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**FACILITY CLOSURE PASSIVE SOIL GAS INVESTIGATION REPORT
TECHNICHEM INCORPORATED
4245 HALLECK STREET
EMERYVILLE, CALIFORNIA**

JUNE 19, 2006

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1.0 INTRODUCTION

This report describes the Facility Closure Passive Soil Gas Investigation completed for the former Technichem, Inc. facility located at 4245 Halleck Street in Emeryville, California (the Facility). The investigation was performed by PES Environmental, Inc. (PES) on behalf of Mario J. & Virginia E. Pellegrini Trust (Pellegrini), the owner of the property at which the Technichem facility was formerly located. The Facility site location is shown in Plate 1, and the site plan is shown in Plate 2.

Technichem operated a dry cleaning solvent recycling facility until late 2003. Technichem submitted a closure workplan to the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) on February 2, 2004. DTSC provided comments on March 23, 2004 and requested the workplan include the elements of a RCRA Facility Closure Investigation. Clayton Group Services (Clayton) submitted a Facility Closure Investigation Workplan (Workplan) on April 21, 2005 to address DTSC's March 23, 2004 comments. On May 16, 2005, DTSC submitted a Notice of Deficiency and asked that Technichem resubmit the Workplan and include only the initial passive soil gas survey for initial scoping in a phased-implementation Facility Workplan. Clayton submitted a May 27, 2005 Facility Closure Passive Soil Gas Investigation Workplan¹ that was approved by DTSC in a letter dated July 12, 2005.

Subsequently, Technichem allowed the property owner (Pellegrini) to assume closure and corrective action obligations associated with the Facility Closure. Pellegrini contracted with PES to perform the passive soil gas investigation under DTSC oversight. Correspondence between DTSC, Technichem and Pellegrini which describes the sequence of events leading up to the implementation of this passive soil gas investigation is attached as Appendix A.

This report describes the initial closure activity of conducting a passive soil gas survey at the site, completed by PES on behalf of Pellegrini, in accordance with the DTSC-approved workplan prepared by Clayton and dated May 27, 2005. In addition to the activities in the approved workplan, two soil samples were collected for physical properties analyses. These analyses were conducted in order to provide site-specific data allowing the results of the passive soil gas survey to be converted to standard soil gas units.

Subsequent to the Workplan approval, it was determined that solid waste management unit 6 (SWMU6), the Outside Storage Area, was not a part of the property owned by Pellegrini. It is PES' understanding that Technichem leased this area from Union Pacific Railroad (UPRR). Because this area is not owned by Pellegrini, no passive soil gas sampling was conducted by PES on this property, as had been planned in the Workplan. PES understands that the soil gas sampling planned for SWMU6 is the responsibility of others. This change represents the only significant deviation from the approved Workplan.

¹ Clayton Group Services, 2005. *Facility Closure Passive Soil Gas Investigation Workplan, Technichem Incorporated, 4245 Halleck Street, Emeryville, California 94608. May 27.*

2.0 FACILITY BACKGROUND

Between 1987 and late 2003, the Facility was primarily used for the recycling of tetrachloroethylene (PCE), a solvent commonly used in dry cleaning operations. The Facility is located in a Light-Industrial zoned portion of Emeryville comprising primarily industrial and commercial properties with some residential use.

2.1 Prior Environmental Investigation

The City of Emeryville performed limited soil and groundwater sampling adjacent to the Facility, within the Halleck Street right-of-way, in 2003. PCE was detected at 82 milligrams per kilogram (mg/kg) in soil collected 2.5 feet below ground surface (bgs) at boring ENV-2 near a door on Halleck Street. The highest concentrations of PCE and degradation products, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC), were reported in a grab groundwater sample collected from boring ENV-2. PCE was detected at 110 micrograms per liter ($\mu\text{g/L}$), TCE at 9.1 $\mu\text{g/L}$, cis-1,2-DCE at 22 $\mu\text{g/L}$, and VC at 2.3 $\mu\text{g/L}$. PCE was also detected in groundwater samples from borings ENV-3, ENV-4, and ENV-5, at 4.7, 14, and 0.84 $\mu\text{g/L}$, respectively. TCE and cis-1,2-DCE were also detected in Boring ENV-4, at concentrations of 1.4 and 40 $\mu\text{g/L}$, respectively. Appendix B presents a plate showing the boring locations from the City of Emeryville's investigation.

2.2 Process Areas

DTSC identified eight process areas in a March 23, 2004 Memorandum to be the focus of the Facility Closure Investigation. These eight process areas, originally established during a Facility Assessment conducted in 1992, included six SWMUs and two areas of concern (AOCs), as follows (see Plate 2):

- SWMU1: Process Room
- SWMU2: Tank Storage Area
- SWMU3: Wastewater Treatment Area
- SWMU4: Hazardous Waste Drum Storage Area
- SWMU5: Distillation Unit
- SWMU6: Outside Storage Area
- AOC1: Recycled PCE Storage Areas
- AOC2: Laboratory

Clayton incorporated investigation of each of these areas in their Workplan.

3.0 FIELD INVESTIGATION

The passive soil gas survey was designed as a screening level tool to identify areas for future subsurface investigation in addition to the eight process areas identified above. The passive soil gas survey consisted of drilling shallow boreholes to place passive soil gas sample modules for a designated period of time. After the required residence time, the modules were sent to a laboratory for analysis. The following sections describe: (1) pre-survey activities; (2) the passive soil gas sampling locations; (3) setting and retrieving passive soil gas sample modules; (4) laboratory analytical procedures; (5) quality assurance/quality control (QA/QC) procedures; and (6) sampling procedures used for soil physical properties.

3.1 Pre-Field Activities

Prior to conducting the passive soil gas survey, various permitting and health and safety planning activities were performed. An encroachment permit was obtained from the City of Emeryville for the work planned within Halleck Street. The permit defined conditions for partial closure of the Halleck Street right-of-way, as well as requirements for notification of city inspectors for post-sampling inspections. These requirements were followed.

A site-specific Health and Safety Plan was developed, which required photoionization detector (PID) screening for VOCs during sampling activities. To address concerns regarding possible subsurface utilities a private utility locator, Cruz Brothers, of Milpitas, California, was contracted to clear boreholes of subsurface utilities. Utility clearance was performed under PES oversight on April 10, 2006. Underground Service Alert (USA) was also notified of the sampling activities at least two business days in advance of initiating the passive soil gas survey.

3.2 Sample Locations

Plate 2 shows the passive soil gas sample module locations. A total of 49 module locations were sited based on the workplan, with minor modifications due to subsurface utilities. The locations were distributed mainly in a grid pattern covering the entire Facility on a 15-foot grid, to provide a Facility-wide screening for potential areas of subsurface impact. Some targeted locations were also selected to provide information on whether those specific areas contributed to subsurface impact, including: one near an interior floor drain along the western wall of the Facility; one near a drain along the eastern wall of the Facility along Halleck Street; a row of four modules along the western wall of the Facility to evaluate conditions on the downgradient property boundary; and a row of 14 soil gas modules along Halleck Street in front of the Facility to evaluate whether contaminants may have migrated onto the Facility from Off-site sources.

As mentioned above, SWMU6, the Outside Storage Area, is owned by UPRR. Consequently, the six soil gas locations proposed in the Workplan were not evaluated.

3.3 Sample Collection Procedures

This section describes the specific procedures for collecting and preserving samples collected during the investigation. W. L. Gore and Associates (Gore) of Elkton, Maryland, provided the sample modules known as Gore™ Modules (Gore module).

A Gore module consists of several separate Gore passive sorbent collection devices. A typical sorber is 15 to 25 millimeters (mm) long, with a 3 mm inside diameter (ID), and contains 40 milligrams (mg) of a suitable granular adsorbent material, depending on the specific compounds to be detected. Typically, polymeric and carbonaceous resins are used for their affinity for a broad range of compounds. The sorbers are sheathed in the bottom of a one-foot length of vapor-permeable insertion and retrieval cord, which is fashioned with a loop (to which a string is attached for installation and retrieval). Both the retrieval cord and sorbent container are constructed solely of inert, hydrophobic, microporous Gore-tex expanded polytetrafluoroethylene (ePTFE, similar to Teflon brand PTFE).

Gore modules were installed in the subsurface through shallow boreholes (Plate 2) on April 13 and April 14, 2006. DTSC provided oversight of Gore module installation on April 13, 2006. As each Gore module was installed, its unique identification number and location were recorded on a tracking log and on a map of the area. A small diameter borehole was advanced to approximately 3 feet bgs at each location using a rotary hammer with a 1-inch carbide bit. The Gore modules were then sealed in place using a cork provided by Gore. To prevent tampering with sampling devices located along Halleck Street, the cork above the Gore module was set slightly below ground surface and a thin cement covering was applied. The probes remained in place for the required residence time of 13 to 14 days. To ensure that the Gore modules could be found following the residence time, the locations were clearly marked with spray paint during the utility clearance.

On April 27, 2006, after 13 to 14 calendar days had elapsed, the Gore modules were removed from the ground. As each module was retrieved, it was sealed into its unique shipping vial containing information on the probe and module numbers and date, and placed into the Gore supplied shipping box. The module numbers and location were confirmed against the tracking log and area map, and the information was entered on a chain of custody document. Each module was placed into its container prior to retrieving the next module to eliminate the possibility of cross contamination or inadvertently mixing up modules. Samples were shipped with a chain of custody form via overnight courier to the Gore laboratory in Elkton, Maryland, for analysis. Gore was also provided with an AutoCAD map of sampling locations for use in preparing their report.

3.4 Sample Analysis

The Gore screening modules were analyzed via a modified EPA method 8260/8270 for the following volatile organic compounds (VOCs):

- tetrachloroethylene (PCE)
- trichloroethylene (TCE)
- cis-1,2-dichloroethene (cis-1,2-DCE)
- trans- 1,2-dichloroethene (trans-1,2-DCE)
- 1,1-dichloroethene (1,1-DCE)
- 1,1-dichloroethane (1,1-DCA)
- 1,2-dichloroethane (1,2-DCA)
- vinyl chloride
- carbon tetrachloride
- 1,1,1-trichloroethane (1,1,1-TCA)
- 1,1,2-trichloroethane (1,1,2-TCA)
- 1,1,1,2-tetrachloroethane (1,1,1,2-PCA)
- 1,1,2,2-tetrachloroethane (1,1,2,2-PCA)
- chlorobenzene
- 1,2-dichlorobenzene (1,2-DCB)
- 1,3-dichlorobenzene (1,3-DCB)
- 1,4-dichlorobenzene (1,4-DCB)
- chloroform

The screening module analyses consist of analyzing the granular adsorbent material inside the modules, and calculating the mass of each VOC adsorbed to the material. Laboratory results are presented in micrograms (μg).

3.5 Quality Assurance/Quality Control

Quality assurance (QA) is the process for ensuring that all data and decisions made with the data are technically and statistically valid, and properly documented. Quality control (QC) procedures are the procedures employed to measure the degree to which these quality assurance objectives are met. The following QA/QC samples were collected during the passive soil investigation: trip blanks, field duplicates and ambient air control samples.

3.5.1 Trip Blanks

Five trip blanks were submitted for this project. Trip blanks are included in the analytical process to provide an indication of whether sample modules may have been contaminated during shipping and/or storage. Trip blanks consist of Gore modules sealed in their shipping vials. Trip blanks are prepared at the same time as the sample modules, and stored and shipped with the sample modules throughout the sampling process. Trip blanks are then analyzed via the same processes as the other sample modules.

3.5.2 Field Duplicates

Field duplicates are generally collected to test sample collection and analytical procedures. Six field duplicates were collected. Each field duplicate included installing a Gore module in a borehole located within a few inches of a sample location. The field duplicates were analyzed for the same chemicals as the primary sample to permit comparison of the results.

3.5.3 Ambient Air Control Sample

Four ambient air control samples were collected. Three Gore modules were exposed to ambient air for approximately 10 minutes, at locations AA-1 through AA-3, to simulate module exposure to ambient air between the time it is removed from the vial and the time it is sealed in the subsurface. Two Gore modules were exposed to ambient air during the entire 14-day passive soil gas period to evaluate concentrations of VOCs in ambient air at locations AA-1 and AA-2. These ambient air control samples were hung within the building.

3.6 Soil Physical Properties Sampling Procedures

In addition to the passive soil gas sampling, two soil samples were collected for physical properties analyses. The physical properties analyses were suggested by a Gore representative, Mr. Andre Brown, to permit conversion of raw mass-based data (units of μg) to more commonly used soil gas units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Soil samples were collected on April 13, 2006, the first day of the passive soil gas investigation. To collect the samples, a concrete corer was contracted to core three 4-inch diameter holes through the concrete. Boreholes were advanced to the desired depth using a stainless steel hand auger, and samples were collected in 6-inch long, 2-inch diameter stainless steel tubes using a slide hammer and attached split spoon sampler. In one location (SB-3), PID screening of the borehole indicated the presence of high concentrations of VOCs (greater than the screening capability of the PID), so a soil sample was not collected because of concerns that the physical testing laboratory may not have protocols in place to safely handle contaminated soil samples. In the other two locations, SB-1 and SB-2, soil samples were collected at 1.5 to 2 feet bgs. The shallow half of the sample from SB-1 (1.55 to 1.7 feet bgs) and the deep half of the sample from SB-2 (1.85-2.0 feet bgs) were analyzed.

Samples were submitted to PTS Laboratories, Inc. of Santa Fe Springs, California for analysis of moisture content by ASTM Method D2216/American Petroleum Institute (API) Method RP40, and bulk density, grain density, total porosity, air-filled porosity and total pore fluid saturations by API Method RP40.

4.0 PASSIVE SOIL GAS INVESTIGATION RESULTS

Results of the passive soil investigation are presented in W.L. Gore & Associates, Inc.'s May 17, 2006 report titled *GORE™ Surveys Final Report, Technichem, Emeryville, CA* (Gore report). The report is attached in its entirety as Appendix C, and summarized below. The report includes: (1) text including a sample summary, analytical procedures and project comments; (2) copies of field logs and chain of custody forms; (3) raw data tables; (4) chromatograms from module analyses; (5) a description of the calculations used to convert the mass data (μg) to vapor concentrations ($\mu\text{g}/\text{m}^3$) and (6) isoconcentration contour maps showing the distribution of the three VOCs most commonly detected during analysis of the passive soil gas modules, PCE, TCE and cis-1,2-DCE. The raw data presented in the Gore report is also presented with corresponding sample location names in Tables 1 and 2 of this report, which present the mass-based (μg) and converted data ($\mu\text{g}/\text{m}^3$), respectively.

4.1 Summary of Analytical Data

The following sections present analytical data from passive soil gas survey modules, soil physical properties tests and QA/QC samples including trip blanks, duplicate samples and ambient air samples.

4.1.1 Passive Soil Gas Survey Modules

PCE, TCE and cis-1,2-DCE were the most frequently detected VOCs and had among the highest concentrations detected in the passive soil gas samples. Results of the 49 passive soil gas samples and 5 duplicate samples are summarized below:

- PCE was detected in 53 modules, at concentrations of up to 1,061 μg (988,015 $\mu\text{g}/\text{m}^3$);
- TCE was detected in 42 modules, at concentrations of up to 43.8 μg (22,829 $\mu\text{g}/\text{m}^3$);
- cis-1,2-DCE was detected in 24 modules, at concentrations of up to 34.3 μg (22,597 $\mu\text{g}/\text{m}^3$);
- trans-1,2-DCE was detected in 15 modules, at concentrations of up to 0.79 μg (539.5 $\mu\text{g}/\text{m}^3$);
- 1,2-DCE (sum of cis- and trans- isomers) was detected in 24 modules, at concentrations of up to 35.1 μg (23,136 $\mu\text{g}/\text{m}^3$);
- Vinyl chloride was detected in 4 modules, at concentrations of up to 12.35 μg (2,556 $\mu\text{g}/\text{m}^3$);
- Chloroform, 1,1-DCE, 1,1-DCA, 1,2-DCA, 1,1,1-TCA, 1,1,1,2-PCA, 1,1,2,2-PCA, chlorobenzene and 1,2-DCB were detected at comparatively low concentrations [up to 0.38 μg (577 $\mu\text{g}/\text{m}^3$)] in up to 15 modules; and

- Carbon tetrachloride, 1,1,2-TCA and 1,3-DCB were not detected above laboratory reporting limits during the Gore passive soil gas survey.

4.1.2 Lateral Extent of VOCs in Soil Gas

Three isoconcentration contour maps in the Gore report present a graphical depiction of the PCE, TCE and cis-1,2-DCE results. The plates represent the analytical results using the color spectrum. As shown on the explanation, the purple and red colors correspond to the highest concentrations, grading to light blue and dark blue which correspond to the lowest detections. The minimum contour interval is shown in gray, and corresponds to the maximum method blank concentration, trip blank concentration or the method detection limit, whichever is higher.

VOCs were detected beneath the floor slab throughout the interior area (SG-15 through SG-49) sampled during this phase of investigation. The isoconcentration contour maps show that the highest concentrations of PCE, TCE and cis-1,2-DCE in soil gas were detected beneath the former process areas, including SWMU1 (former Process Room), AOC1 (former Recycled PCE Storage Area); SWMU5 (former Distillation Unit) and SWMU2 (former Tank Area). Other interior areas with lower detections of VOCs include SWMU4 (former Waste Storage Area) and AOC2 (Laboratory).

For the exterior sample locations (SG-1 through SG-14), PCE was detected at concentrations above trip blank levels at all locations except SG-12, SG-13 and SG-14. PCE concentrations were moderate [up to $93.2 \mu\text{g}$ ($82,644 \mu\text{g}/\text{m}^3$) at location SG-8] compared to interior process areas [up to $1,061 \mu\text{g}$ ($988,015 \mu\text{g}/\text{m}^3$)]. A relatively high concentration of TCE [$20.83 \mu\text{g}$ ($10,365 \mu\text{g}/\text{m}^3$)], compared to interior concentrations of up to $43.8 \mu\text{g}$ ($22,829 \mu\text{g}/\text{m}^3$) was detected at location SG-8, with lower concentrations of TCE detected at 7 of the 13 other exterior locations. Concentrations of cis-1,2-DCE at the exterior locations ranged from non-detect (9 locations) to $1.02 \mu\text{g}$ ($638 \mu\text{g}/\text{m}^3$) at location SG-5.

Based on the isoconcentration contour maps, the extents of PCE and TCE in soil gas are not fully characterized to the south or west of the former process areas. The extent of cis-1,2-DCE in soil gas is more limited; however, it is not fully characterized to the west of location SG-31. There appears to be an area of lower VOC concentrations between the interior process areas and the exterior sample locations with elevated VOC concentrations. It is not known whether the exterior detections of VOCs in soil gas represent upgradient diffusion and/or migration of VOCs from the former process areas, or whether the exterior detections are due to a separate off-site source.

4.2 Soil Physical Properties Results

Laboratory analytical results for the two soil physical properties analyses are presented in Appendix D. These results were forwarded to Gore for their use in converting the mass-based

data into soil gas concentrations. Gore used the following average physical properties data in their conversions:

- Moisture content - 6.85 % weight;
- Bulk density - 2.075 grams per cubic centimeter (g/cc);
- Grain density - 2.735 g/cc;
- Total porosity - 24.1 % bulk volume;
- Air-filled porosity - 9.6 % bulk volume; and
- Total pore fluid saturations - 60.2 % pore volume.

4.3 QA/QC Results

Results of QA/QC samples, including duplicate samples and ambient air samples, are presented below. Table 3 summarizes the trip blank results, Table 4 presents an evaluation of duplicate sample results, and Table 5 presents ambient air sample results. Laboratory QA/QC procedures and results are also discussed below. Appendix E presents completed analytical data assessment checklists.

4.3.1 Trip Blank Results

The five trip blanks were analyzed for the same analytes as the survey modules. PCE was detected in 4 of the 5 trip blanks, at masses ranging from 0.17 μg to below the detection limit (bdl) of 0.03. These trip blank detections are well below the maximum PCE detection of 1061.18 μg and average PCE detection of 221.54 μg .

According to Mr. Jim Whetzel of Gore, it is not uncommon for low masses of VOCs to be detected in trip blanks from sampling events in which high masses of one or more VOCs are detected. Mr. Whetzel hypothesized that limited cross-contamination may occur because: (1) the vials are only sealed hand-tight; and/or (2) small quantities of VOCs may diffuse through the vial cap. The Gore report factors trip blank detections into the data analysis, as described in Section 4.1.2.

The trip blank PCE detections do not indicate a QA/QC problem with the data. Given that the maximum trip blank detection is nearly four orders of magnitude lower than the maximum detection and over three orders of magnitude lower than the average PCE mass, cross-contamination would only be expected to contribute a very small fraction of the detected mass of PCE in Gore modules.

4.3.2 Duplicate Sample Results

Duplicate sample results are denoted by a "D" suffix. Duplicate sample results for higher VOC concentrations are very similar (within 1-2%), while for lower concentrations of VOCs, duplicate samples results vary slightly more, as would be expected at the lower end of the analytical range and in consideration of the cross-contamination noted above.

4.3.3 Ambient Air Sample Results

Table 3 presents a summary of ambient air control sample results. Results are presented on a mass basis. Four ambient air control samples were collected. Two ambient air control samples were exposed to ambient air for approximately 10 minutes to simulate module exposure to ambient air between the time it is removed from the vial and the time it is sealed in the subsurface. The other two samples were exposed to ambient air during the entire 13-day passive soil gas period to analyze ambient air concentrations of VOCs. These ambient air control samples were hung inside the building.

As shown in Table 3, results of the 10-minute ambient air samples are of the same order of magnitude as the trip blank samples [up to $0.08 \mu\text{g}$ ($988 \mu\text{g}/\text{m}^3$)]. Therefore, it is not possible to tell whether the detections of VOCs in the 10-minute samples are truly due to ambient air or are due to low levels of cross-contamination during storage and/or shipping of ambient air samples with the soil gas modules containing higher VOC concentrations (see Section 4.3.1). Regardless of the source of VOCs in the 10-minute sample, the mass of VOCs is very low compared to the average mass of VOCs on the actual sampling modules ($251 \mu\text{g}$), therefore ambient air is not expected to have contributed significant VOC mass to the Gore modules during placement.

The 10-minute ambient air sample results of 0.82 and $0.58 \mu\text{g}$ were converted to volume-based concentrations. However, due to the extremely short duration of exposure, the converted method detection limit was very high, at $302.97 \mu\text{g}/\text{m}^3$. PCE was detected in one of the 10-minute ambient air samples at a converted concentration of $988.16 \mu\text{g}/\text{m}^3$. However, this is lower than the highest converted trip blank result of $2063.63 \mu\text{g}/\text{m}^3$. According to Mr. Jim Whetzel of Gore, due to the extremely short duration of exposure and the resulting high method detection limit concentration after conversion, as well as the similar trip blank detections, the 10-minute ambient air converted concentrations are likely not accurate or representative of actual ambient air conditions.

Table 3 shows the 13-day ambient air samples contained significantly higher mass of VOCs, as would be expected based on the much longer exposure duration. Gore converted the mass of the ambient air samples to volumetric concentrations, using the formula described in the Gore report. PCE was detected at 5.32 and $3.72 \mu\text{g}/\text{m}^3$ in the two samples, well above the method detection limit of $0.16 \mu\text{g}/\text{m}^3$. According to Mr. Whetzel, these concentrations are likely much more representative of actual ambient air conditions than the converted 10-minute exposure concentrations.

4.3.4 Laboratory QA/QC

The Gore laboratory performed internal QA/QC processes including method blanks and analysis of surrogate compounds, as described on Page 3 of Gore's report (Appendix C). No VOCs were detected in method blanks. Laboratory QA/QC documentation shows the analytical data to be of acceptable quality.

4.3.5 QA/QC Summary

An analytical data review summary, consisting of a data package completeness checklist and a data validation summary, is attached as Appendix E. The analytical data review summary, along with the evaluation of trip blanks, field duplicates and laboratory QA/QC procedures presented above, indicate the data generated during this passive soil gas survey is expected to be accurate and valid.

5.0 DISCUSSION AND RECOMMENDATIONS

The screening level passive soil gas survey described above has identified elevated concentrations of VOCs in shallow soil gas at the former Technichem facility. Soil gas data has been generated on a mass basis, and converted to approximate soil gas concentrations using conversion calculations prepared by Gore and presented in their report.

The highest concentrations of VOCs, particularly PCE, were detected beneath the former process areas, including SWMU1 (former Process Room), AOC1 (former Recycled PCE Storage Area), SWMU5 (former Distillation Unit) and SWMU2 (former Tank Area). Other interior areas with lower detections of VOCs include SWMU4 (former Waste Storage Area) and AOC2 (Laboratory). There appears to be an area of lower VOC concentrations between the interior process areas and the exterior sample locations with elevated VOC concentrations. It is not known whether the exterior detections of VOCs in soil gas represent upgradient diffusion and/or migration of VOCs from the former process areas, or whether the exterior detections are due to a separate off-site source. The lateral extent of the VOC-affected soil gas is not known, particularly to the south and west of the former interior process areas and to the east beneath Halleck Street, and vertical profiling has not been performed.

The soil gas concentrations generated during the screening level survey can generally be compared to soil gas screening levels promulgated by regulatory agencies, including the California Human Health Screening Levels (CHHSLs) developed by DTSC for industrial/commercial sites. Applicable CHHSLs are presented on Table 2 for comparison purposes. The maximum detected concentrations of several VOCs, including PCE, TCE and vinyl chloride, exceed the applicable CHHSLs. However, the screening level passive survey was not performed following standard (active) soil gas sampling procedures, and therefore the survey results may not be directly comparable to CHHSLs.

Additionally, the converted ambient air concentrations were compared to CHHSLs for indoor air in commercial and industrial settings. Because the 10-minute converted concentrations were deemed inaccurate due to probable cross-contamination, only the results of the 13-day ambient air samples were compared to CHHSLs. The converted 13-day ambient air concentrations of 5.32 and 3.73 $\mu\text{g}/\text{m}^3$ (indoor locations AA-1 and AA-2, respectively) exceed the CHHSL of 0.69 $\mu\text{g}/\text{m}^3$. However, these converted concentrations are not from conventional indoor air samples, and are therefore not directly comparable to CHHSLs for indoor air.

The results indicate that significant releases of VOCs to the subsurface have occurred. There is a need to obtain confirmatory active soil gas and indoor air concentrations as well as soil and groundwater data to better define the extent of contamination, in order to initiate the process of evaluating remedial alternatives to complete the closure process.

It is recommended that the facility closure investigation be continued in a step-wise fashion. For the next phase of investigation, several types of sampling are recommended, as follows:

- Conduct a limited standard soil gas survey within the area of the passive soil gas investigation showing the highest concentrations of VOCs. This will provide a confirmation of the magnitude of the concentrations of VOCs in soil gas, and provide soil gas data that is more appropriate for comparison with regulatory screening levels, for use in future risk assessment calculations and/or for remediation planning;
- Collect soil and grab groundwater samples from beneath the slab in the interior of the building, to provide an indication of the magnitude of the VOC contamination in soil matrix and groundwater at the Facility, and evaluate subsurface data in terms of commonly recognized units of measure for groundwater and soil matrix samples;
- Collect grab groundwater samples from exterior locations along Halleck Street, to determine the concentrations of VOCs in groundwater along the upgradient property boundary, if any, that may be migrating onto the site from an upgradient source and/or emanating from an onsite source; and
- Evaluate indoor air quality using conventional air sampling techniques over an 8- or 24-hour period.

A detailed workplan for the next phase of characterization will be prepared for DTSC review and approval.

Table 1
Passive Soil Gas Survey Results - Mass Basis
Technichem Incorporated
4245 Halleck Street
Emeryville, California

Sample Date	Location ID	Module ID	Volatile Organic Compounds [all results expressed in micrograms (µg)]															
			Chlorobenzene	1,2-DCE	trans-1,2-DCE	cis-1,2-DCE	1,1-DCA	1,1,1-TCA	1,2-DCA	TCE	PCE	1,4-DCB	VC	1,1-DCE	Chloroform	1,1,1,2-PCA	1,1,2,2-PCA	1,2-DCB
05/02/06	SG-1	487564	<0.02	0.74	<0.03	0.74	<0.02	<0.02	<0.02	0.35	0.95	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/01/06	SG-2	487575	<0.02	0.65	<0.03	0.65	<0.02	<0.02	<0.02	0.13	0.26	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-3	487581	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.13	84.17	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-4	487566	<0.02	0.26	<0.03	0.26	<0.02	<0.02	<0.02	0.18	35.68	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-5	487567	<0.02	1.05	0.04	1.02	<0.02	<0.02	<0.02	0.38	8.52	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	bdl
05/02/06	SG-6	487568	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.42	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-7	487569	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	1.21	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/01/06	SG-8	487570	<0.02	0.18	<0.03	0.18	<0.02	<0.02	<0.02	20.83	93.17	<0.02	12.35	0.22	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-9	487571	<0.02	0.57	0.20	0.36	<0.02	<0.02	<0.02	0.23	2.81	bdl	<0.77	<0.03	<0.02	<0.02	<0.02	bdl
05/03/06	SG-9D	487572	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.11	20.96	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-10	487573	<0.02	0.53	0.08	0.44	<0.02	<0.02	<0.02	0.14	0.58	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-11	487574	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.08	12.78	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-12	487576	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-13	487577	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.15	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-14	487578	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.03	0.13	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-15	487579	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.37	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	bdl
05/01/06	SG-15D	487648	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.03	2.44	<0.02	<0.77	<0.03	bdl	<0.02	<0.02	bdl
05/02/06	SG-16	487580	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.33	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-17	487582	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.33	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-18	487583	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.07	2.60	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-18D	487647	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	0.55	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-19	487584	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	1.17	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-20	487585	<0.02	0.13	<0.03	0.13	<0.02	<0.02	<0.02	0.13	10.15	<0.02	bdl	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-21	487586	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	bdl	1.16	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-22	487587	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.03	10.09	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-23	487588	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	bdl	7.21	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-24	487589	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	bdl	0.52	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-25	487590	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	1.42	<0.02	<0.77	<0.03	<0.02	<0.02	0.38	<0.02
05/02/06	SG-26	487591	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.04	2.53	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/01/06	SG-27	487592	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.41	52.37	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-28	487593	<0.02	0.04	0.04	bdl	<0.02	<0.02	<0.02	2.71	651.24	<0.02	<0.77	<0.03	0.20	0.05	<0.02	bdl
05/01/06	SG-29	487594	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	3.22	670.06	<0.02	<0.77	<0.03	0.05	0.12	<0.02	<0.02
05/02/06	SG-30	487595	<0.02	1.21	0.06	1.15	<0.02	<0.02	<0.02	7.46	653.26	<0.02	<0.77	<0.03	0.11	0.14	<0.02	<0.02
05/01/06	SG-31	487596	bdl	35.10	0.79	34.31	<0.02	<0.02	<0.02	43.75	577.66	<0.02	bdl	0.24	<0.02	<0.02	<0.02	bdl
05/02/06	SG-32	487597	<0.02	0.07	<0.03	0.07	<0.02	<0.02	<0.02	0.59	69.29	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-33	487598	<0.02	0.61	0.04	0.57	<0.02	<0.02	<0.02	4.30	675.59	<0.02	<0.77	<0.03	0.09	0.20	<0.02	<0.02
05/02/06	SG-33D	487617	<0.02	0.84	0.08	0.76	<0.02	<0.02	<0.02	5.99	692.22	<0.02	<0.77	bdl	0.09	0.14	<0.02	<0.02
05/02/06	SG-34	487618	0.29	6.16	0.21	5.95	<0.02	<0.02	<0.02	10.65	1061.18	bdl	bdl	0.17	0.07	0.29	<0.02	0.03
05/02/06	SG-35	487619	<0.02	0.07	0.03	0.04	<0.02	<0.02	<0.02	5.25	664.98	<0.02	<0.77	<0.03	0.04	0.17	<0.02	<0.02
05/03/06	SG-36	487620	<0.02	nd	<0.03	<0.03	<0.02	<0.02	bdl	1.58	357.59	<0.02	<0.77	<0.03	<0.02	0.04	<0.02	<0.02
05/02/06	SG-37	487621	<0.02	nd	<0.03	<0.03	0.08	0.03	bdl	3.71	3.71	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-38	487622	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.33	65.24	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-39	487635	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.54	223.60	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/03/06	SG-40	487636	<0.02	0.21	<0.03	0.21	<0.02	<0.02	<0.02	3.97	696.74	<0.02	<0.77	<0.03	0.02	0.13	<0.02	<0.02
05/02/06	SG-41	487637	0.07	11.75	0.71	11.04	<0.02	<0.02	<0.02	23.77	780.00	<0.02	<0.77	0.06	0.15	0.18	<0.02	0.06
05/03/06	SG-42	487638	<0.02	0.33	0.06	0.27	<0.02	<0.02	<0.02	8.97	719.66	<0.02	<0.77	<0.03	0.10	0.13	<0.02	<0.02
05/01/06	SG-43	487639	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	0.27	126.68	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-44	487640	<0.02	0.36	0.03	0.33	<0.02	<0.02	<0.02	0.86	123.28	<0.02	<0.77	bdl	<0.02	<0.02	<0.02	<0.02
05/02/06	SG-45	487641	<0.02	0.13	<0.03	0.13	<0.02	<0.02	<0.02	14.54	820.13	<0.02	<0.77	<0.03	0.04	<0.02	<0.02	<0.02
05/02/06	SG-46	487642	<0.02	0.00	<0.03	bdl	<0.02	<0.02	<0.02	6.78	802.76	<0.02	<0.77	<0.03	0.14	0.13	<0.02	<0.02
05/02/06	SG-47	487643	0.11	0.18	0.07	0.11	<0.02	<0.02	<0.02	16.39	958.39	bdl	<0.77	0.06	0.07	0.34	<0.02	0.07
05/03/06	SG-47D	487644	0.13	0.28	0.14	0.15	<0.02	<0.02	<0.02	20.64	967.10	<0.02	<0.77	0.05	0.12	0.38	<0.02	0.05
05/02/06	SG-48	487645	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	4.46	574.19	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02
05/01/06	SG-49	487646	<0.02	nd	<0.03	<0.03	<0.02	<0.02	<0.02	<0.02	1.44	<0.02	<0.77	<0.03	<0.02	<0.02	<0.02	<0.02

NOTES:

µg: micrograms
 bdl: compound was detected below detection limit
 nd: not detected
 <31.53: not detected above indicated reporting limit
 1,2-DCE: cis- & trans-1,2-dichloroethylene
 trans-1,2-DCE: trans-1,2-dichloroethylene
 cis-1,2-DCE: cis-1,2-dichloroethylene

VC: vinyl chloride
 1,1-DCA: 1,1-dichloroethane
 1,1,1-TCA: 1,1,1-trichloroethane
 1,2-DCA: 1,2-dichloroethane
 Carb Tet: carbon tetrachloride
 TCE: trichloroethylene
 PCE: tetrachloroethylene

1,4-DCB: 1,4-dichlorobenzene
 1,1-DCE: 1,1-dichloroethylene
 1,1,2-TCA: 1,1,2-trichloroethane
 1,1,1,2-PCA: 1,1,1,2-tetrachloroethane
 1,1,2,2-PCA: 1,1,2,2-tetrachloroethane
 1,3-DCB: 1,3-dichlorobenzene
 1,2-DCB: 1,2-dichlorobenzene

Table 2
 Passive Soil Gas Survey Results - Concentrations
 Technichem Incorporated
 4245 Halleck Street
 Emeryville, California

Sample Date	Location ID	Module ID	Volatile Organic Compounds (all results expressed in µg/m ³)																
			Chlorobenzene	1,2-DCE	trans-1,2-DCE	cis-1,2-DCE	1,1-DCA	1,1,1-TCA	1,2-DCA	TCE	PCE	1,4-DCB	VC	1,1-DCE	Chloroform	1,1,1,2-PCA	1,1,2,2-PCA	1,2-DCB	
05/02/06	SG-1	487564	<31.53	463.45	<18.58	463.45	<13.31	<14.90	<10.12	171.12	837.29	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/01/06	SG-2	487575	<31.53	404.00	<18.58	404.00	<13.31	<14.90	<10.12	66.27	225.17	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-3	487581	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	69.01	80036.04	<29.80	<166.12	<62.80	<10.53	bdl	<9.44	<38.05	
05/02/06	SG-4	487566	<31.53	163.23	<18.58	163.23	<13.31	<14.90	<10.12	88.22	31561.11	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-5	487567	<31.53	661.31	23.32	637.99	<13.31	<14.90	<10.12	188.31	7540.57	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	bdl	
05/02/06	SG-6	487568	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	370.90	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-7	487569	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	1068.58	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/01/06	SG-8	487570	<31.53	113.36	<18.58	113.36	<13.31	<14.90	<10.12	10364.77	82643.79	<29.80	2555.94	488.16	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-9	487571	<31.53	359.71	132.45	227.25	<13.31	<14.90	<10.12	113.42	2488.20	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	bdl	
05/03/06	SG-9D	487572	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	55.47	18590.96	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-10	487573	<31.53	333.32	54.74	278.58	<13.31	<14.90	<10.12	68.51	510.73	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-11	487574	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	38.78	11345.79	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-12	487576	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	<23.22	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-13	487577	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	131.30	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-14	487578	<31.53	nd	<18.58	<19.62	<13.31	<14.90	10.65	<9.96	115.20	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-15	487579	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	341.64	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	bdl	
05/01/06	SG-15D	487648	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	15.04	2298.77	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	bdl	
05/02/06	SG-16	487580	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	304.31	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-17	487582	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	305.79	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-18	487583	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	38.33	2415.21	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-18D	487647	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	514.76	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-19	487584	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	1089.23	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-20	487585	<31.53	84.09	<18.58	84.09	<13.31	<14.90	<10.12	65.16	9421.70	<29.80	bdl	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-21	487586	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	bdl	1075.39	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-22	487587	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	17.65	9363.84	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-23	487588	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	bdl	6696.31	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-24	487589	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	bdl	479.64	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-25	487590	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	<9.96	1321.24	<29.80	<166.12	<62.80	<10.53	<19.05	174.60	<38.05	
05/02/06	SG-26	487591	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	20.27	2349.12	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/01/06	SG-27	487592	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	213.52	48668.68	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-28	487593	<31.53	26.89	26.89	bdl	<13.31	<14.90	<10.12	1413.66	605639.56	<29.80	<166.12	<62.80	<10.53	39.61	<9.44	bdl	
05/01/06	SG-29	487594	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	1677.35	623204.80	<29.80	<166.12	<62.80	<10.53	28.87	91.90	<9.44	<38.05
05/02/06	SG-30	487595	<31.53	796.23	38.20	758.02	<13.31	<14.90	<10.12	3889.40	607641.39	<29.80	<166.12	<62.80	<10.53	59.81	107.04	<9.44	<38.05
05/01/06	SG-31	487596	bdl	23136.33	539.55	22596.79	<13.31	<14.90	<10.12	22829.48	537408.61	<29.80	bdl	576.78	<10.53	<19.05	<9.44	bdl	
05/02/06	SG-32	487597	<31.53	46.51	<18.58	46.51	<13.31	<14.90	<10.12	309.53	64468.73	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-33	487598	<31.53	400.17	25.95	374.21	<13.31	<14.90	<10.12	2243.12	628644.48	<29.80	<166.12	<62.80	<10.53	49.49	157.81	<9.44	<38.05
05/02/06	SG-33D	487617	<31.53	557.15	53.52	503.63	<13.31	<14.90	<10.12	3127.21	643816.20	<29.80	<166.12	bdl	49.92	108.85	<9.44	<38.05	
05/02/06	SG-34	487618	538.37	4065.75	143.68	3922.07	<13.31	<14.90	<10.12	5562.25	988015.24	<29.80	bdl	409.45	37.79	232.53	<9.44	47.97	
05/02/06	SG-35	487619	<31.53	48.45	20.31	28.15	<13.31	<14.90	<10.12	2741.64	619062.51	<29.80	<166.12	<62.80	<10.53	23.08	138.53	<9.44	<38.05
05/03/06	SG-36	487620	<31.53	nd	<18.58	<19.62	<13.31	bdl	<10.12	823.50	332878.27	<29.80	<166.12	<62.80	<10.53	33.30	<9.44	<38.05	
05/02/06	SG-37	487621	<31.53	nd	<18.58	<19.62	51.48	21.41	<10.12	bdl	3451.51	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-38	487622	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	174.10	60762.24	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-39	487635	<31.53	nd	<18.58	<19.62	<13.31	16.79	<10.12	282.31	208255.77	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/03/06	SG-40	487636	<31.53	136.43	<18.58	136.43	<13.31	<14.90	<10.12	2076.19	649217.46	<29.80	<166.12	<62.80	<10.53	12.81	103.18	<9.44	<38.05
05/02/06	SG-41	487637	119.37	7769.01	483.97	7285.05	<13.31	<14.90	<10.12	12431.06	727182.50	<29.80	<166.12	135.79	86.53	142.07	<9.44	101.27	
05/03/06	SG-42	487638	<31.53	220.27	41.43	178.83	<13.31	<14.90	<10.12	4689.78	671000.35	<29.80	<166.12	<62.80	<10.53	54.35	103.40	<9.44	<38.05
05/01/06	SG-43	487639	<31.53	nd	<18.58	<19.62	<13.31	23.29	<10.12	140.19	118099.62	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-44	487640	<31.53	235.95	19.32	216.63	<13.31	<14.90	<10.12	450.34	114961.99	<29.80	<166.12	bdl	<10.53	<19.05	<9.44	<38.05	
05/02/06	SG-45	487641	<31.53	88.62	<18.58	88.62	<13.31	<14.90	<10.12	7607.68	764910.63	<29.80	<166.12	<62.80	<10.53	19.71	<19.05	<9.44	<38.05
05/02/06	SG-46	487642	<31.53	0.00	<18.58	bdl	<13.31	<14.90	<10.12	3547.46	748797.57	<29.80	<166.12	<62.80	<10.53	75.60	105.20	<9.44	<38.05
05/02/06	SG-47	487643	205.40	118.16	44.46	73.71	<13.31	<14.90	<10.12	8575.35	894007.36	<29.80	<166.12	bdl	148.29	40.77	<9.44	120.32	
05/03/06	SG-47D	487644	244.48	188.80	92.99	95.81	<13.31	<14.90	<10.12	10802.59	902560.52	<29.80	<166.12	119.45	66.90	301.44	<9.44	76.16	
05/02/06	SG-48	487645	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.12	2334.92	536100.39	<29.80	<166.12	<62.80	<10.53	<19.05	<9.44	<38.05	
05/01/06	SG-49	487646	<31.53	nd	<18.58	<19.62	<13.31	<14.90	<10.1										

Table 3
Trip Blank Results
Technichem Incorporated
4245 Halleck Street
Emeryville, California

Date	Module ID	PCE (μg)
05/01/06	487649	bdl
05/03/06	487650	0.17
05/02/06	487652	<0.03
05/02/06	487654	0.05
05/03/06	487659	0.04

NOTES:

μg : micrograms

bdl: below detection limit

<0.03: non-detect

PCE: tetrachloroethene

No other compounds detected.

Table 4
Results of Duplicate Samples - Mass Basis
Technichem Incorporated
4245 Halleck Street
Emeryville, California

Date	Location ID	Module ID	Analytes (all results expressed in µg)									
			Chlorobenzene	1,2-DCE	trans-1,2-DCE	cis-1,2-DCE	TCE	PCE	1,1-DCE	Chloroform	1,1,1,2-PCA	1,2-DCB
05/03/06	SG-9	487571	<0.02	0.57	0.20	0.36	0.23	2.81	<0.03	<0.02	<0.02	bdl
05/03/06	SG-9D	487572	<0.02	nd	<0.03	<0.03	0.11	20.96	<0.03	<0.02	<0.02	<0.02
05/02/06	SG-15	487579	<0.02	nd	<0.03	<0.03	<0.02	0.37	<0.03	<0.02	<0.02	bdl
05/01/06	SG-15D	487648	<0.02	nd	<0.03	<0.03	0.03	2.44	<0.03	bdl	<0.02	bdl
05/02/06	SG-18	487583	<0.02	nd	<0.03	<0.03	0.07	2.60	<0.03	<0.02	<0.02	<0.02
05/02/06	SG-18D	487647	<0.02	nd	<0.03	<0.03	<0.02	0.55	<0.03	<0.02	<0.02	<0.02
05/03/06	SG-33	487598	<0.02	0.61	0.04	0.57	4.30	675.59	<0.03	0.09	0.20	<0.02
05/02/06	SG-33D	487617	<0.02	0.84	0.08	0.76	5.99	692.22	bdl	0.09	0.14	<0.02
05/02/06	SG-47	487643	0.11	0.18	0.07	0.11	16.39	958.39	0.06	0.07	0.34	0.07
05/03/06	SG-47D	487644	0.13	0.28	0.14	0.15	20.64	967.10	0.05	0.12	0.38	0.05

NOTES:

µg: micrograms

bdl: below detection limit

<31.53: non-detect

1,2-DCE: cis- & trans-1,2-dichloroethylene

trans-1,2-DCE: trans-1,2-dichloroethylene

TCE: trichloroethylene

PCE: tetrachloroethylene

cis-1,2-DCE: cis-1,2-dichloroethylene

1,1-DCE: 1,1-dichloroethylene

1,1,1,2-PCA: 1,1,1,2-tetrachloroethane

1,2-DCB: 1,2-dichlorobenzene

MDL: method detection limit

**Table 5
Ambient Air Sample Results
Technichem Incorporated
4245 Halleck Street
Emeryville, California**

Date	Module ID	Location ID	Location	Exposure	PCE (μg)	PCE ($\mu\text{g}/\text{m}^3$)
05/03/06	487599	AA-1	Interior	10 minutes	0.08	988.16
05/02/06	487614	AA-2	Interior	10 minutes	<0.03	<302.97
05/02/06	487616	AA-3	Exterior	10 minutes	0.03	416.26
05/03/06	487600	AA-1	Interior	13 days	0.82	5.32
05/01/06	487615	AA-2	Interior	13 days	0.58	3.72
CHHSL					None	0.69

NOTES: μg : micrograms $\mu\text{g}/\text{m}^3$: micrograms per cubic meter

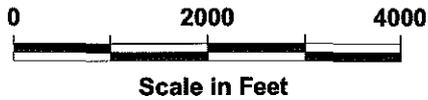
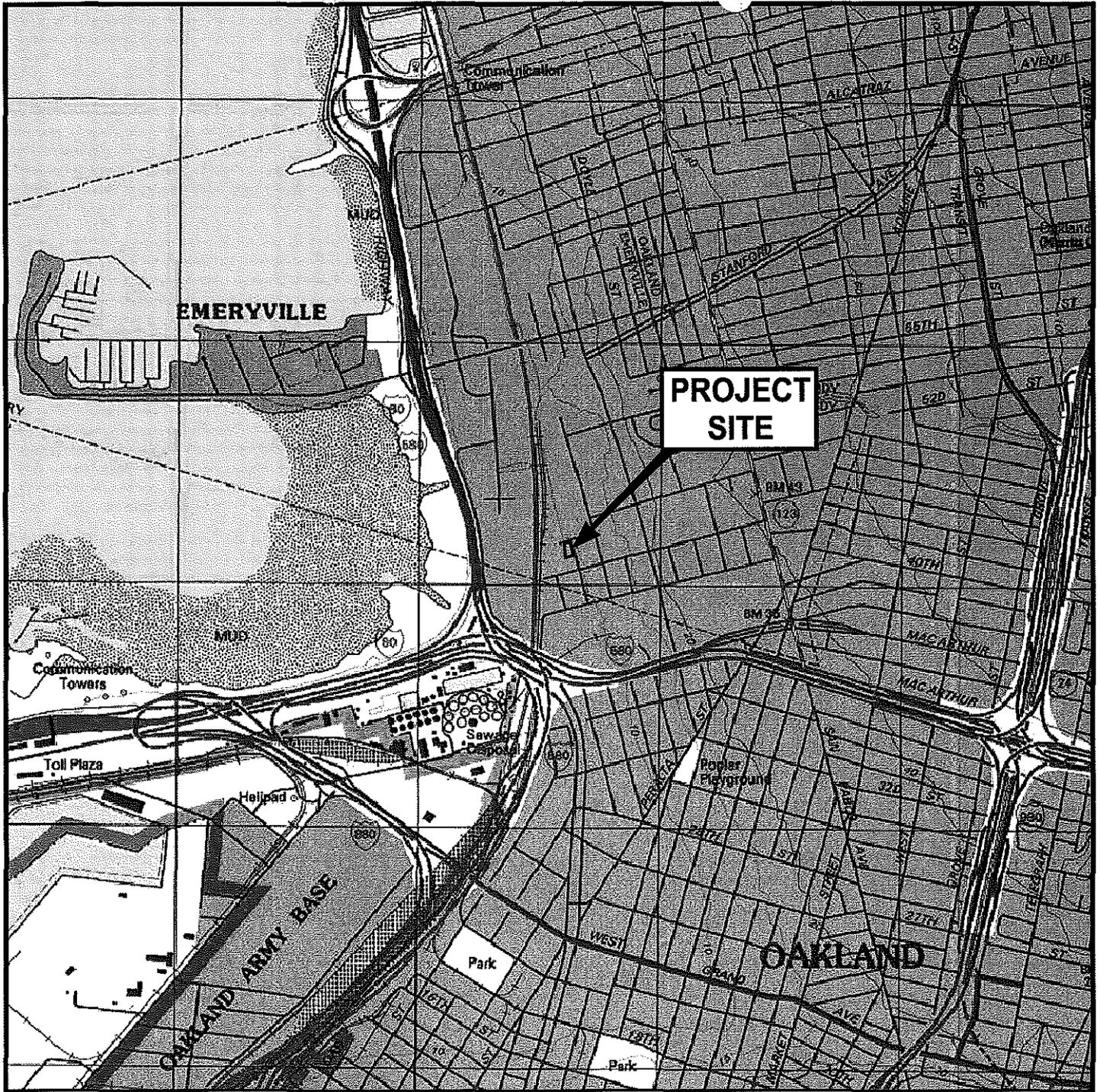
<0.03: not detected above the indicated laboratory reporting limit

PCE: tetrachloroethylene

CHHSL: California Human Health Screening Levels for Indoor Air Human Health Screening Levels:
Commercial/Industrial Land Use Only; January 2005

PLATES

PLATES

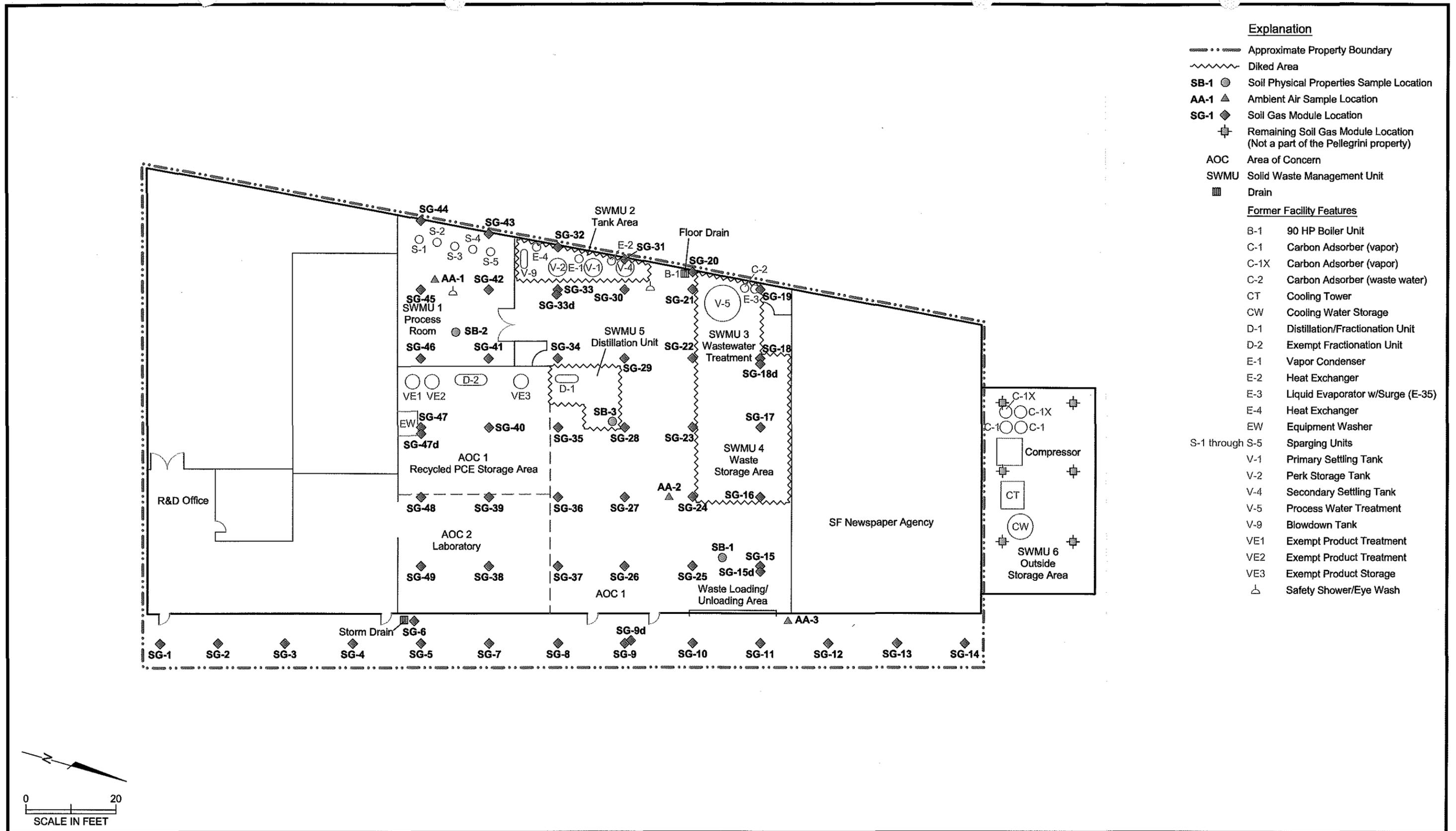


U.S.G.S. Topo Map - Oakland West, California, 7.5-minute quadrangle. Map version 1997.



Site Location Map
Former Technichem Facility
4245 Halleck Street
Emeryville, California

PLATE
1



Explanation

- Approximate Property Boundary
- ~~~~~ Diked Area
- SB-1 ● Soil Physical Properties Sample Location
- AA-1 ▲ Ambient Air Sample Location
- SG-1 ◆ Soil Gas Module Location
- ⊕ Remaining Soil Gas Module Location (Not a part of the Pellegrini property)
- AOC Area of Concern
- SWMU Solid Waste Management Unit
- ▣ Drain
- Former Facility Features**
- B-1 90 HP Boiler Unit
- C-1 Carbon Adsorber (vapor)
- C-1X Carbon Adsorber (vapor)
- C-2 Carbon Adsorber (waste water)
- CT Cooling Tower
- CW Cooling Water Storage
- D-1 Distillation/Fractionation Unit
- D-2 Exempt Fractionation Unit
- E-1 Vapor Condenser
- E-2 Heat Exchanger
- E-3 Liquid Evaporator w/Surge (E-35)
- E-4 Heat Exchanger
- EW Equipment Washer
- S-1 through S-5 Sparging Units
- V-1 Primary Settling Tank
- V-2 Perk Storage Tank
- V-4 Secondary Settling Tank
- V-5 Process Water Treatment
- V-9 Blowdown Tank
- VE1 Exempt Product Treatment
- VE2 Exempt Product Treatment
- VE3 Exempt Product Storage
- ⚡ Safety Shower/Eye Wash

APPENDIX A

APPENDIX A

PROJECT CORRESPONDENCE

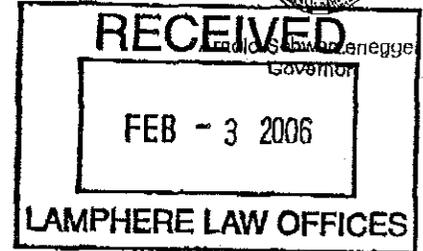


Department of Toxic Substances Control



Maureen F. Gorsen, Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA



January 30, 2006

Mr. Mark Ng
Technichem, Inc.
2349 Lincoln Avenue
Hayward, California 94545

Certified Mail 7001 0320 0000 9689 0249
Return Receipt Requested

FACILITY CLOSURE: TECHNICHEM INC., 4245 HALLECK STREET, EMERYVILLE, CA 94608, EPA I.D. CAD981375983.

Dear Mr. Ng:

This is in response to your letter of January 6, 2006, regarding the facility closure of Technichem, Inc. (Facility), 4245 Halleck Street, Emeryville, CA 94608. The Department of Toxic Substances Control (DTSC) accepts Technichem's agreement to allow the Mario and Virginia Pellegrini (Property owner) to immediately assume closure and corrective action obligations associated with the closure of the Facility.

In addition, in your letter of January 6, you discussed the correspondences and discussions between the Department and the Facility during the period of December 2003 to present time, following the entry of the Stipulated Final Judgment, signed on December 9, 2003.

In order to clarify some of the statements you made in your letter, the DTSC has reviewed your files and discussed them with previous Project Managers within the DTSC. As a result, the following are major events, which took place from 2003 to now:

On December 9, 2003, a Stipulated Final Judgment was signed between the DTSC and the Facility. As required by the Stipulated Final Judgment, on December 27, 2003, the Facility withdrew the pending Standardized Permit Application submitted to the DTSC on March 1996. The treatment and storage authorization associated with the 1987 permit terminated on December 31, 2003. The Stipulated Final Judgment, effective on December 17, 2003, required the submittal of a Closure Investigation Work Plan (Work Plan) by January 31, 2004. The Stipulated Final Judgment required the Work Plan to

Mr. Mark Ng

January 30, 2006

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detail an investigation of all areas on-site and off-site that were potentially impacted by the Facility's operations.

On February 2, 2004, the Facility submitted a Work Plan to the DTSC for review and approval. The DTSC found the Work Plan deficient. On April 8, 2004, the DTSC sent out a Notice of Deficiency (NOD) for the Work Plan and advised the Facility to hire an independent consultant. The Facility hired Clayton group services (Clayton) to prepare a revised Work Plan. On April 21, 2005, over a full year later, Clayton submitted a revised Work Plan to the DTSC without the certification of the Facility as required by Title 22, CCR, and Section 66270.11. The DTSC still found the Work Plan to be deficient and sent out another NOD, on May 16, 2005. On May 27, 2005, Clayton submitted a *Facility Closure passive Soil Gas Investigation Workplan, Technichem Incorporated, 4245 Halleck Street, Emeryville (Passive Soil Gas Work Plan)* which was approved by the DTSC in a letter dated July 12, 2005.

The Stipulated Judgment required the Facility to implement the approved Work Plan within 14 days of the DTSC's approval, and within 30 days of obtaining the results from the Work Plan, the Facility was required to submit an amended closure plan to the DTSC. The amended closure plan was required to address closure of the permitted facility and all Solid Waste Management Units identified by the Work Plan results as requiring further remediation. In addition, the Facility was required to submit proof of adequate financial assurance for closure within 30 days of the DTSC approval of the Facility's amended closure plan.

To date, the Facility has not implemented the approved Work Plan, not submitted an amended closure plan nor submitted adequate financial assurance for closure within the timeframes required by the Stipulated Judgment. Instead, the Facility has raised additional questions after the Work Plan was approved by the DTSC. Attached is a Memorandum dated January 20, 2006 from Mr. Buck King of the DTSC to Mr. Tony Hashemian answering questions and concerns you presented to the DTSC in a letter dated November 1, 2005.

Finally, effective the date of this letter, the DTSC has agreed to allow the property owner to accept complete control and obligations of the closure and corrective action process associated with closure of the Facility.

Mr. Mark Ng
January 30, 2006
Page 4

cc: Buck King, P.G., C. Hg.
Engineering Geologist
Geological Support Unit - Berkeley
Hazardous Waste Management Program
Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, California 94710

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Department of Toxic Substances Control



Alan C. Lloyd, Ph. D.
Agency Secretary
Cal/EPA

700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Tony Hashemian
Hazardous Substances Scientist
Regulatory and Program Development Branch
Hazardous Waste Management Program, Headquarters Office

FROM: Buck King, PG, CHG. ---original signed by---
Engineering Geologist
Geology, Permitting and Corrective Action Branch
Geological Services Unit, Berkeley Regional Office

CONCUR: Brian Lewis, CEG, CHG ---BK signed for BL---
Senior Engineering Geologist
Geology, Permitting and Corrective Action Branch
Geological Services Unit, Berkeley Regional Office

DATE: January 20, 2006

SUBJECT: FACILITY CLOSURE INVESTIGATION WORKPLAN
TECHNICHEM, EMERYVILLE, ALAMEDA COUNTY
PROJECT NO. 22220/200314-48/43-HWMP

DOCUMENT REVIEWED

Letter Regarding Project Status Facility Closure Passive Soil Gas Workplan, (Investigation Status Letter). Letter prepared by Mark J. Ng and dated November 1, 2005.

INTRODUCTION

Per your request, the Geological Services Unit (GSU) has reviewed the Investigation Status Letter. This memorandum contains a discussion of the Investigation Status Letter. If you have any questions regarding this memorandum, please call Buck King at (510) 540-3955 or Brian Lewis at (916) 255-6532.

Discussion

The Investigation Status Letter indicated that during the process of soliciting proposals from environmental investigation contractors, Mr. Ng received questions from the contractors regarding the *Facility Closure Passive Soil Gas Investigation Workplan, Technichem Incorporated, 4245 Halleck Street, Emeryville (Passive Soil Gas Work Plan)* dated May 27, 2005 and approved by DTSC in a letter dated July 12, 2005. The Investigation Status Letter included three general questions and requested answers be provided in a question and answer format. The following includes the original questions and GSU responses.

Question 1. After performance of passive soil gas characterization methods, one will be provided with mass results (gm) rather than concentrations results (ppm). Can these mass results be used to correspond to existing soil and groundwater test results? For example, if passive soil gas characterization samples taken outside of the building on the east side (where groundwater and soil samples taken and analyzed) are similar to passive samples inside the building, will existing data (soil and groundwater) be allowed to create a worst case scenario in developing a health risk assessment? Alternatively, can the passive soil gas results be correlated to provide concentration data for the preparation of an acceptable health risk assessment?

Answer to Question 1. The passive soil gas investigation is an investigation approach intended to identify areas of volatile organic compounds in soils. The passive soil gas survey is intended to facilitate screening the subsurface areas beneath the facility for potential presence of VOCs in soil. The passive soil gas results can be used to qualitatively identify the distribution of VOCs in the subsurface, assist in the development (or validation of) of a site conceptual model describing the occurrence, transport, and fate of contaminants present, and facilitate the design of any additional investigation activities that may be required to facilitate site closure, such as soil sampling, soil gas sampling, or groundwater sampling. The passive soil gas sampling results are not acceptable to DTSC for human health risk assessment in the event that VOC are detected at the facility. The Passive Soil Gas Work Plan clearly indicates that it is the first phase of a potentially multiple phase investigation.

Question 2. If published action levels for groundwater and soil (US EPA/Regional Water Boards) are not directly acceptable to DTSC and the goal is to produce a health risk assessment that is acceptable, why aren't the specific guidelines for production of an acceptable health risk assessment (i.e. test methods /procedures , methods of data correlation) made as a condition of the workplan? If the test methods and data obtained from the testing outlined in the workplan are not specifically acceptable for the production of a health risk assessment, why are these tests being performed? Past facility sampling provides insight into the probable nature of the site. This is not a location where the site characteristics are completely unknown or with areas of concern (AOC) which would require this proposed "information screen". Future testing should confirm the past sampling results and provide data that will allow the project to advance to the next step of facility closure.

Tony Hashemian
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January 20, 2006

Answer to Question 2. As described above, passive soil gas sampling is intended to screen the facility for subsurface presence of VOCs. The GSU does not agree that sufficient subsurface information is available to characterize the subsurface or evaluate human health risk. The previous sampling conducted at the facility was not comprehensive in scope, was not conducted using a DTSC approved RCRA Facility Closure Work Plan, and was not conducted under the oversight of DTSC. For these reasons, the data is not acceptable for the purposes of RCRA Facility Closure.

Question 3. The sampling locations are indicted on a uniform grid-type system within the facility. However, this does not focus on areas identified in the workplan as "waste management units" or "areas of concern", and previously identified in the DTSC facility assessment of 1993. Can the sampling locations be adjusted to focus on these items? This will maximize the value of each sample.

Answer to Question 3. The sampling locations identified in the work plan evaluate subsurface conditions in the vicinity of previously identified as waste management units, areas of concern identified in 1993, and areas of concern identified subsequently. The Passive Soil Gas Work Plan and the passive soil gas sampling locations it described was developed with input from GSU and is expected to be implemented. The GSU does agree with the proposal to revise the approved work plan at this time.

The Investigation Status Letter also included a discussion of comments, concerns and responses that described three issues paraphrased as follows, 1) can passive soil gas data be used to correlate previously collected data with passive soil gas data for the purposes of risk assessment, 2) can undocumented soil gas investigation results be used for purpose of directing site closure investigation activities, and 3) can site subsurface investigation activities be focused to an area located along the east side of the property where evidence of VOC in the subsurface have been previously identified.

As described above in the answers to questions 1, 2, and 3, and repeated here for clarity:

- Passive soil gas data can not be used for risk assessment.
- Site characterization conducted to date is insufficient for determining subsurface conditions.
- Alleged site characterization activities conducted without a DTSC approved facility closure investigation or DTSC oversight can not be used as the basis for determining facility closure status.

The Investigation Status Letter suggests that Technichem will unilaterally revise the approved Passive Soil Gas Work Plan and submit an alternate work plan. The GSU does not agree with this proposal and strongly recommends that the passive soil gas investigation be conducted. In the event that subsurface VOC contamination is identified, subsequent investigation work plans can be developed. The GSU considers this general request for information and revision of the approved work plan to be an

Tony Hashemian
Page 4 of 4
January 20, 2006

unnecessary delay and recommends that Technichem seek out a qualified environmental investigation contractor familiar with RCRA facility closure in the state of California to implement the approved work plan. The questions raised by the environmental investigation contractors suggest they do not have an adequate conceptual or technical understanding of the specific issues at this site, or of RCRA facility closures in general.

APPENDIX B

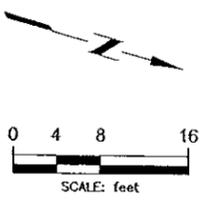
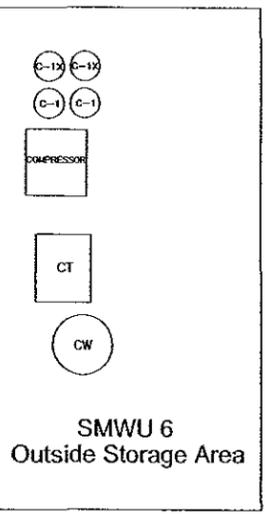
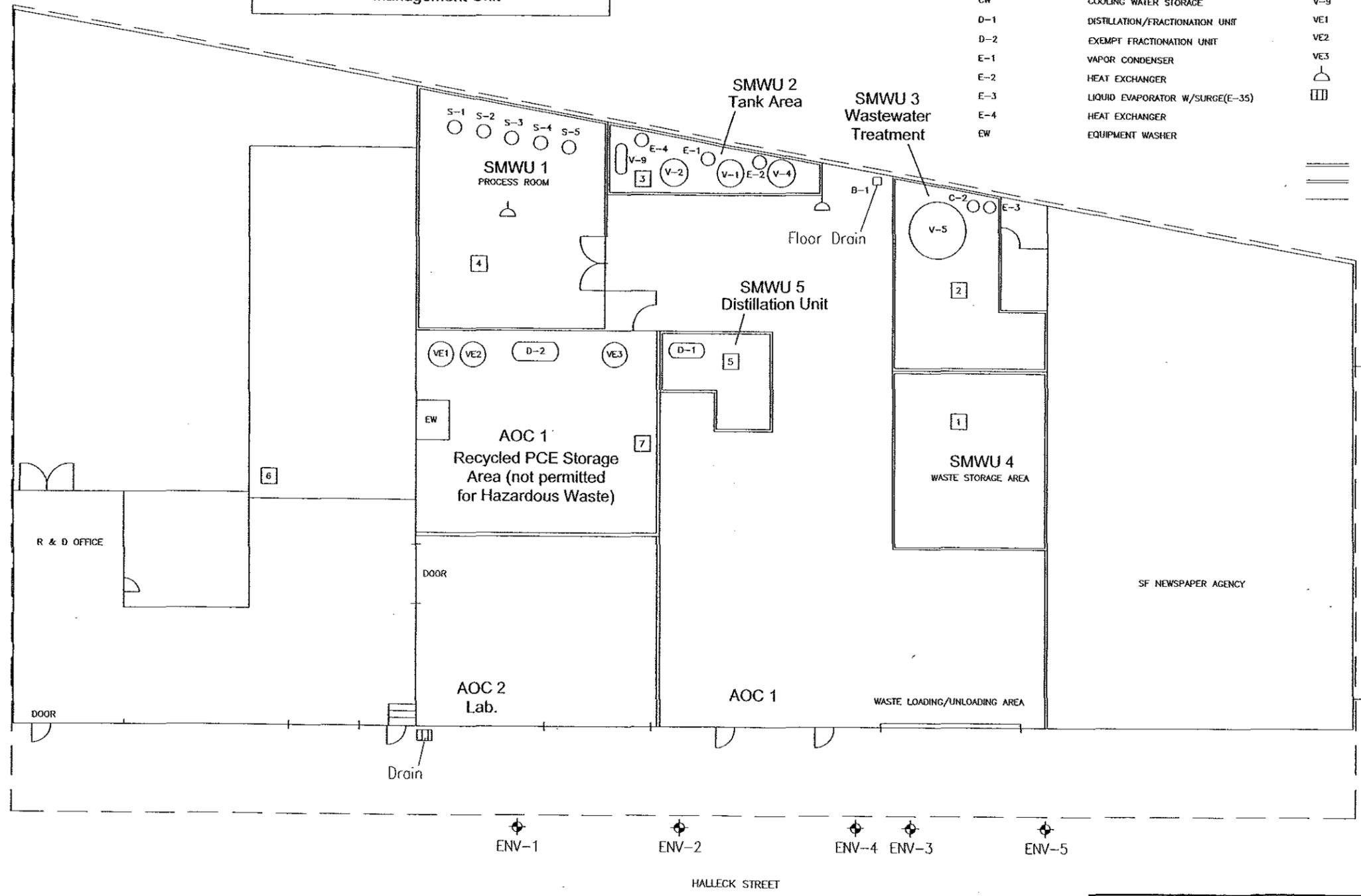
LOCATIONS OF PRIOR ENVIRONMENTAL INVESTIGATION

Legend:
 ENV-1 Boring by City of Emeryville, 2003
 AOC Area of Concern
 SWMU Solid Waste Management Unit

EQUIPMENT LIST

B-1	90 HP BOILER UNIT	S-1 THROUGH S-5	SPARGING UNITS
C-1	CARBON ADSORBER (VAPOR)	V-1	PRIMARY SETTLING TANK
C-1X	CARBON ADSORBER (VAPOR)	V-2	PERK STORAGE TANK
C-2	CARBON ADSORBER (WASTE WATER)	V-4	SECONDARY SETTLING TANK
CT	COOLING TOWER	V-5	PROCESS WATER TREATMENT
CW	COOLING WATER STORAGE	V-9	BLOWDOWN TANK
D-1	DISTILLATION/FRACTIONATION UNIT	VE1	EXEMPT PRODUCT TREATMENT
D-2	EXEMPT FRACTIONATION UNIT	VE2	EXEMPT PRODUCT TREATMENT
E-1	VAPOR CONDENSER	VE3	EXEMPT PRODUCT STORAGE
E-2	HEAT EXCHANGER		SAFETY SHOWER/EYE WASH
E-3	LIQUID EVAPORATOR W/SURGE(E-35)		STORM DRAIN
E-4	HEAT EXCHANGER		
EW	EQUIPMENT WASHER		

DIKED AREAS
 DIKED AREAS
 PORTABLE DIKE
 PROPERTY BOUNDARY



PREVIOUS INVESTIGATION TECHNICHEM 4245 HALLECK STREET EMERYVILLE, CALIFORNIA Clayton Project No. 70-05387.00	Figure	
	5	
	02/18/05 SITE0205.DWG	

APPENDIX C

GORE™ SURVEYS FINAL REPORT



W. L. GORE & ASSOCIATES, INC.

100 CHESAPEAKE BLVD., P.O. BOX 10 • ELKTON, MARYLAND 21922-0010
PHONE: 410/392-7600 • FAX: 410/506-4780

GORE™ EXPLORATION SURVEY
GORE™ ENVIRONMENTAL SURVEY

GORE™ Surveys Final Report

Technichem
Emeryville, CA

May 17, 2006

Prepared For:
PES Environmental, Inc.
1682 Novato Blvd, Suite 100
Novato, CA 94947

W.L. Gore & Associates, Inc.

Written/Submitted by:
Jim E. Whetzel, Project Manager

---original signed by---

Reviewed/Approved by:
Jay W. Hodny, Ph.D., Product Specialist

---original signed by---

Analytical Data Reviewed by:
Jim E. Whetzel, Chemist

---original signed by---

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GORE™ Surveys - Final Report

REPORT DATE: 5/17/06

AUTHOR: JW

SITE INFORMATION

Site Reference: Technichem, Emeryville, CA
Gore Production Order Number: 12683984

Gore Site Code: DGV

FIELD PROCEDURES

Modules shipped: 71
Installation Date(s): 4/13, 14/2006
Modules Installed: 59
Field work performed by: PES Environmental, Inc.

Retrieval date(s): 4/14/2006* & 4/27/2006 **Exposure Time:** <1* & 13, 14 [days]
Modules Retrieved: 59 **# Trip Blanks Returned:** 5
Modules Lost in Field: 0 **# Unused Modules Returned:** 7**
Modules Not Returned: 0

Date/Time Received by Gore: 4/28/06 @ 11:40AM **By:** DY

Chain of Custody Form attached: Yes

Chain of Custody discrepancies: None

Comments:

Modules 487649, -650, -652, -654, and -659 were identified as trip blanks.

* Modules 487599, -600, and -614 to -616 had a comment noted as "Ambient." These Modules do not appear to have been installed in the soil. Modules 487599, -614, and -616 were exposed for less than one day. Modules 487600 and -615 were exposed for approximately 13 days.

**Modules 487651, -653, -655 to -658 were returned unused. Module 478565 was noted as "Module Broken" and, although the module appeared used, there were no installation and retrieval dates noted.

GORE™ Surveys - Final Report

ANALYTICAL PROCEDURES

W.L. Gore & Associates' Screening Module Laboratory operates under the guidelines of its Quality Assurance Manual, Operating Procedures and Methods. The quality assurance program is consistent with Good Laboratory Practices (GLP) and ISO Guide 25, "General Requirements for the Competence of Calibration and Testing Laboratories", third edition, 1990.

Instrumentation consists of state of the art gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation simply involves cutting the tip off the bottom of the sample module and transferring one or more exposed sorbent containers (sorbents, each containing engineered adsorbents) to a thermal desorption tube for analysis. Sorbents remain clean and protected from dirt, soil, and ground water by the insertion/retrieval cord, and require no further sample preparation.

Analytical Method Quality Assurance:

The analytical method employed is a modified EPA method 8260/8270. Before each run sequence, two instrument blanks, a sorber containing 5 μ g BFB (Bromofluorobenzene), and a method blank are analyzed. The BFB mass spectra must meet the criteria set forth in the method before samples can be analyzed. A method blank and a sorber containing BFB is also analyzed after every 30 samples and/or trip blanks. Standards containing the selected target compounds at five calibration levels are analyzed at the beginning of each run. The criterion for each target compound is less than 25% RSD (relative standard deviation). If this criterion is not met for any target compound, the analyst has the option of generating second- or third-order standard curves, as appropriate. A second-source reference standard, at a level of 10 μ g per target compound, is analyzed after every ten samples and/or trip blanks, and at the end of the run sequence. Positive identification of target compounds is determined by 1) the presence of the target ion and at least two secondary ions; 2) retention time versus reference standard; and, 3) the analyst's judgment.

NOTE: All data have been archived. Any replicate sorbers not used in the initial analysis will be discarded fifteen (15) days from the date of analysis.

Laboratory analysis: thermal desorption, gas chromatography, mass selective detection

Instrument ID: # 5 **Chemist:** CP/JW

Compounds/mixtures requested: A10 + VC

Deviations from Standard Method: None

Comments: Soil vapor analytes and abbreviations are tabulated in the Data Table Key (page 6)

GORE™ Surveys - Final Report

DATA TABULATION

CONTOUR MAPS ENCLOSED: Three (3) B-sized color contour maps
LIST OF MAPS ENCLOSED:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- cis-1,2-Dichloroethene (cis-1,2-DCE)

NOTE: All data values presented in Appendix A represent masses of compound(s) desorbed from the GORE™ Modules received and analyzed by W.L. Gore & Associates, Inc., as identified in the Chain of Custody (Appendix A). The measurement traceability and instrument performance are reproducible and accurate for the measurement process documented. Semi-quantitation of the compound mass is based on a five-level standard calibration.

General Comments:

- This survey reports soil gas mass and estimated concentration levels present in the vapor phase. Vapors are subject to a variety of attenuation factors during migration away from the source concentration to the module. Thus, levels reported from the module will often be less than concentrations reported in soil and groundwater matrix data. In most instances, the soil gas levels reported on the modules compare favorably with concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels relative to other sampled locations on the site, matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.
- Soil gas signals reported by this method cannot be identified specifically to soil adsorbed, groundwater, and/or free-product contamination. The soil gas signal reported from each module can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).
- QA/QC trip blank modules were provided to document potential exposures that were not part of the soil gas signal of interest (i.e., impact during module shipment, installation and retrieval, and storage). The trip blanks are identically manufactured and packaged soil gas modules to those modules placed in the subsurface. However, the trip blanks remain unopened during all phases of the soil gas survey. Levels reported on the trip blanks may indicate potential impact to modules other than the contaminant source of interest.

GORE™ Surveys - Final Report

- Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. Typically, UPEs are indicative of complex fluid mixtures that are present in the subsurface. UPEs observed early in the chromatogram are considered to indicate the presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.
- Stacked total ion chromatograms (TICs) are included in Appendix A. The six-digit serial number of each module is incorporated into the TIC identification (e.g.: 123456S.D represents module #123456).

Project Specific Comments:

- The minimum (gray) contour level, for each mapped analyte or group of analytes, was set at the maximum blank level observed or the method detection limit, whichever was greater. When target compounds are summed together (i.e., cis- & trans-1,2-DCE), the contour minimum is arbitrarily set at 0.02 µg or the maximum blank level, whichever is greater. The maximum contour level was set at the maximum value observed.
- No target compounds were detected on the trip blanks and/or the method blanks. Thus, target analyte levels reported for the field-installed modules that exceed trip and method blank levels, and the analyte method detection limit, are more likely to have originated from on-site sources.
- Estimated concentration values were calculated, reported, and used for contouring. A summary of the calculation procedure used is included in the appendix.
- Separate data tables with estimated concentrations were provided for modules placed in the soil, modules exposed to ambient conditions for less than one day, and modules exposed to ambient conditions for 13 days. Detection limits, trip blank, and method blank estimated concentration values were based on the matrix and average exposure time for each deployment scenario.
- The mapped spatial patterns indicated partially defined soil gas plumes and “hot spots.” Similar patterns were observed for PCE, TCE, and cis-1,2-DCE maps. Presence and distribution of TCE and cis-1,2-DCE may indicate natural attenuation of the PCE.
- If the objective of the soil gas survey was to delineate the nature and extent of the contamination, then additional soil gas sampling is recommended in those areas where the color contours appear to extend into unsampled areas. Subsequent sampling events can be combined with the data from this event and mapped together to provide greater coverage.

GORE™ Surveys - Final Report

KEY TO DATA TABLE Technichem, Emeryville, CA

UNITS

µg	micrograms (per sorber)
µg/m ³	micrograms per cubic meter
MDL	method detection limit
bdl	below detection limit
nd	non-detect

ANALYTES

CIBENZ	chlorobenzene
ct12DCE	cis- & trans-1,2-dichloroethene
t12DCE	trans-1,2-dichloroethene
c12DCE	cis-1,2-dichloroethene
11DCA	1,1-dichloroethane
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
TCE	trichloroethene
PCE	tetrachloroethene
14DCB	1,4-dichlorobenzene
11DCE	1,1-dichloroethene
CHC1 ₃	chloroform
CC1 ₄	carbon tetrachloride
112TCA	1,1,2-trichloroethane
1112TetCA	1,1,1,2-tetrachloroethane
1122TetCA	1,1,2,2-tetrachloroethane
13DCB	1,3-dichlorobenzene
12DCB	1,2-dichlorobenzene
VC	vinyl chloride

BLANKS

TBn	unexposed trip blanks, travels with the exposed modules
method blank	QA/QC module, documents analytical conditions during analysis

APPENDIX A:

1. CHAIN OF CUSTODY
2. DATA TABLE
3. STACKED TOTAL ION CHROMATOGRAMS
4. COLOR CONTOUR MAPS

GORE-SORBER® Screening Survey Chain of Custody

For W.L. Gore & Associates use only
Production Order # 12683984



W. L. Gore & Associates, Inc., Survey Products Group

100 Chesapeake Boulevard • Elkton, Maryland 21921 • Tel: (410) 392-7600 • Fax (410) 506-4780

Instructions: Customer must complete ALL shaded cells

Customer Name: <u>PES ENVIRONMENTAL INC</u> Address: <u>1682 NOVATO BOULEVARD SUITE 100</u> <u>NOVATO CA 94947</u> <u>USA</u> Phone: <u>415 899 1600</u> AX: <u>415 899 1601</u>	Site Name: <u>TECHNICHEM EMERYVILLE CA PES</u> Site Address: <u>NOVATO CA</u> Project Manager: <u>ANN LOOMIS</u> Customer Project No.: <u>1017.001.01.02</u> Customer P.O. #: _____ Quote #: <u>222699</u>
---	--

Serial # of Modules Shipped						# of Modules for Installation	# of Trip Blanks
# 487564 - # 487600	#	-	#	Total Modules Shipped:	<u>71</u>	Pieces	<u>5</u>
# 487614 - # 487622	#	-	#	Total Modules Received:	<u>71</u>	Pieces	
# 487635 - # 487659	#	-	#	Total Modules Installed:	<u>59</u>	Pieces	
- #	#	-	#	Serial # of Trip Blanks (Client Decides)		#	
- #	#	-	#	# <u>487652</u>	#	#	
# - #	#	-	#	# <u>487654</u>	#	#	
- #	#	-	#	# <u>487649</u>	#	#	
- #	#	-	#	# <u>487659</u>	#	#	
# - #	#	-	#	# <u>487650</u>	#	#	
- #	#	-	#	#	#	#	

Prepared By: <u>Merrill A. Maguire</u>	#	#	#
Verified By: _____	#	#	#

Installation Method(s) (circle those that apply):	Slide Hammer <input type="checkbox"/> <u>Hammer Drive</u> <input checked="" type="checkbox"/> Auger <input type="checkbox"/>
Name (please print): <u>Peter Gorman & Chris Baldassari</u>	Other: _____
Company/Affiliation: <u>PES Environmental, Inc</u>	
Installation Start Date and Time: <u>4/13/06 13:30 AM</u> <input checked="" type="radio"/> PM	
Installation Complete Date and Time: <u>4/14/06 12:00 AM</u> <input checked="" type="radio"/> PM	

Retrieval Performed By:	Total Modules Retrieved: <u>59</u> Pieces
Name (please print): <u>Chris Baldassari</u>	Total Modules Lost in Field: <u>1</u> Pieces
Company/Affiliation: <u>PES Environmental</u>	Total Unused Modules Returned: <u>6</u> Pieces
Retrieval Start Date and Time: <u>4/27/06 11:08 AM</u> <input checked="" type="radio"/> PM	
Retrieval Complete Date and Time: <u>4/27/06 14:52 AM</u> <input checked="" type="radio"/> PM	

Relinquished By	Date	Time	Received By	Date	Time
<u>Merrill A. Maguire</u>	<u>4-6-06</u>	<u>10:00</u>	<u>AL</u>	<u>4/7/06</u>	<u>11:00</u>
Affiliation: _____			Affiliation: <u>PES</u>		
Relinquish	Date	Time	Received By:	Date	Time
Affiliation:	<u>4-27-06</u>	<u>17:00</u>	Affiliation:		
Relinquish	Date	Time	Received By: <u>Valentino L. Loomis</u>	Date	Time
Affiliation:			Affiliation: <u>W.L. Gore & Associates, Inc.</u>	<u>4/28/06</u>	<u>11:40</u>

GORE-SORBER® Screening Survey

SITE NAME & LOCATION

Installation and Retrieval Log

*Fishersham, 417.45 Hallbeck St
Savannah, GA*

PES Environmental

602 Newto Boulevard, Suite 1

Page 1 of 2

LINE #	MODEL#	INSTALLATION DATE/TIME	RETRIVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LPH) OR HYDROCARBON ODOR (check as appropriate)		MODULE IN WATER (check one)		COMMENTS
				HI	ODOR	NONE	YES	
1.	487564	4/13/06 - 1330	4-27-06 1108					SG-1
2.	487565							Module Broken
3.	487566	4/13/06 1445	4-27-06 1121					SG-4
4.	487567	1455	1126					Module
5.	487568	1520	130					-5" wet on recovery
6.	487569	1540	135					-6" wet upon
7.	487570	1555	139					-7-5" bottom wet
8.	487571	1600	146					-8 mod. wet on recov
9.	487572	4	148					-9 bottom 2" wet
10.	487573	4/13/06 1610	1154					-9d
11.	487574	1630	1203					-10
12.	487575	1345	1114					-11 bottom 4" wet
13.	487576	1650	1208					count hyd. seat missing broken
14.	487577	1700	1213					-13 broken seal, 4" wet
15.	487578	1705	1221					-14 cracked seal, all wet
16.	487579	4/13/06 0705	1243					-15
17.	487580	1 0715	1247					-16 wet
18.	487581	4/13/06 1730	1117					-3
19.	487582	4/14/06 0735	250					-17 bottom 4" wet
20.	487583	4/14/06 0740	259					-18
21.	487584	0750	305					-19
22.	487585	0800	307					bottom 2" wet
23.	487586	0810	309					" " "
24.	487587	0815	314					wet
25.	487588	0820	320					23
26.	487589	0840	328					" 2" wet
27.	487590	0845	326					" 4" wet
28.	487591	0850	329					" 3" wet
29.	487592	0855	331					27
30.	487593	0910	334					" 2" wet
31.	487594	0915	337					" 1" wet
32.	487595	0920	340					30
33.	487596	0925	342					31
34.	487597	0930	344					" 1" wet
35.	487598	0935	348					" 2" wet
36.	487599	0935	4-06 @ 0945					Ambient
37.	487600	0937	4-27-06 @ 1402					
38.	487614	0940	4-14-06 @ 0950					
39.	487615	0941	4-27-06 @ 1403					
40.	487616	0953	4-14-06 @ 1003					
1.	487617	0954	4-27-06 @ 1406					bottom 1" wet SG-53d
2.	487618	0950	1352					v. dark brown product on bottom 3"; bottom 3" also wet SG-54

* possible

GORE-SORBER® Screening Survey
Installation and Retrieval Log

SITE NAME & LOCATION

PES Environmental
 1877 Nevada St. #6
 Fremont CA 94547

Reichman, 4245 Hallik St
 Emeryville, CA

Page 2 of 2

LINE	MODULE#	INSTALLATION DATE/TIME	RETRIEVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LHD) OR HYDROCARBON ODOR (check as appropriate)			MODULE IN WATER (check one)		COMMENTS
				TPT	ODOR	NONE	YES	NO	
43.	487619	4/14/04 0955	4.27.06 1359				bottom 2" wet	56-35	
44.	487620	1005	410					-36	
45.	487621	1010	418					-37	
46.	487622	1020	417				" 3" wet	-38	
47.	487635	1025	420					-39	
48.	487636	1035	422					-40	
49.	487637	1048	425					-41	
50.	487638	1053	428					rod/module wet 42	
51.	487639	1056	433				" 2" wet	-43	
52.	487640	1105	437				" 5" "	rod/hole very moist 48	
53.	487641	1110	439					-45	
54.	487642	1115	442				" 2" "	-46	
55.	487643	1119	445					-47	
56.	487644	1130	447				" 2" wet rod wet	high moisture -47d	
57.	487645	1140	449					-48	
58.	487646	1147	452					-4a	
59.	487647	1155	1256				X bottom 2"	-18d water in hole	
60.	487648	1205	1240					-15d	
61.	487649								
62.	487650								
63.	487651								
64.	487652								
65.	487653								
66.	487654								
67.	487655								
68.	487656								
69.	487657								
70.	487658								
71.	487659								
72.									
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77.									
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83.									
84.									

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug	ct12DCE, ug	t12DCE, ug	c12DCE, ug	11DCA, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug
	MDL=	0.02		0.03	0.03	0.02	0.02	0.02	0.02	0.03
05/02/06	487564	nd	0.74	nd	0.74	nd	nd	nd	0.35	0.95
05/02/06	487565	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487566	nd	0.26	nd	0.26	nd	nd	nd	0.18	35.68
05/02/06	487567	nd	1.05	0.04	1.02	nd	nd	nd	0.38	8.52
05/02/06	487568	nd	nd	nd	nd	nd	nd	nd	nd	0.42
05/02/06	487569	nd	nd	nd	nd	nd	nd	nd	nd	1.21
05/01/06	487570	nd	0.18	nd	0.18	nd	nd	nd	20.83	93.17
05/03/06	487571	nd	0.57	0.20	0.36	nd	nd	nd	0.23	2.81
05/03/06	487572	nd	nd	nd	nd	nd	nd	nd	0.11	20.96
05/03/06	487573	nd	0.53	0.08	0.44	nd	nd	nd	0.14	0.58
05/02/06	487574	nd	nd	nd	nd	nd	nd	nd	0.08	12.78
05/01/06	487575	nd	0.65	nd	0.65	nd	nd	nd	0.13	0.26
05/02/06	487576	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487577	nd	nd	nd	nd	nd	nd	nd	nd	0.15
05/03/06	487578	nd	nd	nd	nd	nd	nd	0.03	nd	0.13
05/02/06	487579	nd	nd	nd	nd	nd	nd	nd	nd	0.37
05/02/06	487580	nd	nd	nd	nd	nd	nd	nd	nd	0.33
05/03/06	487581	nd	nd	nd	nd	nd	nd	nd	0.13	84.17
05/02/06	487582	nd	nd	nd	nd	nd	nd	nd	nd	0.33
05/02/06	487583	nd	nd	nd	nd	nd	nd	nd	0.07	2.60
05/02/06	487584	nd	nd	nd	nd	nd	nd	nd	nd	1.17
05/02/06	487585	nd	0.13	nd	0.13	nd	nd	nd	0.13	10.15
05/02/06	487586	nd	nd	nd	nd	nd	nd	nd	bdl	1.16
05/02/06	487587	nd	nd	nd	nd	nd	nd	nd	0.03	10.09
05/02/06	487588	nd	nd	nd	nd	nd	nd	nd	bdl	7.21
05/02/06	487589	nd	nd	nd	nd	nd	nd	nd	bdl	0.52
05/03/06	487590	nd	nd	nd	nd	nd	nd	nd	nd	1.42
05/02/06	487591	nd	nd	nd	nd	nd	nd	nd	0.04	2.53
05/01/06	487592	nd	nd	nd	nd	nd	nd	nd	0.41	52.37
05/03/06	487593	nd	0.04	0.04	bdl	nd	nd	nd	2.71	651.24
05/01/06	487594	nd	nd	nd	nd	nd	nd	nd	3.22	670.06

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug	ct12DCE, ug	t12DCE, ug	c12DCE, ug	11DCA, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug
	MDL=	0.02		0.03	0.03	0.02	0.02	0.02	0.02	0.03
05/02/06	487595	nd	1.21	0.06	1.15	nd	nd	nd	7.46	653.26
05/01/06	487596	bdl	35.10	0.79	34.31	nd	nd	nd	43.75	577.66
05/02/06	487597	nd	0.07	nd	0.07	nd	nd	nd	0.59	69.29
05/03/06	487598	nd	0.61	0.04	0.57	nd	nd	nd	4.30	675.59
05/03/06	487599	nd	nd	nd	nd	nd	nd	nd	nd	0.08
05/03/06	487600	nd	nd	nd	nd	nd	nd	nd	nd	0.82
05/02/06	487614	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/01/06	487615	nd	nd	nd	nd	nd	nd	nd	nd	0.58
05/02/06	487616	nd	nd	nd	nd	nd	nd	nd	nd	0.03
05/02/06	487617	nd	0.84	0.08	0.76	nd	nd	nd	5.99	692.22
05/02/06	487618	0.29	6.16	0.21	5.95	nd	nd	nd	10.65	1061.18
05/02/06	487619	nd	0.07	0.03	0.04	nd	nd	nd	5.25	664.98
05/03/06	487620	nd	nd	nd	nd	nd	bdl	nd	1.58	357.59
05/02/06	487621	nd	nd	nd	nd	0.08	0.03	nd	bdl	3.71
05/03/06	487622	nd	nd	nd	nd	nd	nd	nd	0.33	65.24
05/02/06	487635	nd	nd	nd	nd	nd	0.02	nd	0.54	223.60
05/03/06	487636	nd	0.21	nd	0.21	nd	nd	nd	3.97	696.74
05/02/06	487637	0.07	11.75	0.71	11.04	nd	nd	nd	23.77	780.00
05/03/06	487638	nd	0.33	0.06	0.27	nd	nd	nd	8.97	719.66
05/01/06	487639	nd	nd	nd	nd	nd	0.03	nd	0.27	126.68
05/02/06	487640	nd	0.36	0.03	0.33	nd	nd	nd	0.86	123.28
05/02/06	487641	nd	0.13	nd	0.13	nd	nd	nd	14.54	820.13
05/02/06	487642	nd	0.00	nd	bdl	nd	nd	nd	6.78	802.76
05/02/06	487643	0.11	0.18	0.07	0.11	nd	nd	nd	16.39	958.39
05/03/06	487644	0.13	0.28	0.14	0.15	nd	nd	nd	20.64	967.10
05/02/06	487645	nd	nd	nd	nd	nd	nd	nd	4.46	574.19
05/01/06	487646	nd	nd	nd	nd	nd	nd	nd	nd	1.44
05/02/06	487647	nd	nd	nd	nd	nd	nd	nd	nd	0.55
05/01/06	487648	nd	nd	nd	nd	nd	nd	nd	0.03	2.44
05/01/06	487649	nd	nd	nd	nd	nd	nd	nd	nd	bdl

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug	ct12DCE, ug	t12DCE, ug	c12DCE, ug	11DCA, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug
	MDL=	0.02		0.03	0.03	0.02	0.02	0.02	0.02	0.03
05/03/06	487650	nd	nd	nd	nd	nd	nd	nd	nd	0.17
05/02/06	487652	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487654	nd	nd	nd	nd	nd	nd	nd	nd	0.05
05/03/06	487659	nd	nd	nd	nd	nd	nd	nd	nd	0.04
05/01/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd	bdl
	Maximum	0.29	35.10	0.79	34.31	0.08	0.03	0.03	43.75	1061.18
	Standard Dev.	0.04	4.78	0.14	4.66	0.01	0.01	0.00	7.72	333.03
	Mean	0.01	1.02	0.04	0.98	0.00	0.00	0.00	3.51	221.54

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	14DCB, ug	VC, ug	11DCE, ug	CHCl3, ug	CCl4, ug	112TCA, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug	12DCB, ug
MDL=	0.02	0.77	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
487564	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487565	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487566	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487567	nd	nd	nd	nd	nd	nd	nd	nd	nd	bdl
487568	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487569	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487570	nd	12.35	0.22	nd	nd	nd	nd	nd	nd	nd
487571	bdl	nd	nd	nd	nd	nd	nd	nd	nd	bdl
487572	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487573	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487574	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487575	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487576	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487577	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487578	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487579	nd	nd	nd	nd	nd	nd	nd	nd	nd	bdl
487580	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487581	nd	nd	nd	nd	nd	nd	bdl	nd	nd	nd
487582	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487583	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487584	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487585	nd	bdl	nd	nd	nd	nd	nd	nd	nd	nd
487586	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487587	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487588	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487589	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487590	nd	nd	nd	nd	nd	nd	nd	0.38	nd	nd
487591	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487592	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487593	nd	nd	nd	0.20	nd	nd	0.05	nd	nd	bdl
487594	nd	nd	nd	0.05	nd	nd	0.12	nd	nd	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	14DCB, ug	VC, ug	11DCE, ug	CHCl3, ug	CCl4, ug	112TCA, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug	12DCB, ug
MDL=	0.02	0.77	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
487595	nd	nd	nd	0.11	nd	nd	0.14	nd	nd	nd
487596	nd	bdl	0.24	nd	nd	nd	nd	nd	nd	bdl
487597	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487598	nd	nd	nd	0.09	nd	nd	0.20	nd	nd	nd
487599	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487600	bdl	nd	nd	nd	nd	nd	nd	nd	nd	nd
487614	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487615	bdl	nd	nd	nd	nd	nd	nd	nd	nd	nd
487616	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487617	nd	nd	bdl	0.09	nd	nd	0.14	nd	nd	nd
487618	bdl	bdl	0.17	0.07	nd	nd	0.29	nd	nd	0.03
487619	nd	nd	nd	0.04	nd	nd	0.17	nd	nd	nd
487620	nd	nd	nd	nd	nd	nd	0.04	nd	nd	nd
487621	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487622	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487635	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487636	nd	nd	nd	0.02	nd	nd	0.13	nd	nd	nd
487637	nd	nd	0.06	0.15	nd	nd	0.18	nd	nd	0.06
487638	nd	nd	nd	0.10	nd	nd	0.13	nd	nd	nd
487639	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487640	nd	nd	bdl	nd	nd	nd	nd	nd	nd	nd
487641	nd	nd	nd	0.04	nd	nd	nd	nd	nd	nd
487642	nd	nd	nd	0.14	nd	nd	0.13	nd	nd	nd
487643	bdl	nd	0.06	0.07	nd	nd	0.34	nd	nd	0.07
487644	nd	nd	0.05	0.12	nd	nd	0.38	nd	nd	0.05
487645	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487646	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487647	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487648	nd	nd	nd	bdl	nd	nd	nd	nd	nd	bdl
487649	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	14DCB, ug	VC, ug	11DCE, ug	CHCl3, ug	CCl4, ug	112TCA, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug	12DCB, ug
MDL=	0.02	0.77	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
487650	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487654	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
487659	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Maximum	0.01	12.35	0.24	0.20	0.00	0.00	0.38	0.38	0.00	0.07
Standard Dev.	0.00	1.59	0.05	0.05	0.00	0.00	0.09	0.05	0.00	0.01
Mean	0.00	0.22	0.01	0.02	0.00	0.00	0.04	0.01	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug/m3	ct12DCE, ug/m3	t12DCE, ug/m3	c12DCE, ug/m3	11DCA, ug/m3	111TCA, ug/m3	12DCA, ug/m3	TCE, ug/m3
	MDL=	31.53		18.58	19.62	13.31	14.90	10.12	9.96
05/02/06	487564	nd	463.45	nd	463.45	nd	nd	nd	171.12
05/02/06	487566	nd	163.23	nd	163.23	nd	nd	nd	88.22
05/02/06	487567	nd	661.31	23.32	637.99	nd	nd	nd	188.31
05/02/06	487568	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487569	nd	nd	nd	nd	nd	nd	nd	nd
05/01/06	487570	nd	113.36	nd	113.36	nd	nd	nd	10364.77
05/03/06	487571	nd	359.71	132.45	227.25	nd	nd	nd	113.42
05/03/06	487572	nd	nd	nd	nd	nd	nd	nd	55.47
05/03/06	487573	nd	333.32	54.74	278.58	nd	nd	nd	68.51
05/02/06	487574	nd	nd	nd	nd	nd	nd	nd	38.78
05/01/06	487575	nd	404.00	nd	404.00	nd	nd	nd	66.27
05/02/06	487576	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487577	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	487578	nd	nd	nd	nd	nd	nd	10.65	nd
05/02/06	487579	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487580	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	487581	nd	nd	nd	nd	nd	nd	nd	69.01
05/02/06	487582	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487583	nd	nd	nd	nd	nd	nd	nd	38.33
05/02/06	487584	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487585	nd	84.09	nd	84.09	nd	nd	nd	65.16
05/02/06	487586	nd	nd	nd	nd	nd	nd	nd	bdl
05/02/06	487587	nd	nd	nd	nd	nd	nd	nd	17.65
05/02/06	487588	nd	nd	nd	nd	nd	nd	nd	bdl
05/02/06	487589	nd	nd	nd	nd	nd	nd	nd	bdl
05/03/06	487590	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487591	nd	nd	nd	nd	nd	nd	nd	20.27
05/01/06	487592	nd	nd	nd	nd	nd	nd	nd	213.52
05/03/06	487593	nd	26.89	26.89	bdl	nd	nd	nd	1413.66
05/01/06	487594	nd	nd	nd	nd	nd	nd	nd	1677.35
05/02/06	487595	nd	796.23	38.20	758.02	nd	nd	nd	3889.40
05/01/06	487596	bdl	23136.33	539.55	22596.79	nd	nd	nd	22829.48
05/02/06	487597	nd	46.51	nd	46.51	nd	nd	nd	309.53
05/03/06	487598	nd	400.17	25.95	374.21	nd	nd	nd	2243.12
05/02/06	487617	nd	557.15	53.52	503.63	nd	nd	nd	3127.21

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug/m3	ct12DCE, ug/m3	t12DCE, ug/m3	c12DCE, ug/m3	11DCA, ug/m3	111TCA, ug/m3	12DCA, ug/m3	TCE, ug/m3
	MDL=	31.53		18.58	19.62	13.31	14.90	10.12	9.96
05/02/06	487618	538.37	4065.75	143.68	3922.07	nd	nd	nd	5562.25
05/02/06	487619	nd	48.45	20.31	28.15	nd	nd	nd	2741.64
05/03/06	487620	nd	nd	nd	nd	nd	bdl	nd	823.50
05/02/06	487621	nd	nd	nd	nd	51.48	21.41	nd	bdl
05/03/06	487622	nd	nd	nd	nd	nd	nd	nd	174.10
05/02/06	487635	nd	nd	nd	nd	nd	16.79	nd	282.31
05/03/06	487636	nd	136.43	nd	136.43	nd	nd	nd	2076.19
05/02/06	487637	119.37	7769.01	483.97	7285.05	nd	nd	nd	12431.06
05/03/06	487638	nd	220.27	41.43	178.83	nd	nd	nd	4689.78
05/01/06	487639	nd	nd	nd	nd	nd	23.29	nd	140.19
05/02/06	487640	nd	235.95	19.32	216.63	nd	nd	nd	450.34
05/02/06	487641	nd	88.62	nd	88.62	nd	nd	nd	7607.68
05/02/06	487642	nd	0.00	nd	bdl	nd	nd	nd	3547.46
05/02/06	487643	205.40	118.16	44.46	73.71	nd	nd	nd	8575.35
05/03/06	487644	244.48	188.80	92.99	95.81	nd	nd	nd	10802.59
05/02/06	487645	nd	nd	nd	nd	nd	nd	nd	2334.92
05/01/06	487646	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487647	nd	nd	nd	nd	nd	nd	nd	nd
05/01/06	487648	nd	nd	nd	nd	nd	nd	nd	15.04
05/01/06	487649	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	487650	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487652	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	487654	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	487659	nd	nd	nd	nd	nd	nd	nd	nd
05/01/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd
05/02/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd
05/03/06	method blank	nd	nd	nd	nd	nd	nd	nd	nd
	Maximum	538.37	23136.33	539.55	22596.79	51.48	23.29	10.65	22829.48
	Standard Dev.	85.02	3320.38	99.98	3231.26	7.01	5.08	1.45	4185.91
	Mean	20.64	748.47	32.24	716.82	0.95	1.39	0.20	2024.88

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	PCE, ug/m3	14DCB, ug/m3	VC, ug/m3	11DCE, ug/m3	CHCl3, ug/m3	CCl4, ug/m3	112TCA, ug/m3	1112TetCA, ug/m3	1122TetCA, ug/m3
MDL=	23.22	29.80	166.12	62.80	10.53	14.84	25.56	19.05	9.44
487564	837.29	nd	nd	nd	nd	nd	nd	nd	nd
487566	31561.11	nd	nd	nd	nd	nd	nd	nd	nd
487567	7540.57	nd	nd	nd	nd	nd	nd	nd	nd
487568	370.90	nd	nd	nd	nd	nd	nd	nd	nd
487569	1068.58	nd	nd	nd	nd	nd	nd	nd	nd
487570	82643.79	nd	2555.94	488.16	nd	nd	nd	nd	nd
487571	2488.20	bdl	nd	nd	nd	nd	nd	nd	nd
487572	18590.96	nd	nd	nd	nd	nd	nd	nd	nd
487573	510.73	nd	nd	nd	nd	nd	nd	nd	nd
487574	11345.79	nd	nd	nd	nd	nd	nd	nd	nd
487575	225.17	nd	nd	nd	nd	nd	nd	nd	nd
487576	nd	nd	nd	nd	nd	nd	nd	nd	nd
487577	131.30	nd	nd	nd	nd	nd	nd	nd	nd
487578	115.20	nd	nd	nd	nd	nd	nd	nd	nd
487579	341.64	nd	nd	nd	nd	nd	nd	nd	nd
487580	304.31	nd	nd	nd	nd	nd	nd	nd	nd
487581	80036.04	nd	nd	nd	nd	nd	nd	bdl	nd
487582	305.79	nd	nd	nd	nd	nd	nd	nd	nd
487583	2415.21	nd	nd	nd	nd	nd	nd	nd	nd
487584	1089.23	nd	nd	nd	nd	nd	nd	nd	nd
487585	9421.70	nd	bdl	nd	nd	nd	nd	nd	nd
487586	1075.39	nd	nd	nd	nd	nd	nd	nd	nd
487587	9363.84	nd	nd	nd	nd	nd	nd	nd	nd
487588	6696.31	nd	nd	nd	nd	nd	nd	nd	nd
487589	479.64	nd	nd	nd	nd	nd	nd	nd	nd
487590	1321.24	nd	nd	nd	nd	nd	nd	nd	174.60
487591	2349.12	nd	nd	nd	nd	nd	nd	nd	nd
487592	48668.68	nd	nd	nd	nd	nd	nd	nd	nd
487593	605639.56	nd	nd	nd	111.38	nd	nd	39.61	nd
487594	623204.80	nd	nd	nd	28.87	nd	nd	91.90	nd
487595	607641.39	nd	nd	nd	59.81	nd	nd	107.04	nd
487596	537408.61	nd	bdl	576.78	nd	nd	nd	nd	nd
487597	64468.73	nd	nd	nd	nd	nd	nd	nd	nd
487598	628644.48	nd	nd	nd	49.49	nd	nd	157.81	nd
487617	643816.20	nd	nd	bdl	49.92	nd	nd	108.85	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	PCE, ug/m3	14DCB, ug/m3	VC, ug/m3	11DCE, ug/m3	CHCl3, ug/m3	CCl4, ug/m3	112TCA, ug/m3	1112TetCA, ug/m3	1122TetCA, ug/m3
MDL=	23.22	29.80	166.12	62.80	10.53	14.84	25.56	19.05	9.44
487618	988015.24	bdl	bdl	409.45	37.79	nd	nd	232.53	nd
487619	619062.51	nd	nd	nd	23.08	nd	nd	138.53	nd
487620	332878.27	nd	nd	nd	nd	nd	nd	33.30	nd
487621	3451.51	nd	nd	nd	nd	nd	nd	nd	nd
487622	60762.24	nd	nd	nd	nd	nd	nd	nd	nd
487635	208255.77	nd	nd	nd	nd	nd	nd	nd	nd
487636	649217.46	nd	nd	nd	12.81	nd	nd	103.18	nd
487637	727182.50	nd	nd	135.79	86.53	nd	nd	142.07	nd
487638	671000.35	nd	nd	nd	54.35	nd	nd	103.40	nd
487639	118099.62	nd	nd	nd	nd	nd	nd	nd	nd
487640	114961.99	nd	nd	bdl	nd	nd	nd	nd	nd
487641	764910.63	nd	nd	nd	19.71	nd	nd	nd	nd
487642	748797.57	nd	nd	nd	75.60	nd	nd	105.20	nd
487643	894007.36	bdl	nd	148.29	40.77	nd	nd	272.70	nd
487644	902560.52	nd	nd	119.45	66.90	nd	nd	301.44	nd
487645	536100.39	nd	nd	nd	nd	nd	nd	nd	nd
487646	1340.74	nd	nd	nd	nd	nd	nd	nd	nd
487647	514.76	nd	nd	nd	nd	nd	nd	nd	nd
487648	2298.77	nd	nd	nd	bdl	nd	nd	nd	nd
487649	bdl	nd	nd	nd	nd	nd	nd	nd	nd
487650	158.19	nd	nd	nd	nd	nd	nd	nd	nd
487652	nd	nd	nd	nd	nd	nd	nd	nd	nd
487654	46.56	nd	nd	nd	nd	nd	nd	nd	nd
487659	40.31	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd
method blank	bdl	nd	nd	nd	nd	nd	nd	nd	nd
Maximum	988015.24	9.66	2555.94	576.78	111.38	0.00	0.00	301.44	174.60
Standard Dev.	319206.00	1.89	347.70	117.06	26.38	0.00	0.00	72.73	23.76
Mean	229176.66	0.43	51.16	36.77	13.45	0.00	0.00	36.04	3.23

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	13DCB, ug/m3	12DCB, ug/m3
MDL=	29.35	38.05
487564	nd	nd
487566	nd	nd
487567	nd	bdl
487568	nd	nd
487569	nd	nd
487570	nd	nd
487571	nd	bdl
487572	nd	nd
487573	nd	nd
487574	nd	nd
487575	nd	nd
487576	nd	nd
487577	nd	nd
487578	nd	nd
487579	nd	bdl
487580	nd	nd
487581	nd	nd
487582	nd	nd
487583	nd	nd
487584	nd	nd
487585	nd	nd
487586	nd	nd
487587	nd	nd
487588	nd	nd
487589	nd	nd
487590	nd	nd
487591	nd	nd
487592	nd	nd
487593	nd	bdl
487594	nd	nd
487595	nd	nd
487596	nd	bdl
487597	nd	nd
487598	nd	nd
487617	nd	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	13DCB, ug/m3	12DCB, ug/m3
MDL=	29.35	38.05
487618	nd	47.97
487619	nd	nd
487620	nd	nd
487621	nd	nd
487622	nd	nd
487635	nd	nd
487636	nd	nd
487637	nd	101.27
487638	nd	nd
487639	nd	nd
487640	nd	nd
487641	nd	nd
487642	nd	nd
487643	nd	120.32
487644	nd	76.16
487645	nd	nd
487646	nd	nd
487647	nd	nd
487648	nd	bdl
487649	nd	nd
487650	nd	nd
487652	nd	nd
487654	nd	nd
487659	nd	nd
method blank	nd	nd
method blank	nd	nd
method blank	nd	nd
Maximum	0.00	120.32
Standard Dev.	0.00	24.26
Mean	0.00	8.15

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
PES ENVIRONMENTAL, INC., NOVATO, CA
GORE CHLORINATED VOCs (A10+VC)
ESTIMATED CONCENTRATIONS (13 DAY AMBIENT EXPOSURE)
TECHNICHEM, EMERYVILLE, CA
SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug/m3	ct12DCE, ug/m3	t12DCE, ug/m3	c12DCE, ug/m3	11DCA, ug/m3	111TCA, ug/m3	12DCA, ug/m3
	MDL=	0.22		0.13	0.14	0.09	0.10	0.07
05/03/06	487600	nd	nd	nd	nd	nd	nd	nd
05/01/06	487615	nd	nd	nd	nd	nd	nd	nd
05/01/06	487649	nd	nd	nd	nd	nd	nd	nd
05/03/06	487650	nd	nd	nd	nd	nd	nd	nd
05/02/06	487652	nd	nd	nd	nd	nd	nd	nd
05/02/06	487654	nd	nd	nd	nd	nd	nd	nd
05/03/06	487659	nd	nd	nd	nd	nd	nd	nd
05/01/06	method blank	nd	nd	nd	nd	nd	nd	nd
05/02/06	method blank	nd	nd	nd	nd	nd	nd	nd
05/03/06	method blank	nd	nd	nd	nd	nd	nd	nd
	Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Dev.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 ESTIMATED CONCENTRATIONS (13 DAY AMBIENT EXPOSURE)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	TCE, ug/m3	PCE, ug/m3	14DCB, ug/m3	VC, ug/m3	11DCE, ug/m3	CHCl3, ug/m3	CCl4, ug/m3	112TCA, ug/m3
MDL=	0.07	0.16	0.21	1.16	0.44	0.07	0.10	0.18
487600	nd	5.32	bdl	nd	nd	nd	nd	nd
487615	nd	3.72	bdl	nd	nd	nd	nd	nd
487649	nd	bdl	nd	nd	nd	nd	nd	nd
487650	nd	1.11	nd	nd	nd	nd	nd	nd
487652	nd	nd	nd	nd	nd	nd	nd	nd
487654	nd	0.33	nd	nd	nd	nd	nd	nd
487659	nd	0.28	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	bdl	nd	nd	nd	nd	nd	nd
Maximum	0.00	5.32	0.10	0.00	0.00	0.00	0.00	0.00
Standard Dev.	0.00	1.13	0.02	0.00	0.00	0.00	0.00	0.00
Mean	0.00	4.52	0.09	0.00	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 ESTIMATED CONCENTRATIONS (13 DAY AMBIENT EXPOSURE)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	1112TetCA, ug/m3	1122TetCA, ug/m3	13DCB, ug/m3	12DCB, ug/m3
MDL=	0.13	0.07	0.21	0.27
487600	nd	nd	nd	nd
487615	nd	nd	nd	nd
487649	nd	nd	nd	nd
487650	nd	nd	nd	nd
487652	nd	nd	nd	nd
487654	nd	nd	nd	nd
487659	nd	nd	nd	nd
method blank	nd	nd	nd	nd
method blank	nd	nd	nd	nd
method blank	nd	nd	nd	nd
Maximum	0.00	0.00	0.00	0.00
Standard Dev.	0.00	0.00	0.00	0.00
Mean	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 ESTIMATED VAPOR CONCENTRATIONS (10 MIN AMBIENT EXPOSURE)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

DATE ANALYZED	SAMPLE NAME	CIBENZ, ug/m3	ct12DCE, ug/m3	t12DCE, ug/m3	c12DCE, ug/m3	11DCA, ug/m3	111TCA, ug/m3	12DCA, ug/m3
	MDL=	411.28		242.39	255.97	173.66	194.37	132.07
05/03/06	487599	nd	nd	nd	nd	nd	nd	nd
05/02/06	487614	nd	nd	nd	nd	nd	nd	nd
05/01/06	487649	nd	nd	nd	nd	nd	nd	nd
05/03/06	487650	nd	nd	nd	nd	nd	nd	nd
05/02/06	487652	nd	nd	nd	nd	nd	nd	nd
05/02/06	487654	nd	nd	nd	nd	nd	nd	nd
05/03/06	487659	nd	nd	nd	nd	nd	nd	nd
05/01/06	method blank	nd	nd	nd	nd	nd	nd	nd
05/02/06	method blank	nd	nd	nd	nd	nd	nd	nd
05/03/06	method blank	nd	nd	nd	nd	nd	nd	nd
	Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Dev.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 ESTIMATED VAPOR CONCENTRATIONS (10 MIN AMBIENT EXPOSURE)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

SAMPLE NAME	TCE, ug/m3	PCE, ug/m3	14DCB, ug/m3	VC, ug/m3	11DCE, ug/m3	CHCl3, ug/m3	CCl4, ug/m3	112TCA, ug/m3
MDL=	129.88	302.97	388.80	2167.10	819.28	137.43	193.65	333.42
487599	nd	988.16	nd	nd	nd	nd	nd	nd
487614	nd	nd	nd	nd	nd	nd	nd	nd
487649	nd	bdl	nd	nd	nd	nd	nd	nd
487650	nd	2063.63	nd	nd	nd	nd	nd	nd
487652	nd	nd	nd	nd	nd	nd	nd	nd
487654	nd	607.44	nd	nd	nd	nd	nd	nd
487659	nd	525.81	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	bdl	nd	nd	nd	nd	nd	nd
Maximum	0.00	988.16	0.00	0.00	0.00	0.00	0.00	0.00
Standard Dev.	0.00	698.74	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.00	494.08	0.00	0.00	0.00	0.00	0.00	0.00

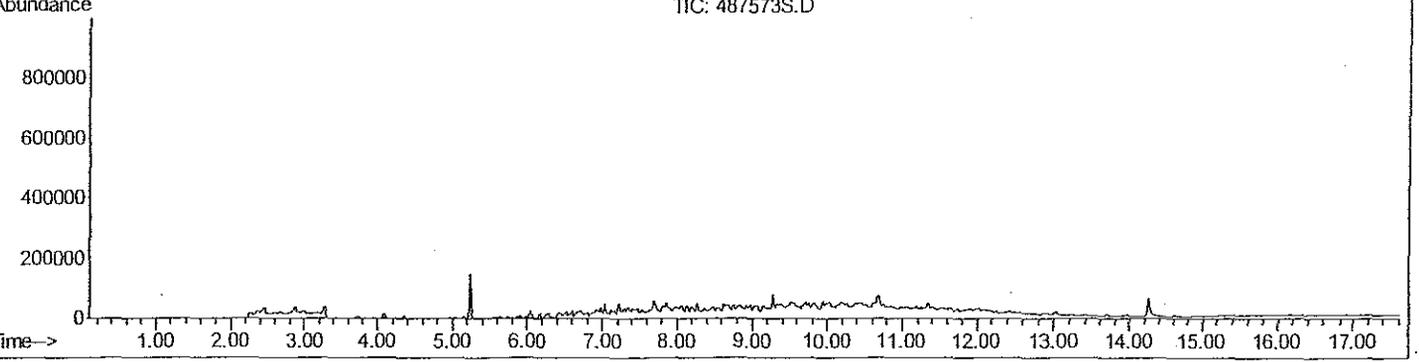
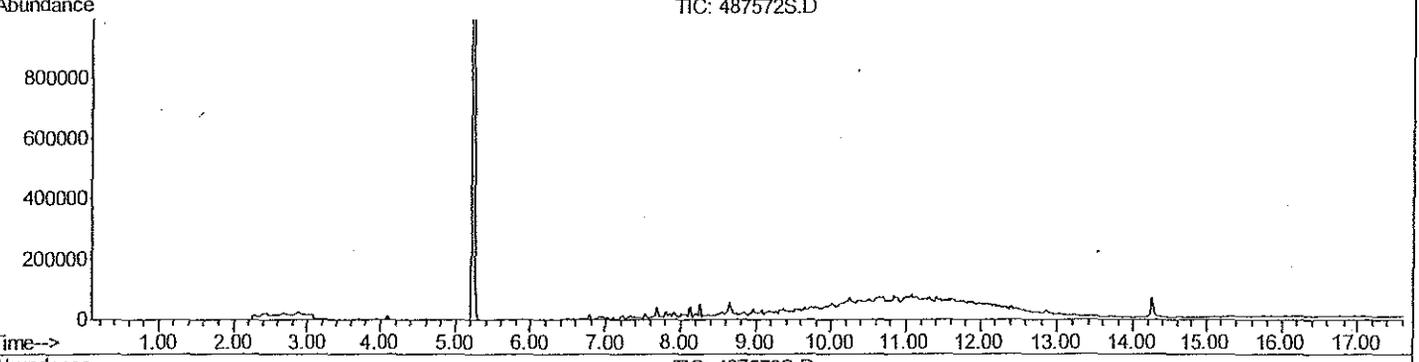
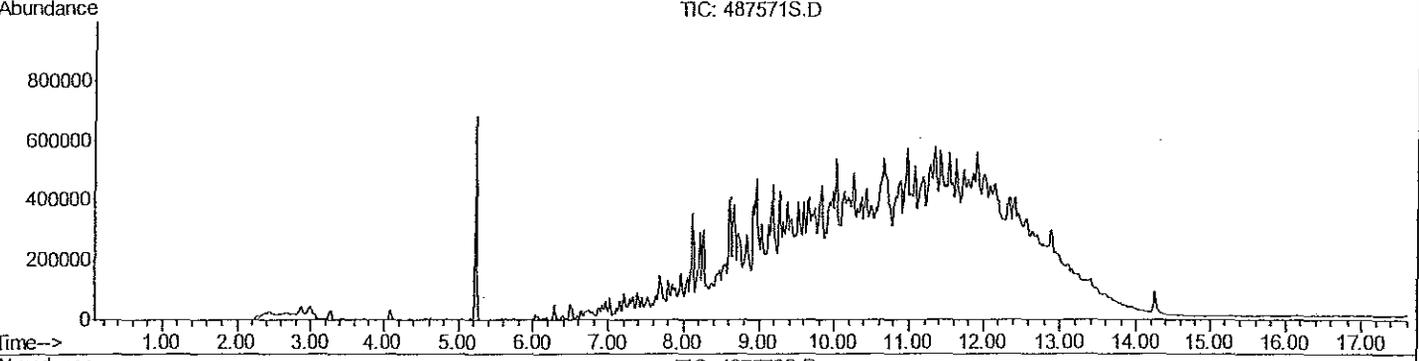
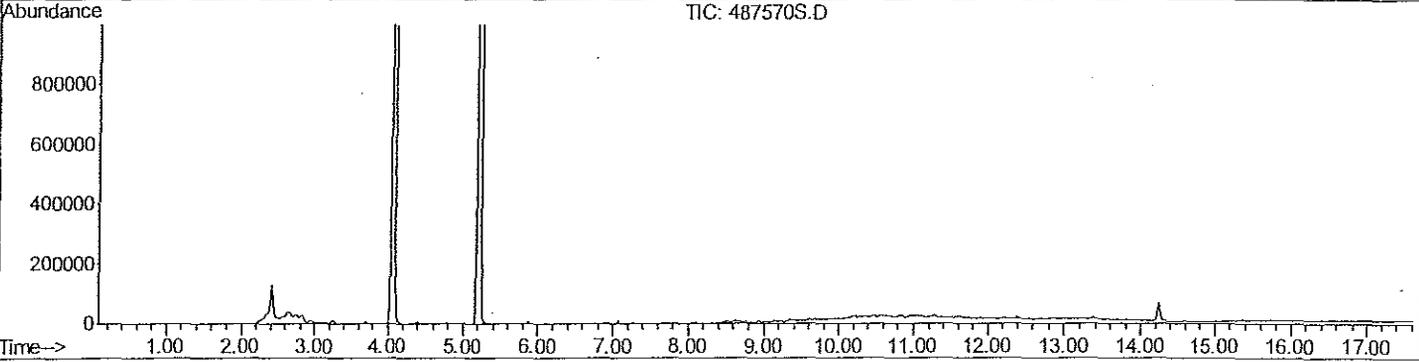
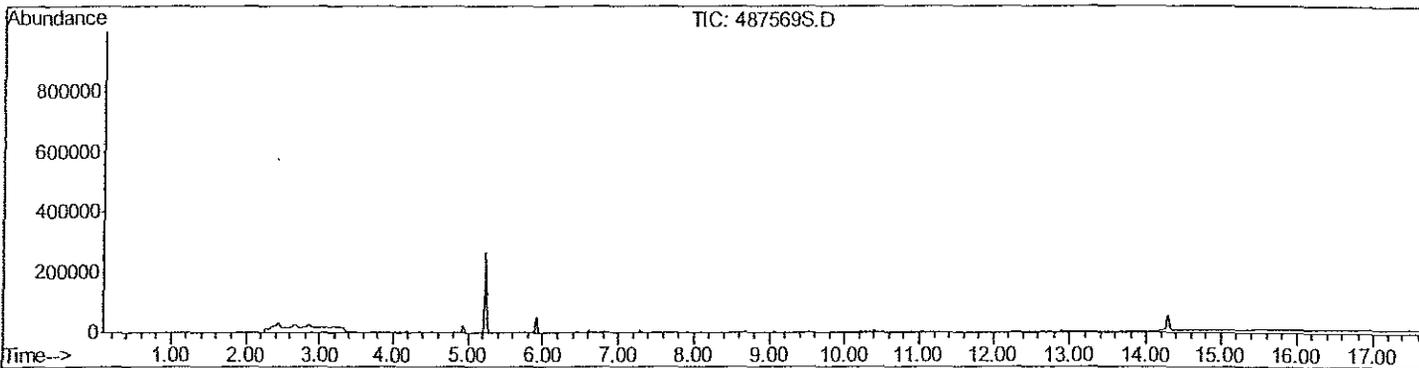
No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 PES ENVIRONMENTAL, INC., NOVATO, CA
 GORE CHLORINATED VOCs (A10+VC)
 ESTIMATED VAPOR CONCENTRATIONS (10 MIN AMBIENT EXPOSURE)
 TECHNICHEM, EMERYVILLE, CA
 SITE DGV - PRODUCTION ORDER #12683984

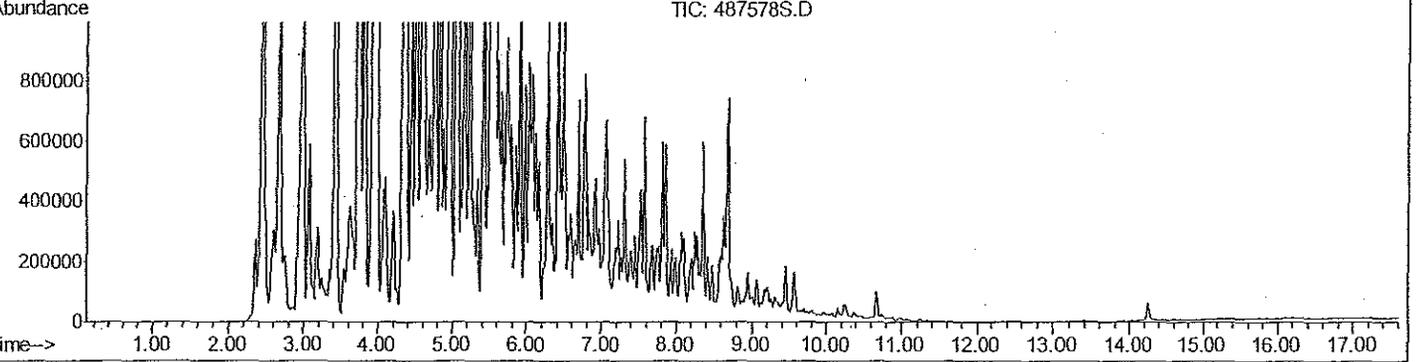
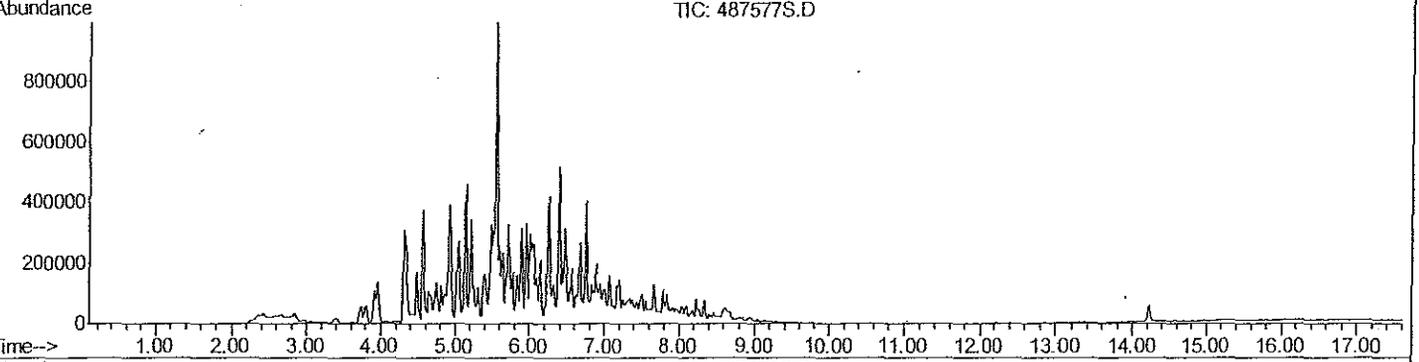
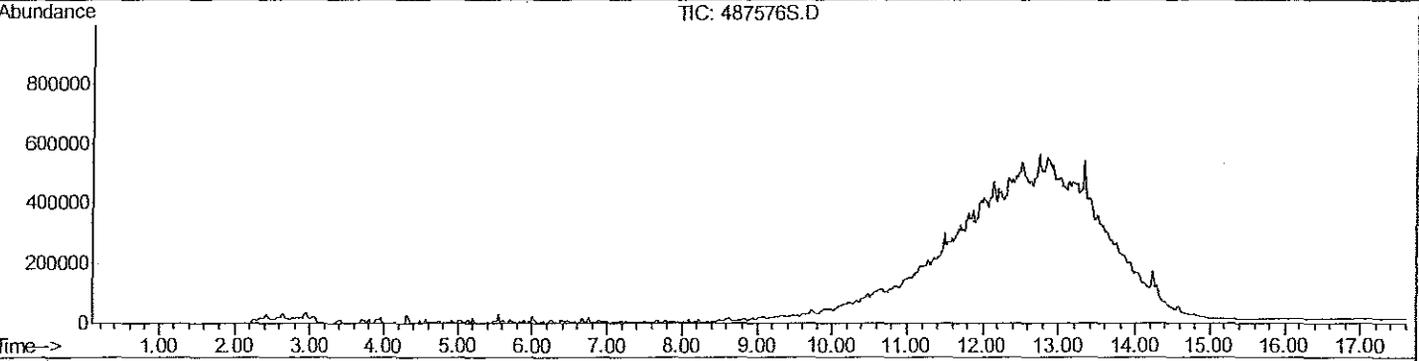
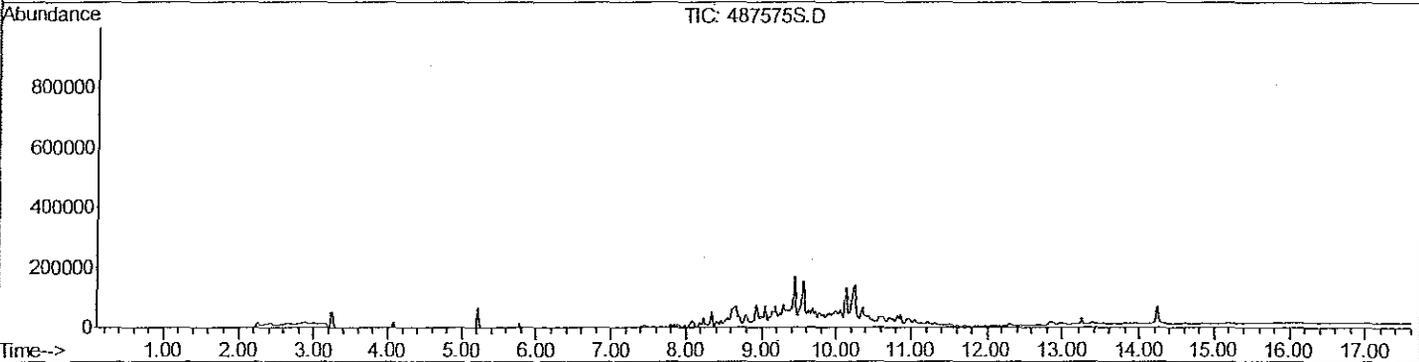
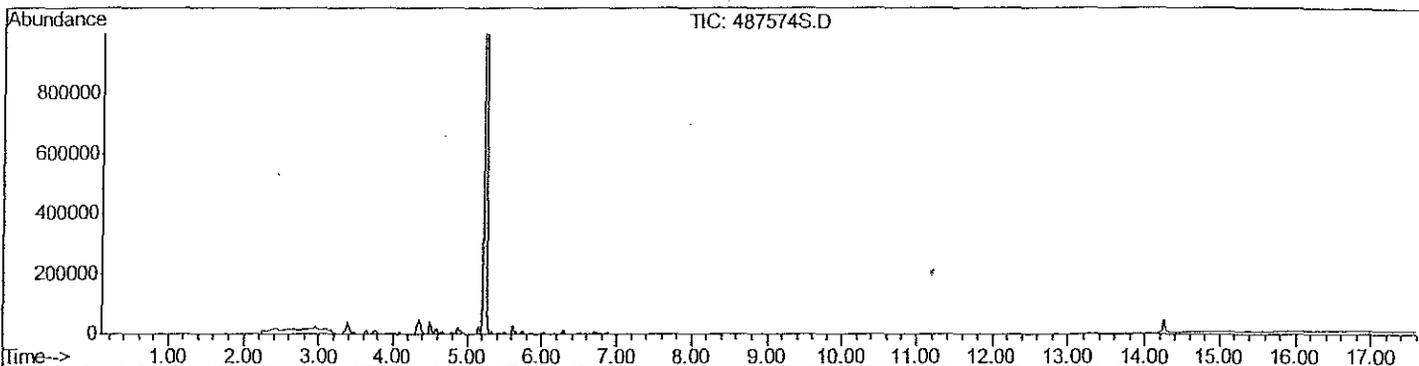
SAMPLE NAME	1112TetCA, ug/m3	1122TetCA, ug/m3	13DCB, ug/m3	12DCB, ug/m3
MDL=	248.55	123.13	382.91	496.39
487599	nd	nd	nd	nd
487614	nd	nd	nd	nd
487649	nd	nd	nd	nd
487650	nd	nd	nd	nd
487652	nd	nd	nd	nd
487654	nd	nd	nd	nd
487659	nd	nd	nd	nd
method blank	nd	nd	nd	nd
method blank	nd	nd	nd	nd
method blank	nd	nd	nd	nd
Maximum	0.00	0.00	0.00	0.00
Standard Dev.	0.00	0.00	0.00	0.00
Mean	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

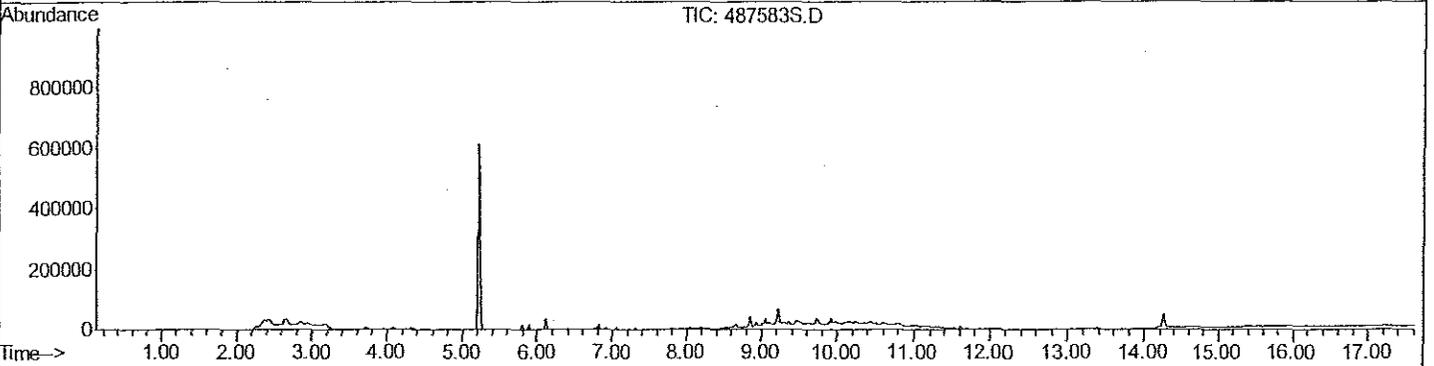
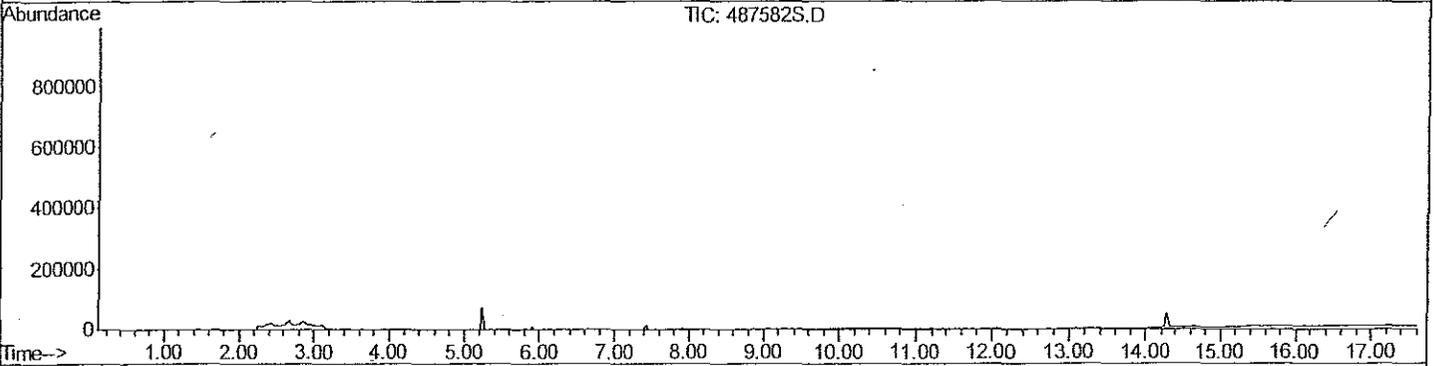
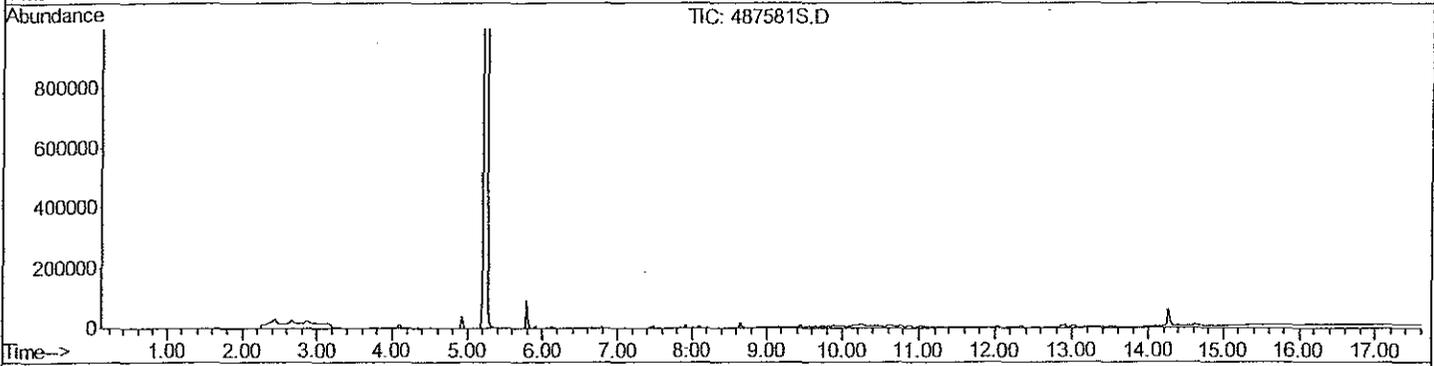
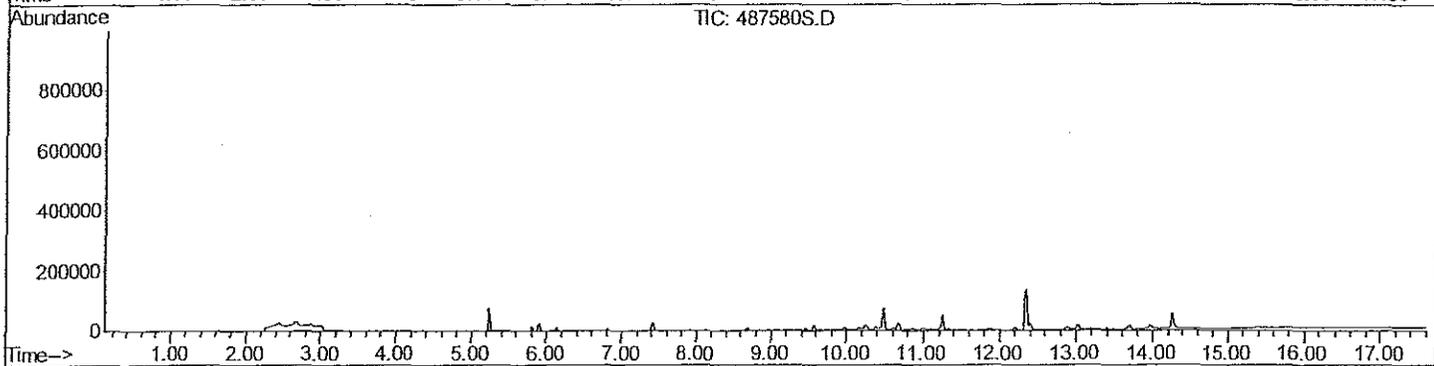
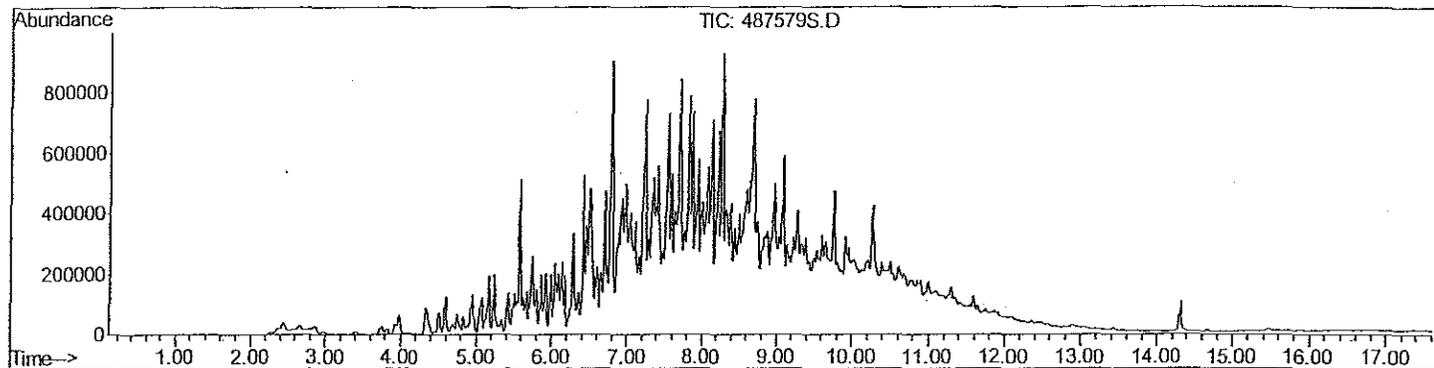
TIC - SITE DGV - PRODUCTION ORL #12683984
In Numerical Order



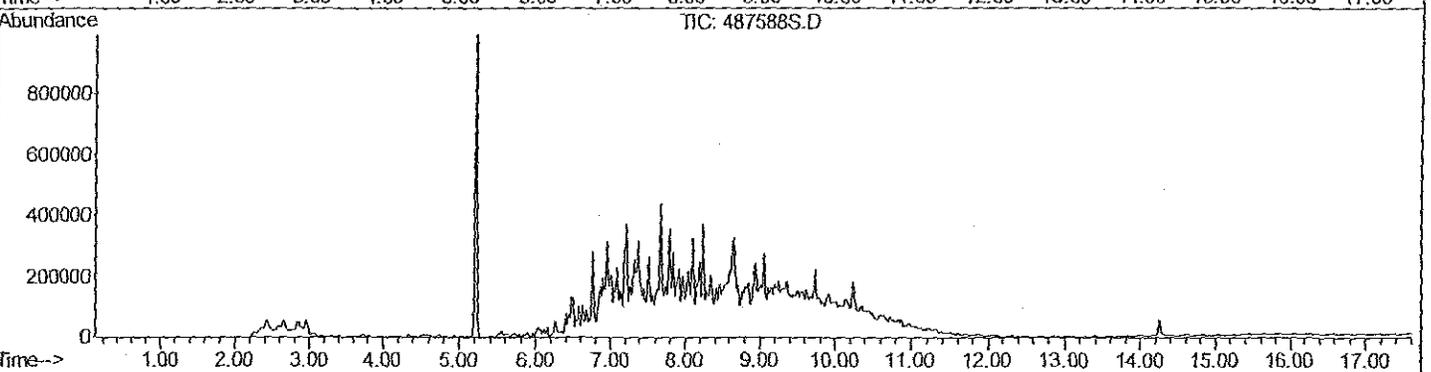
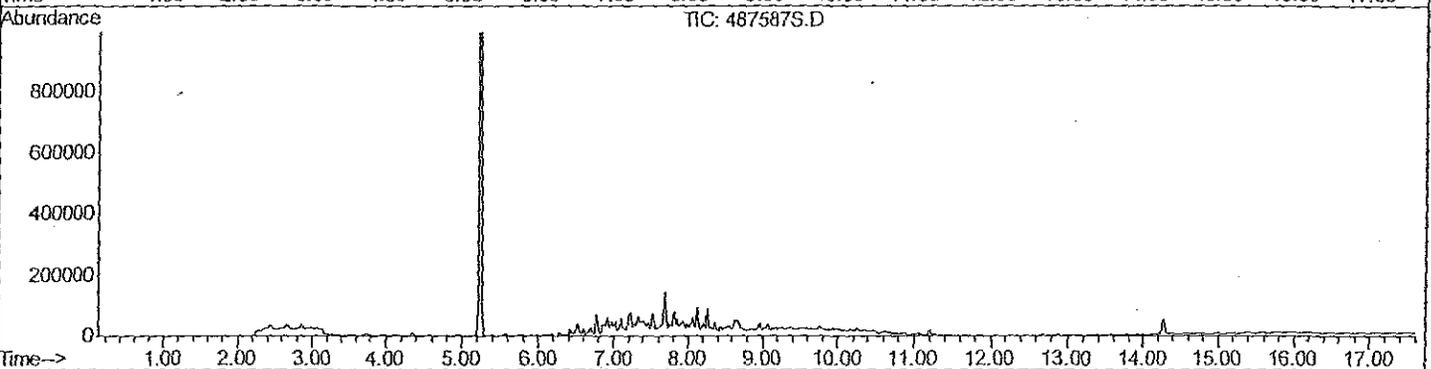
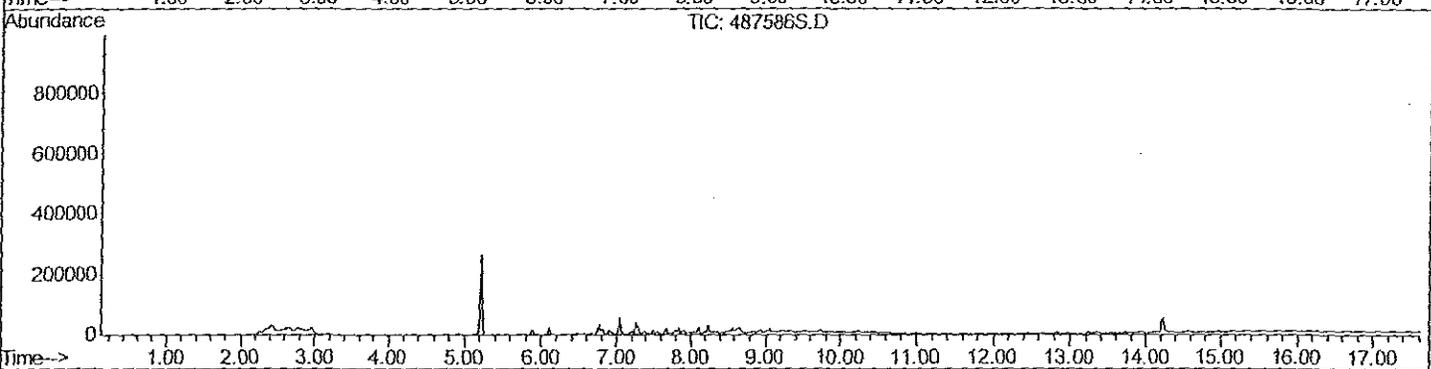
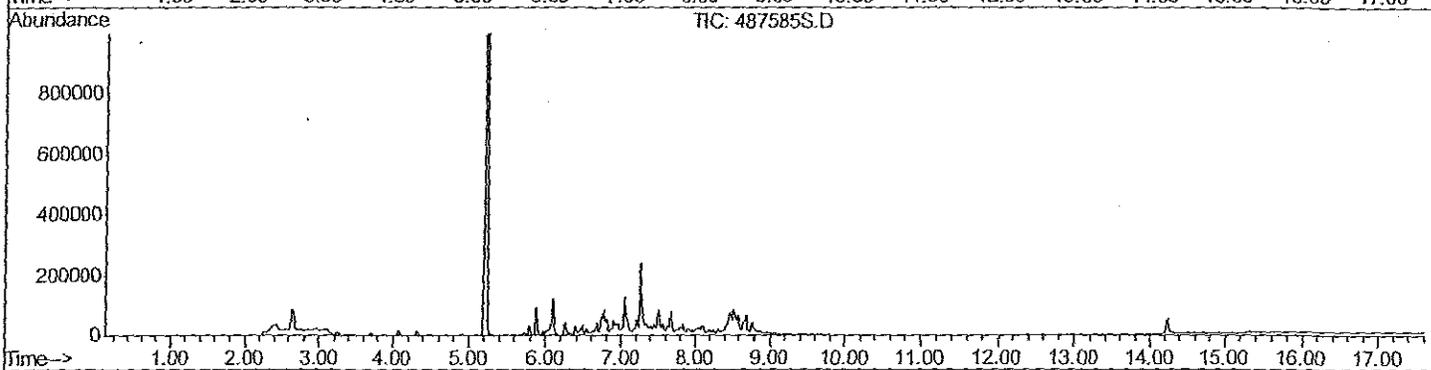
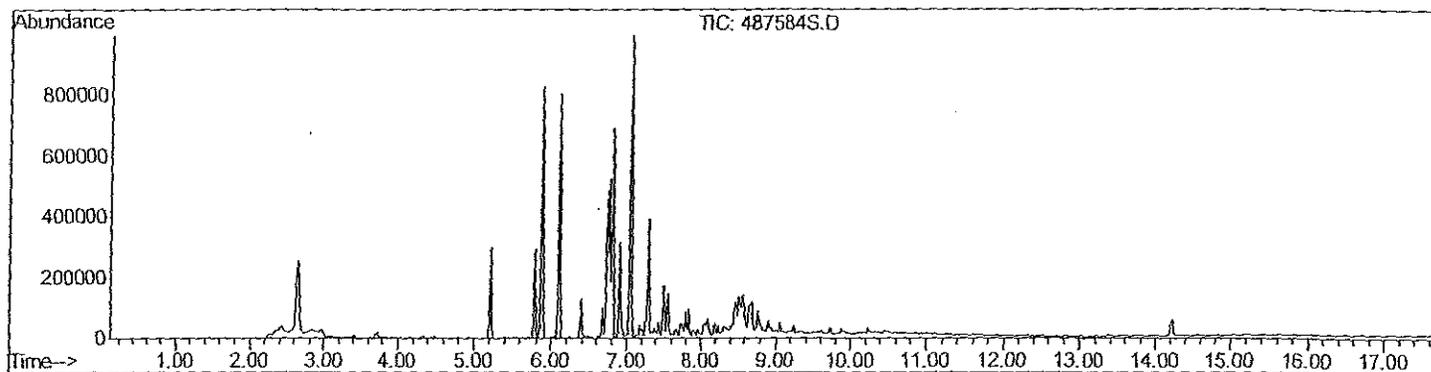
TIC - SITE DGV - PRODUCTION ORL #12683984
In Numerical Order



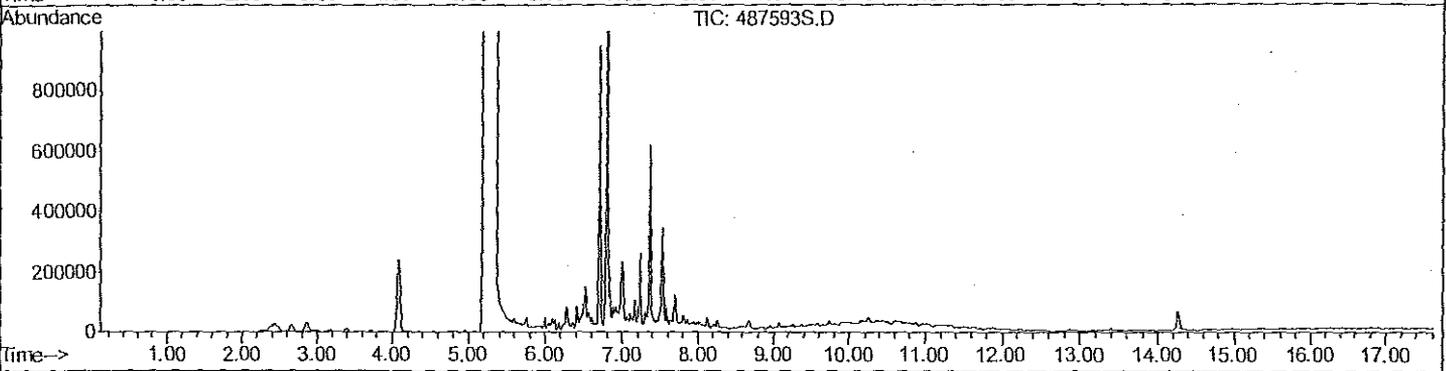
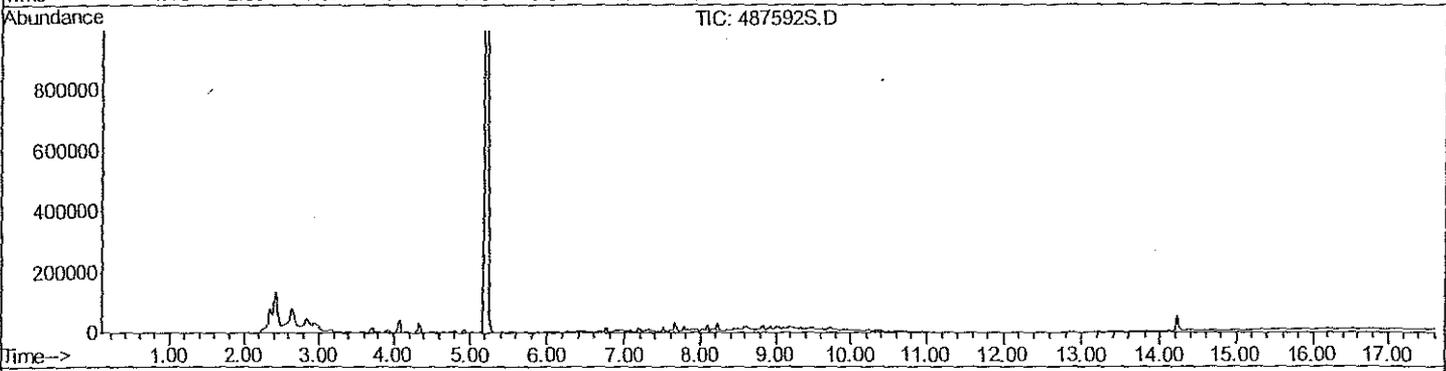
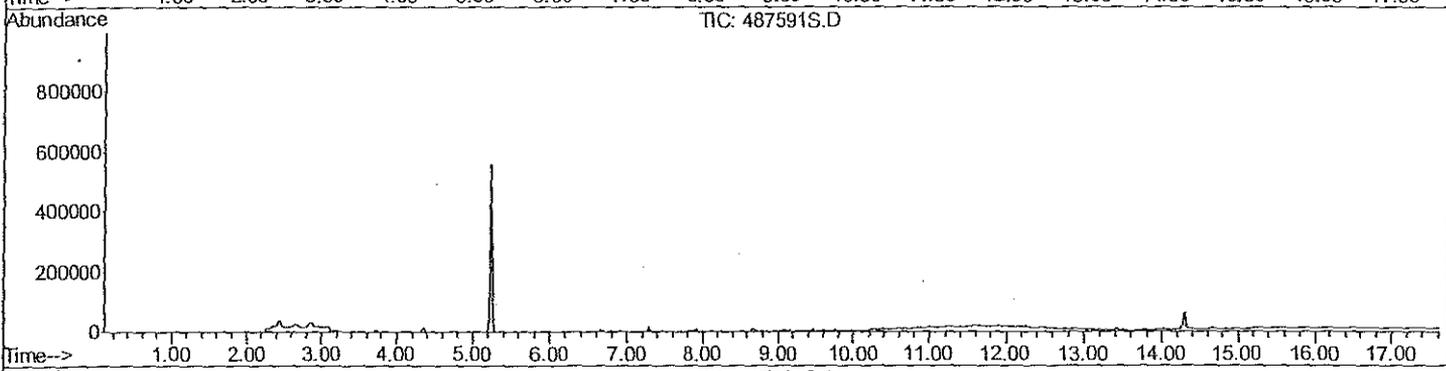
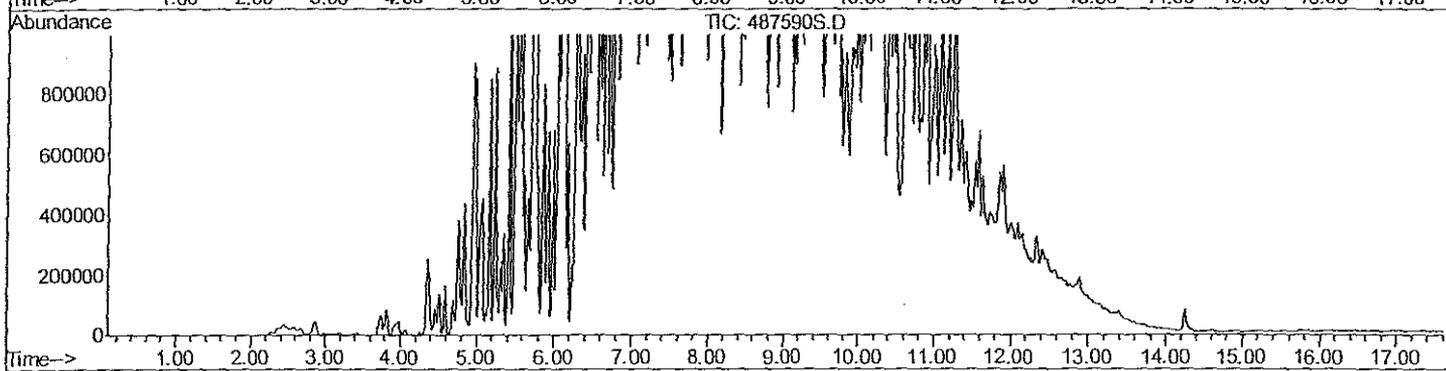
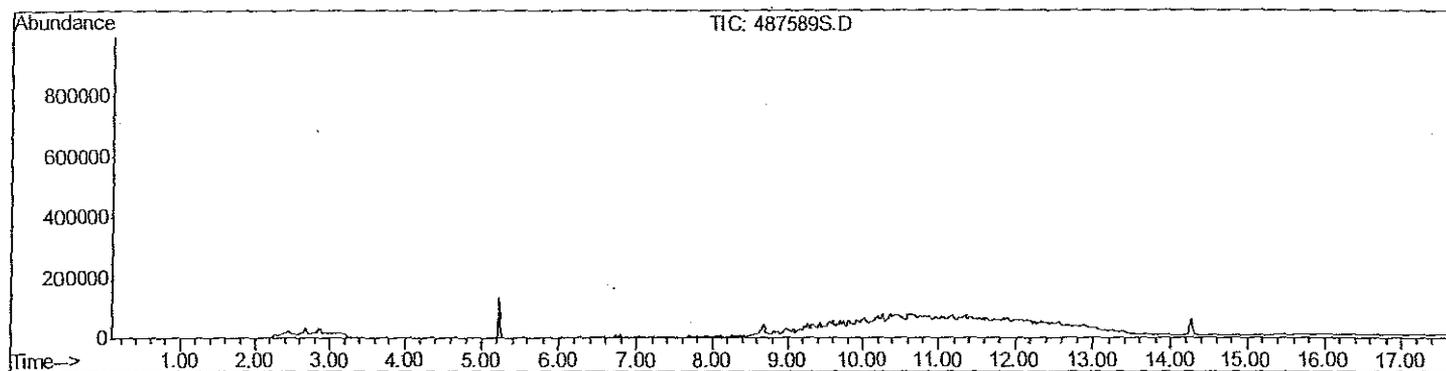
TIC - SITE DGV - PRODUCTION ORDER #12683984
In Numerical Order



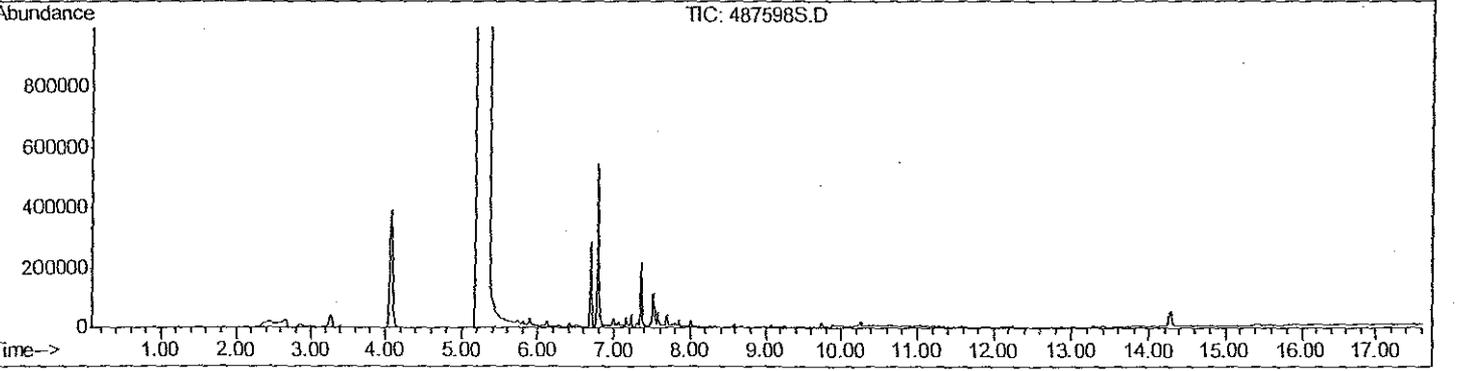
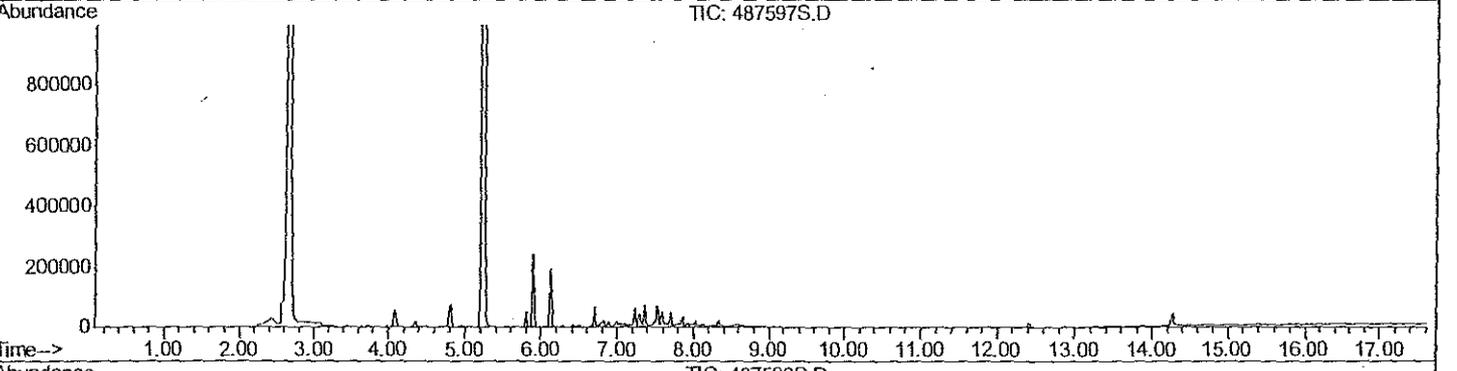
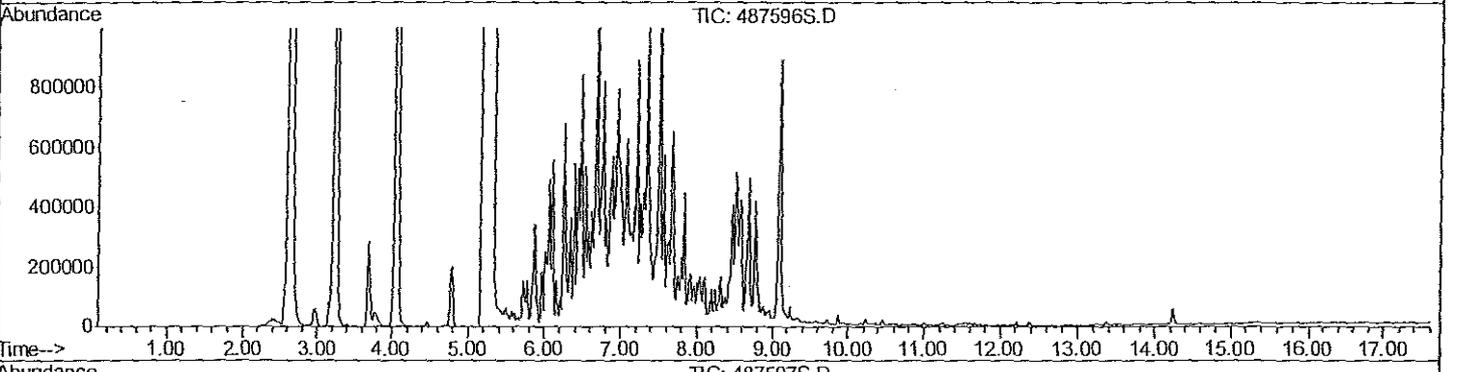
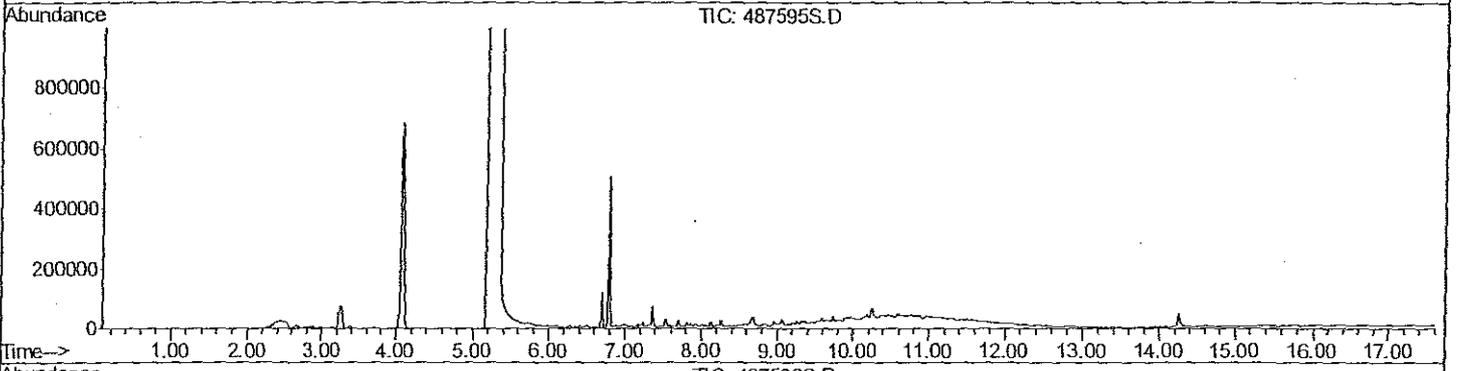
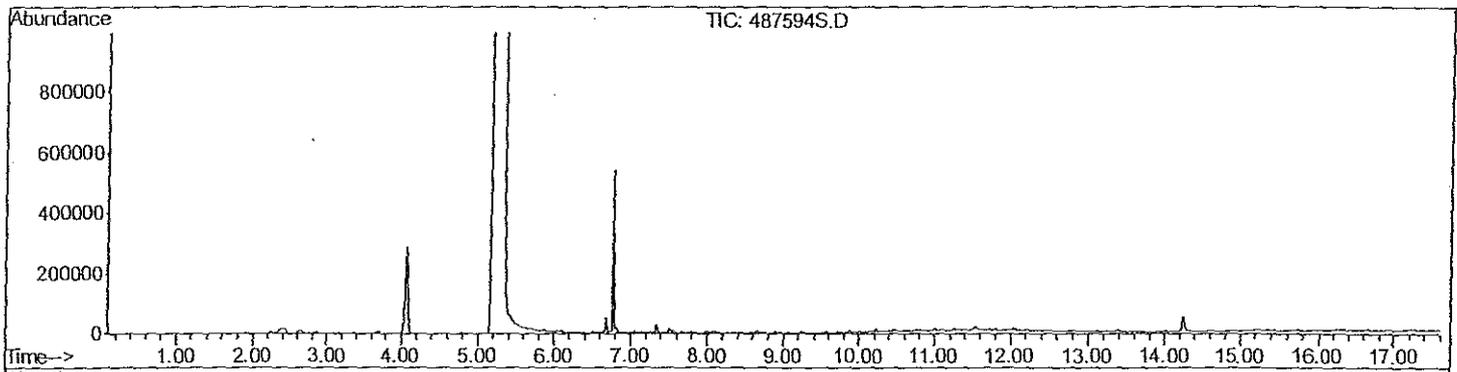
TIC - SITE DGV - PRODUCTION ORL #12683984
In Numerical Order



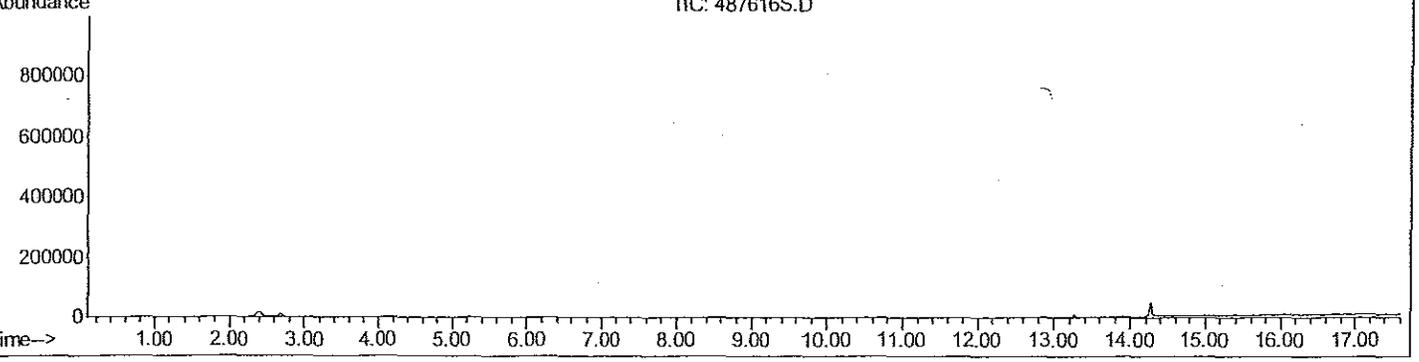
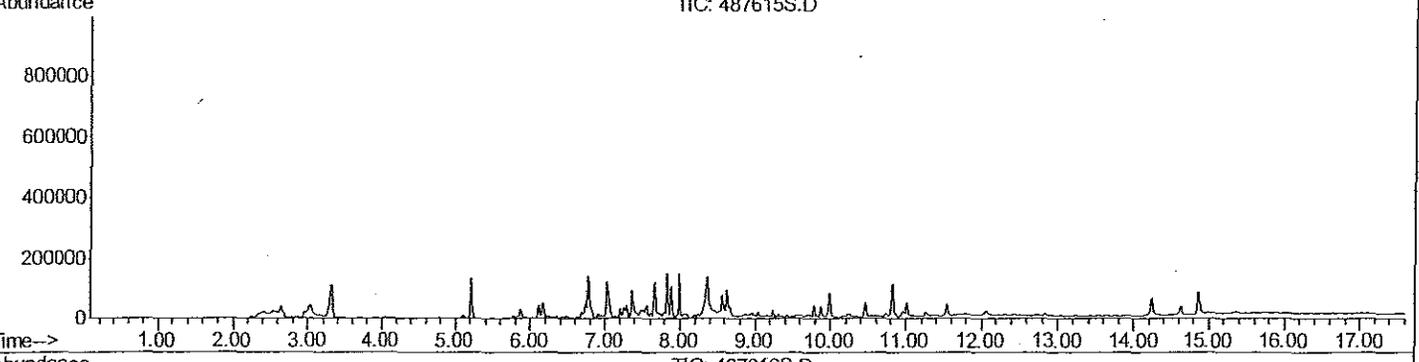
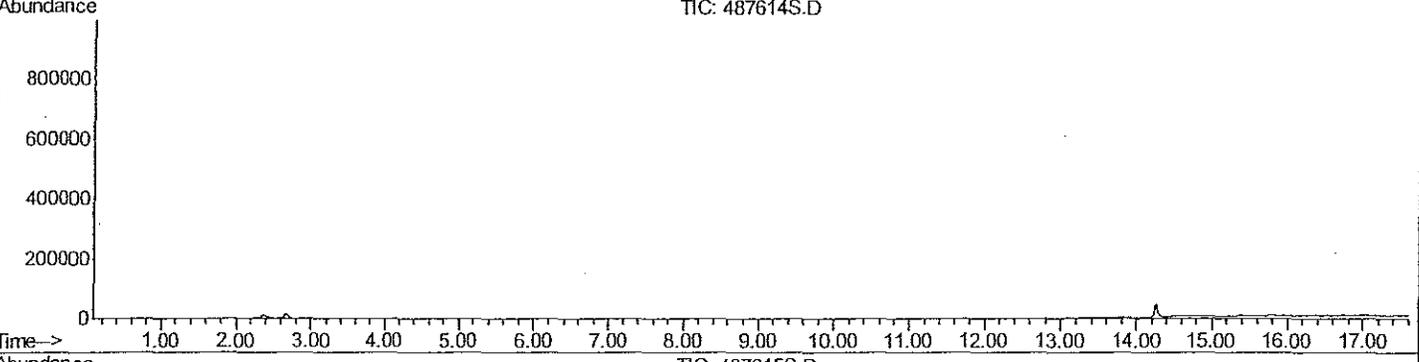
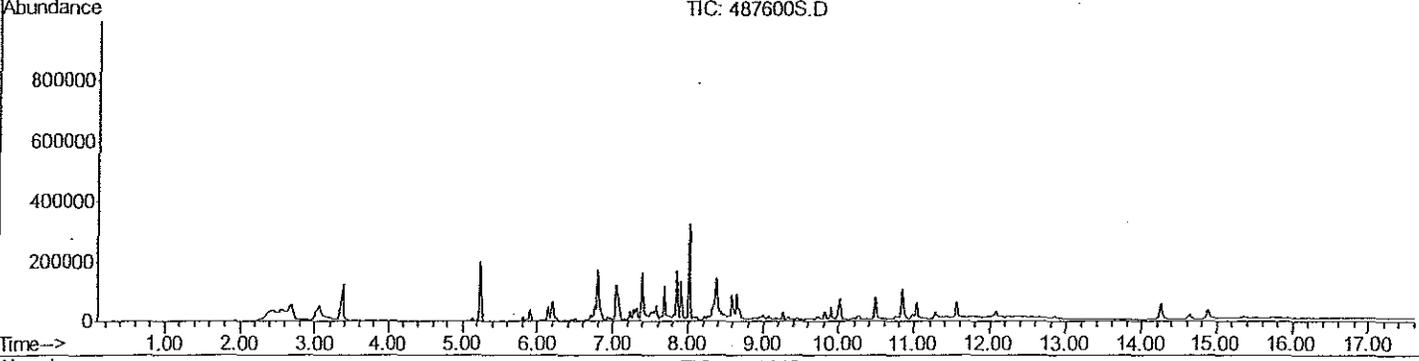
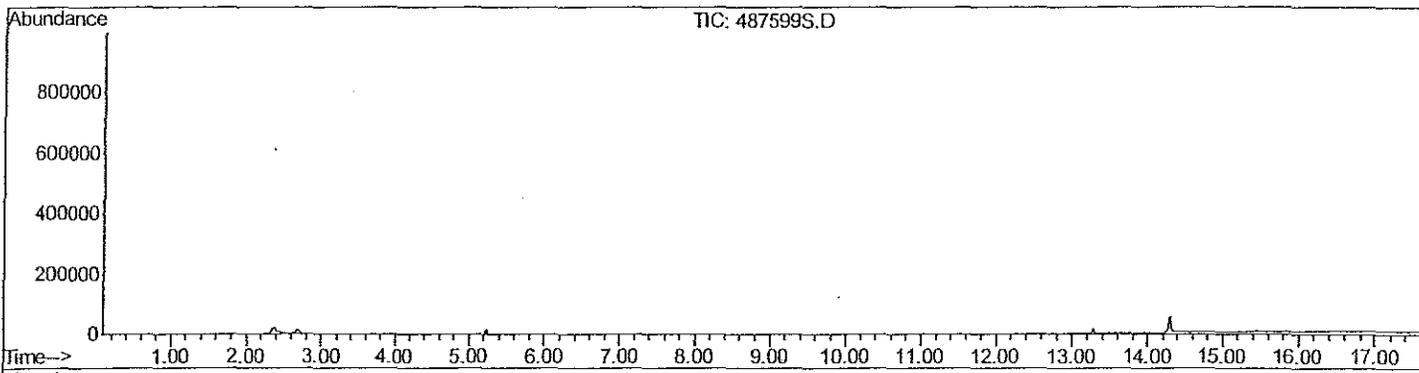
TIC - SITE DGV - PRODUCTION ORL #12683984
In Numerical Order



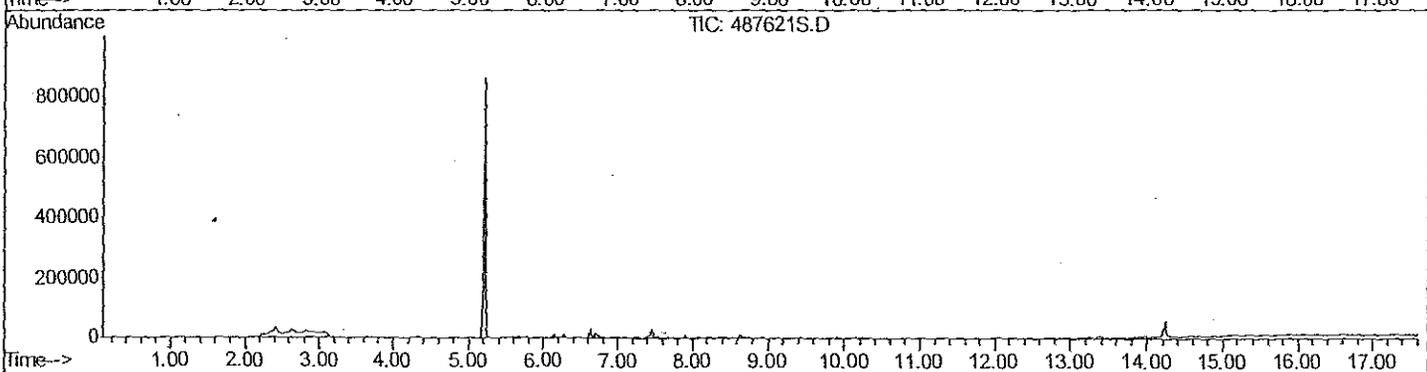
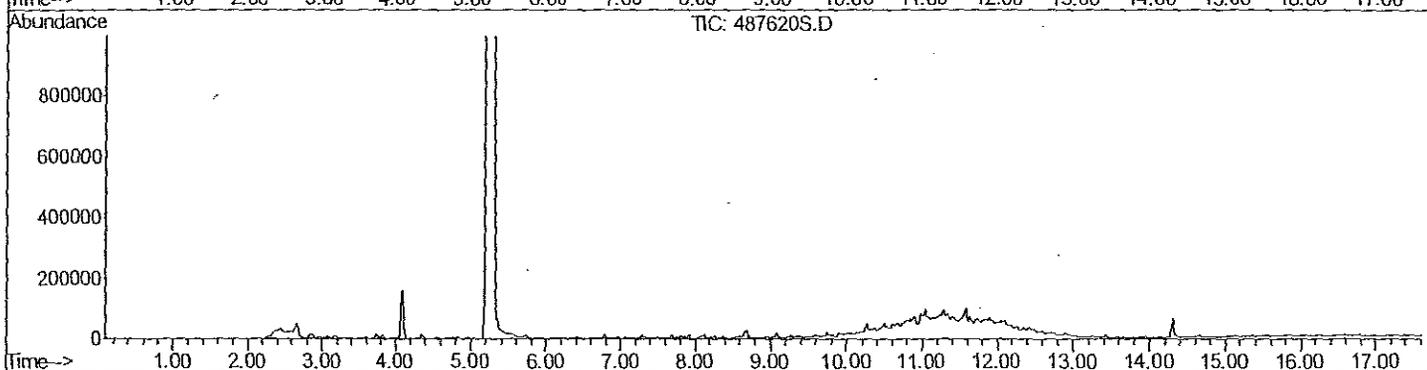
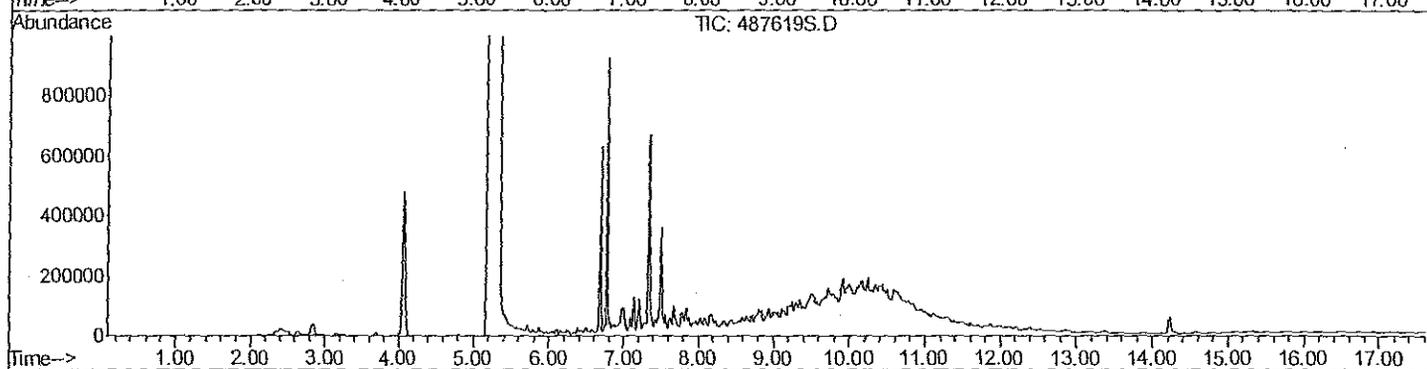
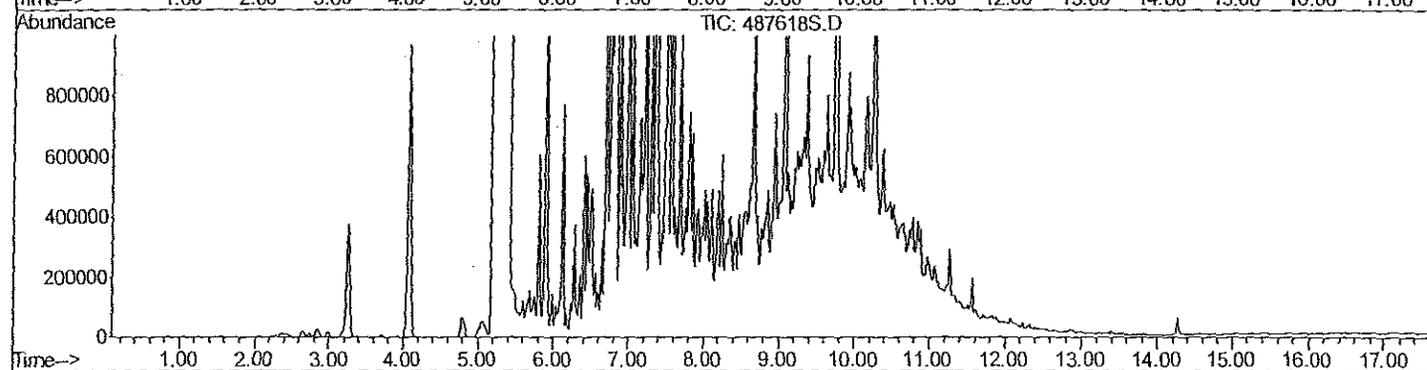
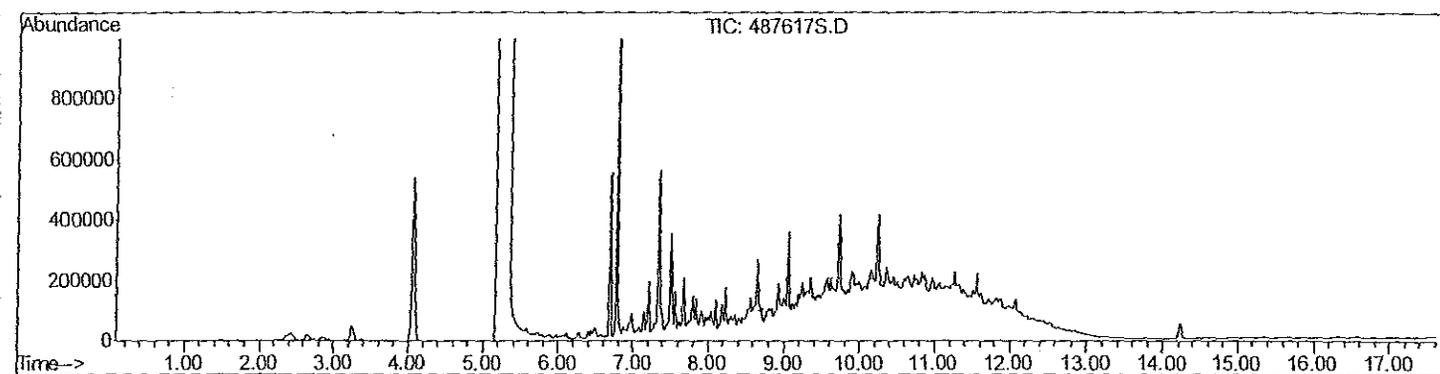
TIC - SITE DGV - PRODUCTION ORDER #12683984
In Numerical Order



TIC - SITE DGV - PRODUCTION ORDER #12683984
In Numerical Order

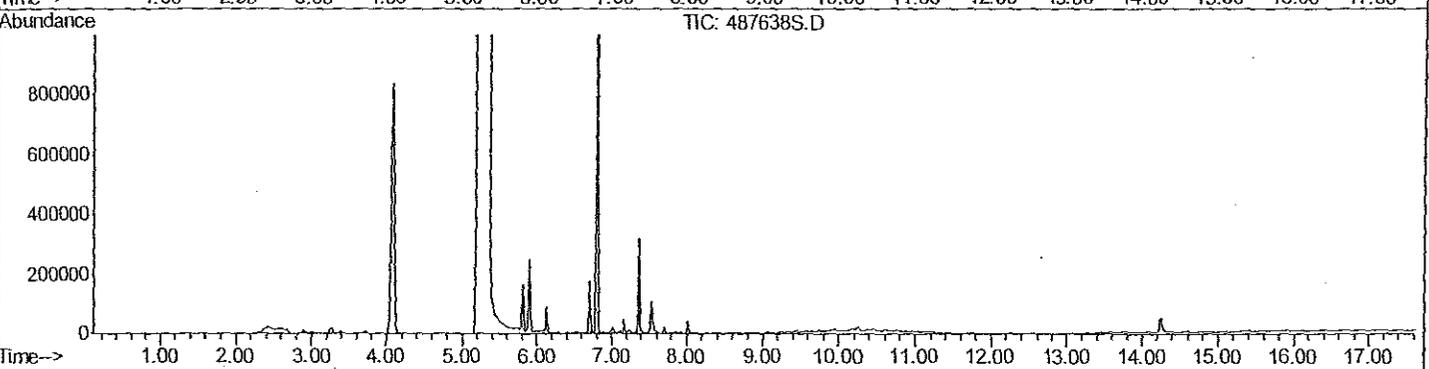
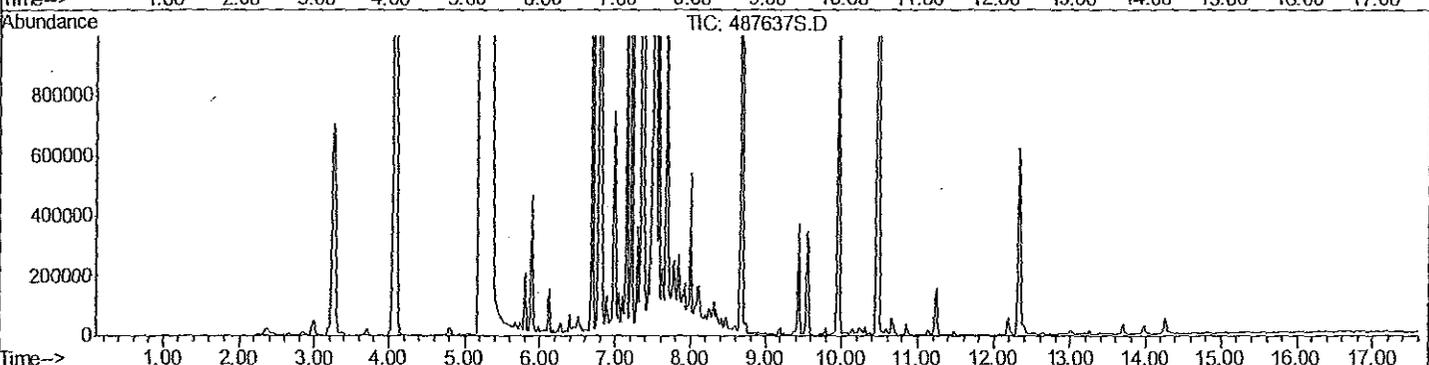
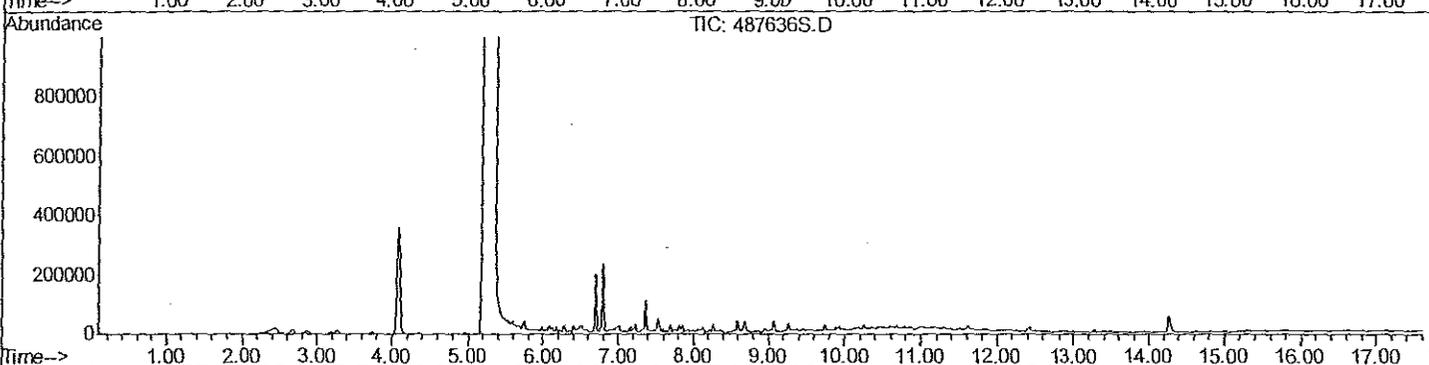
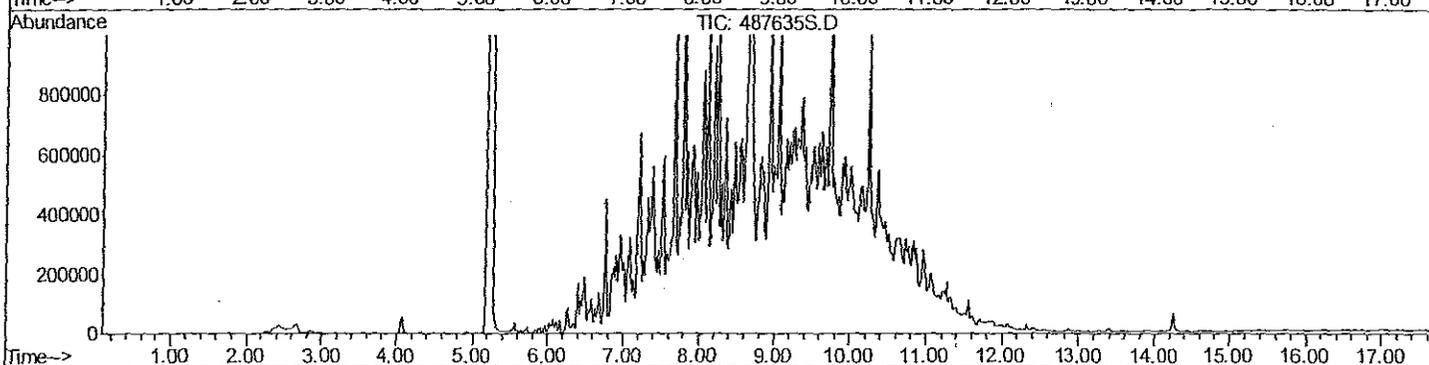
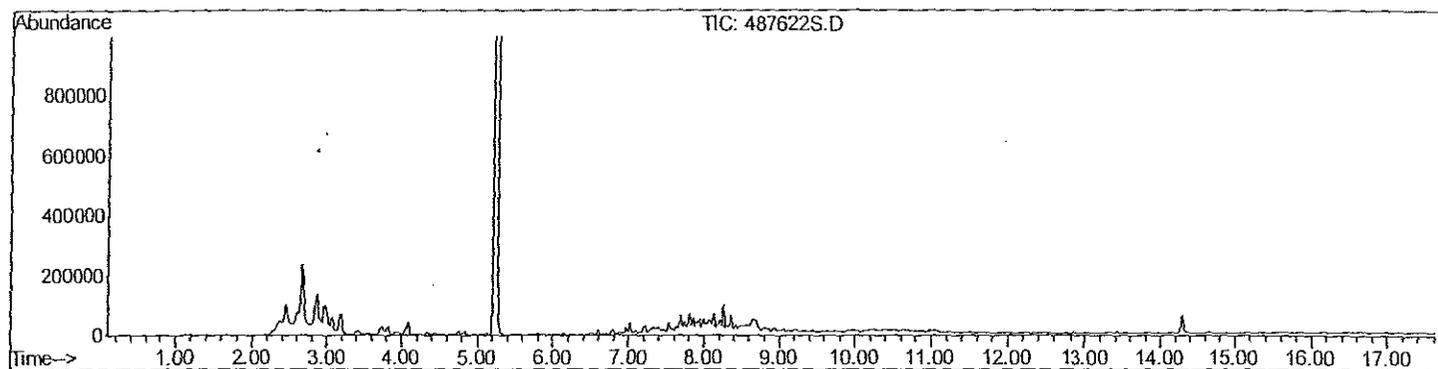


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In Numerical Order

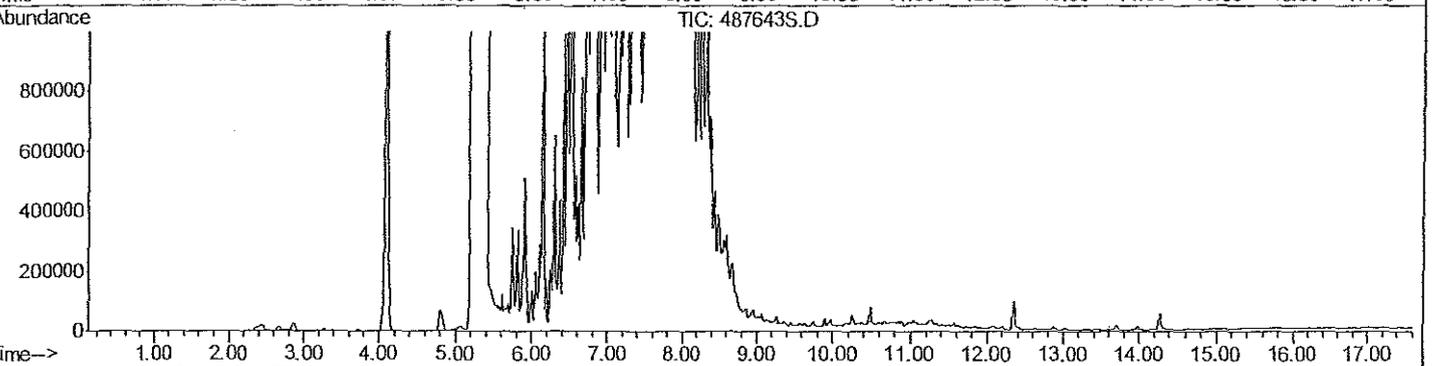
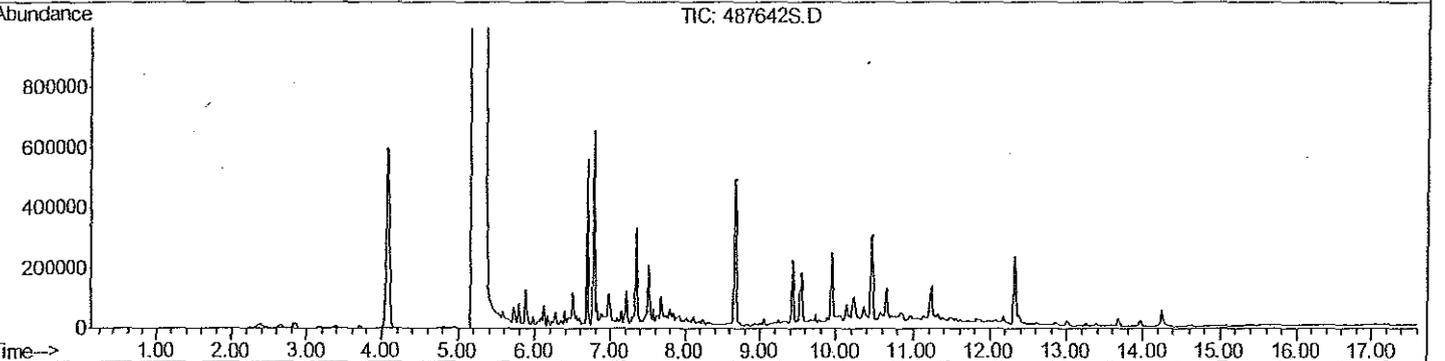
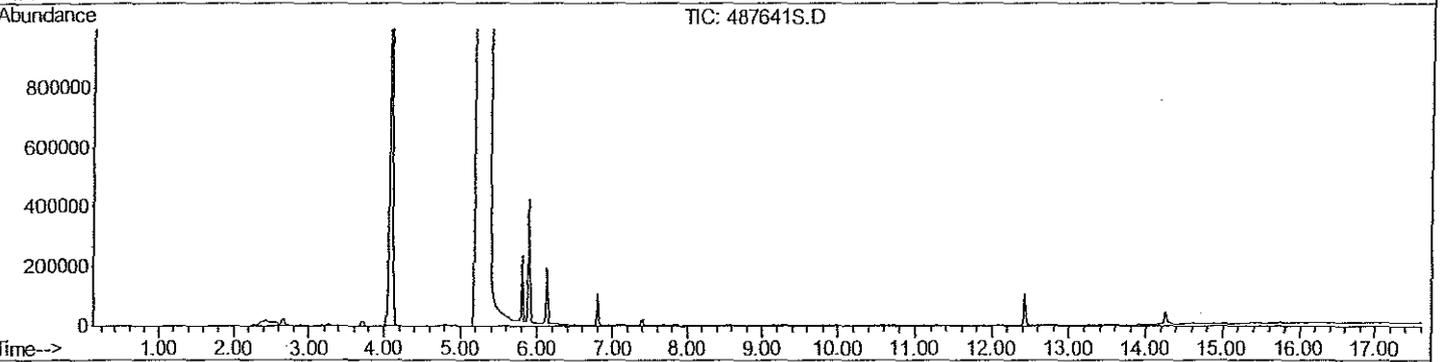
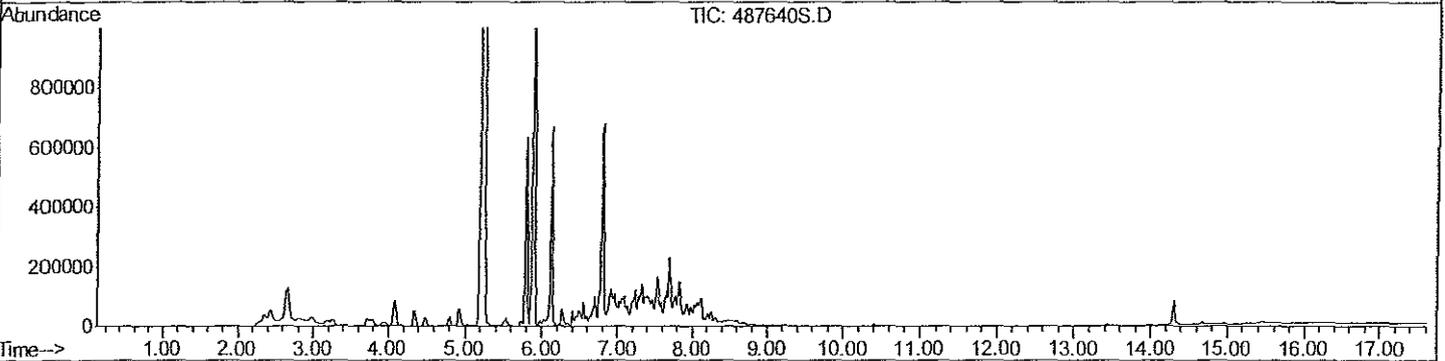
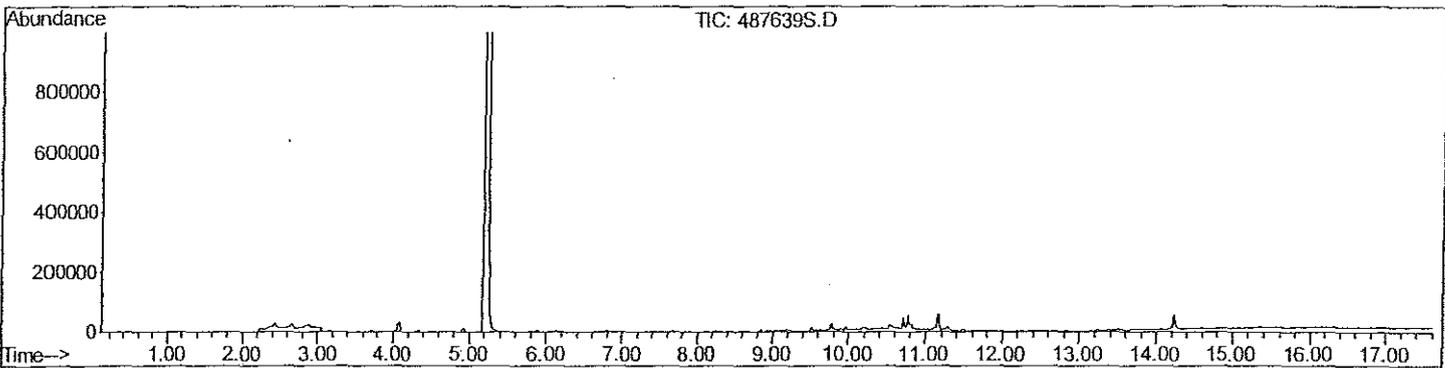


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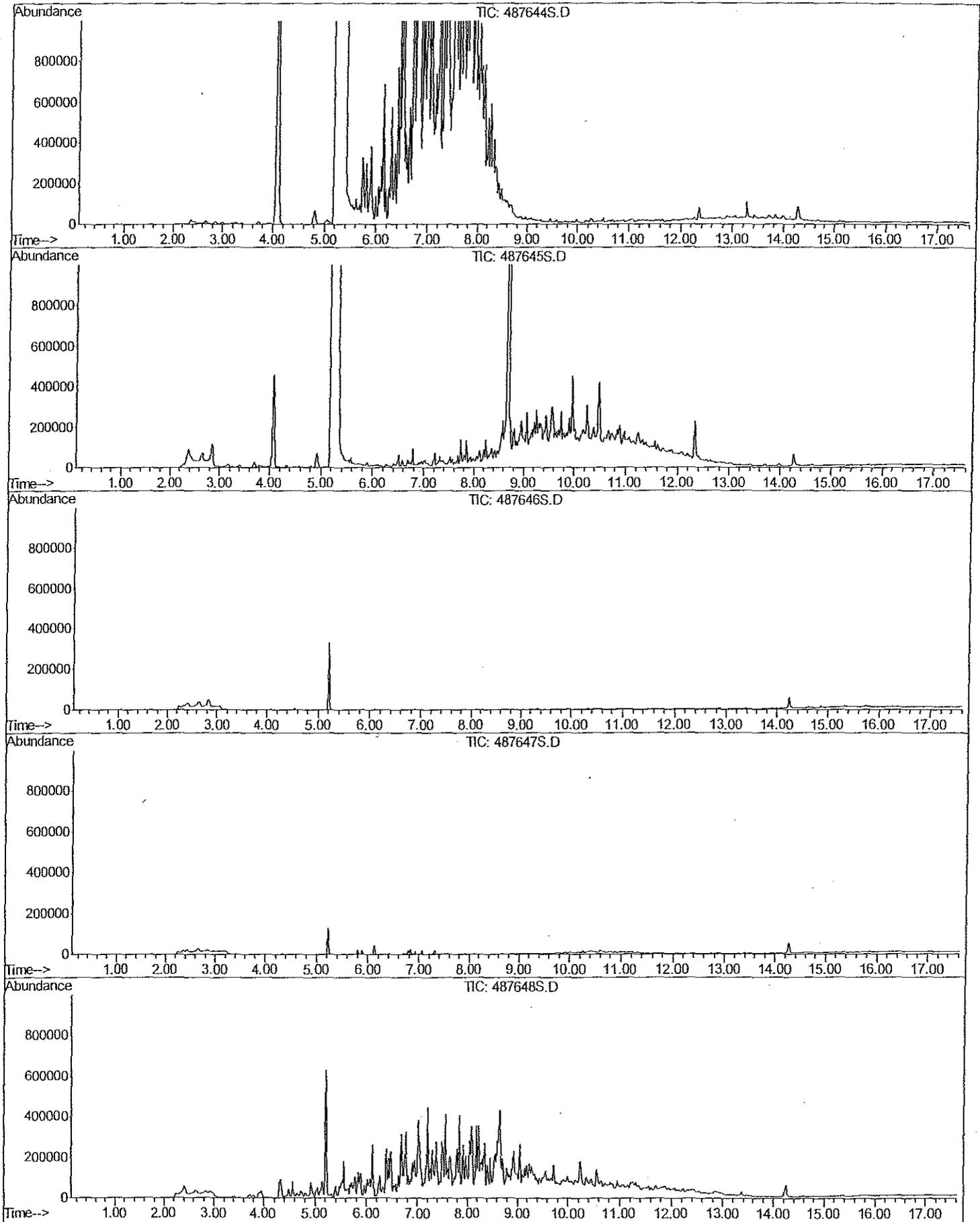
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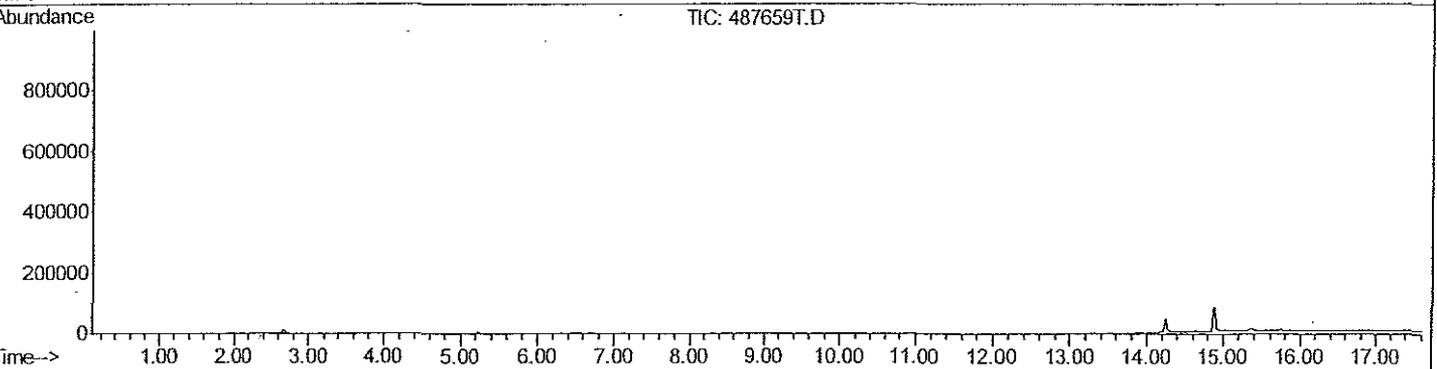
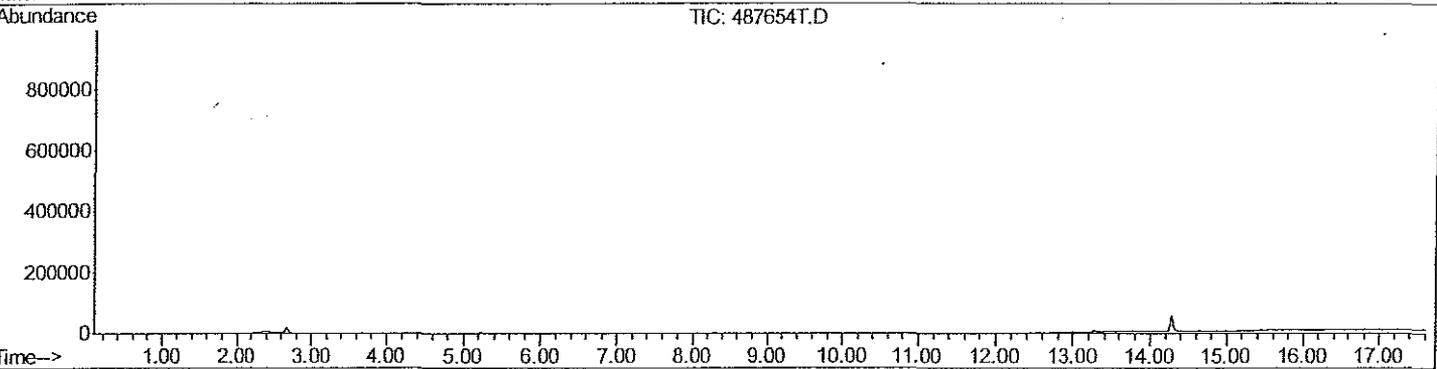
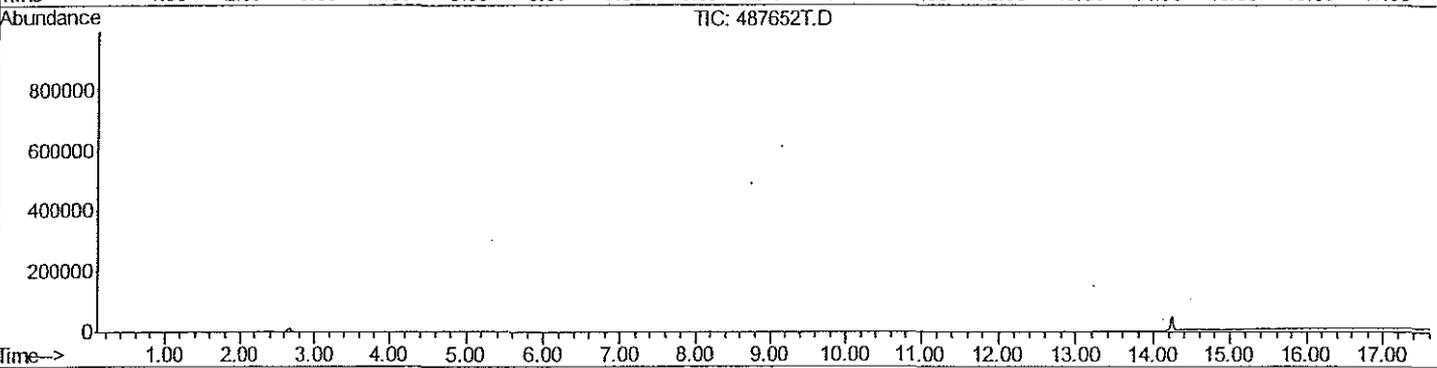
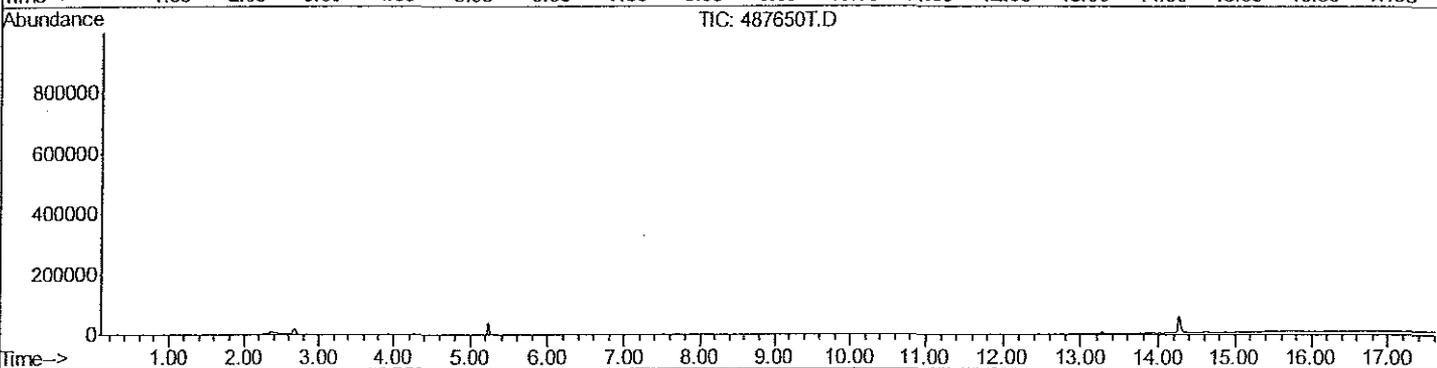
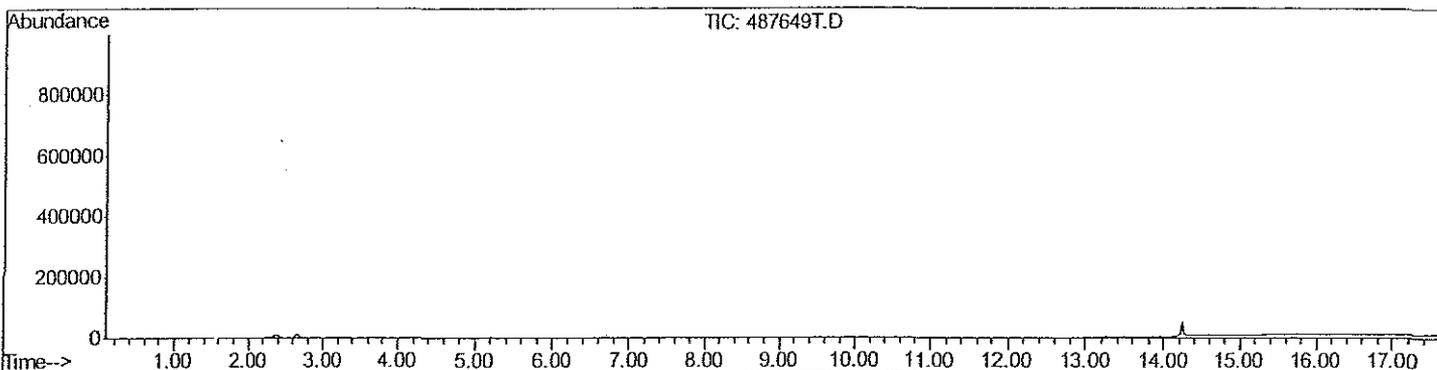


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In Numerical Order



TIC - SITE DGV - PRODUCTION ORDER #12683984

In Numerical Order



GORE™ SURVEYS ENVIRONMENTAL SITE ASSESSMENT

FOCUSING YOUR REMEDIATION EFFORTS.

Vapor Concentration Calculations

Vapor concentration data from the GORE™ Module, are derived from existing ASTM¹, MDHS² and other accepted and approved methods, developed for passive, sorbent-based, diffusion samplers.

Air: $\mu\text{g}/\text{m}^3 = \text{Mass}/\text{System Factor}/[(\text{Sampling Rate})(\text{Exposure Time})]$

Soil Gas: $\mu\text{g}/\text{m}^3 = \text{Air}/\text{Soil Effectiveness Factor}$

Mass = GC/MS measured mass from the Module

System Factor = correction factor for the efficiency of adsorption-desorption specific to the adsorbent, the compound of interest, and the analytical method

Sampling Rate = liters per hour (L/hr) of contaminated air collected by the Module

Soil Effectiveness Factor (E) = corrects for soil porosity and moisture content

Volume of air determinations were made by measuring the uptake rate of the GORE™ Module over time. Modules were placed in a sample chamber equipped with a microbalance. Vapor containing toluene concentrations of 10, 30 and 50 ppm were introduced into the chamber. The mass uptake was recorded through time, and for each concentration was linear with time. The slopes from each linear concentration curve were plotted and modeled. The sampling rate was determined for toluene. In a similar fashion, sampling rates were measured for a number of other petroleum and chlorinated compounds. Using these measured sampling rates and physical properties of these compounds, a model was generated to predict the sampling rates of similar compounds in our analyte list.

The masses of the target compounds are derived by desorbing the Module and analyzing the sample via gas chromatography and mass spectroscopy (GC/MS) following modified EPA methods 8260/8270. The mass is reported in units of micrograms.

System factors account for the efficiency of adsorption and desorption specific to the adsorbent, the compound of interest and the GC/MS method. The system factor is calculated for each target compound.

Soil effectiveness factors (E) is applied to the sampling rate to correct for lower potential flow through the pores of the soil, accounting for physical limitations that can retard the vapor migration process, e.g., low porosity soils and moisture in the vadose zone pore space. The factor is equal to the ratio of the effective diffusion of the compounds to the molecular diffusivity of the compound in air.

REFERENCES

1. ASTM Methods 6306-98, 4597-03, 6246-02, and 5314-93
2. MDHS Methods, 27, 70, and 80
3. Millington, R.J. and J.M. Quirk. 1961. "Permeability of Porous Solids." Trans. Faraday Soc. 57:1200-1207.
4. User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. 2000. PN 050240.004. www.epa.gov/sperfund/programs/risk.airmold/johnson_ettinger.htm



www.gore.com/surveys

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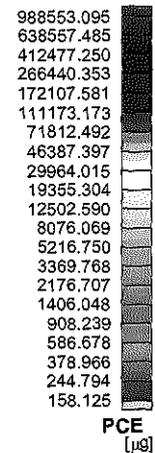
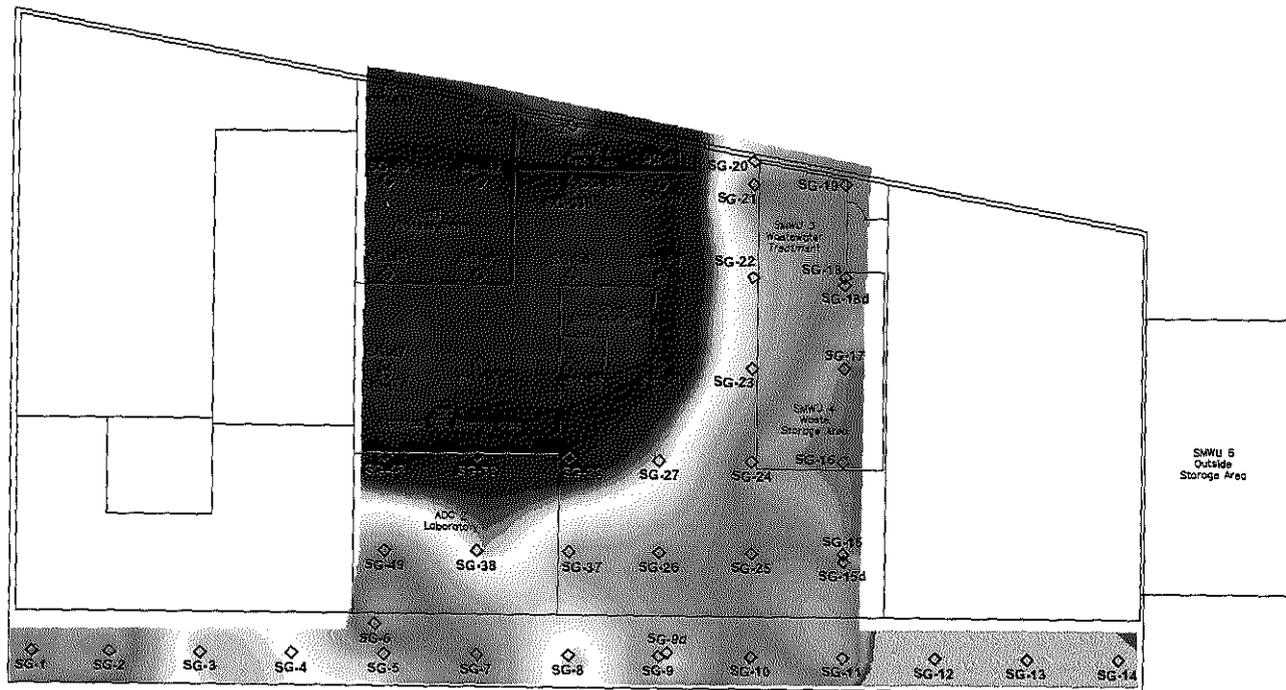
Email: environmental@wlgoze.com

The optimal performance of any Gore product is dependent upon how it is incorporated in the final device. Please contact one of our technical sales associates for application assistance.

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GORE(TM) Module Location
SG-40

GORE™ Surveys for Environmental Site Assessment



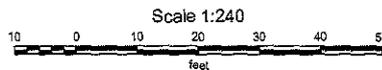
W.L. GORE & ASSOCIATES, INC.

100 CHESAPEAKE BOULEVARD
ELKTON, MD, USA 21821
USA
(410) 382-7800

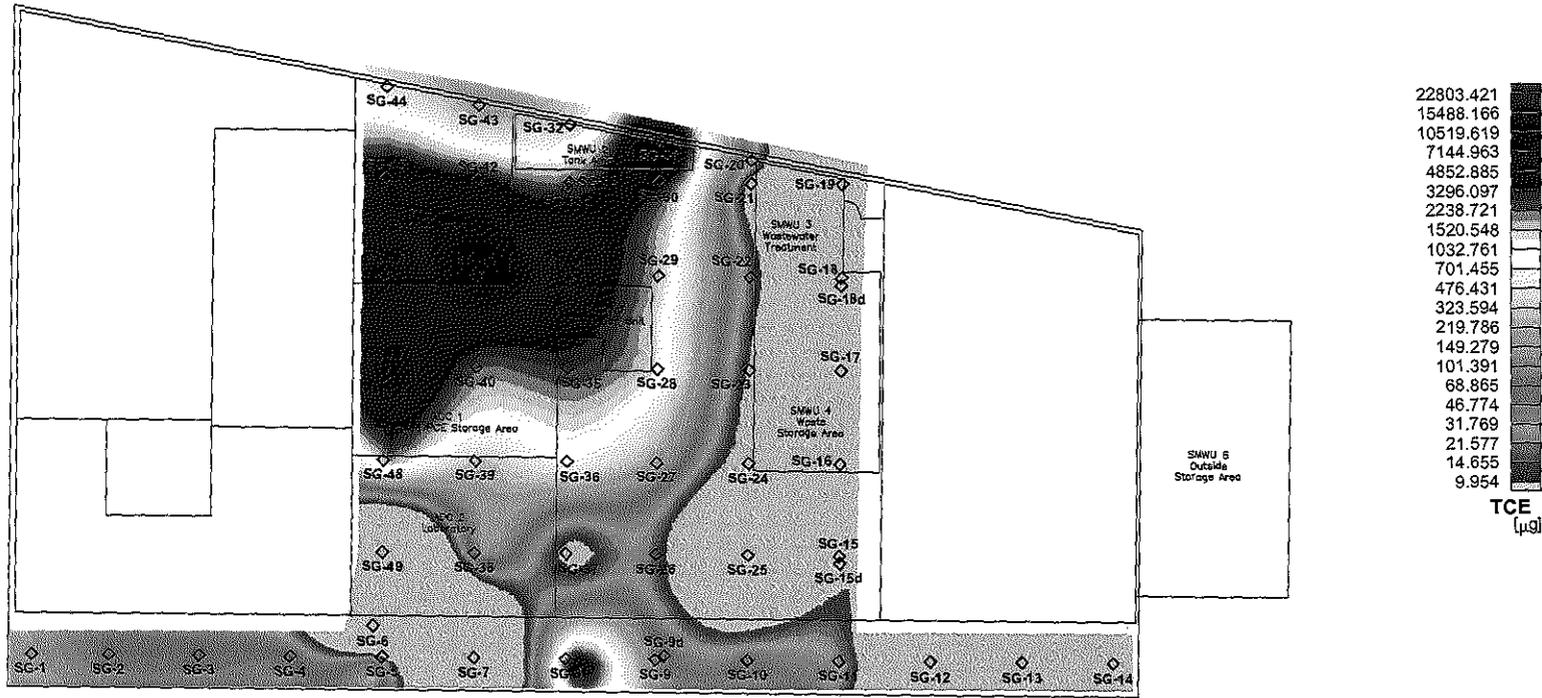
PES Environmental, Inc., Novato, CA
Technichem, Emeryville, CA
Tetrachloroethene

DATE DRAWN: 16 MAY 2006	DRAWN BY: JW	ORIG. CAD: 101706.DWG	SITE CODE: DGV
REV. DATE: 30 MAY 2006	REV. #: 1	PROJECT NUMBER: 12693884	

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GORE(TM) Module Location

 SG-40

GORE™ Surveys for Environmental Site Assessment



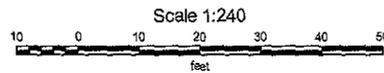
W.L. GORE & ASSOCIATES, INC.

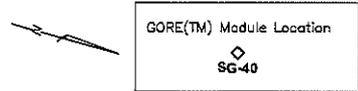
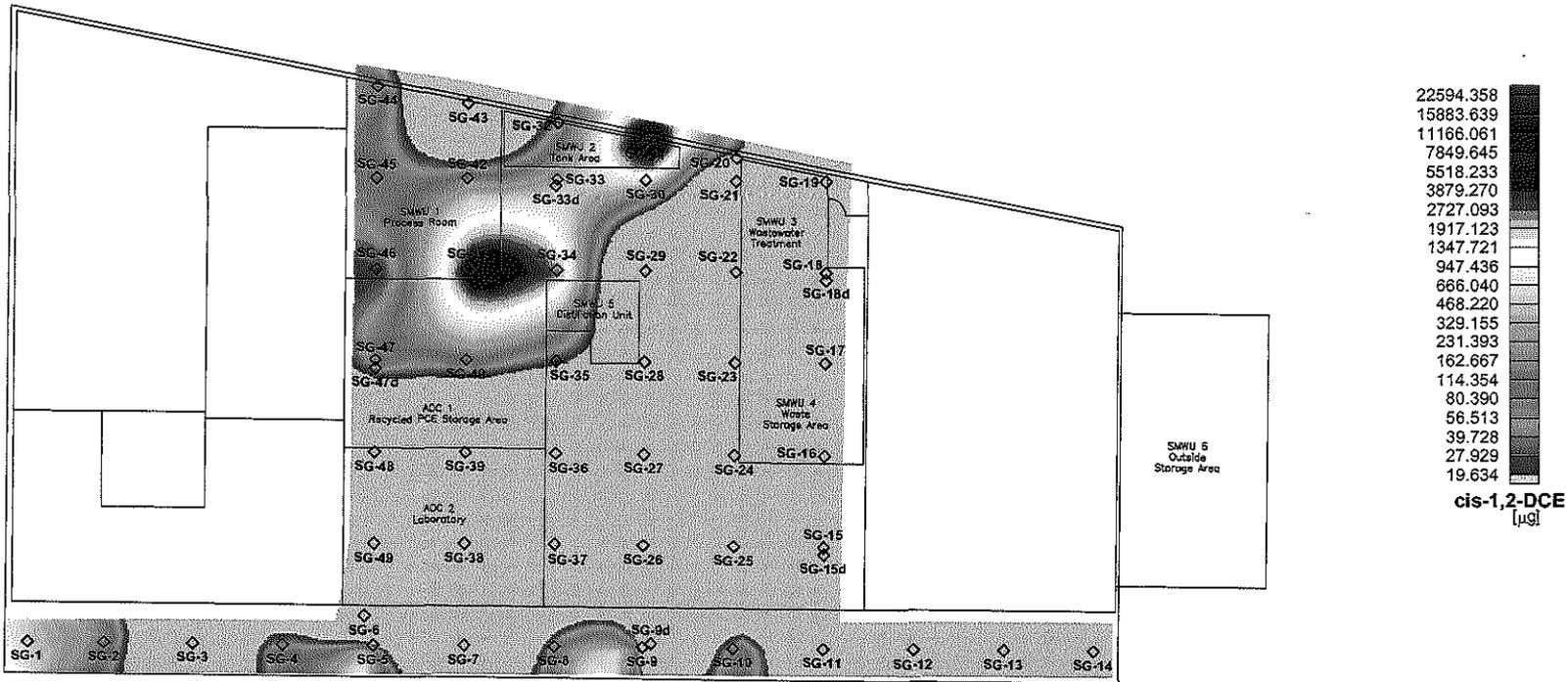
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 USA
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PES Environmental, Inc., Novato, CA
 Technichem, Emeryville, CA
 Trichloroethene

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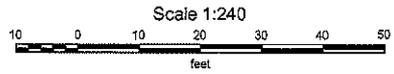
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APPENDIX D

SOIL PHYSICAL PROPERTIES ANALYTICAL DATA

May 1, 2006

Mr. Carl Michelsen
PES Environmental
1682 Novato Blvd.
Novato, CA 94947

Re: 1017.001.01.002/Technichem
File: 36240

Dear Mr. Michelson:

Enclosed are final data for samples submitted from your Technichem Project #1017.001.01.002. Electronic versions of the data have been previously sent to your attention. All analyses were performed by applicable ASTM, EPA or API methodology. The samples are currently in storage and will be held for thirty days before disposal.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this project. Please call me at (562) 907-3607 with any questions or if you require additional information.

Sincerely,
PTS Laboratories, Inc.

---original signed by---

Larry Kunkel
District Manager

LAK:vk

Encl.

APPENDIX E

APPENDIX E

ANALYICAL DATA REVIEW SUMMARY

ANALYTICAL DATA REVIEW SUMMARY

Site Name: Technichem

Location: 4245 Halleck Street

Project TDD Number:

Emeryville, CA 94608

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- Included: No Problems
- X Included: Problems Noted In Review
- None Not Included and/or Not Available
- NR Not Required
- X Provided As Re-submission

Case Narrative:

- Case Narrative Present

Quality Control Summary Package:

- Data Summary Sheets
- Matrix Spike/Spike Duplicate Recoveries
- Laboratory Control Sample Recoveries
- Method Blank Summaries
- None Initial Calibration Data
- None Continuing Calibration Data
- Surrogate Compound Recovery Summary
- Internal Standard Area Summary

Sample and Blank Data Package Section

- Chromatograms
- Quantitation Reports

Raw QC Data Package Section

- NR Quantitation Reports for Standards, LCS, and MS/MSD
- List of Instrument Detection Limits
- Chain-of-Custody Records
- NR Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Site Name: <u>Technichem</u>	Location: <u>4245 Halleck Street</u>
Project TDD Number:	<u>Emeryville, CA 94608</u>

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable:

- | | | |
|---------------|-------------------------------------|-----------------------------|
| 1 | Holding Times | <u>yes</u> |
| 2 | Instrument Performance Criteria | <u>yes</u> |
| 3 | Initial Calibrations | <u>yes</u> |
| 4 | Continuing Calibrations | <u>yes</u> |
| 5 | Laboratory Control Sample | <u>yes</u> |
| 6 | Matrix Spike/Matrix Spike Duplicate | <u>yes</u> |
| 7 | Blanks and Background Samples | <u>yes</u> |
| 8 | Surrogate Compounds | <u>yes</u> |
| 9 | Internal Standards | <u>yes</u> |
| 10 | Duplicate Analyses | <u>yes</u> |
| 11 | Analyte Quantitation | <u>yes</u> |
| 12 | Analyte Quantitation | <u> </u> |
| 13 | Overall Assessment of Data | <u>yes</u> |
| 14 | Usability of Data | <u>yes</u> |

Comments:

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**FACILITY CLOSURE PASSIVE SOIL GAS INVESTIGATION REPORT
 TECHNICHEM INCORPORATED
 4245 HALLECK STREET
 EMERYVILLE, CALIFORNIA**

JUNE 19, 2006

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3 Copies	PES Job Files	6 - 8
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CERTIFICATION STATEMENT

I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those portions of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared at my direction in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted.

---original signed by---

Carl J. Michelsen, C.H.G.
 Principal Geologist
 June 19, 2006