TECHNICAL MEMORANDUM NO. 3
ON-SITE AND OFF-SITE SOIL GAS SAMPLING FOR VOCS

TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION
95 AMES STREET
ROCHESTER, NEW YORK

FINAL - DECEMBER 1997

ABB Environmental Services, Inc.

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I. Introduction

ABB Environmental Services, Inc. (ABB-ES), on behalf of Combustion Engineering, Inc. (CE), is performing an environmental investigation at the Taylor Instruments facility located at 95 Ames Street, Rochester, New York. The general scope of the investigation is described in the Site Investigation Work Plan, August 1997, Taylor Instruments Site (ABB-ES)

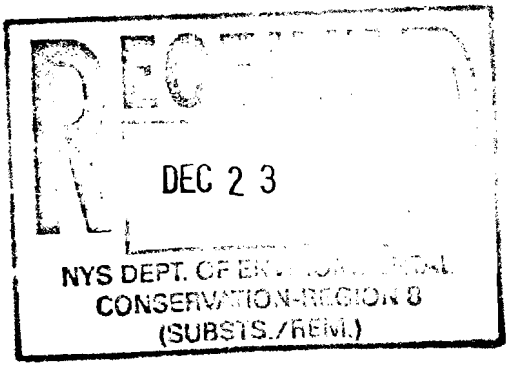
To provide NYSDEC, NYSDOH, and MCDH with timely results of investigation activities and to create an environment for discussing conceptual clean-up goals for the Taylor site, a series of Technical Memoranda (TM) has been prepared as follows:

TM No. 1	Full Suite (TCL VOCs, SVOCs, pesticides/PCBs, TAL metals) and TCLP Soil Analysis.
TM No. 2	Sewer Investigation.
TM No. 3	On-site and Off-site soil gas sampling for VOCs.
TM No. 4	Groundwater investigation.
TM No. 5	Mercury Vapor Investigation.
TM No. 6	Proposed Cleanup Goals and Justification

Each TM initially focused on summarizing the primary sample analytical results and provided only a limited amount of sampling effort documentation and interpretive discussion. As required by the Voluntary Cleanup Agreement (VCA) for the Taylor site, CE will submit the complete investigation results in an Investigative Report (IR). The IR will include a more thorough documentation of the work performed, summarize previous investigative activities, discuss QA/QC procedures and results, and expand upon and/or modify the initial, limited results discussion, interpretation and conclusions found in the TM.

As of November 8, 1997 the above memoranda had been delivered to the agencies. At NYSDOH's request, CE agreed to update TM 3 and TM 5 in order to provide a level of documentation similar to that which will be provided in the IR. The updated memoranda will contain all finalized analytical results, conclusions and interpretations and backup documentation.

This is Technical Memorandum No. 3.



II. Scope of Work

As described in the Work Plan, samples were collected from 7 off-site (SGV-1 through 7) and 4 on-site (SGV-8 through 11) locations to assess the presence of site-related VOCs in soil gas. The locations are shown on Figure 1, VOC Soil Gas Sampling Results (Attachment A).

The locations of SGV-6, SGV-7, and SGV-11 were modified from those shown in the Work Plan. SGV-6 was moved to a location just south of the railroad tracks due to drilling refusal in the Ames Street roadway beneath the rail overpass. SGV-7 was moved slightly to the east between the railroad tracks and the Davenport Machine facility, again due to access conditions. SGV-11 was paired with existing site well TW-04 instead of existing well TW-07 to provide longer coverage along the site perimeter abutting Ames Street.

II.1 Soil Gas Sampling.

At each location, a small-diameter borehole was created using a hydraulic push rig or, at locations SGV-6 and SGV-7, using hand tools. Soil gas samples were collected using EMFLUX passive soil gas sampling devices supplied by Quadrel Services, Inc. The EMFLUX technique is described in the Work Plan and in the data package provided by Quadrel included herein as Attachment B.

As discussed in the Work Plan, the EMFLUX passive soil gas collection technique involves deployment of the collectors for three or more days during specific time windows that are calculated to have greater potential for the movement (flux) of soil gas vapors through the subsurface. Based on Quadrel's recommendation, ABB-ES deployed collectors at locations SGV-1 through SGV-6, on 8/29/97 and retrieved them on 9/2/97. Upon retrieval it was discovered that the collector at SGV-6 had not been properly installed and therefore no soil gas was collected from that location. In addition, due to the pattern of results at locations SGV-9, -10 and -11, Quadrel suggested collecting a second set of samples at those locations. Collectors were deployed at these four locations on 9/10/97 and retrieved on 9/19/97. This collection window was recommended by Quadrel and included a time period with predicted greater potential for vapor emissions.

The remaining location, SGV-7, is on a narrow, privately owned lot lying between the railroad tracks and Davenport Machine Company. Access permission was not obtained in time to install the collector during either the 8/29/97 or 9/10/97 deployments. SGV-7 and a duplicate collector (located 0.5 feet apart) were installed on 9/19/97 and retrieved on 9/23/97, again in a vapor flux window recommended by Quadrel.

Soil gas samples were analyzed by Maryland Spectral Services, Inc. of Baltimore, Maryland, a laboratory contracted by Quadrel. Samples were analyzed using USEPA Method 8260 for VOCs.

II.2 Groundwater Sampling.

Groundwater samples were collected at eight of the eleven soil gas locations. At the four on-site soil gas locations, groundwater samples were obtained from adjacent overburden monitoring wells (W-5, TW-17, TW-9, and TW-7) during the first site-wide groundwater sampling event (from 9/6/97 to 9/8/97).

At the seven off-site locations groundwater samples were obtained, when possible, using the hydraulic punch rig. The punch rig utilizes screened rods and a small bailer to collect groundwater samples from a selected depth. Groundwater samples were successfully collected at SGV-1, SGV-3, SGV-4, and SGV-5 but could not be obtained from SGV-2 and SGV-6 (at the original attempted Ames Street location to the north of the railroad tracks) due to punch rod refusal at or above the water table. SGV-7, and re-located SGV-6 were installed by hand auger, therefore no water sample was obtainable.

Groundwater samples were analyzed by Columbia Analytical Services Inc, Rochester New York, using EPA Method 8260.

II.3 Soil Sampling.

Soil samples were collected from the four on-site soil gas locations (SGV-8, SGV-9, SGV-10, and SGV-11) using the punch rig . The objective was to assess the presence of contaminants in shallow unsaturated soils at the point of soil gas collection.

Groundwater samples were analyzed by Columbia Analytical Services Inc, Rochester, New York, using EPA Method 8260.

III. Discussion

The primary objective of VOC soil gas sampling was to assess the presence of VOCs in off-site soil gas and to use these measurements to identify potential health risks (if any) to off-site industrial/commercial or residential receptors.

The 1996 Phase I Voluntary Site Investigation (VSI) found that trichloroethene (TCE) was the most prevalent VOC identified in site soils and groundwater. In on-site soils, samples containing TCE also occasionally contained lesser amounts of tetrachloroethene (PCE). In on-site groundwater, samples with TCE frequently contained lesser amounts of 1,2,dichloroethene (1,2 DCE). 1,2 DCE is often seen as a transformation (biodegradation) product of TCE. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were only detected sporadically and at low concentrations in on-site samples.

III.1 Soil Gas Results.

Soil gas data reports provided by Quadrel are included in Attachment A. Quadrel Report No. QS2319V contains data and results for the initial sampling deployment of 8/29/97. Report No. QS2319B contains data and results for the subsequent deployments of 9/10/97 and 9/19/97.

Soil gas concentrations for all samples are summarized in Table 3-1. The results were examined to identify patterns of occurrence and magnitude and compared to soil and groundwater results (where available) to establish the presence of VOCs off-site that could potentially be associated with Taylor Instrument Site sources.

TCE was detected in soil gas at all four on-site sampling locations (SGV-8 through SGV-11). 1,2 DCE was detected at two of these (SGV-8 and SGV-9) and PCE was detected at two or three (SGV-8, SGV-9 and possibly SGV-10). The two sample sets from locations SGV-9, SGV-10, and SGV-11 are different in magnitude but very consistent in the distribution of results within each set. TCE levels are the highest at SGV-8 and become progressively lower moving from around northeast corner of the site.

At the off-site locations, TCE, 1,2 DCE, and PCE are reported in two samples close to the site (SGV-6 and SGV-7) but are not present in the other five off-site locations. Although PCE alone was measured in SGV-3, it does not fit the on-site pattern (i.e. it was not found along with TCE) and therefore does not appear to be related to the Taylor Instruments site.

Table 3-2 compares TCE, 1,2 DCE, and PCE soil gas results with co-located soil and/or groundwater samples. The on-site results show a general consistency in that the highest levels of TCE identified in soil gas are from the locations with the highest levels of TCE reported in groundwater and soil samples (SGV-8 and SGV-9).

VOCs other than TCE, 1,2 DCE, and PCE that were identified in soil gas do not appear to be related to the Taylor Instruments site. BTEX compounds were detected in most soil gas samples. However, BTEX was not identified in groundwater from wells along the site perimeter near soil gas locations (e.g. SGV-8 through SGV-11) in this study or in previous sampling. BTEX was also not detected in groundwater collected at the off-site soil gas locations, even from locations such as SGV-5 which had a comparably high BTEX soil gas result. These low concentrations of BTEX compounds in soil gas are probably related to local impact from roads, vehicles, off-site industries, railroads, etc.

Similarly, other VOCs (carbon tetrachloride, et al. on Table 3-1) were detected at very low soil gas concentrations but were not found in any of the soil or groundwater samples from this study and are not therefore interpreted to be soil gas contaminants of concern.

Regardless of frequency of detection, or whether or not compounds appeared to be related to Taylor Instruments site, all compounds detected in soil gas were evaluated with respect to health risk as discussed in Section IV.

III.2 Soil Results.

Results for the four soil samples collected at the on-site soil gas locations, (SGV-8 through SGV-11), are presented in Attachment B. TCE was the sole VOC detected and was identified in the samples from only SGV-8 and SGV-9. As discussed above, these results are consistent with the detection of TCE in soil gas and groundwater at these locations (see Table 3-2).

III.3 Groundwater.

Results for the four off-site groundwater samples and the four on-site well samples adjacent to on-site soil gas points are provided in Attachment B. In brief, TCE and to a lesser extent 1,2 DCE were identified in the four on-site samples with highest concentrations found along the northern site perimeter next to soil gas locations SGV-8 and SGV-9. Only one of the four off-site samples (SGV-1) contained a potential site-related VOC (TCE at 7.1 ug/L). A trip blank and rinseate blank associated with this sample contained similar concentrations of TCE, casting doubt on the validity of the SGV-1 result.

Groundwater data from all site wells is presented and discussed in detail in TM-4, "Groundwater Investigation".

III.4 Data Quality Evaluation.

The laboratory analytical data used in this technical memorandum was generated from two sources. Soil and water environmental samples were collected by ABB-ES and submitted to Columbia Analytical Services, Inc. (CAS) in Rochester, New York. Soil gas samples were collected on sorbent patches provided by Quadrel Services, Inc., and deployed by the ABB-ES field sampling crew. The sorbent patches were submitted to Quadrel who forwarded them to Maryland Spectral Services, Inc. (MSS) in Baltimore, Maryland. All samples were analyzed using purge and trap gas chromatography coupled with a mass selective detector.

A data quality evaluation was performed in accordance with the Work Plan using the National Functional Guidelines for Organic Data Review as guidance. The samples evaluated are listed along with their associated quality control samples in Table E-1 in Attachment E.

The data were evaluated for seven categories: precision, accuracy, representativeness, completeness, comparability, sensitivity, and instrument performance. The categories of the evaluation and the elements comprising each are described below.

Precision

Three matrix spike/matrix spike duplicate analyses performed by CAS on soil or groundwater samples were evaluated for precision. The environmental samples spiked by the laboratory (two water and one soil) were specified by the ABB-ES field sampling crew, who provided additional sample amounts for the analyses.

The percent recoveries for all spiked analytes were within specified limits. Additionally, the relative percent differences between the matrix spike and the matrix spike duplicate percent recoveries were within specified limits. The results of the analyses are summarized in Table E-2 in Attachment E.

Three laboratory control samples were analyzed in conjunction with the three matrix spike/matrix spike duplicate pairs. All percent recoveries for all analytes in each control sample were within specified limits. The control sample results are presented in Table E-3 in Attachment E.

Overall sampling and analysis precision for soil, groundwater, and soil gas samples was evaluated using results of two primary sample and field duplicate pairs. Water samples TWV003XXXX and TWV003XXXD were both collected from sampling location SGV-3. The results of both samples were non-detect for all analytes. Soil gas samples SGV007XXX and SGV007XXD were both collected from sampling location SGV-7. Positive results were reported from both samples. The results of the soil gas field duplicates are presented in Table E-4 in Attachment E.

Field duplicate results measure both field and laboratory precision. Therefore, the results may have more variability than matrix spike analyses, which measure only laboratory performance. It is expected that non-aqueous matrices will have a greater variance than aqueous matrices due to difficulties associated with collecting identical field samples. This is generally due to variability inherent in sampling procedures and inhomogeneous matrices. The results of field duplicate samples may be evaluated subjectively or objectively, however no qualifications of the data set are specified by the Functional Guidelines, which were followed as guidance for this data quality assessment. Therefore, no qualifications of the reported values were made.

Accuracy

The accuracy of each CAS soil and water sample was evaluated by the percent recoveries of three spiked system monitoring compounds (surrogates): 4-Bromofluorobenzene, Toluene-d8, and Dibromofluoromethane. The percent recoveries for all surrogates are presented in Table E-5 in Attachment E. All percent recoveries were within specified limits, with one exception. The percent recovery of Toluene-d8 was below the lower specified limit in water sample TWV001XXXX. As a result, all non-detect results for this sample were qualified as estimated and flagged "UJ". (There were no unqualified positive results for this sample.)

The sampling and analysis methodology employed by Quadrel does not allow for the use of surrogates, therefore no similar evaluation is possible.

Dilution was required on two water samples to bring the concentration of the purged aliquot within the instrument calibration range. Samples TSV08XX5XX and MWW5XXXX were diluted; both result sets for these samples are reported in Table B-1.

Initial and continuing calibrations were evaluated for all samples and all matrices (soil, water, and soil gas samples). Initial calibration criteria were met for all target analytes in all analyses for all three matrices. Continuing calibration criteria were not met for all associated samples. The percent differences for Chloromethane, 4-Methyl-2-pentanone, and 1,1,2,2-Tetrachloroethene were greater than 25 percent in the continuing calibration associated with the following samples: TSV08XX5XX, TSV09XX5XX, TSV10XX5XX, and TSV11XX5XX. None of the four samples exhibited reportable results for these analytes. The practical quantitation limit for these analytes in the affected samples was qualified as estimated and flagged "UJ".

. The calibration evaluation for the analyses performed by Maryland Spectral Services showed that the percent differences for Chloromethane, 4-Methyl-2-pentanone, 2-Butanone, and 2-Hexanone were greater than 25 percent in the continuing calibrations associated with both rounds of samples collected and analyzed. The practical quantitation limits for these compounds were therefore qualified as estimated and flagged "UJ" for non-detect results. Positive results for these compounds were qualified as estimated and flagged "J".

Representativeness

Representativeness is evaluated using field blanks, equipment blanks, trip blanks, and method blanks.

A single field blank (QD001XXXXX) was collected from the source of the water used for decontamination purposes. This water source was used during all on-site and off-site sampling activities. The sample was collected to demonstrate that the water was free from contamination by target analytes or other interference. No positive results were reported

from the analysis of this sample. The results are presented in Table E-6.

Additionally, a field blank designated "A" was collected in support of the soil gas sampling. The blank consisted of a sorbent patch briefly opened and exposed to the ambient air at the site. No positive results were reported from the analysis of this sample. The results are reported in Attachment A.

Two equipment blanks were collected during the soil and water sampling tasks and analyzed to evaluate decontamination procedures Equipment blank QR0001XXXXX exhibited no reportable results. The equipment blank QR05XXXX exhibited a reportable result for chloroform of 9.3 ug/L. No qualifications of the data were made based on this result, because chloroform was not reported in any associated sample. The results for both equipment blanks are presented in Table E-7 in Attachment E.

Four trip blanks were submitted to CAS with associated soil and groundwater samples. A positive result of 7.1 ug/L for trichloroethene was reported from QT002XXXXX. An associated sample, TWV001XXX, contained trichloroethene at a concentration of 7.1 ug/L. Because the value reported from this sample is less than five times the result reported from the trip blank, the sample value was qualified as not detected, the reporting limit was elevated to the value reported from the sample, and the result flagged with a "U". The other three trip blanks exhibited no reportable results. The results for all four trip blanks are presented in Table E-8 in Attachment E.

The soil gas trip blank analyzed by MSS from Quadrel on September 3, 1997 exhibited no reportable results. However, the trip blank received on September 22, 1997 exhibited reportable results for benzene, and chloromethane (49 and 58 ng per sorbent patch, respectively).

All four of the associated samples (SGV006XX2, SGV009XX2, SGV010XX2, and SGV011XX2) exhibited reportable results for benzene. Samples SGV006XX2, SGV009XX2 had positive results greater than five times the result reported in the trip blank (226 and 935 ng, respectively) and were not qualified. Samples SGV010XX2, SGV011XX2 had positive results less than five times the result reported in the trip blank (38 and 52 ng, respectively). The positive results for benzene in samples SGV010XX2 and SGV011XX2 were therefore qualified as undetected and flagged with a "U". The practical quantitation limit for benzene was elevated to the concentration reported in the affected samples. For further discussion of Quadrel's reporting and evaluation process, and other quality control considerations relating to the soil gas data, refer to the reports submitted by Quadrel and presented in Attachment A.

Two of the four associated samples (SGV006XX2 and SGV009XX2) exhibited reportable results for chloromethane (1530 and 940 ng, respectively). Both samples had positive results greater than 5 times the result reported in the trip blank and were, therefore, not qualified.

Six method blanks were analyzed by CAS concurrent with associated soil and water samples. The six method blanks exhibited no positive results. These results are reported in Table E-9 in Attachment E.

Three method blanks were analyzed by Maryland Spectral Services concurrent with associated soil gas samples. The three samples exhibited no positive results. The results are presented in Attachment A.

Overall, the analytical results of the various blanks demonstrate that the associated environmental samples submitted for analyses were representative of site conditions. The only possibly significant representativeness issue is the Completeness

No major laboratory deficiencies were discovered during the evaluation and no target analyte data was rejected. The data set is considered 100 percent complete.

Comparability

All analyses of samples by CAS, an ELAP-certified laboratory, were performed and reported according to NYSDEC ASP protocols. Therefore, the data are comparable to other data sets generated by earlier investigations at the site, and will be comparable to future data, if collected.

The soil gas data generated by Quadrel services is less conventional; however, standard analytical methods and procedures and quality assurance methods were employed in the generation of the data. Therefore, the data should be considered comparable to other methods of soil gas analysis.

Sensitivity

All sample results were reported at the method-specified practical quantitation limits. Samples that required dilution were reported in two different result sets so that the lowest possible values for each analyte were available. All reporting limits suggest the data can be compared to both promulgated cleanup standards and potential Taylor Site-specific remediation goals.

Instrument Performance

Prior to analysis of any samples, the mass selective detectors on all instrumentation was tuned to the specified criteria published in the analytical method. All instruments passed method-specific tune criteria prior to any analytical procedures being performed.

Data Presentation

Data reported by Quadrel Services, Inc. is presented in two reports contained in Attachment A. The data reports have been manually edited by ABB-ES and the appropriate qualifiers inserted. Comprehensive tables of data reported by CAS are presented in Attachment B, with all appropriate qualifiers. The tables supporting the data quality assessment are presented in Attachment E.

Overall Assessment

Overall, the soil and groundwater data set produced by CAS was of acceptable quality. With one exception data qualification is not believed to affect the usefulness of the data set, primarily because the compounds qualified are not believed to be Site-related. The only qualification of potential significance was the trichloroethene result from the off-site groundwater sample TWV001XXXXX. Due to this action, it cannot be said with certainty whether or not this compound is present in groundwater at this location. However, either a low or a non-detected result would be consistent with the lack of detectable VOCs in the associated soil gas sample. The qualification is therefore believed to be unimportant to the overall assessment.

The overall quality of the soil gas data set is more difficult to assess because the method does not allow for all standard evaluations of precision and accuracy. However, the data set does appear to be of sufficient quality to allow useful risk estimates to be made. Again, the only specific data qualifications made were for compounds that are not believed to be Site-related.

IV. Health Risk Evaluation

The VOC soil gas data presented in this TM were evaluated to determine if the detected concentrations potentially pose an unacceptable risk to public health under current and potential future land use conditions. The VOC data were used in fate and transport models to estimate the indoor air concentrations that may potentially occur in buildings in the general vicinity of the sampling areas, or in future buildings constructed at the sampling areas. The estimated indoor air concentrations of each detected VOC were then compared to risk-based screening levels (RBSLs) and to workplace air standards that are protective for inhalation exposures. If estimated indoor air concentrations are lower than RBSLs or workplace air standards, the soil gas and soil gas source area are interpreted to not pose an unacceptable risk. Finally, the soil gas data and groundwater data presented in this TM were integrated with this risk evaluation to estimate target soil and groundwater concentrations for on-site TCE source areas.

IV.1 Assessment Methods

The following paragraphs summarize the procedures used to evaluate health risks for potential exposures to VOCs in soil gas.

Risk-Based Screening Levels. RBSLs represent VOC concentrations which do not pose risks of concern for potential exposures under the current and potential future exposure conditions. RBSLs were developed by identifying human populations, or receptors, that may occur on- and off-site under the current and anticipated future land use conditions. Receptor-specific exposure variables and chemical-specific toxicity information were then used to calculate VOC concentrations that correspond to fixed levels of cancer and non-cancer health risk.

The Taylor Instruments site is presently paved and fenced; there are no exposures to on-site receptors under current land use conditions. The future land use of the site will be restricted to commercial/industrial use; under these conditions, the only receptors who would be potentially exposed at any substantial frequency and duration would be occupational workers. The land use in the vicinity of the site is mixed commercial/residential, and is expected to remain unchanged. Under these land use conditions off-site receptors would include residents and occupational workers.

The exposure pathway of concern for on- and off-site receptors is inhalation of VOCs that may migrate from subsurface soil (on-site only) and groundwater (on-site and off-site) to air in a building that overlies the impacted soil or groundwater. For on-site exposures this pathway is associated with possible future land use, since there are presently no occupied on-site buildings. Off-site samples were located very near both residences and commercial/industrial buildings and are as representative as possible without actually accessing the structures themselves.

RBSLs were developed for an occupational worker scenario (exposure 8 hours/day, 250 days/year, for 25 years) and a residential scenario (exposure 24 hours/day, 350 days/year, for 30 years (adult) or 6 years (child)), for a target excess lifetime cancer risk of $1x10^{-6}$ or a non-cancer hazard index of 1. RBSLs were calculated using standard risk assessment exposure parameters and algorithms as published by ASTM (1995). Dose-response data were obtained from USEPA's Integrated Risk Information System (IRIS; October, 1997) and Health Effects Assessment Summary Tables (HEAST: FY 1997). Additional exposure parameters, dose-response values, and calculations are documented in Attachment C, Tables C-1 through C-3. For each VOC, the lesser of the cancer or non-cancer based RBSL was selected for comparison to the estimated indoor air concentrations.

Despite the soil gas sampling detecting several VOCs that appear to be unrelated to the Taylor Instruments Site, or which were detected infrequently, all compounds identified in soil gas were evaluated. RBSLs were, therefore, developed for all VOCs detected soil gas from on-site and off-site sample locations.

Fate and Transport Modeling. A fate and transport model was used to estimate the indoor air concentrations that could be associated with the measured soil gas concentrations. The fate and transport model used for this evaluation, which is documented in Attachment D, is a modification of the model recommended by ASTM (1995) for estimating vapor migration from subsurface sources to indoor air. Specifically, the portion of the ASTM model that calculates a theoretical soil gas concentration was replaced with the measured soil gas data, thereby eliminating a number of default assumptions the model normally must use. .

Vapor migration modeling was performed for both occupational and residential scenarios. As documented in the calculation tables, the occupational scenario assumes vapor migration into a building that is on a floor slab, and a higher building air exchange rate than the residential scenario. The residential scenario assumes vapor migration into the basement of a residential dwelling. For both scenarios, the soil gas source was assumed to be directly beneath the building slab or foundation (i.e., contacting it), and to occupy an area the size of the building footprint.

Indoor air concentrations were estimated through modeling the maximum detected soil gas concentration of each VOC. This provides a "worst-case" evaluation by assuming that the maximum soil gas concentrations will all occur at a single location, and that a future building will be constructed directly above that soil gas sample location. Use of the maximum concentration therefore provides an evaluation that tends to overestimate the potential exposures at each location. To evaluate potential on- and off-site commercial/industrial worker exposures, the maximum detected concentrations were selected from all on-site and off-site sample locations. To evaluate off-site residential receptor exposures, the maximum detected concentrations were selected from soil gas samples collected at all off-site locations (samples SGV-1 through SGV-7). Because deed restrictions are assumed to prevent the Taylor Site from being used in the future for

residential purposes, residential exposures were not calculated using on-site data. Attachment C, Table C-4, documents the fate and transport modeling.

IV.2 Risk Evaluation Results - Off-Site Data

The maximum detected soil gas concentrations among all off-site samples were modeled for migration to a residential basement. The estimated indoor air concentrations were then compared to residential RBSLs (Table 3-3). As shown in Table 3-3, for all compounds detected (both those which may be site-related and which are not believed to be site-related), estimated indoor air concentrations are substantially below RBSLs.

This evaluation indicates that even under very conservative assumptions, soil gas and soil gas source areas do not pose an unacceptable public health risk to current or potential future off-site residents.

IV.3 Risk Evaluation Results - On-Site Data

The maximum detected soil gas concentrations among all on-site and off-site samples were modeled for migration to a commercial/industrial building. The estimated indoor air concentrations were then compared to occupational worker RBSLs and workplace air standards published by OSHA and ACGIH (Table 3-4). As shown in Table 3-4, for all compounds detected (suspected site-related and suspected non site-related), estimated indoor air concentrations are substantially below RBSLs and workplace air standards.

This evaluation indicates that even under very conservative assumptions, soil gas and soil gas source areas do not pose an unacceptable public health risk to current off-site or potential future on- and off-site commercial/industrial workers.

V. Conclusions

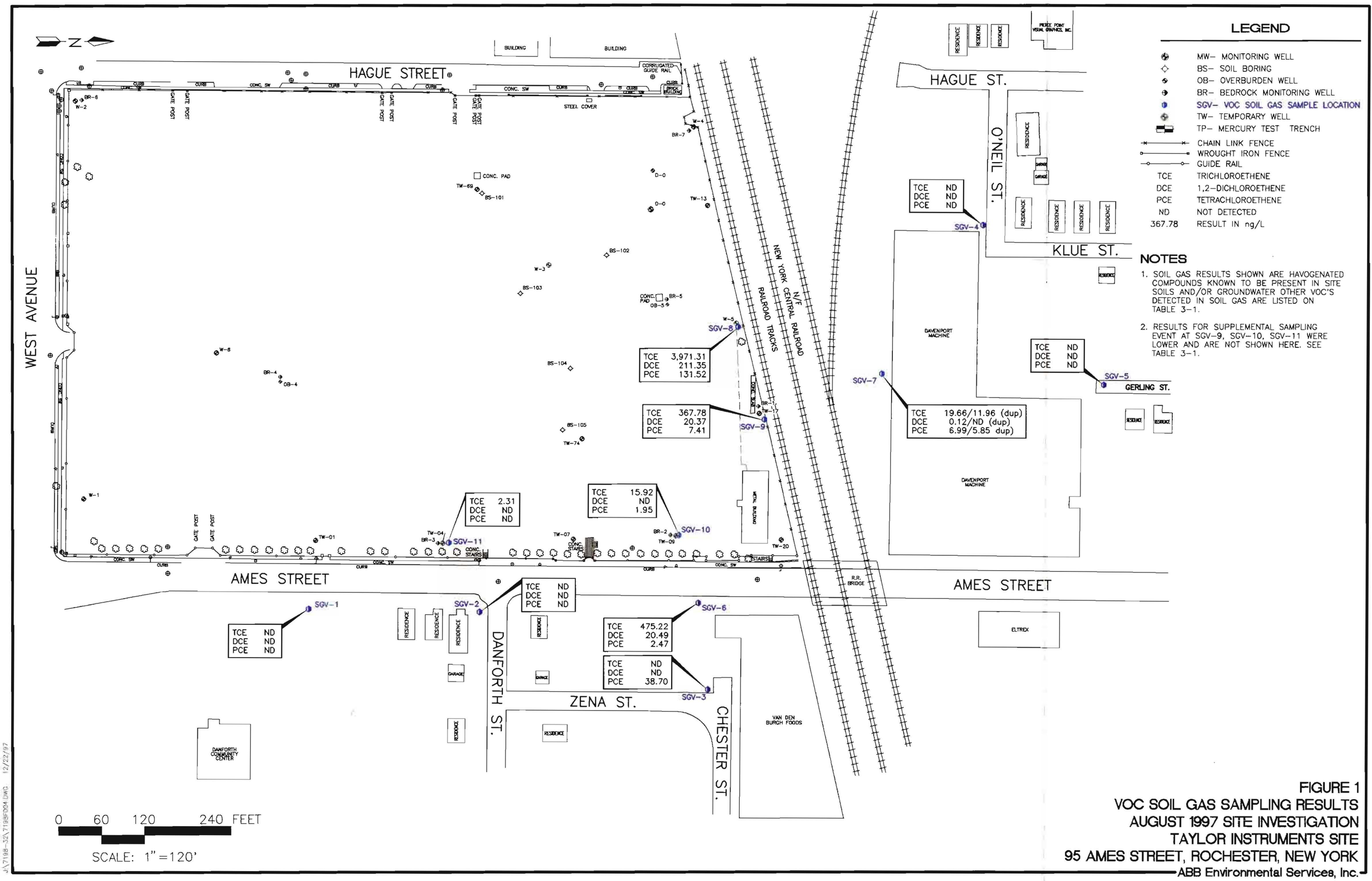
Based on the data evaluation conducted to date, ABB-ES has reached the following conclusions:

1. The soil gas data is of sufficient quality and displays an appropriate consistency with soil and groundwater results such that it is appropriate to use as a replacement for default assumptions in the fate and transport model used to estimate inhalation exposures and risks.

2. Fuel-related hydrocarbons (BTEX) present at a number of off-site locations, and PCE at off-site location SGV-3, do not appear to be related to Taylor Instruments site.

3. The VOC concentrations measured in soil gas along the site perimeter (on-site) and in nearby off-site commercial and residential areas do not pose a significant health risk to either a residential or commercial/industrial receptor. Based on the nature of the data and modeling technique used, the model forecasts probably over-estimate the actual long-term average contaminant concentrations to which a receptor might be exposed.

4. Remediation of site soil to achieve the 7.0 mg/kg goal for TCE proposed by CE in Technical Memorandum No. 6 is expected to eliminate the soil contribution to a potential future on-site inhalation risk. Based on the groundwater monitoring results discussed in Technical Memorandum 4, groundwater might still pose a potential inhalation risk if concentrations remained at similar levels following soil remediation. However, any soil remediation aimed at achieving CE's proposed goal for TCE would probably also result in very significantly lowered groundwater concentrations and might also eliminate the groundwater contribution to a potential future inhalation risk.



LEGEND

- MW– MONITORING WELL
- BS– SOIL BORING
- OB– OVERBURDEN WELL
- BR– BEDROCK MONITORING WELL
- SGV– VOC SOIL GAS SAMPLE LOCATION
- TW– TEMPORARY WELL
- TP– MERCURY TEST TRENCH
- CHAIN LINK FENCE
- WROUGHT IRON FENCE
- GUIDE RAIL
- TCE TRICHLOROETHENE
- DCE 1,2–DICHLOROETHENE
- PCE TETRACHLOROETHENE
- ND NOT DETECTED
- 367.78 RESULT IN ng/L

NOTES

1. SOIL GAS RESULTS SHOWN ARE HAVOGENATED COMPOUNDS KNOWN TO BE PRESENT IN SITE SOILS AND/OR GROUNDWATER OTHER VOC'S DETECTED IN SOIL GAS ARE LISTED ON TABLE 3–1.
2. RESULTS FOR SUPPLEMENTAL SAMPLING EVENT AT SGV–9, SGV–10, SGV–11 WERE LOWER AND ARE NOT SHOWN HERE. SEE TABLE 3–1.

FIGURE 1
VOC SOIL GAS SAMPLING RESULTS
AUGUST 1997 SITE INVESTIGATION
TAYLOR INSTRUMENTS SITE
95 AMES STREET, ROCHESTER, NEW YORK
ABB Environmental Services, Inc.

J:\7198-32\7198P004.DWG 12/22/97

Table 3-1

VOC Soil Gas Concentrations (ng/L)
Taylor Instruments Site - 95 Ames Street

Sample Location:	SGV-1	SGV-2	SGV-3	SGV-4	SGV-5	SGV-8	SGV-9	SGV-10	SGV-11	SGV-9	SGV-10	SGV-11	SGV-6	SGV-7	SGV-7 dup
Date Collectors Deployed:	8/29/97	8/29/97	8/29/97	8/29/97	8/29/97	8/29/97	8/29/97	8/29/97	8/29/97	9/10/97	9/10/97	9/10/97	9/10/97	9/19/97	9/19/97
Analyte															
Trichloroethene	--	--	--	--	--	3971.31	367.78	15.92	2.31	5.58	0.35	0.07	475.22	19.66	11.96
1,2-Dichloroethene (total)	--	--	--	--	--	211.35	20.37	--	--	0.25	--	--	20.49	0.12	--
Tetrachloroethene	--	--	38.70	--	--	131.52	7.41	1.95	--	1.49	--	--	2.47	6.99	5.85
Benzene	--	7.48	2.24	1.11	11.71	10.20	1.48	3.96		2.70	--	--	0.54	1.14	0.46
Toluene	0.43	22.98	4.26	1.42	135.74	--	0.66	8.39		0.84	--	--	--	67.39	13.29
Ethylbenzene	--	--	--	--	--	1.11	--	--	--	--	--	--	--	--	--
Xylenes (total)	--	27.31	3.18	--	244.00	--	--	7.25	--	--	--	--	--	415.28	40.47
Total BTEX	0.43	57.77	9.68	2.53	391.45	11.31	2.14	19.60	--	--	--	--	--	483.81	54.22
Carbon Tetrachloride	--	--	--	--	--	0.53	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	0.17	--	--	--	0.05	--	0.14	--	--
Chloromethane	--	6.28	0.58	0.70	3.05	--	2.03	1.29	0.28	1.10	--	--	1.84	--	--
1,1-Dichloroethene	--	--	--	--	--	--	0.83	0.25	--	0.21	--	--	0.86	--	--
Styrene	--	6.19	0.84	--	--	--	--	1.11	--	--	--	--		--	--
1,1,1-Trichloroethane	--	--	--	--	--	2.75	0.15	0.15	--	0.14	--	--	0.20	--	--
1,2,4-Trimethylbenzene	--	3.01	--	--	68.64	--	--	--	--	--	--	--	--	91.22	7.60
1,3,5-Trimethylbenzene	--	1.30	--	--	18.54	--	--	1.96	--	--	--	--	--	35.43	4.36

Notes:

1. "--" denotes the absence of detections above the quantitation level (Q.L.). The Q.L.s varied slightly for each deployement, so they are not shown on this summary table but are included in the data packages from Quadrel.

Table 3-2

Comparison of Results From Soil Gas, Groundwater, and Soil Media
Taylor Instruments Site - 95 Ames Street

		On-site Locations				Off-site Locations						
	Sample Location	SGV-8 /W-5	SGV-9 /TW-17	SGV-10 /TW-9	SGV-11 /TW-4	SGV-1	SGV-2	SGV-3	SGV-4	SGV-5	SGV-6	SGV-7
Analyte	Media											
TCE	soil gas (ng/L)	**4000**	**370**	**16**	**2.3**	--	--	--	--	--	**480**	**20**
	groundwater (ug/L)	**1300**	**1900**	**410**	**77**	**7.1***	NS	--	--	--	NS	NS
	soil (ug/kg)	**950**	**150**	--	--	NS	NS	NS	NS	NS	NS	NS
1,2 DCE	soil gas (ng/L)	**210**	**20**	--	--	--	--	--	--	--	**20**	**0.12**
(total)	groundwater (ug/L)	**26**	--	**23**	--	--	NS	--	--	--	NS	NS
	soil (ug/kg)	--	--	--	--	NS	NS	NS	NS	NS	NS	NS
PCE	soil gas (ng/L)	**130**	**7.4**	**2**	--	--	--	**37**	--	--	**2.5**	**7**
	groundwater (ug/L)	--	--	--	--	--	NS	--	--	--	NS	NS
	soil (ug/kg)	--	--	--	--	NS	NS	NS	NS	NS	NS	NS

Notes:
1. This table compares results for the principal halogenated contaminants found in site soils and groundwater.
2. Results for different media should be compared only qualitatively to identify patterns of relative occurence.
3. "NS" = not sampled; "--" = not detected
4. In accordance with the Work Plan, soil samples were collected only from on-site locations.
5. Results have been rounded to two significant figures for ease of comparison.
6. Results from the supplementary sampling set at SGV-9, SGV-10, and SGV-11 are not shown because they were much lower than those from the first sampling event.
7. Groundwater result at SGV-1 is questionable and qualified " * " due to the presence of TCE in the associated trip blank

Table 3-3

Risk Evaluation for Soil Gas Data
Resident - Off-Site Data Sampling points 1 - 7

Taylor Instruments Site - 95 Ames Street

Constituent	Maximum Reported Soil Gas (ng/L)	Adjusted Soil Gas (mg/m^3)	Estimated Indoor Air Concentration (mg/m^3)	RBSL Resident (mg/m^3)	Indoor Air Concentration Exceeds RBSL?
Benzene	11.71	1.17E-02	1.4E-07	2.9E-04	NO
Toluene	135.74	1.36E-01	1.5E-06	1.8E-01	NO
Xylenes	415.28	4.15E-01	4.1E-06	1.4E-01	NO
Chloroform	0.14	1.40E-04	1.7E-09	1.0E-04	NO
Chloromethane	6.28	6.28E-03	9.7E-08	1.4E-03	NO
1,1-Dichloroethene	0.86	8.60E-04	9.4E-09	7.1E-06	NO
1,2-Dichloroethene	20.5	2.05E-02	2.2E-07	NA	
Styrene	6.19	6.19E-03	6.0E-08	4.6E-01	NO
1,1,1-Trichloroethane	0.2	2.00E-04	2.2E-09	4.7E-01	NO
Tetrachloroethene	38.7	3.87E-02	4.0E-07	4.3E-03	NO
Trichloroethene	475	4.75E-01	5.3E-06	1.4E-03	NO
1,2,4-Trimethylbenzene	91.22	9.12E-02	9.0E-07	1.4E-01	NO
1,3,5-Trimethylbenzene	35.43	3.54E-02	3.5E-07	1.4E-01	NO

Notes:
1ng/L * 1000L/m3 * 1ug/1000 ng * 1mg/1000 ug = mg/m3

RBSLs and estimated indoor air concentrations calculated in Attachment D.

RBSL is the lower of the value based on a cancer risk of 1E-06 or a non-cancer hazard index of 1 for an adult assumed to be exposed in a basement 24 hours/day, 350 days/yr for 30 years, or a child (ages 1-6) assumed to be exposed in a basement 24 hours/day, 350 days/yr for 6 years.

Trimethylbenzenes use xylene as a surrogate

RBSL = risk-based screening level
NA = Not Available; no dose-response data available to calculate RBSL.

Table 3-4

Risk Evaluation for Soil Gas Data
Full-Time Commercial/Industrial Worker - On- and Off-Site Data Sampling points 1 - 11

Taylor Instruments Site - 95 Ames Street

Constituent	Reported Soil Gas (ng/L)	Adjusted Soil Gas (mg/m^3)	Estimated Indoor Air Concentration (mg/m^3)	RBSL Com/Ind worker (mg/m^3)	Indoor Air Concentration Exceeds RBSL?	Workplace Air Standard (mg/m^3)	Indoor Concentration Exceeds Workplace Air Standard?
Benzene	11.71	1.17E-02	5.69E-08	4.93E-04	NO	3.00E+00	NO
Toluene	135.74	1.36E-01	5.95E-07	5.62E-01	NO	1.88E+02	NO
Ethylbenzene	1.11	1.11E-03	4.10E-09	1.48E+00	NO	4.34E+02	NO
Xylenes	415.28	4.15E-01	1.66E-06	4.40E-01	NO	4.34E+02	NO
Carbon tetrachloride	0.53	5.30E-04	2.36E-09	2.70E-04	NO	1.26E+01	NO
Chloromethane	6.28	6.28E-03	3.91E-08	2.27E-03	NO	1.03E+02	NO
1,2-DCE	211.35	2.11E-01	9.32E-07	NA	NA	7.90E+02	NO
Styrene	6.19	6.19E-03	2.43E-08	1.46E+00	NO	2.13E+02	NO
Tetrachloroethene	131.52	1.32E-01	5.44E-07	7.15E-03	NO	1.70E+02	NO
1,1,1-TCA	2.75	2.75E-03	1.22E-08	1.48E+00	NO	1.90E+03	NO
TCE	3971	3.97E+00	1.80E-05	2.38E-03	NO	2.69E+02	NO
1,2,4-Trimethylbenzene	91.22	9.12E-02	3.65E-07	4.40E-01	NO	1.23E+02	NO
1,3,5-Trimethylbenzene	35.43	3.54E-02	1.42E-07	4.40E-01	NO	1.23E+02	NO
1,1-DCE	0.83	8.30E-04	3.67E-09	1.19E-05	NO	4.00E+00	NO
Chloroform	0.17	1.70E-04	8.42E-10	1.77E-04	NO	9.78E+00	NO

Notes:
1ng/L * 1000L/m3 * 1ug/1000 ng * 1mg/1000 ug = mg/m3

RBSLs and estimated indoor air concentrations calculated in Attachment D.

RBSL is the lower of the value based on a cancer risk of 1E-06 or a non-cancer hazard index of 1, for a worker assumed to be exposed in a building constructed on a slab 250 days/year for 25 years.

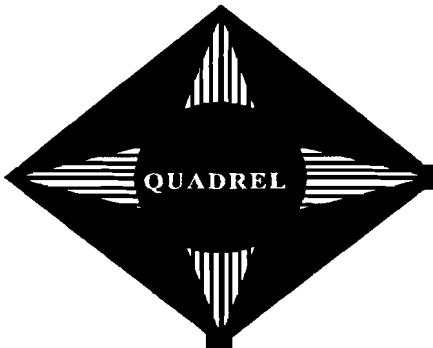
Trimethylbenzenes use xylene as a surrogate

Workplace Air Standard is the lower of the ACGIH TLV TWA and the OSHA PEL TWA.

RBSL = risk-based screening level
NA = Not Available; no dose-response data available to calculate RBSL.

Attachment A
Quadrel Soil Gas Data Reports

Report No. QS2319V (results from 8/29/97 survey)
Report No. QS2319B (results from 9/10/97 and 9/19/97 surveys)



Quadrel Report No. QS2319V

EMFLUX® Passive, Non-Invasive Soil-Gas Survey

AMES ST./TAYLOR SITE
NEW YORK

Prepared for

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by

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September 19, 1997

EMFLUX® Survey Number: QS2319V

Ames St./Taylor Site
New York

This EMFLUX® Soil-Gas Survey Report has been prepared for ABB Environmental Services, Inc. by Quadrel Services, Inc. (Quadrel) in accordance with the terms of Purchase Order No. SE725161 dated August 20, 1997. Quadrel's principal technical contact at ABB for this project has been Mr. Geoff Knight.

1. Objectives

To assess concentrations of gas-phase volatile organic compounds in soils on and near the Ames St./Taylor Site.

2. Target Compounds

This survey targeted the 32 compounds listed in **Attachment 1**, which also supplies the resulting laboratory data in nanograms (ng) of specific compound per cartridge.

3. Survey Description

· No. of Field Sample Points:	11
· No. of Ambient-Air Control Samples:	1
· No. of Trip Blanks:	1
· Total No. of EMFLUX® Cartridges:	13

4. Field Work

Quadrel provided ABB an EMFLUX® Field Kit with the equipment needed to conduct a 11-point EMFLUX® Soil-Gas Survey. Collectors were deployed on August 29, 1997 and retrieved September 2, 1997. **Attachment 2** describes the field procedures used. Individual deployment and retrieval times will be found in the Field Deployment Report (**Attachment 3**).

Note: ABB personnel could not get access to sample location 7 and the collector at sample location 6 was not effectively exposed during the present survey. These locations were sampled, however, during a supplemental survey conducted between September 10 and 23, 1997; results from the supplemental survey are provided in Quadrel Report No. QS2319B.

5. Maryland Spectral Services, Inc. (MSS) Analysis and Reporting Dates

- MSS received 11 sample cartridges for analysis on September 3, 1997.
- EMFLUX℠ samples cartridges were thermally desorbed, then analyzed using gas chromatography/mass spectrometry (GC/MS) equipment, in accordance with EPA Method 8260 (Modified). MSS analyzed each cartridge for the targeted compounds.
- MSS completed the analysis on September 3, 1997.
- Following a laboratory review, Quadrel received MSS data on September 5, 1997 and provided preliminary data to ABB on September 8, 1997.

6. Data Treatment

- **Table 1** provides the survey results in soil-gas concentrations in nanograms per liter (ng/L, or parts per trillion). Laboratory values were converted to soil-gas concentrations using the following formula:

$$C = 10^3 KW/TR$$

where: **C** = Avg. soil-gas conc. in collector (ng/L)
K = Cartridge collection constant (1.0 sec/cm^3)
W = Contaminant mass (ng)
T = Collection period (sec)
R = Adsorbent recovery factor (decimal fraction)

The specific collection period for each sample is given in the Field Deployment Report. Adsorbent recovery factors are provided in **Attachment 5**, values in **Table 1** have been corrected for recovery factors.

Note: Quadrel's derivation of the EMFLUX℠ cartridge collection constant, K, involved (i) adoption of 0.05 cm^2/sec as a typical diffusion coefficient, D, for VOCs in free air and (ii) evaluation of experimental laboratory data to determine the ratio between collection area, A, and diffusion distance, Z. The latter relationship, based on work done to date, appears to be A/Z = 20.2 cm. Given these values, Quadrel has computed the value of the constant to be:

$$K = 1/|D(A/Z)| \text{ sec/cm}^3$$
$$= 1/|0.05(20.2)| \text{ sec/cm}^3$$
$$= 1/1.01 \text{ sec/cm}^3$$
$$\approx 1.0 \text{ sec/cm}^3$$

- **Data Compatibility Equation**. It is important to note that when sample locations are covered with an artificial surface (*e.g.*, asphalt or concrete), sample measurements are often distorted

(increased) significantly. Such distortion can be attributed to the fact that gas rising from sources beneath impermeable caps tends to reach equilibrium in relatively short periods of time and that, once equilibrium is reached, the soil-gas concentration measured at any point in a vertical line between source and cap is theoretically the same. Thus, a reading taken immediately below an impermeable surface is much higher than it would be in the absence of such a cap.

In this survey, samples 2, 5, and 10 were collected beneath asphalt/concrete caps. Typically, when an EMFLUX® Survey is performed on a site which is partially covered by an impermeable cap, the values recorded beneath the cap should be artihmetically adjusted for comparison with values recorded in uncapped areas. To make such corrections, the following equation can be applied.

$$C_{(e)} = C_{(c)}Z_{(c)}/Z_{(s)}$$

where: $C_{(e)}$ = Estimated *uncapped* measurement (ng)
$C_{(c)}$ = Measurement in Collector (ng)
$Z_{(c)}$ = Depth of Collector (cm)
$Z_{(s)}$ = Known or assumed depth to source (cm)

This calculation assumes that concentration gradients are linear with depth from source to surface, an assumption deemed acceptable by Quadrel on the basis of literature reviews and previous experience.

Note: Contaminant concentrations reported in **Table 1** were not corrected with the above equation.

7. Report Notes and Quality Assurance/Quality Control Factors

- **Table 1** provides survey results in soil-gas concentrations by sample-point number and compound name. The quantitation levels (Q.L.) represent values above which quantitative laboratory results can be achieved within specified limits of precision and with a high degree of confidence. The quantitation level of each compound, therefore, provides a reliable basis for comparison of the relative strength of individual detections of that compound.

- The **Chain-of-Custody** form, which was shipped with the samples for this survey, is supplied as **Attachment 6**.

- **Laboratory QA/QC procedures** included standards, surrogates, and blanks appropriate to EPA Method 8260 (Modified). Field work and reporting were done in accordance with Quadrel's Quality Assurance Program Plan. MSS performed analyses under the laboratory's own Quality Assurance Plan.

QA/QC Contaminant Corrections. Following EPA guidelines, Quadrel does not correct EMFLUX® laboratory data for method blank, trip blank, or ambient-air control sample contamination values; all contamination detected on QA/QC samples is reported in **Attachment 1**. Subsequent handling of QA/QC sample contamination depends upon the circumstances and origin of the sample; all corrective conventions noted here have, in Quadrel's experience, proved highly useful in deriving accurate and reproducible interpretations of survey data. *No other methods thus far tested have produced comparable levels of quality.*

Laboratory method blanks are run each day with project samples to identify contamination present in the laboratory. If contamination is detected on a method blank, detections of identical compounds on samples analyzed the same day are considered to be suspect and are flagged both in the laboratory report and in converted soil-gas concentration data. The laboratory method blanks analyzed in connection with the present samples revealed no contamination.

The **trip blank** is an EMFLUX® cartridge prepared, transported, and analyzed with other samples but intentionally not exposed. Although reported in the laboratory data, contamination on this field QA/QC sample is subtracted from measurements of the same compounds on both field and control samples during data interpretation. Here, the trip blank (labeled Trip-1 in **Attachment 1**) recorded none of the targeted compounds, indicating that the survey site itself is the source of detected contamination.

Control samples are field QA/QC samples which serve to identify compounds present in ambient air during deployment and retrieval of collection devices. During data interpretation, contamination found on the control samples is subtracted from measurements of the same compounds on field samples prior to their conversion to soil-gas concentrations; however, the control sample (trap A in **Attachment 1**) did not record any of the targeted compounds, indicating that ambient air is not the source of detected contamination.

Data Loss: High levels of contamination were detected on sample 8. Because the laboratory was concerned that some of the contamination detected on subsequent samples 9, 10, and 11 could be the result of carry-over, Quadrel recommended that a supplemental set of samples be collected at these locations.

Survey findings are relative exclusively to this project and should not routinely be compared with results of other EMFLUX® Surveys.

Table 1

Soil-Gas Concentrations (ng/L)
Ames St./Taylor Site
New York

SAMPLE LOCATION	Q.L.	1	2	3	4	5
CONTAMINANTS						
Benzene	0.18	--	7.48	2.24	1.11	11.71
Toluene	0.40	0.43	22.98	4.26	1.42	135.74
Ethylbenzene	0.80	--	--	--	--	--
Xylenes (total)	0.80	--	27.31	3.18	--	244.00
Total BTEX	0.18	0.43	57.77	9.68	2.53	391.45
Carbon Tetrachloride	0.14	--	--	--	--	--
Chloroform	0.10	--	--	--	--	--
Chloromethane	0.14	--	6.28	0.58	0.70	3.05
1,1-Dichloroethene	0.07	--	--	--	--	--
1,2-Dichloroethene (total)	0.10	--	--	--	--	--
Styrene	0.72	--	6.19	0.84	--	--
Tetrachloroethene	0.30	--	--	38.70	--	--
1,1,1-Trichloroethane	0.12	--	--	--	--	--
Trichloroethene	0.12	--	--	--	--	--
1,2,4-Trimethylbenzene	1.44	--	3.01	--	--	68.64
1,3,5-Trimethylbenzene	0.90	--	1.30	--	--	18.54

NOTES:

1) Values listed under "Q.L." are reported soil-gas concentration quantitation levels.
2) "--" denotes absence of detections above the reported quantitation level.
3) Samples were not collected from locations 6 and 7 (see Section 4).

The following **Attachments** are included:

-1- Laboratory Report
-2- EMFLUX® Field Procedures
-3- Field Deployment Report
-4- Laboratory Procedures
-5- Adsorbent Recovery Factors
-6- Chain-of-Custody Form

wpdocs\qs2319v-2

Attachment 1

Laboratory Report

Attachment 2

FIELD PROCEDURES FOR EMFLUX® SOIL-GAS SURVEYS

The following field procedures are routinely used during EMFLUX® Soil-Gas Surveys. Modifications can be and are incorporated from time to time in response to individual project requirements. In all instances, Quadrel adheres to EPA-approved Quality Assurance and Quality Control practices.

A. Field personnel carry EMFLUX® system components and support equipment to the site and deploy the EMFLUX® Collectors in a prearranged survey pattern. Although EMFLUX® Collectors require only one person for emplacement and retrieval, the specific number of field personnel required depends upon the scope and schedule of the project. Each Collector emplacement generally takes less than two minutes.

B. For those sample locations covered with soils or vegetation, a field technician clears vegetation and debris exposing the ground surface. Using a hammer and a ¾-inch-diameter pointed metal stake, the technician creates a hole approximately three inches deep. For those locations covered with an asphalt or concrete cap, the field technician drills a one-inch-diameter hole through the cap to the soils beneath. (If necessary, the Collector can be sleeved with a ¾-inch i.d. copper pipe for either capped or uncapped locations).

C. The technician then removes the solid plastic cap from an EMFLUX® Collector (a glass vial containing an adsorbent cartridge with a length of wire attached to the vial for retrieval) and replaces it with a Sampling Cap (a plastic cap with a hole covered by screen meshing). The technician inserts the Collector, with the Sampling Cap end facing down, into the hole (**see attached figure**). The Collector is then covered with either local soils for uncapped locations or, for capped locations, aluminum foil and a concrete patch. The Collector's location, time and date of emplacement, and other relevant information are recorded on the Field Deployment Form.

D. As a quality-control check during emplacement and retrieval, the technician takes periodic ambient-air control samples and records the date, time, and location of each. (One or more trip blanks are also included as part of the quality-control procedures).

E. Once all EMFLUX® Collectors have been deployed, field personnel schedule Collector recovery (approximately 72 hours after emplacement) and depart, taking all no-longer-needed equipment and materials with them).

F. Field personnel retrieve the Collectors at the end of the 72-hour exposure period. At each location, a field technician withdraws the Collector from its hole and wipes the outside of the vial clean using gauze cloth; following removal of the Sampling Cap, the threads of the vial are also cleaned. A solid plastic cap is screwed onto the vial and the sample location number is written on the label. The technician then records sample-point location, date, time, etc. on the Field Deployment Form.

G. Sampling holes are refilled with soil, sand, or other suitable material. If Collectors have been installed through asphalt or concrete, the hole if filled to grade with a plug of cold patch or cement.

H. Following retrieval, field personnel ship or carry the EMFLUX® Collectors to analytical laboratories under contract to Quadrel Services. The remaining equipment is returned to Quadrel's preparation facility.

Attachment 3

Field Deployment Report

Orange caps

QUADREL SERVICES, INC.
FIELD DEPLOYMENT REPORT

PROJECT #:	CLIENT:	SITE:
2319	ABB	Ames St. / Taylor

INDIVIDUAL SAMPLE INFORMATION

EMPLACEMENT DATE:	RETRIEVAL DATE:
8/29/97	9/2/97

SAMPLE NUMBER	TIME		FIELD NOTES (e.g., asphalt/concrete covering, description of sample location, cartridge/vial condition)
	Emplaced	Retrieved	
SGV-1	1559	1604	Condition OK when retrieved.
SGV-2	1630	1633	Concrete covering. Condition OK when retrieved
SGV-3	1640	1640	Condition OK when retrieved
SGV-4	1655	1624	Condition OK when retrieved.
SGV-5	1645	1615	Asphalt covering. Condition OK when retrieved.
SGV-6	1705	1608	Sampling cap never placed on vial; no results this site.
SGV-8	1504	1645	High PID reading (50 ppm) this location.
SGV-9	1515	1655	
SGV-10	1528	1658	Asphalt covering
SGV-11	1543	1701	
A	-	1626	collected at point # SGV-4 Opened @ retrieval
Trip-1	-	-	Do not open only

Attachment 4

LABORATORY PROCEDURES FOR EMFLUX® ADSORBENT CARTRIDGES

Following are laboratory procedures used with the EMFLUX® Soil-Gas System, a screening technology for expedited site investigation. After exposure, EMFLUX® cartridges are analyzed using U.S. EPA Method 8260 as described in the Solid Waste Manual (SW-846), a purge-and-trap capillary gas chromatographic/mass spectrometric method, modified to accommodate high- temperature thermal desorption of the adsorbent cartridges. This procedure is summarized as follows:

A. The adsorbent cartridges are thermally desorbed at 300°C for 11 minutes in a 40 mL/min helium flow, through 5 mL of reagent water spiked with 250 ng of internal standards and surrogates held in the sparging vessel. Any analytes in the helium stream are adsorbed onto a standard three-component trap (Tenax, silica gel, coconut charcoal).

B. Following cryofocusing, the three-component trap is thermally desorbed at 220°C onto a Supelco VOCOL 105 m, 0.5 mm ID, 3.00 micron filament thickness capillary column, per the U.S. EPA CLP Statement of Work (SOW) for the method.

C. Following the SOW, the GC/MS is scanned between 35 and 260 Atomic Mass Units (AMU) at one second per scan.

D. BFB tuning criteria and initial calibration are per the EPA CLP 2/88 guidelines, with an 18-hour tune window. A laboratory blank is analyzed after the daily standard to determine that the system is contaminant-free.

E. The instrumentation used for these analyses includes:

Finnigan Model OWA 1050 Gas Chromatograph/Mass Spectrometer;

Tekmar Model 6016 Aero Trap Autosampler;

Tekmar Model LSC 2000 Liquid Sample Concentrator; and

Tekmar Model ALS 2016 Autosampler.

Attachment 5

ADSORBENT RECOVERY FACTORS

Quadrel maintains an ongoing laboratory-based program to quantify recovery factors for the adsorbents used in EMFLUX[∞] field collection devices. This program is designed to determine adsorbent affinity (a combination of attraction and retention characteristics) for a broad spectrum of compounds, including each of the VOCs targeted in this survey. The adsorbent with the highest overall affinity for the targeted VOCs was utilized for this survey, and the recovery factors of those compounds that were detected are as follows:

Compound	Percent Recovered
Benzene	41
Carbon Tetrachloride	53
Chloroform	72
Chloromethane	100
1,1-Dichloroethene	100
1,2-Dichloroethenes (total)	74
Ethylbenzene	9
Styrene	10
Tetrachloroethene	24
Toluene	18
1,1,1-Trichloroethane	61
Trichloroethene	58
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene	8
Xylenes (total)	9

Attachment 6

Chain-of-Custody Form

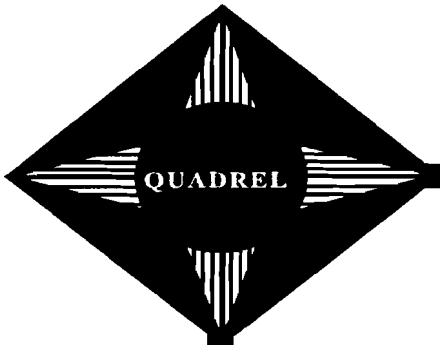
QUADREL SERVICES, INC.
CHAIN-OF-CUSTODY FORM

PROJECT NUMBER: 2319	PROJECT NAME:
LOCATION:	CLIENT: ABB
TARGET COMPOUNDS: VOCS / 8260	

SAMPLE NUMBER	LAB ID No. (for lab use only)	REMARKS			
		Condition of sample or vial	Date	Time	Init.
SVG-1	97-0903-01	OK	9/2/97	1900	DOG
SVG-2	02	OK			
SVG-3	03	OK			
SVG-4	04	OK			
SVG-5	05	OK			
SVG-6	06	OK NO sample can Just Storage can			
SVG-8	07	OK High PID 50 ppm			
SVG-9	08	OK			
SVG-10	09	OK			
SVG-11	10	OK			
A	11				
TRIP BLANK	12				

RELINQUISHED BY		DATE	TIME	RECEIVED BY	
Signature	Printed Name			Signature	Printed Name
	Steve Thornley	8-25-97	1500	Fed Ex	
Fedex					
David Nicoll	Dave Downie	9-2-97	1900		
FED EXPRESS		9-3-97	1030		E. MAGTOUNG

* ADDED TO COC.



Quadrel Report No. QS2319B

EMFLUX® Passive, Non-Invasive Soil-Gas Survey

SUPPLEMENTAL SURVEY:
AMES ST./TAYLOR SITE
NEW YORK

Prepared for

ABB Environmental Services, Inc.
1400 Centerpoint Blvd
Suite 158
Knoxville, TN 37932

by

Quadrel Services, Inc.
1896 Urbana Pike
Suite 20
Clarksburg, MD 20871

October 3, 1997

EMFLUX® Survey Number: QS2319B

Supplemental Survey:
Ames St./Taylor Site
New York

This EMFLUX® Soil-Gas Survey Report has been prepared for ABB Environmental Services, Inc. (ABB) by Quadrel Services, Inc. (Quadrel) in accordance with the terms of Purchase Order No. SE725161, dated August 20, 1997. Quadrel's principal technical contact at ABB for this project has been Mr. Geoff Knight.

1. Objectives

To assess concentrations of gas-phase volatile organic compounds in soils at the Ames St./Taylor Site. Supplemental Survey results will be used in conjunction with results from an earlier survey (Quadrel Report No. QS2319V, dated September 19, 1997).

2. Target Compounds

This survey targeted the 32 compounds listed in **Attachment 1**, which also supplies the resulting laboratory data in nanograms (ng) of specific compound per cartridge.

3. Survey Description

· No. of Field Sample Points:	6
· No. of Trip Blanks:	2
· Total No. of EMFLUX® Cartridges:	8

4. Field Work

Quadrel provided ABB an EMFLUX® Field Kit with the equipment needed to conduct a six-point EMFLUX® Soil-Gas Survey. Four of the collectors were deployed on September 10, 1997 and retrieved September 19, 1997; two of the collectors were deployed on September 19, 1997 and retrieved September 23, 1997. **Attachment 2** describes the field procedures used. Individual deployment and retrieval times will be found in the Field Deployment Report (**Attachment 3**) or the Chain-of-Custody Forms (**Attachment 4**).

5. Maryland Spectral Services, Inc. (MSS) Analysis and Reporting Dates

- MSS received for analysis five sample cartridges on September 22, 1997 and three sample cartridges on September 24, 1997.
- EMFLUX® sample cartridges were thermally desorbed, then analyzed using gas chromatography/mass spectrometry (GC/MS) equipment, in accordance with EPA Method 8260 (Modified), as described in **Attachment 5**.
- MSS completed the analysis on September 24, 1997.
- Quadrel received MSS data on September 30, 1997 and provided preliminary data to ABB on the same day.

6. Data Treatment

- **Tables 1 and 2** provide the survey results in soil-gas concentrations in nanograms per liter (ng/L, or parts per trillion). Laboratory values were converted to soil-gas concentrations using the following formula:

$$C = 10^3 KW/TR$$

where: **C** = Avg. soil-gas conc. in collector (ng/L)
K = Cartridge collection constant (1.0 sec/cm^3)
W = Contaminant mass (ng)
T = Collection period (sec)
R = Adsorbent recovery factor (decimal fraction)

The specific collection period for each sample is given in the Field Deployment Report. Adsorbent recovery factors are provided in **Attachment 6**. The values in **Tables 1 and 2** have been corrected for the appropriate recovery factors.

Note: Quadrel's derivation of the EMFLUX® cartridge collection constant, K, involved (i) adoption of 0.05 cm^2/sec as a typical diffusion coefficient, D, for VOCs in free air and (ii) evaluation of experimental laboratory data to determine the ratio between collection area, A, and diffusion distance, Z. The latter relationship, based on work done to date, appears to be A/Z = 20.2 cm. Given these values, Quadrel has computed the value of the constant to be:

$$\begin{aligned} K &= 1/[D(A/Z)] \text{ sec/cm}^3 \\ &= 1/[0.05(20.2)] \text{ sec/cm}^3 \\ &= 1/1.01 \text{ sec/cm}^3 \\ &\approx 1.0 \text{ sec/cm}^3 \end{aligned}$$

Data Compatibility Equation. It is important to note that when sample locations are covered with an artificial surface (*e.g.*, asphalt or concrete), sample measurements are often distorted (increased) significantly. Such distortion can be attributed to the fact that gas rising from sources beneath impermeable caps tends to reach equilibrium in relatively short periods of time and that, once equilibrium is reached, the soil-gas concentration measured at any point in a vertical line between source and cap is theoretically the same. Thus, a reading taken immediately below an impermeable surface is much higher than it would be in the absence of such a cap.

Typically, when an EMFLUX® Survey is performed on a site which is partially covered by an impermeable cap, the values recorded beneath the cap should be arithmetically adjusted for comparion with values recorded in uncapped areas. To make such corrections, the following equation can be applied.

$$C_{(e)} = C_{(c)} Z_{(c)} / Z_{(s)}$$

where: $C_{(e)}$ = Estimated *uncapped* measurement (ng)
$C_{(c)}$ = Measurement in Collector (ng)
$Z_{(c)}$ = Depth of Collector (cm)
$Z_{(s)}$ = Known or assumed depth to source (cm)

This calculation assumes that concentration gradients are linear with depth from source to surface, an assumption deemed acceptable by Quadrel on the basis of literature reviews and previous experience.

Note: Contaminant concentrations reported in **Tables 1 and 2** were not corrected with the above equation.

7. Report Notes and Quality Assurance/Quality Control Factors

Tables 1 and 2 provide survey results in soil-gas concentrations by sample-point number and compound name. The quantitation levels (Q.L.) represent values above which quantitative laboratory results can be achieved within specified limits of precision and with a high degree of confidence. The quantitation level of each compound, therefore, provides a reliable basis for comparison of the relative strength of individual detections of that compound.

Laboratory QA/QC procedures included standards, surrogates, and blanks appropriate to the EPA Method 8260 (Modified) used. Field work and reporting were done in accordance with Quadrel's Quality Assurance Program Plan. MSS performed analyses under the laboratory's own Quality Assurance Plan.

QA/QC Contaminant Corrections. Following EPA guidelines, Quadrel does not correct EMFLUX® laboratory data for method blank, trip blank, or ambient-air control sample

contamination values; all contamination detected on QA/QC samples is reported in **Attachment 1**. Subsequent handling of QA/QC sample contamination depends upon the circumstances and origin of the sample; any corrective conventions noted below have, in Quadrel's experience, proved highly useful in deriving accurate and reproducible interpretations of survey data. *No other methods thus far tested have produced comparable levels of quality.*

Laboratory method blanks are run each day with project samples to identify contamination present in the laboratory. If contamination is detected on a method blank, detections of identical compounds on samples analyzed the same day are considered to be suspect and are flagged both in the laboratory report and in converted soil-gas concentration data. The laboratory method blanks analyzed in connection with the present samples revealed no contamination.

The **trip blank** is an EMFLUX® cartridge prepared, transported, and analyzed with other samples but intentionally not exposed. Although reported in the laboratory data, contamination on this field QA/QC sample is subtracted from measurements of the same compounds on both field and control samples during data interpretation. Here, the trip blank received at the laboratory on September 22, 1997 recorded 49 ng of Benzene and 58 ng of Chloromethane. The trip blank received at the laboratory on September 24, 1997 recorded none of the targeted compounds.

As additional QA/QC, ABB deployed one sample as a **duplicate field sample**. The results of this sample (labeled SGV007XXD, which is a duplicate of SGV007XXX) are given in soil-gas concentrations in **Table 2**. Because duplicates cannot be identically located in the field and because it is possible for even small geophysical differences between sample locations to affect soil-gas-emission quantities, comparisons between duplicates samples should be made on a qualitative basis, as quantitative results may be subject to random distortions.

Survey findings are relative exclusively to this project and should not routinely be compared with results of other EMFLUX® Surveys.

The following **Attachments** are included:

-1- Laboratory Report
-2- EMFLUX® Field Procedures
-3- Field Deployment Report
-4- Chain-of-Custody Form
-5- Laboratory Procedures
-6- Adsorbent Recovery Factors

Table 1

Soil-Gas Concentrations (ng/L)
Ames St./Taylor Site
New York

SAMPLE LOCATION	Q.L.	SGV006XX2	SGV009XX2	SGV010XX2	SGV011XX2
CONTAMINANTS					
Benzene	0.08	0.54	2.70	--	--
Chloroform	0.04	0.14	--	0.05	--
Chloromethane	0.06	1.84	1.10	--	--
1,1-Dichloroethene	0.03	0.86	0.21	--	--
1,2-Dichloroethene (total)	0.04	20.49	0.25	--	--
Tetrachloroethene	0.13	2.47	1.49	--	--
Toluene	0.17	--	0.84	--	--
1,1,1-Trichloroethane	0.05	0.20	0.14	--	--
Trichloroethene	0.05	475.22	5.58	0.35	0.07

NOTES:
1) Values listed under "Q.L." are reported soil-gas concentration quantitation levels.
2) "--" denotes absence of detections above the reported quantitation level.

Table 2

Soil-Gas Concentrations (ng/L)
Ames St./Taylor Site
New York

SAMPLE LOCATION	Q.L.	SGV007XXX	SGV007XXD
CONTAMINANTS			
Benzene	0.19	1.14	0.46
Toluene	0.44	67.39	13.29
Xylenes (total)	0.88	415.28	40.47
Total BTEX	0.19	483.81	54.22
1,2-Dichloroethene (total)	0.11	0.12	--
Tetrachloroethene	0.33	6.99	5.85
Trichloroethene	0.14	19.66	11.96
1,2,4-Trimethylbenzene	1.58	91.22	7.60
1,3,5-Trimethylbenzene	0.99	35.43	4.36

NOTES:

1) Values listed under "Q.L." are reported soil-gas concentration quantitation levels.
2) "--" denotes absence of detections above the reported quantitation level.

Attachment 1

Laboratory Report

MARYLAND SPECTRAL SERVICES, INC.
1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	SVG-1	SVG-2	SVG-3	SVG-4	SVG-5	SVG-8
	QS2319	QS2319	QS2319	QS2319	QS2319	QS2319
LAB SAMPLE ID:	97090301	97090302	97090303	97090304	97090305	97090307
RECEIVED DATE:	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97
ANALYSIS DATE:	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97
FILE NAME:	090301	090302	090303	090304	090305	090307
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	25 U	1060	318	157	1650	1470
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	99
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
Chloromethane	50 R UJ	2170 J	202 J	239 J	1050 J	50 R UJ
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (total)	25 U	25 U	25 U	25 U	25 U	55000
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	35
2-Hexanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
4-Methyl-2-Pentanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
Styrene	25 U	214	29	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	25 U	25 U	3210	25 U	25 U	11100
Toluene	27	1430	265	88	8400	25 U
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	590
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	810000
1,2,4-Trimethylbenzene	25 U	52	25 U	25 U	1180	25 U
1,3,5-Trimethylbenzene	25 U	36	25 U	25 U	510	25 U
Vinyl Chloride	50 U	50 U	50 U	50 U	50 U	50 U
Xylene (total)	25 U	850	99	25 U	7550	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	SVG-9	SVG-10	SVG-11	A	TRIP-BLANK	VBLK0904D1
	QS2319	QS2319	QS2319	QS2319	QS2319	
LAB SAMPLE ID:	97090308	97090309	97090310	97090311	97090312	METHOD_BLANK
RECEIVED DATE:	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97	
ANALYSIS DATE:	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97	09/03/97
FILE NAME:	090308	090309	090310	090311	090312	0903VBLKD1
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	214	570	25 U	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	44	25 U	25 U	25 U	25 U	25 U
Chloromethane	715 J	454 J	99 J	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	291	88	25 U	25 U	25 U	25 U
1,2-Dichloroethene (total)	5300	25 U	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ
4-Methyl-2-Pentanone	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ	50 ~~R~~ UJ
Styrene	25 U	39	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	625	164	25 U	25 U	25 U	25 U
Toluene	42	530	25 U	25 U	25 U	25 U
1,1,1-Trichloroethane	31	32	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	75000	3240	469	25 U	25 U	25 U
1,2,4-Trimethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
1,3,5-Trimethylbenzene	25 U	55	25 U	25 U	25 U	25 U
Vinyl Chloride	50 U	50 U	50 U	50 U	50 U	50 U
Xylene (total)	25 U	229	25 U	25 U	25 U	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.

1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	SGV006XX2	SGV009XX2	SGV010XX2	SGV011XX2	TRIP-BLANK	SG007XXX
	QS2319B	QS2319B	QS2319B	QS2319B	QS2319B	QS2319B
LAB SAMPLE ID:	97092201	97092202	97092203	97092204	97092205	97092401
RECEIVED DATE:	09/22/97	09/22/97	09/22/97	09/22/97	09/22/97	09/24/97
ANALYSIS DATE:	09/24/97	09/24/97	09/24/97	09/24/97	09/24/97	09/24/97
FILE NAME:	092201	092202	092203	092204	092205	092401
INSTRUMENT ID:	MSD	MSD	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS						
Benzene	226	935	38 U	52 U	49	148
Bromodichloromethane	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U	50 U	50 U
Chloroform	81	25 U	30	25 U	25 U	25 U
Chloromethane	1530 J	940 J	50 R UJ	50 R UJ	58 J	50 R UJ
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	685	165	25 U	25 U	25 U	25 U
1,2-Dichloroethene (total)	12100	146	25 U	25 U	25 U	27
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
4-Methyl-2-Pentanone	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ	50 R UJ
Styrene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Tetrachloroethene	473	286	25 U	25 U	25 U	530
Toluene	25 U	121	25 U	25 U	25 U	3830
1,1,1-Trichloroethane	95	66	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
Trichloroethene	220000	2590	161	31	25 U	3600
1,2,4-Trimethylbenzene	25 U	25 U	25 U	25 U	25 U	1440
1,3,5-Trimethylbenzene	25 U	25 U	25 U	25 U	25 U	895
Vinyl Chloride	50 U	50 U	50 U	50 U	50 U	50 U
Xylene (total)	25 U	25 U	25 U	25 U	25 U	11800

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

MARYLAND SPECTRAL SERVICES, INC.
1500 Caton Center Drive Baltimore, MD 21227

VOLATILE ORGANICS BY EPA GC/MS METHOD MODIFIED 8260

CLIENT SAMPLE ID:	SGV007XXD QS2319B	TRIP-BLANK QS2319B	VBLK0923D1	VBLK0924D1
LAB SAMPLE ID:	97092402	97092403	METHOD_BLANK	METHOD_BLANK
RECEIVED DATE:	09/24/97	09/24/97		
ANALYSIS DATE:	09/24/97	09/24/97	09/23/97	09/24/97
FILE NAME:	092402	092403	0923VBLKD1	0924VBLKD1
INSTRUMENT ID:	MSD	MSD	MSD	MSD
UNITS:	NG/TRAP	NG/TRAP	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS				
Benzene	59	25 U	25 U	25 U
Bromodichloromethane	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U
Bromomethane	50 U	50 U	50 U	50 U
2-Butanone	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ
Carbon Tetrachloride	25 U	25 U	25 U	25 U
Chlorobenzene	25 U	25 U	25 U	25 U
Chloroethane	50 U	50 U	50 U	50 U
Chloroform	25 U	25 U	25 U	25 U
Chloromethane	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ
Dibromochloromethane	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U
1,1-Dichloroethene	25 U	25 U	25 U	25 U
1,2-Dichloroethene (total)	25 U	25 U	25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U	25 U	25 U
Ethylbenzene	25 U	25 U	25 U	25 U
2-Hexanone	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ
4-Methyl-2-Pentanone	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ	50 ~~U~~ UJ
Styrene	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U
Tetrachloroethene	443	25 U	25 U	25 U
Toluene	755	25 U	25 U	25 U
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U	25 U	25 U
Trichloroethene	2190	25 U	25 U	25 U
1,2,4-Trimethylbenzene	120	25 U	25 U	25 U
1,3,5-Trimethylbenzene	110	25 U	25 U	25 U
Vinyl Chloride	50 U	50 U	50 U	50 U
Xylene (total)	1150	25 U	25 U	25 U

B - Detected in lab blank. U - Below reported quantitation level. J - Estimated value.

Attachment 2

FIELD PROCEDURES FOR EMFLUX® SOIL-GAS SURVEYS

The following field procedures are routinely used during EMFLUX® Soil-Gas Surveys. Modifications can be and are incorporated from time to time in response to individual project requirements. In all instances, Quadrel adheres to EPA-approved Quality Assurance and Quality Control practices.

A. Field personnel carry EMFLUX® system components and support equipment to the site and deploy the EMFLUX® Collectors in a prearranged survey pattern. Although EMFLUX® Collectors require only one person for emplacement and retrieval, the specific number of field personnel required depends upon the scope and schedule of the project. Each Collector emplacement generally takes less than two minutes.

B. For those sample locations covered with soils or vegetation, a field technician clears vegetation and debris exposing the ground surface. Using a hammer and a ¾-inch-diameter pointed metal stake, the technician creates a hole approximately three inches deep. For those locations covered with an asphalt or concrete cap, the field technician drills a one-inch-diameter hole through the cap to the soils beneath. (If necessary, the Collector can be sleeved with a ¾-inch i.d. copper pipe for either capped or uncapped locations).

C. The technician then removes the solid plastic cap from an EMFLUX® Collector (a glass vial containing an adsorbent cartridge with a length of wire attached to the vial for retrieval) and replaces it with a Sampling Cap (a plastic cap with a hole covered by screen meshing). The technician inserts the Collector, with the Sampling Cap end facing down, into the hole (**see attached figure**). The Collector is then covered with either local soils for uncapped locations or, for capped locations, aluminum foil and a concrete patch. The Collector's location, time and date of emplacement, and other relevant information are recorded on the Field Deployment Form.

D. As a quality-control check during emplacement and retrieval, the technician takes periodic ambient-air control samples and records the date, time, and location of each. (One or more trip blanks are also included as part of the quality-control procedures).

E. Once all EMFLUX® Collectors have been deployed, field personnel schedule Collector recovery (approximately 72 hours after emplacement) and depart, taking all no-longer-needed equipment and materials with them).

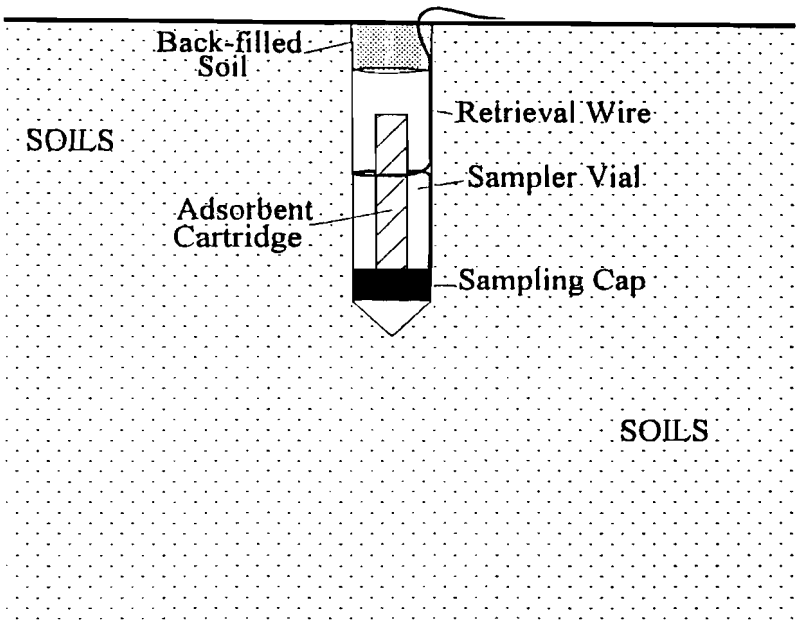
F. Field personnel retrieve the Collectors at the end of the 72-hour exposure period. At each location, a field technician withdraws the Collector from its hole and wipes the outside of the vial clean using gauze cloth; following removal of the Sampling Cap, the threads of the vial are also cleaned. A solid plastic cap is screwed onto the vial and the sample location number is written on the label. The technician then records sample-point location, date, time, etc. on the Field Deployment Form.

G. Sampling holes are refilled with soil, sand, or other suitable material. If Collectors have been installed through asphalt or concrete, the hole if filled to grade with a plug of cold patch or cement.

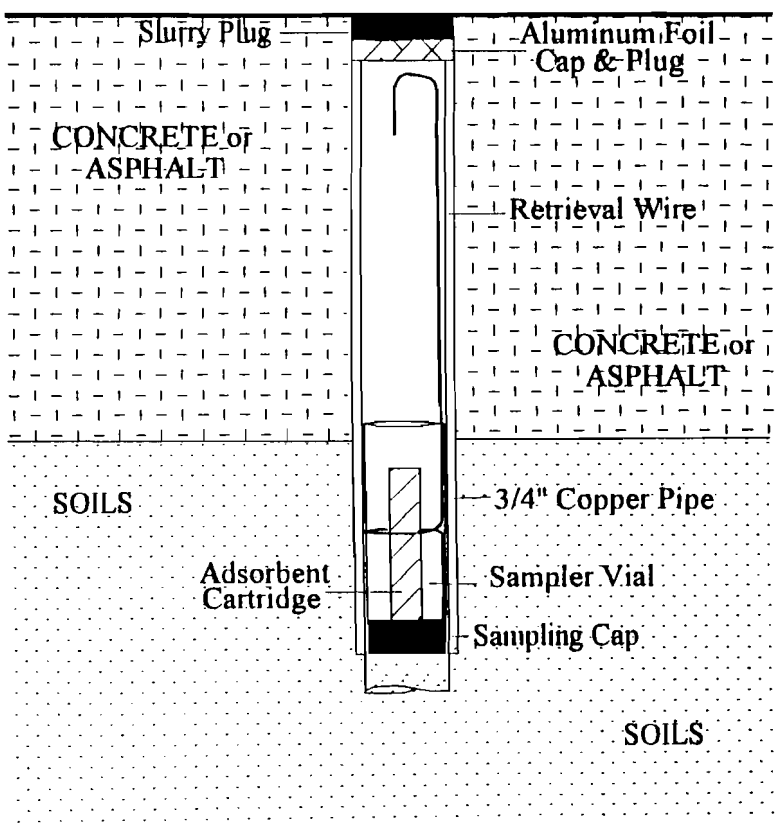
H. Following retrieval, field personnel ship or carry the EMFLUX® Collectors to analytical laboratories under contract to Quadrel Services. The remaining equipment is returned to Quadrel's preparation facility.

EMFLUX® COLLECTOR

DEPLOYMENT THROUGH SOILS



DEPLOYMENT THROUGH AN ASPHALT/CONCRETE CAP



Attachment 3

Field Deployment Report

QUADREL SERVICES, INC.
FIELD DEPLOYMENT REPORT

PROJECT #:	CLIENT:	SITE:
2319 B	ABB Environmental Services	Taylor Instruments

INDIVIDUAL SAMPLE INFORMATION

EMPLACEMENT DATE:	RETRIEVAL DATE:
9/10/97	9/19/97

SAMPLE NUMBER	TIME		FIELD NOTES (e.g., asphalt/concrete covering, description of sample location, cartridge/vial condition)
	Emplaced	Retrieved	
SGV009XX2	1155	1815	Grassed area. Installed 4' bgs in copper pipe. Good condition
SGV010XX2	1200	1820	Paved area. Installed 4' bgs in copper pipe. Good condition
SGV011XX2	1205	1826	off edge of pavement in grass. Installed 4' bgs in copper pipe.
SGV006XX2	1210	1753	Embankment near concrete wall, grass soil. Installed 3.8' bgs. Good condition, probe not disturbed
Trip Blank	-	-	Do not open

Attachment 4

Chain-of-Custody Forms

QUADREL SERVICES, INC.
CHAIN-OF-CUSTODY FORM

Ames Street

PROJECT NUMBER: 2319 B	PROJECT NAME: Taylor Instruments
LOCATION: Taylor Instruments	CLIENT: ABB Environmental Svs.
TARGET COMPOUNDS: 8260	

SAMPLE NUMBER	LAB ID No. (for lab use only) MSCA#	REMARKS: Condition of sample or vial	Date	Time	Init.
SGV006XX2	970922-01				
SGV009XX2	02				
SGV010XX2	03				
SGV011XX2	04				
5		NO SAMPLE			
6					
7					
8					
Trip Blank	05				

RELINQUISHED BY: Signature	Printed Name	DATE	TIME	RECEIVED BY: Signature	Printed Name
	Steve Thornley	9-8-97	1500	Fedex	
Fedex		9/9/97	1300	(illegible)	Dave Dionne
		9/19/97	1700		Geoff Knight
	Geoff Knight	9/19/97	1900	FedEx	
FED EX		9/20/97	1205		E. Marchmont

CHAIN OF CUSTODY RECORD/ANALYTICAL REQUEST

1. Project Name: Taylor Instruments
2. Project No.: 7198.31
3. SDG No.:
4. Project Manager: G. Knight
5. Manager's Phone No.: 423/531-1922
6. Work Release No.:
7. Prepared by: G. Knight
8. Form checked before shipping by:
9. Airbill No.: 801033309462

Samplers (Print names): Geoff Knight

ABB Environmental Services, Inc.
110 Free Street
P.O. Box 7050
Portland, ME 04112
Tel: (207) 775-5401
Fax: (207) 772-4762

Date	Time	Water	Soil	Sample ID Number	Total No. of Containers:	VOC: Preservative: / Bottle Type	SVOC: / Bottle Type	Inorganic: Preservative: / Filtered ☐Yes ☐No / Bottle Type	Pest/PCB: / Bottle Type	TPH: Preservative: / Bottle Type	EPA 8260				Remarks: (Include MS/MSD information, composite or grab sample information, etc.)
9/23/97	see note			SGV007XXX	1	MS	SS4	97-09246-01			X				SGV007XXX and SGV007XXD deployed 9/19/97 @ 1753 and retrieved 9/23/97 @ 0935.
9/23/97				SGV007XXD	1					02	X				
9/23/97				Trip blank	1					03	X				Trip blank consists of unused sample device.

10. Date Shipped: 9/23/97
11. Date Received: 9/24/97 1100 hrs
12. Date Shipped:
13. Relinquished by: Geoff Knight Date/Time 9/23/97 1555
14. Received by: MSS Date/Time
15. Relinquished by: Date/Time
16. Received by: FedEx Date/Time
17. Relinquished by: Date/Time
18. Received for Disposal by: Date/Time
19. Comments (Special instructions):

Attachment 5

LABORATORY PROCEDURES FOR EMFLUX® ADSORBENT CARTRIDGES

Following are laboratory procedures used with the EMFLUX® Soil-Gas System, a screening technology for expedited site investigation. After exposure, EMFLUX® cartridges are analyzed using U.S. EPA Method 8260 as described in the Solid Waste Manual (SW-846), a purge-and-trap capillary gas chromatographic/mass spectrometric method, modified to accommodate high- temperature thermal desorption of the adsorbent cartridges. This procedure is summarized as follows:

A. The adsorbent cartridges are thermally desorbed at 300°C for 11 minutes in a 40 mL/min helium flow, through 5 mL of reagent water spiked with 250 ng of internal standards and surrogates held in the sparging vessel. Any analytes in the helium stream are adsorbed onto a standard three-component trap (Tenax, silica gel, coconut charcoal).

B. Following cryofocusing, the three-component trap is thermally desorbed at 220°C onto a Supelco VOCOL 105 m, 0.5 mm ID, 3.00 micron filament thickness capillary column, per the U.S. EPA CLP Statement of Work (SOW) for the method.

C. Following the SOW, the GC/MS is scanned between 35 and 260 Atomic Mass Units (AMU) at one second per scan.

D. BFB tuning criteria and initial calibration are per the EPA CLP 2/88 guidelines, with an 18-hour tune window. A laboratory blank is analyzed after the daily standard to determine that the system is contaminant-free.

E. The instrumentation used for these analyses includes:

Finnigan Model OWA 1050 Gas Chromatograph/Mass Spectrometer;

Tekmar Model 6016 Aero Trap Autosampler;

Tekmar Model LSC 2000 Liquid Sample Concentrator; and

Tekmar Model ALS 2016 Autosampler.

Attachment 6

ADSORBENT RECOVERY FACTORS

Quadrel maintains an ongoing laboratory-based program to quantify recovery factors for the adsorbents used in EMFLUX℠ field collection devices. This program is designed to determine adsorbent affinity (a combination of attraction and retention characteristics) for a broad spectrum of compounds, including each of the VOCs targeted in this survey. The adsorbent with the highest overall affinity for the targeted VOCs was utilized for this survey, and the recovery factors of those compounds that were detected are as follows:

Compound	Percent Recovered
Benzene	41
Chloroform	72
Chloromethane	100
1,1-Dichloroethene	100
1,2-Dichloroethene (total)	74
Tetrachloroethene	24
Toluene	18
1,1,1-Trichloroethane	61
Trichloroethene	58
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene	8
Xylenes	9

Attachment B
Results Summary Tables
for
Soil and Groundwater Samples Collected at Soil Gas Probe Locations

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-1	TWV001XXXXX	8/29/97	W	1,1,1-TRICHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	1,1,2,2-TETRACHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	1,1,2-TRICHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	1,1-DICHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	1,1-DICHLOROETHENE		-	5.0	UJ	ug/l
		8/29/97	W	1,2-DICHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	1,2-DICHLOROPROPANE		-	5.0	UJ	ug/l
		8/29/97	W	2-BUTANONE (MEK)		-	10	UJ	ug/l
		8/29/97	W	2-HEXANONE		-	10	UJ	ug/l
		8/29/97	W	4-METHYL-2-PENTANONE (MIBK)		-	10	UJ	ug/l
		8/29/97	W	ACETONE		-	20	UJ	ug/l
		8/29/97	W	BENZENE		-	5.0	UJ	ug/l
		8/29/97	W	BROMODICHLOROMETHANE		-	5.0	UJ	ug/l
		8/29/97	W	BROMOFORM		-	5.0	UJ	ug/l
		8/29/97	W	BROMOMETHANE		-	5.0	UJ	ug/l
		8/29/97	W	CARBON DISULFIDE		-	10	UJ	ug/l
		8/29/97	W	CARBON TETRACHLORIDE		-	5.0	UJ	ug/l
		8/29/97	W	CHLOROBENZENE		-	5.0	UJ	ug/l
		8/29/97	W	CHLOROETHANE		-	5.0	UJ	ug/l
		8/29/97	W	CHLOROFORM		-	5.0	UJ	ug/l
		8/29/97	W	CHLOROMETHANE		-	5.0	UJ	ug/l
		8/29/97	W	CIS-1,2-DICHLOROETHENE		-	5.0	UJ	ug/l
		8/29/97	W	CIS-1,3-DICHLOROPROPENE		-	5.0	UJ	ug/l
		8/29/97	W	DIBROMOCHLOROMETHANE		-	5.0	UJ	ug/l
		8/29/97	W	ETHYLBENZENE		-	5.0	UJ	ug/l
		8/29/97	W	M+P-XYLENE		-	5.0	UJ	ug/l
		8/29/97	W	METHYLENE CHLORIDE		-	5.0	UJ	ug/l
		8/29/97	W	O-XYLENE		-	5.0	UJ	ug/l
		8/29/97	W	STYRENE		-	5.0	UJ	ug/l
		8/29/97	W	TETRACHLOROETHENE		-	5.0	UJ	ug/l
		8/29/97	W	TOLUENE		-	5.0	UJ	ug/l
		8/29/97	W	TRANS-1,2-DICHLOROETHENE		-	5.0	UJ	ug/l
		8/29/97	W	TRANS-1,3-DICHLOROPROPENE		-	5.0	UJ	ug/l
		8/29/97	W	TRICHLOROETHENE		-	7.1	UJ	ug/l
		8/29/97	W	VINYL CHLORIDE		-	5.0	UJ	ug/l
SGV-10	TSV10XX5XX	8/26/97	S	1,1,1-TRICHLOROETHANE		-	5.6	U	ug/kg
		8/26/97	S	1,1,2,2-TETRACHLOROETHANE		-	5.6	UJ	ug/kg
		8/26/97	S	1,1,2-TRICHLOROETHANE		-	5.6	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHANE		-	5.6	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHENE		-	5.6	U	ug/kg
		8/26/97	S	1,2-DICHLOROETHANE		-	5.6	U	ug/kg
		8/26/97	S	1,2-DICHLOROPROPANE		-	5.6	U	ug/kg

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-10	TSV10XX5XX	8/26/97	S	2-BUTANONE (MEK)			11	U	ug/kg
		8/26/97	S	2-HEXANONE			11	U	ug/kg
		8/26/97	S	4-METHYL-2-PENTANONE (MIBK)			11	UJ	ug/kg
		8/26/97	S	ACETONE			22	U	ug/kg
		8/26/97	S	BENZENE			5.6	U	ug/kg
		8/26/97	S	BROMODICHLOROMETHANE			5.6	U	ug/kg
		8/26/97	S	BROMOFORM			5.6	U	ug/kg
		8/26/97	S	BROMOMETHANE			5.6	U	ug/kg
		8/26/97	S	CARBON DISULFIDE			11	U	ug/kg
		8/26/97	S	CARBON TETRACHLORIDE			5.6	U	ug/kg
		8/26/97	S	CHLOROBENZENE			5.6	U	ug/kg
		8/26/97	S	CHLOROETHANE			5.6	U	ug/kg
		8/26/97	S	CHLOROFORM			5.6	U	ug/kg
		8/26/97	S	CHLOROMETHANE			5.6	UJ	ug/kg
		8/26/97	S	CIS-1,2-DICHLOROETHENE			5.6	U	ug/kg
		8/26/97	S	CIS-1,3-DICHLOROPROPENE			5.6	U	ug/kg
		8/26/97	S	DIBROMOCHLOROMETHANE			5.6	U	ug/kg
		8/26/97	S	ETHYLBENZENE			5.6	U	ug/kg
		8/26/97	S	M+P-XYLENE			5.6	U	ug/kg
		8/26/97	S	METHYLENE CHLORIDE			5.6	U	ug/kg
		8/26/97	S	O-XYLENE			5.6	U	ug/kg
		8/26/97	S	STYRENE			5.6	U	ug/kg
		8/26/97	S	TETRACHLOROETHENE			5.6	U	ug/kg
		8/26/97	S	TOLUENE			5.6	U	ug/kg
		8/26/97	S	TRANS-1,2-DICHLOROETHENE			5.6	U	ug/kg
		8/26/97	S	TRANS-1,3-DICHLOROPROPENE			5.6	U	ug/kg
		8/26/97	S	TRICHLOROETHENE			5.6	U	ug/kg
		8/26/97	S	VINYL CHLORIDE			5.6	U	ug/kg
SGV-11	TSV11XX5XX	8/26/97	S	1,1,1-TRICHLOROETHANE			5.4	U	ug/kg
		8/26/97	S	1,1,2,2-TETRACHLOROETHANE			5.4	UJ	ug/kg
		8/26/97	S	1,1,2-TRICHLOROETHANE			5.4	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHANE			5.4	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHENE			5.4	U	ug/kg
		8/26/97	S	1,2-DICHLOROETHANE			5.4	U	ug/kg
		8/26/97	S	1,2-DICHLOROPROPANE			5.4	U	ug/kg
		8/26/97	S	2-BUTANONE (MEK)			11	U	ug/kg
		8/26/97	S	2-HEXANONE			11	U	ug/kg
		8/26/97	S	4-METHYL-2-PENTANONE (MIBK)			11	UJ	ug/kg
		8/26/97	S	ACETONE			21	U	ug/kg
		8/26/97	S	BENZENE			5.4	U	ug/kg
		8/26/97	S	BROMODICHLOROMETHANE			5.4	U	ug/kg
		8/26/97	S	BROMOFORM			5.4	U	ug/kg

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-11	TSV11XX5XX	8/26/97	S	BROMOMETHANE		<	5.4	U	ug/kg
		8/26/97	S	CARBON DISULFIDE		<	11	U	ug/kg
		8/26/97	S	CARBON TETRACHLORIDE		<	5.4	U	ug/kg
		8/26/97	S	CHLOROBENZENE		<	5.4	U	ug/kg
		8/26/97	S	CHLOROETHANE		<	5.4	U	ug/kg
		8/26/97	S	CHLOROFORM		<	5.4	U	ug/kg
		8/26/97	S	CHLOROMETHANE		<	5.4	UJ	ug/kg
		8/26/97	S	CIS-1,2-DICHLOROETHENE		<	5.4	U	ug/kg
		8/26/97	S	CIS-1,3-DICHLOROPROPENE		<	5.4	U	ug/kg
		8/26/97	S	DIBROMOCHLOROMETHANE		<	5.4	U	ug/kg
		8/26/97	S	ETHYLBENZENE		<	5.4	U	ug/kg
		8/26/97	S	M+P-XYLENE		<	5.4	U	ug/kg
		8/26/97	S	METHYLENE CHLORIDE		<	5.4	U	ug/kg
		8/26/97	S	O-XYLENE		<	5.4	U	ug/kg
		8/26/97	S	STYRENE		<	5.4	U	ug/kg
		8/26/97	S	TETRACHLOROETHENE		<	5.4	U	ug/kg
		8/26/97	S	TOLUENE		<	5.4	U	ug/kg
		8/26/97	S	TRANS-1,2-DICHLOROETHENE		<	5.4	U	ug/kg
		8/26/97	S	TRANS-1,3-DICHLOROPROPENE		<	5.4	U	ug/kg
		8/26/97	S	TRICHLOROETHENE		<	5.4	U	ug/kg
		8/26/97	S	VINYL CHLORIDE		<	5.4	U	ug/kg
SGV-3	TWV003XXXXX	8/28/97	W	1,1,1-TRICHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	1,1,2,2-TETRACHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	1,1,2-TRICHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	1,1-DICHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	1,1-DICHLOROETHENE		<	5.0	U	ug/l
		8/28/97	W	1,2-DICHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	1,2-DICHLOROPROPANE		<	5.0	U	ug/l
		8/28/97	W	2-BUTANONE (MEK)		<	10	U	ug/l
		8/28/97	W	2-HEXANONE		<	10	U	ug/l
		8/28/97	W	4-METHYL-2-PENTANONE (MIBK)		<	10	U	ug/l
		8/28/97	W	ACETONE		<	20	U	ug/l
		8/28/97	W	BENZENE		<	5.0	U	ug/l
		8/28/97	W	BROMODICHLOROMETHANE		<	5.0	U	ug/l
		8/28/97	W	BROMOFORM		<	5.0	U	ug/l
		8/28/97	W	BROMOMETHANE		<	5.0	U	ug/l
		8/28/97	W	CARBON DISULFIDE		<	10	U	ug/l
		8/28/97	W	CARBON TETRACHLORIDE		<	5.0	U	ug/l
		8/28/97	W	CHLOROBENZENE		<	5.0	U	ug/l
		8/28/97	W	CHLOROETHANE		<	5.0	U	ug/l
		8/28/97	W	CHLOROFORM		<	5.0	U	ug/l
		8/28/97	W	CHLOROMETHANE		<	5.0	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-3	TWV003XXXXX	8/28/97	W	CIS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	CIS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/28/97	W	DIBROMOCHLOROMETHANE			5.0	U	ug/l
		8/28/97	W	ETHYLBENZENE			5.0	U	ug/l
		8/28/97	W	M+P-XYLENE			5.0	U	ug/l
		8/28/97	W	METHYLENE CHLORIDE			5.0	U	ug/l
		8/28/97	W	O-XYLENE			5.0	U	ug/l
		8/28/97	W	STYRENE			5.0	U	ug/l
		8/28/97	W	TETRACHLOROETHENE			5.0	U	ug/l
		8/28/97	W	TOLUENE			5.0	U	ug/l
		8/28/97	W	TRANS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	TRANS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/28/97	W	TRICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	VINYL CHLORIDE			5.0	U	ug/l
SGV-4	TWV004XXXX	8/29/97	W	1,1,1-TRICHLOROETHANE			5.0	U	ug/l
		8/29/97	W	1,1,2,2-TETRACHLOROETHANE			5.0	U	ug/l
		8/29/97	W	1,1,2-TRICHLOROETHANE			5.0	U	ug/l
		8/29/97	W	1,1-DICHLOROETHANE			5.0	U	ug/l
		8/29/97	W	1,1-DICHLOROETHENE			5.0	U	ug/l
		8/29/97	W	1,2-DICHLOROETHANE			5.0	U	ug/l
		8/29/97	W	1,2-DICHLOROPROPANE			5.0	U	ug/l
		8/29/97	W	2-BUTANONE (MEK)			10	U	ug/l
		8/29/97	W	2-HEXANONE			10	U	ug/l
		8/29/97	W	4-METHYL-2-PENTANONE (MIBK)			10	U	ug/l
		8/29/97	W	ACETONE			20	U	ug/l
		8/29/97	W	BENZENE			5.0	U	ug/l
		8/29/97	W	BROMODICHLOROMETHANE			5.0	U	ug/l
		8/29/97	W	BROMOFORM			5.0	U	ug/l
		8/29/97	W	BROMOMETHANE			5.0	U	ug/l
		8/29/97	W	CARBON DISULFIDE			10	U	ug/l
		8/29/97	W	CARBON TETRACHLORIDE			5.0	U	ug/l
		8/29/97	W	CHLOROBENZENE			5.0	U	ug/l
		8/29/97	W	CHLOROETHANE			5.0	U	ug/l
		8/29/97	W	CHLOROFORM			5.0	U	ug/l
		8/29/97	W	CHLOROMETHANE			5.0	U	ug/l
		8/29/97	W	CIS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/29/97	W	CIS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/29/97	W	DIBROMOCHLOROMETHANE			5.0	U	ug/l
		8/29/97	W	ETHYLBENZENE			5.0	U	ug/l
		8/29/97	W	M+P-XYLENE			5.0	U	ug/l
		8/29/97	W	METHYLENE CHLORIDE			5.0	U	ug/l
		8/29/97	W	O-XYLENE			5.0	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-4	TWV004XXXX	8/29/97	W	STYRENE			5.0	U	ug/l
		8/29/97	W	TETRACHLOROETHENE			5.0	U	ug/l
		8/29/97	W	TOLUENE			5.0	U	ug/l
		8/29/97	W	TRANS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/29/97	W	TRANS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/29/97	W	TRICHLOROETHENE			5.0	U	ug/l
		8/29/97	W	VINYL CHLORIDE			5.0	U	ug/l
SGV-5	TWV005XXXXX	8/28/97	W	1,1,1-TRICHLOROETHANE			5.0	U	ug/l
		8/28/97	W	1,1,2,2-TETRACHLOROETHANE			5.0	U	ug/l
		8/28/97	W	1,1,2-TRICHLOROETHANE			5.0	U	ug/l
		8/28/97	W	1,1-DICHLOROETHANE			5.0	U	ug/l
		8/28/97	W	1,1-DICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	1,2-DICHLOROETHANE			5.0	U	ug/l
		8/28/97	W	1,2-DICHLOROPROPANE			5.0	U	ug/l
		8/28/97	W	2-BUTANONE (MEK)			10	U	ug/l
		8/28/97	W	2-HEXANONE			10	U	ug/l
		8/28/97	W	4-METHYL-2-PENTANONE (MIBK)			10	U	ug/l
		8/28/97	W	ACETONE			20	U	ug/l
		8/28/97	W	BENZENE			5.0	U	ug/l
		8/28/97	W	BROMODICHLOROMETHANE			5.0	U	ug/l
		8/28/97	W	BROMOFORM			5.0	U	ug/l
		8/28/97	W	BROMOMETHANE			5.0	U	ug/l
		8/28/97	W	CARBON DISULFIDE			10	U	ug/l
		8/28/97	W	CARBON TETRACHLORIDE			5.0	U	ug/l
		8/28/97	W	CHLOROBENZENE			5.0	U	ug/l
		8/28/97	W	CHLOROETHANE			5.0	U	ug/l
		8/28/97	W	CHLOROFORM			5.0	U	ug/l
		8/28/97	W	CHLOROMETHANE			5.0	U	ug/l
		8/28/97	W	CIS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	CIS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/28/97	W	DIBROMOCHLOROMETHANE			5.0	U	ug/l
		8/28/97	W	ETHYLBENZENE			5.0	U	ug/l
		8/28/97	W	M+P-XYLENE			5.0	U	ug/l
		8/28/97	W	METHYLENE CHLORIDE			5.0	U	ug/l
		8/28/97	W	O-XYLENE			5.0	U	ug/l
		8/28/97	W	STYRENE			5.0	U	ug/l
		8/28/97	W	TETRACHLOROETHENE			5.0	U	ug/l
		8/28/97	W	TOLUENE			5.0	U	ug/l
		8/28/97	W	TRANS-1,2-DICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	TRANS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		8/28/97	W	TRICHLOROETHENE			5.0	U	ug/l
		8/28/97	W	VINYL CHLORIDE			5.0	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-8	TSV08XX5XX	8/26/97	S	1,1,1-TRICHLOROETHANE			720	U	ug/kg
		8/26/97	S	1,1,1-TRICHLOROETHANE			29	U	ug/kg
		8/26/97	S	1,1,2,2-TETRACHLOROETHANE			720	U	ug/kg
		8/26/97	S	1,1,2,2-TETRACHLOROETHANE			29	UJ	ug/kg
		8/26/97	S	1,1,2-TRICHLOROETHANE			720	U	ug/kg
		8/26/97	S	1,1,2-TRICHLOROETHANE			29	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHANE			29	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHANE			720	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHENE			720	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHENE			29	U	ug/kg
		8/26/97	S	1,2-DICHLOROETHANE			29	U	ug/kg
		8/26/97	S	1,2-DICHLOROETHANE			720	U	ug/kg
		8/26/97	S	1,2-DICHLOROPROPANE			720	U	ug/kg
		8/26/97	S	1,2-DICHLOROPROPANE			29	U	ug/kg
		8/26/97	S	2-BUTANONE (MEK)			1400	U	ug/kg
		8/26/97	S	2-BUTANONE (MEK)			58	U	ug/kg
		8/26/97	S	2-HEXANONE			1400	U	ug/kg
		8/26/97	S	2-HEXANONE			58	U	ug/kg
		8/26/97	S	4-METHYL-2-PENTANONE (MIBK)			1400	U	ug/kg
		8/26/97	S	4-METHYL-2-PENTANONE (MIBK)			58	UJ	ug/kg
		8/26/97	S	ACETONE			2900	U	ug/kg
		8/26/97	S	ACETONE			120	U	ug/kg
		8/26/97	S	BENZENE			720	U	ug/kg
		8/26/97	S	BENZENE			29	U	ug/kg
		8/26/97	S	BROMODICHLOROMETHANE			29	U	ug/kg
		8/26/97	S	BROMODICHLOROMETHANE			720	U	ug/kg
		8/26/97	S	BROMOFORM			29	U	ug/kg
		8/26/97	S	BROMOFORM			720	U	ug/kg
		8/26/97	S	BROMOMETHANE			720	U	ug/kg
		8/26/97	S	BROMOMETHANE			29	U	ug/kg
		8/26/97	S	CARBON DISULFIDE			58	U	ug/kg
		8/26/97	S	CARBON DISULFIDE			1400	U	ug/kg
		8/26/97	S	CARBON TETRACHLORIDE			29	U	ug/kg
		8/26/97	S	CARBON TETRACHLORIDE			720	U	ug/kg
		8/26/97	S	CHLOROBENZENE			29	U	ug/kg
		8/26/97	S	CHLOROBENZENE			720	U	ug/kg
		8/26/97	S	CHLOROETHANE			29	U	ug/kg
		8/26/97	S	CHLOROETHANE			720	U	ug/kg
		8/26/97	S	CHLOROFORM			29	U	ug/kg
		8/26/97	S	CHLOROFORM			720	U	ug/kg
		8/26/97	S	CHLOROMETHANE			29	UJ	ug/kg
		8/26/97	S	CHLOROMETHANE			720	U	ug/kg

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-8	TSV08XX5XX	8/26/97	S	CIS-1,2-DICHLOROETHENE			29	U	ug/kg
		8/26/97	S	CIS-1,2-DICHLOROETHENE			720	U	ug/kg
		8/26/97	S	CIS-1,3-DICHLOROPROPENE			720	U	ug/kg
		8/26/97	S	CIS-1,3-DICHLOROPROPENE			29	U	ug/kg
		8/26/97	S	DIBROMOCHLOROMETHANE			720	U	ug/kg
		8/26/97	S	DIBROMOCHLOROMETHANE			29	U	ug/kg
		8/26/97	S	ETHYLBENZENE			720	U	ug/kg
		8/26/97	S	ETHYLBENZENE			29	U	ug/kg
		8/26/97	S	M+P-XYLENE			29	U	ug/kg
		8/26/97	S	M+P-XYLENE			720	U	ug/kg
		8/26/97	S	METHYLENE CHLORIDE			720	U	ug/kg
		8/26/97	S	METHYLENE CHLORIDE			29	U	ug/kg
		8/26/97	S	O-XYLENE			720	U	ug/kg
		8/26/97	S	O-XYLENE			29	U	ug/kg
		8/26/97	S	STYRENE			29	U	ug/kg
		8/26/97	S	STYRENE			720	U	ug/kg
		8/26/97	S	TETRACHLOROETHENE			720	U	ug/kg
		8/26/97	S	TETRACHLOROETHENE			29	U	ug/kg
		8/26/97	S	TOLUENE			720	U	ug/kg
		8/26/97	S	TOLUENE			29	U	ug/kg
		8/26/97	S	TRANS-1,2-DICHLOROETHENE			29	U	ug/kg
		8/26/97	S	TRANS-1,2-DICHLOROETHENE			720	U	ug/kg
		8/26/97	S	TRANS-1,3-DICHLOROPROPENE			29	U	ug/kg
		8/26/97	S	TRANS-1,3-DICHLOROPROPENE			720	U	ug/kg
		8/26/97	S	TRICHLOROETHENE	950		720		ug/kg
		8/26/97	S	TRICHLOROETHENE	3000		29	J	ug/kg
		8/26/97	S	VINYL CHLORIDE			29	U	ug/kg
		8/26/97	S	VINYL CHLORIDE			720	U	ug/kg
SGV-9	TSV09XX5XX	8/26/97	S	1,1,1-TRICHLOROETHANE			6.1	U	ug/kg
		8/26/97	S	1,1,2,2-TETRACHLOROETHANE			6.1	UJ	ug/kg
		8/26/97	S	1,1,2-TRICHLOROETHANE			6.1	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHANE			6.1	U	ug/kg
		8/26/97	S	1,1-DICHLOROETHENE			6.1	U	ug/kg
		8/26/97	S	1,2-DICHLOROETHANE			6.1	U	ug/kg
		8/26/97	S	1,2-DICHLOROPROPANE			6.1	U	ug/kg
		8/26/97	S	2-BUTANONE (MEK)			12	U	ug/kg
		8/26/97	S	2-HEXANONE			12	U	ug/kg
		8/26/97	S	4-METHYL-2-PENTANONE (MIBK)			12	UJ	ug/kg
		8/26/97	S	ACETONE			25	U	ug/kg
		8/26/97	S	BENZENE			6.1	U	ug/kg
		8/26/97	S	BROMODICHLOROMETHANE			6.1	U	ug/kg
		8/26/97	S	BROMOFORM			6.1	U	ug/kg

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
SGV-9	TSV09XX5XX	8/26/97	S	BROMOMETHANE			6.1	U	ug/kg
		8/26/97	S	CARBON DISULFIDE			12	U	ug/kg
		8/26/97	S	CARBON TETRACHLORIDE			6.1	U	ug/kg
		8/26/97	S	CHLOROBENZENE			6.1	U	ug/kg
		8/26/97	S	CHLOROETHANE			6.1	U	ug/kg
		8/26/97	S	CHLOROFORM			6.1	U	ug/kg
		8/26/97	S	CHLOROMETHANE			6.1	UJ	ug/kg
		8/26/97	S	CIS-1,2-DICHLOROETHENE			6.1	U	ug/kg
		8/26/97	S	CIS-1,3-DICHLOROPROPENE			6.1	U	ug/kg
		8/26/97	S	DIBROMOCHLOROMETHANE			6.1	U	ug/kg
		8/26/97	S	ETHYLBENZENE			6.1	U	ug/kg
		8/26/97	S	M+P-XYLENE			6.1	U	ug/kg
		8/26/97	S	METHYLENE CHLORIDE			6.1	U	ug/kg
		8/26/97	S	O-XYLENE			6.1	U	ug/kg
		8/26/97	S	STYRENE			6.1	U	ug/kg
		8/26/97	S	TETRACHLOROETHENE			6.1	U	ug/kg
		8/26/97	S	TOLUENE			6.1	U	ug/kg
		8/26/97	S	TRANS-1,2-DICHLOROETHENE			6.1	U	ug/kg
		8/26/97	S	TRANS-1,3-DICHLOROPROPENE			6.1	U	ug/kg
		8/26/97	S	TRICHLOROETHENE	150		6.1		ug/kg
		8/26/97	S	VINYL CHLORIDE			6.1	U	ug/kg
TW07	TW07XXXX	9/7/97	W	1,1,1-TRICHLOROETHANE			5.0	U	ug/l
		9/7/97	W	1,1,2,2-TETRACHLOROETHANE			5.0	U	ug/l
		9/7/97	W	1,1,2-TRICHLOROETHANE			5.0	U	ug/l
		9/7/97	W	1,1-DICHLOROETHANE			5.0	U	ug/l
		9/7/97	W	1,1-DICHLOROETHENE			5.0	U	ug/l
		9/7/97	W	1,2-DICHLOROETHANE			5.0	U	ug/l
		9/7/97	W	1,2-DICHLOROPROPANE			5.0	U	ug/l
		9/7/97	W	2-BUTANONE (MEK)			10	U	ug/l
		9/7/97	W	2-HEXANONE			10	U	ug/l
		9/7/97	W	4-METHYL-2-PENTANONE (MIBK)			10	U	ug/l
		9/7/97	W	ACETONE			20	U	ug/l
		9/7/97	W	BENZENE			5.0	U	ug/l
		9/7/97	W	BROMODICHLOROMETHANE			5.0	U	ug/l
		9/7/97	W	BROMOFORM			5.0	U	ug/l
		9/7/97	W	BROMOMETHANE			5.0	U	ug/l
		9/7/97	W	CARBON DISULFIDE			10	U	ug/l
		9/7/97	W	CARBON TETRACHLORIDE			5.0	U	ug/l
		9/7/97	W	CHLOROBENZENE			5.0	U	ug/l
		9/7/97	W	CHLOROETHANE			5.0	U	ug/l
		9/7/97	W	CHLOROFORM			5.0	U	ug/l
		9/7/97	W	CHLOROMETHANE			5.0	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
TW07	TW07XXXX	9/7/97	W	CIS-1,2-DICHLOROETHENE	5.3		5.0		ug/l
		9/7/97	W	CIS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		9/7/97	W	DIBROMOCHLOROMETHANE			5.0	U	ug/l
		9/7/97	W	ETHYLBENZENE			5.0	U	ug/l
		9/7/97	W	M+P-XYLENE			5.0	U	ug/l
		9/7/97	W	METHYLENE CHLORIDE			5.0	U	ug/l
		9/7/97	W	O-XYLENE			5.0	U	ug/l
		9/7/97	W	STYRENE			5.0	U	ug/l
		9/7/97	W	TETRACHLOROETHENE			5.0	U	ug/l
		9/7/97	W	TOLUENE			5.0	U	ug/l
		9/7/97	W	TRANS-1,2-DICHLOROETHENE	35		5.0		ug/l
		9/7/97	W	TRANS-1,3-DICHLOROPROPENE			5.0	U	ug/l
		9/7/97	W	TRICHLOROETHENE	41		5.0		ug/l
		9/7/97	W	VINYL CHLORIDE			5.0	U	ug/l
TW09	TW09XXXX	9/7/97	W	1,1,1-TRICHLOROETHANE			13	U	ug/l
		9/7/97	W	1,1,2,2-TETRACHLOROETHANE			13	U	ug/l
		9/7/97	W	1,1,2-TRICHLOROETHANE			13	U	ug/l
		9/7/97	W	1,1-DICHLOROETHANE			13	U	ug/l
		9/7/97	W	1,1-DICHLOROETHENE			13	U	ug/l
		9/7/97	W	1,2-DICHLOROETHANE			13	U	ug/l
		9/7/97	W	1,2-DICHLOROPROPANE			13	U	ug/l
		9/7/97	W	2-BUTANONE (MEK)			25	U	ug/l
		9/7/97	W	2-HEXANONE			25	U	ug/l
		9/7/97	W	4-METHYL-2-PENTANONE (MIBK)			25	U	ug/l
		9/7/97	W	ACETONE			50	U	ug/l
		9/7/97	W	BENZENE			13	U	ug/l
		9/7/97	W	BROMODICHLOROMETHANE			13	U	ug/l
		9/7/97	W	BROMOFORM			13	U	ug/l
		9/7/97	W	BROMOMETHANE			13	U	ug/l
		9/7/97	W	CARBON DISULFIDE			25	U	ug/l
		9/7/97	W	CARBON TETRACHLORIDE			13	U	ug/l
		9/7/97	W	CHLOROBENZENE			13	U	ug/l
		9/7/97	W	CHLOROETHANE			13	U	ug/l
		9/7/97	W	CHLOROFORM			13	U	ug/l
		9/7/97	W	CHLOROMETHANE			13	U	ug/l
		9/7/97	W	CIS-1,2-DICHLOROETHENE	23		13		ug/l
		9/7/97	W	CIS-1,3-DICHLOROPROPENE			13	U	ug/l
		9/7/97	W	DIBROMOCHLOROMETHANE			13	U	ug/l
		9/7/97	W	ETHYLBENZENE			13	U	ug/l
		9/7/97	W	M+P-XYLENE			13	U	ug/l
		9/7/97	W	METHYLENE CHLORIDE			13	U	ug/l
		9/7/97	W	O-XYLENE			13	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
TW09	TW09XXXX	9/7/97	W	STYRENE			13	U	ug/l
		9/7/97	W	TETRACHLOROETHENE			13	U	ug/l
		9/7/97	W	TOLUENE			13	U	ug/l
		9/7/97	W	TRANS-1,2-DICHLOROETHENE			13	U	ug/l
		9/7/97	W	TRANS-1,3-DICHLOROPROPENE			13	U	ug/l
		9/7/97	W	TRICHLOROETHENE	410		13		ug/l
		9/7/97	W	VINYL CHLORIDE			13	U	ug/l
TW17	TW17XXXX	9/6/97	W	1,1,1-TRICHLOROETHANE			50	U	ug/l
		9/6/97	W	1,1,2,2-TETRACHLOROETHANE			50	U	ug/l
		9/6/97	W	1,1,2-TRICHLOROETHANE			50	U	ug/l
		9/6/97	W	1,1-DICHLOROETHANE			50	U	ug/l
		9/6/97	W	1,1-DICHLOROETHENE			50	U	ug/l
		9/6/97	W	1,2-DICHLOROETHANE			50	U	ug/l
		9/6/97	W	1,2-DICHLOROPROPANE			50	U	ug/l
		9/6/97	W	2-BUTANONE (MEK)			100	U	ug/l
		9/6/97	W	2-HEXANONE			100	U	ug/l
		9/6/97	W	4-METHYL-2-PENTANONE (MIBK)			100	U	ug/l
		9/6/97	W	ACETONE			200	U	ug/l
		9/6/97	W	BENZENE			50	U	ug/l
		9/6/97	W	BROMODICHLOROMETHANE			50	U	ug/l
		9/6/97	W	BROMOFORM			50	U	ug/l
		9/6/97	W	BROMOMETHANE			50	U	ug/l
		9/6/97	W	CARBON DISULFIDE			100	U	ug/l
		9/6/97	W	CARBON TETRACHLORIDE			50	U	ug/l
		9/6/97	W	CHLOROBENZENE			50	U	ug/l
		9/6/97	W	CHLOROETHANE			50	U	ug/l
		9/6/97	W	CHLOROFORM			50	U	ug/l
		9/6/97	W	CHLOROMETHANE			50	U	ug/l
		9/6/97	W	CIS-1,2-DICHLOROETHENE			50	U	ug/l
		9/6/97	W	CIS-1,3-DICHLOROPROPENE			50	U	ug/l
		9/6/97	W	DIBROMOCHLOROMETHANE			50	U	ug/l
		9/6/97	W	ETHYLBENZENE			50	U	ug/l
		9/6/97	W	M+P-XYLENE			50	U	ug/l
		9/6/97	W	METHYLENE CHLORIDE			50	U	ug/l
		9/6/97	W	O-XYLENE			50	U	ug/l
		9/6/97	W	STYRENE			50	U	ug/l
		9/6/97	W	TETRACHLOROETHENE			50	U	ug/l
		9/6/97	W	TOLUENE			50	U	ug/l
		9/6/97	W	TRANS-1,2-DICHLOROETHENE			50	U	ug/l
		9/6/97	W	TRANS-1,3-DICHLOROPROPENE			50	U	ug/l
		9/6/97	W	TRICHLOROETHENE	1900		50		ug/l
		9/6/97	W	VINYL CHLORIDE			50	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
W-5	MWW5XXXX	9/8/97	W	1,1,1-TRICHLOROETHANE			5.0	U	ug/l
		9/8/97	W	1,1,1-TRICHLOROETHANE			130	U	ug/l
		9/8/97	W	1,1,2,2-TETRACHLOROETHANE			130	U	ug/l
		9/8/97	W	1,1,2,2-TETRACHLOROETHANE			5.0	U	ug/l
		9/8/97	W	1,1,2-TRICHLOROETHANE			130	U	ug/l
		9/8/97	W	1,1,2-TRICHLOROETHANE			5.0	U	ug/l
		9/8/97	W	1,1-DICHLOROETHANE			130	U	ug/l
		9/8/97	W	1,1-DICHLOROETHANE			5.0	U	ug/l
		9/8/97	W	1,1-DICHLOROETHENE			130	U	ug/l
		9/8/97	W	1,1-DICHLOROETHENE			5.0	U	ug/l
		9/8/97	W	1,2-DICHLOROETHANE			130	U	ug/l
		9/8/97	W	1,2-DICHLOROETHANE			5.0	U	ug/l
		9/8/97	W	1,2-DICHLOROPROPANE			5.0	U	ug/l
		9/8/97	W	1,2-DICHLOROPROPANE			130	U	ug/l
		9/8/97	W	2-BUTANONE (MEK)			10	U	ug/l
		9/8/97	W	2-BUTANONE (MEK)			250	U	ug/l
		9/8/97	W	2-HEXANONE			10	U	ug/l
		9/8/97	W	2-HEXANONE			250	U	ug/l
		9/8/97	W	4-METHYL-2-PENTANONE (MIBK)			10	U	ug/l
		9/8/97	W	4-METHYL-2-PENTANONE (MIBK)			250	U	ug/l
		9/8/97	W	ACETONE			20	U	ug/l
		9/8/97	W	ACETONE			500	U	ug/l
		9/8/97	W	BENZENE			130	U	ug/l
		9/8/97	W	BENZENE			5.0	U	ug/l
		9/8/97	W	BROMODICHLOROMETHANE			5.0	U	ug/l
		9/8/97	W	BROMODICHLOROMETHANE			130	U	ug/l
		9/8/97	W	BROMOFORM			130	U	ug/l
		9/8/97	W	BROMOFORM			5.0	U	ug/l
		9/8/97	W	BROMOMETHANE			130	U	ug/l
		9/8/97	W	BROMOMETHANE			5.0	U	ug/l
		9/8/97	W	CARBON DISULFIDE			10	U	ug/l
		9/8/97	W	CARBON DISULFIDE			250	U	ug/l
		9/8/97	W	CARBON TETRACHLORIDE			5.0	U	ug/l
		9/8/97	W	CARBON TETRACHLORIDE			130	U	ug/l
		9/8/97	W	CHLOROBENZENE			5.0	U	ug/l
		9/8/97	W	CHLOROBENZENE			130	U	ug/l
		9/8/97	W	CHLOROETHANE			5.0	U	ug/l
		9/8/97	W	CHLOROETHANE			130	U	ug/l
		9/8/97	W	CHLOROFORM			5.0	U	ug/l
		9/8/97	W	CHLOROFORM			130	U	ug/l
		9/8/97	W	CHLOROMETHANE			130	U	ug/l
		9/8/97	W	CHLOROMETHANE			5.0	U	ug/l

Table B-1

COMPREHENSIVE RESULTS
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	Result	Detect Flag	PQL	Qualifier	Units
W-5	MWW5XXXX	9/8/97	W	CIS-1,2-DICHLOROETHENE	18		5.0		ug/l
		9/8/97	W	CIS-1,2-DICHLOROETHENE		<	130	U	ug/l
		9/8/97	W	CIS-1,3-DICHLOROPROPENE		<	130	U	ug/l
		9/8/97	W	CIS-1,3-DICHLOROPROPENE		<	5.0	U	ug/l
		9/8/97	W	DIBROMOCHLOROMETHANE		<	5.0	U	ug/l
		9/8/97	W	DIBROMOCHLOROMETHANE		<	130	U	ug/l
		9/8/97	W	ETHYLBENZENE		<	130	U	ug/l
		9/8/97	W	ETHYLBENZENE		<	5.0	U	ug/l
		9/8/97	W	M+P-XYLENE		<	5.0	U	ug/l
		9/8/97	W	M+P-XYLENE		<	130	U	ug/l
		9/8/97	W	METHYLENE CHLORIDE		<	5.0	U	ug/l
		9/8/97	W	METHYLENE CHLORIDE		<	130	U	ug/l
		9/8/97	W	O-XYLENE		<	130	U	ug/l
		9/8/97	W	O-XYLENE		<	5.0	U	ug/l
		9/8/97	W	STYRENE		<	5.0	U	ug/l
		9/8/97	W	STYRENE		<	130	U	ug/l
		9/8/97	W	TETRACHLOROETHENE		<	130	U	ug/l
		9/8/97	W	TETRACHLOROETHENE		<	5.0	U	ug/l
		9/8/97	W	TOLUENE		<	5.0	U	ug/l
		9/8/97	W	TOLUENE		<	130	U	ug/l
		9/8/97	W	TRANS-1,2-DICHLOROETHENE		<	130	U	ug/l
		9/8/97	W	TRANS-1,2-DICHLOROETHENE	7.8		5.0		ug/l
		9/8/97	W	TRANS-1,3-DICHLOROPROPENE		<	5.0	U	ug/l
		9/8/97	W	TRANS-1,3-DICHLOROPROPENE		<	130	U	ug/l
		9/8/97	W	TRICHLOROETHENE	1300		5.0	J	ug/l
		9/8/97	W	TRICHLOROETHENE	2000		130		ug/l
		9/8/97	W	VINYL CHLORIDE		<	5.0	U	ug/l
		9/8/97	W	VINYL CHLORIDE		<	130	U	ug/l

Attachment C
Risk Evaluation Tables

Vapor migration from subsurface soil to indoor air

The equation used to estimate the vapor concentration in indoor air that may result from vapor migration from subsurface soil sources is presented below. This equation is a modification of the equation presented in ASTM (1995) and used in the Phase I VSI HHRA (Table D-5) for modeling vapor movement from the subsurface to indoor air:

$$CA_{indoor} = \frac{CA_{soil} * \left[\frac{D_s^{eff} / L_s}{ER * L_B} \right]}{1 + \left[\frac{D_s^{eff} / L_s}{ER * L_B} \right] + \left[\frac{D_s^{eff} / L_s}{(D_{crack}^{eff} / L_{crack})\, n} \right]}$$

where:

$$D_{crack}^{eff} = D^a * \frac{\theta_{acrack}^{3.33}}{\theta_T^{2.0}} + D^w * \frac{1}{H} * \frac{\theta_{wcrack}^{3.33}}{\theta_T^{2.0}}$$

and

$$D_s^{eff} = D^a * \frac{\theta_{as}^{3.33}}{\theta_T^{2.0}} + D^w * \frac{1}{H} * \frac{\theta_{ws}^{3.33}}{\theta_T^{2.0}}$$

Note the modifications from the original equation (below) include replacing the portion of the equation which calculates a theoretical soil gas concentration with a measured soil gas concentration, and removing the conversion factor.

$$VF_{sesp} = \frac{\frac{H * \rho_s}{[\theta_{ws} + K_s * \rho_s + H * \theta_{as}]} * \left[\frac{D_s^{eff} / L_s}{ER * L_B} \right]}{1 + \left[\frac{D_s^{eff} / L_s}{ER * L_B} \right] + \left[\frac{D_s^{eff} / L_s}{(D_{crack}^{eff} / L_{crack})\, n} \right]} * CF_1$$

The parameters used in these equations are described in Table D-4. The solutions of these equations are used as the values for quantifying the vapor concentrations in indoor air that may result from volatile emissions from subsurface soil sources.

The modified equation simply models soil gas diffusion through a building slab into a building. By using a measured soil gas concentration (units of mg/m^3), much of the uncertainty associated with the accuracy of the original model is removed because the most sensitive chemical-physical variables (e.g., Henry's law constant, soil:water partition coefficient, soil density, and TOC) are either not used or are not significant in determining the parameters in which they appear. The chemical-specific diffusion variables, which are the only unmeasured chemical-physical variables remaining in the model, are among the least sensitive factors in the model equation; diffusion coefficients for a wide range of VOCs are within the same order of magnitude, and the effective diffusion coefficients calculated for this model are not sensitive model parameters. In addition, since the soil gas is assumed to be directly beneath the building slab (i.e., 1 cm depth), the uncertainty associated with diffusion over distance is minimized. The most sensitive parameters remaining in the model are associated with those that describe the physical characteristics of the building (e.g., crack factor, building air exchange rate, building floor slab thickness, etc.), and will generally affect all models equally with respect to uncertainty.

The original model equation presents an indoor air concentration expressed as a function of soil concentration, in units of mg/m^3 indoor air per mg/kg soil. This value was divided into the maximum allowable chemical- and receptor-specific indoor air concentration (the risk-based screening level; units of mg/m^3) to derive an allowable soil concentration that corresponded to the allowable indoor air concentration. Using the measured soil gas concentration, the modified model calculates a theoretical indoor air concentration that is independent of soil concentration. Therefore, the objective for using the modified model is to estimate an indoor air concentration that can be compared directly to an allowable air concentration. This facilitates a determination of whether the measured soil gas concentration poses an unacceptable risk. The estimated indoor air concentrations are compared to risk-based concentrations for indoor air in Tables 3-3 and 3-4.

RESAIR
RISK BASED SCREENING LEVEL - AMBIENT AIR
RESIDENT - ADULT
HUMAN HEALTH RISK ASSESSMENT - TAYLOR INSTRUMENTS SITE
ROCHESTER, NY
C-1

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
TARGET CANCER RISK	TRc	1E-06	unitless	NYSDEC, 1995
TARGET NON-CANCER RISK	TRnc	1	unitless	NYSDEC, 1995
INHALATION RATE	IR	20	m^3/day	ASTM, 1995
BODY WEIGHT	BW	70	kg	ASTM, 1995
EXPOSURE FREQUENCY	EF	350	days/year	ASTM, 1995
EXPOSURE DURATION	ED	30	years	ASTM, 1995
AVERAGING TIME				
CANCER	AT	70	years	ASTM, 1995
NONCANCER	AT	30	years	ASTM, 1995

NYSDEC, 1995. Site Assessment and Closure Guidance for Petroleum Impacted Sites (Review Draft). Division of Spills Management: September 24, 1995.

ASTM, 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM Stnd. E1739-95)

EQUATIONS

$$RBSL_{cancer}\ (mg/m3) = \frac{TRc \times BW \times AT \times 365\ days/yr}{IR \times ED \times EF \times CSF}$$

$$RBSL_{non\text{-}cancer}\ (mg/m3) = \frac{TRnc \times BW \times AT \times 365\ days/yr \times RfD}{IR \times ED \times EF}$$

Note:
For noncarcinogenic effects: AT = ED
RBSL = Risk Based Screening Level
CSF = Cancer Slope Factor
RfD = Reference Dose

CARCINOGENIC EFFECTS

COMPOUND	INHALATION CSF (mg/kg-day)$^{-1}$	RBSL (mg/m3)	
ORGANICS			
Benzene	2.90E-02	2.94E-04	
Trichloroethene	6.00E-03	1.42E-03	
Tetrachloroethene	2.00E-03	4.26E-03	
Chloromethane	6.30E-03	1.35E-03	
Carbon Tetrachloride	5.30E-02	1.61E-04	
1,1-Dichloroethene	1.20E+00	7.10E-06	
Chloroform	8.10E-02	1.05E-04	

ND = No data available

NONCARCINOGENIC EFFECTS

COMPOUND	INHALATION RfD (mg/kg-day)	RBSL (mg/m3)	
ORGANICS			
1,2-Dichloroethene	ND		
1,1,1-Trichloroethane	2.90E-01	1.06E+00	
1,2,4-Trimethylbenzene	0.086	3.14E-01	
1,3,5-Trimethylbenzene	0.086	3.14E-01	
Benzene	ND		
Ethylbenzene	2.90E-01	1.06E+00	
Tetrachloroethene	ND		
Toluene	1.10E-01	4.02E-01	
Trichloroethene	ND		
Xylene (total)	8.60E-02	3.14E-01	
Styrene	2.86E-01	1.04E+00	
Chloroform	ND		
1,1-Dichloroethene	ND		

ND = No data available
Values for xylenes used as surrogate for trimethylbenzenes

RESAIR
RISK BASED SCREENING LEVEL - AMBIENT AIR
RESIDENT - CHILD (AGES 1-6)
HUMAN HEALTH RISK ASSESSMENT - TAYLOR INSTRUMENTS SITE
ROCHESTER, NY
C-2

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
TARGET CANCER RISK	TRc	1E-06	unitless	NYSDEC, 1995
TARGET NON-CANCER RISK	TRnc	1	unitless	NYSDEC, 1995
INHALATION RATE	IR	9.7	m^3/day	[A]
BODY WEIGHT	BW	15	kg	ASTM, 1995
EXPOSURE FREQUENCY	EF	350	days/year	ASTM, 1995
EXPOSURE DURATION	ED	6	years	ASTM, 1995
AVERAGING TIME				
CANCER	AT	70	years	ASTM, 1995
NONCANCER	AT	6	years	ASTM, 1995

NYSDEC, 1995. Site Assessment and Closure Guidance for Petroleum Impacted Sites (Review Draft). Division of Spills Management; September 24, 1995.

ASTM, 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM Stnd. E1739-95)

[A] Average of values for child ages 1-6.

EQUATIONS

$$RBSL_{cancer}\ (mg/m3) = \frac{TRc \times BW \times AT \times 365\ days/yr}{IR \times ED \times EF \times CSF}$$

$$RBSL_{non\text{-}cancer}\ (mg/m3) = \frac{TRnc \times BW \times AT \times 365\ days/yr \times RfD}{IR \times ED \times EF}$$

Note:
For noncarcinogenic effects: AT = ED
RBSL = Risk Based Screening Level
CSF = Cancer Slope Factor
RfD = Reference Dose

CARCINOGENIC EFFECTS

COMPOUND	INHALATION CSF (mg/kg-day)^-1	RBSL (mg/m3)	
ORGANICS			
Benzene	2.90E-02	6.49E-04	
Trichloroethene	6.00E-03	3.14E-03	
Tetrachloroethene	2.00E-03	9.41E-03	
Chloromethane	6.30E-03	2.99E-03	
Carbon Tetrachloride	5.30E-02	3.55E-04	
1,1-Dichloroethene	1.20E+00	1.57E-05	
Chloroform	8.10E-02	2.32E-04	

ND = No data available

NONCARCINOGENIC EFFECTS

COMPOUND	INHALATION RfD (mg/kg-day)	RBSL (mg/m3)	
ORGANICS			
1,2-Dichloroethene	ND		
1,1,1-Trichloroethane	2.90E-01	4.68E-01	
1,2,4-Trimethylbenzene	0.086	1.39E-01	
1,3,5-Trimethylbenzene	0.086	1.39E-01	
Benzene	ND		
Ethylbenzene	2.90E-01	4.68E-01	
Tetrachloroethene	ND		
Toluene	1.10E-01	1.77E-01	
Trichloroethene	ND		
Xylene (total)	8.60E-02	1.39E-01	
Styrene	2.86E-01	4.61E-01	
Chloroform	ND		
1,1-Dichloroethene	ND		

ND = No data available
Values for xylenes used as surrogate for trimethylbenzenes

COMMAIR
RISK BASED SCREENING LEVEL - AMBIENT AIR
FULL TIME COMMERCIAL/INDUSTRIAL WORKER
HUMAN HEALTH RISK ASSESSMENT - TAYLOR INSTRUMENTS SITE
ROCHESTER, NY
C-3

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
TARGET CANCER RISK	TRc	1E-06	unitless	NYSDEC, 1995
TARGET NON-CANCER RISK	TRnc	1	unitless	NYSDEC, 1995
INHALATION RATE	IR	20	m^3/work day	ASTM, 1995
BODY WEIGHT	BW	70	kg	ASTM, 1995
EXPOSURE FREQUENCY	EF	250	days/year	ASTM, 1995
EXPOSURE DURATION	ED	25	years	ASTM, 1995
AVERAGING TIME				
CANCER	AT	70	years	ASTM, 1995
NONCANCER	AT	25	years	ASTM, 1995

NYSDEC, 1995. Site Assessment and Closure Guidance for Petroleum Impacted Sites (Review Draft). Division of Spills Management: September 24, 1995.

ASTM, 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM Stnd. E1739-95)

EQUATIONS

$$RBSL_{cancer}\ (mg/m3) = \frac{TRc \times BW \times AT \times 365\ days/yr}{IR \times ED \times EF \times CSF}$$

$$RBSL_{non\text{-}cancer}\ (mg/m3) = \frac{TRnc \times BW \times AT \times 365\ days/yr \times RfD}{IR \times ED \times EF}$$

Note:
For noncarcinogenic effects: AT = ED
RBSL = Risk Based Screening Level
CSF = Cancer Slope Factor
RfD = Reference Dose

CARCINOGENIC EFFECTS

COMPOUND	INHALATION CSF (mg/kg-day)^-1	RBSL (mg/m3)	
ORGANICS			
Benzene	2.90E-02	4.93E-04	
Trichloroethene	6.00E-03	2.38E-03	
Tetrachloroethene	2.00E-03	7.15E-03	
Chloromethane	6.30E-03	2.27E-03	
Carbon Tetrachloride	5.30E-02	2.70E-04	
1,1-Dichloroethene	1.20E+00	1.19E-05	
Chloroform	8.10E-02	1.77E-04	

ND = No data available

NONCARCINOGENIC EFFECTS

COMPOUND	INHALATION RfD (mg/kg-day)	RBSL (mg/m3)	
ORGANICS			
1,2-Dichloroethene	ND		
1,1,1-Trichloroethane	2.90E-01	1.48E+00	
1,2,4-Trimethylbenzene	0.086	4.39E-01	
1,3,5-Trimethylbenzene	0.086	4.39E-01	
Benzene	ND		
Ethylbenzene	2.90E-01	1.48E+00	
Tetrachloroethene	ND		
Toluene	1.10E-01	5.62E-01	
Trichloroethene	ND		
Xylene (total)	8.60E-02	4.39E-01	
Styrene	2.86E-01	1.46E+00	
Chloroform	ND		
1,1-Dichloroethene	ND		

ND = No data available
Values for xylenes used as surrogate for trimethylbenzenes

TABLE C-4
PARAMETERS FOR CALCULATION OF SOIL GAS VOLATILIZATION TO INDOOR AIR
HUMAN HEALTH RISK ASSESSMENT
ROCHESTER, NY

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
HENRY'S LAW CONSTANT	H	chemical-specific	dimensionless	[h]
SOIL BULK DENSITY	Ps	1.70E+00	g-soil/cm3-soil	ASTM, 1995
WATER CONTENT VADOSE ZONE SOILS	0ws	0.12	cm3-water/cm3-soil	Site-specific [b]
AIR CONTENT VADOSE ZONE SOILS	0as	0.26	cm3-air/cm3-soil	ASTM, 1995
SOIL-WATER PARTITION COEFFICIENT	Ks	chemical-specific	cm3-water/g-soil	USEPA, 1986 [c]
DEPTH TO SUBSURFACE SOIL SOURCES	Ls	1	cm	Site-specific [d]
ENCLOSED SPACE VOL./INFILT. AREA RATIO - comm/in	Lb	300	cm	ASTM, 1995
ENCLOSED SPACE VOL./INFILT. AREA RATIO - resident	Lb	200	cm	ASTM, 1995
DEPTH TO GROUNDWATER	Lgw	1	cm	Site-specific [e]
ENCLOSED SPACE AIR EXCHANGE RATE - comm/ind b	ER	0.00023	sec-1	ASTM, 1995
ENCLOSED SPACE AIR EXCHANGE RATE - residential	ER	0.00014	sec-1	ASTM, 1995
ENCLOSED SPACE WALL THICKNESS	Lcrack	15	cm	ASTM, 1995
AREAL FRACTION OF CRACKS IN WALLS	N	0.0008	cm2-crack/cm2-total	[i]
DIFFUSION COEFFICIENT IN SOIL	Ds	chemical-specific	cm2/sec	ASTM, 1995 [f]
DIFFUSION COEFFICIENT THROUGH CRACKS	Dcrack	chemical-specific	cm2/sec	ASTM, 1995 [f]
DIFFUSION COEFFICIENT: SOIL AND GROUNDWATER	Dws	chemical-specific	cm2/sec	ASTM, 1995 [f]
DIFFUSION COEFFICIENT IN AIR	Da	chemical-specific	cm2/sec	USEPA, 1988
DIFFUSION COEFFICIENT IN WATER	Dw	chemical-specific	cm2/sec	Lyman, et al. (1990)
SOIL POROSITY IN IMPACTED ZONE	0T	0.38	cm3/cm3 soil	ASTM, 1995
AIR CONTENT IN WALL CRACKS	0acrack	0.26	cm3-air/cm3-tot.vol.	ASTM, 1995
WATER CONTENT WALL CRACKS	0wcrack	0.12	m3-water/cm3-tot.vo	ASTM, 1995
AIR CONCENTRATION - INDOOR AIR	C A indoor	chemical-specific	mg/m3	ASTM, 1995 [f]
SOIL GAS CONCENTRATION	CA	chemical-specific	mg/m3	Site-specific
CONVERSION FACTOR 1	CF1	1.0E+03	cm3-kg/m3-g	ASTM, 1995
CONVERSION FACTOR 2	CF2	1.0E+03	L/m3	ASTM, 1995

NOTES:

ASTM, 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM Standard E1739-95)

NYSDEC, 1995. Site Assessment and Closure Guidance for Petroleum Impacted Sites (Review Draft). Division of Spills Management. September 24, 1995.

USEPA, 1986. Superfund Public Health Evaluation Manual. Oswer Directive 9285.4-1. October, 1986. EPA/540/1-86/060

USEPA, 1988. Superfund Exposure Assessment Manual. Oswer Directive 9285.5-1. April, 1988. EPA/540/1-88/001

USEPA, 1993. Superfund Chemical Data Matrix. March 9, 1993.

Howard, Phillip H. "Handbook of Environmental Fate and Exposure Data for Organic Chemicals" Vol I and II. 1990.

Lyman, et al. (1990). Handbook of Chemical Property Estimation Methods. American Chemical Society, Washington. Chpt. 17-5. Values calculated using the following equation: DBW = 13.26E-5/NW ^ 1.14 x VB ^ 0.589, where NW = 1.307 at 10C and VB from L

[b] Average water content in soils collected for laboratory analyses.

[c] Ks = Koc x foc; foc = 0.0154 (site-specific average TOC). Koc values represent the average of values reported in USEPA (1986) and using a standard fate and transport algorithm (Koc = Kow x 0.63).

[d] Assumes soil gas measurement represents gas concentration directly beneath floor slab (com/ind) or basement floor (residential).

[e] Average annual water table.

[f] Calculated below.

[h] Average of Henry's law constant values reported in USEPA (1986), USEPA (1993), and Howard (1990), adjusted for subsurface tem

[i] Value represents the maximum volume changes for a concrete floor (Portland Cement Association, 12th Ed); see text Section 4.

NOTE: All equations presented in the text accompanying this Table.

C-4, cont.
CALCULATION OF SOIL GAS VOLATILIZATION TO INDOOR AIR - RESIDENT
HUMAN HEALTH RISK ASSESSMENT
AMES STREET SITE
ROCHESTER, NY

CHEMICAL	H (unitless)	Ks (cm3/g)	Da (cm2/sec)	Dw (cm2/sec)	CA (mg/m3)	Dcap (cm3/cm3)	Ds (cm2/sec)	Dcrack (cm2/sec)	Dws (cm2/sec)	CA - indoor (mg/m3)
1,1,1-Trichloroethane	5.7E-01	2.0E+00	7.50E-02	5.99E-06	2.00E-04	1.17E-05	5.85E-03	5.85E-03	7.06E-05	2.19E-09
1,2-Dichloroethene	3.3E-01	1.0E+00	7.44E-02	7.07E-06	2.05E-02	1.38E-05	5.81E-03	5.81E-03	8.28E-05	2.23E-07
Ethylbenzene	3.3E-01	1.6E+01	6.27E-02	5.00E-06	ND	1.10E-05	4.90E-03	4.90E-03	6.64E-05	
Toluene	2.7E-01	5.0E+00	7.37E-02	5.48E-06	1.36E-01	1.34E-05	5.75E-03	5.75E-03	8.05E-05	1.46E-06
Trichloroethene	4.2E-01	2.0E+00	7.64E-02	6.23E-06	4.75E-01	1.27E-05	5.96E-03	5.96E-03	7.67E-05	5.31E-06
Xylene (total)	2.9E-01	1.0E+01	6.74E-02	5.00E-06	4.15E-01	1.21E-05	5.26E-03	5.26E-03	7.25E-05	4.09E-06
Tetrachloroethene	8.4E-01	9.0E+00	6.97E-02	5.61E-06	3.87E-02	1.03E-05	5.44E-03	5.44E-03	6.20E-05	3.95E-07
Benzene	2.4E-01	1.0E+00	8.19E-02	6.10E-06	1.17E-02	1.55E-05	6.39E-03	6.39E-03	9.32E-05	1.40E-07
1,2,4-Trimethylbenzene	2.9E-01	1.0E+01	6.74E-02	5.00E-06	9.12E-02	1.21E-05	5.26E-03	5.26E-03	7.25E-05	9.00E-07
1,3,5-Trimethylbenzene	2.9E-01	1.0E+01	6.74E-02	5.00E-06	3.54E-02	1.21E-05	5.26E-03	5.26E-03	7.25E-05	3.49E-07
Chloromethane	1.20E+00	3.10E-01	1.05E-01	6.00E-06	6.28E-03	1.45E-05	8.19E-03	8.19E-03	8.76E-05	9.65E-08
Carbon Tetrachloride	1.10E+00	4.00E+00	7.50E-02	6.00E-06	ND	1.07E-05	5.85E-03	5.85E-03	6.47E-05	
1,1-Dichloroethene	1.30E+00	1.00E+00	7.44E-02	7.07E-06	8.60E-04	1.07E-05	5.81E-03	5.81E-03	6.43E-05	9.36E-09
Chloroform	1.60E-01	7.00E-01	8.35E-02	6.00E-06	1.40E-04	1.81E-05	6.51E-03	6.51E-03	1.08E-04	1.71E-09
Styrene	1.20E-01	9.2E+00	6.62E-02	6.00E-06	6.19E-03	1.83E-05	5.17E-03	5.17E-03	1.09E-04	5.99E-08

Note: Values for xylenes used as surrogate for trimethylbenzenes

CA is the maximum detected soil gas concentrations in off-site samples SVG-1 through SVG-7.

C-4, cont.

CALCULATION OF SOIL GAS VOLATILIZATION TO INDOOR AIR - COMMERCIAL/INDUSTRIAL WORKER

HUMAN HEALTH RISK ASSESSMENT

AMES STREET SITE

ROCHESTER, NY

CHEMICAL	H (unitless)	Ks (cm3/g)	Da (cm2/sec)	Dw (cm2/sec)	CA (mg/m3)	Dcap (cm3/cm3)	Ds (cm2/sec)	Dcrack (cm2/sec)	Dws (cm2/sec)	CA - indoor (mg/m3)
1,1,1-Trichloroethane	5.7E-01	2.0E+00	7.50E-02	5.99E-06	2.75E-03	1.17E-05	5.85E-03	5.85E-03	7.06E-05	1.22E-08
1,2-Dichloroethene	3.3E-01	1.0E+00	7.44E-02	7.07E-06	2.11E-01	1.38E-05	5.81E-03	5.81E-03	8.28E-05	9.32E-07
Ethylbenzene	3.3E-01	1.6E+01	6.27E-02	5.00E-06	1.10E-03	1.10E-05	4.90E-03	4.90E-03	6.64E-05	4.10E-09
Toluene	2.7E-01	5.0E+00	7.37E-02	5.48E-06	1.36E-01	1.34E-05	5.75E-03	5.75E-03	8.05E-05	5.95E-07
Trichloroethene	4.2E-01	2.0E+00	7.64E-02	6.23E-06	3.97E+00	1.27E-05	5.96E-03	5.96E-03	7.67E-05	1.80E-05
Xylene (total)	2.9E-01	1.0E+01	6.74E-02	5.00E-06	4.15E-01	1.21E-05	5.26E-03	5.26E-03	7.25E-05	1.66E-06
Tetrachloroethene	8.4E-01	9.0E+00	6.97E-02	5.61E-06	1.32E-01	1.03E-05	5.44E-03	5.44E-03	6.20E-05	5.44E-07
Benzene	2.4E-01	1.0E+00	8.19E-02	6.10E-06	1.17E-02	1.55E-05	6.39E-03	6.39E-03	9.32E-05	5.69E-08
1,2,4-Trimethylbenzene	2.9E-01	1.0E+01	6.74E-02	5.00E-06	9.12E-02	1.21E-05	5.26E-03	5.26E-03	7.25E-05	3.65E-07
1,3,5-Trimethylbenzene	2.9E-01	1.0E+01	6.74E-02	5.00E-06	3.54E-02	1.21E-05	5.26E-03	5.26E-03	7.25E-05	1.42E-07
Chloromethane	1.20E+00	3.10E-01	1.05E-01	6.00E-06	6.28E-03	1.45E-05	8.19E-03	8.19E-03	8.76E-05	3.91E-08
Carbon Tetrachloride	1.10E+00	4.00E+00	7.50E-02	6.00E-06	5.30E-04	1.07E-05	5.85E-03	5.85E-03	6.47E-05	2.36E-09
1,1-Dichloroethene	1.30E+00	1.00E+00	7.44E-02	7.07E-06	8.30E-04	1.07E-05	5.81E-03	5.81E-03	6.43E-05	3.67E-09
Chloroform	1.60E-01	7.00E-01	8.35E-02	6.00E-06	1.70E-04	1.81E-05	6.51E-03	6.51E-03	1.08E-04	8.42E-10
Styrene	1.2E-01	9.2E+00	6.62E-02	6.00E-06	6.19E-03	1.83E-05	5.17E-03	5.17E-03	1.09E-04	2.43E-08

Note: Values for xylenes used as surrogate for trimethylbenzenes

CA is the maximum detected soil gas concentrations in on- and off-site samples SVG-1 through SVG-11.

Attachment D
Field Sampling Forms

TERRAPROBE FIELD DATA RECORD

Project: Taylor Instruments (Ames) **Logged by:** BButler

Job No.: 7198-29 **TerraProbe Operator:** BSellick

Exploration Location	Sample ID (ISIS)	Matrix	Date	Time	Depth	Collection Method
SGV-8	TSV08XX5XX	☐ Water ☒ Soil/Sed	8/26/97	1352	☐ Inches ☒ Feet 4-6	☒ Soil Probe ☐ Surface Soil ☐ Bail for Water

Observations (Texture, Color, Odor, Etc.)
Lt. brown to gray mottled silty fine sand/w tr. clay, tr. gravel. Moist. PID = 74 ppm headspace

Sample Collected for:
☒ Laboratory Analysis
☐ Field Analysis

Exploration Location	Sample ID (ISIS)	Matrix	Date	Time	Depth	Collection Method
SGV-9	TSV09XX5XX	☐ Water ☒ Soil/Sed	8/26/97	1425	☐ Inches ☒ Feet 4-6	☒ Soil Probe ☐ Surface Soil ☐ Bail for Water

Observations (Texture, Color, Odor, Etc.)
Wet silty fine sand, brown, tr. clay, ~~Moist~~ SB 8/26/97. brick fragment @ 4' bgs. PID = 0 ppm headspace

Sample Collected for:
☒ Laboratory Analysis
☐ Field Analysis

Exploration Location	Sample ID (ISIS)	Matrix	Date	Time	Depth	Collection Method
SGV-10	TSV10XX5XX	☐ Water ☒ Soil/Sed	8/26/97	1525	☐ Inches ☒ Feet 4-6	☒ Soil Probe ☐ Surface Soil ☐ Bail for Water

Observations (Texture, Color, Odor, Etc.)
brown to black layered silty fine sand/w gravel. Dry PID = 0 ppm headspace

Sample Collected for:
☒ Laboratory Analysis
☐ Field Analysis

Exploration Location	Sample ID (ISIS)	Matrix	Date	Time	Depth	Collection Method
SGV-11	TSV11XX5XX	☐ Water ☒ Soil/Sed	8/26/97	1710	☐ Inches ☐ Feet 4-6'	☒ Soil Probe ☐ Surface Soil ☐ Bail for Water

Observations (Texture, Color, Odor, Etc.)
Lt brown to tan moist/damp silty fine sand. PID = 0ppm headspace

Sample Collected for:
☒ Laboratory Analysis
☐ Field Analysis

GROUNDWATER SAMPLE FIELD DATA RECORD

Project: Taylor Instruments Site
Project Number: 7198-31
Site: W-5
Date: 9/8/97
Time: Start: 1620 End: 1800
Sample Location ID: MWW5XXXXX
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 22.5 Ft. — X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing
Well Riser Stick-up (from ground) -0.05 Ft.
Protective Casing/Well Difference -0.05 Ft.
Protective Casing 0 Ft. Flush Mount

Depth to Water 6.68 Ft.
Well Material: X PVC / ___ SS / ___
Well Locked?: ___ Yes / X No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch / ___
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer / ___

Height of Water Column 15.82 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ Gal/Ft. (___ in.)
= 2.53 Gal/Vol. / 1.6 Total Gal Purged

Well Integrity: Prot. Casing Secure — Yes: ___ No: X
Concrete Collar Intact — Yes: X No: ___
Other ___ — Yes: ___ No: ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	500823
—	—	Submersible Pump	
—	—	Bailer	
X	X	PVC/Silicon Tubing	
—	—	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	—	In-line Filter	
—	—	Press/Vac Filter	
—	—		

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
___ Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
X None Disposable Tubing

Field Analysis Data

PID: Ambient Air 0 ppm Well Mouth 71 ppm
Purge Data Collected X In-line / ___ In Container
Sample Observations: ___ Turbid ___ Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ 2.1 L Gal.	@ 3.1 L Gal.	@ 4.1 L Gal.	@ 5.1 L Gal.	@ 6.1 L Gal.
water level	9.18	9.56	9.30	9.15	9.4
Temperature, Deg. C	15.0	17.0	16.8	16.5	~~16.7~~ 16.3
pH, units	6.92	6.76	6.76	6.67	6.67
Specific Conductivity (µmhos/cm)	1,400	1,390	1440	1530	1530
Turbidity (NTUS)	12	12	11	9	10
Oxidation - Reduction, +/- mv	—	—	—	—	—
Dissolved Oxygen, ppm	2.2	1.2	0.8	0.9	0.6
	0.06	0.06	0.06	0.07	0.07
Time	1655	1705	1715	1725	1735

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Sample Collected	Preservation Method	Volume Required	Sample Bottle ILot Nos.
X VOCs	✓	4°C	2x40 ml	Y5785260 / Y5785258
X ~~SVOCs~~	✓	~~4°C~~	~~2x1 liter AG~~ 1L	Y2182244
X Inorganics	✓	HNO, 4°C	1x1 liter P	4927351
X Cyanide	✓	NaOH, 4°C	1x~~500ml~~ P	4927357
___ Nitrate/Sulfate		H_2SO_4, 4°C	1x1 liter P	
___ Nitrate/Phosphate		H_2SO_4, 4°C	1x1 liter P	
___ Pest/PCB		4°C	3x1 liter AG	
___ TPH		H_2SO_4, 4°C	2x1 liter AG	
___ TOC		H_2SO_4, 4°C	1x1 liter P	

Notes: Sample collected using Low Flow technique
Sample time: 1735 hrs

ABB Environmental Services

9404014D L22

GROUNDWATER SAMPLE FIELD DATA RECORD

Project: Taylor Instruments
Project Number: 07198-31
Site: Ames St
Date: 9/7/97
Time: Start: 1543 End: 1625
Sample Location ID: TW07X-25
Signature of Sampler: DBD cont

Water Level/Well Data

Well Depth 18.5 Ft. — [X] Measured [ ] Historical
[✓] Top of Well [ ] Top of Protective Casing
Well Riser Stick-up -0.32 Ft. (from ground)
Protective -0.32 Ft. Casing/Well Difference
Protective Flush Ft. Casing

Depth to Water 10.27 Ft.
Well Material: [X] PVC [ ] SS
Well Locked?: [X] Yes [ ] No
Well Dia. [X] 2 inch [ ] 4 inch [ ] 6 inch
Water Level Equip. Used: [X] Elect. Cond. Probe [ ] Float Activated [ ] Press. Transducer

Height of Water Column 8.23 Ft. X [X] .16 Gal/Ft. (2 in.) [ ] .65 Gal/Ft. (4 in.) [ ] 1.5 Gal/Ft. (6 in.) [ ] __ Gal/Ft. (__ in.) = 1.3 Gal/Vol. / 1.3 Total Gal Purged

Well Integrity:

	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
	✓	Penstaltic Pump	SCCEQ7
		Submersible Pump	
		Bailer	
✓	✓	PVC/Silicon Tubing	
		Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used: (✓ All That Apply at Location)
- [ ] Methanol (100%)
- [ ] 25% Methanol/75% ASTM Type II water
- [ ] Deionized Water
- [ ] Liquinox Solution
- [ ] Hexane
- [ ] HNO_3/D.I. Water Solution
- [ ] Potable Water
- [✓] None

Field Analysis Data

PID: Ambient Air 0 ppm Well Mouth 0 ppm
Purge Data Collected [ ] In-line [ ] In Container
Sample Observations: [ ] Turbid [✓] Clear [ ] Cloudy [ ] Colored [ ] Odor

Purge Data	@ 2l Gal.	@ 3l Gal.	@ 4l Gal.	@ 5l Gal.	@ ___ Gal.
water level	11.87	11.87	11.77	11.75	
Temperature, Deg. C	16.3	16.3	16.1	16.16	
pH, units	7.1	7.0	7.0	7.0	
Specific Conductivity (µmhos/cm)	1910	1910	1900	1920	
Turbidity (NTUS)	0	0	0	0	
Oxidation - Reduction, +/- mv	—	—	—	—	
Dissolved Oxygen, ppm	3.5	3.4	3.3	3.19	
Salinity	0.09	0.09	0.08	0.09	
Time	1555	1558	1602	1610	

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Sample Collected	Preservation Method	Volume Required	Sample Bottle ILot Nos.
✓ VOCs	✓	4°C	2x40 ml	Y578584, Y578585
✓ SVOCs	✓	4°C	2x1 liter AG	Y943178
✓ Inorganics	✓	HNO_3,4°C	1x1 liter P	X927972
✓ Cyanide	✓	NaOH,4°C	1x500ml P	X927435
__ Nitrate/Sulfate		H_2SO_4,4°C	1x1 liter P	
__ Nitrate/Phosphate		H_2SO_4,4°C	1x1 liter P	
__ Pest/PCB		4°C	3x1 liter AG	
__ TPH		H_2SO_4,4°C	2x1 liter AG	
__ TOC		H_2SO_4,4°C	1x1 liter P	

Notes: Purging at around 350 ml/min 16:10

ABB Environmental Services

GROUNDWATER SAMPLE FIELD DATA RECORD

Project: Taylor Instruments Site
Project Number: 7195-31
Site: TW-09
Date: 9/7/97
Time: Start: 0930 End: 1030
Sample Location ID: TW09xxxx
Signature of Sampler:

Water Level/Well Data

Well Depth 17.5 Ft. — X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing
Well Riser Stick-up _____ Ft. (from ground)
Protective 0.6 Ft. Casing/Well Difference
Protective N/A Ft. Casing

Depth to Water 12.09 Ft.
Well Material: X PVC / ___ SS
Well Locked?: X Yes / ___ No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer

Height of Water Column 5.41 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ Gal/Ft. (___ in.) =
0.9 Gal/Vol.
2.5 Total Gal Purged

Well Integrity: Yes / No
Prot. Casing Secure: X / ___
Concrete Collar Intact: ___ / X heaved
Other: ___ / ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	500823
—	—	Submersible Pump	
—	—	Bailer	
X	X	PVC/Silicon Tubing	
—	—	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	—	In-line Filter	
—	—	Press/Vac Filter	
—	—		

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
___ Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
X None dedicated Tubing

Field Analysis Data

PID: Ambient Air 0 ppm Well Mouth 1.9 ppm
Purge Data Collected X In-line / ___ In Container
Sample Observations: ___ Turbid / X Clear / ___ Cloudy / ___ Colored / ___ Odor

Purge Data	@ 0.53 Gal.	@ 1.19 Gal.	@ 1.85 Gal.	@ 2.5 Gal.	@ ___ Gal.
Temperature, Deg. C	16.1	16.2	16.3	16.4	
pH, units	6.94	6.94	6.96	6.94	
Specific Conductivity (µmhos/cm)	1,500	1,590	1,500	1,510	
Turbidity (NTUS)	10	10	10	10	
Oxidation - Reduction, +/- mv	NA	NA	NA	NA	
Dissolved Oxygen, ppm	2.70	2.26	2.49	2.41	
Salinity %	0.07	0.07	0.06		
Water Level (ft)	12.59	12.76	12.84	12.95	

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Sample Collected	Preservation Method	Volume Required	Sample Bottle ILot Nos.
X VOCs	✓	4°C	2x40 ml	Y578298/578566
X SVOCs	✓	4°C	2x1 liter AG	Y796327
X Inorganics	✓	HNO_3, 4°C	1x1 liter P	X928080
X Cyanide	✓	NaOH, 4°C	1x~~500ml P~~ 1LP	X928072
___ Nitrate/Sulfate		H_2SO_4, 4°C	1x1 liter P	
___ Nitrate/Phosphate		H_2SO_4, 4°C	1x1 liter P	
X Pest/PCB	✓	4°C	2x1 liter AG	Y796613
___ TPH		H_2SO_4, 4°C	2x1 liter AG	
___ TOC		H_2SO_4, 4°C	1x1 liter P	

Notes: Sample collected using low flow technique. Samples collected @ 1015 hrs. 2.5 gallons purged prior to sampling.

ABB Environmental Services

9404014D L22

GROUNDWATER SAMPLE FIELD DATA RECORD

Project: Taylor Instruments Site
Project Number: 7198-31
Site: TW-17
Date: 9/6/97
Time: Start: 1420 End: 1545
Sample Location ID: TW17XXXX
Signature of Sampler:

Water Level/Well Data

Well Depth 17.35 Ft. — X Measured / ___ Historical
X Top of Well / ~~X~~ Top of Protective Casing
Well Riser Stick-up 2.2 Ft. (from ground)
Protective 0.18 Ft. Casing/Well Difference
Protective 2.38 Ft. Casing

Depth to Water 8.18 Ft.
Well Material: X PVC / ___ SS
Well Locked?: X Yes / ___ No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer

Height of Water Column 9.17 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ Gal/Ft. (___ in.)
= 1.47 Gal/Vol. / 3.5 Total Gal Purged

Well Integrity: Yes / No
Prot. Casing Secure: ✓ / ___
Concrete Collar Intact: ✓ / ___
Other: ___ / ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
✓	___	Peristaltic Pump	#50c873
___	___	Submersible Pump	
___	___	Bailer	
✓	✓	PVC/Silicon Tubing	
✓	✓	Teflon/Silicon Tubing	
___	___	Airlift	
___	___	Hand Pump	
___	___	In-line Filter	
___	___	Press/Vac Filter	
___	___		

Decontamination Fluids Used: (✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
~~X~~ Deionized Water
~~X~~ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
X None Disposable Tubing

Field Analysis Data

PID: Ambient Air 0.0 ppm Well Mouth 1.5 ppm
Purge Data Collected ___ In-line / X In Container
Sample Observations: ___ Turbid / X Clear / ___ Cloudy / ___ Colored / ___ Odor

Purge Data	@ 1.2 Gal.	@ 2.0 Gal.	@ 3.1 Gal.	@ 3.5 Gal.	@ ___ Gal.
Temperature, Deg. C	17.8	18.6	17.7		
pH, units	6.66	6.65	6.62		
Specific Conductivity (µmhos/cm)	1,420	1,420	1,410		
Turbidity (NTUS)	13	5	4		
Oxidation - Reduction, +/- mv	NA	NA	NA		
Dissolved Oxygen, ppm	3.97	3.60	ERR		
Salinity (o/oo)	0.06	0.06	0.06		
Water level (ft)	~8.15	8.70	8.95		

Sample Collection Requirements (✓ If Required at this Location)

Analytical Parameter	✓ If Sample Collected	Preservation Method	Volume Required	Sample Bottle ILot Nos.
X VOCs	✓	4°C	2x40 ml	Y578302/Y578569
~~X~~ SVOCs	✓	~~4°C~~	~~2x1~~ liter AG	Y~~5~~796325
X Inorganics	✓	HNO_3, 4°C	1x1 liter P	X928077
X Cyanide	✓	NaOH, 4°C	1x~~500ml~~ P 1L	X928075
___ Nitrate/Sulfate	___	H_2SO_4, 4°C	1x1 liter P	
___ Nitrate/Phosphate	___	H_2SO_4, 4°C	1x1 liter P	
X Pest/PCB	✓	4°C	1 ~~2~~x1 liter AG	Y796615
___ TPH	___	H_2SO_4, 4°C	2x1 liter AG	
___ TOC	___	H_2SO_4, 4°C	1x1 liter P	

Notes: Sample collected using Low Flow technique. Sampling Time = 1525 hrs. 3.5 gallons purged before sampling started.

ABB Environmental Services

9404014D L22

CC VIBIA ANALYTICAL SERVICES, INC.
1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN C CUSTODY/LABORATORY ANALYSIS REQU T FORM

(800) 695-7222

DATE 9/7/97 PAGE 2 OF ____

PROJECT NAME Taylor Instruments (ABB)
PROJECT MANAGER/CONTACT Geoff Knight / Allen Young
COMPANY/ADDRESS ABB Environmental Services
1400 Centerpoint Blvd, Suite 158, Knoxville TN 37932
TEL (923) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE R E Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's 2xHCl, Vial, HCl ☒ 8260 ☐ 624 CLP	GC/MS SVOA's 1x1 LAG ☒ 8270A ☐ 625 CLP	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's 1x1 LAG ☒ 8080 ☐ 608 CLP	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	TAL Metals-CLP, Hg 7471 1-LP, HNO3	Cyanide-CLP 1-LP, NaOH						PRESERVATION pH < 2.0 HNO3	pH > 12 NaOH	Other HCl
TW17XXXX	9/6/97	1525	166373	Water	6	2	1		1							1	1						X	X	X
TW04XXXX	9/6/97	1650	166374	Water	6	2	1		1							1	1						X	X	X
TW04XXXD	9/6/97	1650	166375	Duplicate	6	2	1		1							1	1						X	X	X
TW04XXXM	9/6/97	1650		MS/MSD	6	2	1		1							1	1						X	X	X
BR01XXXX	9/7/97	0900	166376	Water	6	2	1		1							1	1						X	X	X
TW09XXXX	9/7/97	1015	166377	Water	6	2	1		1							1	1						X	X	X
MWW4XXXX	9/7/97	1210	166378	Water	5	2	1									1	1						X	X	X
BR02XXXX	9/7/97	1035	166379	water	6	2	1		1							1	1						X	X	X
BR07XXXX	9/7/97	1210	166380	water	6	2	1		1							1	1						X	X	X
BR03XXXX	9/7/97	1440	166381	water	6	2	1		1							1	1						X	X	X

RELINQUISHED BY:
Signature R E Butler
Printed Name Brink Butler
Firm ABB
Date/Time 0905 9/8/97

RECEIVED BY:
Signature Timothy J. Perry
Printed Name Timothy J. Perry
Firm CAS.
Date/Time 09:27 9/8/97

RELINQUISHED BY:
Signature Timothy J. Perry
Printed Name Timothy J. Perry
Firm CAS.
Date/Time 9/8/97 09:45

RECEIVED BY:
Signature Tom Hastings
Printed Name Tom Hastings
Firm CAS
Date/Time 9/8/97 09:45

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days) *
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date ____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
X 5. NY ASP/CLP Deliverables *
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #: SE7251606
Bill To: ____

SAMPLE RECEIPT:
Shipping Via: Courier/LAB
Shipping #: ____
Temperature: ____
Submission No: ____

SPECIAL INSTRUCTIONS/COMMENTS:
METALS See P.O. for Mercury Method
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List
* see Quote/P.O. For specific Methods, TAT, deliverable + other requirements.
Associate with Trip Blank QT005XXXX

65 RAMAPO VALLEY ROAD
MAHWAH, NJ 07430
201-512-3292
FAX 201-512-3362

309 WEST RIDLEY AVE.
RIDLEY PARK, PA 19078
610-521-3083
FAX 610-521-4589

COLUMBIA ANALYTICAL SERVICES, INC.

1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

(800) 695-7222

DATE 9/7/97 PAGE 3 OF

PROJECT NAME Taylor Instruments (ABB)
PROJECT MANAGER/CONTACT Geoff Knight / Allen Young
COMPANY/ADDRESS 1400 Centerpoint Blvd, Suite 150
Knoxville TN 37932 ABB Environmental Services
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's 2-40 vials ☒ 8260 ☐ 624 HCl CLP	GC/MS SVOA's 1 x 1Liter ☒ 8270A ☐ 625 CLP	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's 1x1Liter ☒ 8080 ☐ 608 CLP	STARS LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STARS LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	TAL metals - CLP, Hg 7471 1-LP, HNO3	Cyanide - CLP 1 pt, NaOH						PRESERVATION pH < 2.0 HNO3	pH > 12 NaOH	Other HCl
TW74XXXX	9/7/97	1535	166382	water	5	2	1									1	1						x	x	x
TW07XXXX	9/7/97	1610	166383	water	5	2	1									1	1						x	x	x
MW03XXXX	9/7/97	1705	166384	water	5	2	1									1	1						x	x	x
QT005XXXX	9/8/97	0900	166387	Trip Blank	2	2																			X

RELINQUISHED BY:
Signature Brian K Butler
Printed Name Brian K Butler
Firm ABB
Date/Time 0905 9/8/97

RECEIVED BY:
Signature Timothy J Perry
Printed Name Timothy J Perry
Firm CAS
Date/Time 09:27 9/8/97

RELINQUISHED BY:
Signature Timothy J Perry
Printed Name Timothy J. Perry
Firm CAS
Date/Time 9/8/97 09:45

RECEIVED BY:
Signature Tom Hastings
Printed Name Tom Hastings
Firm CAS
Date/Time 9/8/97 09:45

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
X 5. NY ASP/CLP Deliverables *
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #: SE725166 PA
Bill To:

SAMPLE RECEIPT:
Shipping Via: Courier / Lab
Shipping #:
Temperature:
Submission No:

SPECIAL INSTRUCTIONS/COMMENTS:
METALS see P.O. For Mercury Method
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List
* See Quote / P.O. for specific Methods, TAT, deliverable & other requirements
Associate with Trip Blank QT005XXXX

65 RAMAPO VALLEY ROAD
MAHWAH, NJ 07430
201-512-3292
FAX 201-512-3362

309 WEST RIDLEY AVE.
RIDLEY PARK, PA 19078
610-521-3083
FAX 610-521-4589

COLUMBIA ANALYTICAL SERVICES, INC.

1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

(800) 695-7222

DATE 9/8/97 PAGE 1 OF 2

PROJECT NAME Taylor Instruments (ABB)
PROJECT MANAGER/CONTACT Geoff Knight / Allen Young
COMPANY/ADDRESS ABB Environmental Services
1400 Centerpoint Blvd., Suite 158, Knoxville, TN 37932
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE Rick Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's 40 mL vials HCl ☒ 8260 ☐ 624	GC/MS SVOA's 1-LPE ☒ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's ☐ 8080 ☐ 608	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	TAL Metals, HG 747A 1-LP HNO3	Cyanide-CLP 1-LP NaOH					PRESERVATION pH < 2.0 HNO3	pH > 12 NaOH	Other HCl
QTOO6XXXX	9/8/97	1000	166632	Trip Blnk	2	2	~~X~~ (PB 11/97)																	X
MWW1XXXX	9/8/97	0835	33	water	5	2	1									1	1						X	X	X
MWW1XXXD	9/8/97	0835	34	Duplicate	5	2	1									1	1						X	X	X
TW01XXXX	9/8/97	1030 1130	35	water	5	2	1									1	1						X	X	X
TW20XXXX	9/8/97	1130	36	water	5	2	1									1	1						X	X	X
TW69XXXX	9/8/97	1330	37	Water	5	2	1									1	1						X	X	X
MW00XXXX	9/8/97	1520	38	Water	5	2	1									1	1						X	X	X
MWW5XXXX	9/8/97	1735	39	water	5	2	1									1	1						X	X	X
TW13XXXX	9/8/97	1700	40	Water	5	2	1									1	1						X	X	X
MWW6XXXX	9/8/97	1850	41	Water	5	2	1									1	1						X	X	X

RELINQUISHED BY:
Signature: Rick Butler
Printed Name: Brian Butler
Firm: ABB
Date/Time: 9/9/97 1515 hrs

RECEIVED BY:
Signature: Tom Hastings
Printed Name: Tom Hastings
Firm: CAS
Date/Time: 9/9/97 15:15

RELINQUISHED BY:
Signature: Tom Hastings
Printed Name: Tom Hastings
Firm: CAS
Date/Time: 9/9/97 16:00

RECEIVED BY:
Signature: VGardner
Printed Name: V Gardner
Firm: CAS
Date/Time: 9/9/97 @ 1600

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature:
Printed Name:
Firm:
Date/Time:

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
☒ Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
☒ 5. NY ASP/CLP Deliverables *
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #: SE 725166
Bill To: _____

SAMPLE RECEIPT:
Shipping Via: Courier-Lab
Shipping #: _____
Temperature: 3.5°C
Submission No: 9-138

SPECIAL INSTRUCTIONS/COMMENTS:
METALS See P.O. for Mercury Method
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List
* See Quote/P.O. for specific Methods, TAT, deliverable & other requirements.
Associate lab Trip Blnk QTOO5XXXX, Rinsate QRO5XXXX

65 RAMAPO VALLEY ROAD
MAHWAH, NJ 07430
201-512-3292
FAX 201-512-3362

309 WEST RIDLEY AVE.
RIDLEY PARK, PA 19078
610-521-3083
FAX 610-521-4589

COLUMBIA ANALYTICAL SERVICES, INC.

1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

(800) 695-7222

DATE 9/9/97 PAGE 2 OF 2

PROJECT NAME Taylor Instruments (ABB)
PROJECT MANAGER/CONTACT Geoff Knight/Allen Young
COMPANY/ADDRESS ABB Environmental Services
1400 Centerpoint Blvd, Suite 158, Knoxville, TN 37932
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☐ 8260 ☐ 624	GC/MS SVOA's 1-LA6 ☐ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's CLP 1-LA6 ☒ 8080 ☐ 608	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL TAL (LIST BELOW) 1-LP Mets	METALS, DISSOLVED (LIST BELOW) 1-LP Mets	Extra volume for MS/MSD	PRESERVATION pH < 2.0 HNO3 TAL Mets	pH > 12 NaOH CLP-CN	Other HCl VOCs
OB05XXXX	9/9/97	0840	166642	Water	6	2	1		1					1	1		X	X	X
BR05XXXX	9/9/97	850	43	Water	6	2	1		1					1	1		X	X	X
BR04XXXX	9/9/97	1030	44	Water	12	4	2		2					2	2	Extra volume for MS/MSD	X	X	X
BR04XXXD	9/9/97	1030 850	45	Duplicate	6	2	1		1					1	1		X	X	X
OB04XXXX	9/9/97	1045	46	Water	6	2	1		1					1	1		X	X	X
MWW2XXXX	9/9/97	1405	47	Water	5	2	1		XO					1	1		X	X	X
BR06XXXX	9/9/97	1430	48	Water	6	2	1		1					1	1		X	X	X
QR05XXXX	9/9/97	1130	49	Water	6	2	1		1					1	1		X	X	X

RELINQUISHED BY:
Signature Rick Butler
Printed Name Brian Butler
Firm ABB
Date/Time 9/9/97 1515 hrs

RECEIVED BY:
Signature Tom Hasting
Printed Name Tom Hasting
Firm CAS
Date/Time 9/9/97 1515

RELINQUISHED BY:
Signature Tom Hasting
Printed Name Tom Hasting
Firm CAS
Date/Time 9/9/97 16:00

RECEIVED BY:
Signature VGardner
Printed Name V Gardner
Firm CAS
Date/Time 9/9/97 @ 1600

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
X 5. NY ASP/CLP Deliverables *
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #: SE725166
Bill To:

SAMPLE RECEIPT:
Shipping Via: Courier-Lab
Shipping #:
Temperature: 3.5°C
Submission No: 9-138

SPECIAL INSTRUCTIONS/COMMENTS:
METALS See P.O. For Mercury Method
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List
* See Quote/P.O. for specific Methods, TAT, deliverables, or Other requirements.
Associate w/ Trip Blank QT005XXXX, Rinsate QR05XXXX

65 RAMAPO VALLEY ROAD, MAHWAH, NJ 07430 — 201-512-3292 — FAX 201-512-3362
309 WEST RIDLEY AVE., RIDLEY PARK, PA 19078 — 610-521-3083 — FAX 610-521-4589

CO MBIA ANALYTICAL SERVICES, INC.
1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN C CUSTODY/LABORATORY ANALYSIS REQU T FORM

(800) 695-7222

DATE 8/26/97 PAGE 1 OF 4

PROJECT NAME Taylor Instruments (Ames Street)
PROJECT MANAGER/CONTACT Geoff Knight
COMPANY/ADDRESS Knoxville, TN
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE Brian K Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☐ 8260 ☐ 624 4oz jar	GC/MS SVOA's ☐ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's ☐ 8080 ☐ 608	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	Metal- Mercury 4oz jar							PRESERVATION pH < 2.0	PRESERVATION pH > 12	PRESERVATION Other
TSV08XX5XX	8/26/97	1352	165013	Soil	2	2																			
TSV09XX5XX	8/26/97	1425	165015	Soil	2	2																			
TSV10XX5XX	8/26/97	1525	165017	Soil	2	2																			
TSM10XX5XX	8/26/97	1615	165018	Soil	1											1									
TSV11XX5XX	8/26/97	1710	165019	Soil	2	2																			
TSM05XX5XX	8/26/97	1755	165020	Soil	1											1									
TSM09XX5XX	8/27/97	0825	165021	Soil	1											1									
TSM07XX5XX	8/27/97	0930	165022	Soil	1											1									
TSM09XX5XD	8/27/97	0825	165023	Soil dup	1											1									
TSM08XX5XX	8/27/97	1005	165024	Soil	1											1									

RELINQUISHED BY:
Signature: Brian K Butler
Printed Name: Brian L Butler
Firm: ABB
Date/Time: 8/27/97 1650

RECEIVED BY:
Signature: Timothy Perry
Printed Name: Timothy Perry
Firm: CAS
Date/Time: 8/27/97 16:50

RELINQUISHED BY:
Signature: Timothy Perry
Printed Name: Timothy Perry
Firm: CAS
Date/Time: 8/27/97 17:10

RECEIVED BY:
Signature: Tom Hastings
Printed Name: Tom Hastings
Firm: CAS
Date/Time: 8/27/97 17:10

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
__ 5. NY ASP/CLP Deliverables
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #:
Bill To:

SAMPLE RECEIPT:
Shipping Via: VM Courier CAS
Shipping #:
Temperature: 2.5°C
Submission No: 8-328

SPECIAL INSTRUCTIONS/COMMENTS:
METALS
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List

65 RAMAPO VALLEY ROAD
MAHWAH, NJ 07430
201-512-3292
FAX 201-512-3362

309 WEST RIDLEY AVE.
RIDLEY PARK, PA 19078
610-521-3083
FAX 610-521-4589

COLUMBIA ANALYTICAL SERVICES, INC.

1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

(800) 695-7222

DATE 8/27/97 PAGE 4 OF 4

PROJECT NAME Taylor Instruments (Ames Street)
PROJECT MANAGER/CONTACT Geoff Knight
COMPANY/ADDRESS Knoxville, TN
TEL (423) 531-1922 FAX (423) 531-8276
SAMPLER'S SIGNATURE Rick Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☐ 624 ☒ 8260 (40mL Vials)	GC/MS SVOA's ☐ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's ☐ 8080 ☐ 608	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	Metal-mercury 4 oz jar	Metal-Mercury 1-L Plastic, HNO3	PRESERVATION pH < 2.0	pH > 12	Other
PSM0106CS	8/26/97	1427	165034	Soil	1											1				
PSM0206CX	8/27/97	1400	165035	Soil composite	1											1				
QT001XXXX	8/27/97	1630	165036	Trip Blank	2	2														
QD001XXXXX	8/27/97	1635	165037	Source Blank	3	2											1			
QR001XXXXX	8/27/97	1640	165038	Rinsate	3	2											1			

RELINQUISHED BY:
Signature Rick Butler
Printed Name Brian K Butler
Firm ABB
Date/Time 8/27/97 1650

RECEIVED BY:
Signature Timothy J. Perry
Printed Name T.J. Perry
Firm CAS
Date/Time 8/27/97 16:50

RELINQUISHED BY:
Signature Timothy J. Perry
Printed Name Timothy J. Perry
Firm CAS
Date/Time 8/27/97 17:10

RECEIVED BY:
Signature Tom Hastings
Printed Name Tom Hastings
Firm ERT
Date/Time 8/27/97 17:10

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
__ 5. NY ASP/CLP Deliverables
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #:
Bill To:

SAMPLE RECEIPT:
Shipping Via: Courier
Shipping #:
Temperature:
Submission No:

SPECIAL INSTRUCTIONS/COMMENTS:
METALS
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List

65 RAMAPO VALLEY ROAD, MAHWAH, NJ 07430 — 201-512-3292, FAX 201-512-3362
309 WEST RIDLEY AVE., RIDLEY PARK, PA 19078 — 610-521-3083, FAX 610-521-4589

CC MBIA ANALYTICAL SERVICES, INC.
1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN C CUSTODY/LABORATORY ANALYSIS REQU T FORM

(800) 695-7222

DATE 8/28/97 PAGE 1 OF 45

PROJECT NAME Taylor Instruments Site (Ames Street)
PROJECT MANAGER/CONTACT Geoff Knight
COMPANY/ADDRESS Knoxville, TN
ABB Environmental
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE Brian K Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's ☒ 8260 ☐ 624	GC/MS SVOA's ☐ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's ☐ 8080 ☐ 608	STAR'S LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STAR'S LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☒ METALS ☒ VOA's ☒ SVOA's ☒ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	TAL Metals	TCN/Reactivity/Solids/pH Survey					PRESERVATION pH < 2.0	pH > 12	Other
BS00500BXX	8/28/97	0818	165376	Soil	2	2																		
BS005010XX	8/28/97	0835	165377	Soil	6	2	1					1				1	1	165393						
BS005020XX	8/28/97	0925	165380	Soil	2	2																		
QT002XXXXX	8/28/97	1115	165381	Trip Blank	2	2																		HCl
QR002XXXXX	8/28/97	1315	165382	Rinsate Blank	6	2	1					1				1	1							NaOH HNO3 HCl
BR004008XX	8/28/97	1625	165388	Soil	2	2																		
OB004008XX	8/29/97	0740	165389	Soil	2	2																		
OB004010XX	8/29/97	0745	165390	Soil	6	2	1					1				1	1	165394						
OB004010XD	8/29/97	0745	165391	Soil dup	6	2	1					1				1	1	165395						
OB004015XX	8/29/97	0840	165392	Soil	2	2																		

RELINQUISHED BY:
Signature Brian K Butler
Printed Name ABB
Firm 8/29/97 1523 hrs
Date/Time

RECEIVED BY:
Signature Michael Perry
Printed Name CAS
Firm 8/29/97 1528
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature Tom Hastings
Printed Name Tom Hastings
Firm CAS
8/29/97 15:28
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
__ 4. N.J. Reduced Deliverables Level IV
__ 5. NY ASP/CLP Deliverables
__ 6. Site specific QC.

INVOICE INFORMATION:
P.O. #:
Bill To:

SAMPLE RECEIPT:
Shipping Via:
Shipping #:
Temperature:
Submission No: 8-328

SPECIAL INSTRUCTIONS/COMMENTS:
METALS
ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List

65 RAMAPO VALLEY ROAD 201-512-3292
MAHWAH, NJ 07430 FAX 201-512-3362
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RIDLEY PARK, PA 19078 FAX 610-521-4589

COLUMBIA ANALYTICAL SERVICES, INC.

1 Mustard St., Suite 250, P.O. Box 90859, Rochester, NY 14609-0859
(716) 288-5380 • FAX (716) 288-8475

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

(800) 695-7222

DATE 8/29/97 PAGE 5 OF 5

PROJECT NAME Taylor Instrument Site (Ames St)
PROJECT MANAGER/CONTACT Geoff Knight
COMPANY/ADDRESS ABB Environmental, Knoxville, TN
TEL (423) 531-1922 FAX (423) 531-8226
SAMPLER'S SIGNATURE Brian K Butler

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	# OF CONTAINERS	GC/MS VOA's 40 ml Vials ☒ 8260 ☐ 624	GC/MS SVOA's ☐ 8270A ☐ 625	GC VOA's ☐ 8010/8020 ☐ 601/602	PESTICIDES/PCB's ☐ 8080 ☐ 608	STARS LIST 8021 VOA's ☐ TOTAL ☐ TCLP	STARS LIST 8270 SVOA's ☐ TOTAL ☐ TCLP	TCLP ☐ METALS ☐ VOA's ☐ SVOA's ☐ H/P	WASTE CHARACTERIZATION ☐ React ☐ Corros. ☐ Ignit.	METALS, TOTAL (LIST BELOW)	METALS, DISSOLVED (LIST BELOW)	PRESERVATION pH < 2.0	PRESERVATION pH > 12	PRESERVATION Other
TWV004XXXX	8/29/97	0930	165420	water	2	2												HCl
TWV003XXXXX	8/28/97	1030	165421	water	2	2												HCl
TWV003XXXXD	8/28/97	1030	165422	dup	2	2												HCl
TWV005XXXXX	8/28/97	1400	165423	water	2	2												HCl
TWV001XXXXX	8/29/97	1230	165424	water	2	2												HCl

RELINQUISHED BY:
Signature Brian K Butler
Printed Name ABB
Firm 8/29/97 1530 hrs
Date/Time

RECEIVED BY:
Signature Michael Perry
Printed Name CAS
Firm 8/29/97 15:30
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature Tom Hastings
Printed Name Tom Hastings
Firm CAS
Date/Time 8/29/97 15:30

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
__ 24 hr. __ 48 hr. __ 5 day
X Standard (10-15 working days)
__ Provide Verbal Preliminary Results
__ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
__ 1. Routine Report
__ 2. Routine Rep. w/CASE Narrative
__ 3. EPA Level III Validatable Package
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SPECIAL INSTRUCTIONS/COMMENTS:
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ORGANICS: ☐ TCL ☐ PPL ☐ AE Only ☐ BN Only ☐ Special List

65 RAMAPO VALLEY ROAD
MAHWAH, NJ 07430
201-512-3292
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309 WEST RIDLEY AVE.
RIDLEY PARK, PA 19078
610-521-3083
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Attachment E
Data Evaluation Tables

Table E-1
Sample Association Matrix
VOC Analyses of Soil, Water, and Soil Gas
Taylor Instruments Facility Site Investigation

					Associated Quality Control Samples										
					Field Blank		Equipment Blank		Travel Blank		Method Blank	Matrix Spike	Matrix Spike Duplicate	Control Sample	
Site ID	Sample ID	Laboratory ID	Matrix	Date	Sample ID	Laboratory ID	Sample ID	Laboratory ID	Sample ID	Laboratory ID	Laboratory ID	Laboratory ID	Laboratory ID	Laboratory ID	Notes
SGV-8	TSV08XX5XX	165013	soil	8/26/97	QD001XXXXX	165037	QR001XXXXX	165038	QT001XXXXX	165036	166989	167002	167004	166992	
SGV-8	TSV08XX5XX	165013	soil	8/26/97	QD001XXXXX	165037	QR001XXXXX	165038	QT001XXXXX	165036	166999	167002	167004	166992	125-fold dilution
SGV-9	TSV09XX5XX	165015	soil	8/26/97	QD001XXXXX	165037	QR001XXXXX	165038	QT001XXXXX	165036	166989	167002	167004	166992	
SGV-10	TSV10XX5XX	165017	soil	8/26/97	QD001XXXXX	165037	QR001XXXXX	165038	QT001XXXXX	165036	166989	167002	167004	166992	
SGV-11	TSV11XX5XX	165019	soil	8/26/97	QD001XXXXX	165037	QR001XXXXX	165038	QT001XXXXX	165036	166989	167002	167004	166992	
SGV-1	TWV001XXXXX	165424	water	8/29/97	QD001XXXXX	165037	QR002XXXXX	165382	QT002XXXXX	165381	166995	168987	168988	166992	
SGV-3	TWV003XXXXX	165421	water	8/28/97	QD001XXXXX	165037	QR002XXXXX	165382	QT002XXXXX	165381	166995	168987	168988	166992	
SGV-3	TWV003XXXXD	165422	water	8/28/97	QD001XXXXX	165037	QR002XXXXX	165382	QT002XXXXX	165381	166995	168987	168988	166992	field duplicate
SGV-4	TWV004XXXX	165420	water	8/29/97	QD001XXXXX	165037	QR002XXXXX	165382	QT002XXXXX	165381	166995	168987	168988	166992	
SGV-5	TWV005XXXXX	165423	water	8/28/97	QD001XXXXX	165037	QR002XXXXX	165382	QT002XXXXX	165381	166995	168987	168988	166992	
TW07	TW07XXXX	166383	water	9/7/97	QD001XXXXX	165037	QR05XXXX	166649	QT005XXXX	166387	168989	168987	168988	168986	
TW09	TW09XXXX	166377	water	9/7/97	QD001XXXXX	165037	QR05XXXX	166649	QT005XXXX	166387	168990	168987	168988	168986	
TW17	TW17XXXX	166373	water	9/8/97	QD001XXXXX	165037	QR05XXXX	166649	QT005XXXX	166387	168990	168987	168988	168986	
W-5	MWW5XXXX	166639	water	9/8/97	QD001XXXXX	165037	QR05XXXX	166649	QT006XXXX	166632	169596	169598	169599	169597	
W-5	MWW5XXXX	166639	water	9/8/97	QD001XXXXX	165037	QR05XXXX	166649	QT006XXXX	166632	169601	169598	169599	169597	25-fold dilution
SGV-1	SVG-1	97090301	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-2	SVG-2	97090302	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-3	SVG-3	97090303	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-4	SVG-4	97090304	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-5	SVG-5	97090305	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-8	SVG-8	97090307	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-9	SVG-9	97090308	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-10	SVG-10	97090309	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-11	SVG-11	97090310	soil gas	9/2/97	A	97090311	n/a	n/a	TRIP-BLANK	97090312	VBLK0904D1	n/a	n/a	n/a	
SGV-8	SGV008XX2	97092201	soil gas	9/19/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092205	VBLK0923D1	n/a	n/a	n/a	
SGV-9	SGV009XX2	97092202	soil gas	9/19/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092205	VBLK0923D1	n/a	n/a	n/a	
SGV-10	SGV010XX2	97092203	soil gas	9/19/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092205	VBLK0923D1	n/a	n/a	n/a	
SGV-11	SGV011XX2	97092204	soil gas	9/19/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092205	VBLK0923D1	n/a	n/a	n/a	
SGV-7	SGV007XXX	97092401	soil gas	9/23/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092403	VBLK0924D1	n/a	n/a	n/a	
SGV-7	SGV007XXD	97092402	soil gas	9/23/97	n/a	n/a	n/a	n/a	TRIP-BLANK	97092403	VBLK0924D1	n/a	n/a	n/a	field duplicate

Table E-2
MS / MSD Summary
VOC Analyses of Soil and Water for Soil Gas Data Evaluation
Taylor Instruments Facility Site Investigation

S / MSD Laboratory ID	Matrix	Analyte	S %Recovery	SD % Recovery	RPD	MAX_RPD
167002 / 167004	S	BENZENE	106	109	2.8	21
167002 / 167004	S	CHLOROBENZENE	99	99	0	21
167002 / 167004	S	DICHLOROETHENE	114	117	2.6	22
167002 / 167004	S	TOLUENE	102	102	0	21
167002 / 167004	S	TRICHLOROETHENE	113	110	2.7	24
168987 / 168988	W	BENZENE	100	100	0	10
168987 / 168988	W	CHLOROBENZENE	102	101	1.0	13
168987 / 168988	W	DICHLOROETHENE	121	126	4.0	14
168987 / 168988	W	TOLUENE	98	96	2.1	13
168987 / 168988	W	TRICHLOROETHENE	116	118	1.7	14
169598 / 169599	W	BENZENE	99	101	2.0	11
169598 / 169599	W	CHLOROBENZENE	92	101	9.3	13
169598 / 169599	W	DICHLOROETHENE	98	102	4.0	14
169598 / 169599	W	TOLUENE	89	90	1.1	13
169598 / 169599	W	TRICHLOROETHENE	84	90	6.9	14

Table E-3
CONTROL SAMPLE SUMMARY
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Control Sample ID	Matrix	Analyte	% Recovery	Lower Limit	Upper Limit
169597	W	BROMOMETHANE	75	10	242
		CARBON DISULFIDE	70	45	148
		CARBON TETRACHLORIDE	113	70	140
		CHLOROBENZENE	109	37	160
		CHLOROETHANE	96	53	149
		CHLOROFORM	111	51	138
		CHLOROMETHANE	69	10	273
		CIS-1,2-DICHLOROETHENE	114	54	156
		CIS-1,3-DICHLOROPROPENE	102	10	227
		DIBROMOCHLOROMETHANE	114	53	149
		ETHYLBENZENE	115	37	162
		M+P-XYLENE	108	71	135
		METHYLENE CHLORIDE	108	10	221
		O-XYLENE	107	71	135
		STYRENE	108	66	144
		TETRACHLOROETHENE	126	64	148
		TOLUENE	110	47	150
		TRANS-1,2-DICHLOROETHENE	111	54	156
		TRANS-1,3-DICHLOROPROPENE	98	17	183
		TRICHLOROETHENE	105	71	157
		VINYL CHLORIDE	87	10	251

Table E-3
CONTROL SAMPLE SUMMARY
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Control Sample ID	Matrix	Analyte	% Recovery	Lower Limit	Upper Limit
166992	S	1,1,1-TRICHLOROETHANE	106	52	162
		1,1,2,2-TETRACHLOROETHANE	148	46	157
		1,1,2-TRICHLOROETHANE	120	52	150
		1,1-DICHLOROETHANE	109	59	155
		1,1-DICHLOROETHENE	114	10	234
		1,2-DICHLOROETHANE	119	49	155
		1,2-DICHLOROPROPANE	122	10	210
		2-BUTANONE (MEK)	89	25	162
		2-HEXANONE	123	22	155
		4-METHYL-2-PENTANONE (MIBK)	120	46	157
		ACETONE	109	21	165
		BENZENE	115	37	151
		BROMODICHLOROMETHANE	112	35	155
		BROMOFORM	121	45	169
		BROMOMETHANE	63	10	242
		CARBON DISULFIDE	63	45	148
		CARBON TETRACHLORIDE	113	70	140
		CHLOROBENZENE	105	37	160
		CHLOROETHANE	117	53	149
		CHLOROFORM	109	51	138
		CHLOROMETHANE	68	10	273
		CIS-1,2-DICHLOROETHENE	96	54	156
		CIS-1,3-DICHLOROPROPENE	109	10	227
		DIBROMOCHLOROMETHANE	109	53	149
		ETHYLBENZENE	111	37	162
		M+P-XYLENE	115	71	135
		METHYLENE CHLORIDE	114	10	221
		O-XYLENE	105	71	135
		STYRENE	109	66	144
		TETRACHLOROETHENE	102	64	148
		TOLUENE	112	47	150
		TRANS-1,2-DICHLOROETHENE	110	54	156
		TRANS-1,3-DICHLOROPROPENE	110	17	183
		TRICHLOROETHENE	105	71	157
		VINYL CHLORIDE	113	10	251
168986	W	1,1,1-TRICHLOROETHANE	107	52	162
		1,1,2,2-TETRACHLOROETHANE	96	46	157
		1,1,2-TRICHLOROETHANE	99	52	150
		1,1-DICHLOROETHANE	97	59	155
		1,1-DICHLOROETHENE	119	10	234
		1,2-DICHLOROETHANE	96	49	155
		1,2-DICHLOROPROPANE	105	10	210

Table E-3
CONTROL SAMPLE SUMMARY
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Control Sample ID	Matrix	Analyte	% Recovery	Lower Limit	Upper Limit
168986	W	2-BUTANONE (MEK)	100	25	162
		2-HEXANONE	99	22	155
		4-METHYL-2-PENTANONE (MIBK)	77	46	157
		ACETONE	100	21	165
		BENZENE	103	37	151
		BROMODICHLOROMETHANE	95	35	155
		BROMOFORM	92	45	169
		BROMOMETHANE	61	10	242
		CARBON DISULFIDE	72	45	148
		CARBON TETRACHLORIDE	101	70	140
		CHLOROBENZENE	101	37	160
		CHLOROETHANE	100	53	149
		CHLOROFORM	103	51	138
		CHLOROMETHANE	74	10	273
		CIS-1,2-DICHLOROETHENE	105	54	156
		CIS-1,3-DICHLOROPROPENE	99	10	227
		DIBROMOCHLOROMETHANE	91	53	149
		ETHYLBENZENE	98	37	162
		M+P-XYLENE	105	71	135
		METHYLENE CHLORIDE	108	10	221
		O-XYLENE	102	71	135
		STYRENE	104	66	144
		TETRACHLOROETHENE	99	64	148
		TOLUENE	102	47	150
		TRANS-1,2-DICHLOROETHENE	105	54	156
		TRANS-1,3-DICHLOROPROPENE	97	17	183
		TRICHLOROETHENE	106	71	157
		VINYL CHLORIDE	97	10	251
169597		1,1,1-TRICHLOROETHANE	113	52	162
		1,1,2,2-TETRACHLOROETHANE	109	46	157
		1,1,2-TRICHLOROETHANE	98	52	150
		1,1-DICHLOROETHANE	109	59	155
		1,1-DICHLOROETHENE	111	10	234
		1,2-DICHLOROETHANE	108	49	155
		1,2-DICHLOROPROPANE	115	10	210
		2-BUTANONE (MEK)	80	25	162
		2-HEXANONE	127	22	155
		4-METHYL-2-PENTANONE (MIBK)	99	46	157
		ACETONE	91	21	165
		BENZENE	110	37	151
		BROMODICHLOROMETHANE	103	35	155
		BROMOFORM	103	45	169

Table E-4
Soil Gas Field Duplicates
Taylor Instruments Facility Site Investigation

SAMPLE ID:	SG007XXX QS2319B	SGV007XXD QS2319B
LAB SAMPLE ID:	97092401	97092402
RECEIVED DATE:	9/24/97	9/24/97
ANALYSIS DATE:	9/24/97	9/24/97
FILE NAME:	92401	92402
INSTRUMENT ID:	MSD	MSD
UNITS	NG/TRAP	NG/TRAP
VOLATILE COMPOUNDS		
Benzene	148	59
Bromodichloromethane	25 U	25 U
Bromoform	25 U	25 U
Bromomethane	50 U	50 U
2-Butanone	50 UJ	50 UJ
Carbon Tetrachloride	25 U	25 U
Chlorobenzene	25 U	25 U
Chloroethane	50 U	50 U
Chloroform	25 U	25 U
Chloromethane	50 UJ	50 UJ
Dibromochloromethane	25 U	25 U
1,1-Dichloroethane	25 U	25 U
1,2-Dichloroethane	25 U	25 U
1,1-Dichloroethene	25 U	25 U
1,2-Dichloroethene (total)	27	25 U
1,2-Dichloropropane	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U
trans-1,3-Dichloropropene	25 U	25 U
Ethylbenzene	25 U	25 U
2-Hexanone	50 UJ	50 UJ
4-Methyl-2-Pentanone	50 UJ	50 UJ
Styrene	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U
Tetrachloroethene	530	443
Toluene	3830	755
1,1,1-Trichloroethane	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U
Trichloroethene	3600	2190
1,2,4-Trimethylbenzene	1440	120
1,3,5-Trimethylbenzene	895	110
Vinyl Chloride	50 U	50 U
Xylene (total)	11800	1150

Table E-5

SURROGATE RECOVERY SUMMARY
VOC ANALYSES OF SOIL AND WATER
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Site ID	Sample	Date	Matrix	Analyte	% Recovery	Lower Limit	Upper Limit
SGV-1	TWV001XXXXX	8/29/97	W	4-BROMOFLUOROBENZENE	107	86	115
		8/29/97	W	DIBROMOFLUOROMETHANE	100	86	118
		8/29/97	W	TOLUENE-D8	66	88	110
SGV-10	TSV10XX5XX	8/26/97	S	4-BROMOFLUOROBENZENE	82	74	121
		8/26/97	S	DIBROMOFLUOROMETHANE	114	80	120
		8/26/97	S	TOLUENE-D8	103	81	117
SGV-11	TSV11XX5XX	8/26/97	S	4-BROMOFLUOROBENZENE	98	74	121
		8/26/97	S	DIBROMOFLUOROMETHANE	107	80	120
		8/26/97	S	TOLUENE-D8	103	81	117
SGV-3	TWV003XXXXX	8/28/97	W	4-BROMOFLUOROBENZENE	105	86	115
		8/28/97	W	DIBROMOFLUOROMETHANE	95	86	118
		8/28/97	W	TOLUENE-D8	101	88	110
SGV-4	TWV004XXXX	8/29/97	W	4-BROMOFLUOROBENZENE	112	86	115
		8/29/97	W	DIBROMOFLUOROMETHANE	99	86	118
		8/29/97	W	TOLUENE-D8	105	88	110
SGV-5	TWV005XXXXX	8/28/97	W	4-BROMOFLUOROBENZENE	103	86	115
		8/28/97	W	DIBROMOFLUOROMETHANE	92	86	118
		8/28/97	W	TOLUENE-D8	92	88	110
SGV-8	TSV08XX5XX	8/26/97	S	4-BROMOFLUOROBENZENE	98	74	121
		8/26/97	S	DIBROMOFLUOROMETHANE	106	80	120
		8/26/97	S	TOLUENE-D8	100	81	117
SGV-9	TSV09XX5XX	8/26/97	S	4-BROMOFLUOROBENZENE	93	74	121
		8/26/97	S	DIBROMOFLUOROMETHANE	105	80	120
		8/26/97	S	TOLUENE-D8	103	81	117
TW07	TW07XXXX	9/7/97	W	4-BROMOFLUOROBENZENE	100	86	115
		9/7/97	W	DIBROMOFLUOROMETHANE	103	86	118
		9/7/97	W	TOLUENE-D8	99	88	110
TW09	TW09XXXX	9/7/97	W	4-BROMOFLUOROBENZENE	101	86	115
		9/7/97	W	DIBROMOFLUOROMETHANE	101	86	118
		9/7/97	W	TOLUENE-D8	99	88	110
TW17	TW17XXXX	9/6/97	W	4-BROMOFLUOROBENZENE	101	86	115
		9/6/97	W	DIBROMOFLUOROMETHANE	102	86	118
		9/6/97	W	TOLUENE-D8	100	88	110
W-5	MWW5XXXX	9/8/97	W	4-BROMOFLUOROBENZENE	90	86	115
		9/8/97	W	DIBROMOFLUOROMETHANE	99	86	118
		9/8/97	W	TOLUENE-D8	91	88	110

Table E-6
SOURCE WATER BLANK RESULTS
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QD001XXXXX	8/27/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	105
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE			5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE			5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	90
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE			5.0	ug/l	
		TOLUENE-D8				%	98
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE			5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	

Table E-7
EQUIPMENT BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QR001XXXXX	8/27/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	106
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		Dibromofluoromethane				%	96
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		Toluene-d8				%	102
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
QR05XXXX	9/9/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	

Table E-7
EQUIPMENT BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QR05XXXX	9/9/97	1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	101
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM	9.3		5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		Dibromofluoromethane				%	100
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		Toluene-d8				%	96
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	

Table E-8

TRIP BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QT001XXXXX	8/27/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	98
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	91
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	97
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
QT002XXXXX	8/28/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	

Table E-8

TRIP BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QT002XXXXX	8/28/97	1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	101
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	95
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	102
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE	7.1		5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
QT005XXXX	9/8/97	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	

Table E-8

TRIP BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QT005XXXX	9/8/97	1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	102
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	102
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	94
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
QT006XXXX		1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE			5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	

Table E-8

TRIP BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Date	Analyte	Result	Detect Flag	PQL	Units	Surrogate
QT006XXXX	9/8/97	4-BROMOFLUOROBENZENE				%	104
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	99
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	104
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	

Table E-9

METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	166989	1,1,1-TRICHLOROETHANE		U	5.0	ug/kg	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/kg	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/kg	
		1,1-DICHLOROETHANE		U	5.0	ug/kg	
		1,1-DICHLOROETHENE		U	5.0	ug/kg	
		1,2-DICHLOROETHANE		U	5.0	ug/kg	
		1,2-DICHLOROPROPANE		U	5.0	ug/kg	
		2-BUTANONE (MEK)		U	10	ug/kg	
		2-HEXANONE		U	10	ug/kg	
		4-BROMOFLUOROBENZENE				%	95
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/kg	
		ACETONE		U	20	ug/kg	
		BENZENE		U	5.0	ug/kg	
		BROMODICHLOROMETHANE		U	5.0	ug/kg	
		BROMOFORM		U	5.0	ug/kg	
		BROMOMETHANE		U	5.0	ug/kg	
		CARBON DISULFIDE		U	10	ug/kg	
		CARBON TETRACHLORIDE		U	5.0	ug/kg	
		CHLOROBENZENE		U	5.0	ug/kg	
		CHLOROETHANE		U	5.0	ug/kg	
		CHLOROFORM		U	5.0	ug/kg	
		CHLOROMETHANE		U	5.0	ug/kg	
		CIS-1,2-DICHLOROETHENE			5.0	ug/kg	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/kg	
		DIBROMOCHLOROMETHANE		U	5.0	ug/kg	
		DIBROMOFLUOROMETHANE				%	103
		ETHYLBENZENE		U	5.0	ug/kg	
		M+P-XYLENE			5.0	ug/kg	
		METHYLENE CHLORIDE		U	5.0	ug/kg	
		O-XYLENE		U	5.0	ug/kg	
		STYRENE		U	5.0	ug/kg	
		TETRACHLOROETHENE		U	5.0	ug/kg	
		TOLUENE		U	5.0	ug/kg	
		TOLUENE-D8				%	103
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/kg	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/kg	
		TRICHLOROETHENE			5.0	ug/kg	
		VINYL CHLORIDE		U	5.0	ug/kg	
	166995	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	

Table E-9

METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	166995	1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	95
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	93
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	94
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
	166999	1,1,1-TRICHLOROETHANE		U	630	ug/kg	
		1,1,2,2-TETRACHLOROETHANE		U	630	ug/kg	
		1,1,2-TRICHLOROETHANE		U	630	ug/kg	
		1,1-DICHLOROETHANE		U	630	ug/kg	
		1,1-DICHLOROETHENE		U	630	ug/kg	
		1,2-DICHLOROETHANE		U	630	ug/kg	
		1,2-DICHLOROPROPANE		U	630	ug/kg	
		2-BUTANONE (MEK)		U	1300	ug/kg	
		2-HEXANONE		U	1300	ug/kg	
		4-BROMOFLUOROBENZENE				%	99

Table E-9

METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	166999	4-METHYL-2-PENTANONE (MIBK)			1300	ug/kg	
		ACETONE			2500	ug/kg	
		BENZENE			630	ug/kg	
		BROMODICHLOROMETHANE			630	ug/kg	
		BROMOFORM			630	ug/kg	
		BROMOMETHANE			630	ug/kg	
		CARBON DISULFIDE			1300	ug/kg	
		CARBON TETRACHLORIDE			630	ug/kg	
		CHLOROBENZENE			630	ug/kg	
		CHLOROETHANE			630	ug/kg	
		CHLOROFORM			630	ug/kg	
		CHLOROMETHANE			630	ug/kg	
		CIS-1,2-DICHLOROETHENE			630	ug/kg	
		CIS-1,3-DICHLOROPROPENE			630	ug/kg	
		DIBROMOCHLOROMETHANE			630	ug/kg	
		DIBROMOFLUOROMETHANE				%	103
		ETHYLBENZENE			630	ug/kg	
		M+P-XYLENE			630	ug/kg	
		METHYLENE CHLORIDE			630	ug/kg	
		O-XYLENE			630	ug/kg	
		STYRENE			630	ug/kg	
		TETRACHLOROETHENE			630	ug/kg	
		TOLUENE			630	ug/kg	
		TOLUENE-D8				%	104
		TRANS-1,2-DICHLOROETHENE			630	ug/kg	
		TRANS-1,3-DICHLOROPROPENE			630	ug/kg	
		TRICHLOROETHENE			630	ug/kg	
		VINYL CHLORIDE			630	ug/kg	
	168990	1,1,1-TRICHLOROETHANE			5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE			5.0	ug/l	
		1,1,2-TRICHLOROETHANE			5.0	ug/l	
		1,1-DICHLOROETHANE			5.0	ug/l	
		1,1-DICHLOROETHENE			5.0	ug/l	
		1,2-DICHLOROETHANE			5.0	ug/l	
		1,2-DICHLOROPROPANE			5.0	ug/l	
		2-BUTANONE (MEK)			10	ug/l	
		2-HEXANONE			10	ug/l	
		4-BROMOFLUOROBENZENE				%	94
		4-METHYL-2-PENTANONE (MIBK)			10	ug/l	
		ACETONE			20	ug/l	
		BENZENE			5.0	ug/l	
		BROMODICHLOROMETHANE			5.0	ug/l	
		BROMOFORM			5.0	ug/l	

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METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	168990	BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	
		CHLOROFORM		U	5.0	ug/l	
		CHLOROMETHANE		U	5.0	ug/l	
		CIS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		DIBROMOCHLOROMETHANE		U	5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	98
		ETHYLBENZENE		U	5.0	ug/l	
		M+P-XYLENE		U	5.0	ug/l	
		METHYLENE CHLORIDE		U	5.0	ug/l	
		O-XYLENE		U	5.0	ug/l	
		STYRENE		U	5.0	ug/l	
		TETRACHLOROETHENE		U	5.0	ug/l	
		TOLUENE		U	5.0	ug/l	
		TOLUENE-D8				%	99
		TRANS-1,2-DICHLOROETHENE		U	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		U	5.0	ug/l	
		TRICHLOROETHENE		U	5.0	ug/l	
		VINYL CHLORIDE		U	5.0	ug/l	
	169596	1,1,1-TRICHLOROETHANE		U	5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE		U	5.0	ug/l	
		1,1,2-TRICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHANE		U	5.0	ug/l	
		1,1-DICHLOROETHENE		U	5.0	ug/l	
		1,2-DICHLOROETHANE		U	5.0	ug/l	
		1,2-DICHLOROPROPANE		U	5.0	ug/l	
		2-BUTANONE (MEK)		U	10	ug/l	
		2-HEXANONE		U	10	ug/l	
		4-BROMOFLUOROBENZENE				%	89
		4-METHYL-2-PENTANONE (MIBK)		U	10	ug/l	
		ACETONE		U	20	ug/l	
		BENZENE		U	5.0	ug/l	
		BROMODICHLOROMETHANE		U	5.0	ug/l	
		BROMOFORM		U	5.0	ug/l	
		BROMOMETHANE		U	5.0	ug/l	
		CARBON DISULFIDE		U	10	ug/l	
		CARBON TETRACHLORIDE		U	5.0	ug/l	
		CHLOROBENZENE		U	5.0	ug/l	
		CHLOROETHANE		U	5.0	ug/l	

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METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	169596	CHLOROFORM			5.0	ug/l	
		CHLOROMETHANE			5.0	ug/l	
		CIS-1,2-DICHLOROETHENE			5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE			5.0	ug/l	
		DIBROMOCHLOROMETHANE			5.0	ug/l	
		DIBROMOFLUOROMETHANE				%	97
		ETHYLBENZENE			5.0	ug/l	
		M+P-XYLENE			5.0	ug/l	
		METHYLENE CHLORIDE			5.0	ug/l	
		O-XYLENE			5.0	ug/l	
		STYRENE			5.0	ug/l	
		TETRACHLOROETHENE			5.0	ug/l	
		TOLUENE			5.0	ug/l	
		TOLUENE-D8				%	100
		TRANS-1,2-DICHLOROETHENE			5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE			5.0	ug/l	
		TRICHLOROETHENE			5.0	ug/l	
		VINYL CHLORIDE			5.0	ug/l	
	169601	1,1,1-TRICHLOROETHANE			5.0	ug/l	
		1,1,2,2-TETRACHLOROETHANE			5.0	ug/l	
		1,1,2-TRICHLOROETHANE			5.0	ug/l	
		1,1-DICHLOROETHANE			5.0	ug/l	
		1,1-DICHLOROETHENE			5.0	ug/l	
		1,2-DICHLOROETHANE			5.0	ug/l	
		1,2-DICHLOROPROPANE			5.0	ug/l	
		2-BUTANONE (MEK)			10	ug/l	
		2-HEXANONE			10	ug/l	
		4-BROMOFLUOROBENZENE				%	88
		4-METHYL-2-PENTANONE (MIBK)			10	ug/l	
		ACETONE			20	ug/l	
		BENZENE			5.0	ug/l	
		BROMODICHLOROMETHANE			5.0	ug/l	
		BROMOFORM			5.0	ug/l	
		BROMOMETHANE			5.0	ug/l	
		CARBON DISULFIDE			10	ug/l	
		CARBON TETRACHLORIDE			5.0	ug/l	
		CHLOROBENZENE			5.0	ug/l	
		CHLOROETHANE			5.0	ug/l	
		CHLOROFORM			5.0	ug/l	
		CHLOROMETHANE			5.0	ug/l	
		CIS-1,2-DICHLOROETHENE			5.0	ug/l	
		CIS-1,3-DICHLOROPROPENE			5.0	ug/l	
		DIBROMOCHLOROMETHANE			5.0	ug/l	

Table E-9

METHOD BLANK SUMMARY
TAYLOR INSTRUMENTS FACILITY SITE INVESTIGATION

Sample	Lab Sample ID	Analyte	Result	Detect Flag	PQL	Units	Surrogate
Method Blank	169601	DIBROMOFLUOROMETHANE				%	97
		ETHYLBENZENE		<	5.0	ug/l	
		M+P-XYLENE		<	5.0	ug/l	
		METHYLENE CHLORIDE		<	5.0	ug/l	
		O-XYLENE		<	5.0	ug/l	
		STYRENE		<	5.0	ug/l	
		TETRACHLOROETHENE		<	5.0	ug/l	
		TOLUENE		<	5.0	ug/l	
		TOLUENE-D8				%	98
		TRANS-1,2-DICHLOROETHENE		<	5.0	ug/l	
		TRANS-1,3-DICHLOROPROPENE		<	5.0	ug/l	
		TRICHLOROETHENE		<	5.0	ug/l	
		VINYL CHLORIDE		<	5.0	ug/l	