



# PHILIPS

## Philips Semiconductors

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February 4, 2000

Mr. Steve Pullen  
Military and Private Sector (MAPS) Section  
RCRA Corrective Action Program  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
Santa Fe, NM 87502

FEB 2000  
RECEIVED

Subject: Soil Gas Survey, RCRA Facility Investigation for SWMU #8, Former Coronado Municipal Landfill, RCRA Permit #NMD000709782

Dear : Mr. Pullen

Philips Semiconductors is submitting the enclosed memorandum that summarizes the findings of the December 1999 soil gas survey that was conducted as part of the RCRA Facility Investigation (RFI) for SWMU #8, Former Coronado Municipal Landfill. The soil gas survey was implemented as was proposed in the RFI Work Plan submitted in October 1999.

If you have any questions regarding the soil gas survey please feel free to contact me at (505) 822-7634.

Sincerely,

Philips Semiconductors

A handwritten signature in cursive script, appearing to read "Joe Mauser".

Joe Mauser  
Project Manager

cc: Baird Swanson/GWQB  
Kirby Olson/HRMB  
David Cobrain/HRMB

## **December 1999 Soil Gas Survey**

### **Philips Semiconductors, Albuquerque, New Mexico**

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This memorandum summarizes the soil gas survey activities that were conducted between December 6 and 11, 1999 at the Philips Semiconductors facility and certain privately-owned adjacent properties in Albuquerque, New Mexico. The soil gas survey was conducted to investigate the former Coronado Municipal Landfill (CML) which had been operated on portions of the properties by the City of Albuquerque (COA) during the early 1960's. Presented below is a discussion of the site background, the soil gas investigation activities that were conducted, a summary of the soil gas investigation results, and conclusions that can be drawn from the results of the soil gas survey.

### **Investigation Background and Summary**

The area that comprises the former CML covers approximately 60 acres. That 60-acre area was leased by the COA from 1963 to 1965 and was used as a municipal waste landfill. The actual owner of the property during the time of the landfill operation is unknown. In 1980 Philips bought the property that is situated east of San Mateo Blvd, south of San Diego Avenue, west of Pan American Freeway, and north of Modesto Ave. This parcel of property includes part of the area that was operated as the former CML. At the time of the purchase, Philips was unaware that the property had previously been used as a municipal landfill. In April 1981, via an industrial revenue bond process, the COA became the owner/lessor of the property and currently, Philips leases the property from the COA for \$1 per year.

In 1987, Philips initiated a baseline investigation of groundwater beneath the facility to evaluate possible potential impacts to the groundwater from the former CML wastes. Groundwater samples collected during the baseline investigation, and during subsequent regular sampling conducted by Philips, identified the compound tetrachloroethene (PCE) in the groundwater at concentrations above the Environmental Protection Agency (EPA) regulatory standard. The compound PCE is not currently nor ever has been used in the operations at the Philips facility.

As the occupant of the property, Philips Semiconductors has been required to investigate the source of the PCE in the groundwater as part of a Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) and determine if it poses a threat to human health or the environment. As part of the RFI, a soil gas survey was performed to investigate possible contaminant source areas in the former landfill materials.

The results of the soil gas survey are contained in this report and are discussed in more detail below. The low level concentration and non-detect soil gas results from this investigation suggest that a PCE source is not present in the landfill materials and therefore a remedial action targeted at removing a discrete near-surface source is not warranted. These data, along with other data collected during the RFI, will be used to determine what, if any, remedial measures may be necessary in the future to protect human health and the environment.

## Soil Gas Survey Investigation

### Soil Gas Survey Investigation Activities

As part of the RCRARFI at the site a soil gas survey was proposed to investigate possible contaminant source areas in the former landfill materials and to evaluate soil gas as a potential contaminant transport mechanism. In order to accomplish this CH2M HILL and a soil gas survey subcontractor, teg Rocky Mountain, mobilized to the Philips' site on December 6, 1999 to begin the soil gas survey. A pre-determined sampling grid, as presented in Section 3.3.6 of the RFI Work Plan, was laid out overlying the suspected areas of subsurface landfill material. A total of 91 samples were collected and analyzed; 87 samples were collected from soil gas sample probe points and four samples were collected from existing methane vent wells at the Philips' site. Figure 1 shows the actual sample locations for all of the collected soil gas samples.

Two main 150- by 150-foot cell sampling grids were laid out on the Philips property, one grid on the southern property edge and the second along the northern property edge. Soil gas samples were collected from a total of 61 points on the Philips' property, 54 samples from the pre-determined gridded nodes, four additional samples around the first sample location that showed a detection of tetrachloroethene (PCE) in the soil gas (SG-24), and three additional locations in the area between the southern and northern grids to provide data from that area. Five of the sample points on the southern grid were not sampled because they were in inaccessible areas. Also, in some cases grid sample locations had to be shifted to accommodate structures or utilities that were in the way.

The four additional sample points placed around SG-24 were added because at that point in the field effort that was the first location that displayed any concentration of PCE. Therefore, that area was further investigated by adding sample locations at 50-ft radii to the north, south, east, and west around it to better evaluate the shape and dimensions of a potential plume. Two of the four additional sample points were found to contain PCE. However, as the survey proceeded it became apparent that individual and clustered locations with PCE concentrations of 1-3 µg/L were not unusual across the properties. Therefore as the survey continued, additional points were not added around all of the locations with PCE detections.

Additional soil gas survey grids were sampled on several of the private properties north of the Philips site (north of San Diego Avenue). The property owners of Lots 29-32, Block 5 and Lots 1-6, Block 4 in the North Albuquerque Acres Tract A, Unit B subdivision granted access to Philips' and its subcontractors to enter their properties and conduct the soil gas survey. Permission was requested but not received from the owner of Lots 27-32, Block 4 and Lots 1-6, Block 5 in the subdivision so the soil gas survey did not include those lots. Figure 1 shows the actual sample locations.

Each soil gas sample was collected by advancing 1 ½-inch diameter steel sampling rods into the soil to depths of approximately 8 to 10 feet below ground surface. The RFI Work Plan had proposed that soil gas samples would be collected from depths of approximately 15 feet below ground surface but it was found that the soil material and subsurface rock and debris at the site made it infeasible to advance the sampling rods that deep.

The soil sampling rods were advanced by hydraulically pushing the rods into the ground with the sampling rig. Upon reaching the final probe depth, the sampling rods were pulled back slightly to expose the open end of the rod to the soil interface and a vacuum pump was placed on the end of the sampling rod at the ground surface. A vacuum was drawn to purge the static air volume inside the sampling rod and then draw the gas present in the interstitial spaces in the soil into the rod and to the surface. A volume of soil gas was collected in a 1-liter Tedlar sample bag and then taken to the onsite mobile laboratory where it was immediately analyzed by the technician.

Gas samples were collected from four of the existing methane vent wells at the Philips site by placing a sampling hose down the vent pipe and drawing a sample. There was no way to purge the vent pipe or seal the sampling hose onto the vent pipe therefore the collected samples were most likely largely mixed with ambient air.

In the mobile onsite laboratory each sample was analyzed for Volatile Halogenated and Aromatic Hydrocarbons using a modified SW-846 Method 8021 (See Attachment A for the laboratory report that provides the complete list of analyte compounds). Samples were also analyzed for fixed gases (carbon dioxide, oxygen, nitrogen, and methane) using SW-846 Method 3C.

After collection of the soil gas samples at each location the sampling rods were extracted and the remaining 1-inch diameter hole was backfilled with powdered bentonite to seal the hole.

### **Soil Gas Survey Investigation Results**

The goal of the soil gas survey was to attempt to determine if a PCE source might exist in the subsurface landfill materials on the Philips' property or the northern private properties which could in turn be acting as a source of PCE contamination in the groundwater. Therefore, the primary contaminant of concern, PCE and its anticipated degradation products, such as trichloroethene, and dichloroethene were key compounds looked for in the soil gas survey. Methane concentrations in the soil gas were also of interest because they could be indicative of the presence of subsurface landfill materials. The soil gas sample results are summarized in Table 1 and the full analytical report is provided as Appendix A.

The results of the December 1999 soil gas survey indicated the presence of low levels of multiple compounds in soil gas in several areas of the Philips' property and the private properties. Compounds detected in the soil gas included benzene, toluene, ethylbenzene, m&p- and o-xylenes, PCE, trans- and cis-1,2-dichloroethene (DCE), and trichloroethene (TCE). Results are summarized in the bullets below:

- At 37 of the 87 soil gas sample locations no volatile halogenated or aromatic hydrocarbon compounds at all were detected (the detection levels were 0.25 µg/L).
- At 24 locations only detections of one or more of the compounds benzene, toluene, ethylbenzene, and m&p- or o-xylenes (BTEX compounds) occurred.
- In 26 samples the chlorinated compound PCE was detected, both with and without companion concentrations of BTEX compounds.
- Only two of the 24 samples that contained concentrations of PCE also contained one or more its degradation products (TCE and DCE).

Figure 2 shows contour lines around sample locations with similar PCE concentrations, including locations that had PCE only detected and locations that had PCE detected with TCE and DCE. The contour lines on Figure 2 are dashed because the location of a given concentration contour line is only estimated based on available data points and does not necessarily occur as depicted on the figure.

The highest detected soil gas concentration for any compound was a concentration of 4.26 µg/L PCE detected in sample SG-82 which was located in one of the northern private properties. Soil gas concentrations of PCE between 2.0 and 3.0 µg/L were detected at three sample locations, SG-24, SG-59, and SG-92. Location SG-24 is located on the Philips' property and locations SG-59 and SG-92 are located on the privately owned properties north of San Diego Ave. All remaining detected soil gas concentrations of PCE were between 1.0 and 2.0 µg/L. Thirteen of the < 2.0 µg/L PCE

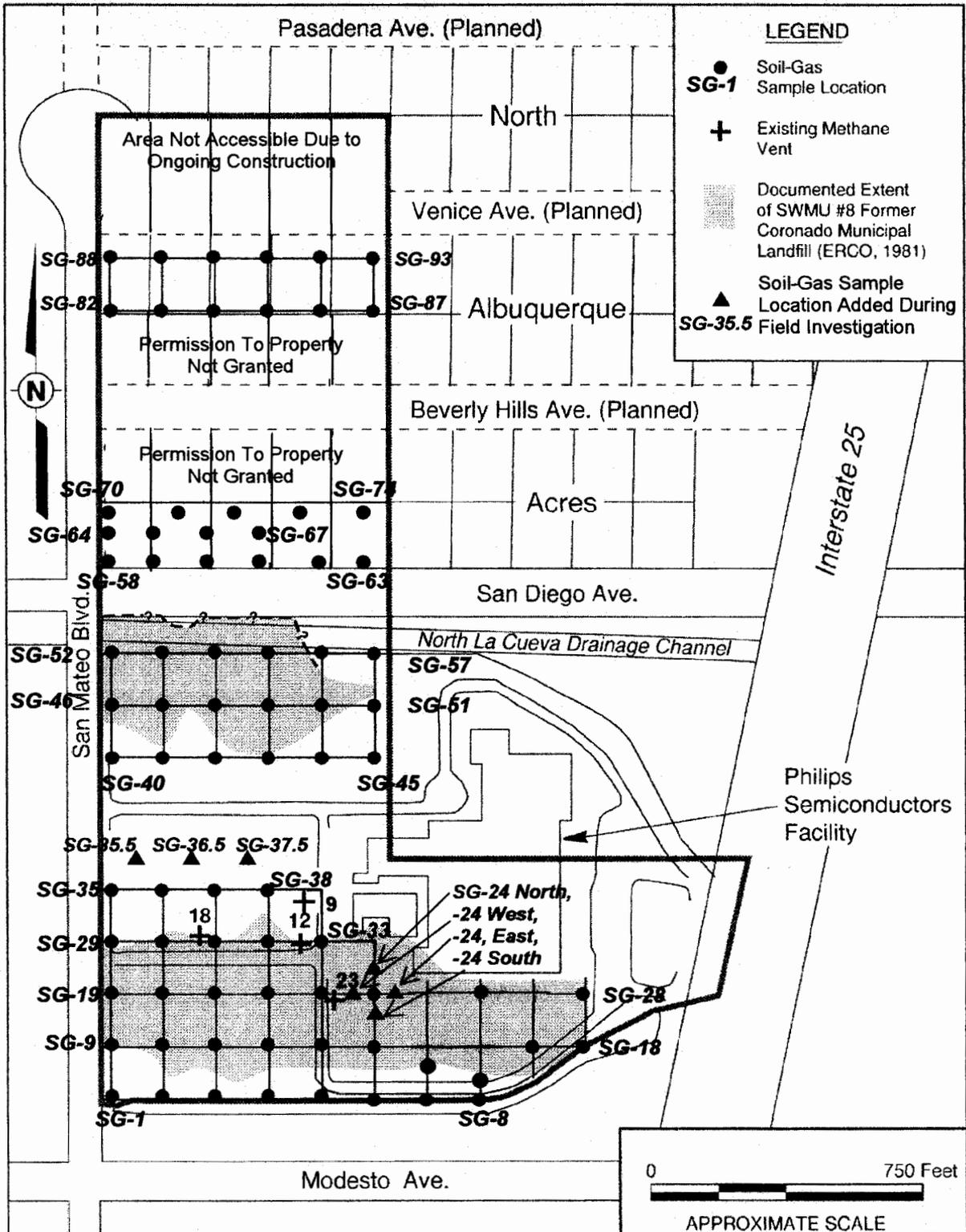
detections were from sample locations on the Philips' property and the other nine detections were from locations on the privately owned properties north of San Diego Ave.

Methane was detected at 35 soil gas sample locations with concentrations ranging from 1.1 to 26.2%. There was no clear correlation between the presence of methane in a given sample and the occurrence of other chlorinated or petroleum hydrocarbon compounds.

The presence of BTEX compounds in samples from the December 1999 soil gas survey is not unusual considering that the materials disposed of in the landfill most likely included various household sources of petroleum hydrocarbon compounds. The occurrence of methane in various samples also is not unusual because the area is known to contain landfill materials which are decomposing and producing methane.

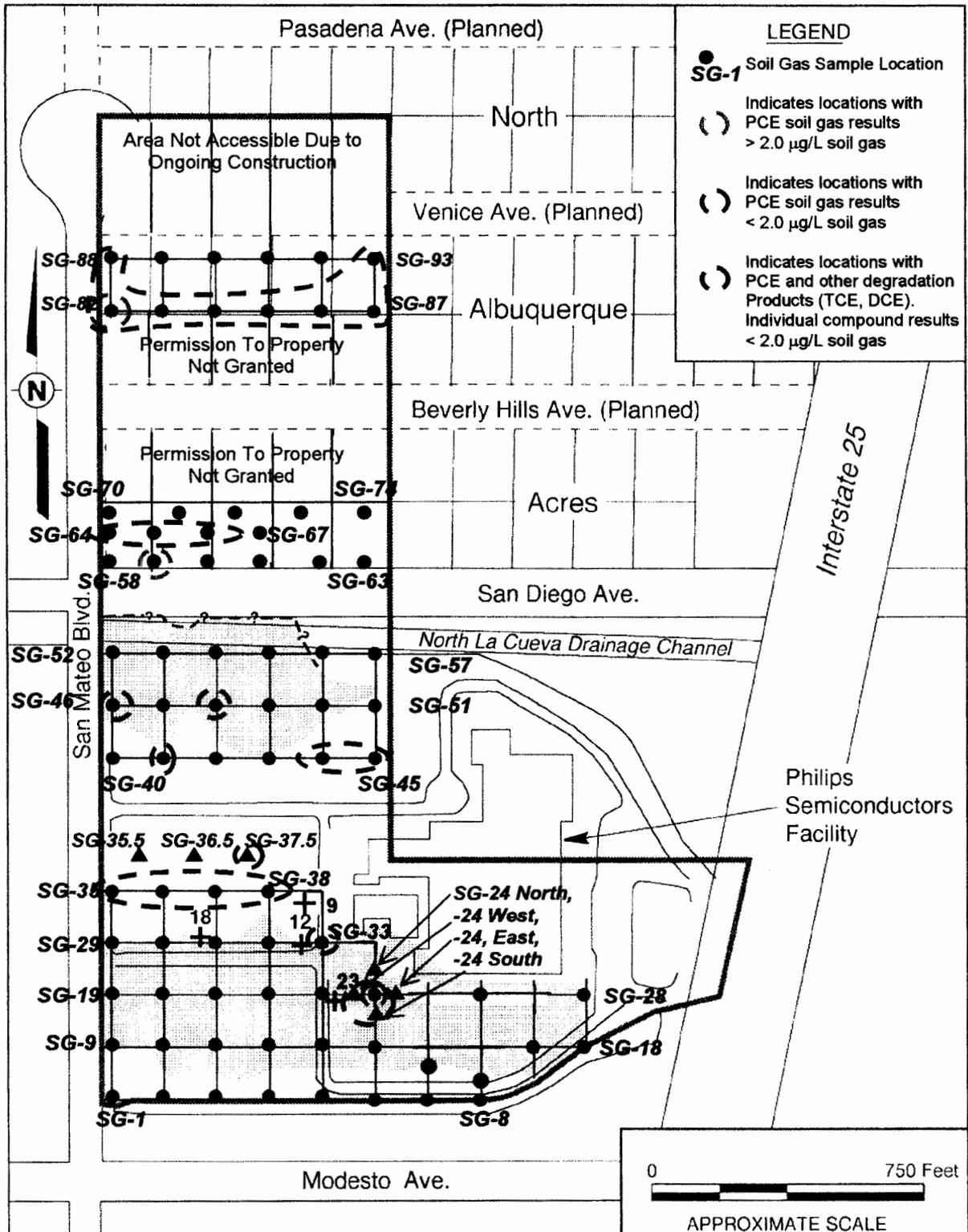
### **Soil Gas Survey Investigation Conclusions**

Soil gas concentration results can not be directly correlated to concentrations in other media unless the properties of that media are specifically known and the dynamics of the inputs and outputs of a system can be constrained. Therefore, the results from the December 1999 soil gas survey provide only a screening tool to evaluate the possible presence of contaminants of concern in the soil gas at the site and to roughly discern areas of higher or lower concentrations. The concentrations of PCE detected in the soil gas survey at the Philips site and on the northern private properties were all relatively low. If an active PCE source occurred within the near surface in the proximity of a sample location soil gas concentrations on the order of 100's  $\mu\text{g/L}$  would be more likely to occur than concentrations of  $< 2.0 \mu\text{g/L}$ .



The soil gas sample points are numbered consecutively across each grid line from west to east. The sample number for the west and east sample point for each grid line is shown on the above map. The sample numbers for the middle locations increasing consecutively from the lower number to the higher number. Even if a sample could not be collected at a given grid location the sample number for that location was retained. Samples were not collected at points SG-25, -26, -27, -34, or -39. Furthermore, samples SG-24 South, -24, East, -24 North, and SG-35.5, 36.5, and -37.5 are additional sample locations that were added during the field investigation.

**Figure 1. Soil Gas Sample Locations**



Sample locations shown outlined with a dashed colored contour line are locations that had detectable soil gas concentrations of PCE, TCE, and/or DCE. The key at the upper right explains the meaning of the different contour colors. The contour lines on the figure are dashed because the location of a given concentration contour is only estimated based on available data points and does not necessarily occur as depicted on the figure.

**Figure 2. Soil Gas Concentration Contours - PCE**

















Sample Number	Vent 23	Vent 9	Vent 12	Vent 18
Date	12/10/99	12/10/99	12/10/99	12/10/99
Sample Amount (cc or mL)	40	40	40	40
Matrix	vapor	vapor	vapor	vapor

**Compound (all results in µg/L)**

benzene	ND	ND	ND	ND
toluene	ND	ND	ND	ND
ethylbenzene	ND	ND	ND	ND
m&p-xylenes	ND	ND	ND	ND
o-xylene	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	ND	ND
methylene chloride	ND	ND	ND	ND
trans- 1,2-dichloroethene	ND	ND	ND	ND
1,1-dichloroethane	ND	ND	ND	ND
cis- 1,2-dichloroethene	ND	ND	ND	ND
chloroform	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND
carbon tetrachloride	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND
trichloroethene	ND	ND	ND	ND
1,1,2-trichloroethane	ND	ND	ND	ND
tetrachloroethene	ND	ND	ND	ND
chlorobenzene	ND	ND	ND	ND
1,1,1,2-tetrachloroethane	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	ND	ND	ND	ND

Reporting Limit	0.25	0.25	0.25	0.25
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**Fixed Gas: (Normalized)**

carbon dioxide (%)	13.2	2.9	7.0	2.9
oxygen (%)	7.0	18.8	13.5	19.0
nitrogen (%)	79.2	78.0	79.3	77.8
methane (%)	ND	ND	ND	ND

Reporting Limit	1.0	1.0	1.0	1.0
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**Attachment A**  
**Soil Gas Sample Laboratory Report**



**teg Rocky Mountain**  
Project Narrative Report  
teg Project Number: 9388  
Tuesday, December 14, 1999  
teg Client: CH2M Hill Inc.  
Client Contact: Sharon Minchak

**Sample Receipt:**

The samples for this project were received from December 6 to December 11, 1999 from the teg Rocky Mountain Field Services Division. The samples and their containers appeared to be in good condition and a chain of custody form was completed to log the samples into the mobile lab.

**Holding Times:**

All samples were prepared and analyzed within the method required holding times.

**Methodology:**

The determinations for halogenated and BTEX compounds were carried out using modified SW-846 method 8021. Samples were introduced into the instruments by method 5030 (purge and trap.) The determinations for fixed gasses were carried out using method 3C.

**Laboratory Equipment:**

The laboratory is equipped with two Finnigan/Tremetrics model 9001 gas chromatographs interfaced with Tekmar LSC 2000 purge and trap units. Each GC has FID, PID, and ELCD detectors mounted on the instrument. At any one time, two detectors are active on each instrument. Each detector has associated with it particular classes of compounds for which it is the primary means of identification and quantification. The other active detector on the instrument is sometimes used to confirm the identification performed by the primary detector. The laboratory is also equipped with a Carle 111 gas chromatograph. This instrument has a TCD detector and data acquisition is done using Peak Simple software.

**Calculations:**

All the detectors on the gas chromatographs in the mobile laboratory are calibrated to respond to absolute masses (in nanograms) of analyte. Calculations are then carried out by the data system to compute the actual concentration of the analyte in the original sample. The default volume of sample for purge and trap is 40 mL. Dividing nanograms of analyte by milliliters of sample is equivalent to  $\mu\text{g/L}$ . The default volume of sample for fixed gas analysis of vapors is 1.0 mL. The instrument is calibrated in percent, and the results are then normalized to 100%.

**Calibration:**

The analytical work for this project was carried out using teg level II QC and employed a three point initial calibration. On each additional project day the calibration was verified with a mid-level continuing calibration verification.

**Method Blanks:**

A method blank is used after each calibration run to verify system cleanliness and after hot samples at the discretion of the analyst.

**Analysis Comments:**

Sample SG-24 was initially reported as 18 $\mu$ g/L. This was incorrect and due to a calculation error. The correct result is shown with the data.

*Jan Tall* for Graham Jackson  
Analyst/Date 12/16/99

*Jan Tall* 12/16/99  
Reviewer/Date

teg Rocky Mountain  
 400 Corporate Circle  
 Suite R  
 Golden, CO 80401

FINAL DATA

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 E-Mail: Lab@tegrockymountain.com

CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP  
 VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99
SAMPLE	BLANK	BLANK	SG-1	SG-9	SG-19	SG-20	SG-10	SG-2	SG-3
SAMPLE AMOUNT (cc or mL)	10	10	40	40	40	40	40	40	40
MATRIX	WATER	WATER	VAPOR						
BENZENE (µg/L)	ND	ND	ND	3.90	ND	ND	ND	ND	ND
TOLUENE (µg/L)	ND	ND	0.85	1.35	0.61	1.31	0.51	1.07	ND
ETHYLBENZENE (µg/L)	ND	ND	0.55	1.20	ND	1.20	0.58	1.12	ND
m&p-XYLENES (µg/L)	ND	ND	0.55	1.84	0.38	1.79	ND	ND	ND
o-XYLENE (µg/L)	ND	ND	0.65	1.34	ND	1.33	ND	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND								
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	1.0	1.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	ND	NA	ND	1.1	10.4	11.8	ND	0.6	ND
OXYGEN (%)	ND	NA	21.8	20.8	8.7	7.3	21.2	21.5	21.8
NITROGEN (%)	ND	NA	77.1	77.7	80.3	80.0	76.6	77.4	78.0
METHANE (%)	ND	NA	8.1	ND	ND	ND	1.6	ND	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION  
 NA INDICATES NOT ANALYZED  
 ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT  
 ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY  
 ANALYSES PERFORMED BY: G. JACKSON

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FINAL DATA

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E- Mail: Lab@tegrockymountain.com

CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/6/99	12/7/99	12/7/99
SAMPLE	SG-11	SG-21	SG-22	SG-12	SG-4	SG-5	SG-13	BLANK	BLANK
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	10	10
MATRIX	VAPOR	WATER	WATER						
BENZENE (µg/L)	ND	ND	ND	ND	ND	ND	3.85	ND	ND
TOLUENE (µg/L)	ND	ND	ND	ND	ND	ND	1.05	ND	ND
ETHYLBENZENE (µg/L)	ND	ND	ND	ND	ND	ND	1.12	ND	ND
m&p-XYLENES (µg/L)	1.52	ND	1.54	ND	ND	ND	1.58	ND	ND
o-XYLENE (µg/L)	ND	ND	1.22	ND	ND	ND	1.25	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND								
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.0	1.0
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	ND	6.8	6.5	3.0	ND	1.8	9.8	ND	ND
OXYGEN (%)	21.4	14.1	13.8	18.6	22.0	20.9	12.8	ND	ND
NITROGEN (%)	77.6	78.1	78.8	77.6	76.8	76.2	76.0	ND	ND
METHANE (%)	ND	1.1	1.0	ND	ND	1.0	1.5	ND	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY

ANALYSES PERFORMED BY: G. JACKSON

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CH2M HILL PROJECT

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 VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99
SAMPLE	SG-23	SG-8	SG-6	SG-7	SG-16	SG-15	SG-26	SG-17	SG-18
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	40	40
MATRIX	VAPOR								
BENZENE (µg/L)	ND								
TOLUENE (µg/L)	0.54	0.52	ND	1.02	ND	ND	ND	ND	1.00
ETHYLBENZENE (µg/L)	ND	ND	ND	1.10	ND	ND	ND	ND	ND
m&p-XYLENES (µg/L)	0.27	ND	ND	1.53	ND	ND	ND	ND	1.52
o-XYLENE (µg/L)	ND	ND	ND	1.23	ND	ND	ND	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND								
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	32.4	2.3	4.1	2.4	14.1	8.9	37.0	12.1	29.6
OXYGEN (%)	2.6	22.4	21.7	22.6	15.0	18.6	2.2	16.2	4.6
NITROGEN (%)	63.7	74.2	74.2	75.0	70.9	72.5	59.3	70.8	65.3
METHANE (%)	1.3	1.0	ND	ND	ND	ND	1.6	ND	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY

ANALYSES PERFORMED BY: G. JACKSON

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CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/7/99	12/8/99	12/8/99
SAMPLE	SG-28	SG-14	SG-24	SG-33	SG-32	SG-31	SG-30	BLANK	BLANK
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	10	10
MATRIX	VAPOR	WATER	WATER						
BENZENE (µg/L)	ND	ND	ND	3.85	ND	3.85	ND	ND	ND
TOLUENE (µg/L)	ND	1.01	0.65	1.02	ND	1.08	0.50	ND	ND
ETHYLBENZENE (µg/L)	0.72	ND	ND	1.12	ND	1.12	0.54	ND	ND
m&p-XYLENES (µg/L)	ND	1.51	ND	1.53	ND	1.56	ND	ND	ND
o-XYLENE (µg/L)	ND	ND	ND	1.22	ND	1.25	ND	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	ND	2.41	1.32	ND	ND	ND	ND	ND
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.0	1.0
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	42.8	9.9	37.6	31.3	25.2	27.1	2.5	ND	NA
OXYGEN (%)	1.6	17.8	1.7	2.9	10.3	8.4	22.2	ND	NA
NITROGEN (%)	29.5	71.5	60.1	59.3	63.8	63.4	74.5	ND	NA
METHANE (%)	26.2	ND	ND	6.5	ND	1.1	ND	ND	NA
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY

ANALYSES PERFORMED BY: G. JACKSON

teg Rocky Mountain  
400 Corporate Circle  
Suite R  
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FINAL DATA

303-278-1911  
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CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP  
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99
SAMPLE	SG-29	SG-35	SG-37	SG-36	SG-38	SG-41	SG-42	SG-48	SG-53
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	40	40
MATRIX	VAPOR								
BENZENE (µg/L)	ND	3.92	3.87						
TOLUENE (µg/L)	ND	1.25	1.16						
ETHYLBENZENE (µg/L)	ND	1.23	1.18						
m&p-XYLENES (µg/L)	ND	1.91	1.66						
o-XYLENE (µg/L)	ND	1.36	1.29						
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND	0.94	ND						
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND	1.45	ND						
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	1.10	1.05	1.34	1.07	1.37	ND	1.40	ND
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	19.2	2.5	1.3	1.2	2.7	6.0	7.9	25.4	5.2
OXYGEN (%)	8.4	20.5	21.3	21.8	20.7	17.6	15.6	2.8	18.2
NITROGEN (%)	71.5	76.3	74.8	75.4	75.6	75.5	75.3	64.4	74.6
METHANE (%)	ND	ND	2.6	1.6	1.0	ND	1.3	7.5	2.0
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION  
NA INDICATES NOT ANALYZED  
ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT  
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ANALYSES PERFORMED BY: G. JACKSON

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 400 Corporate Circle  
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FINAL DATA

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TREMTRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP  
 VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/8/99	12/9/99
SAMPLE	SG-54	SG-47	SG-43	SG-44	SG-49	SG-50	SG-55	SG-56	BLANK
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	40	10
MATRIX	VAPOR	WATER							
BENZENE (µg/L)	ND	ND	ND	ND	ND	ND	3.95	ND	ND
TOLUENE (µg/L)	2.87	0.54	ND	0.57	ND	ND	1.22	ND	ND
ETHYLBENZENE (µg/L)	0.63	0.64	ND	0.60	ND	ND	1.32	ND	ND
m&p-XYLENES (µg/L)	ND	ND	ND	ND	ND	ND	2.21	ND	ND
o-XYLENE (µg/L)	ND	ND	ND	ND	ND	ND	1.42	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	ND	ND	1.01	ND	ND	ND	ND	ND
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.0
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	24.8	26.7	3.0	1.7	7.3	3.9	20.1	16.3	ND
OXYGEN (%)	2.7	2.2	20.2	21.6	16.2	19.2	4.3	7.5	ND
NITROGEN (%)	66.6	53.3	74.9	75.8	75.0	75.0	68.7	74.9	ND
METHANE (%)	5.9	17.9	1.9	ND	1.5	1.9	6.9	1.2	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

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ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

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ANALYSES PERFORMED BY: G. JACKSON

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TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99
SAMPLE	BLANK	SG-57	SG-51	SG-45	SG-40	SG-46	SG-52	SG-58	SG-59
SAMPLE AMOUNT (cc or mL)	10	40	40	40	40	40	40	40	40
MATRIX	WATER	VAPOR							
BENZENE (µg/L)	ND								
TOLUENE (µg/L)	ND								
ETHYLBENZENE (µg/L)	ND								
m&p-XYLENES (µg/L)	ND								
o-XYLENE (µg/L)	ND								
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	0.78	ND	ND	ND
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	2.65	ND	ND	ND
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	1.27	ND	ND	ND
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	ND	ND	1.31	ND	1.32	ND	ND	2.23
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	1.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	NA	1.4	1.4	2.0	17.8	18.8	16.9	1.7	9.6
OXYGEN (%)	NA	22.4	22.5	21.9	5.6	3.6	5.2	22.0	13.7
NITROGEN (%)	NA	75.8	76.1	75.3	76.4	72.0	74.5	75.7	76.1
METHANE (%)	NA	ND	ND	ND	ND	5.5	3.4	ND	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

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DATE	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/9/99	12/10/99
SAMPLE	SG-60	SG-61	SG-62	SG-63	SG-64	SG-70	SG-65	SG-66	BLANK
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	40	10
MATRIX	VAPOR	WATER							
BENZENE (µg/L)	ND								
TOLUENE (µg/L)	ND								
ETHYLBENZENE (µg/L)	ND								
m&p-XYLENES (µg/L)	ND								
o-XYLENE (µg/L)	ND								
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	ND	ND	ND	1.27	ND	1.17	1.44	ND
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.0
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	1.1	10.3	1.8	ND	ND	ND	ND	ND	ND
OXYGEN (%)	22.8	13.5	21.9	22.6	22.9	22.8	23.1	23.0	ND
NITROGEN (%)	75.6	75.7	75.2	75.3	75.9	75.7	75.2	75.3	ND
METHANE (%)	ND	ND	1.1	1.2	ND	ND	1.1	1.1	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION  
NA INDICATES NOT ANALYZED  
ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT  
ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY  
ANALYSES PERFORMED BY: G. JACKSON

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FINAL DATA

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CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP  
 VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
SAMPLE	BLANK	SG-67	SG-72	SG-73	SG-74	SG-71	SG-35.5	SG-36.5	SG-37.5
SAMPLE AMOUNT (cc or mL)	10	40	40	40	40	40	40	40	40
MATRIX	WATER	VAPOR							
BENZENE (µg/L)	ND								
TOLUENE (µg/L)	ND								
ETHYLBENZENE (µg/L)	ND								
m&p-XYLENES (µg/L)	ND								
o-XYLENE (µg/L)	ND								
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	1.42							
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	1.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	NA	ND	ND	ND	ND	ND	1.2	1.0	2.4
OXYGEN (%)	NA	21.8	22.2	22.0	22.1	22.2	21.2	21.4	19.5
NITROGEN (%)	NA	77.7	77.5	77.2	77.6	77.2	77.3	77.3	77.9
METHANE (%)	NA	ND							
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION  
 NA INDICATES NOT ANALYZED  
 ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT  
 ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY  
 ANALYSES PERFORMED BY: G. JACKSON

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DATE	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99	12/11/99
SAMPLE	SG-24 SOU	VENT 23	VENT 9	VENT 12	VENT 18	SG-24 EAST	SG-24 NOR	SG-24 WEST	BLANK
SAMPLE AMOUNT (cc or mL)	40	40	40	40	40	40	40	40	10
MATRIX	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	WATER
BENZENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-XYLENES (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-XYLENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,-TRICHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
(TCE) TRICHLOROETHENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
(PCE) TETRACHLOROETHENE (µg/L)	1.38	ND	ND	ND	ND	ND	ND	1.42	ND
CHLOROBENZENE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND
REPORTING LIMIT (µg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.0
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	14.1	13.2	2.9	7.0	2.9	3.1	ND	15.2	ND
OXYGEN (%)	4.9	7.0	18.8	13.5	19.0	19.0	21.8	5.6	ND
NITROGEN (%)	80.7	79.2	78.0	79.3	77.8	77.5	77.2	78.8	ND
METHANE (%)	ND	ND	ND	ND	ND	ND	ND	ND	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

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ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

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VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE	12/11/99	12/11/99	12/11/99	12/11/99	12/11/99	12/11/99	12/11/99	12/11/99	12/11/99
SAMPLE	BLANK	SG-82	SG-83	SG-84	SG-85	SG-86	SG-87	SG-93	SG-92
SAMPLE AMOUNT (cc or mL)	10	40	40	40	40	40	40	40	40
MATRIX	WATER	VAPOR							
BENZENE (µg/L)	ND								
TOLUENE (µg/L)	ND	1.03	ND						
ETHYLBENZENE (µg/L)	ND								
m&p-XYLENES (µg/L)	ND	1.63	ND	1.53	ND	ND	ND	ND	ND
o-XYLENE (µg/L)	ND								
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND								
METHYLENE CHLORIDE (µg/L)	ND								
TRANS-1,2-DICHLOROETHENE (µg/L)	ND								
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND								
CIS-1,2-DICHLOROETHENE (µg/L)	ND								
CHLOROFORM (µg/L)	ND								
1,1,1,-TRICHLOROETHANE (µg/L)	ND								
CARBON TETRACHLORIDE (µg/L)	ND								
1,2-DICHLOROETHANE (µg/L)	ND								
(TCE) TRICHLOROETHENE (µg/L)	ND								
1,1,2-TRICHLOROETHANE (µg/L)	ND								
(PCE) TETRACHLOROETHENE (µg/L)	ND	4.26	1.07	1.75	1.75	1.54	1.14	1.47	2.07
CHLOROBENZENE (µg/L)	ND								
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND								
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND								
REPORTING LIMIT (µg/L)	1.0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Fixed Gas: (Normalized)									
CARBON DIOXIDE (%)	NA	18.9	2.0	2.0	2.6	8.6	ND	ND	5.6
OXYGEN (%)	NA	3.2	20.3	20.3	19.7	13.9	22.2	21.9	16.9
NITROGEN (%)	NA	77.4	77.0	76.9	76.6	76.7	77.4	76.4	76.8
METHANE (%)	NA	ND	ND	ND	1.1	ND	ND	1.4	ND
REPORTING LIMIT (%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY

ANALYSES PERFORMED BY: G. JACKSON

teg Rocky Mountain  
 400 Corporate Circle  
 Suite R  
 Golden, CO 80401

FINAL DATA

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CH2M HILL PROJECT

PHILIPS FACILITY

TREMETRICS 9001 GC / TEKMAR LSC 2000 PURGE & TRAP  
 VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021M) AND FIXED GASSES

DATE 12/11/99 12/11/99 12/11/99 12/11/99

SAMPLE SG-91 SG-90 SG-89 SG-88

SAMPLE AMOUNT (cc or mL) 40 40 40 40

MATRIX VAPOR VAPOR VAPOR VAPOR

BENZENE (µg/L)	ND	ND	ND	ND
TOLUENE (µg/L)	1.05	ND	1.11	ND
ETHYLBENZENE (µg/L)	1.36	1.36	1.46	0.59
m&p-XYLENES (µg/L)	2.52	ND	2.91	0.87
o-XYLENE (µg/L)	1.47	0.68	1.55	0.66
(DCE) 1,1-DICHLOROETHENE (µg/L)	ND	ND	ND	ND
METHYLENE CHLORIDE (µg/L)	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND
(DCA) 1,1-DICHLOROETHANE (µg/L)	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE (µg/L)	ND	ND	ND	ND
CHLOROFORM (µg/L)	ND	ND	ND	ND
1,1,1,-TRICHLOROETHANE (µg/L)	ND	ND	ND	ND
CARBON TETRACHLORIDE (µg/L)	ND	ND	ND	ND
1,2-DICHLOROETHANE (µg/L)	ND	ND	ND	ND
(TCE) TRICHLOROETHENE (µg/L)	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE (µg/L)	ND	ND	ND	ND
(PCE) TETRACHLOROETHENE (µg/L)	ND	ND	ND	1.02
CHLOROBENZENE (µg/L)	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE (µg/L)	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE (µg/L)	ND	ND	ND	ND

REPORTING LIMIT (µg/L) 0.25 0.25 0.25 0.25

Fixed Gas: (Normalized)

CARBON DIOXIDE (%) 3.8 1.3 1.1 12.0

OXYGEN (%) 18.6 21.1 21.2 9.9

NITROGEN (%) 76.1 76.8 77.1 76.9

METHANE (%) 1.4 ND ND 1.2

REPORTING LIMIT (%) 1.0 1.0 1.0 1.0

J INDICATES ESTIMATED QUANTITATION

NA INDICATES NOT ANALYZED

ND INDICATES NOT DETECTED AT SPECIFIED REPORTING LIMIT

ANALYSES PERFORMED ONSITE IN TEG'S MOBILE LABORATORY

ANALYSES PERFORMED BY: G. JACKSON