrusion Pilot Program Guidance – April 26, 2006) which identifies a technical approach that may be used to evaluate the potential completeness and significance of the VI migration and exposure pathway. For chlorinated VOC groundwater plumes, the IDEM guidance document (IDEM VI guidance) specifies a step-wise approach that consists of first determining if chlorinated VOCs are detected in soil or groundwater within 100 feet of an occupied residence at concentrations greater than the soil and groundwater screening levels presented in the IDEM guidance document. If VOCs are detected at concentrations greater than VI screening levels, then the guidance recommends collection of soil gas samples and

evaluation of the soil gas data using soil gas screening levels presented in the IDEM VI guidance. Soil gas may be collected as sub-slab soil gas, near slab soil gas, or open field soil gas, with preference for sub-slab soil gas samples.

Evaluation of groundwater data for samples collected from monitoring wells located on the Honeywell property indicated that chlorinated VOCs have been detected in ten groundwater monitoring wells at concentrations greater than the groundwater VI screening levels presented in Appendix VIII, Table 5 of the IDEM VI guidance (Attachment A). Figure 1 shows the monitoring well locations and groundwater flow directions. None of the monitoring wells, however, are located within 100 feet of an occupied residence, and the majority of the monitoring wells are not located in the residential area. Only wells S-14, S-15, and S-9 are located in proximity to the residential area (to the west and east) and contain chlorinated VOCs (1,2-dichloroethane, trichloroethene, and/or vinyl chloride) at concentrations greater than the screening values. Groundwater flow from these wells is generally to the west and south, toward groundwater extraction wells that are operated at the facility, and not toward the residential area. Notably, monitoring wells located to the east of the residential area do not contain VOCs at concentrations greater than the screening values.

Based on this information, the possibility that VOCs may be present at concentrations greater than VI screening levels in groundwater in the vicinity of the residential properties (i.e., within 100 feet of occupied buildings) could not be ruled out. Consequently, Honeywell performed a soil gas investigation to further evaluate the VI pathway.

SOIL GAS INVESTIGATION METHODS AND RESULTS

Sample Point Installation:

Per Appendix II of the IDEM VI guidance, MACTEC installed sampling points on September 29, 2009 at 5 ft below ground surface (bgs) to correspond with the approximate depth of basement floors/slabs and at 10 ft bgs to allow sample collection approximately five feet above the water table. All sampling ports were installed through the asphalt parking lot on Honeywell property. Sampling locations are identified as SV-1 through SV-9 and are shown on Figure 2. Sample points were installed in a 4" diameter borehole created by a Geoprobe direct push tool. During the installation process, soil samples were collected from several locations to evaluate moisture and grain size. Each sample point was constructed of a 6" stainless steel screen connected to a 1/8" diameter polyethylene tubing extending to 2 feet above the ground surface and fitted with a gas tight nylon valve. Each sample point was backfilled with 1 foot of #5 filter sand to create the sand pack around the screen and then completed with hydrated bentonite chips to approximately 6 inches below surface. Purging of the sand pack and tubing was completed immediately following the installation. Sand pack and tubing volume was calculated (using 30% porosity for the sand pack) for each sample point. Three volumes of air were removed using a 60 mL graduated syringe. Purge volumes for each sample point were recorded in the field notes.

Sample Collection:

Soil gas samples were collected on October 2, 2009. Prior to sample collection, three times the tubing and screen volume was removed using a 60 mL graduated syringe and was simultaneously checked for moisture. Sample collection was completed using 1-liter Summa canisters attached to the nylon valve via 1 foot of polyethylene tubing. Flow to the Summa canisters was controlled by a regulator dedicated to each summa canister. The regulators were pre-set by the laboratory (Test America, Inc.) at a rate of 100 mL per minute.

Samples were collected from 16 of the 18 sample points and sent to Test America North Canton for analysis. Both the shallow and deep sampling intervals at location SV-3 were unable to be sampled due to water encountered during the purging process. Water present at SV-3 was likely due to heavy rain in the area in the days prior to the sample collection activities with SV-3 location in a low spot in the parking lot. Each sample port was left in place following the sampling activities with the possibility of future soil gas sampling occurring at each location. The valves were sealed and covered with pea stone to protect them from pedestrian and vehicle traffic.

Sample Analysis and Results:

Soil gas samples were analyzed by Method EPA TO-15. The analytical data for soil gas samples and geotechnical samples are presented in Attachment B. The soil gas sampling data are presented on Table 1. Twelve VOCs were detected in the soil gas samples, including seven chlorinated VOCs and five non-chlorinated (i.e., petroleum-related) VOCs. Among the chlorinated VOCs that were detected in groundwater at concentrations greater than groundwater VI screening levels, three were detected in soil gas:

- Trichloroethene was detected in shallow and deep soil gas samples at locations SV-4 through SV-8;
- 1,2-Dichloroethane was detected in the shallow and deep soil gas samples at location SV-7; and
- Vinyl chloride was not detected in any of the soil gas samples.

Several VOCs were detected in one or more soil gas samples, but were not detected in any of the groundwater samples during any of the rounds of groundwater sampling. These include: dichlorofluormethane, trichlorofluoromethane, methylene chloride, and tetrachloroethene. Notable, tetrachloroethene was detected at low and fairly consistent concentrations in all soil gas samples. Because this VOC was not detected in groundwater, it is possible that the tetrachloroethene detected in the soil gas samples is attributable to the canisters that were provided by the laboratory (e.g., residual contamination from previous sampling at another site). Other VOCs such as chlorofluoromethanes and methylene chloride may be an artifact of laboratory contamination.

VAPOR INTRUSION EVALUATION

The objective of the vapor intrusion evaluation is to determine if there may be a potential concern about vapor intrusion into occupied residences at the off-property area between the property boundary and the park. As discussed above, the concentrations of chlorinated VOCs detected in groundwater monitoring wells in the vicinity of the residential area exceed vapor intrusion screening values presented in the IDEM VI guidance. Therefore, in accordance with the IDEM VI guidance, a soil gas investigation was performed.

In recognition that soil gas is the conduit from which vapors may migrate from groundwater to indoor air (i.e., it is the direct vapor source medium for indoor air), soil gas provides a more reliable method of evaluating vapor intrusion. Whereas groundwater data provides an indication of the VOCs that could hypothetically partition to soil gas and migrate to indoor air, soil gas data provides a direct measure of the VOCs that actually did partition from groundwater and could migrate to indoor air.

Soil gas samples were collected from locations beneath a large paved parking lot that is adjacent to the residential area. Soil gas sampling locations SV-5 and SV-6, where the majority of detected VOCs were identified, are each located approximately 100 feet from occupied residences. Soil gas samples collected from the Honeywell property should provide a conservative assessment of potential soil gas concentrations that may exist beneath basement floors in the residential area for the following reasons:

- A review of the groundwater data indicated that the highest VOC concentrations in groundwater in the vicinity of the residential area would be to the west and south of the residential area, on Honeywell property.

- Groundwater VOC concentrations beneath the residential area would be expected to exhibit a concentration gradient that increases to the west and south of the area; it does not appear than any localized 'hot spots' of VOC contamination in groundwater exist within the residential area.

- The areas of the Honeywell property where soil gas sampling occurred are paved. The pavement limits soil gas migration from the subsurface to the ambient air, and therefore limits dilution of VOC concentrations in soil gas, much like the conditions that might be encountered beneath a basement floor slab.

Table 2 provides a comparison of the soil gas sampling results to soil gas screening levels presented in Appendix VIII, Table 7 of the IDEM VI guidance. As indicated in Table 2, with the exception of one detection of trichloroethene, none of the VOCs were detected at concentrations in excess of the IDEM soil gas screening levels. The detection of trichloroethene (35 ppbv) in the deep (10 ft bgs) soil gas sample at location SV-6 slightly exceeds the IDEM soil gas screening level of 22 ppbv. Location SV-6 is approximately 100 feet to the west of an occupied residence,

and as a result, closer in proximity to higher VOC concentrations in groundwater relative to those observed in the neighborhood and Kennedy Park area. Soil gas locations SV-5 and SV-7, located on either side of SV-6, had considerably lower TCE concentrations detected in soil gas.

The soil gas screening levels presented in the IDEM VI guidance were derived by multiplying the risk-based indoor air level that is protective for chronic 30-year residential exposures at a cancer risk of 1 in 100,000 or a non-cancer hazard index of 1 by a soil gas to indoor air attenuation factor of 100. However, site-specific geological and hydrogeological conditions can result in substantially different soil gas to indoor air attenuation factors. Therefore, a site-specific attenuation factor was calculated (see Attachment C) and site-specific soil gas screening levels were derived. The methodology used to derive the site-specific attenuation factors are as follows:

1) The Johnson and Ettinger (J&E) Advanced Soil Gas Model (USEPA, 2004) was used. The model provides estimates of indoor air concentrations that could result from vapor intrusion of soil gas under the assumption that a building with a basement is located directly over the soil gas source.

2) Site-specific soil properties data were collected for grain size and moisture content. Grain size was consistent among the 4 samples submitted (from locations SV-5 and SV-6), indicating primarily fine sand and a mean particle size of between 250 and 400 microns. This grain size corresponds to three soil types within the J&E model: sandy clay, sandy loam, and loamy sand. Soil moisture averaged 4.2%.

3) The model was run using the site-specific moisture content and soil type sandy loam. In addition, the model was run using soil type sand to provide a conservative upper-bound on attenuation factors. Attenuation factors (calculated by dividing the infinite source building concentration calculated in the model by the source soil gas concentration used as the model input) were 2E-04 for sandy loam and 2E-03 for sand. The IDEM soil gas screening levels were then re-calculated to reflect these attenuation coefficients by multiplying the default soil gas screening level by the ratio of default attenuation factor (1E-02) to the site-specific attenuation factor (2E-03 or 2E-04).

Table 3 presents a comparison of soil gas concentrations to soil gas screening levels that are based on the site-specific attenuation factors. As indicated in Table 3, no VOCs were detected in soil gas at concentrations greater than the site-specific soil gas screening levels. Table 3 also provides excess lifetime cancer risk and hazard index values that are associated with hypothetical exposure to the maximum detected soil gas concentrations under the assumption that soil gas migrates to air within a residence under the site-specific attenuation factors calculated in this evaluation. The cumulative excess lifetime cancer risk is $6x10^{-6}$ and the cumulative hazard index is 0.02 using the high-end site-specific attenuation factor of 2E-03. Under the more realistic site-specific attenuation factor of 2E-04, the cumulative excess lifetime cancer risk would be $6x10^{-7}$. These risks are below the IDEM cumulative risk limits of $1x10^{-5}$ and a hazard index of 1. These cumulative risks include risk contribution from tetrachloroethene and methylene chloride, both of

which were likely reported in soil gas as a result of laboratory contamination. The cancer risk associated with TCE alone is only $3x10^{-6}$.

In conclusion, the results of the soil gas investigation suggest that the VI exposure pathway at the off-property residential area is insignificant and does not warrant further investigation. This is evidenced by:

- Results from soil gas samples that were collected from beneath a large paved parking area that overlies higher groundwater VOC concentrations than the off-property residential area. Soil gas concentrations from samples collected from this area would conservatively represent the soil gas concentrations beneath basement floors in the residential area. The results of the soil gas sampling showed VOC concentrations generally below IDEM default soil gas screening levels, with only one detection in deep soil gas at a concentration slightly above the IDEM screening level. Results from the shallower sample at this location were below the IDEM screening level.

- Evaluation of site-specific soil gas to indoor air attenuation, which indicates that all detected soil gas concentrations are well below levels that would pose a potentially significant vapor intrusion exposure pathway. Cumulative excess lifetime cancer risks and non-cancer hazard index values associated with vapor intrusion from soil gas, under site-specific attenuation conditions, are below IDEM cumulative risk limits.

Table 1
Analytical Summary - Soil Vapor Intrusion Study
Honeywell - South Bend

Sample Location		SV-1s 10 09	SV-1d 10 09	SV-2s 10 09	SV-2d 10 09	SV-4s 10 09	SV-4d 10 09	SV-5s 10 09	SV-5d 10 09	SV-6s 10 09	SV-6d 10 09	SV-7s 10 09	SV-7d 10 09	SV-8s 10 09	SV-8d 10 09	SV-9s 10 09	SV-9d 10 09
Constituent	**Unit**	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09
Dichlorodifluoromethane	ppb (v/v)	<2.0	<2.0	**2.7**	**3.7**	<2.0	<1.8	<2.0	<2.0	**4.8**	**3.5**	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
Trichlorofluoromethane	ppb (v/v)	<2.0	<2.0	**2.9**	**3.6**	<2.0	<1.8	<2.0	<2.0	**4.4**	**15**	**2.3**	**3.0**	<1.8	<2.0	<2.0	<2.0
Methylene Chloride	ppb (v/v)	<5.0	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<4.5	<5.0	<5.0	**54**
1,1,1-Trichloroethane	ppb (v/v)	<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	**19**	**44**	**53**	**74**	**27**	**44**	**2.0**	<2.0	<2.0	<2.0
Benzene	ppb (v/v)	<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
1,2-Dichloroethane	ppb (v/v)	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	**3.0**	**4.5**	<1.8	<2.0	<2.0	<2.0
Trichloroethene	ppb (v/v)	<2.0	<2.0	<2.0	<2.0	**2.7**	**4.3**	**4.6**	**18**	**15**	**35**	**6.4**	**18**	**4.9**	**3.6**	<2.0	<2.0
Toluene	ppb (v/v)	**4.9**	**7.3**	**4.1**	**10**	<2.0	**13**	**2.5**	**4.3**	**6.1**	**5.1**	<1.8	<2.0	**2.1**	<2.0	**2.8**	**5.4**
Tetrachloroethene	ppb (v/v)	**5.3**	**5.8**	**2.2**	**2.5**	**43**	**37**	**31**	**36**	**28**	**17**	**3.7**	**3.6**	**12**	**5.1**	<2.0	<2.0
Ethylbenzene	ppb (v/v)	<2.0	**2.1**	<2.0	**2.3**	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
m-Xylene & p-Xylene	ppb (v/v)	**5.0**	**8.2**	**4.3**	**8.2**	<2.0	**3.2**	<2.0	**2.0**	**2.3**	**2.7**	<1.8	<2.0	**2.5**	<2.0	**2.4**	**2.7**
1,2,4-Trimethylbenzene	µg/L	<2.0	**2.6**	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0

BOLD = detected constituent
ppb = parts per billion

Table 2
Comparison of Soil Vapor Data to IDEM Default Soil Gas Screening Levels
Honeywell - South Bend

Sample Location				SV-1s 10 09	SV-1d 10 09	SV-2s 10 09	SV-2d 10 09	SV-4s 10 09	SV-4d 10 09	SV-5s 10 09	SV-5d 10 09	SV-6s 10 09	SV-6d 10 09	SV-7s 10 09	SV-7d 10 09	SV-8s 10 09	SV-8d 10 09	SV-9s 10 09	SV-9d 10 09
Constituent	**Unit**	**IDEM Residential Prompt Action Level**	**IDEM Residential Chronic Range (30-yr)**	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09
Dichlorodifluoromethane	ppb (v/v)		NA	<2.0	<2.0	**2.7**	**3.7**	<2.0	<1.8	<2.0	<2.0	**4.8**	**3.5**	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
Trichlorofluoromethane	ppb (v/v)		NA	<2.0	<2.0	**2.9**	**3.6**	<2.0	<1.8	<2.0	<2.0	**4.4**	**15**	**2.3**	**3.0**	<1.8	<2.0	<2.0	<2.0
Methylene Chloride	ppb (v/v)		*1,200*	<5.0	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<4.5	<5.0	<5.0	**54**
1,1,1-Trichloroethane	ppb (v/v)		*42,000*	<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	**19**	**44**	**53**	**74**	**27**	**44**	**2.0**	<2.0	<2.0	<2.0
Benzene	ppb (v/v)	440	78	<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
1,2-Dichloroethane	ppb (v/v)	300	18	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	**3.0**	**4.5**	<1.8	<2.0	<2.0	<2.0
Trichloroethene	ppb (v/v)	370	22	<2.0	<2.0	<2.0	<2.0	**2.7**	**4.3**	**4.6**	**18**	**15**	**35**	**6.4**	**18**	**4.9**	**3.6**	<2.0	<2.0
Toluene	ppb (v/v)		*140,000*	**4.9**	**7.3**	**4.1**	**10**	<2.0	**13**	**2.5**	**4.3**	**6.1**	**5.1**	<1.8	<2.0	**2.1**	<2.0	**2.8**	**5.4**
Tetrachloroethene	ppb (v/v)	770	47	**5.3**	**5.8**	**2.2**	**2.5**	**43**	**37**	**31**	**36**	**28**	**17**	**3.7**	**3.6**	**12**	**5.1**	<2.0	<2.0
Ethylbenzene	ppb (v/v)		*24,000*	<2.0	**2.1**	<2.0	**2.3**	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
m-Xylene & p-Xylene	ppb (v/v)		*2,400*	**5.0**	**8.2**	**4.3**	**8.2**	<2.0	**3.2**	<2.0	**2.0**	**2.3**	**2.7**	<1.8	<2.0	**2.5**	<2.0	**2.4**	**2.7**
1,2,4-Trimethylbenzene	µg/L		*130*	<2.0	**2.6**	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0

= reported constituent concentration exceeds IDEM screening value
BOLD = detected constituent
ppb = parts per billion
= IDEM publishes a soil gas screening level for this compound. For all other compounds, IDEM does not publish a screening value; therefore, per IDEM guidance, the value presented is the indoor air screening level multiplied by a factor of 100.
NA = Not Available

Table 3
Comparison of Soil Gas Data to Site-Specific Soil Gas Screening Levels and Evaluation of Cumulative Risk
Honeywell - South Bend

		Soil Gas Screening Level - Residential Chronic 30-yr			Cumulative Risk [b]		SV-1s 10 09	SV-1d 10 09	SV-2s 10 09	SV-2d 10 09	SV-4s 10 09	SV-4d 10 09	SV-5s 10 09	SV-5d 10 09	SV-6s 10 09	SV-6d 10 09	SV-7s 10 09	SV-7d 10 09	SV-8s 10 09	SV-8d 10 09	SV-9s 10 09	SV-9d 10 09
Constituent	**Unit**	**IDEM Default**	**Site-Specifc Attenuation Factor = 2E-04 [a]**	**Site-Specifc Attenuation Factor = 2E-03 [a]**	**Cancer Risk**	**Hazard Index**	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09	10/2/09
Dichlorodifluoromethane	ppb (v/v)	NA					<2.0	<2.0	**2.7**	**3.7**	<2.0	<1.8	<2.0	<2.0	**4.8**	**3.5**	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
Trichlorofluoromethane	ppb (v/v)	NA					<2.0	<2.0	**2.9**	**3.6**	<2.0	<1.8	<2.0	<2.0	**4.4**	**15**	**2.3**	**3.0**	<1.8	<2.0	<2.0	<2.0
Methylene Chloride	ppb (v/v)	*1,200*	*63,158*	*6,316*	*9.E-08*		<5.0	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<5.0	<5.0	<5.0	<4.5	<5.0	<4.5	<5.0	<5.0	**54**
1,1,1-Trichloroethane	ppb (v/v)	*42,000*	*2,210,526*	*221,053*		*0.0003*	<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	**19**	**44**	**53**	**74**	**27**	**44**	**2.0**	<2.0	<2.0	<2.0
Benzene	ppb (v/v)	78			2.E-07		<2.0	<2.0	<2.0	<2.0	<2.0	**1.9**	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
1,2-Dichloroethane	ppb (v/v)	18	947	95	5.E-07		<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	**3.0**	**4.5**	<1.8	<2.0	<2.0	<2.0
Trichloroethene	ppb (v/v)	22	1,158	116	3.E-06		<2.0	<2.0	<2.0	<2.0	**2.7**	**4.3**	**4.6**	**18**	**15**	**35**	**6.4**	**18**	**4.9**	**3.6**	<2.0	<2.0
Toluene	ppb (v/v)	*140,000*				*0.00009*	**4.9**	**7.3**	**4.1**	**10**	<2.0	**13**	**2.5**	**4.3**	**6.1**	**5.1**	<1.8	<2.0	**2.1**	<2.0	**2.8**	**5.4**
Tetrachloroethene	ppb (v/v)	47	2,474	247	2.E-06		**5.3**	**5.8**	**2.2**	**2.5**	**43**	**37**	**31**	**36**	**28**	**17**	**3.7**	**3.6**	**12**	**5.1**	<2.0	<2.0
Ethylbenzene	ppb (v/v)	*24,000*				*0.0001*	<2.0	**2.1**	<2.0	**2.3**	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
m-Xylene & p-Xylene	ppb (v/v)	*2,400*				*0.003*	**5.0**	**8.2**	**4.3**	**8.2**	<2.0	**3.2**	<2.0	**2.0**	**2.3**	**2.7**	<1.8	<2.0	**2.5**	<2.0	**2.4**	**2.7**
1,2,4-Trimethylbenzene	µg/L	*130*				*0.02*	<2.0	**2.6**	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0	<1.8	<2.0	<2.0	<2.0
				Total [c]	**6.E-06**	**0.02**																

[a] = For chlorinated VOCs: Calculated by mutliplyting the IDEM Default soil gas screening level (presented in Table 7 of the IDEM VI Guidance) by a the ratio of default attenuation factor (0.01) to site-specific attenuation factor. For non-chlorinated VOCs: Calcualted using IDEM default soil gas screening level. Site-specific attenuation factor calculated using Johnson-Ettinger Model (Attachment C).

[b] = Cancer risk calculated using maximum detected soil gas concentration and soil gas screening level based on attenuation factor of 2E-03. Cancer risk = 1E-05 x Max Conc / Soil Gas screening level
Hazard Index calculated using maximum detected soil gas concentration and soil gas screening level based on attenuation factor of 2E-03. Hazard Index = Max Conc / Soil Gas screening level

[c] = Sum of cancer risks and hazard index values for all chemicals.

BOLD = detected constituent

ppb = parts per billion

VAPOR INTRUSION STUDY AREA

N

S5
699.83
Shallow Monitoring Well Location
Groundwater Elevation Measured on August 18, 2009

I1
Intermediate Monitoring Well

RVB16
696.61
Groundwater Extraction Well Location
Groundwater Elevation Measured on August 18, 2009

698
Groundwater Potentiometric Contour, feet above Mean Sea Level

Groundwater Flow Direction

Note: EW-5 off-line for servicing

SCALE (FT)
600 0 300 600

DESIGNED BY		
DRAWN BY		
CHKD. BY		

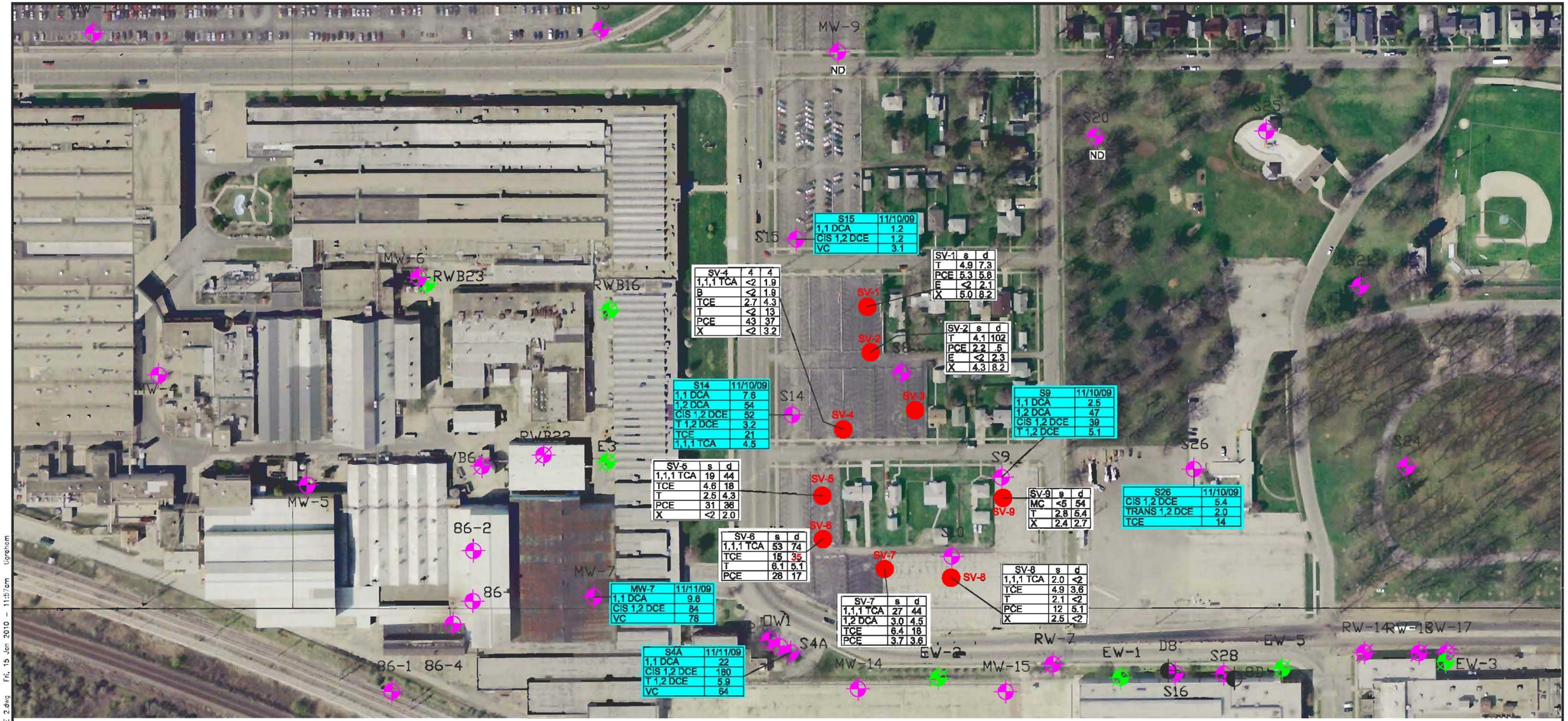
MACTEC
46850 Magellan Drive, Suite 190
Novi, MI 48377

FIGURE 1
SITE LOCATION MAP

HONEYWELL INDUSTRIAL COMPLEX

SOUTH BEND, INDIANA

P:\HW - South Bend\MACTEC Drawings & Prints\3310080028.6100_1209\FIGURE 1.dwg Tue, 15 Dec 2009 - 4:13pm tigraham



LEGEND

- VAPOR GAS SAMPLING LOCATION — S5
- SHALLOW MONITORING WELL LOCATION — I1
- INTERMEDIATE MONITORING WELL — RWB16
- GROUNDWATER EXTRACTION WELL LOCATION

NOTE:
SOIL GAS RESULTS IN ppb (v/v)
GROUNDWATER RESULTS IN ug/L

MC	METHYLENE CHLORIDE
1,1,1 TCA	1,1,1–TRICHLOROETHANE
B	BENZENE
1,2 DCA	1,2–DICHLOROETHANE
TCE	TRICHLOROETHENE
T	TOLUENE
PCE	TETRACHLOROETHENE
E	ETHYLBENZENE
X	XYLENE

N

SCALE (FT)
250 0 125 250

DESIGNED BY		
DRAWN BY		
CHKD. BY		

MACTEC
46850 Magellan Drive, Suite 190
Novi, MI 48377

FIGURE 2
SOIL GAS AND GROUNDWATER RESULTS
HONEYWELL INDUSTRIAL COMPLEX
SOUTH BEND, INDIANA

P:\HW - South Bend\MACTEC Drawings & Prints\3310280028.61CD_1209\FIGURE 2.dwg Fri, 15 Jan 2010 - 11:57am Ugraham

ATTACHMENT A

Comparison of Shallow Groundwater Results to IDEM Vapor Intrusion Screening Levels

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		MW-9	MW-9	MW-9	MW-9	**Temporal**	S3	S3	S3
DATE	Sand	Loamy Sand	12/5/2006	6/7/2007	12/12/2007	6/26/2008	**MW-9**	12/5/2006	6/6/2007	12/12/2007
TCE	6	11	ND	ND	ND	ND		ND	ND	ND
VC	3.2	6.1	ND	ND	ND	ND		ND	ND	ND
1,2-DCA	38	71	ND	ND	ND	ND		ND	ND	ND
cis-1,2-DCE			ND	ND	ND	ND		ND	ND	ND
trans-1,2-DCE			ND	ND	ND	ND		ND	ND	ND
1,1-DCE			ND	ND	ND	ND		ND	ND	ND
1,1,1-TCA			ND	ND	ND	ND		ND	ND	ND
1,1-DCA			ND	ND	ND	ND		ND	ND	ND
TOTAL VOCs			0	0	0	0		0	0	0

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S3	**Temporal**	S4A	S4A	S4A	S4A	**Temporal**	S9
DATE	Sand	Loamy Sand	6/26/2008	**S3**	12/6/2006	6/5/2007	12/12/2007	6/25/2008	**S4A**	12/5/2006
TCE	6	11	ND		ND	ND	ND	ND		ND
VC	3.2	6.1	ND		**46.6**	**39**	**34**	**24**	**35.9**	ND
1,2-DCA	38	71	ND		ND	ND	ND	ND		**63.8**
cis-1,2-DCE			ND		319	260	260	210		50
trans-1,2-DCE			ND		ND	5.2	ND	ND		6.5
1,1-DCE			ND		ND	ND	ND	ND		ND
1,1,1-TCA			ND		ND	ND	ND	ND		ND
1,1-DCA			ND		37.5	32	30	25		ND
TOTAL VOCs			0		403.1	336.2	324	259		120.3

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S9	S9	S9	**Temporal**	S14	S14	S14	S14
DATE	Sand	Loamy Sand	6/5/2007	12/12/2007	6/26/2008	**S9**	12/5/2006	6/6/2007	12/12/2007	6/25/2008
TCE	6	11	ND	ND	ND		**68.6**	**37**	**40**	**26**
VC	3.2	6.1	ND	ND	ND		ND	ND	ND	ND
1,2-DCA	38	71	**46**	**44**	**47**	**50.2**	ND	5.4	9.2	10
cis-1,2-DCE			41	39	39		102	52	70	41
trans-1,2-DCE			5.2	4.5	5.1		9.4	3.6	4.5	3
1,1-DCE			ND	ND	ND		ND	ND	ND	ND
1,1,1-TCA			ND	ND	ND		14	9.6	8.2	5.9
1,1-DCA			2.7	2.3	2.8		34.3	15	21	8.2
TOTAL VOCs			94.9	94.9	93.9		228.3	122.6	152.9	94.1

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		**Temporal**	S15	S15	S15	S15	**Temporal**	S16	S16
DATE	Sand	Loamy Sand	**S14**	12/5/2006	6/6/2007	12/12/2007	6/26/2008	**S15**	12/7/2006	6/6/2007
TCE	6	11	**42.9**	ND	ND	ND	ND		**304**	**160**
VC	3.2	6.1		**24.5**	**7.3**	**8.9**	**3.4**	**11.0**	ND	ND
1,2-DCA	38	71		ND	ND	ND	ND		ND	ND
cis-1,2-DCE				5.8	8.3	5	2.6		37.2	19
trans-1,2-DCE				ND	2.6	2	1.2		ND	ND
1,1-DCE				ND	ND	ND	ND		ND	ND
1,1,1-TCA				ND	ND	ND	ND		10.8	7.9
1,1-DCA				12.1	6.2	4.9	1.9		ND	ND
TOTAL VOCs				42.4	24.4	20.8	9.1		352	197.9

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S16	S16	**Temporal**	S17	S17	S17	S17	**Temporal**
DATE	Sand	Loamy Sand	12/13/2007	6/26/2008	**S16**	12/6/2006	6/5/2007	12/13/2007	6/26/2008	**S17**
TCE	6	11	**350**	**210**	**256**	**14.6**	**9.8**	**15**	**10**	**12.4**
VC	3.2	6.1	ND	ND		ND	ND	ND	ND	
1,2-DCA	38	71	ND	ND		ND	ND	ND	ND	
cis-1,2-DCE			32	14		ND	2.2	2.1	1.3	
trans-1,2-DCE			ND	ND		ND	ND	ND	ND	
1,1-DCE			ND	ND		ND	ND	ND	ND	
1,1,1-TCA			12	9		ND	1.8	2.2	1.9	
1,1-DCA			ND	ND		ND	ND	ND	1.1	
TOTAL VOCs			405	244		14.6	13.8	19.3	14.3	

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S20	S20	S20	S20	**Temporal**	S21	S21	S21
DATE	Sand	Loamy Sand	12/5/2006	6/5/2007	12/11/2007	6/24/2008	**S20**	12/7/2006	6/6/2007	12/12/2007
TCE	6	11	ND	ND	ND	ND		**66.3**	**40**	**44**
VC	3.2	6.1	ND	ND	ND	ND		ND	ND	ND
1,2-DCA	38	71	ND	ND	ND	ND		ND	ND	ND
cis-1,2-DCE			ND	1.1	1.2	ND		40.8	34	15
trans-1,2-DCE			ND	ND	ND	ND		25.2	22	8.1
1,1-DCE			ND	ND	ND	ND		ND	ND	ND
1,1,1-TCA			ND	ND	ND	ND		ND	ND	ND
1,1-DCA			ND	ND	ND	ND		ND	ND	ND
TOTAL VOCs			0	1.1	1.2	0		132.3	98.3	69.4

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S21	**Temporal**	S22	S22	S22	S22	**Temporal**	S23
DATE	Sand	Loamy Sand	6/24/2008	**S21**	12/5/2006	6/5/2007	12/12/2007	6/24/2008	**S22**	12/6/2006
TCE	6	11	**40**	**47.6**	ND	ND	ND	ND		**32.8**
VC	3.2	6.1	ND		ND	ND	ND	ND		ND
1,2-DCA	38	71	ND		ND	ND	ND	ND		ND
cis-1,2-DCE			29		108	100	100	84		ND
trans-1,2-DCE			21		47.6	39	36	25		ND
1,1-DCE			ND		ND	ND	ND	ND		ND
1,1,1-TCA			ND		ND	ND	ND	ND		ND
1,1-DCA			ND		ND	ND	ND	ND		23.5
TOTAL VOCs			92.3		155.6	145.3	142.3	115.3		56.3

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S23	S23	S23	**Temporal**	S24	S24	S24	S24
DATE	Sand	Loamy Sand	6/5/2007	12/12/2007	6/25/2008	**S23**	12/6/2006	6/5/2007	12/12/2007	6/24/2008
TCE	6	11	**17**	**14**	**13**	**19.2**	ND	**6.1**	ND	**9.1**
VC	3.2	6.1	ND	ND	ND		ND	ND	ND	ND
1,2-DCA	38	71	ND	ND	ND		ND	ND	ND	ND
cis-1,2-DCE			2.2	1.6	1.6		97.4	110	95	88
trans-1,2-DCE			1.3	ND	ND		131	120	120	100
1,1-DCE			2	1.3	1.3		ND	ND	ND	ND
1,1,1-TCA			ND	ND	ND		ND	ND	ND	ND
1,1-DCA			14	5.7	5.5		ND	ND	ND	ND
TOTAL VOCs			36.5	22.6	21.4		228.4	236.1	215	197.1

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		**Temporal**	S25	S25	S25	S25	**Temporal**	S26	S26
DATE	Sand	Loamy Sand	**S24**	12/5/2006	6/6/2007	12/12/2007	6/24/2008	**S25**	12/6/2006	6/6/2007
TCE	6	11	**7.6**	ND	ND	ND	ND		**16**	**18**
VC	3.2	6.1		ND	ND	ND	ND		ND	ND
1,2-DCA	38	71		ND	ND	ND	ND		ND	ND
cis-1,2-DCE				6.8	6.4	4.8	6.7		6.5	7.5
trans-1,2-DCE				ND	1.9	1.4	2.2		ND	2.6
1,1-DCE				ND	ND	ND	ND		ND	ND
1,1,1-TCA				ND	ND	ND	ND		ND	ND
1,1-DCA				ND	ND	ND	ND		ND	ND
TOTAL VOCs				6.8	8.3	6.2	8.9		22.5	28.1

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure									
SITE_ID	15 ft Depth to GW		S26	S26	**Temporal**	S27	S27	S27	S27	**Temporal**
DATE	Sand	Loamy Sand	12/16/2007	6/25/2008	**S26**	12/6/2006	6/5/2007	12/12/2007	6/24/2008	**S27**
TCE	6	11	**6.7**	**19**	**14.9**	**26.9**	**19**	**19**	**14**	**19.7**
VC	3.2	6.1	ND	ND		ND	ND	ND	ND	
1,2-DCA	38	71	ND	ND		ND	ND	ND	ND	
cis-1,2-DCE			2.2	6.1		17.9	19	20	20	
trans-1,2-DCE			ND	2.3		ND	3.9	3.9	3.4	
1,1-DCE			ND	ND		ND	2.8	3.9	2.1	
1,1,1-TCA			ND	ND		28	14	12	8.4	
1,1-DCA			ND	ND		39.1	36	32	28	
TOTAL VOCs			8.9	27.4		111.9	94.7	90.8	75.9	

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

Attachment A
Comparison of Shallow Groundwater Monitoring Results to Vapor Intrusion Screening Levels
Honeywell Industrial Complex
South Bend, Indiana

	Residential - 30 yr Exposure						
SITE_ID	15 ft Depth to GW		S28	S28	S28	S28	**Temporal**
DATE	Sand	Loamy Sand	12/6/2006	6/6/2007	12/13/2007	6/26/2008	**S28**
TCE	6	11	**99.2**	**59**	**77**	**60**	**73.8**
VC	3.2	6.1	ND	ND	ND	ND	
1,2-DCA	38	71	ND	ND	ND	ND	
cis-1,2-DCE			44.6	22	27	32	
trans-1,2-DCE			47.2	36	44	57	
1,1-DCE			ND	ND	ND	ND	
1,1,1-TCA			ND	2	2	ND	
1,1-DCA			2.3	ND	ND	ND	
TOTAL VOCs			193.3	122.2	153.2	152.2	

All concentration values are in units of ug/L.
ND - Not detected
Temporal = Average concentration of all sampling events within the well.

Prepared by / Date: KJC 09/25/08
Checked by / Date: JP 09/25/08

Notes:

Exceeds Loamy Sand criteria

Exceeds Sand criteria

ATTACHMENT B

Soil Gas and Geotechnical Soil Analytical Results

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Honeywell - South Bend

Lot #: H9J060192

Steven Murray

Mactec Engineering & Consultan
41 Hughes Drive
Traverse City, MI 49686

TESTAMERICA LABORATORIES, INC.

Jamie A. McKinney
Project Manager

October 16, 2009

EXECUTIVE SUMMARY - Detection Highlights

H9J060192

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SV-1S 10 09 10/02/09 09:31 001				
Toluene	4.9	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	5.3	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	5.0	2.0	ppb(v/v)	EPA-2 TO-15
SV-1D 10 09 10/02/09 09:32 002				
Toluene	7.3	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	5.8	2.0	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	2.1	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	8.2	2.0	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	2.6	2.0	ppb(v/v)	EPA-2 TO-15
SV-2S 10 09 10/02/09 09:55 003				
Dichlorodifluoromethane	2.7	2.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	2.9	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	4.1	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	2.2	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	4.3	2.0	ppb(v/v)	EPA-2 TO-15
SV-2D 10 09 10/02/09 09:56 004				
Dichlorodifluoromethane	3.7	2.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	3.6	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	10	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	2.5	2.0	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	2.3	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	8.2	2.0	ppb(v/v)	EPA-2 TO-15
SV-4S 10 09 10/02/09 10:21 005				
Trichloroethene	2.7	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	43	2.0	ppb(v/v)	EPA-2 TO-15
SV-4D 10 09 10/02/09 10:22 006				
1,1,1-Trichloroethane	1.9	1.8	ppb(v/v)	EPA-2 TO-15
Benzene	1.9	1.8	ppb(v/v)	EPA-2 TO-15
Trichloroethene	4.3	1.8	ppb(v/v)	EPA-2 TO-15
Toluene	13	1.8	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	37	1.8	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	3.2	1.8	ppb(v/v)	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

H9J060192

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SV-5S 10 09 10/02/09 10:50 007				
1,1,1-Trichloroethane	19	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	4.6	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	2.5	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	31	2.0	ppb(v/v)	EPA-2 TO-15
SV-5D 10 09 10/02/09 10:51 008				
1,1,1-Trichloroethane	44	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	18	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	4.3	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	36	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.0	2.0	ppb(v/v)	EPA-2 TO-15
SV-6S 10 09 10/02/09 11:37 009				
Dichlorodifluoromethane	4.8	2.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	4.4	2.0	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	53	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	15	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	6.1	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	28	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.3	2.0	ppb(v/v)	EPA-2 TO-15
SV-6D 10 09 10/02/09 11:38 010				
Dichlorodifluoromethane	3.5	2.0	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	15	2.0	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	74	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	35	2.0	ppb(v/v)	EPA-2 TO-15
Toluene	5.1	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	17	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.7	2.0	ppb(v/v)	EPA-2 TO-15
SV-7S 10 09 10/02/09 11:52 011				
Trichlorofluoromethane	2.3	1.8	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	27	1.8	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	3.0	1.8	ppb(v/v)	EPA-2 TO-15
Trichloroethene	6.4	1.8	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	3.7	1.8	ppb(v/v)	EPA-2 TO-15

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

H9J060192

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SV-7D 10 09 10/02/09 11:53 012				
Trichlorofluoromethane	3.0	2.0	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	44	2.0	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	4.5	2.0	ppb(v/v)	EPA-2 TO-15
Trichloroethene	18	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	3.6	2.0	ppb(v/v)	EPA-2 TO-15
SV-8S 10 09 10/02/09 12:11 013				
1,1,1-Trichloroethane	2.0	1.8	ppb(v/v)	EPA-2 TO-15
Trichloroethene	4.9	1.8	ppb(v/v)	EPA-2 TO-15
Toluene	2.1	1.8	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	12	1.8	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.5	1.8	ppb(v/v)	EPA-2 TO-15
SV-8D 10 09 10/02/09 12:12 014				
Trichloroethene	3.6	2.0	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	5.1	2.0	ppb(v/v)	EPA-2 TO-15
SV-9S 10 09 10/02/09 12:25 015				
Toluene	2.8	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.4	2.0	ppb(v/v)	EPA-2 TO-15
SV-9D 10 09 10/02/09 12:26 016				
Methylene chloride	54	5.0	ppb(v/v)	EPA-2 TO-15
Toluene	5.4	2.0	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	2.7	2.0	ppb(v/v)	EPA-2 TO-15

ANALYTICAL METHODS SUMMARY

H9J060192

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H9J060192

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
LL23H	001	SV-1S 10 09	10/02/09	09:31
LL23M	002	SV-1D 10 09	10/02/09	09:32
LL23N	003	SV-2S 10 09	10/02/09	09:55
LL23P	004	SV-2D 10 09	10/02/09	09:56
LL23Q	005	SV-4S 10 09	10/02/09	10:21
LL23W	006	SV-4D 10 09	10/02/09	10:22
LL230	007	SV-5S 10 09	10/02/09	10:50
LL231	008	SV-5D 10 09	10/02/09	10:51
LL232	009	SV-6S 10 09	10/02/09	11:37
LL234	010	SV-6D 10 09	10/02/09	11:38
LL235	011	SV-7S 10 09	10/02/09	11:52
LL236	012	SV-7D 10 09	10/02/09	11:53
LL237	013	SV-8S 10 09	10/02/09	12:11
LL238	014	SV-8D 10 09	10/02/09	12:12
LL239	015	SV-9S 10 09	10/02/09	12:25
LL24A	016	SV-9D 10 09	10/02/09	12:26

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9J060192

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

Custody seals were not present.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. According to the laboratory standard operating procedure, the continuing calibration is acceptable if it meets the laboratory control sample acceptance criteria. Even though the calibration verification analyzed on 10/07/09 exhibited a % difference of > 30% for carbon tetrachloride and calibration verification analyzed on 10/09/09 exhibited a % difference of > 30% for styrene, 1,3,5-trimethylbenzene and 1,2,4-trichlorobenzene, the results were within the LCS acceptance limits.

Although carbon tetrachloride is flagged as being outside recovery limits in the laboratory control sample for batch 9281169, additionally styrene and 1,3,5-trimethylbenzen are flagged as being outside recovery limits in the laboratory control sample for batch 9283158, the laboratory control samples are in control. The standard operating procedure allows for 2 analytes to be outside the control limits, but within marginal exceedence limit.

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-1S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-001 Work Order #...: LL23H1AA Matrix.....: AIR
Date Sampled...: 10/02/09 09:31 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**4.9**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**5.3**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**5.0**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-1S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-001 Work Order #...: LL23H1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-1D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-002 Work Order #...: LL23M1AA Matrix.....: AIR
Date Sampled...: 10/02/09 09:32 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**7.3**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**5.8**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	**2.1**	**2.0**	**ppb(v/v)**
m-Xylene & p-Xylene	**8.2**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	**2.6**	**2.0**	**ppb(v/v)**
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-1D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-002 Work Order #...: LL23M1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-2S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-003 Work Order #...: LL23N1AA Matrix.....: AIR
Date Sampled...: 10/02/09 09:55 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	**2.7**	**2.0**	**ppb(v/v)**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	**2.9**	**2.0**	**ppb(v/v)**
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**4.1**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**2.2**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**4.3**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-2S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-003 Work Order #...: LL23N1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	101	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-2D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-004 Work Order #...: LL23P1AA Matrix.....: AIR
Date Sampled...: 10/02/09 09:56 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	**3.7**	**2.0**	**ppb(v/v)**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	**3.6**	**2.0**	**ppb(v/v)**
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**10**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**2.5**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	**2.3**	**2.0**	**ppb(v/v)**
m-Xylene & p-Xylene	**8.2**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-2D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-004 Work Order #...: LL23P1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-4S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-005 Work Order #...: LL23Q1AA Matrix.....: AIR
Date Sampled...: 10/02/09 10:21 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**2.7**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	ND	2.0	ppb(v/v)
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**43**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	ND	2.0	ppb(v/v)
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-4S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-005 Work Order #...: LL23Q1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-4D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-006 Work Order #...: LL23W1AA Matrix.....: AIR
Date Sampled...: 10/02/09 10:22 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 9.09 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	1.8	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	1.8	ppb(v/v)
Chloromethane	ND	4.5	ppb(v/v)
Vinyl chloride	ND	1.8	ppb(v/v)
Bromomethane	ND	1.8	ppb(v/v)
Chloroethane	ND	1.8	ppb(v/v)
Trichlorofluoromethane	ND	1.8	ppb(v/v)
1,1-Dichloroethene	ND	1.8	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.8	ppb(v/v)
Methylene chloride	ND	4.5	ppb(v/v)
1,1-Dichloroethane	ND	1.8	ppb(v/v)
cis-1,2-Dichloroethene	ND	1.8	ppb(v/v)
Chloroform	ND	1.8	ppb(v/v)
1,1,1-Trichloroethane	**1.9**	**1.8**	**ppb(v/v)**
Carbon tetrachloride	ND	1.8	ppb(v/v)
Benzene	**1.9**	**1.8**	**ppb(v/v)**
1,2-Dichloroethane	ND	1.8	ppb(v/v)
Trichloroethene	**4.3**	**1.8**	**ppb(v/v)**
1,2-Dichloropropane	ND	1.8	ppb(v/v)
cis-1,3-Dichloropropene	ND	1.8	ppb(v/v)
Toluene	**13**	**1.8**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	1.8	ppb(v/v)
1,1,2-Trichloroethane	ND	1.8	ppb(v/v)
Tetrachloroethene	**37**	**1.8**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	1.8	ppb(v/v)
Chlorobenzene	ND	1.8	ppb(v/v)
Ethylbenzene	ND	1.8	ppb(v/v)
m-Xylene & p-Xylene	**3.2**	**1.8**	**ppb(v/v)**
o-Xylene	ND	1.8	ppb(v/v)
Styrene	ND	1.8	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	1.8	ppb(v/v)
1,3,5-Trimethylbenzene	ND	1.8	ppb(v/v)
1,2,4-Trimethylbenzene	ND	1.8	ppb(v/v)
1,3-Dichlorobenzene	ND	1.8	ppb(v/v)
1,4-Dichlorobenzene	ND	1.8	ppb(v/v)
1,2-Dichlorobenzene	ND	1.8	ppb(v/v)
Benzyl chloride	ND	3.6	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-4D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-006 Work Order #...: LL23W1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	9.1	ppb(v/v)
Hexachlorobutadiene	ND	9.1	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-5S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-007 Work Order #...: LL2301AA Matrix.....: AIR
Date Sampled...: 10/02/09 10:50 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	**19**	**2.0**	**ppb(v/v)**
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**4.6**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**2.5**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**31**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	ND	2.0	ppb(v/v)
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-5S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-007 Work Order #...: LL2301AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-5D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-008 Work Order #...: LL2311AA Matrix.....: AIR
Date Sampled...: 10/02/09 10:51 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	**44**	**2.0**	**ppb(v/v)**
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**18**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**4.3**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**36**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**2.0**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-SD 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-008 Work Order #...: LL2311AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	104	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-6S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-009 Work Order #...: LL2321AA Matrix.....: AIR
Date Sampled...: 10/02/09 11:37 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	**4.8**	**2.0**	**ppb(v/v)**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	**4.4**	**2.0**	**ppb(v/v)**
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	**53**	**2.0**	**ppb(v/v)**
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**15**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**6.1**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**28**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**2.3**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-6S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-009 Work Order #...: LL2321AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	106	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-6D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-010 Work Order #...: LL2341AA Matrix.....: AIR
Date Sampled...: 10/02/09 11:38 Date Received..: 10/06/09
Prep Date.....: 10/07/09 Analysis Date..: 10/08/09
Prep Batch #...: 9281169
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	**3.5**	**2.0**	**ppb(v/v)**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	**15**	**2.0**	**ppb(v/v)**
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	**74**	**2.0**	**ppb(v/v)**
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**35**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**5.1**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**17**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**2.7**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-6D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-010 Work Order #...: LL2341AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	104	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-7S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-011 Work Order #...: LL2351AA Matrix.....: AIR
Date Sampled...: 10/02/09 11:52 Date Received..: 10/06/09
Prep Date.....: 10/08/09 Analysis Date..: 10/08/09
Prep Batch #...: 9282175
Dilution Factor: 9.09 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	1.8	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	1.8	ppb(v/v)
Chloromethane	ND	4.5	ppb(v/v)
Vinyl chloride	ND	1.8	ppb(v/v)
Bromomethane	ND	1.8	ppb(v/v)
Chloroethane	ND	1.8	ppb(v/v)
Trichlorofluoromethane	**2.3**	**1.8**	**ppb(v/v)**
1,1-Dichloroethene	ND	1.8	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.8	ppb(v/v)
Methylene chloride	ND	4.5	ppb(v/v)
1,1-Dichloroethane	ND	1.8	ppb(v/v)
cis-1,2-Dichloroethene	ND	1.8	ppb(v/v)
Chloroform	ND	1.8	ppb(v/v)
1,1,1-Trichloroethane	**27**	**1.8**	**ppb(v/v)**
Carbon tetrachloride	ND	1.8	ppb(v/v)
Benzene	ND	1.8	ppb(v/v)
1,2-Dichloroethane	**3.0**	**1.8**	**ppb(v/v)**
Trichloroethene	**6.4**	**1.8**	**ppb(v/v)**
1,2-Dichloropropane	ND	1.8	ppb(v/v)
cis-1,3-Dichloropropene	ND	1.8	ppb(v/v)
Toluene	ND	1.8	ppb(v/v)
trans-1,3-Dichloropropene	ND	1.8	ppb(v/v)
1,1,2-Trichloroethane	ND	1.8	ppb(v/v)
Tetrachloroethene	**3.7**	**1.8**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	1.8	ppb(v/v)
Chlorobenzene	ND	1.8	ppb(v/v)
Ethylbenzene	ND	1.8	ppb(v/v)
m-Xylene & p-Xylene	ND	1.8	ppb(v/v)
o-Xylene	ND	1.8	ppb(v/v)
Styrene	ND	1.8	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	1.8	ppb(v/v)
1,3,5-Trimethylbenzene	ND	1.8	ppb(v/v)
1,2,4-Trimethylbenzene	ND	1.8	ppb(v/v)
1,3-Dichlorobenzene	ND	1.8	ppb(v/v)
1,4-Dichlorobenzene	ND	1.8	ppb(v/v)
1,2-Dichlorobenzene	ND	1.8	ppb(v/v)
Benzyl chloride	ND	3.6	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-7S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-011 Work Order #...: LL2351AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	9.1	ppb(v/v)
Hexachlorobutadiene	ND	9.1	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	119	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-7D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-012 Work Order #...: LL2361AA Matrix.....: AIR
Date Sampled...: 10/02/09 11:53 Date Received..: 10/06/09
Prep Date.....: 10/08/09 Analysis Date..: 10/08/09
Prep Batch #...: 9282175
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	**3.0**	**2.0**	**ppb(v/v)**
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	**44**	**2.0**	**ppb(v/v)**
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	**4.5**	**2.0**	**ppb(v/v)**
Trichloroethene	**18**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	ND	2.0	ppb(v/v)
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**3.6**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	ND	2.0	ppb(v/v)
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc.

Client Sample ID: SV-7D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-012 Work Order #...: LL2361AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	110	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-8S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-013 Work Order #...: LL2371AA Matrix.....: AIR
Date Sampled...: 10/02/09 12:11 Date Received..: 10/06/09
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 9.09 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	1.8	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	1.8	ppb(v/v)
Chloromethane	ND	4.5	ppb(v/v)
Vinyl chloride	ND	1.8	ppb(v/v)
Bromomethane	ND	1.8	ppb(v/v)
Chloroethane	ND	1.8	ppb(v/v)
Trichlorofluoromethane	ND	1.8	ppb(v/v)
1,1-Dichloroethene	ND	1.8	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.8	ppb(v/v)
Methylene chloride	ND	4.5	ppb(v/v)
1,1-Dichloroethane	ND	1.8	ppb(v/v)
cis-1,2-Dichloroethene	ND	1.8	ppb(v/v)
Chloroform	ND	1.8	ppb(v/v)
1,1,1-Trichloroethane	**2.0**	**1.8**	**ppb(v/v)**
Carbon tetrachloride	ND	1.8	ppb(v/v)
Benzene	ND	1.8	ppb(v/v)
1,2-Dichloroethane	ND	1.8	ppb(v/v)
Trichloroethene	**4.9**	**1.8**	**ppb(v/v)**
1,2-Dichloropropane	ND	1.8	ppb(v/v)
cis-1,3-Dichloropropene	ND	1.8	ppb(v/v)
Toluene	**2.1**	**1.8**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	1.8	ppb(v/v)
1,1,2-Trichloroethane	ND	1.8	ppb(v/v)
Tetrachloroethene	**12**	**1.8**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	1.8	ppb(v/v)
Chlorobenzene	ND	1.8	ppb(v/v)
Ethylbenzene	ND	1.8	ppb(v/v)
m-Xylene & p-Xylene	**2.5**	**1.8**	**ppb(v/v)**
o-Xylene	ND	1.8	ppb(v/v)
Styrene	ND	1.8	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	1.8	ppb(v/v)
1,3,5-Trimethylbenzene	ND	1.8	ppb(v/v)
1,2,4-Trimethylbenzene	ND	1.8	ppb(v/v)
1,3-Dichlorobenzene	ND	1.8	ppb(v/v)
1,4-Dichlorobenzene	ND	1.8	ppb(v/v)
1,2-Dichlorobenzene	ND	1.8	ppb(v/v)
Benzyl chloride	ND	3.6	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-8S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-013 Work Order #...: LL2371AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	9.1	ppb(v/v)
Hexachlorobutadiene	ND	9.1	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	103	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-8D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-014 Work Order #...: LL2381AA Matrix.....: AIR
Date Sampled...: 10/02/09 12:12 Date Received..: 10/06/09
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	**3.6**	**2.0**	**ppb(v/v)**
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	ND	2.0	ppb(v/v)
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	**5.1**	**2.0**	**ppb(v/v)**
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	ND	2.0	ppb(v/v)
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-8D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-014 Work Order #...: LL2381AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	103	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-9S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-015 Work Order #...: LL2391AA Matrix.....: AIR
Date Sampled...: 10/02/09 12:25 Date Received..: 10/06/09
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	ND	5.0	ppb(v/v)
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**2.8**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	ND	2.0	ppb(v/v)
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**2.4**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-9S 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-015 Work Order #...: LL2391AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	105	(60 - 140)

MACTEC Engineering and Consulting Inc

Client Sample ID: SV-9D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-016 Work Order #...: LL24A1AA Matrix.....: AIR
Date Sampled...: 10/02/09 12:26 Date Received..: 10/06/09
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 10 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Dichlorodifluoromethane	ND	2.0	ppb(v/v)
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	2.0	ppb(v/v)
Chloromethane	ND	5.0	ppb(v/v)
Vinyl chloride	ND	2.0	ppb(v/v)
Bromomethane	ND	2.0	ppb(v/v)
Chloroethane	ND	2.0	ppb(v/v)
Trichlorofluoromethane	ND	2.0	ppb(v/v)
1,1-Dichloroethene	ND	2.0	ppb(v/v)
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	2.0	ppb(v/v)
Methylene chloride	**54**	**5.0**	**ppb(v/v)**
1,1-Dichloroethane	ND	2.0	ppb(v/v)
cis-1,2-Dichloroethene	ND	2.0	ppb(v/v)
Chloroform	ND	2.0	ppb(v/v)
1,1,1-Trichloroethane	ND	2.0	ppb(v/v)
Carbon tetrachloride	ND	2.0	ppb(v/v)
Benzene	ND	2.0	ppb(v/v)
1,2-Dichloroethane	ND	2.0	ppb(v/v)
Trichloroethene	ND	2.0	ppb(v/v)
1,2-Dichloropropane	ND	2.0	ppb(v/v)
cis-1,3-Dichloropropene	ND	2.0	ppb(v/v)
Toluene	**5.4**	**2.0**	**ppb(v/v)**
trans-1,3-Dichloropropene	ND	2.0	ppb(v/v)
1,1,2-Trichloroethane	ND	2.0	ppb(v/v)
Tetrachloroethene	ND	2.0	ppb(v/v)
1,2-Dibromoethane (EDB)	ND	2.0	ppb(v/v)
Chlorobenzene	ND	2.0	ppb(v/v)
Ethylbenzene	ND	2.0	ppb(v/v)
m-Xylene & p-Xylene	**2.7**	**2.0**	**ppb(v/v)**
o-Xylene	ND	2.0	ppb(v/v)
Styrene	ND	2.0	ppb(v/v)
1,1,2,2-Tetrachloroethane	ND	2.0	ppb(v/v)
1,3,5-Trimethylbenzene	ND	2.0	ppb(v/v)
1,2,4-Trimethylbenzene	ND	2.0	ppb(v/v)
1,3-Dichlorobenzene	ND	2.0	ppb(v/v)
1,4-Dichlorobenzene	ND	2.0	ppb(v/v)
1,2-Dichlorobenzene	ND	2.0	ppb(v/v)
Benzyl chloride	ND	4.0	ppb(v/v)

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MACTEC Engineering and Consulting Inc

Client Sample ID: SV-9D 10 09

GC/MS Volatiles

Lot-Sample #...: H9J060192-016 Work Order #...: LL24A1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2,4-Trichloro-benzene	ND	10	ppb(v/v)
Hexachlorobutadiene	ND	10	ppb(v/v)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	105	(60 - 140)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AA Matrix.....: AIR
MB Lot-Sample #: H9J080000-169

Prep Date.....: 10/07/09
Analysis Date..: 10/07/09 Prep Batch #...: 9281169
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Dichlorodifluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloromethane	ND	0.50	ppb(v/v)	EPA-2 TO-15
Vinyl chloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Bromomethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Methylene chloride	ND	0.50	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,2-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroform	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Carbon tetrachloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloropropane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Toluene	ND	0.20	ppb(v/v)	EPA-2 TO-15
trans-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
o-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Styrene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3,5-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,4-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzyl chloride	ND	0.40	ppb(v/v)	EPA-2 TO-15
1,2,4-Trichlorobenzene	ND	1.0	ppb(v/v)	EPA-2 TO-15

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Hexachlorobutadiene	ND	1.0	ppb(v/v)	EPA-2 TO-15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	93	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AC Matrix.....: AIR
LCS Lot-Sample#: H9J080000-169
Prep Date.....: 10/07/09 Analysis Date..: 10/07/09
Prep Batch #...: 9281169
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Dichlorodifluoromethane	109	(60 - 140)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	105	(60 - 140)	EPA-2 TO-15
Chloromethane	117	(60 - 140)	EPA-2 TO-15
Vinyl chloride	98	(70 - 130)	EPA-2 TO-15
Bromomethane	82	(70 - 130)	EPA-2 TO-15
Chloroethane	86	(70 - 130)	EPA-2 TO-15
Trichlorofluoromethane	102	(60 - 140)	EPA-2 TO-15
1,1-Dichloroethene	115	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	113	(70 - 130)	EPA-2 TO-15
Methylene chloride	93	(70 - 130)	EPA-2 TO-15
1,1-Dichloroethane	105	(70 - 130)	EPA-2 TO-15
cis-1,2-Dichloroethene	103	(70 - 130)	EPA-2 TO-15
Chloroform	100	(70 - 130)	EPA-2 TO-15
1,1,1-Trichloroethane	108	(70 - 130)	EPA-2 TO-15
Carbon tetrachloride	131 a	(70 - 130)	EPA-2 TO-15
Benzene	85	(70 - 130)	EPA-2 TO-15
1,2-Dichloroethane	101	(70 - 130)	EPA-2 TO-15
Trichloroethene	93	(70 - 130)	EPA-2 TO-15
1,2-Dichloropropane	96	(70 - 130)	EPA-2 TO-15
cis-1,3-Dichloropropene	93	(70 - 130)	EPA-2 TO-15
Toluene	101	(70 - 130)	EPA-2 TO-15
trans-1,3-Dichloropropene	105	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloroethane	100	(70 - 130)	EPA-2 TO-15
Tetrachloroethene	95	(70 - 130)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	100	(70 - 130)	EPA-2 TO-15
Chlorobenzene	97	(70 - 130)	EPA-2 TO-15
Ethylbenzene	110	(70 - 130)	EPA-2 TO-15
m-Xylene & p-Xylene	110	(70 - 130)	EPA-2 TO-15
o-Xylene	110	(70 - 130)	EPA-2 TO-15
Styrene	128	(70 - 130)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	112	(70 - 130)	EPA-2 TO-15
1,3,5-Trimethylbenzene	124	(70 - 130)	EPA-2 TO-15

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AC Matrix.....: AIR
LCS Lot-Sample#: H9J080000-169

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
1,2,4-Trimethylbenzene	**117**	**(70 - 130)**	**EPA-2 TO-15**
1,3-Dichlorobenzene	**105**	**(70 - 130)**	**EPA-2 TO-15**
1,4-Dichlorobenzene	**105**	**(70 - 130)**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**103**	**(70 - 130)**	**EPA-2 TO-15**
Benzyl chloride	**118**	**(70 - 130)**	**EPA-2 TO-15**
1,2,4-Trichloro-benzene	**121**	**(60 - 140)**	**EPA-2 TO-15**
Hexachlorobutadiene	**113**	**(60 - 140)**	**EPA-2 TO-15**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AC Matrix.....: AIR
LCS Lot-Sample#: H9J080000-169
Prep Date.....: 10/07/09 Analysis Date..: 10/07/09
Prep Batch #...: 9281169
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Dichlorodifluoromethane	12	14	ppb(v/v)	109	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	12	13	ppb(v/v)	105	EPA-2 TO-15
Chloromethane	12	15	ppb(v/v)	117	EPA-2 TO-15
Vinyl chloride	12	12	ppb(v/v)	98	EPA-2 TO-15
Bromomethane	12	10	ppb(v/v)	82	EPA-2 TO-15
Chloroethane	12	11	ppb(v/v)	86	EPA-2 TO-15
Trichlorofluoromethane	12	13	ppb(v/v)	102	EPA-2 TO-15
1,1-Dichloroethene	12	14	ppb(v/v)	115	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	12	14	ppb(v/v)	113	EPA-2 TO-15
Methylene chloride	12	12	ppb(v/v)	93	EPA-2 TO-15
1,1-Dichloroethane	12	13	ppb(v/v)	105	EPA-2 TO-15
cis-1,2-Dichloroethene	12	13	ppb(v/v)	103	EPA-2 TO-15
Chloroform	12	12	ppb(v/v)	100	EPA-2 TO-15
1,1,1-Trichloroethane	12	13	ppb(v/v)	108	EPA-2 TO-15
Carbon tetrachloride	12	16 a	ppb(v/v)	131	EPA-2 TO-15
Benzene	12	11	ppb(v/v)	85	EPA-2 TO-15
1,2-Dichloroethane	12	13	ppb(v/v)	101	EPA-2 TO-15
Trichloroethene	12	12	ppb(v/v)	93	EPA-2 TO-15
1,2-Dichloropropane	12	12	ppb(v/v)	96	EPA-2 TO-15
cis-1,3-Dichloropropene	12	12	ppb(v/v)	93	EPA-2 TO-15
Toluene	12	13	ppb(v/v)	101	EPA-2 TO-15
trans-1,3-Dichloropropene	12	13	ppb(v/v)	105	EPA-2 TO-15
1,1,2-Trichloroethane	12	12	ppb(v/v)	100	EPA-2 TO-15
Tetrachloroethene	12	12	ppb(v/v)	95	EPA-2 TO-15
1,2-Dibromoethane (EDB)	12	12	ppb(v/v)	100	EPA-2 TO-15
Chlorobenzene	12	12	ppb(v/v)	97	EPA-2 TO-15
Ethylbenzene	12	14	ppb(v/v)	110	EPA-2 TO-15
m-Xylene & p-Xylene	25	28	ppb(v/v)	110	EPA-2 TO-15
o-Xylene	12	14	ppb(v/v)	110	EPA-2 TO-15
Styrene	12	16	ppb(v/v)	128	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	12	14	ppb(v/v)	112	EPA-2 TO-15
1,3,5-Trimethylbenzene	12	15	ppb(v/v)	124	EPA-2 TO-15

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL6V31AC Matrix.....: AIR
LCS Lot-Sample#: H9J080000-169

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
1,2,4-Trimethylbenzene	**12**	**15**	**ppb(v/v)**	**117**	**EPA-2 TO-15**
1,3-Dichlorobenzene	**12**	**13**	**ppb(v/v)**	**105**	**EPA-2 TO-15**
1,4-Dichlorobenzene	**12**	**13**	**ppb(v/v)**	**105**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**12**	**13**	**ppb(v/v)**	**103**	**EPA-2 TO-15**
Benzyl chloride	**12**	**15**	**ppb(v/v)**	**118**	**EPA-2 TO-15**
1,2,4-Trichloro-benzene	**12**	**15**	**ppb(v/v)**	**121**	**EPA-2 TO-15**
Hexachlorobutadiene	**12**	**14**	**ppb(v/v)**	**113**	**EPA-2 TO-15**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AA Matrix.....: AIR
MB Lot-Sample #: H9J090000-175

Prep Date.....: 10/08/09
Analysis Date..: 10/08/09 Prep Batch #...: 9282175
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Dichlorodifluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloromethane	ND	0.50	ppb(v/v)	EPA-2 TO-15
Vinyl chloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Bromomethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Methylene chloride	ND	0.50	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,2-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroform	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Carbon tetrachloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloropropane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Toluene	ND	0.20	ppb(v/v)	EPA-2 TO-15
trans-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
o-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Styrene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3,5-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,4-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzyl chloride	ND	0.40	ppb(v/v)	EPA-2 TO-15
1,2,4-Trichlorobenzene	ND	1.0	ppb(v/v)	EPA-2 TO-15

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Hexachlorobutadiene	ND	1.0	ppb(v/v)	EPA-2 TO-15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	117	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AC Matrix.....: AIR
LCS Lot-Sample#: H9J090000-175
Prep Date.....: 10/08/09 Analysis Date..: 10/08/09
Prep Batch #...: 9282175
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Dichlorodifluoromethane	125	(60 - 140)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	109	(60 - 140)	EPA-2 TO-15
Chloromethane	112	(60 - 140)	EPA-2 TO-15
Vinyl chloride	110	(70 - 130)	EPA-2 TO-15
Bromomethane	89	(70 - 130)	EPA-2 TO-15
Chloroethane	88	(70 - 130)	EPA-2 TO-15
Trichlorofluoromethane	130	(60 - 140)	EPA-2 TO-15
1,1-Dichloroethene	95	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	100	(70 - 130)	EPA-2 TO-15
Methylene chloride	104	(70 - 130)	EPA-2 TO-15
1,1-Dichloroethane	96	(70 - 130)	EPA-2 TO-15
cis-1,2-Dichloroethene	79	(70 - 130)	EPA-2 TO-15
Chloroform	107	(70 - 130)	EPA-2 TO-15
1,1,1-Trichloroethane	108	(70 - 130)	EPA-2 TO-15
Carbon tetrachloride	117	(70 - 130)	EPA-2 TO-15
Benzene	82	(70 - 130)	EPA-2 TO-15
1,2-Dichloroethane	120	(70 - 130)	EPA-2 TO-15
Trichloroethene	84	(70 - 130)	EPA-2 TO-15
1,2-Dichloropropane	89	(70 - 130)	EPA-2 TO-15
cis-1,3-Dichloropropene	93	(70 - 130)	EPA-2 TO-15
Toluene	75	(70 - 130)	EPA-2 TO-15
trans-1,3-Dichloropropene	94	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloroethane	78	(70 - 130)	EPA-2 TO-15
Tetrachloroethene	87	(70 - 130)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	85	(70 - 130)	EPA-2 TO-15
Chlorobenzene	80	(70 - 130)	EPA-2 TO-15
Ethylbenzene	84	(70 - 130)	EPA-2 TO-15
m-Xylene & p-Xylene	86	(70 - 130)	EPA-2 TO-15
o-Xylene	84	(70 - 130)	EPA-2 TO-15
Styrene	76	(70 - 130)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	76	(70 - 130)	EPA-2 TO-15
1,3,5-Trimethylbenzene	79	(70 - 130)	EPA-2 TO-15

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AC Matrix.....: AIR
LCS Lot-Sample#: H9J090000-175

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
1,2,4-Trimethylbenzene	**86**	**(70 - 130)**	**EPA-2 TO-15**
1,3-Dichlorobenzene	**75**	**(70 - 130)**	**EPA-2 TO-15**
1,4-Dichlorobenzene	**74**	**(70 - 130)**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**80**	**(70 - 130)**	**EPA-2 TO-15**
Benzyl chloride	**100**	**(70 - 130)**	**EPA-2 TO-15**
1,2,4-Trichloro-benzene	**98**	**(60 - 140)**	**EPA-2 TO-15**
Hexachlorobutadiene	**106**	**(60 - 140)**	**EPA-2 TO-15**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	120	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AC Matrix.....: AIR
LCS Lot-Sample#: H9J090000-175
Prep Date.....: 10/08/09 Analysis Date..: 10/08/09
Prep Batch #...: 9282175
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Dichlorodifluoromethane	2.5	3.1	ppb(v/v)	125	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	2.5	2.7	ppb(v/v)	109	EPA-2 TO-15
Chloromethane	2.5	2.8	ppb(v/v)	112	EPA-2 TO-15
Vinyl chloride	2.5	2.7	ppb(v/v)	110	EPA-2 TO-15
Bromomethane	2.5	2.2	ppb(v/v)	89	EPA-2 TO-15
Chloroethane	2.5	2.2	ppb(v/v)	88	EPA-2 TO-15
Trichlorofluoromethane	2.5	3.2	ppb(v/v)	130	EPA-2 TO-15
1,1-Dichloroethene	2.5	2.4	ppb(v/v)	95	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	2.5	2.5	ppb(v/v)	100	EPA-2 TO-15
Methylene chloride	2.5	2.6	ppb(v/v)	104	EPA-2 TO-15
1,1-Dichloroethane	2.5	2.4	ppb(v/v)	96	EPA-2 TO-15
cis-1,2-Dichloroethene	2.5	2.0	ppb(v/v)	79	EPA-2 TO-15
Chloroform	2.5	2.7	ppb(v/v)	107	EPA-2 TO-15
1,1,1-Trichloroethane	2.5	2.7	ppb(v/v)	108	EPA-2 TO-15
Carbon tetrachloride	2.5	2.9	ppb(v/v)	117	EPA-2 TO-15
Benzene	2.5	2.0	ppb(v/v)	82	EPA-2 TO-15
1,2-Dichloroethane	2.5	3.0	ppb(v/v)	120	EPA-2 TO-15
Trichloroethene	2.5	2.1	ppb(v/v)	84	EPA-2 TO-15
1,2-Dichloropropane	2.5	2.2	ppb(v/v)	89	EPA-2 TO-15
cis-1,3-Dichloropropene	2.5	2.3	ppb(v/v)	93	EPA-2 TO-15
Toluene	2.5	1.9	ppb(v/v)	75	EPA-2 TO-15
trans-1,3-Dichloropropene	2.5	2.3	ppb(v/v)	94	EPA-2 TO-15
1,1,2-Trichloroethane	2.5	2.0	ppb(v/v)	78	EPA-2 TO-15
Tetrachloroethene	2.5	2.2	ppb(v/v)	87	EPA-2 TO-15
1,2-Dibromoethane (EDB)	2.5	2.1	ppb(v/v)	85	EPA-2 TO-15
Chlorobenzene	2.5	2.0	ppb(v/v)	80	EPA-2 TO-15
Ethylbenzene	2.5	2.1	ppb(v/v)	84	EPA-2 TO-15
m-Xylene & p-Xylene	5.0	4.3	ppb(v/v)	86	EPA-2 TO-15
o-Xylene	2.5	2.1	ppb(v/v)	84	EPA-2 TO-15
Styrene	2.5	1.9	ppb(v/v)	76	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	2.5	1.9	ppb(v/v)	76	EPA-2 TO-15
1,3,5-Trimethylbenzene	2.5	2.0	ppb(v/v)	79	EPA-2 TO-15

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LL9JJ1AC Matrix.....: AIR
LCS Lot-Sample#: H9J090000-175

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
1,2,4-Trimethylbenzene	**2.5**	**2.2**	**ppb(v/v)**	**86**	**EPA-2 TO-15**
1,3-Dichlorobenzene	**2.5**	**1.9**	**ppb(v/v)**	**75**	**EPA-2 TO-15**
1,4-Dichlorobenzene	**2.5**	**1.9**	**ppb(v/v)**	**74**	**EPA-2 TO-15**
1,2-Dichlorobenzene	**2.5**	**2.0**	**ppb(v/v)**	**80**	**EPA-2 TO-15**
Benzyl chloride	**2.5**	**2.5**	**ppb(v/v)**	**100**	**EPA-2 TO-15**
1,2,4-Trichloro-benzene	**2.5**	**2.5**	**ppb(v/v)**	**98**	**EPA-2 TO-15**
Hexachlorobutadiene	**2.5**	**2.7**	**ppb(v/v)**	**106**	**EPA-2 TO-15**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	120	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AA Matrix.....: AIR
MB Lot-Sample #: H9J100000-158

Prep Date.....: 10/09/09
Analysis Date..: 10/09/09 Prep Batch #...: 9283158
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Dichlorodifluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloromethane	ND	0.50	ppb(v/v)	EPA-2 TO-15
Vinyl chloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Bromomethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichlorofluoromethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Methylene chloride	ND	0.50	ppb(v/v)	EPA-2 TO-15
1,1-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,2-Dichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chloroform	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,1-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Carbon tetrachloride	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Trichloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichloropropane	ND	0.20	ppb(v/v)	EPA-2 TO-15
cis-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Toluene	ND	0.20	ppb(v/v)	EPA-2 TO-15
trans-1,3-Dichloropropene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2-Trichloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
Tetrachloroethene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	ND	0.20	ppb(v/v)	EPA-2 TO-15
Chlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Ethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
m-Xylene & p-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
o-Xylene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Styrene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3,5-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2,4-Trimethylbenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,3-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,4-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
1,2-Dichlorobenzene	ND	0.20	ppb(v/v)	EPA-2 TO-15
Benzyl chloride	ND	0.40	ppb(v/v)	EPA-2 TO-15
1,2,4-Trichloro-benzene	ND	1.0	ppb(v/v)	EPA-2 TO-15

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Hexachlorobutadiene	ND	1.0	ppb(v/v)	EPA-2 TO-15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AC Matrix.....: AIR
LCS Lot-Sample#: H9J100000-158
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Dichlorodifluoromethane	99	(60 - 140)	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	94	(60 - 140)	EPA-2 TO-15
Chloromethane	108	(60 - 140)	EPA-2 TO-15
Vinyl chloride	94	(70 - 130)	EPA-2 TO-15
Bromomethane	77	(70 - 130)	EPA-2 TO-15
Chloroethane	89	(70 - 130)	EPA-2 TO-15
Trichlorofluoromethane	95	(60 - 140)	EPA-2 TO-15
1,1-Dichloroethene	107	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	105	(70 - 130)	EPA-2 TO-15
Methylene chloride	87	(70 - 130)	EPA-2 TO-15
1,1-Dichloroethane	100	(70 - 130)	EPA-2 TO-15
cis-1,2-Dichloroethene	96	(70 - 130)	EPA-2 TO-15
Chloroform	95	(70 - 130)	EPA-2 TO-15
1,1,1-Trichloroethane	100	(70 - 130)	EPA-2 TO-15
Carbon tetrachloride	116	(70 - 130)	EPA-2 TO-15
Benzene	73	(70 - 130)	EPA-2 TO-15
1,2-Dichloroethane	95	(70 - 130)	EPA-2 TO-15
Trichloroethene	80	(70 - 130)	EPA-2 TO-15
1,2-Dichloropropane	108	(70 - 130)	EPA-2 TO-15
cis-1,3-Dichloropropene	98	(70 - 130)	EPA-2 TO-15
Toluene	110	(70 - 130)	EPA-2 TO-15
trans-1,3-Dichloropropene	116	(70 - 130)	EPA-2 TO-15
1,1,2-Trichloroethane	106	(70 - 130)	EPA-2 TO-15
Tetrachloroethene	93	(70 - 130)	EPA-2 TO-15
1,2-Dibromoethane (EDB)	109	(70 - 130)	EPA-2 TO-15
Chlorobenzene	103	(70 - 130)	EPA-2 TO-15
Ethylbenzene	121	(70 - 130)	EPA-2 TO-15
m-Xylene & p-Xylene	119	(70 - 130)	EPA-2 TO-15
o-Xylene	120	(70 - 130)	EPA-2 TO-15
Styrene	138 a	(70 - 130)	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	124	(70 - 130)	EPA-2 TO-15
1,3,5-Trimethylbenzene	136 a	(70 - 130)	EPA-2 TO-15

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AC Matrix.....: AIR
LCS Lot-Sample#: H9J100000-158

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
1,2,4-Trimethylbenzene	124	(70 - 130)	EPA-2 TO-15
1,3-Dichlorobenzene	112	(70 - 130)	EPA-2 TO-15
1,4-Dichlorobenzene	110	(70 - 130)	EPA-2 TO-15
1,2-Dichlorobenzene	112	(70 - 130)	EPA-2 TO-15
Benzyl chloride	127	(70 - 130)	EPA-2 TO-15
1,2,4-Trichloro-benzene	132	(60 - 140)	EPA-2 TO-15
Hexachlorobutadiene	127	(60 - 140)	EPA-2 TO-15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AC Matrix.....: AIR
LCS Lot-Sample#: H9J100000-158
Prep Date.....: 10/09/09 Analysis Date..: 10/09/09
Prep Batch #...: 9283158
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Dichlorodifluoromethane	25	25	ppb(v/v)	99	EPA-2 TO-15
1,2-Dichloro-1,1,2,2-tetrafluoroethane	25	23	ppb(v/v)	94	EPA-2 TO-15
Chloromethane	25	27	ppb(v/v)	108	EPA-2 TO-15
Vinyl chloride	25	23	ppb(v/v)	94	EPA-2 TO-15
Bromomethane	25	19	ppb(v/v)	77	EPA-2 TO-15
Chloroethane	25	22	ppb(v/v)	89	EPA-2 TO-15
Trichlorofluoromethane	25	24	ppb(v/v)	95	EPA-2 TO-15
1,1-Dichloroethene	25	27	ppb(v/v)	107	EPA-2 TO-15
1,1,2-Trichloro-1,2,2-trifluoroethane	25	26	ppb(v/v)	105	EPA-2 TO-15
Methylene chloride	25	22	ppb(v/v)	87	EPA-2 TO-15
1,1-Dichloroethane	25	25	ppb(v/v)	100	EPA-2 TO-15
cis-1,2-Dichloroethene	25	24	ppb(v/v)	96	EPA-2 TO-15
Chloroform	25	24	ppb(v/v)	95	EPA-2 TO-15
1,1,1-Trichloroethane	25	25	ppb(v/v)	100	EPA-2 TO-15
Carbon tetrachloride	25	29	ppb(v/v)	116	EPA-2 TO-15
Benzene	25	18	ppb(v/v)	73	EPA-2 TO-15
1,2-Dichloroethane	25	24	ppb(v/v)	95	EPA-2 TO-15
Trichloroethene	25	20	ppb(v/v)	80	EPA-2 TO-15
1,2-Dichloropropane	25	27	ppb(v/v)	108	EPA-2 TO-15
cis-1,3-Dichloropropene	25	25	ppb(v/v)	98	EPA-2 TO-15
Toluene	25	27	ppb(v/v)	110	EPA-2 TO-15
trans-1,3-Dichloropropene	25	29	ppb(v/v)	116	EPA-2 TO-15
1,1,2-Trichloroethane	25	26	ppb(v/v)	106	EPA-2 TO-15
Tetrachloroethene	25	23	ppb(v/v)	93	EPA-2 TO-15
1,2-Dibromoethane (EDB)	25	27	ppb(v/v)	109	EPA-2 TO-15
Chlorobenzene	25	26	ppb(v/v)	103	EPA-2 TO-15
Ethylbenzene	25	30	ppb(v/v)	121	EPA-2 TO-15
m-Xylene & p-Xylene	50	60	ppb(v/v)	119	EPA-2 TO-15
o-Xylene	25	30	ppb(v/v)	120	EPA-2 TO-15
Styrene	25	34 a	ppb(v/v)	138	EPA-2 TO-15
1,1,2,2-Tetrachloroethane	25	31	ppb(v/v)	124	EPA-2 TO-15
1,3,5-Trimethylbenzene	25	34 a	ppb(v/v)	136	EPA-2 TO-15

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: H9J060192 Work Order #...: LMDPA1AC Matrix.....: AIR
LCS Lot-Sample#: H9J100000-158

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
1,2,4-Trimethylbenzene	25	31	ppb(v/v)	124	EPA-2 TO-15
1,3-Dichlorobenzene	25	28	ppb(v/v)	112	EPA-2 TO-15
1,4-Dichlorobenzene	25	28	ppb(v/v)	110	EPA-2 TO-15
1,2-Dichlorobenzene	25	28	ppb(v/v)	112	EPA-2 TO-15
Benzyl chloride	25	32	ppb(v/v)	127	EPA-2 TO-15
1,2,4-Trichloro-benzene	25	33	ppb(v/v)	132	EPA-2 TO-15
Hexachlorobutadiene	25	32	ppb(v/v)	127	EPA-2 TO-15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(60 - 140)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

HGJ060192

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	1 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip: Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO #: 51333286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-1S 10 09	10/2/09	9:21	9:31			103	L-5136	X									X		
SV-1D 10 09		9:22	9:32			32	L-5185	X									X		
SV-2S 10 09		9:45	9:55			01	L-5144	X									X		
SV-2D 10 09		9:46	9:56			44	L-4155	X									X		
SV-4S 10 09		10:11	10:21			85	L-8177	X									X		
SV-4D 10 09	↓	10:12	10:22			70	L-518	X									X		

Sampled by: James P. Staley

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

2 BOXES RECD AMBIENT
WB#S 1Z 54D 3W5 01 4292 0474
1Z 54D 3W5 01 4458 7085
NO CUSTODY SEALS TG 10/6/09
20 CANS, 20 FLOWS (R)

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/5/09	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by: Del Smith 10/6/09 9:10
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN. 37921
phone 865-291-3000 fax 865-584-4315

HPSD60192

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	2 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip: Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO # 51332286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-5S 10 09	10/2/09	10:40	10:50			64	L-8180	X									X		
SV-5D 10 09		10:41	10:51			03	L-5198	X									X		
SV-6S 10 09		11:27	11:37			105	L-5117	X									X		
SV-6D 10 09		11:28	11:38			47	L-5110	X									X		
SV-7S 10 09		11:42	11:52			67	L-5111	X									X		
SV-7D 10 09	↓	11:43	11:53			73	L-5154	X									X		

Sampled by :
James P. Staley

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/5/09	Canisters Received by:	
Samples Relinquished by:	Date/Time:	Received by:	
Relinquished by:	Date/Time:	Received by:	

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

H9501601 92

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	3 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip: Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO # 51333286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sentinel	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-8S 10 09	10/2/09	12:01	12:11			115	L-8194	X									X		
SV-8D 10 09	↓	12:02	12:12			39	L-5145	X									X		
SV-9S 10 09		12:15	12:25			110	L-5107	X									X		
SV-9D 10 09	↓	12:16	12:26			89	L-5104	X									X		
	~~↓~~																		
	~~↓~~																		

Sampled by :
James P. Staley

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (Inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/2/09	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by: 10/6/09 930
Relinquished by:	Date/Time:	Received by:

09

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 440060192

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	4A
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)			✓	☐ 2a Temp Blank = _____ ☐ 2b Cooler Temp = _____	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☐ 4c Other:	
5. Were all of the samples listed on the COC received?	✓			☐ 5a Samples received-not on COC ☐ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?	✓				

Quote #: 73525 PM Instructions: _____

Sample Receiving Associate: Smith Date: 10/16/09

QA026R21.doc, 090409

Test America - Knoxville ---- Air Canister Dilution Log

Lot Number: *H9J060192*

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (-in or + psig)	Analyst/Date	I / S	Pbarr (in)	Initial Pres. Pi (in)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
DDF 10-7-09	NA	28.96	LL23H	L5136	-2.0													8324
			LL23M	L5185	-1.6													
			LL23N	L5144	-3.2													
			LL23P	L4155	-3.1													
			LL23Q	L8177	-4.8													8327
			LL23W	L5118	-6.3													8324
			LL230	L8180	-4.8													8327
			LL231	L5198	-4.1													8324
			LL232	L5117	-3.7													
			LL234	L5110	-3.9													
			LL235	L5111	-5.1													
			LL236	L5154	-3.2													
			LL237	L8194	-4.5													8327
			LL238	L5145	-3.4													8324
			LL239	L5107	-5.9													
			LL24A	L5104	-5.1													8327
			LL24L	SL1228											DDF	10-7-09		

Original Chain of Custody Documentation

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

HYJD60192

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	1 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip: Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO # 51333286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-1S 10 09	10/2/09	9:21	9:31			103	L-5136	X									X		
SV-1D 10 09		9:22	9:32			32	L-5185	X									X		
SV-2S 10 09		9:45	9:55			01	L-5144	X									X		
SV-2D 10 09		9:46	9:56			44	L-4155	X									X		
SV-4S 10 09		10:11	10:21			85	L-8177	X									X		
SV-4D 10 09		10:12	10:22			70	L-5118	X									X		

Sampled by :
James P. Staley

Temperature (Fahrenheit)	Interior	Ambient
Start		
Stop		

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

2 BOXES RECD AMBIENT
WBHS 1E 540 3WS 01 4242 0479
1E 540 3WS 01 4458 7685
NO CUSTODY SEALS TG 10/6/09
20 CANS, 20 FLOWS (R)

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/5/09	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by: Dan Smith 10/6/09 9:10
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

HYSD60192

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	2 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO # 5133286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-5S 10 09	10/2/09	10:40	10:50			64	L-8180	X									X		
SV-5D 10 09		10:41	10:51			03	L-5198	X									X		
SV-6S 10 09		11:27	11:37			105	L-5117	X									X		
SV-6D 10 09		11:28	11:38			47	L-5110	X									X		
SV-7S 10 09		11:42	11:52			67	L-5111	X									X		
SV-7D 10 09		11:43	11:53			73	L-5154	X									X		

Sampled by : James P. Staley

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/5/09	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by: Smith 10/6/09 9:10
Relinquished by:	Date/Time:	Received by:

H9J060192

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Steve Murray	Sampled By: James Staley
Company: MACTEC	Phone: 231-922-9050	3 of 3 COCs
Address: 41 Hughes Dr	Site Contact: James Staley	
City/State/Zip: Traverse City, MI 49686	TAL Contact:	
Phone: 231-922-9050		
FAX: 231-922-9055		
Project Name: Honeywell South Bend	Analysis Turnaround Time	
Site/location: South Bend, IN	Standard (Specify)	
PO # 5133286	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type:	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SV-8S 10 09	10/2/09	12:01	12:11			115	L-8194	X									X		
SV-8D 10 09	↓	12:02	12:12			39	L-5145	X									X		
SV-9S 10 09		12:15	12:25			110	L-5107	X									X		
SV-9D 10 09		12:16	12:26			89	L-5104	X									X		

Sampled by :
James P. Staley

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time: 10/2/09	Canisters Received by:
Samples Relinquished by:	Date/Time:	Received by: Smith 10/6/09 9:10
Relinquished by:	Date/Time:	Received by:

TestAmerica
South Burlington, VT

Extended Data Package

134014

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

October 28, 2009

Mr. Craig Kielty
Mactec E & C
46850 Magellan Drive
Suite 190
Novi, MI 48377

Re: Laboratory Project No. 29000
Case: 29000; SDG: 134014

Dear Mr. Kielty:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on October 7th, 2009. Laboratory identification numbers were assigned, and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 10/07/09 ETR No: 134014		
809266	SV-6_5.0 0909	09/29/09	SOIL
809267	SV-6_10.0 0909	09/29/09	SOIL
809268	SV-9_5.0 0909	09/29/09	SOIL
809269	SV-9_10.0 0909	09/29/09	SOIL

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

The laboratory noted no exceptions to the method quality control requirements during the analysis of the samples referenced above.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

Don Dawicki
Project Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody

MACTEC
41 Hughes Drive
Traverse City, MI 49686
Phone: (231) 922-9050
Fax: (231) 922-9055

Chain of Custody

COC #: 0501142

PO #: 5133286

Tracking #:

Relinquished By:	Received By:	Cooler Temp.	Date:	Time:
Jeff Doerr	Clarkold TA	18.8	10/07/09	1020
Relinquished By:	Received By:	Cooler Temp.	Date:	Time:

Lab: Test America North Canton

Send Results To: Craig Kielty + Nick Rogers

Fax Results?: Yes ~~No~~

E-mail Results?: (Yes) No

E-mail Address: Ckielty@Mactec.com and NRRogers@Mactec.com

Project Name: Honeywell South Bend Vapor Intrusion

Project Number: 33100900 26.01

Project Location: South Bend IN

Sampler's Signature: Jeff Doerr

Container Size:
1. 40 mL
2. 500 mL
3. 1 L
4. 4 oz
5. Other _____

Container Type:
1. Plastic
2. Glass
3. VOA
4. Other _____

Sample Matrix:
1. Water
2. Soil
3. Other _____

Preservative:
1. None
2. HCl
3. H_2SO_4
4. HNO_3
5. CH_3OH
6. Other _____

Analysis / Method: Moisture Content D422 | Grain Size D2216-90

Page 1 of 1

Cooler ___ of ___

Sample Identification	Collection Time	Collection Date	Sample Container Size	Sample Container Type	Sample Container Number	Sample Matrix	Preservative	Field Filtered?	Moisture Content D422	Grain Size D2216-90	Comments:
~~SV-6_5.0 0909~~											
SV-6_5.0 0909		9/29	8oz	Glass	1	Soil	n.a	n	X	X	
SV-6_10.0 0909		↓	↓	↓	↓	↓	↓	↓	↓	↓	
SV-9_5.0 0909		↓	↓	↓	↓	↓	↓	↓	↓	↓	
SV-9_10.0 0909		↓	↓	↓	↓	↓	↓	↓	↓	↓	

F1008-C 11/04 Copies: White - Lab Gold - Lab Pink - Sample Collector

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Report Summary – Geotechnical

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.: SV-6_5.0 0909

Lab Name: TestAmerica Burlington | Contract: 5133286 | SDG No.: 134014

Lab Code: TALVT | Case No.: 29000 | Lab Sample ID: 809266

Matrix: SOIL | Client: HONEYW | Date Received: 10/07/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
D2216	Moisture Content	10/19/09		%	1	0.0	6.3	

Printed on: 10/26/09 09:55 AM

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.
SV-6_10.0 0909

Lab Name: TestAmerica Burlington | Contract: 5133286 | SDG No.: 134014

Lab Code: TALVT | Case No.: 29000 | Lab Sample ID: 809267

Matrix: SOIL | Client: HONEYW | Date Received: 10/07/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
D2216	Moisture Content	10/19/09		%	1	0.0	4.2	

Printed on: 10/26/09 09:55 AM

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.: SV-9_5.0 0909

Lab Name: TestAmerica Burlington | Contract: 5133286 | SDG No.: 134014

Lab Code: TALVT | Case No.: 29000 | Lab Sample ID: 809268

Matrix: SOIL | Client: HONEYW | Date Received: 10/07/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
D2216	Moisture Content	10/19/09		%	1	0.0	3.2	

Printed on: 10/26/09 09:55 AM

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.
SV-9_10.0 0909

Lab Name: TestAmerica Burlington | Contract: 5133286 | SDG No.: 134014

Lab Code: TALVT | Case No.: 29000 | Lab Sample ID: 809269

Matrix: SOIL | Client: HONEYW | Date Received: 10/07/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
D2216	Moisture Content	10/19/09		%	1	0.0	3.1	

Printed on: 10/26/09 09:55 AM

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Supportive Documentation – Geotechnical

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Moisture Content

ASTM Method D2216: Standard Test Method for Determination of Water (Moisture) Content of Soil and Rock by Mass
Calculations

Client Code:	HONEYW	**Start Date:**	10/19/2009
ETR:	134014	**Start Time:**	14:42
SDG:	134014	**End Date:**	10/20/2009
		Analyst:	MAP

Laboratory Number	Weight of Pan (g)	Pan + Wet Sample (g)	Pan + Dry Sample (g)	Moisture Content (%)
809266	3.95	135.26	127.42	6.3
809267	3.86	128.48	123.44	4.2
809268	3.92	144.36	140.03	3.2
809269	2.89	124.07	120.38	3.1

TestAmerica

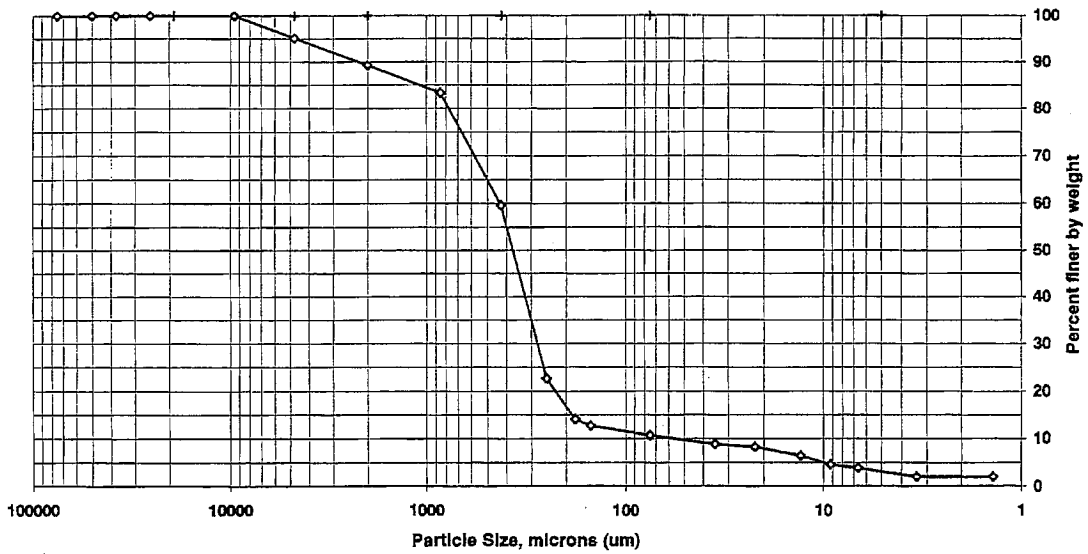
THE LEADER IN ENVIRONMENTAL TESTING

Particle Size Results

Particle Size of Soils by ASTM D422

Client Code:	HONEYW	**SDG:**	134014	**Date Received:**	10/7/2009
Sample ID:	SV-6-5.0 0909	**ETR(s):**	134014	**Start Date:**	10/13/2009
Lab ID:	809266			**End Date:**	10/24/2009

Percent Solids:	94.0%	**Non-soil material:**	na
Specific Gravity:	2.650	**Shape (> #10):**	subrounded
Maximum Particle Size:	9.5 mm	**Hardness (> #10):**	hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	95.2	4.8
#10	2000	89.3	5.9
#20	850	83.3	6.0
#40	425	59.6	23.7
#60	250	22.6	37.0
#80	180	14.1	8.5
#100	150	12.7	1.4
#200	75	10.7	2.0
Hydrometer	34.9	8.9	1.8
|	22.2	8.3	0.6
|	13.0	6.4	1.9
|	9.2	4.6	1.9
|	6.6	3.9	0.6
|	3.4	2.0	2.0
V	1.4	2.0	0.0

Soil Classification	Percent of Total Sample
Gravel	4.8
Sand	84.4
Coarse Sand	5.9
Medium Sand	29.6
Fine Sand	48.9
Silt	6.8
Clay	3.9

Preparation Method: **D2217**
Dispersion Device: Mechanical mixer with a metal paddle.
Dispersion Period: 1 minute

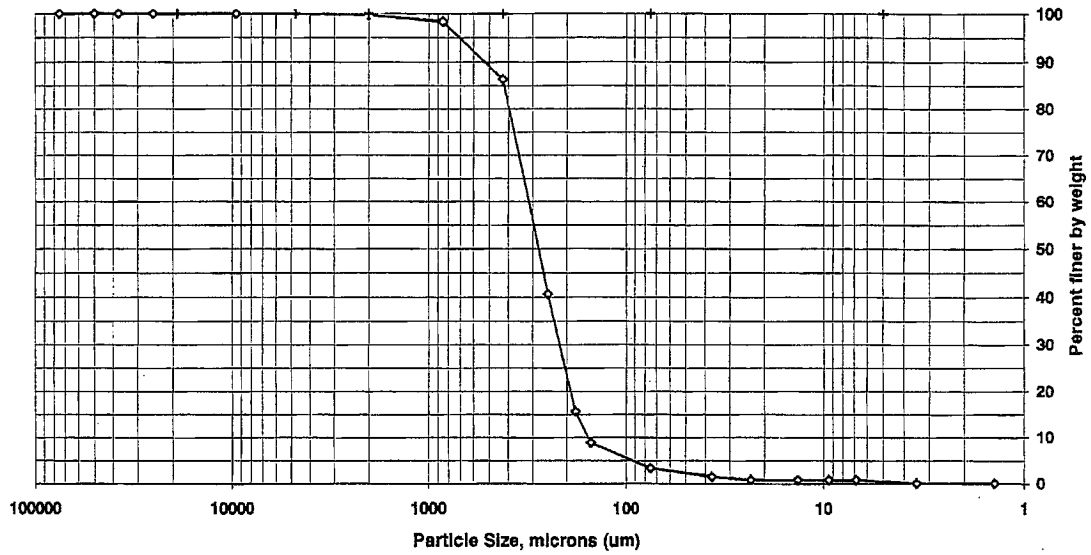
FSL024:07.29.05:0
TestAmerica Burlington

134014PS 10/26/2009

Particle Size of Soils by ASTM D422

Client Code:	HONEYW	**SDG:**	134014	**Date Received:**	10/7/2009
Sample ID:	SV-6-10.0 0909	**ETR(s):**	134014	**Start Date:**	10/13/2009
Lab ID:	809267			**End Date:**	10/24/2009

Percent Solids:	96.0%	**Non-soil material:**	na
Specific Gravity:	2.650	**Shape (> #10):**	subrounded
Maximum Particle Size:	Crs sand	**Hardness (> #10):**	hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.7	0.3
#20	850	98.4	1.3
#40	425	86.4	12.0
#60	250	40.6	45.8
#80	180	15.7	24.9
#100	150	8.9	6.8
#200	75	3.4	5.5
Hydrometer	36.9	1.5	1.9
|	23.4	0.9	0.6
|	13.5	0.9	0.0
|	9.4	0.9	0.0
|	6.8	0.9	0.0
|	3.5	0.1	0.7
V	1.4	0.1	0.0

Soil Classification	Percent of Total Sample
Gravel	0.0
Sand	96.6
Coarse Sand	0.3
Medium Sand	13.3
Fine Sand	83.0
Silt	2.5
Clay	0.9

Preparation Method: **D2217**
Dispersion Device: Mechanical mixer with a metal paddle.
Dispersion Period: 1 minute

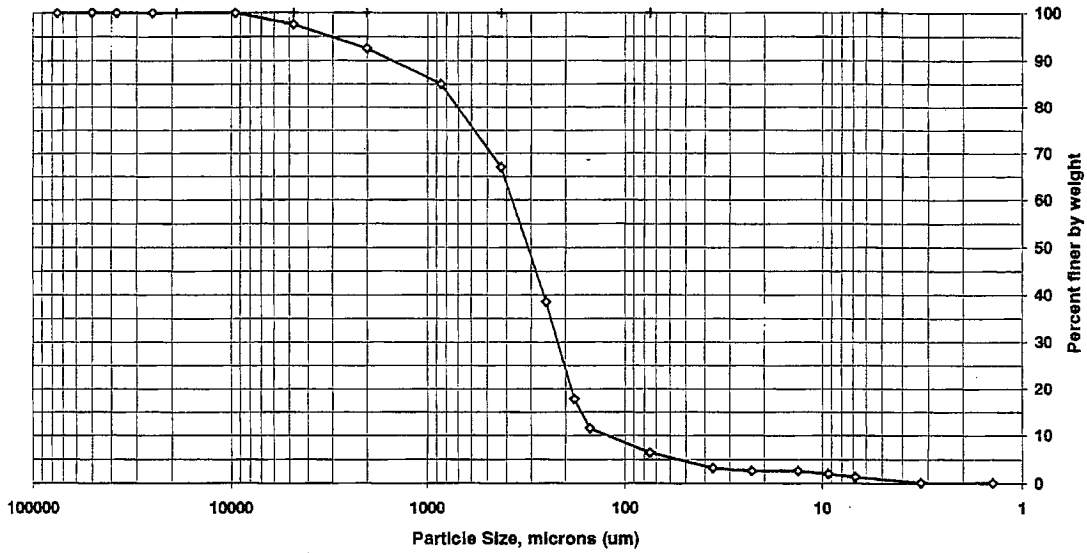
FSL024:07.29.05:0
TestAmerica Burlington

134014PS 10/26/2009

Particle Size of Soils by ASTM D422

Client Code:	HONEYW	**SDG:**	134014	**Date Received:**	10/7/2009
Sample ID:	SV-9-5.0 0909	**ETR(s):**	134014	**Start Date:**	10/13/2009
Lab ID:	809268			**End Date:**	10/24/2009

Percent Solids:	96.9%	**Non-soil material:**	na
Specific Gravity:	2.650	**Shape (> #10):**	subangular
Maximum Particle Size:	9.5 mm	**Hardness (> #10):**	hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	97.6	2.4
#10	2000	92.6	5.0
#20	850	85.0	7.5
#40	425	67.0	18.0
#60	250	38.5	28.5
#80	180	17.8	20.7
#100	150	11.6	6.3
#200	75	6.4	5.2
Hydrometer	36.4	3.2	3.2
|	23.1	2.6	0.6
|	13.4	2.6	0.0
|	9.3	2.0	0.6
|	6.8	1.4	0.6
|	3.3	0.1	1.3
V	1.4	0.1	0.0

Soil Classification	Percent of Total Sample
Gravel	2.4
Sand	91.2
Coarse Sand	5.0
Medium Sand	25.5
Fine Sand	60.6
Silt	5.0
Clay	1.4

Preparation Method: **D2217**
Dispersion Device: Mechanical mixer with a metal paddle.
Dispersion Period: 1 minute

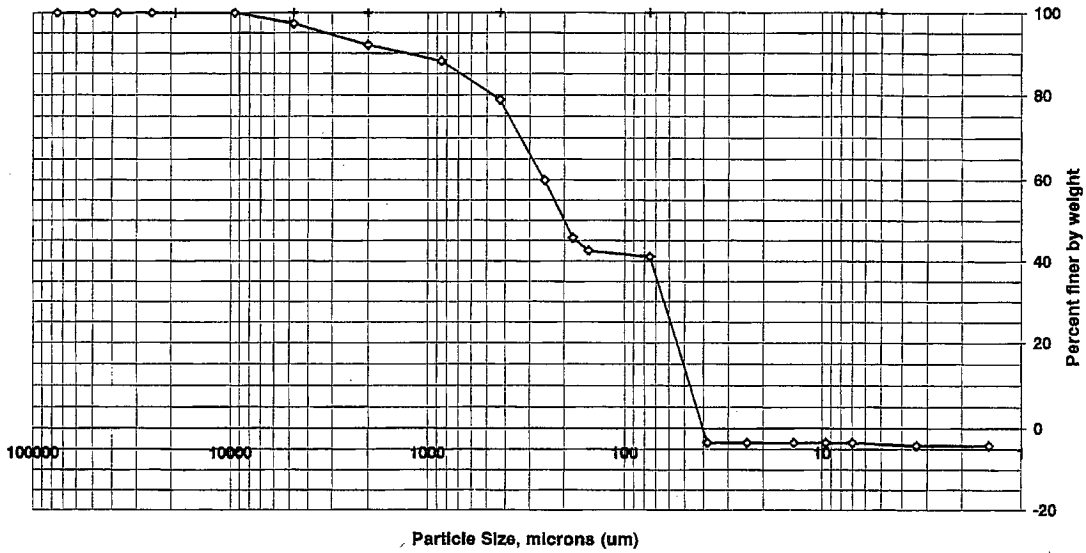
FSL024:07.29.05:0
TestAmerica Burlington

134014PS 10/26/2009

Particle Size of Soils by ASTM D422

Client Code:	HONEYW	**SDG:**	134014	**Date Received:**	10/7/2009
Sample ID:	SV-9-10.0 0909	**ETR(s):**	134014	**Start Date:**	10/13/2009
Lab ID:	809269			**End Date:**	10/24/2009

Percent Solids:	96.9%	**Non-soil material:**	na
Specific Gravity:	2.650	**Shape (> #10):**	subangular
Maximum Particle Size:	9.5 mm	**Hardness (> #10):**	hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	97.3	2.7
#10	2000	92.0	5.3
#20	850	88.1	3.9
#40	425	78.9	9.2
#60	250	59.8	19.0
#80	180	45.7	14.1
#100	150	42.5	3.2
#200	75	41.1	1.5
Hydrometer	38.2	-3.5	44.6
|	24.1	-3.5	0.0
|	13.9	-3.5	0.0
|	9.5	-3.5	0.0
|	7.0	-3.5	0.0
|	3.4	-4.2	0.7
V	1.5	-4.2	0.0

Soil Classification	Percent of Total Sample
Gravel	2.7
Sand	56.3
Coarse Sand	5.3
Medium Sand	13.2
Fine Sand	37.8
Silt	44.6
Clay	-3.5

Preparation Method: **D2217**
Dispersion Device: Mechanical mixer with a metal paddle.
Dispersion Period: 1 minute

FSL024:07.29.05:0
TestAmerica Burlington

134014PS 10/26/2009

Particle Size Analysis of Soils
By ASTM D422
Hydrometer Data

Set Number: 134014

Client Code: HONEYW
SDG: 134014
ETR(s): 134014

Date Received: 7-Oct-09
Start Date: 13-Oct-09
End Date: 24-Oct-09

Date and Analyst

Percent Solids	Weighed	Mixed	Hydrometer	Large sieves	Small sieves
MAP 10/19/09	MAP 10/19/09	TDK 10/20/09	TDK 10/20/09	TDC 10/20/096	MAP 10/21/09
DJP 10/20/09			EMG 10/21/09	TPB 10/24/09	TPB 10/24/09

Test number	1	2	3	4	5	6	7	8	9	10	11	12
Lab number					809266	809267	809268	809269				
Time, min. (2)	2	2	2	2	2	2	2	2	2	2	2	2
Reading					1.0110	1.0050	1.0065	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (5)	5	5	5	5	5	5	5	5	5	5	5	5
Reading					1.0105	1.0045	1.0060	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (15)	15	15	15	15	15	15	15	15	15	15	15	15
Reading					1.0090	1.0045	1.0060	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (30)	30	30	29	29	31	31	31	32	30	30	30	31
Reading					1.0075	1.0045	1.0055	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (60)	59	58	58	63	60	59	59	60	63	57	63	57
Reading					1.0070	1.0045	1.0050	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (250)	256	256	250	250	240	234	265	259	253	247	241	235
Reading					1.0055	1.0040	1.0040	1.0005				
Temperature, C					20.5	20.5	20.5	20.5				
Time, min. (1440)	1440	1440	1434	1434	1424	1418	1412	1406	1400	1394	1388	1382
Reading					1.0055	1.0040	1.0040	1.0005				
Temperature, C					20.5	20.5	20.5	20.5				

Hydrometer used: 741402 **Model #:** ASTM 151H **Manufacturer:** Chase **Hydrometer start time:** 14:20

Calibrations:	L temp, C	L read	H Temp, C	H read
	17.0	1.0045	23.0	1.0035

Cal. Date: 01/06/09 **Hydrometer data entered:** DJP 10/26/09

FSL024:07.29.05:0
TestAmerica Burlington

Particle Size Analysis of Soils
By ASTM D422
Hydrometer Data

Set Number: 134014

Client Code: HONEYW
SDG: 134014
ETR(s): 134014

MC

Date Received: 07-Oct-09
Start Date: 13-Oct-09
End Date: 10.24.09

Date and Analyst

Percent Solids	Weighed	Mixed	Hydrometer	Large sieves	Small sieves
MAP 10.19.09 DJM 10.20.09	MAP 10.19.09	TDK 10-20-09	TDK 10-20-09 EML 10/21/09	TDK 10-20-09 DJM 10/24/09	MAP 10-21-09 DJM 10/24/09

Test number	1	2	3	4	5	6	7	8	9	10	11	12
Lab number					809266	809267	809268	809269				
Time, min. (2)	2	2	2	2	2	2	2	2	2	2	2	2
Reading					1.0110	1.0050	1.0065	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (5)	5	5	5	5	5	5	5	5	5	5	5	5
Reading					1.0105	1.0045	1.0060	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (15)	15	15	15	15	15	15	15	15	15	15	15	15
Reading					1.0090	1.0045	1.0060	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (30)	30	30	29	29	31	31	31	32	30	30	30	31
Reading					1.0075	1.0045	1.0055	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (60)	59	58	58	63	60	59	59	60	63	57	63	57
Reading					1.0070	1.0045	1.0050	1.0010				
Temperature, C					21.0	21.0	21.0	21.0				
Time, min. (250)	256	256	250	250	240	234	265	259	253	247	241	235
Reading					1.0055	1.0040	1.0040	1.0005				
Temperature, C					20.5	20.5	20.5	20.5				
Time, min. (1440)	1440	1440	1434	1434	1424	1418	1412	1406	1400	1394	1388	1382
Reading					1.0055	1.0040	1.0040	1.0005				
Temperature, C					20.5	20.5	20.5	20.5				

Hydrometer used: 741402 **Model #:** ASTM 151H **Manufacturer:**

Hydrometer start time: 1420

Hydrometer data entered: DJM 10.26.09

Calibrations:	L temp, C	L read	H Temp, C	H read
	17.0		23.0	

Cal. Date:

FSL024:07.29.05:0
TestAmerica Burlington

134014PS 10/13/09

Particle Size Analysis of Soils By ASTM D422

Sieve Data

Client Code: [redacted] ETR(s): 134014 SDG: 134014 Date Rec: [redacted] Start Date: [redacted] End Date: [redacted]

SET: 134014

Test	1	2	3	4	5	6	7	8	9	10	11	12
Laboratory No					809266	809267	809268	809269				
Sample ID					SV-8-5.0 0909	SV-8-10.0 090	SV-9-5.0 090	SV-9-10.0 0909				

Dry prep = D421
Wet prep = D2217

Standard Values

Sieve	Opening, um
3 inch	75000
2 inch	50000
1.5 inch	37500
1 inch	25000
3/4 inch	19000
3/8 inch	9500
#4	4750
#10	2000
#20	850
#40	425
#60	250
#80	180
#100	150
#200	75

Sample Prep					D2217	D2217	D2217	D2217				
Pan, g												
Pan/sample, g					137.60	130.64	137.97	134.69				
Pan/dry sample, g												
Hygroscopic Moisture correction factor (HMCF) for dry prep / Percent Solids for dry and wet prep												
Pan, g					3.95	3.89	3.92	3.89				
Pan/sample, g					135.26	129.48	141.39	124.07				
Pan/dry sample, g					127.42	123.44	130.03	120.38				
HMCF					100.0%	100.0%	100.0%	100.0%				
Description of >#10 particles												
Non-soil material					na	na	na	na				
Shape					subrounded	subrounded	subangular	subangular				
Hardness					hard	hard	hard	hard				
Sample % Solids					94.0%	96.0%	96.9%	96.9%				
Dry sample wt, g					129.38	125.55	133.04	130.74				

Sieve (tares)

Size	Mass, g		Size
3 inch			3 inch
2 inch			2 inch
1.5 inch			1.5 inch
1 inch			1 inch
3/4 inch			3/4 inch
3/8 inch			3/8 inch
#4	469.25		#4
#10	463.02		#10
#20	391.82	D	#20
#40	356.17	D	#40
#60	326.08	D	#60
#80	313.86	D	#80
#100	329.78	D	#100
#200	326.58	D	#200

Sieve + Sample Weights

Size	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g	Mass, g
3 inch												
2 inch												
1.5 inch												
1 inch												
3/4 inch												
3/8 inch												
#4					494.52		491.46	491.74				
#10					470.63	463.41	469.73	469.93				
#20					399.56	393.47	401.81	396.94				
#40					366.79	371.20	380.17	369.28				
#60					373.94	363.64	363.98	350.98				
#80					324.91	345.17	341.42	332.33				
#100					331.55	338.34	338.10	333.90				
#200					329.16	333.47	328.42	325.49				
Maximum Particle size					9.5 mm	Crs sand	9.5 mm	9.5 mm				
Default SG 2.65	**Specific gravity**				2.650	2.650	2.650	2.650				

Sample Mass Parameters

Sample Mass >#10, g	0.00	0.00	0.00	0.00	13.88	0.39	9.91	10.40	0.00	0.00	0.00	0.00
Sample mass <#10, g	#VALUE!	#VALUE!	#VALUE!	#VALUE!	115.50	125.16	123.13	120.34	#VALUE!	#VALUE!	#VALUE!	#VALUE!

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Handling

PAIGE KESTNER
(231) 922-9050
MACTEC ENGINEERING & CONSULTIN
341 HUGHES DRIVE
TRAVERSE CITY MI 49686-8263

12 LBS 1 C

SHIP TO:
DON DAWICKI
(802) 660-1990
TEST AMERICA BURLINGTON
SUITE 11
30 COMMUNITY DRIVE
SOUTH BURLINGTON VT 05403

VT 054 0-02

UPS NEXT DAY AIR 1

TRACKING #: 1Z 540 3W5 01 4409 8730

BILLING: P/P

REF 1:3310090028.01
REF 2:Honeywell Soil Vapor intrusion

WS 11.8.15 Eltron LP2844 93.0A 07/2001

TestAmerica Burlington
SAMPLE RECEIPT & LOG IN CHECKLIST

Client:	HONEYW	Date Received:	10/07/09	Log In Date:	10/9/09
ETR:	134014	Time Received:	1820	By:	[illegible]
SDG:	134014	Received By:	CK	Signature:	[signature]
Project:	29000	# Coolers Received:		PM Signature:	[signature]
Samples Delivered By: X Shipping Service ◻ Courier ◻ Hand ◻ Other (specify)				Date:	10/28/09

List Air bill Number(s) or Attach a photocopy of the Air Bill:

COOLER SCREEN	YES	NO	NA	COMMENTS
There is *no* evidence to indicate tampering	X			
Custody seals are present and intact		X		
Custody seal numbers are present			X	

If yes, list custody seal numbers:

Thermal Preservation Type: ◻ Wet Ice ◻ Blue Ice X None ◻ Other (specify)

IR Gun ID: 96	Correction Factor (CF) = Ø °C		
Cooler 1: 18.8 °C	Cooler 6 °C	Cooler 11 °C	Cooler 16 °C
Cooler 2: °C	Cooler 7 °C	Cooler 12 °C	Cooler 17 °C
Cooler 3: °C	Cooler 8 °C	Cooler 13 °C	Cooler 18 °C
Cooler 4: °C	Cooler 9 °C	Cooler 14 °C	Cooler 19 °C
Cooler 5 °C	Cooler 10 °C	Cooler 15 °C	Cooler 20 °C

Unless otherwise documented, the recorded temperature readings are adjusted readings to account for the CF of the IR Gun

EPA Criteria: 0-6°C, except for air and geo samples which should be at ambient temperature and tissue samples, which may be frozen.

Some clients require thermal preservation criteria of 2-4°C or other such criteria. The PM must notify SM when alternate criteria is specified.

SAMPLE CONDITION	YES	NO	NA	COMMENTS
Sample containers were received intact	X			
Legible sample labels are affixed to each container	X			

CHAIN OF CUSTODY (COC)	YES	NO	NA	COMMENTS
COC is present and includes the following information for each container:				
• Sample ID / Sample Description	X			
• Date of Sample Collection	X			
• Time of Sample Collection (GM 10/9/09)	~~X~~	X		SEE BELOW
• Identification of the Sampler	X			
• Preservation Type			X	
• Requested Tests Method(s)	X			
• Necessary Signatures	X			
Internal Chain of Custody (ICOC) Required		X		
If yes to above, ICOC Record initiated for every Worksheet			X	

SAMPLE INTEGRITY / USABILITY	YES	NO	NA	COMMENTS
The sample container matches the COC		X		SEE BELOW
Appropriate sample containers were received for the tests requested	X			
Samples were received within holding time	X			
Sufficient amount of sample is provided for requested analyses	X			
VOA vials do not have headspace or a bubble >6mm (1/4" diameter)			X	
Appropriate preservatives were used for the tests requested			X	
pH of inorganic samples checked and is within method specification			X	
If no, attach Inorganic Sample pH Adjustment Form			X	

ANOMALY / NCR SUMMARY

Samples are listed as SV-6 - 5.09909 on coc and SV-6 @ 5.09909 on coc

Logged in samples with ID's off of chain of custody.

No sample times listed on coc or sample labels. No times used for login

FSR002:12.19.07:3
TestAmerica Burlington

ATTACHMENT C

Calculation of Attenuation Factors for Site-Specific Soil Gas Screening Levels

Calculation of Attenuation Factors

Attenuation Factor = Indoor Building Concentration / Soil Gas Concentration

Soil Type	Soil Gas Concentration (TCE)	Depth of Sampling	Indoor Building Concentration	Attenuation Factor
	(ug/m3)	(cm)	(ug/m3)	(unitless)
Sandy Loam	183	305	0.349	0.002
Sand	183	305	0.0277	0.0002

Soil Gas Concentration: Maximum TCE concentration detected: location SV-6d at 10 ft bgs
Sampling Depth: 10 ft bgs
Indoor Building Concentration: Calculated using Johnson & Ettinger Advanced Soil Gas Model (attached)
Attenuation Factor: Indoor Building Concentration / Soil Gas Concentration

DATA ENTRY SHEET

SITE-SPECIFIC ATTENUATION FACTOR CALCULATION - SAND

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.83E+02			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
200	305	10	305			S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.069								

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	1000	1000	366	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	105	0.306	ERROR	ERROR	0.050	9.92E-08	0.958	9.51E-08	4.000	1.83E+02	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.80E+06	2.22E-04	200	8,557	4.78E-03	2.06E-01	1.75E-04	1.09E-02	0.00E+00	0.00E+00	1.09E-02	105

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^3/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.83E+02	0.10	6.57E+01	1.09E-02	4.00E+02	1.85E+98	1.91E-03	3.49E-01	1.1E-04	4.0E-02

END

DATA ENTRY SHEET

SITE-SPECIFIC ATTENUATION FACTOR CALCULATION - SANDY LOAM

SG-ADV Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.83E+02			Trichloroethylene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
200	305	10	305			SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.068								

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	1000	1000	366	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	105	0.319	ERROR	ERROR	0.083	5.93E-09	0.957	5.68E-09	4,000	1.83E+02	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.80E+06	2.22E-04	200	8,557	4.78E-03	2.06E-01	1.75E-04	1.17E-02	0.00E+00	0.00E+00	1.17E-02	105

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.83E+02	0.10	3.92E+00	1.17E-02	4.00E+02	2.74E+05	1.51E-04	2.77E-02	1.1E-04	4.0E-02

END