

**SOIL REMEDIATION  
IMPLEMENTATION DESIGN REPORT**

Prepared for

**BLACK & DECKER (U.S.) INC.**  
Hampstead, Maryland

March 1997

Prepared by

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W.O. No. 02501-004-001-0310

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## SECTION 1 INTRODUCTION

### 1.1 OVERVIEW

A *Soil Remediation Plan* was prepared in August 1995 (WESTON, 1995) to meet the requirements of the Administrative Consent Order between the State of Maryland Department of the Environment (MDE) and Black & Decker (U.S.) Inc. This plan identified soil vapor extraction (SVE) and bioventing as the recommended remedial technologies for treatment of subsurface soil at the Black and Decker (U.S.) Inc. Hampstead, Maryland facility (the "site"). As prescribed by the plan, a pilot study was conducted to verify the effectiveness of SVE and bioventing at the site. This *Soil Remediation Implementation Design Report* presents the findings of the SVE and bioventing pilot study, and provides a conceptual design for full-scale implementation of the soil remediation.

### 1.2 OBJECTIVES

The objective of this *Soil Remediation Implementation Design Report* is to present and evaluate data obtained during the SVE and bioventing pilot study conducted at the site in accordance with the *Soil Remediation Plan* (WESTON, 1995). In addition, the data evaluation has been used as the basis for a conceptual design of a full-scale soil remediation system. With the concurrence of MDE, the full-scale system will be permitted, installed, and operated in accordance with the schedule provided in Subsection 5.7.

## SECTION 2

### SVE PILOT-SCALE SYSTEM INSTALLATION

The pilot-scale SVE system was installed between 30 October and 20 November 1996 following plans described in the Soil Remediation Plan (WESTON, 1995). Procedures used for system installation are described below:

Figure 2-1 shows the layout of the SVE system components, including extraction vents, subsurface pressure monitoring probes, trailer-mounted blower, vapor treatment system, and above-ground piping. As shown on Figure 2-1, the pilot study was conducted in two areas: the Tank Farm 2 area and the area beneath the northeast corner of the main building.

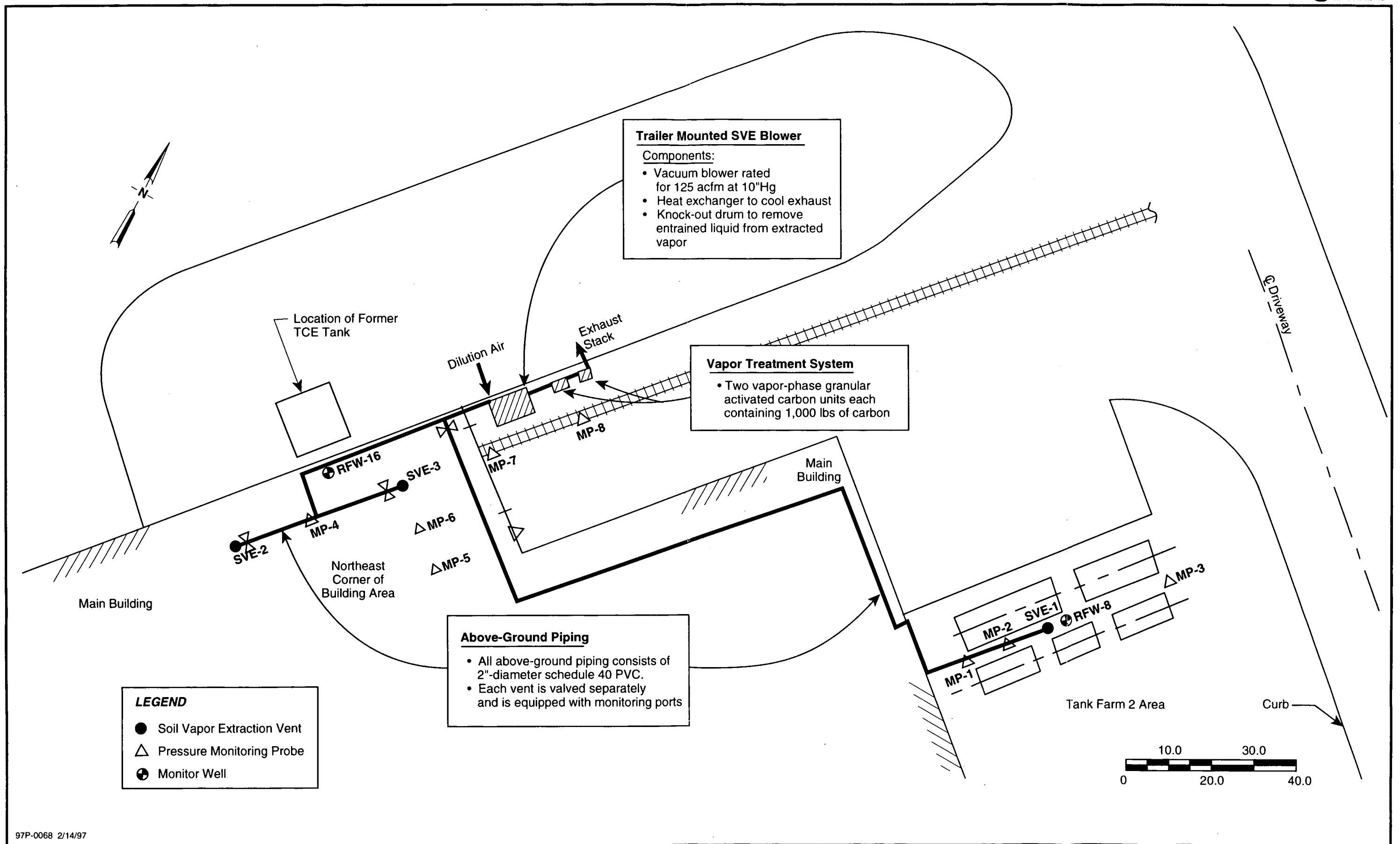
#### **2.1 TANK FARM 2 VENT CONSTRUCTION**

One extraction vent, designated as SVE-1, was located near the center of the Tank Farm 2 area as shown on Figure 2-1. This vent was installed inside a 12-inch diameter borehole which was constructed using hollow-stem auger drilling techniques. Subsurface soil samples were collected as discussed in Subsection 2.4. Borehole logs were also completed during vent construction and are included in Appendix A. The screened interval for SVE-1 extends from 16 to 25 feet (ft) below ground surface (bgs). This interval was selected based on previous investigations which defined the extent of vertical contamination in this area as discussed in the *Soil Remediation Plan* (WESTON, 1995). Construction details for SVE-1 are illustrated in Figure 2-2.

#### **2.2 NORTHEAST CORNER OF BUILDING VENT CONSTRUCTION**

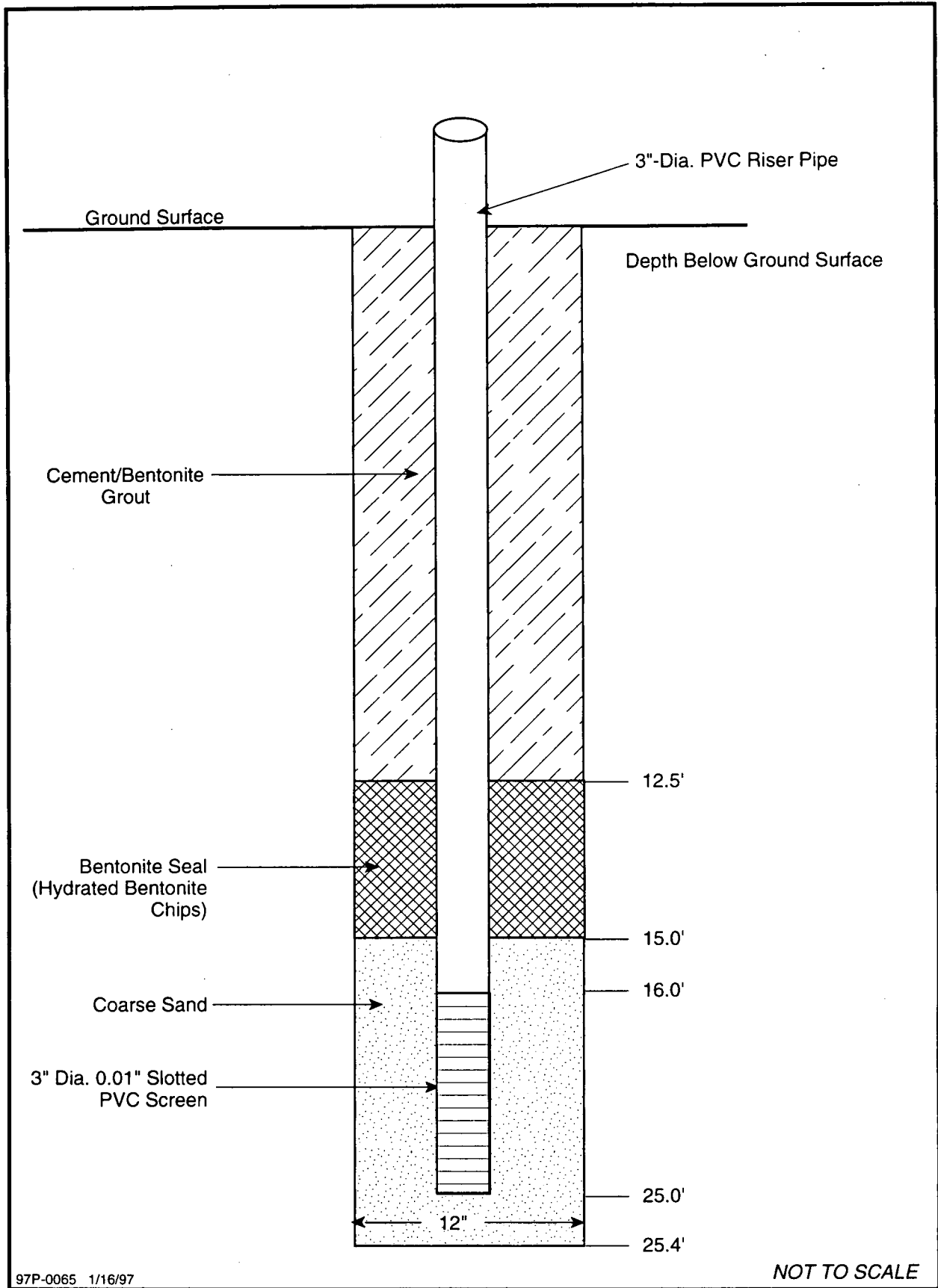
Two pairs of nested extraction vents, SVE-2 and SVE-3, were installed beneath the concrete floor inside the northeast corner of the main building as shown in Figure 2-1. Each pair of nested vents was installed inside a 12-inch diameter borehole which was constructed using hollow-stem auger drilling techniques. Subsurface soil samples were collected as discussed in Subsection 2.4. Borehole logs were also completed during vent construction and are included in Appendix A. Boreholes were advanced to a depth of approximately 36 ft bgs, which corresponded to the first





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**FIGURE 2-1 PILOT-SCALE SOIL VAPOR EXTRACTION SYSTEM LAYOUT**



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NOT TO SCALE

**FIGURE 2-2 CONSTRUCTION DETAILS OF  
EXTRACTION VENT AT TANK FARM 2**

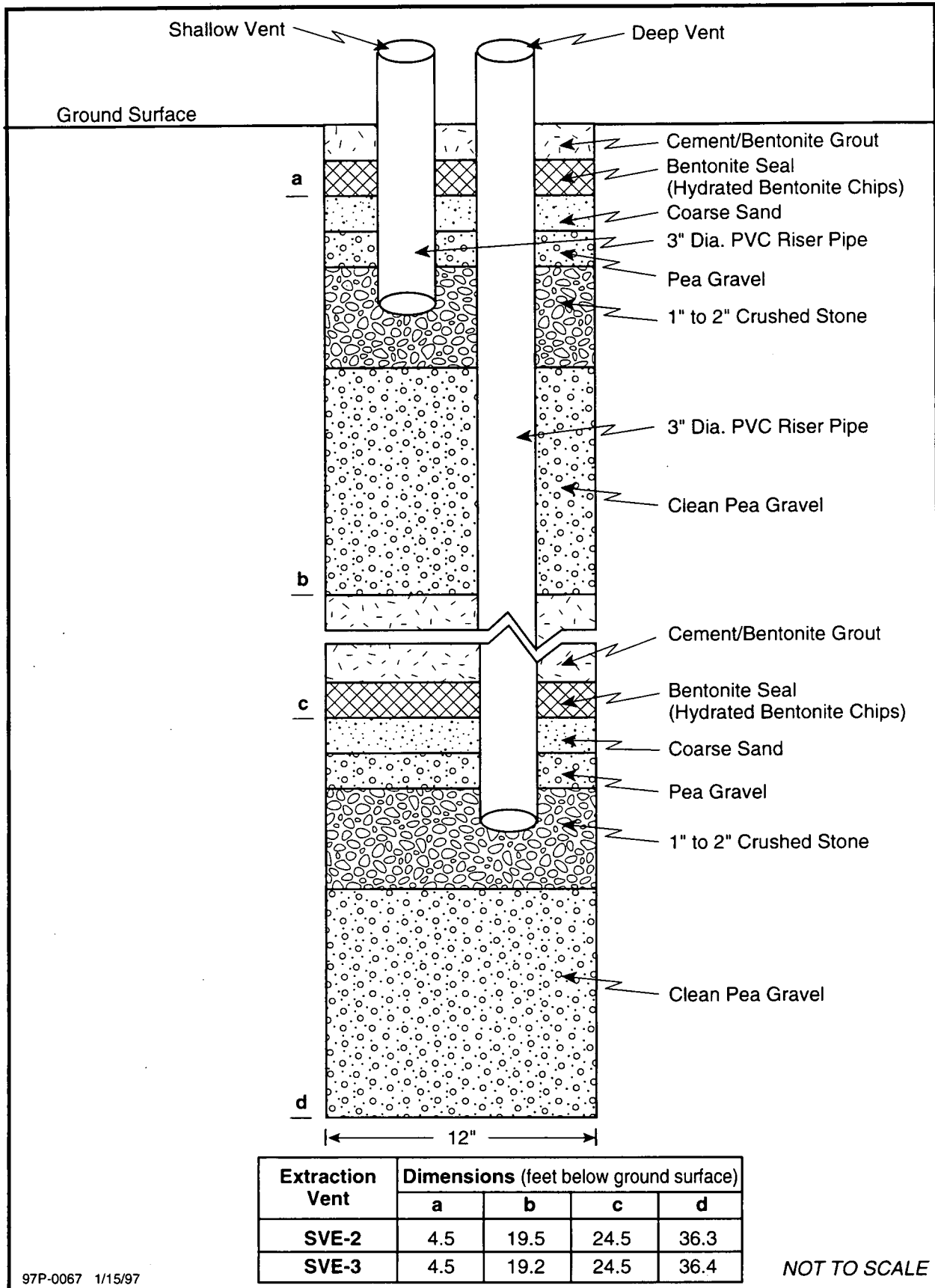
occurrence of groundwater. Termination of the boreholes at this depth, consistent with Subsection 4.2 of the *Soil Remediation Plan* (WESTON, 1995), was necessary to maximize the effective treatment zone while minimizing the collection of groundwater into the SVE system. One shallow and one deep vent (i.e., a nested vent pair) was installed in each borehole. Extraction vents were designated as SVE-2(S), SVE-2(D), SVE-3(S) and SVE-3(D) where the suffixes (S) and (D) denote shallow and deep vents, respectively. Construction details for the nested vents are illustrated on Figure 2-3.

### **2.3 SUBSURFACE PRESSURE MONITORING PROBE CONSTRUCTION**

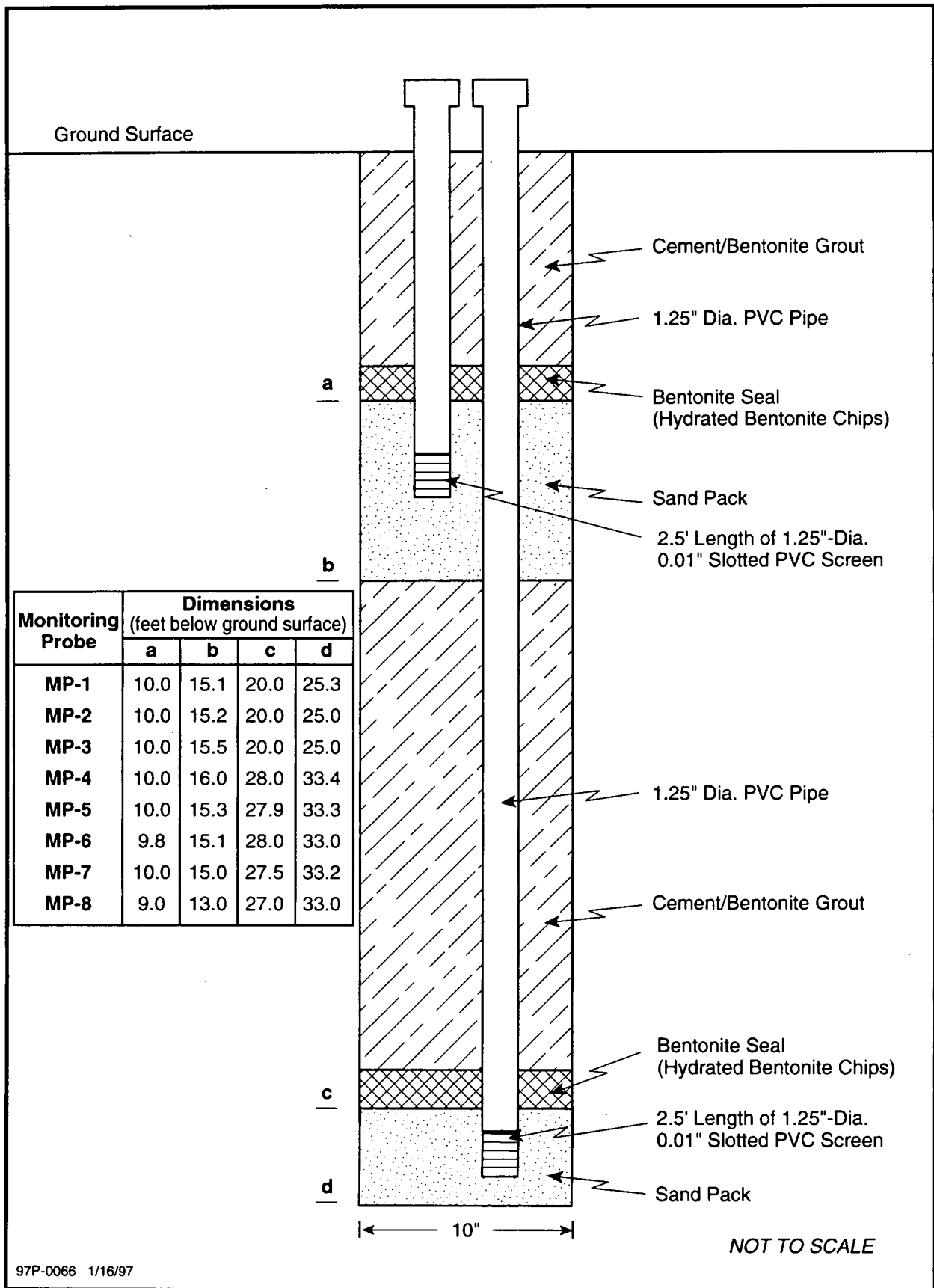
As shown in Figure 2-1, a total of eight pairs of nested subsurface monitoring probes were installed. Three of the probes, MP-1, MP-2, and MP-3 were constructed outside of the building in the Tank Farm 2 area. The remaining probes, MP-4, MP-5, MP-6, MP-7, and MP-8 were constructed in the vicinity of the northeast corner of the building. MP-7 and MP-8 were constructed outside the building beneath the ballast of the former railroad spur and MP-4, MP-5, and MP-6 were constructed inside the building through the concrete floor. Nested monitoring probes were installed inside 10-inch diameter boreholes which were constructed using hollow-stem auger drilling techniques. Subsurface soil samples were collected as discussed in Subsection 2.4. Borehole logs were also completed during probe construction and are included in Appendix A. The suffixes (S) and (D) were used to denote monitoring probes as shallow or deep, respectively. Construction details for the pressure monitoring probes are illustrated in Figure 2-4. All monitoring probes were equipped with quick-disconnect fittings. This allowed for vacuum gauges to be easily connected to the probes without a loss of negative pressure within the probe.

### **2.4 SUBSURFACE SOIL SAMPLING**

Soil samples were collected from the soil encountered in each extraction vent and monitoring probe borehole using split spoon samplers. Each borehole was logged for physical characteristics (see boring logs in Appendix A) and the subsurface soil samples were field-screened for volatile organic compounds (VOCs) using a direct reading photo-ionization detector (PID). A summary



**FIGURE 2-3 CONSTRUCTION DETAILS OF NESTED EXTRACTION VENTS AT NORTHEAST CORNER OF BUILDING**



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**FIGURE 2-4 CONSTRUCTION DETAILS OF NESTED PRESSURE MONITORING PROBES**

of subsurface soil samples collected for laboratory analysis is presented in Table 2-1. A summary of laboratory data for subsurface soil samples is presented in Table 2-2. Laboratory data packages are included in Appendix B of this report.

#### **2.4.1 Tank Farm 2**

Subsurface soil samples were collected from three depth intervals from the SVE-1 borehole and were analyzed for VOCs and Total Petroleum Hydrocarbons (TPH). Samples for laboratory analysis were selected from soil borings within target depth ranges (i.e., 0 to 7 ft bgs, 7 to 15 ft bgs, 15 to 25 ft bgs) at depths which appeared to contain the highest VOC concentrations based on field screening and visual observation. Additional samples also were collected to determine nutrient availability, geophysical characteristics, microbial plate counts, and iron content of subsurface soil at SVE-1 (see Table 2-1).

Single subsurface soil samples were also collected from monitoring probe boreholes MP-1 and MP-2 and were analyzed for VOCs and TPH. Samples were collected from depth intervals which appeared to contain the highest VOC concentrations based on field screening and visual observation.

#### **2.4.2 Northeast Corner of Building**

Subsurface soil samples were collected from three depth intervals from both the SVE-2 and SVE-3 boreholes and were analyzed for VOCs and TPH. Samples for laboratory analysis were selected from soil borings within target depth ranges (i.e., 0 to 10 ft bgs, 10 to 20 ft bgs, 20 to 35 ft bgs) at depths which appeared to contain the highest VOC concentrations based on field screening and visual observation.

Single subsurface soil samples were also collected from monitoring probe boreholes MP-4, MP-5, MP-6, and MP-7 and were analyzed for VOCs and TPH. Samples were collected from depth intervals which appeared to contain the highest VOC concentrations based on field screening and visual observation.

**Table 2-1**  
**Summary of Subsurface Soil Samples**  
**Black & Decker**  
**Hampstead, Maryland**

Vent/Probe ID	Sample ID	Sample Depth (ft bgs)	Analyses										
			VOC	TPH	Total Plate Count	Total Iron	Percent Moisture	TKN	pH	Alkalinity	Total Phos.	Hyd. Cond.*	Porosity*
<b>Tank Farm 2</b>													
SVE-1	SVE-1-005	2-5	X	X	X								
	SVE-1-009	7-9*										X	X
	SVE-1-011	9.0-10.8				X	X	X	X	X	X		
	SVE-1-013	11.0-12.3	X	X	X								
	SVE-1-015	13.0-15.0*										X	X
	SVE-1-017	15-16.8	X	X									
	SVE-1-019	17.0-18.8			X	X	X	X	X	X	X		
MP-1	MP-1-011	9.0-10.6	X	X									
MP-2	MP-2-011	9.0-10.5	X	X									
MP-3	NS	--											
<b>Northeast Corner</b>													
SVE-2	SVE-2-005	3.5-4.8	X	X									
	SVE-2-021	18.5-20.5	X	X									
	SVE-2-035	33.5-34.8	X	X									
SVE-3	SVE-3-011	8.5-10.4	X	X									
	SVE-3-020	18.5-20.0	X	X									
	SVE-3-036	34.0-35.3	X	X									
MP-4	MP-4-030	28.5-30.0	X	X									
MP-5	NS	--											
MP-6	MP-6-005	3.5-5.0	X	X									
MP-7	MP-7-031	29.0-30.3	X	X									
MP-8	NS	--											

Notes: ft bgs - feet below ground surface  
VOC - Volatile organic compounds  
TPH - Total petroleum hydrocarbons  
TKN - Total Kjeldahl nitrogen

Phos. - Phosphate  
Hyd. Cond. - Hydraulic conductivity  
NS - Not Sampled  
\* - Used Shelby Tubes

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Table 2-2  
Analytical Data Summary for Subsurface Soil  
Black & Decker  
Hampstead, Maryland

Analyte	Units	Sample ID/Depth (ft bgs)					
		SVE-1-005 2.0 to 5.0	SVE-1-009 7.0 to 9.0	SVE-1-011 9.0 to 10.8	SVE-1-013 11.0 to 12.3	SVE-1-019 17.0 to 18.8	SVE-1-017 15.0 to 16.8
<b>Volatile Organic Compounds</b>							
Methylene Chloride	ug/kg	<b>11 B</b>	NA	NA	<b>11 B</b>	NA	<b>14 B</b>
Acetone	ug/kg	<b>10 BJ</b>	NA	NA	<b>10 BJ</b>	NA	<b>8 BJ</b>
1,1-Dichloroethene	ug/kg	6 U	NA	NA	6 U	NA	6 U
1,2-Dichloroethene (total)	ug/kg	6 U	NA	NA	6 U	NA	6 U
Chloroform	ug/kg	6 U	NA	NA	6 U	NA	6 U
2-Butanone	ug/kg	12 U	NA	NA	12 U	NA	12 U
1,1,1-Trichloroethane	ug/kg	6 U	NA	NA	6 U	NA	6 U
Trichloroethene	ug/kg	<b>10</b>	NA	NA	<b>10</b>	NA	6 U
1,1,2-Trichloroethane	ug/kg	6 U	NA	NA	6 U	NA	6 U
Benzene	ug/kg	6 U	NA	NA	6 U	NA	6 U
2-Hexanone	ug/kg	12 U	NA	NA	12 U	NA	12 U
Tetrachloroethene	ug/kg	<b>130</b>	NA	NA	<b>190</b>	NA	6 U
Toluene	ug/kg	<b>8</b>	NA	NA	6 U	NA	<b>1 J</b>
Xylenes (total)	ug/kg	<b>3 J</b>	NA	NA	6 U	NA	<b>1 J</b>
<b>TPH/Inorganic Analyses</b>							
% Solids	%	81.8	NA	83.5	79.9	84.6	84.8
Petroleum Hydrocarbons	mg/kg	<b>1320</b>	NA	NA	<b>118</b>	NA	<b>18.2</b>
Alkalinity	mg/kg	NA	NA	<b>150</b>	NA	<b>145</b>	NA
Total Kjeldahl Nitrogen	mg/kg	NA	NA	<b>121</b>	NA	<b>115</b>	NA
pH	pH units	NA	NA	<b>7.4</b>	NA	<b>7.3</b>	NA
Phosphate as P - Total	mg/kg	NA	NA	<b>850</b>	NA	<b>884</b>	NA
Iron	mg/kg	NA	NA	<b>44200</b>	NA	<b>29900</b>	NA
<b>Microbial Analyses</b>							
Total plate count	(2)	<b>1100000</b>	NA	NA	<b>&lt;12000</b>	<b>&lt;12000</b>	NA
<b>Geophysical Analyses</b>							
Hydraulic conductivity	cm/sec	NA	<b>1.00E-06</b>	NA	NA	NA	NA
Intrinsic permeability	darcys	NA	<b>1.04E-03</b>	NA	NA	NA	NA
Porosity	%	NA	<b>34.9 to 46.3 (3)</b>	NA	NA	NA	NA

2-9

Notes: For Volatile Organic Compound (VOC) analyses, only those compounds detected are shown. Boldface type indicates chemical result above the detection limit.

(1) Sample collected using a 30-inch long shelly tube.

(2) Results expressed as a colony forming unit (cfu) per gram on a dry weight basis.

(3) Initial value prior to saturation and consolidation.

ft bgs = feet below ground surface

U = Not Detected

J = Detected below quantification limit

B = Detected in laboratory blank

NA = Not analyzed



Table 2-2 (continued)  
Analytical Data Summary for Subsurface Soil  
Black & Decker  
Hampstead, Maryland

Analyte	Units	Sample ID/Depth (ft bgs)					
		MP-1-011 9.0 to 10.6	MP-2-011 9.0 to 10.5	MP-2-011(DL) 9.0 to 10.5	SVE-2-005 3.5 to 4.8	SVE-2-021 18.5 to 20.5	SVE-2-035 33.5 to 34.8
<b>Volatile Organic Compounds</b>							
Methylene Chloride	ug/kg	11 B	17 B	1900 B	9 B	9 B	6 B
Acetone	ug/kg	7 JB	35 B	4700 B	13 B	12 U	12 U
1,1-Dichloroethene	ug/kg	6 U	82	NA	6 U	6 U	6 U
1,2-Dichloroethene (total)	ug/kg	6 U	350	390 J	6 U	6 U	6 U
Chloroform	ug/kg	6 U	17	NA	6 U	6 U	6 U
2-Butanone	ug/kg	11 U	10 J	NA	12 U	12 U	12 U
1,1,1-Trichloroethane	ug/kg	6 U	E	3900	6 U	6 U	6 U
Trichloroethene	ug/kg	6 U	E	11000	4 J	6 U	6 U
1,1,2-Trichloroethane	ug/kg	6 U	20	NA	6 U	6 U	6 U
Benzene	ug/kg	6 U	7	NA	6 U	6 U	6 U
2-Hexanone	ug/kg	11 U	26	NA	12 U	12 U	12 U
Tetrachloroethene	ug/kg	6 U	E	33000	6 U	6 U	6 U
Toluene	ug/kg	6 U	10	NA	6 U	6 U	6 U
Xylenes (total)	ug/kg	6 U	6 U	NA	6 U	6 U	6 U
<b>TPH/Inorganic Analyses</b>							
% Solids	%	90.8	81.7	NA	86.2	80.9	85.4
Petroleum Hydrocarbons	mg/kg	11.1	80600	NA	13.2	13.1	8.8
Alkalinity	mg/kg	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen	mg/kg	NA	NA	NA	NA	NA	NA
pH	pH units	NA	NA	NA	NA	NA	NA
Phosphate as P - Total	mg/kg	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NA	NA	NA	NA	NA	NA
<b>Microbial Analyses</b>							
Total plate count	(2)	NA	NA	NA	NA	NA	NA
<b>Geophysical Analyses</b>							
Hydraulic conductivity	cm/sec	NA	NA	NA	NA	NA	NA
Intrinsic permeability	darcys	NA	NA	NA	NA	NA	NA
Porosity	%	NA	NA	NA	NA	NA	NA

2-10

Notes: For Volatile Organic Compound (VOC) analyses, only those compounds detected are shown. Boldface type indicates chemical result above the detection limit.

- (1) Sample collected using a 30-inch long shelly tube.
- (2) Results expressed as a colony forming unit (cfu) per gram on a dry weight basis.
- (3) Initial value prior to saturation and consolidation.

ft bgs = feet below ground surface

U = Not Detected

J = Detected below quantification limit

B = Detected in laboratory blank

NA = Not analyzed

Table 2-2 (continued)  
 Analytical Data Summary for Subsurface Soil  
 Black & Decker  
 Hampstead, Maryland

Analyte	Units	Sample ID/Depth (ft bgs)					
		SVE-3-011 8.5 to 10.4	SVE-3-020 18.5 to 20.0	SVE-3-036 34.0 to 35.3	MP-4-30 28.5 to 30.0	MP-6-005 3.5 to 5.0	MP-7-031 29.0 to 30.3
<b>Volatile Organic Compounds</b>							
Methylene Chloride	ug/kg	<b>8 B</b>	<b>11 B</b>	<b>9 B</b>	<b>9 B</b>	<b>8 B</b>	<b>11 B</b>
Acetone	ug/kg	<b>10 BJ</b>	<b>11 BJ</b>	<b>7 BJ</b>	12 U	11 U	<b>8 BJ</b>
1,1-Dichloroethene	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
Chloroform	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
2-Butanone	ug/kg	12 U	13 U	12 U	12 U	11 U	12 U
1,1,1-Trichloroethane	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene	ug/kg	6 U	<b>18</b>	6 U	<b>10</b>	6 U	6 U
1,1,2-Trichloroethane	ug/kg	6 U	6 U	6 U	<b>22</b>	6 U	6 U
Benzene	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
2-Hexanone	ug/kg	12 U	13 U	12 U	12 U	11 U	12 U
Tetrachloroethene	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
Toluene	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
Xylenes (total)	ug/kg	6 U	6 U	6 U	6 U	6 U	6 U
<b>TPH/Inorganic Analyses</b>							
% Solids	%	84.4	77.2	86.3	81.9	82.6	84.8
Petroleum Hydrocarbons	mg/kg	<b>8.5</b>	<b>13.2</b>	<b>9.6</b>	<b>19.9</b>	4 U	NA
Alkalinity	mg/kg	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen	mg/kg	NA	NA	NA	NA	NA	NA
pH	pH units	NA	NA	NA	NA	NA	NA
Phosphate as P - Total	mg/kg	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NA	NA	NA	NA	NA	NA
<b>Microbial Analyses</b>							
Total plate count	(2)	NA	NA	NA	NA	NA	NA
<b>Geophysical Analyses</b>							
Hydraulic conductivity	cm/sec	NA	NA	NA	NA	NA	NA
Intrinsic permeability	darcys	NA	NA	NA	NA	NA	NA
Porosity	%	NA	NA	NA	NA	NA	NA

2-11

Notes: For Volatile Organic Compound (VOC) analyses, only those compounds detected are shown. Boldface type indicates chemical result above the detection limit.

(1) Sample collected using a 30-inch long Shelby tube.

(2) Results expressed as a colony forming unit (cfu) per gram on a dry weight basis.

(3) Initial value prior to saturation and consolidation.

ft bgs = feet below ground surface

U = Not Detected

J = Detected below quantification limit

B = Detected in laboratory blank

NA = Not analyzed

## **2.5 ABOVE-GROUND COMPONENTS**

The layout and specifications for the above-ground components of the pilot-scale SVE system are shown on Figure 2-1. These components are briefly discussed in the following subsections.

### **2.5.1 Above-Ground Piping**

Upon installation of the extraction vents and monitoring probes, the extraction vents were piped to a common manifold using 2-inch diameter Schedule 40 polyvinyl chloride (PVC) piping. Each extraction vent was equipped with a ball-valve to allow testing of individual vents or any combination of vents during test runs. These valves also made it possible to adjust the vacuum applied to individual vents during runs involving the simultaneous operation of multiple vents. The manifold was equipped with a dilution air valve just upstream of the blower intake. This valve allowed the system operating pressure to be adjusted and also prevented overload of the positive displacement blower.

### **2.5.2 Trailer-Mounted SVE Blower System**

The trailer mounted SVE blower system included the following major components:

- Positive displacement vacuum blower rated for 125 actual cubic feet per minute (acfm) at a vacuum of 10 inches of mercury.
- Knock-out drum to remove entrained liquid from the extracted vapor.
- Air to air heat exchanger to cool blower exhaust prior to the vapor treatment system.

### **2.5.3 Vapor Treatment System**

Extracted soil vapor was treated prior to emission using two, 1000-lb. granular activated carbon (GAC) bins connected in series.

## SECTION 3

### SVE PILOT STUDY EVALUATION

#### 3.1 TEST RUN OVERVIEW

A total of 12 individual test runs were conducted at various operating pressures (vacuums) and vent configurations. Test Run Nos. 1 through 3 were conducted in the Tank Farm 2 area while Run Nos. 4 through 12 were conducted in the northeast corner of the building area. Test Run No. 12 was designed to determine the optimal operating conditions so that the SVE system could be adjusted for efficient VOC removal during sustained operations. Once these operating conditions were determined during Run No. 12, sustained operations were initiated using the final adjustments made at the end of Run No. 12 without interruption of SVE operation.

Physical parameters including static pressure, air flow, temperature, relative humidity, and relative VOC concentrations (collected using a direct reading flame ionization detector [FID]) were collected from several locations including:

- Extraction vent(s).
- Manifold upstream from blower.
- Dilution air pipe. (FID measurement not required at this location)
- Blower exhaust.

In addition, FID readings were periodically collected from the discharge port on both the primary and secondary carbon units. These ports were denoted as GAC1-OUT and GAC2-OUT, respectively. One air sample was collected at the end of each test run using 6-liter Summa canisters. These samples were collected from blower exhaust and were analyzed for VOCs by EPA Method TO-14

The test runs are summarized on Table 3-1. A summary of laboratory data for air samples is included on Table 3-2. VOC mass removal rates and total VOCs removed are summarized on Table 3-3 for each of the twelve test runs. Laboratory data packages are included in Appendix B. The SVE pilot study raw data are included in Tables 1 through 12 of Appendix C.

**Table 3-1  
Summary of Test Runs  
Black & Decker  
Hampstead, Maryland**

Test Run	Configuration	Operating Pressure (inches of water)	Key Measurements	Air Samples Collected	Purpose
1	SVE-1 open	-40	Q, P, SP, OVA	AS01-OUT	To determine AP, ROI, MR, and Q at low vacuum.
2	SVE-1 open	-80	Q, P, SP, OVA	AS02-OUT	To determine AP, ROI, MR, and Q at moderate vacuum.
3	SVE-1 open	-135	Q, P, SP, OVA	AS03-OUT	To determine AP, ROI, MR, and Q at high vacuum.
4	SVE-3(S) open	-40	Q, P, ROI, OVA	AS04-OUT	To determine ROI, MR, and Q at low vacuum.
5	SVE-3(D) open	-40	Q, P, ROI, OVA	AS05-OUT	To determine ROI, MR, and Q at low vacuum.
6	SVE-3(S) open	-80	Q, P, SP, OVA	AS06-OUT	To determine AP, ROI, MR, and Q at moderate vacuum.
7	SVE-3(D) open	-80	Q, P, SP, OVA	AS07-OUT	To determine AP, ROI, MR, and Q at moderate vacuum.
8	SVE-2(S) open	-140	Q, P, SP, OVA	AS08-OUT	To determine AP, ROI, MR, and Q at high vacuum.
9	SVE-2(D) open	-140	Q, P, SP, OVA	AS09-OUT	To determine AP, ROI, MR, and Q at high vacuum.
10	SVE-3(S) open	-140	Q, P, SP, OVA	AS10-OUT	To determine AP, ROI, MR, and Q at high vacuum.
11	SVE-3(D) open	-140	Q, P, SP, OVA	AS11-OUT	To determine AP, ROI, MR, and Q at high vacuum.
12	SVE-3(D), SVE-3(S) SVE-2(D), SVE-2(S) open.	-40, -80, -125, -110	Q, P, SP, OVA	AS12-OUT	To determine optimal operating conditions.
SO	SVE-3(D), SVE-3(S) SVE-2(D), SVE-2(S) open.	-110	Q, P, SP, OVA	ASS01-OUT, ASS02- OUT, ASS03-OUT, ASS04-OUT	To determine steady-state mass removal rate and cumulative mass removal rate.

3-2

Notes: Q = Air Flowrate  
P = Operating Pressure  
SP = Subsurface Pressure

OVA = Organic Vapor Analyzer  
AP = Air Permeability  
ROI = Radius of Influence

MR = Mass Removal Rate  
SO = Sustained Operations

**Table 3-2**  
**Summary of VOC Results for Air Samples**  
**Black & Decker**  
**Hampstead, Maryland**

Sample ID	Date/Time Collected	Run No.	TCE (mg/scm)	PCE (mg/scm)	TCA (mg/scm)
<b>Tank Farm 2</b>					
AS01-OUT	3-Dec-96 16:15	1	0.71	7.6	ND
AS02-OUT	3-Dec-96 20:00	2	2	17	1.2
AS03-OUT	4-Dec-96 11:35	3	3.9	30	2.2
<b>Northeast Corner</b>					
AS04-OUT	4-Dec-96 15:16	4	87	1.2	ND
AS05-OUT	5-Dec-96 11:25	5	25	ND	ND
AS06-OUT	5-Dec-96 15:30	6	260	ND	ND
AS07-OUT	5-Dec-96 18:40	7	60	ND	ND
AS08-OUT	6-Dec-96 10:40	8	130	ND	ND
AS09-OUT	6-Dec-96 16:15	9	170	ND	ND
AS10-OUT	9-Dec-96 13:10	10	310	ND	ND
AS11-OUT	9-Dec-96 18:35	11	150	ND	ND
AS12-OUT	10-Dec-96 13:40	12	420	ND	ND
ASS01-OUT	10-Dec-96 17:05	SO	330	ND	ND
ASS02-OUT	11-Dec-96 13:40	SO	240	ND	ND
ASS03-OUT	12-Dec-96 14:20	SO	160	ND	ND
ASS04-OUT	13-Dec-96 9:30	SO	150	ND	ND

Notes: TCE - Trichloroethene  
PCE - Tetrachloroethene  
TCA - 1,1,1-Trichloroethane  
mg/scm - milligrams per standard cubic meter  
SO - Sustained operations  
ND - Not detected

Table 3-3  
VOC Mass Removal Rates  
Black & Decker  
Hampstead, Maryland

Run	Run Start Date/Time	Run Stop Date/Time	Duration (hours)	TCE (mg/scm)	PCE (mg/scm)	TCA (mg/scm)	Total VOC (mg/scm)	Air Flow (scfm)	Mass Removal Rate (lb/hr)	Total Mass Removed (lb)
<b>Tank Farm 2</b>										
1	3-Dec-96 13:32	3-Dec-96 16:15	2.7	0.71	7.6	ND	8	142	0.00	0.01
2	3-Dec-96 17:35	3-Dec-96 20:02	2.4	2	17	1.2	20	109	0.01	0.02
3	4-Dec-96 8:35	4-Dec-96 11:45	3.2	3.9	30	2.2	36	92	0.01	0.04
<b>Subtotal</b>										<b>0.07</b>
<b>Northeast Corner</b>										
4	4-Dec-96 11:55	4-Dec-96 15:22	3.4	87	1.2	ND	88	139	0.05	0.16
5	5-Dec-96 8:25	5-Dec-96 11:30	3.1	25	ND	ND	25	131	0.01	0.04
6	5-Dec-96 13:00	5-Dec-96 15:35	2.6	260	ND	ND	260	112	0.11	0.28
7	5-Dec-96 16:25	5-Dec-96 18:45	2.3	60	ND	ND	60	111	0.02	0.06
8	6-Dec-96 7:25	6-Dec-96 10:44	3.3	130	ND	ND	130	75	0.04	0.12
9	6-Dec-96 12:40	6-Dec-96 16:20	3.7	170	ND	ND	170	87	0.06	0.20
10	9-Dec-96 9:10	9-Dec-96 13:15	4.1	310	ND	ND	310	103	0.12	0.49
11	9-Dec-96 15:35	9-Dec-96 18:40	3.1	150	ND	ND	150	81	0.05	0.14
12	10-Dec-96 8:10	10-Dec-96 13:40	5.5	420	ND	ND	420	93	0.15	0.80
<b>Subtotal</b>										<b>2.29</b>
Sustained Operations	10-Dec-96 12:50	10-Dec-96 13:40	0.8	420	ND	ND	420	93	0.15	0.12
	10-Dec-96 13:40	10-Dec-96 17:05	3.4	330	ND	ND	330	96	0.12	0.45
	10-Dec-96 17:05	11-Dec-96 13:40	20.6	240	ND	ND	240	94	0.08	2.09
	11-Dec-96 13:40	12-Dec-96 14:20	24.7	160	ND	ND	160	97	0.06	1.76
	12-Dec-96 14:20	13-Dec-96 9:30	19.2	150	ND	ND	150	97	0.05	1.08
<b>Subtotal</b>										<b>5.50</b>
<b>Total</b>										<b>7.86</b>

3-4

Notes: Air flowrates and concentrations represent conditions at the blower outlet.  
TCE - Trichloroethene  
PCE - Tetrachloroethene  
TCA - 1,1,1-Trichloroethane

mg/scm - milligrams per standard cubic meter  
scfm - standard cubic feet per minute  
ND - Not detected

### **3.2 SUSTAINED OPERATIONS**

The primary purpose of the sustained operation was to determine the steady-state contaminant mass removal rate. Sustained operations were initiated on 10 December 1996 at 12:50 p.m. and continued to 13 December 1996 at 12:15 p.m. Sustained operations were conducted only on the vents in the northeast corner of the building, consistent with the objectives of the *Soil Remediation Plan* (WESTON, 1995). Sustained operations were conducted at an operating pressure of -110 inches of water. This pressure appeared to be the highest vacuum that could be achieved without causing groundwater to be pulled into the extraction vents. This resulted in a total extracted soil vapor flow rate of approximately 60 scfm. During sustained operations, sand from the borehole annulus was pulled into SVE-2(S). The flow of sand into the vent was stopped by partially closing the valve for SVE-2(S) until the vacuum applied to the vent was reduced to approximately -70 inches of water. This resulted in a reduction in extracted vapor flow rate from 17 scfm to 11 scfm at SVE-2(S).

Air sampling and physical parameter measurements were performed in a manner consistent with the test runs previously discussed. A total of five air samples were collected during sustained operations from the blower exhaust and were analyzed for TO-14 VOCs.

A summary of laboratory data for air samples is included in Table 3-2. Laboratory data packages are included in Appendix B. The SVE pilot study raw data for sustained operations are included in Table 13 of Appendix C..

### **3.3 EVALUATION OF SVE DATA**

The data obtained from the test runs and sustained operations is evaluated by area in the following subsections.



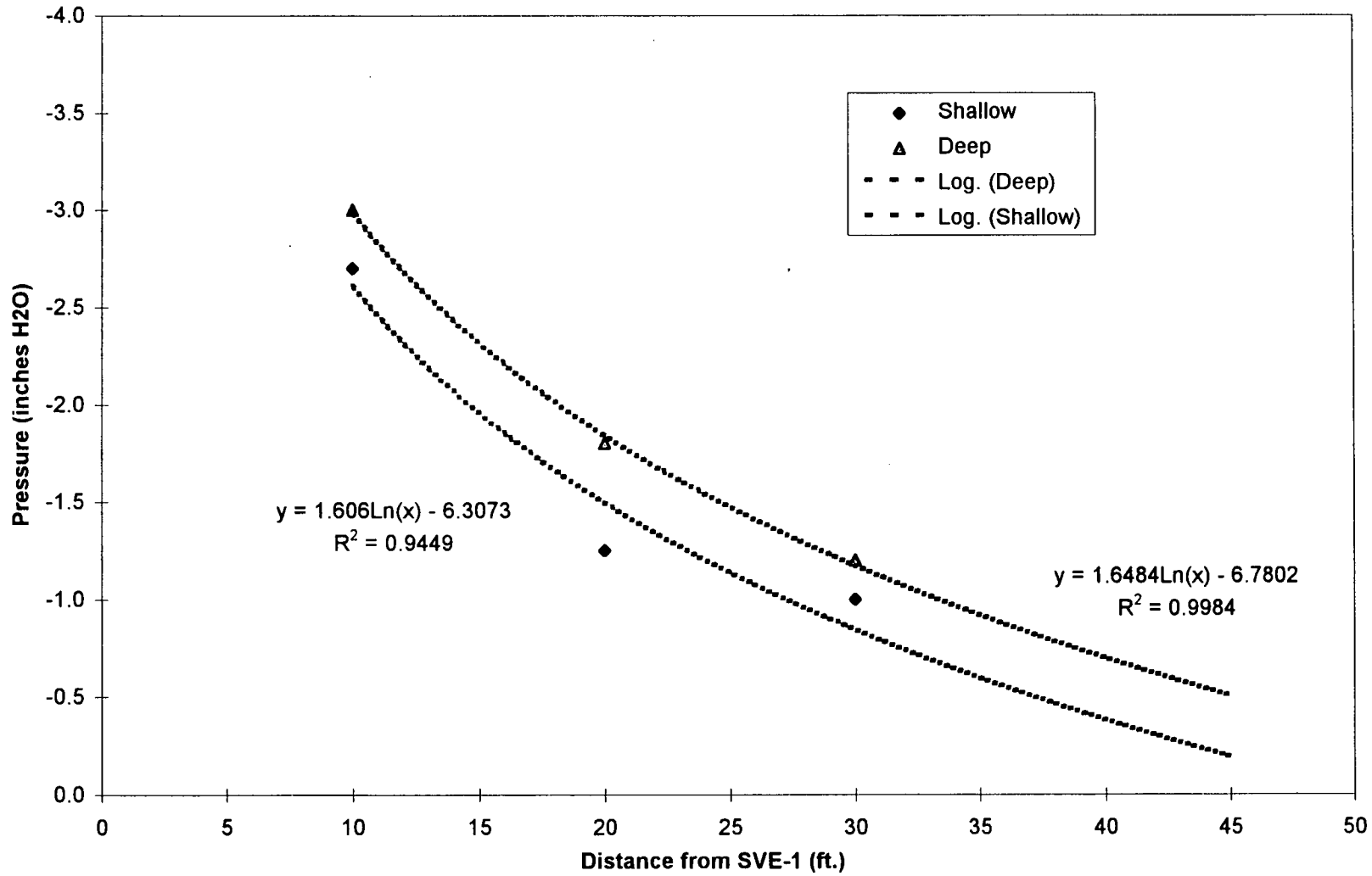
### 3.3.1 Tank Farm 2 Area

Operational data from Test Run Nos. 1, 2, 3 were used to evaluate the following relationships in the Tank Farm 2 area:

- Subsurface pressure in both shallow and deep soil stratum as a function of lateral distance from SVE-1 (radius of influence).
- Subsurface pressure in shallow and deep probes as a function of time (air permeability).
- Air flow rate as a function of operating pressure.
- VOC mass removal rate as a function of operating pressure.

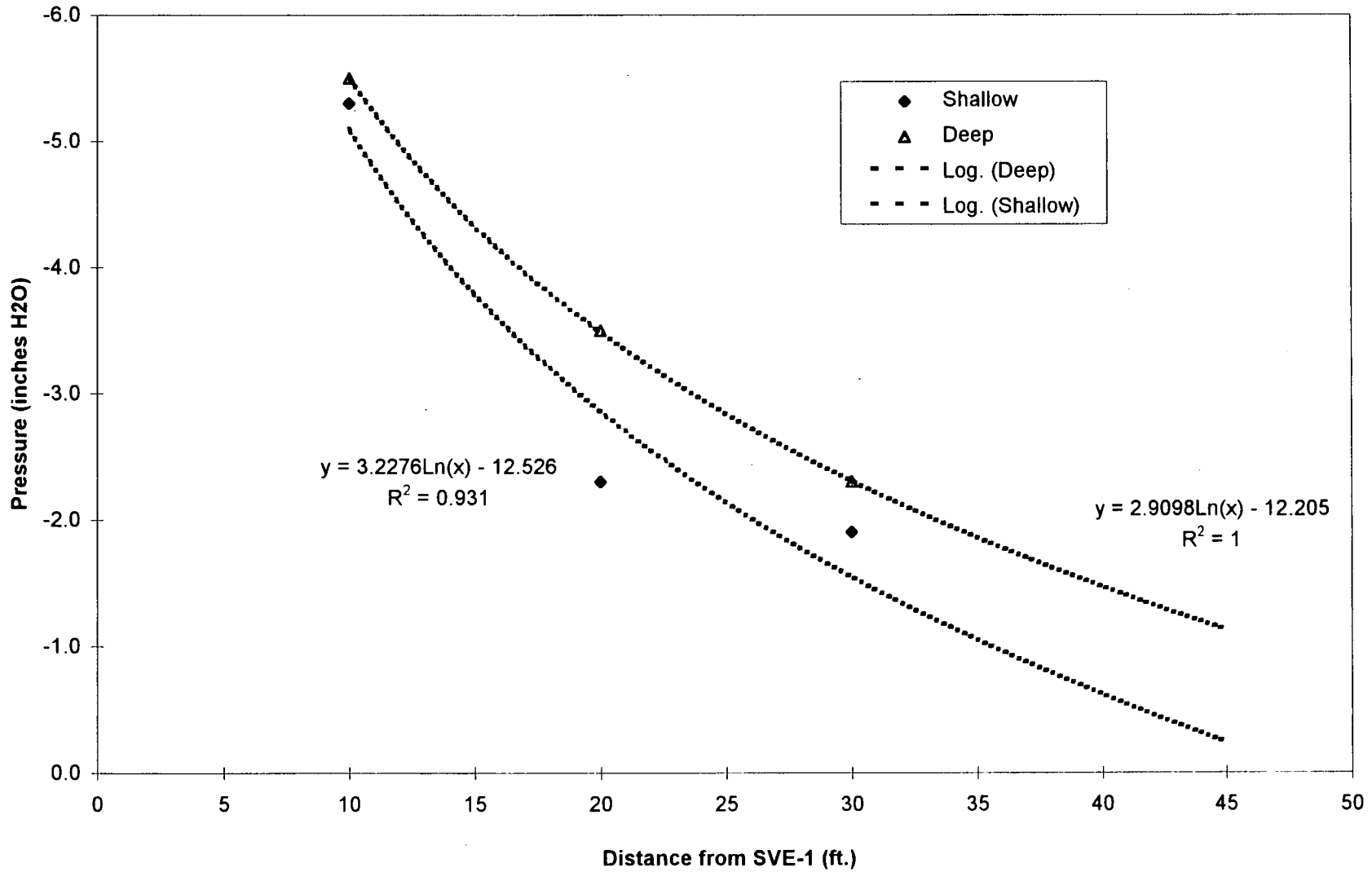
Radius of Influence: The radius of influence is defined as the maximum lateral distance from an extraction vent at which the process of vapor extraction impacts the subsurface soil vapor pressure resulting in a lower than ambient subsurface pressure measurement (i.e., less than 0 inches of water). A subsurface pressure of -0.1 to -1.0 inches of water is used to estimate the radius at which significant treatment occurs. Lateral distance versus subsurface pressures collected during the medium and high vacuum (-80 and -120 inches of water operating pressure) test runs conducted at SVE-1 are plotted on Figures 3-1 and 3-2. The data was fitted to an equation of the form  $y = m \ln(x) + b$  using a regression method. The correlation coefficient ( $R^2$ ) measures the "fit" of the data. In general, an  $R^2$  above 0.9 indicates a good fit, while values less than 0.7 indicate that the data do not fit the equation. Radius of influence values measured in deep monitoring probes were only slightly higher than those measured in the shallow monitoring probes indicating that short-circuiting of air from the surface is not occurring in the shallow vents. This trend was evident in all three test runs conducted on SVE-1. Subsurface pressures did not vary significantly with increasing vacuum and were similar for all three runs. A radius of influence of 30 ft would be sufficient to encompass the area of contaminated soils in Tank Farm 2 based upon data collected in the *Soil Remediation Plan* (WESTON, 1995) and in this pilot study. Based upon Figures 3-1 and 3-2, a radius of influence of 40 ft is conservatively estimated.

Figure 3-1  
Lateral Distance versus Subsurface Pressure  
SVE-1 at -80 Inches of Water



3-7

Figure 3-2  
Lateral Distance versus Subsurface Pressure  
SVE-1 at -135 inches of Water



Air Permeability: Subsurface pressure data from the low and high vacuum test runs (-40 and -135 inches of water operating pressure) are plotted vs. time on Figures 3-3 and 3-4 for air permeability determination. Air permeability data was collected at the beginning of each test run conducted at SVE-1; however, data from the test run conducted at medium vacuum did not produce a useful air permeability curve and therefore a plot is not presented. Air permeability values were calculated using the following equation (EPA, 1991):

$$k = (10^{-8} r^2 e \mu / 4P)^{(B/A+0.5772)}$$

Where:

k = air permeability (cm<sup>2</sup>).

r = radial distance from extraction well (m).

e = air filled soil porosity.

$\mu$  = viscosity of air (1.8 x 10<sup>-4</sup> g/cm-sec).

P = ambient atmospheric pressure (g/cm-s<sup>2</sup>)

A = slope of time versus subsurface pressure plot

B = y-intercept of time versus subsurface pressure plot

Air permeability values of 10<sup>-10</sup> to 10<sup>-11</sup> cm<sup>2</sup> were calculated for the subsurface soil at SVE-1. These values correlate with the laboratory-derived intrinsic permeability of 1.04 x 10<sup>-11</sup> cm<sup>2</sup> reported for the Shelby tube sample collected from SVE-1 (see Table 2-1).

Vacuum Versus Flow Rate: Data from all three runs was used to plot operating vacuum versus air flow rate from SVE-1 as shown on Figure 3-5. This plot indicates that the air flow rate from SVE-1 increased linearly as increasing vacuum was applied, within the range tested.

Vacuum Versus VOC Mass Removal Rate: Data from all three runs was used to plot vacuum versus the total VOC mass removal rate as shown on Figure 3-6. The VOCs detected in air samples collected from SVE-1 consisted of tetrachloroethene (PCE) and lesser amounts of 1,1,1-trichloroethane (TCA) and trichloroethene (TCE). As shown on Figure 3-6, the VOC mass removal rate increased proportionately as increasing vacuum was applied. The overall projected daily VOC removal rate was 0.2 to 0.3 lb at operating pressures of -70 to -120 inches of water. It

Figure 3-3  
Air Permeability Test  
SVE-1 at -40 Inches of Water

3-10

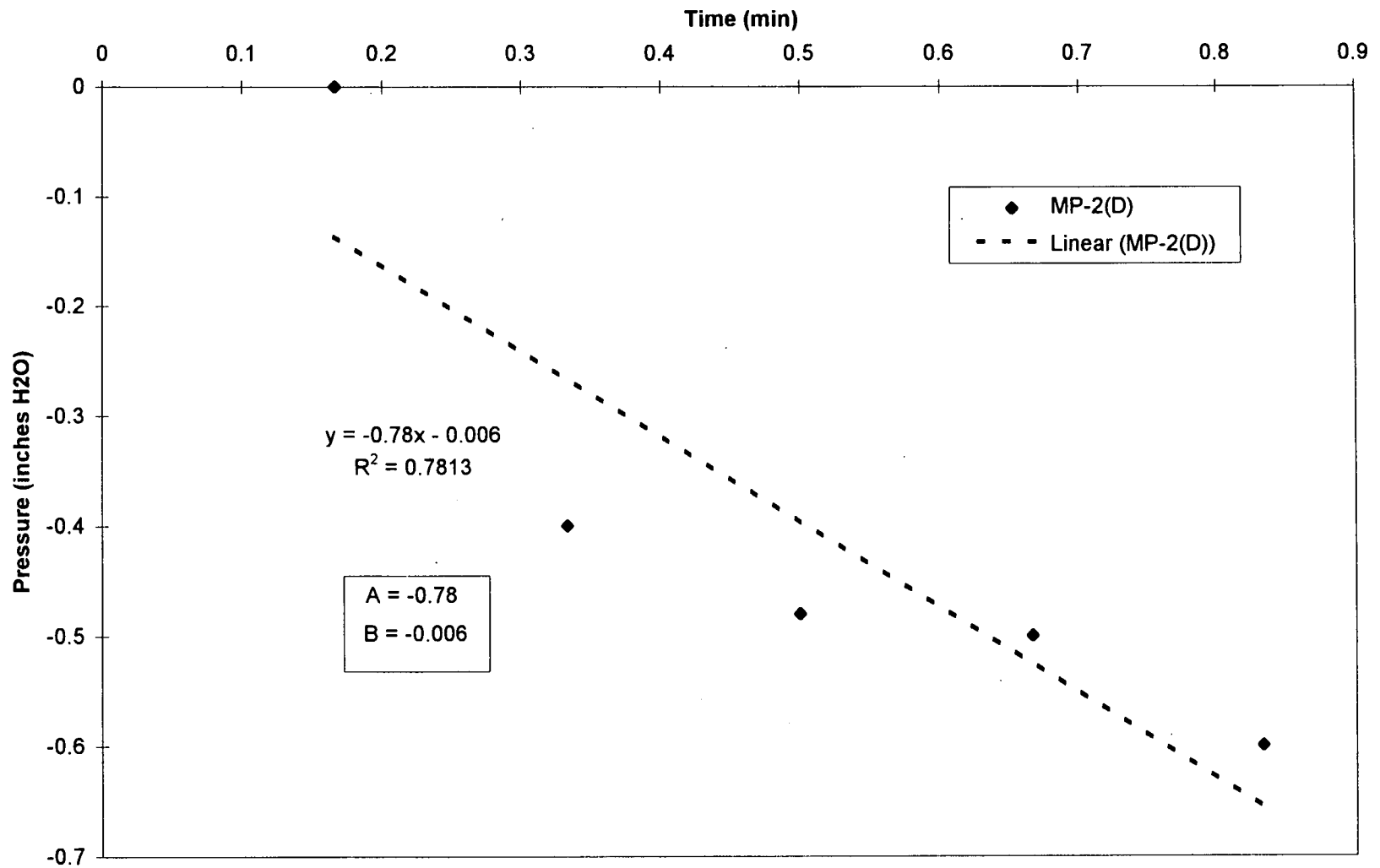


Figure 3-4  
Air Permeability Test  
SVE-1 at -135 Inches of Water

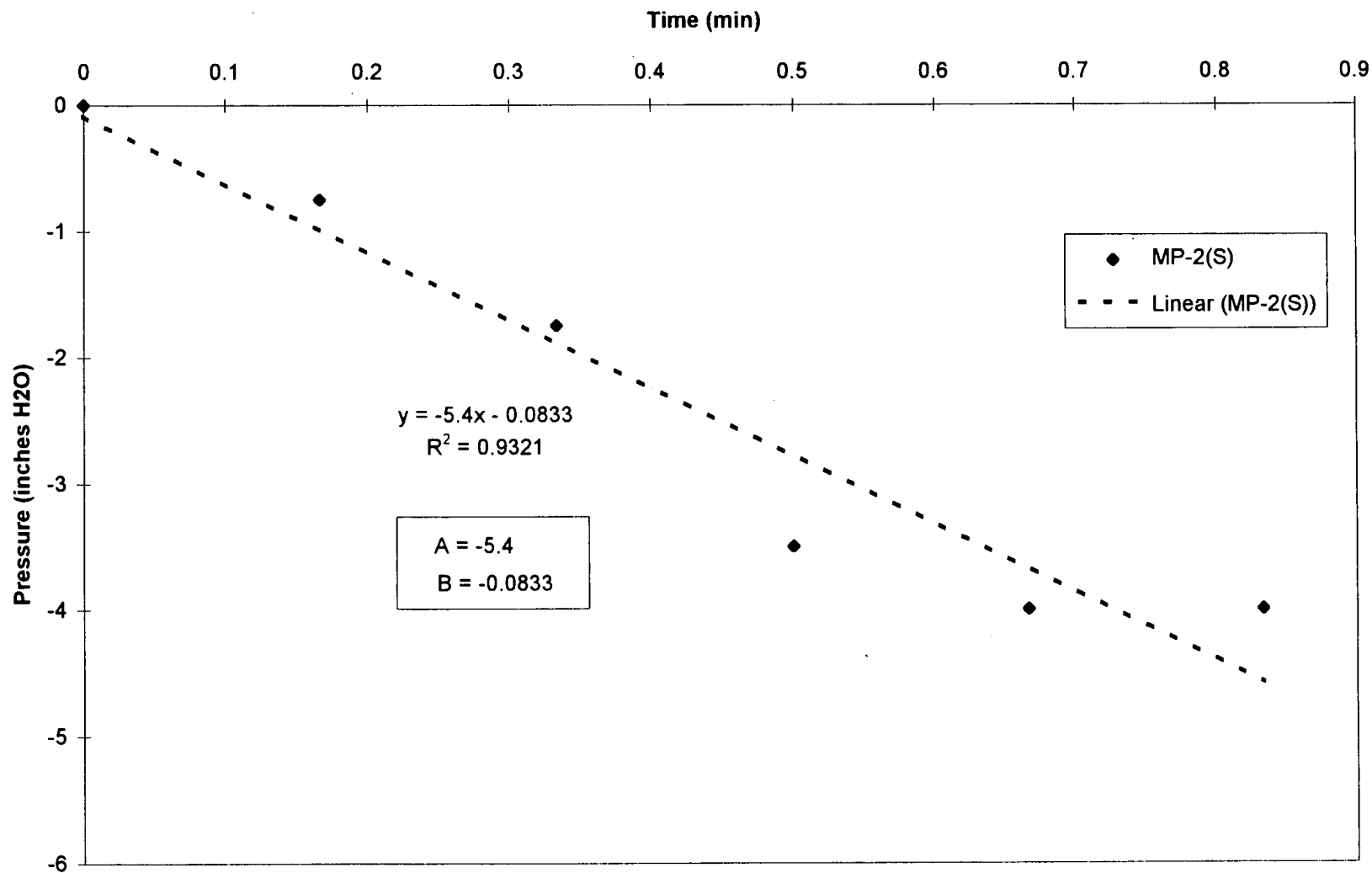


Figure 3-5  
Vacuum versus Air Flowrate for SVE-1

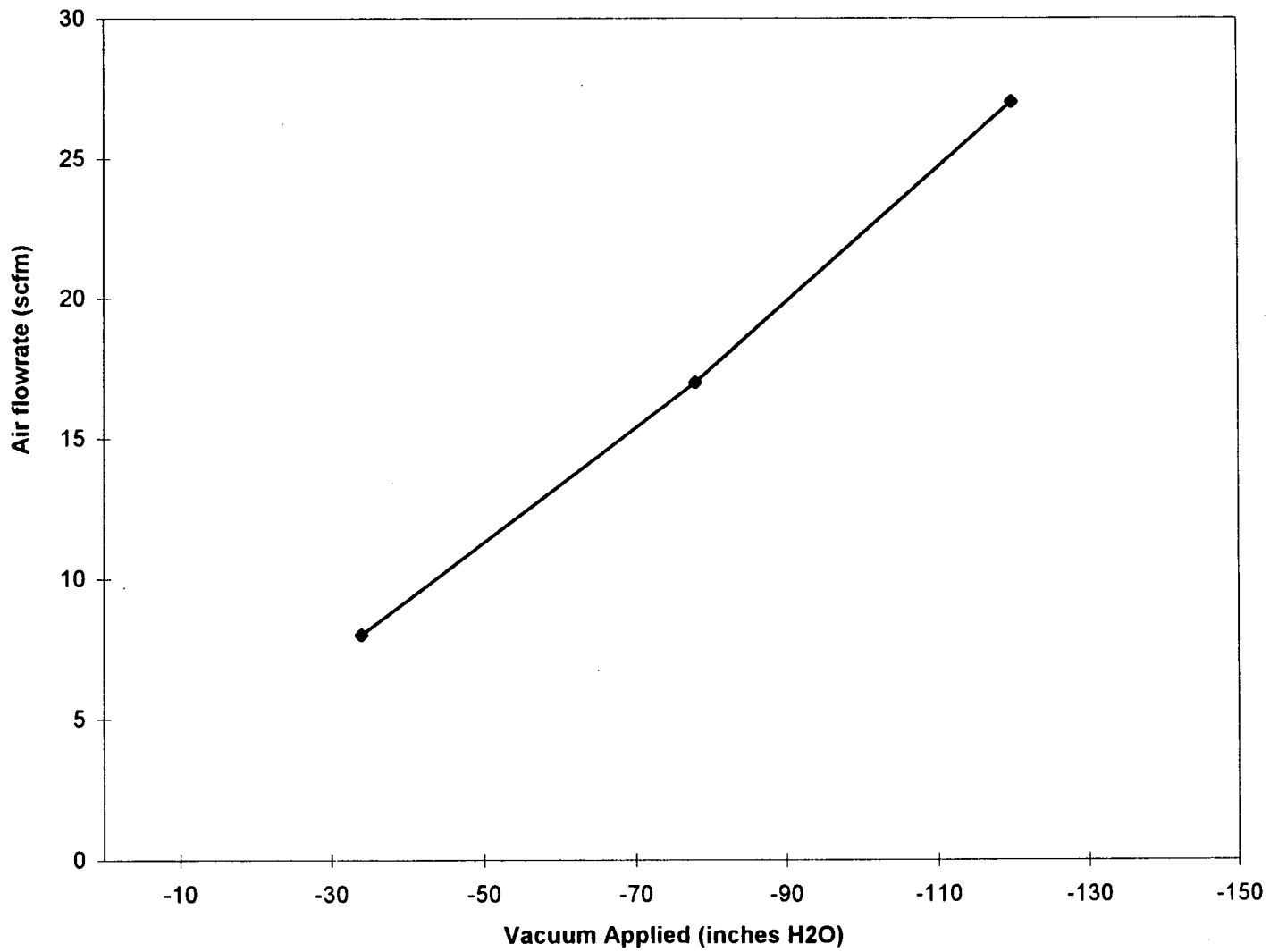
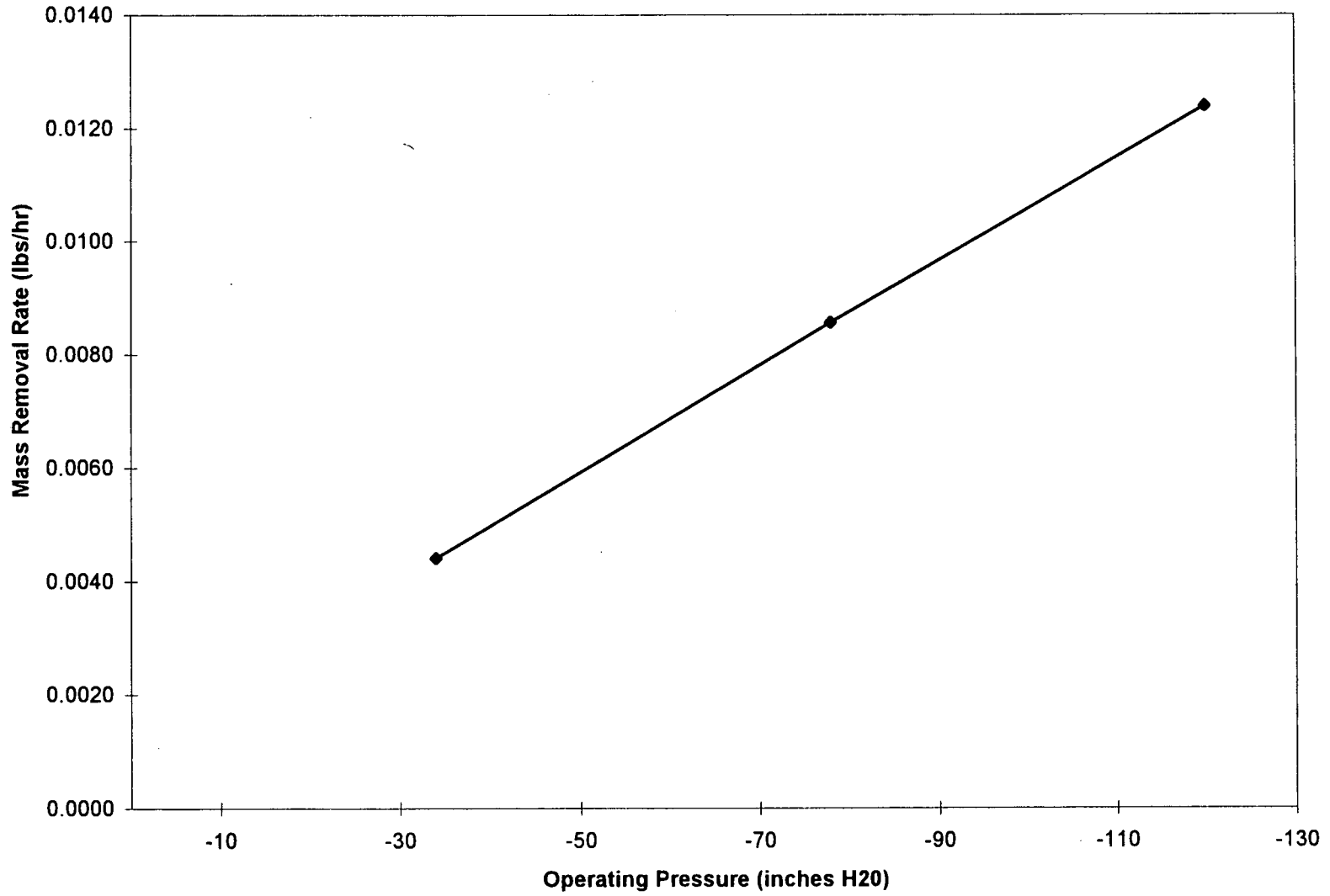


Figure 3-6

Vacuum versus Total VOC Mass Removal Rate for SVE-1





is important to note that the vent in this area will be used for bioventing, where the objective is to provide oxygen to subsurface soil to facilitate bioremediation of contaminants rather than to induce a vacuum.

Subsurface Soil Samples: As summarized on Table 2-2, TPH and VOCs (primarily TCE and PCE) were detected in subsurface soils. The highest concentrations of contaminants were detected in subsurface soil from the 9.0 to 10.5 ft. bgs interval at MP-2 which is near the center of the Tank Farm 2 area. Much lower concentrations were found at the 2.0 to 5.0 ft bgs interval in SVE-1. No significant concentrations were encountered at these same depths in MP-1. These results are consistent with prior studies in this area.

Semivolatile Air Sample Result at MP-2(D): One air sample was collected from monitoring probe MP-2(D) during the pilot study. This probe was selected for semivolatile organic compounds (SVOC) sampling based on the TPH results from subsurface soil samples collected during probe installation. This air sample was collected approximately 5 days after the completion of SVE test runs on SVE-1. The sample was collected by extracting soil vapor from MP-2(D) through a sorbent resin tube. Approximately 1100 liters of vapor were passed through the tube as measured using a rotometer. The air sample was analyzed for EPA TO-13 constituents as summarized on Table 3-4. Based on a maximum air extraction rate of 30 scfm from SVE-1 and the SVOC analytical results discussed above, an SVOC extraction rate of less than 1 lb per year would be expected.

The following conclusions can be made for the Tank Farm 2 area based on the pilot study data:

- Subsurface soil data indicate the highest concentrations of contaminants are located at MP-2 near the center of the Tank Farm 2. Based on analytical data and field observations, significant subsurface soil contamination appears to be confined to within 15 ft of MP-2.
- Based upon a comparison of the radius of influence at SVE-1 (approximately 40 ft.) with Figure 2-1, and considering historical sampling results in the Tank Farm 2 area, it is apparent that contaminated subsurface soils in the entire Tank Farm 2 area are well

**Table 3-4**  
**Analytical Results for Semivolatiles at MP-2(D)**  
**Black & Decker**  
**Hampstead, Maryland**

Analyte	Sample ID	
	ASMP2D-01 <sup>(1)</sup> (ug)	ASMP2D-01 <sup>(2)</sup> (ug/L)
1-Methylnaphthalene	15	0.014
2-Methylnaphthalene	17	0.015
Acenaphthylene	2.9	0.003

Notes:

Sample was collected by passing approximately 1100 L of air withdrawn from MP-2(D) through an XAD sorbent tube.

<sup>(1)</sup> Laboratory result indicating the mass of analyte detected on the XAD sorbent tube.

<sup>(2)</sup> Laboratory result divided by the volume of sample drawn across the sorbent tube.

- within the radius of influence treated at SVE-1, even at the lowest vacuum and flow rate tested.
- 
- Moderate air permeability values indicate that the subsurface soil in the vicinity of SVE-1 may not readily transmit large volumes. This is confirmed by the extracted air flow rate (7 to 27 scfm). However, these flow rates are more than sufficient to support bioventing, as discussed in Section 4.
- While data indicate that the VOC mass removal rate increases proportionately with increasing vacuum, the daily mass VOC removal rate, even at high vacuum operation, is relatively low. This supports the approach of using bioventing to biodegrade petroleum hydrocarbons to facilitate VOC removal.
- SVOC results collected from vapor extracted from MP-2(D) did not indicate the presence of significant quantities of SVOCs in the extracted vapor; therefore, SVOC vapor emissions will not be of concern for the full-scale SVE system.

### 3.3.2 Northeast Corner of Building Area

Operational data from Test Run Nos. 4 through 12 were used to evaluate the following relationships in the Northeast Corner of the Building area:

- Subsurface pressure in both shallow and deep soil stratum as a function of lateral distance from vent (radius of influence).
- Subsurface pressure in shallow and deep probes as a function of time (air permeability).
- Air flow rate as a function of operating pressure.
- TCE mass removal as a function of operating pressure.

Operational data from sustained operations were used to evaluate those relationships which depend on the duration of SVE operation:

- Contaminant mass removal rate as a function of time.
- Cumulative contaminant mass removal as a function of time.

Radius of Influence: The subsurface pressure measurements as a function of lateral distance from the vents are summarized on Figures 3-7 through 3-10. Figures 3-7 and 3-8 demonstrate a radius

Figure 3-7  
Lateral Distance versus Subsurface Pressure  
SVE-3(S) at -80 Inches of Water

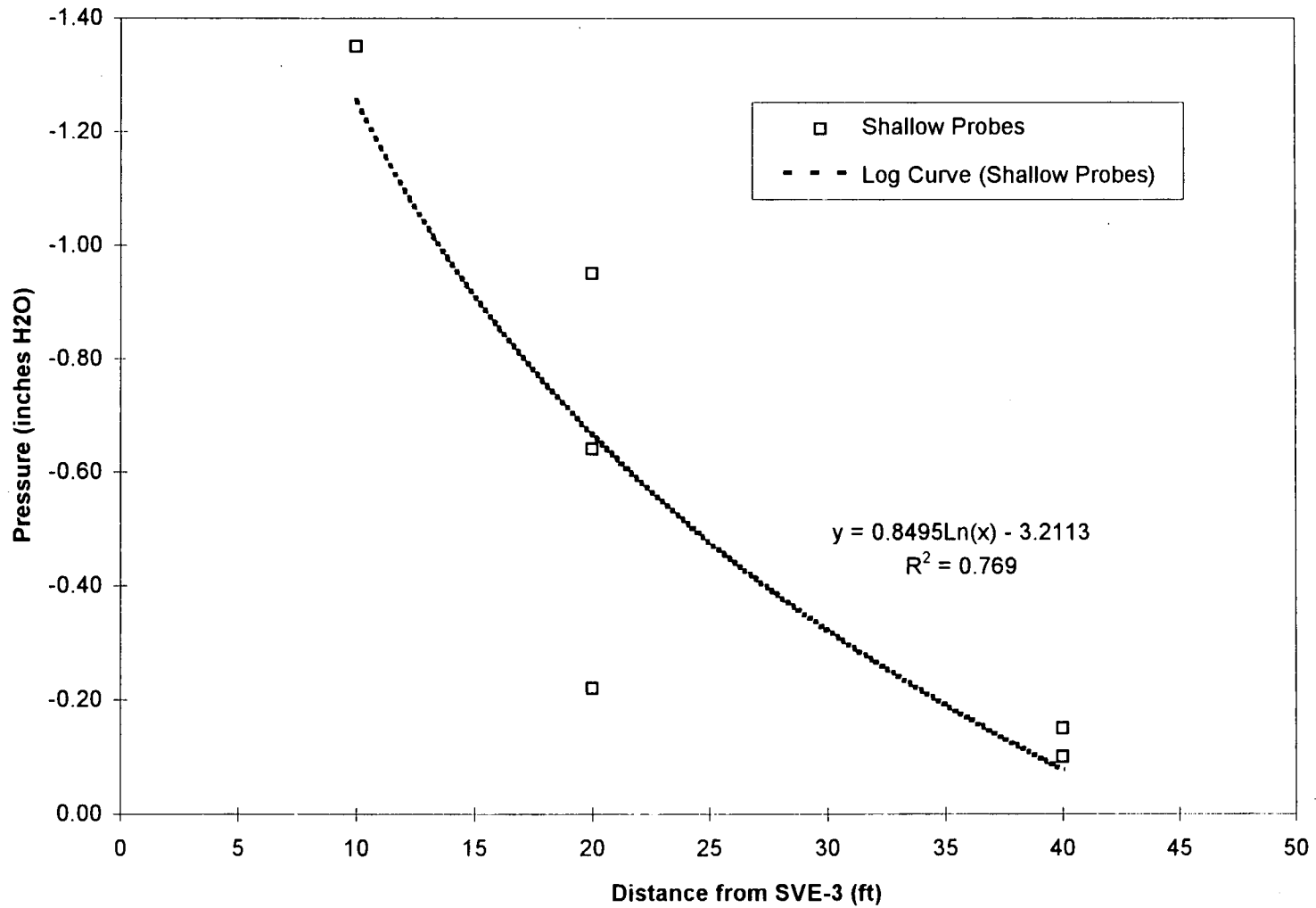


Figure 3-8  
Lateral Distance versus Subsurface Pressure  
SVE-3(D) at -80 Inches of Water

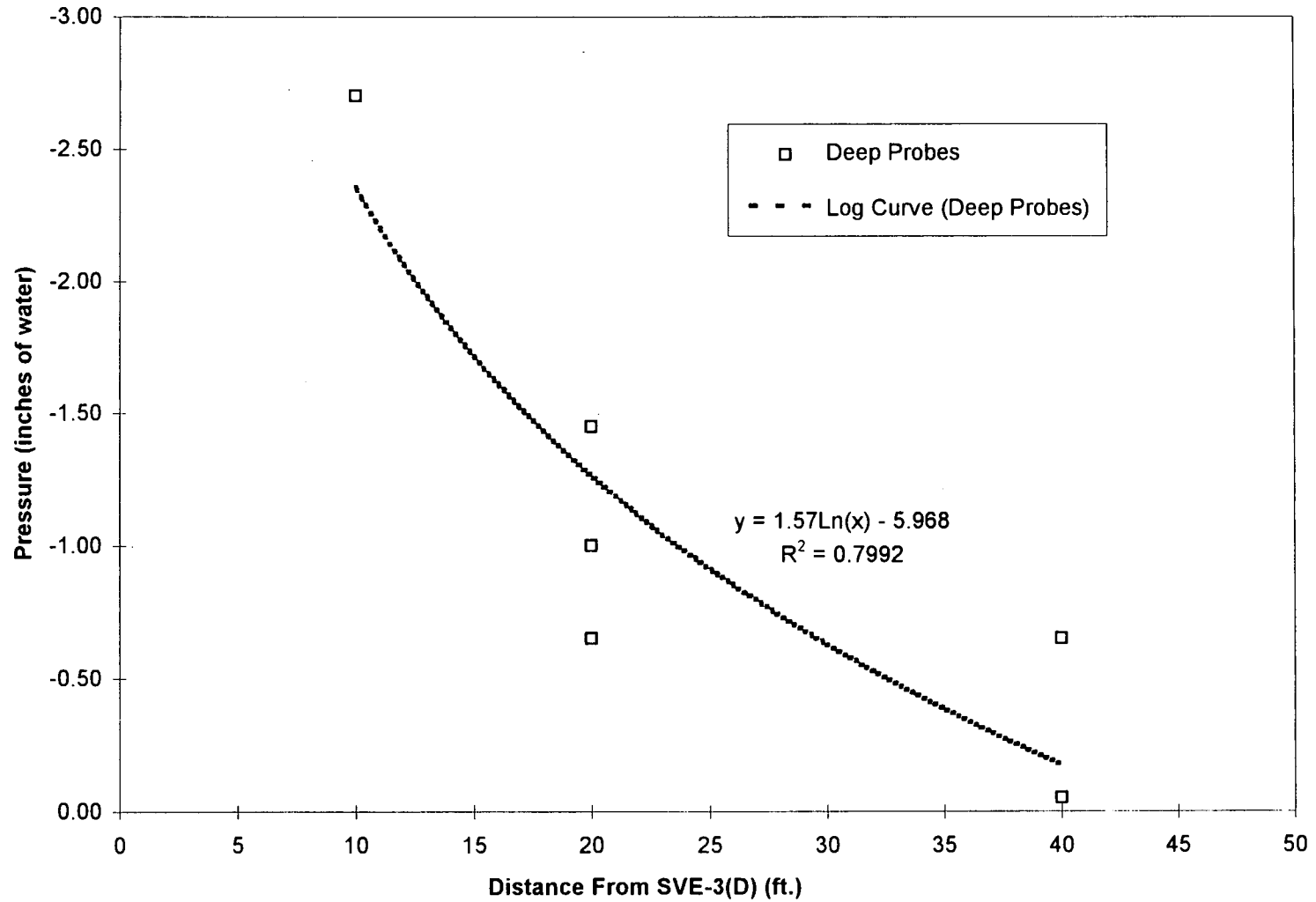


Figure 3-9  
Lateral Distance versus Subsurface Pressure  
SVE-2(S) at -140 Inches of Water

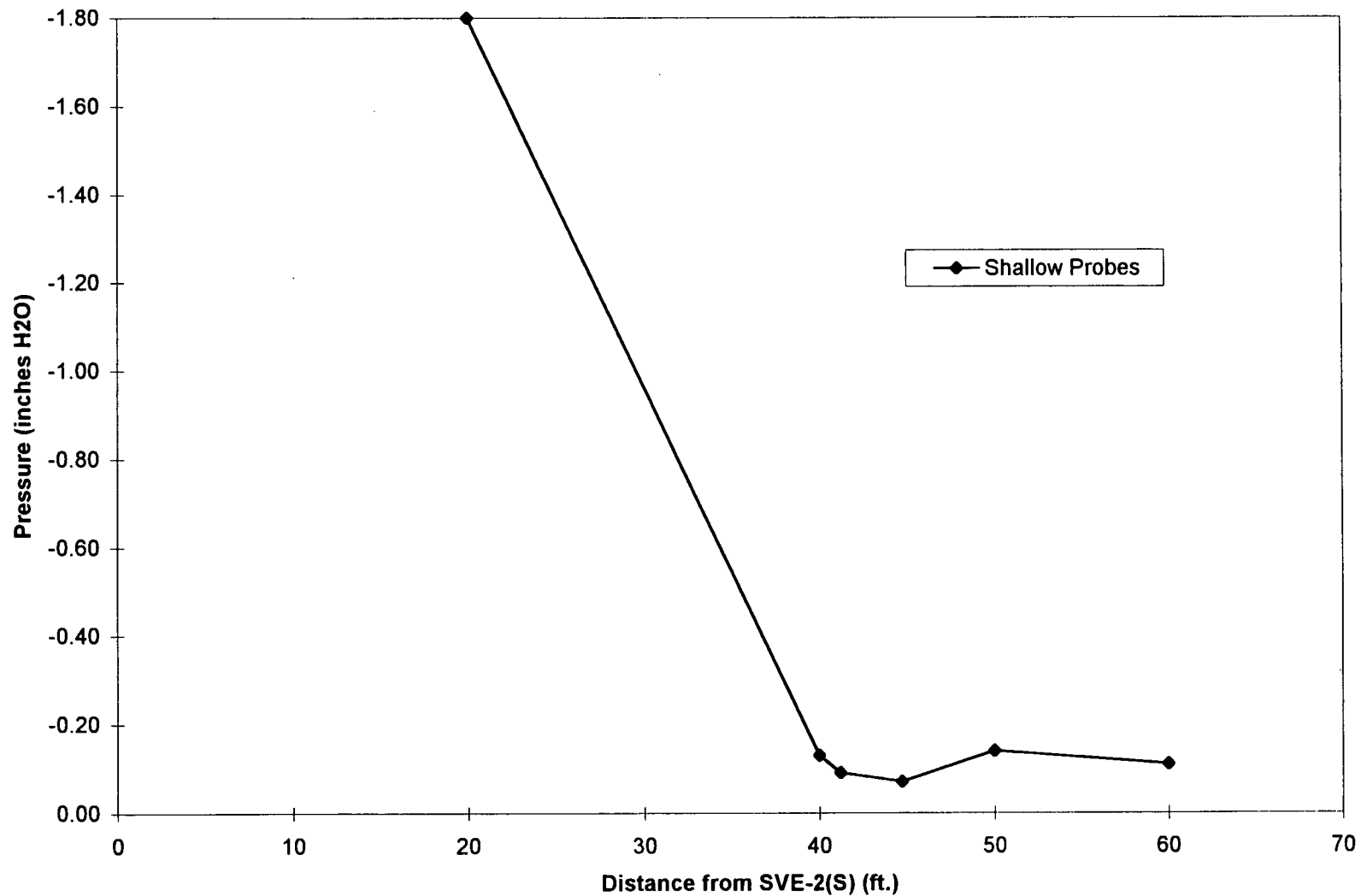
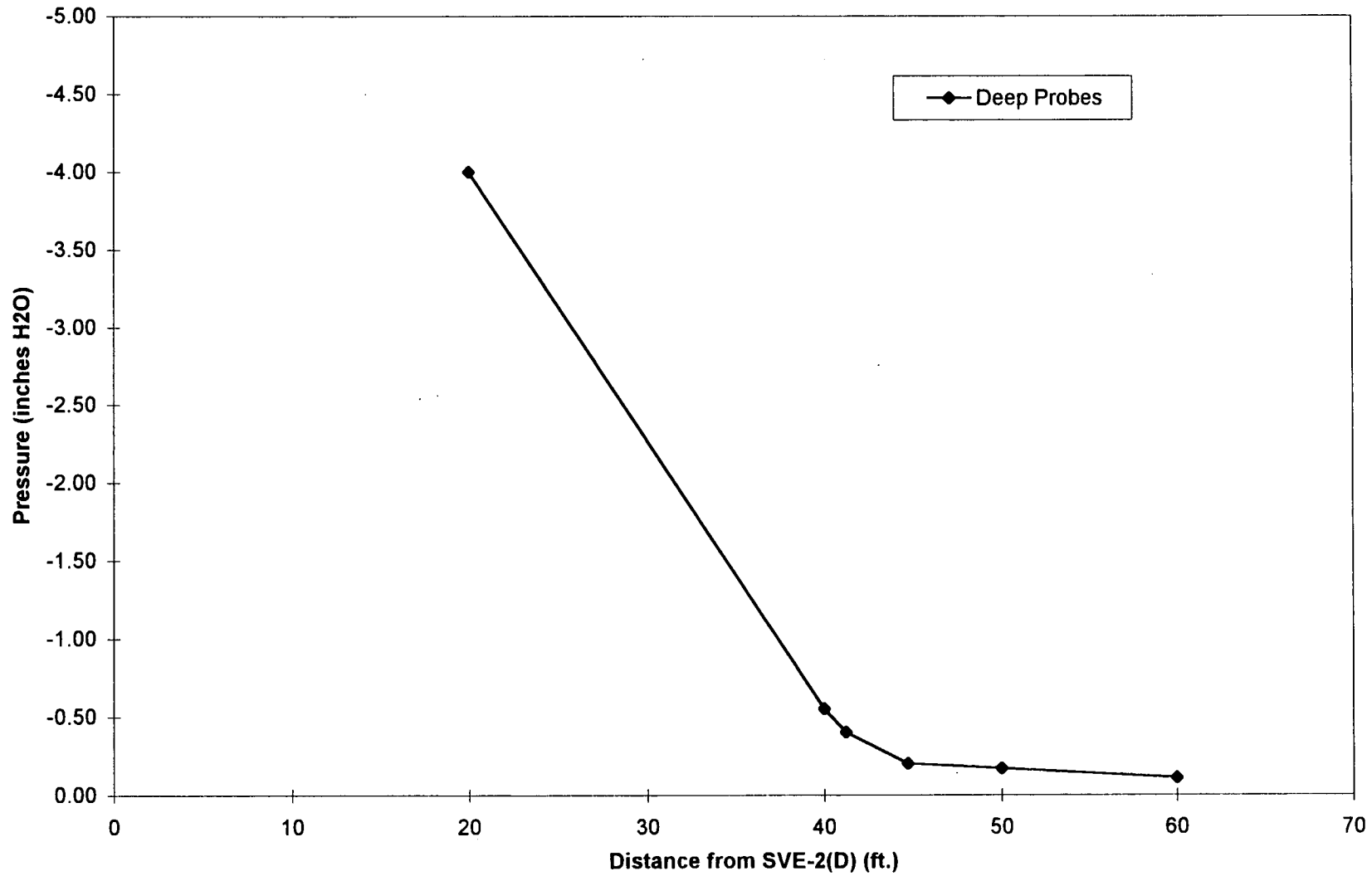


Figure 3-10  
Lateral Distance versus Subsurface Pressure  
SVE-2(D) at -140 Inches of Water



3-20

of influence of about 40 ft for SVE-3. Figures 3-9 and 3-10 for SVE-2 demonstrate that subsurface pressure is measurable even at a distance of 60 ft. The increase in subsurface pressure at 50 and 60 feet shown on Figure 3-9 may be due to the influence of the building footer which may serve as a preferential pathway for subsurface airflow. The overall radius of influence observed in the northeast corner of the building area is conservatively estimated to be 40 feet.

Air Permeability: Air permeability data (i.e., subsurface pressure as a function of time) for the vents in the northeast corner of the building area were plotted and air permeability values were calculated in a manner consistent with Subsection 3.3.1. Air permeability plots were included in Subsection 3.3.1 to illustrate the method used to calculate air permeabilities. Therefore, air permeability plots created for the northeast corner of the building area are not included in this report as they are only useful in providing slope (A) and y-intercept (B) values for the air permeability calculation. Air permeabilities calculated for the shallow vents range from  $10^{-12}$  to  $10^{-14}$   $\text{cm}^2$ , while air permeability for the deep vents ranged from  $10^{-17}$  to  $10^{-33}$   $\text{cm}^2$ . This range of air permeabilities is not uncommon as air permeability measurements can be significantly affected by soil stratigraphy, soil heterogeneity, soil moisture, and surface effects. Since the radius of influence was measured directly, knowledge of the precise air permeability is not necessary for evaluation/design purposes.

Vacuum Versus Flow Rate: The extracted air flow rate as a function of vacuum is shown on Figure 3-11. As illustrated on this figure, the air flow rate increased slightly at 3 of the 4 vents, while it increased more steadily at SVE-3(S). The total flow rate is strongly influenced by the SVE-3 flow rate.

Vacuum Versus VOC Mass Removal Rate: As shown on Figure 3-12, the TCE mass removal rate increased as increasing vacuum is applied. However, the removal rate reaches an inflection point at an operating pressure of -70 inches of water above which there is diminishing returns for further increases in vacuum.

Run Duration Versus Mass Removal Rate: Figure 3-13 shows the relationship between the TCE mass removal rate and operating time determined from sustained operations. The removal rate



Figure 3-11  
Vacuum versus Air Flowrate

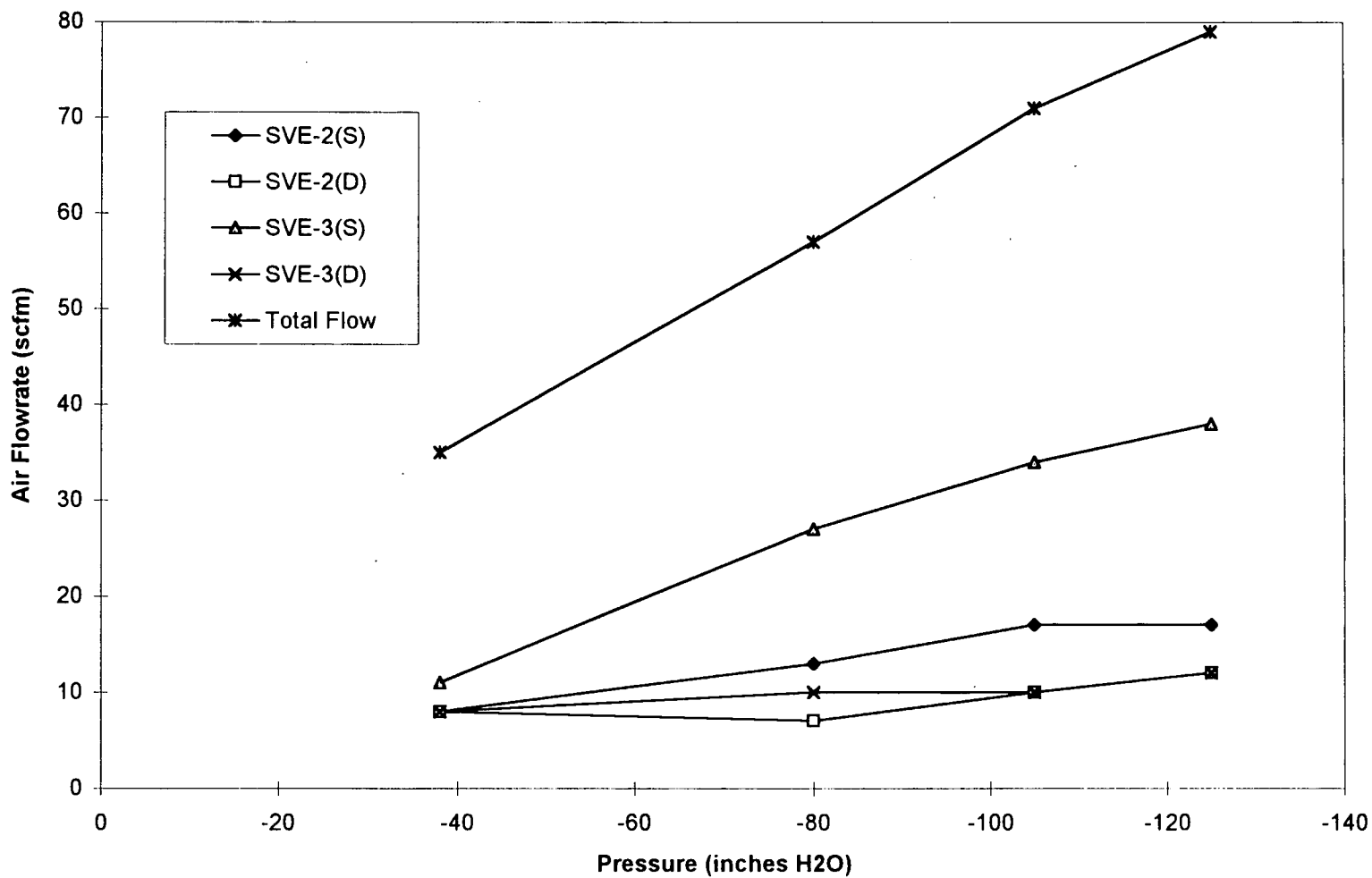
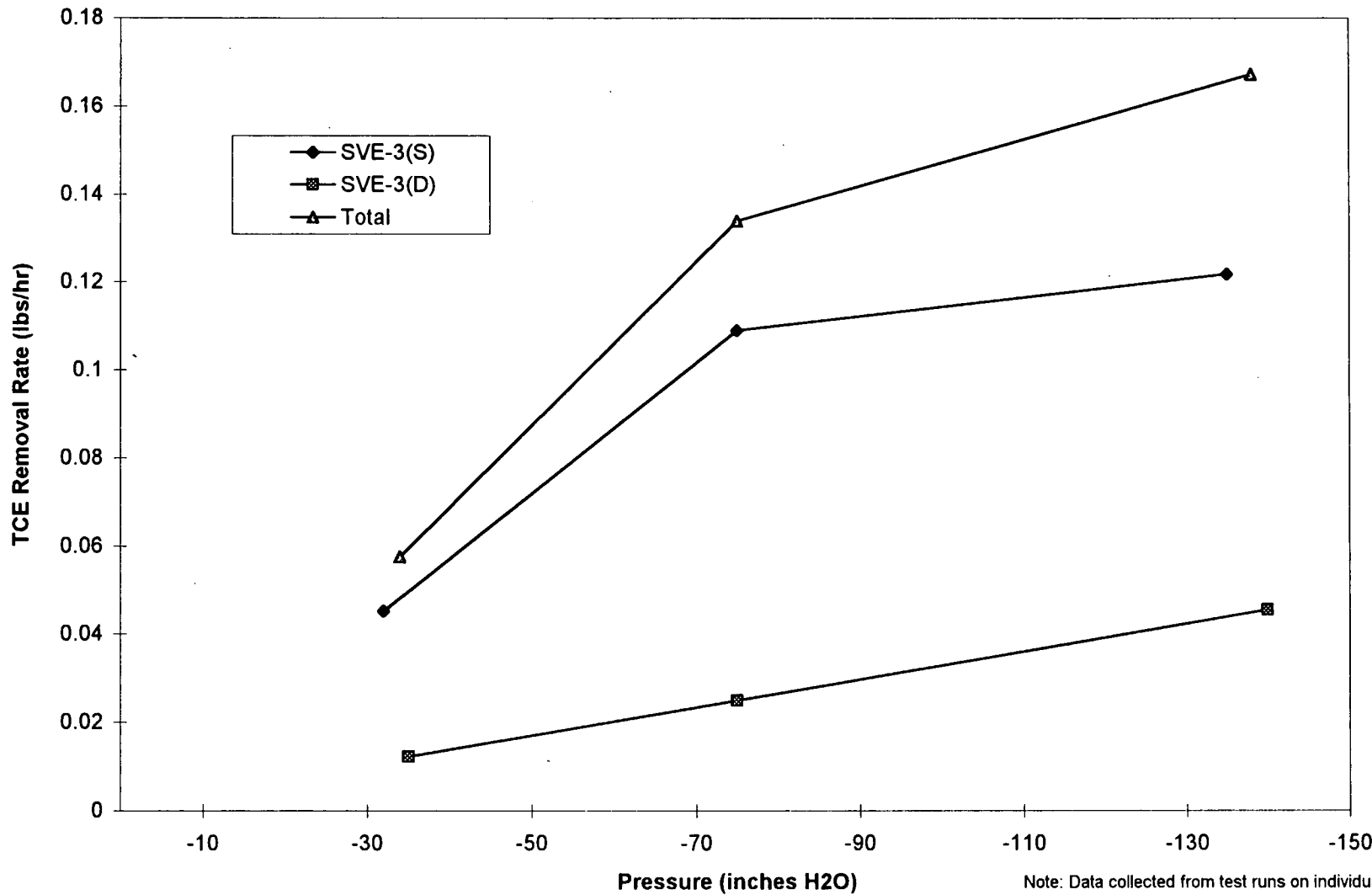
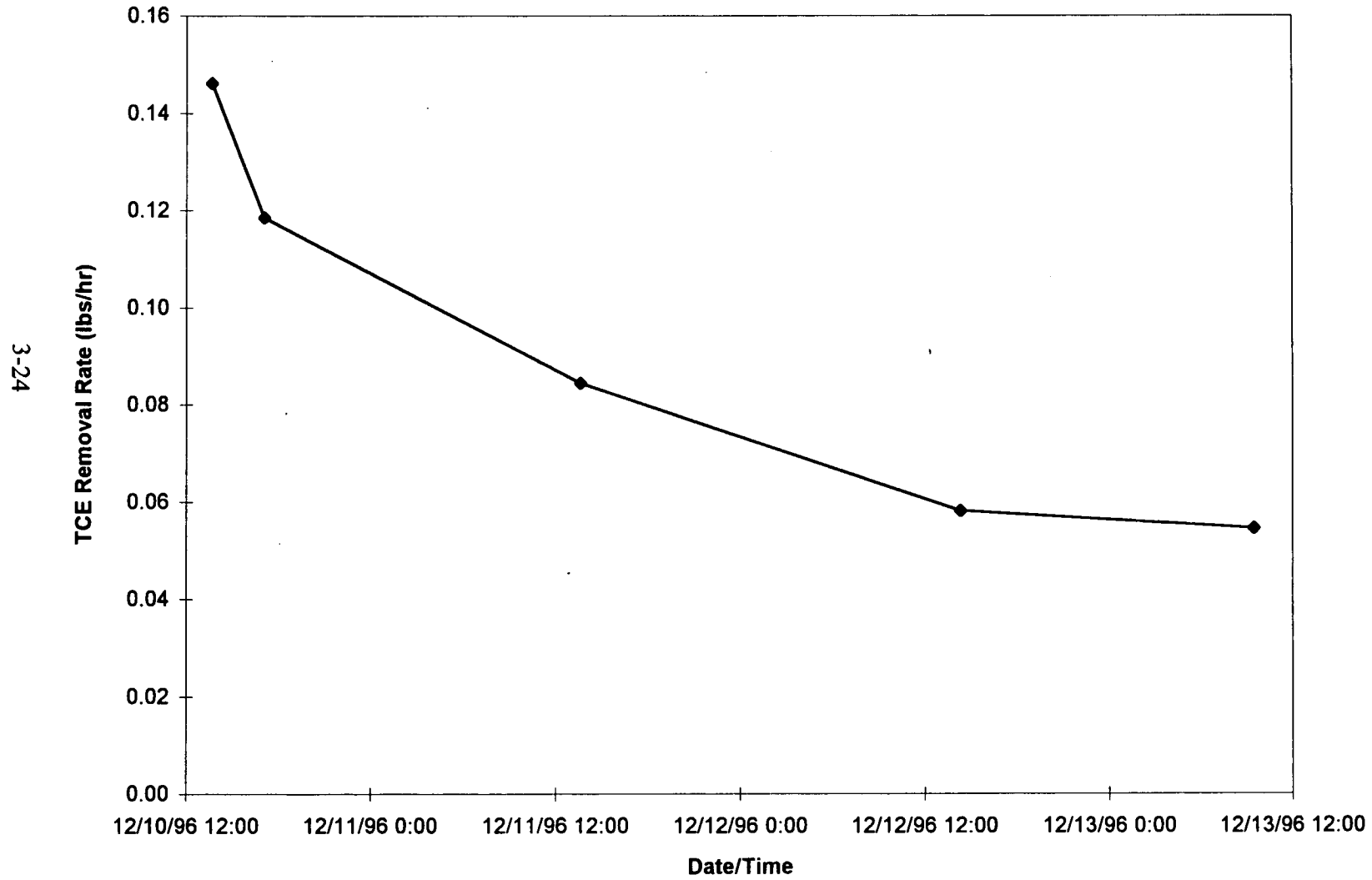


Figure 3-12  
Vacuum versus TCE Mass Removal Rate for SVE3(S) and SVE-3(D)



Note: Data collected from test runs on individual vents.

Figure 3-13  
TCE Removal Rate During Sustained Operations

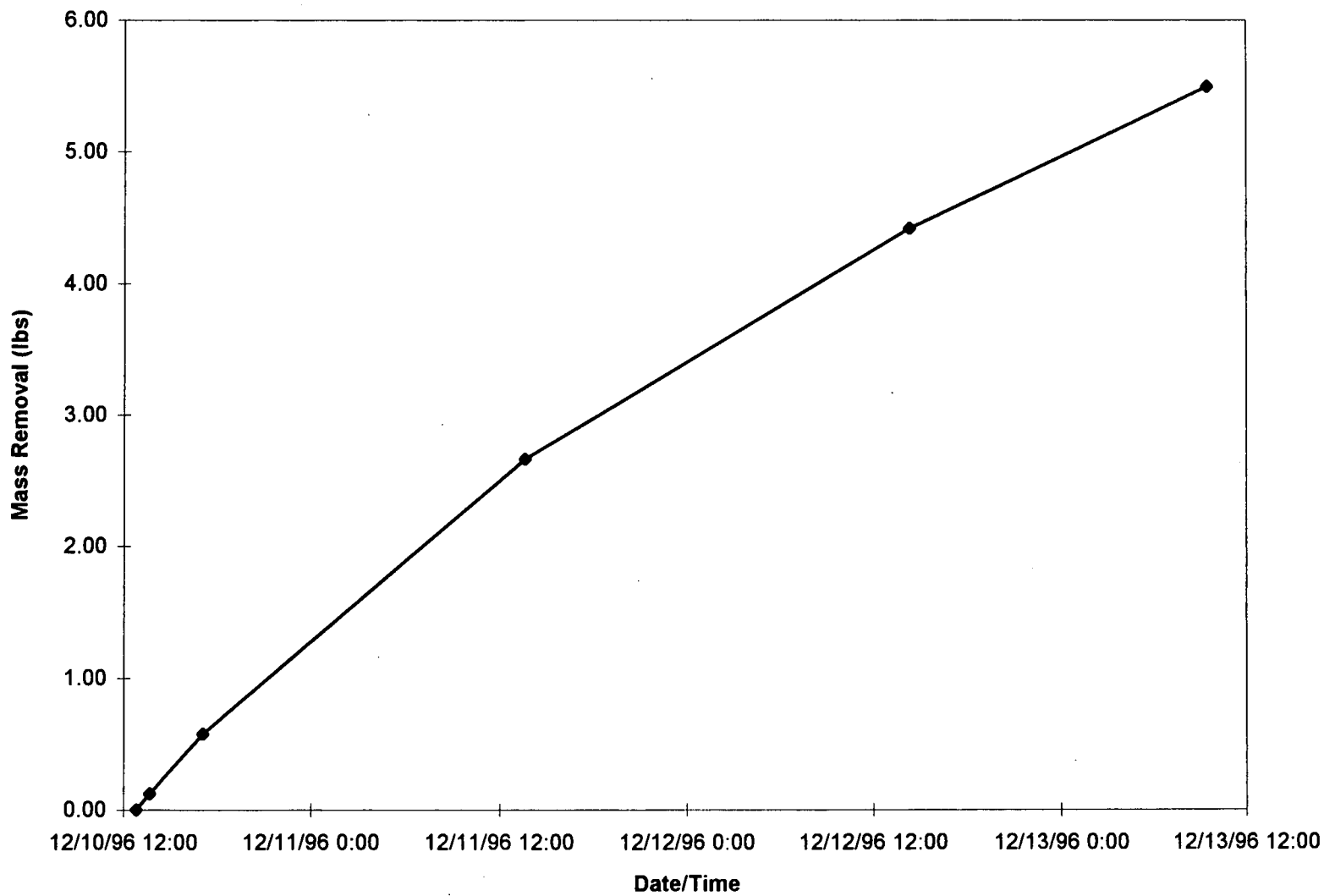


levels off at a value of approximately 0.06 lb./day. Figure 3-14 shows the cumulative TCE mass removal throughout the sustained operations and indicates that approximately 5.5 lb. of TCE was removed by the SVE system during the sustained operations period. The following conclusions can be made for the northeast corner of the building area based on the pilot study data:

- Subsurface soil data indicate the highest concentrations of contaminants are located at MP-4 at a depth of 28.5 to 30.0 ft bgs. Relatively low concentrations of chlorinated hydrocarbons (i.e., 10 µg/kg TCE) and TPH (19.9 mg/kg) were detected at this location. Air and soil sampling data together suggest that subsurface soil contamination appears to be confined to an area around monitor well RFW-16 extending outward as far as SVE-2 and SVE-3. No significant concentrations of contaminants were detected in MP-6 or MP-7.
- Based upon the concentrations of VOCs in the soil samples collected during the pilot study; the concentrations of VOCs in the soil collected from the boring outside the northeast corner of the building (installed during the 1987 Environmental Investigation); and the field screening readings detected in the well borehole for well RFW-16 located near the building wall (1991), it can be concluded that most of the historical TCE contamination in this area is near the building wall.
- Subsurface pressure data indicate that both SVE-2 and SVE-3 have a radius of influence conservatively estimated to be 40 ft. This radius easily encompasses the area where soils appear to have been affected.
- Air permeability calculations indicate that both shallow and deep soil strata in the northeast corner of the building area exhibit relatively low air permeabilities, with shallow soils being more permeable than deep soils. This observation is confirmed by the lower air flow rates observed in deep vents when compared to shallow vents at similar operating pressures.
- Both the extracted vapor flow rate and the TCE mass removal rate increase as the operating vacuum is increased. An inflection point occurs near a vacuum of approximately -70 inches of water, where a further increase in vacuum does not cause a significant increase in flow rate or mass removal.
- Sustained operations indicate that a TCE removal rate of 1.0 to 1.5 lb/day can be expected. This, combined with VOC concentrations in soil, suggests that TCE residual remaining in the vadose zone is less than previously believed. The limited "foot print" suggests that TCE moved downward over a small area into the groundwater.
- Based on the above, remediation using existing vents SVE-2 and SVE-3 will be effective in encompassing the area beneath the northeast corner of the building and the

Figure 3-14  
TCE Cummulative Mass Removal During Sustained Operations

3-26



former TCE tank area. To enhance contaminant mass removal, an air sparging well near the former TCE tank will also be installed.

## SECTION 4

### BIOVENTING PILOT STUDY

Following the SVE operations in the Tank Farm 2 area, a bioventing study was performed to determine the potential effectiveness of bioventing as a remedial technology for subsurface soils in this area. The bioventing study was focused on remediation of subsurface soils containing petroleum hydrocarbon residue which may be less amenable to remediation by SVE than the chlorinated hydrocarbons. Further, because the cosolvency between chlorinated hydrocarbons and other heavier petroleum hydrocarbons reduces the effective volatility of the chlorinated hydrocarbons, an evaluation of bioventing was considered necessary. The effectiveness of the bioventing technology was evaluated by performing an in situ respiration (ISR) test as discussed in the following subsections.

#### **4.1 IN SITU RESPIRATION TEST**

##### **4.1.1 Overview**

Many petroleum hydrocarbons can be metabolized by microorganisms which are naturally occurring in the subsurface soil and have acclimated to the contaminants as a carbon (food) source. The ISR test is intended to provide a relative measurement of the rate of aerobic microbial degradation of contaminants in subsurface soils by measuring the oxygen uptake during the tests. Prior to measuring oxygen uptake, air containing a helium tracer was injected into the soil for a 24-hour period. Oxygen uptake and carbon dioxide production in the soil are subsequently measured over a period of up to 5 days following injection. Helium is also measured to ensure that no additional aeration of the subsurface soil is occurring. In addition, the helium tracer can be used to determine how far the injected oxygen has traveled away from the injection point. Data obtained from the ISR test can be used to determine whether or not the injection of oxygen (air containing oxygen) into the soil will enhance microbial degradation of contaminants in soil and the approximate rate at which degradation will occur.

#### 4.1.2 Test Procedures

The methods used to conduct the ISR test were based on the procedures discussed in both the U.S. Environmental Protection Agency's (EPA) manual: *Bioventing Principles and Practice* (EPA, 1995) and the U.S. Air Force document: *Test Plan and Technical Protocol for a Field Treatability Test for Bioventing* (AFCEE, 1992). The ISR test was conducted on MP-2(S). This probe was selected based on subsurface soil sampling which indicated that TPH contamination was highest at this location.

The following is a summary of the ISR test procedures implemented at the site:

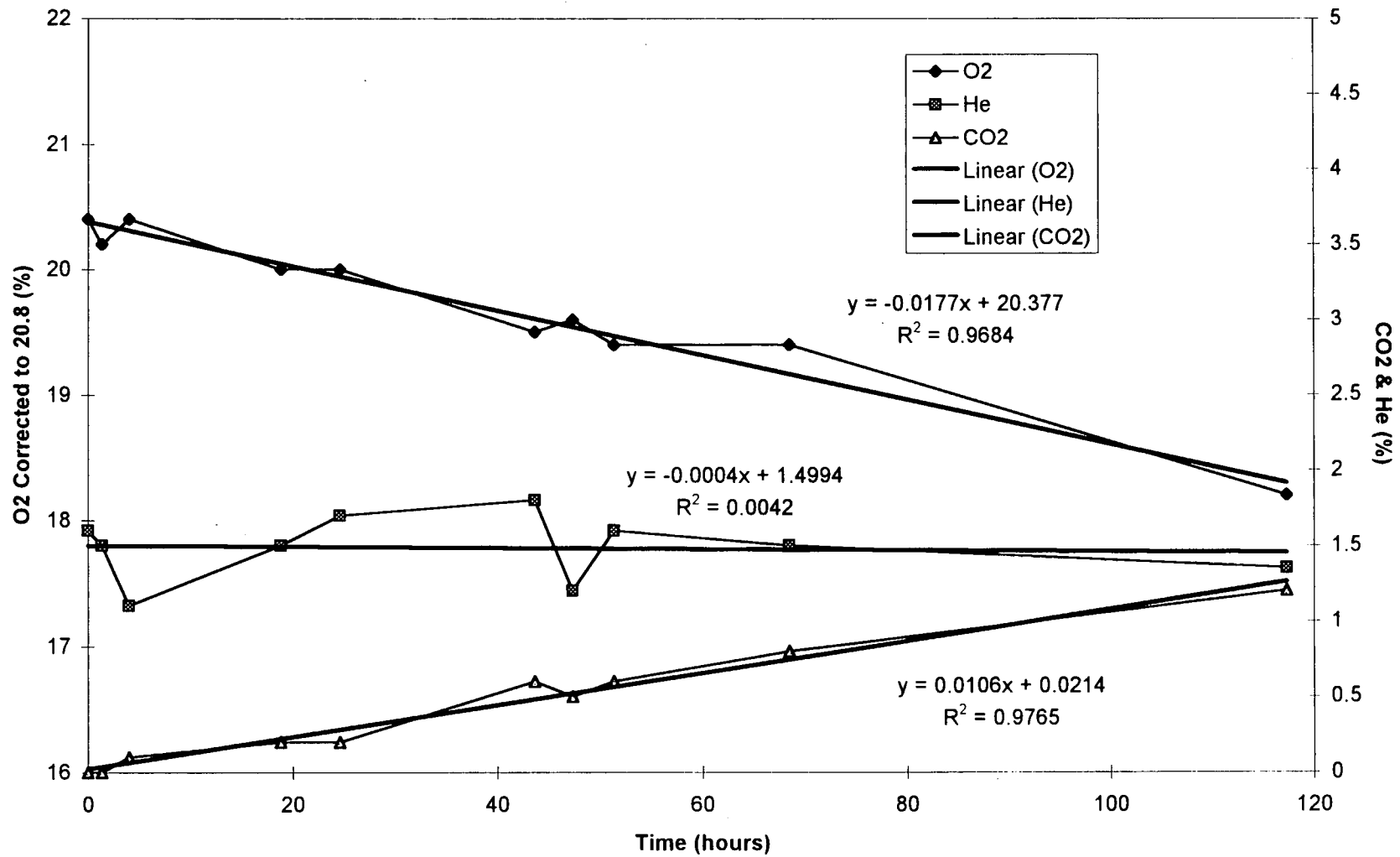
- Baseline oxygen, carbon dioxide, and FID readings were obtained following the SVE study to ensure starting conditions have been established.
- A mixture of 1-3% helium in air was injected into MP-2(S) for approximately 24 hours.
- Oxygen, carbon dioxide, helium, and FID measurements were collected during the test period by purging the monitoring probe approximately 1 minute until carbon dioxide and oxygen measurements stabilize.
- The test was conducted for approximately 5 days.

#### 4.2 In Situ Respiration Test Results

Results from the ISR test are plotted on Figure 4-1. Oxygen values plotted on the figure were corrected to account for varying background oxygen readings collected during the test. Figure 4-1 shows a steady decline for oxygen concentration and a steady increase for carbon dioxide concentration in subsurface soil vapor over the 5-day test period. The helium concentration remains relatively steady indicating that the oxygen concentration decrease is not due to diffusion. During the test, helium was also detected in all of the monitoring probes in the Tank Farm 2 area indicating that the injected air had traveled throughout the entire area. Microbial data, shown on Table 2-2, confirm that microorganisms are present in the subsurface soils tested, although at relatively low levels.



Figure 4-1  
In Situ Respiration Test Results



4-3

Nutrient data for subsurface soils are also included on Table 2-2. Nutrient data (total kjeldahl nitrogen (TKN) and total phosphate) were compared to organic carbon concentrations extrapolated from TPH data (assuming that TPH consists of approximately 80% carbon by weight). The TPH concentration used to calculate the carbon concentration was an average of the TPH concentrations detected in soil samples collected from SVE-1, MP-1, and MP-2. Average nitrogen and phosphorus concentrations were calculated by averaging the TKN and total phosphorous results from the two nutrient samples collected from SVE-1. These average carbon, nitrogen, and phosphorus concentrations were used to calculate carbon to nitrogen (C:N) and carbon to phosphorus (C:P) ratios which were used to determine if these nutrients are present in sufficient concentrations to support microbial growth. The C:N ratio calculated was approximately 110:1, which is somewhat higher than the optimal C:N ratio for balanced microbial growth of 20:1. The C:P ratio calculated was approximately 15:1, which is within the optimal C:P ratio for balanced of microbial growth of 100:1. Although the data suggest that the nitrogen concentration may be low, much of the nitrogen may be naturally recycled over the course of remediation. These nutrient concentrations should be adequate.

#### **4.3 Explanation of Results**

The results of the ISR test indicate that the subsurface soils in the Tank farm 2 area exhibited baseline oxygen concentrations of 14% to 16% prior to air injection. This is attributed to the fact that the SVE pilot study was previously conducted in this area, causing aeration of the soil, prior to conducting the ISR test. A steady uptake of oxygen during the respiration tests coupled with carbon dioxide production, clearly indicate the presence of microbial degradation. The C:P ratio indicates that there is sufficient phosphorus in the soil to support microbial degradation. The C:N ratio indicates a slightly less favorable nitrogen content of soils; however, this ratio may be skewed due to the relatively high TPH concentrations encountered in MP-2.

The rate of biodegradation potentially could be enhanced by adding a microorganism "seed" at the start of bioventing operations. Cultured microorganisms acclimated to heavy petroleum oils could be more effective degraders of the heavy oils than the naturally occurring acclimated

microorganisms due to the low concentration and variety of native microorganisms typically present in soils so far below the surface.

The amount of airflow required for bioventing in the tank farm area was estimated using the ISR oxygen uptake rate of 0.5% per day based on Figure 4-1. To maintain sufficiently aerobic oxygen levels in soil (i.e., greater than 18%), it will be necessary to turn over air within the contaminated zone every 5 days. Conservatively assuming a volume of soil to be treated is a cylinder 40 feet in diameter centered at SVE-1 with a depth of 20 feet, the volume of air within the cylinder is 7,530 ft<sup>3</sup>. Therefore, a minimum flow rate of 1.1 cfm would be required to replenish the air every 5 days.

However, to maintain a radius of influence for aeration across the entire tank farm area higher air injection rate of 15 cfm or more would be needed. This is approximately 15 times the volume of air currently required for respiration and should be sufficient if the respiration rate increases with microbial enhancement.

## SECTION 5

### CONCEPTUAL FULL-SCALE DESIGN

Based on the data collected during the SVE and bioventing pilot studies previously discussed, a conceptual design for a full-scale remediation system has been prepared. This full-scale system is designed to treat subsurface soil in both the Tank Farm 2 area by bioventing and the northeast corner of the building area by SVE and air sparging.

#### 5.1 DESIGN BASIS

Based on the results of the bioventing study, a full-scale bioventing system at the Tank Farm 2 area would require at a low air injection flow rate to replenish oxygen consumed by biodegradation, but a higher air flow rate would be required to distribute the air across the entire target area. Since the equipment for air extraction is already necessary for SVE operations at the northeast corner of the building and air supply will be needed for air sparging, both air extraction and injection could be easily implemented. SVE-1 is better suited to air extraction which can broadly influence the Tank Farm 2 area. Air injection can be used directly at MP-2 to maximize air flow through the highest concentration zone.

In the northeast corner of the building area, air will be extracted from the SVE-2 and SVE-3 nested pairs. Air will be injected into a new air sparging well installed into the more productive transition zone between unconsolidated soil and bedrock. Air injection rates will be kept below one half of the extraction rates to create a defined flow path toward the extraction vents.

The design specifications for the major components of the full-scale soil remediation system are discussed in the following subsections.

## 5.2 SOIL VAPOR EXTRACTION SYSTEM DESIGN

### 5.2.1 Blower System Specifications

The specifications for the vacuum blower, and associated components, that will be used to extract soil vapor are listed below:

- Flow rate = 75 scfm (60 scfm from NE corner and 15 scfm from Tank Farm 2)
- Operating pressure at blower intake = -80 inches of water (approximately 6 inches or Hg).
- Operating pressure at blower exhaust = atmospheric pressure.
- Motor horsepower = 5 hp.

The blower motor will require a 230-volt 3-phase power supply which is readily available inside the northeast corner of the building. The blower system will also include the following accessories:

- A knock-out drum to remove entrained liquid from the extracted soil vapor.
- An air filter to remove particulates from extracted vapor.
- Pressure/vacuum gauges on the intake and outlet of the blower.

### 5.2.2 Extraction Vent Specifications

The existing extraction vents (SVE-1, SVE-2, and SVE-3) appear to be in optimal locations and have been constructed to be used for full-scale remediation. No modification of existing vents or addition of new vents is necessary.

Based on the distribution of contamination in the Tank Farm 2 area and the subsurface pressure measurements collected during the pilot study, the screened interval of 16 to 25 ft bgs at SVE-1 is adequate for treatment. A radius of influence of approximately 40 ft determined for SVE-1

indicates that it will provide treatment of contaminated subsurface soil in the Tank Farm 2 area as shown on Figure 5-1.

Subsurface soil in the unsaturated zone in the northeast corner of the building area can be treated by operating both the shallow and deep vents simultaneously. A conservative radius of influence of 40 ft calculated for both SVE-2 and SVE-3 indicates that simultaneous operation of these two vents will provide treatment of surface soil in the northeast corner of the building area as shown on Figure 5-1.

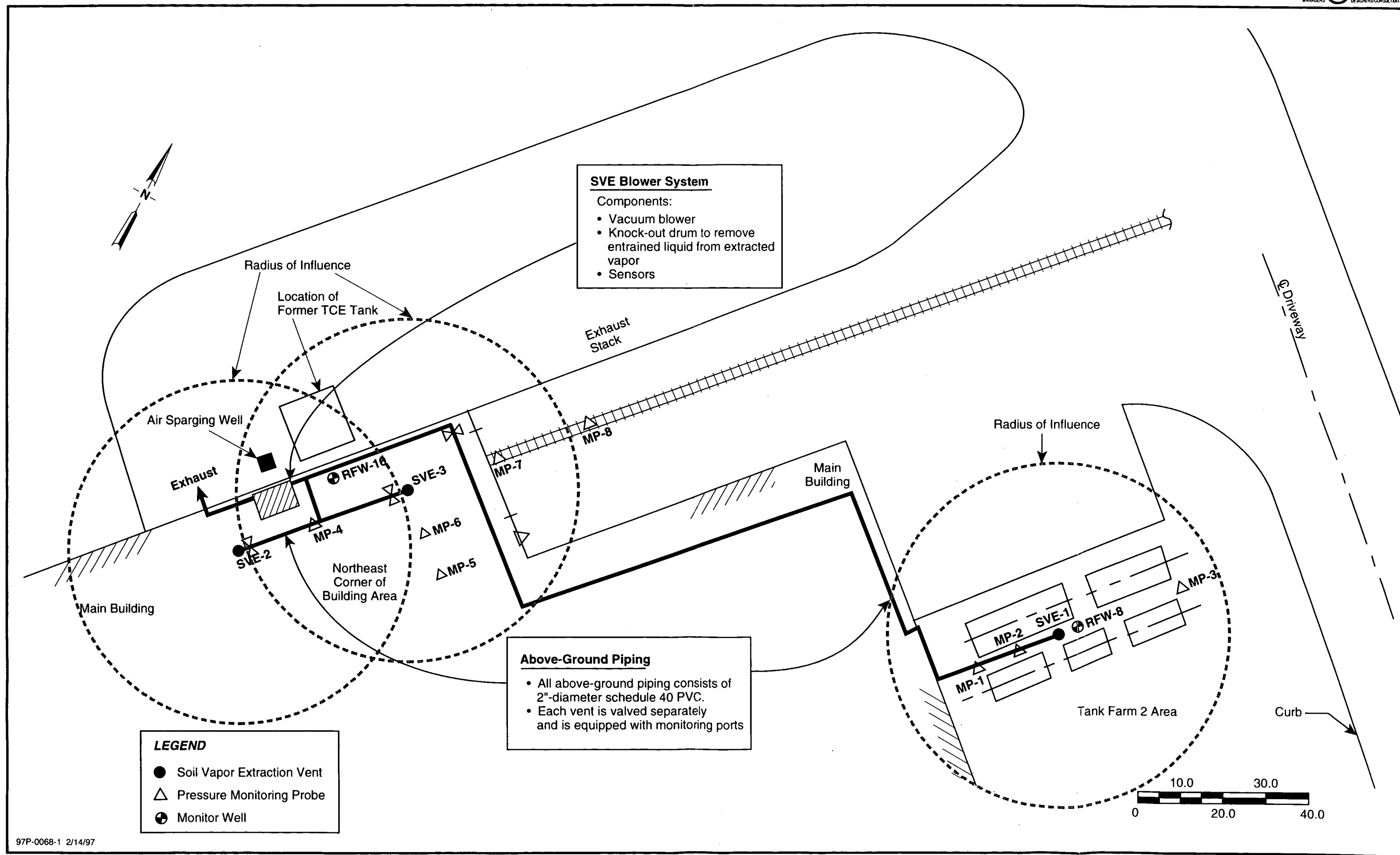
### 5.2.3 Piping Specifications

The existing manifold is constructed of 2-inch diameter Schedule 40 PVC pipe. This piping will require some minor modifications to accommodate the permanent location of the full-scale blower system. Any additional piping required will also be constructed using 2-inch diameter Schedule 40 PVC pipe.

### 5.3 AIR SPARGING DESIGN

Although the full-scale SVE system will treat soils in the vadose zone at the northeast corner of the building, it is not expected to yield a high rate of VOC recovery and will not affect contamination already in the saturated zone. Therefore, in order to further enhance performance and accelerate remediation of the saturated zone, air sparging will be conducted concurrently with the full-scale SVE system in the northeast corner of the building area. The SVE system will collect all VOCs stripped by the air sparging process.

In addition, air injection will be used at MP-2 to create a higher rate of air flow in the zone of peak hydrocarbon contamination. Concurrent operation of SVE-1 will further encourage flow and capture injected air from the soil.



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**FIGURE 5-1 FULL-SCALE SOIL VAPOR EXTRACTION SYSTEM LAYOUT**

### 5.3.1 Sparge Well Design

As previously discussed, it appears that subsurface contamination is concentrated in the vicinity of the building footer near monitor well RFW-16. Therefore, as illustrated on Figure 5-1, one sparge well will be installed in this area. The well will be constructed in the following manner:

- The borehole will be advanced until competent bedrock is encountered (approximately 50-60 ft bgs). Borehole logging, field screening of subsurface soils, and sample collection for laboratory analysis will be performed in a manner consistent with the procedures used for extraction vent installation.
- The sparge well will be constructed of 2-inch diameter Schedule 40 PVC riser pipe equipped with a 5-ft length of 0.01-inch PVC slotted well screen which will begin approximately 1 ft above the bottom of the well. The well screen will be laterally centered in a sandpack and will be equipped with a well sock to prevent silt from entering the sparge well.
- The sandpack will extend approximately 2 feet above the screened interval. The remainder of the annular space between the riser pipe and the borehole wall will be grouted to grade.

Following installation of the well, a pressurized air line will be connected to the sparge well. The air line will be equipped with a regulator to allow the air injection rate to be adjusted.

### 5.3.2 Sparge Well Operation

The sparge well will be operated during full-scale SVE operations. Sparging will be performed by injecting pressurized air (above 20 psig) into the sparge well at an initial flow rate of about 10 scfm. The injection rate will be adjusted to maximize the injection air flow rate without causing excessive mounding of groundwater around the sparge well. Since air sparging aerates the groundwater, the effectiveness of the sparger will be evaluated by measuring the downhole dissolved oxygen in the groundwater at nearby monitor well (RFW-16). In addition, concentrations of extracted soil vapor from the full-scale SVE will be measured before and during air sparging/SVE operation so results can be compared to extracted vapor concentrations measured during SVE operation only.



### 5.3.3 MP-2 Air Injection

To supplement aeration of contaminated soil in the Tank Farm 2 area, air will be injected into MP-2(S), located in the Tank Farm 2 area exhibiting the highest concentrations of TPH. Air injection at MP-2(S) will be conducted concurrently with air extraction from SVE-1. The air injection rate (approximately 5 scfm) will be adjusted so that the subsurface pressures caused by vapor extraction from SVE-1 and air injection at MP-2 are balanced. This will be determined by measuring subsurface pressure at MP-1. The air injection and air extraction systems will be considered balanced when the subsurface pressure measured at MP-1 is approximately zero.

### 5.3.4 Air Supply Requirement

Compressed air will be required for air sparging in the northeast corner of the building and for air injection at MP-2. The compressed air requirements for the full-scale system are:

- Flow rate = 15 scfm.
- Pressure = 15 psig

The compressed air will be filtered, if necessary, to remove potential lubricating oils which might be entrained in the air. In addition, the compressed air supply manifold will be equipped with regulators to prevent over-pressurization of the injection equipment.

## 5.4 PROGRESS MONITORING

Following construction of the full-scale soil remediation system, startup and long-term operation of the system will begin to remediate contaminated soils at both the northeast corner of the building area and the Tank Farm 2 area. Periodic monitoring will be will be conducted to assess the progress of the full-scale remediation system. Monitoring will consist of the collection of air samples and operational measurements.

Monitoring will begin shortly after startup to define initial conditions. Operational measurements will be conducted throughout startup. Following startup, periodic air sampling and operational

monitoring will be conducted at the end of the first week of operation, at the end of the first month of operation, and monthly thereafter. Monitoring will continue for a period of up to 2 years, which is anticipated to be the time required to complete remediation.

#### 5.4.1 Air Sampling

Two air samples will be collected from the blower exhaust of the full-scale system and analyzed for VOCs during the first week of long-term operations to ensure that the emissions from the system do not exceed permissible emission rates, as discussed in Subsection 5.5. During the first week of operation, two air samples, one from the vapor extracted from SVE-1 located at Tank Farm 2 and one from the combined vapor extracted from vents SVE-2 and SVE-3 located at the northeast corner, will be collected and analyzed for VOCs.

Subsequent air samples will be collected on a monthly basis, starting at the completion of the first month of operation. Two air samples, one from the vapor extracted from vent SVE-1 and one from the combined vapor extracted from vents SVE-2 and SVE-3, will be collected during the monthly sampling events and will be analyzed only for those VOCs detected in preceding monitoring events (i.e., TCE and PCE).

#### 5.4.2 Operational Measurements

The operational measurements listed below will be collected from the full-scale system during each monitoring event:

- Air flow rate.
- Air temperature.
- Air pressure.
- Organic vapor concentration of extracted vapor (FID/PID reading).

The above measurements will be collected from the following monitoring locations on the remediation system:

- Each of the five extraction vents.
- Combined flow from the manifold connecting the northeast corner vents.
- Blower exhaust stack.
- Air sparging well (except FID/PID readings).

### 5.4.3 Completion of Remediation

As discussed in the Work Plan, treatment of the soil will continue until monitoring of collected vapors indicate that continued operation of the system would not result in significant reductions in the concentrations of contaminants detected. Determination of system shutdown would be made consistent with the Technical Impracticability guidance referenced in paragraph IV.N of the Consent Order.

### 5.5 AIR EMISSION CONTROL AND PERMITTING CONSIDERATIONS

Based on the pilot study, the air flow rate for full-scale implementation of SVE and bioventing extraction systems will be approximately 75 scfm which will yield approximately 1.5 lb/day of TCE, 0.3 lb/day of PCE, and 0.02 lb/day of TCA. Other contaminants detected in extracted vapor from MP-2 were SVOCs (acenaphthylene, 1-methylnaphthalene, and 2-methylnaphthalene) which, if summed and multiplied by the maximum air flow rate observed from SVE-1, yield an emission rate of 0.0001 lb/day. Since TCE and the detected semivolatile compounds are considered to be VOCs by U.S. EPA (40 CFR 51.100), while PCE and TCA are not, a VOC emission rate of 1.5 lb/day is expected for a full-scale system. However, the addition of an air sparging well could potentially, double the VOC emission rate. Therefore, a total VOC emission rate of 3 lb/day has been used when considering air permitting requirements.

Based on the above information from the pilot study, MDE regulatory requirements for continuous operation of the SVE process are as follows:

Control Requirements for Volatile Organic Compounds (VOC) - in accordance with the Code of Maryland (COMAR) 26.11.06.B, new installations located in Carroll County cannot cause VOC emissions in excess of 20 lb/day unless the emissions are abated by at least 85%. Of the contaminants emitted, only TCE and the semivolatiles are VOCs with a combined emission rate of 3 lb/day which is well below the 20 lb/day regulatory criterion for control. Therefore, no VOC emissions control would be required for full-scale implementation.

Toxic Air Pollutants (TAP) Emissions - in accordance with COMAR 26.16.15, TCE, TCA, and PCE are TAP. All three compounds are further classified as Class II (non-carcinogenic) TAP. The regulation provides for exemption from the requirements for installation of best available control technology for TAP emissions (T-BACT) and ambient impact analysis (i.e., modeling). For new sources of Class II TAP, the exemption criteria are as follows:

- Each TAP emission rate must be 0.5 lb/hr or less; and
- The screening levels (a measure of the toxicity) for each TAP must be greater than 200  $\mu\text{g}/\text{m}^3$ .

Assuming 24-hour operation, the hourly emission rates of each TAP are well below 0.5 lb/hr. The applicable screening levels of TCE, PCE, and TCA are based on threshold limit values (TLVs), and are presented in Table 5-1. As seen on Table 5-1, screening levels for all compounds present exceed the 200  $\mu\text{g}/\text{m}^3$ . Therefore, the emissions from the full-scale system are exempt from T-BACT and ambient impact analysis requirements.

Construction and Operating Permit Requirements - COMAR 26.11.02 lists specific processes requiring permits and those that are exempt from permitting requirements. Those sources that are not on either list must obtain a permit. The SVE process is not specifically required to obtain permits nor is it specifically exempted, therefore, a permit to construct will be required. To obtain this permit, an application will be submitted to MDE in accordance with the schedule provided in Subsection 5.7.

## 5.6 FAULT DETECTION

The full-scale soil remediation system will be equipped with several sensors that will detect abnormal system operations. These abnormal conditions include:

- High liquid level sensor inside knockout drum.
- High temperature sensor for the blower motor.

**Table 5-1**  
**Toxic Air Pollutant Screening Levels**  
**Black & Decker**  
**Hampstead, Maryland**

<b>Compound</b>	<b>TLV-TWA<sup>a</sup> (ug/m<sup>3</sup>)</b>	<b>TLV-STEL<sup>a</sup> (ug/m<sup>3</sup>)</b>	<b>8 Hour<sup>b</sup> Screening Level (ug/m<sup>3</sup>)</b>	<b>1 Hour<sup>c</sup> Screening Level (ug/m<sup>3</sup>)</b>
TCE	269,000	537,000	2,690	5,370
PCE	170,000	685,000	1,700	6,850
TCA	1,910,000	2,460,000	19,100	24,600

Notes:

TLV - Threshold Limit Value.

TWA - Time Weighted Average.

STEL - Short-Term Exposure Limit.

<sup>a</sup> - Values as published by the American Conference of Governmental Industrial Hygienists in 1996.

<sup>b</sup> - The 8 Hour Screening Level is calculated by divided the TLV-TWA by 100.

<sup>c</sup> - The 1 Hour Screening Level is calculated by divided the TLV-STEL by 100.

TCE - Trichloroethene

PCE - Tetrachloroethene

TCA - 1,1,1-Trichloroethane

These sensors will be interlocked to the blower motor starter box and will shutdown the blower if the above conditions are detected by the sensors. In addition, the blower system will be equipped with an autodialer which will dial pre-programmed phone numbers and alert responsible personnel if the system is shutdown for any reason.

## 5.7 LAYOUT

Figure 5-1 shows the layout of the major components of the full-scale soil remediation system. The blower system will be located inside the northeast corner of the building. The sparge well will be located outside the building northeast of monitor well RFW-16. The exact position of these components will be determined by the facility to ensure that plant operations are not disrupted. The off-gas from the SVE system will be exhausted outside the building.

## 5.8 SCHEDULE FOR FULL-SCALE IMPLEMENTATION

The implementation for startup of the full-scale system is shown in Table 5-2.

**Table 5-2**  
**Preliminary Schedule for Implementation of the Full-Scale Remedial System**  
**Black & Decker**  
**Hampstead, Maryland**

Task	1997						
	February	March	April	May	June	July	August
<i>Soil Remediation Implementation Design Report</i>							
1 Submit to MDE			▲				
2 MDE Review							
3 MDE Approval							
<i>Air Permit</i>							
4 Prepare Air Permit							
5 Submit Air Permit to MDE			▲				
6 MDE Review of Permit							
7 MDE Approval of Air Permit							
<i>Full-Scale Implementation</i>							
8 Procurement							
9 Installation/Construction of Full-Scale System							
10 Start Operation of Full-Scale System							

▲ Indicates approximate date that task is completed.

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**SECTION 6**  
**REFERENCES**

AFCEE (U.S. Air Force Center for Environmental Excellence). May 1992. *Test Plan and Technical Protocol for a Field Treatability Test For Bioventing*. Washington D.C.

WESTON (Roy F. Weston, Inc.). August 1995. *Soil Remediation Plan, Black & Decker (U.S.) Inc. Hampstead, Maryland*. West Chester, PA.

EPA (U.S. Environmental Protection Agency). September 1995. *Manual for Bioventing Principles and Practice*. Volume II: Bioventing Design. Washington D.C.

EPA (U.S. Environmental Protection Agency). September 1991. *Guide for Conducting Treatability Studies Under CERCLA: Soil Vapor Extraction (Interim Guidance)*. Washington D.C.



**APPENDIX A**  
**BOREHOLE LOGS**

**TANK FARM 2 AREA**

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : SVE-1
PROJECT : PILOT TEST BEGIN DATE : 10/31/96
SITE/AREA : TANK FARM 2 END DATE : 11/01/96
LOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : O

Total Depth : 25.00 Depth to Bedrock : 0

Borehole Diameter #1: 12.00
Interval: 0.00 ft. to 25.00 ft. BGS
Method : HSA Fluid : NONE

Borehole Diameter #2:
Interval:
Method : Fluid :

Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000
Well Permit.....(Y)es (N)o: N Permit # :
Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0
Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

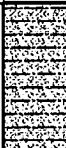




Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
SVE-1	1	1	0.00	1.10	SPS		40	40	20	0	0		NON	POR	LSE	DRY	
SVE-1	1	2	1.10	2.00	SPS		0	0	0	0	0						
SVE-1	2	1	2.00	3.00	SPS		0	40	40	20	0		NON	POR	LSE	MST	
SVE-1	2	2	3.00	4.00	SPS		0	0	0	0	0						
SVE-1	3	1	4.00	5.00	SPS		0	40	40	20	0		NON	POR	LSE	MST	
SVE-1	3	2	5.00	6.00	SPS		0	0	0	0	0						
SVE-1	4	1	6.00	7.00	NS		0	0	0	0	0						
SVE-1	5	1	7.00	9.00	STB		0	0	0	0	0						
SVE-1	6	1	9.00	10.80	SPS		0	30	45	25	0		LOW	POR	LSE	MST	
SVE-1	6	2	10.80	11.00	SPS		0	0	0	0	0						
SVE-1	7	1	11.00	12.30	SPS		0	35	45	20	0		LOW	POR	LSE	MST	
SVE-1	7	2	12.30	13.00	SPS		0	0	0	0	0						
SVE-1	8	1	13.00	15.00	STB		0	0	0	0	0						
SVE-1	9	1	15.00	16.80	SPS		0	15	60	25	0		NON	POR	FIR	DRY	
SVE-1	9	2	16.80	17.00	SPS		0	0	0	0	0						
SVE-1	10	1	17.00	18.80	SPS		0	20	55	25	0		NON	POR	FIR	MST	
SVE-1	10	2	18.80	19.00	SPS		0	0	0	0	0						
SVE-1	11	1	19.00	19.80	STB		0	0	0	0	0						
SVE-1	12	1	19.80	23.00	NS		0	0	0	0	0						
SVE-1	13	1	23.00	24.80	SPS		5	15	60	20	0		LOW	POR	FRM	DRY	
SVE-1	13	2	24.80	25.00	SPS		0	0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : SVE-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-1	1		55	Silty sand with gravel, SM	BROWN/GRAY	LSE	DRY	2 1-1 3	0.0	GRAVEL.
				No Sample Recovered						
-2	2		50	Sandy silt, ML	ORG-BRN	LSE	MST	2 2		
-3	3			No Sample Recovered						
-4	4		50	Sandy silt, ML	ORG-BRN	LSE	MST	1 1-1 2	1.5	SAMPLE SVE-1-005=VOC, TPH, AND TPC.
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED TO 7'-SAME AS ABOVE.
-7	7		100	Shelby tube sample						SHELBY TUBE COLLECTED.
-8	8									
-9	9		90	Sandy silt, ML	ORG-BRN	LSE	MST	1 1-1 2	2.2	SAMPLE SVE-1-011=TOTAL FE, MOISTURE, TKN, PH, TOTAL PHOS., ALK.
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : SVE-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy silt, ML	ORG-BRN	LSE	MST	1 1 2	OVM 2.2	SAMPLE SVE-1-011=TOTAL FE, MOISTURE, TKN, PH, TOTAL PHOS., ALK.
-11	11		65	No Sample Recovered						
				Sandy silt, ML	ORG-BRN	LSE	MST	2 3 4 11	OVM 8.0	QUARTZ FRAGMENTS @-12.1'. WEATHERED MICA SCHISTS; SAMPLE SVE-1-013=VOC TPH, TOTAL PLATE COUNT.
-12	12			No Sample Recovered						
-13	13		100	Shelby tube sample						SHELBY TUBE COLLECTED.
-14	14									
-15	15		90	Silt with sand, ML	ORG-BRN	FIR	DRY	6 7 8 9	OVM 1.4.	SAMPLE SVE-1-017=VOC AND TPH.
-16	16									
-17	17		90	No Sample Recovered						
				Silt with sand, ML	ORG-BRN	FIR	MST	3 4 7 15	OVM 1.1	SAMPLE SVE-1-019=TOTAL FE, MOISTURE, TPH, PH, ALK, TOTAL PHOS.
-18	18									
-19	19			No Sample Recovered						
				Shelby tube sample						SHELBY TUBE REFUSAL (BENT); AUGER TO 23'.
-20	20			Interval Not Sampled						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : SVE-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-21	21									
-22	22									
-23	23		90	Silt with sand, ML	ORG-BRN/RED-BRN	FRM	DRY		OVM 5.0	VAR WEATHERED SCHIST; ROCK FRAGMENTS.
-24	24									
-25	25			No Sample Recovered						
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : MP-1
PROJECT : PILOT TEST BEGIN DATE : 10/30/96
SITE/AREA : TANK FARM 2 END DATE : 10/31/96
LOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 25.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00
Interval: 0.00 ft. to 25.00 ft. BGS
Method : HSA Fluid : NONE

Borehole Diameter #2:
Interval:
Method : Fluid :

Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000

Well Permit.....(Y)es (N)o: N Permit # :

Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0

Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

Comments :



BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-1	1	1	0.00 1.30	SPS		15		50	30	5	0		NON	POR	LSE	MST	
MP-1	1	2	1.30 2.00	SPS		0		0	0	0	0						
MP-1	2	1	2.00 3.50	SPS		5		50	35	10	0		NON	POR	LSE	DRY	
MP-1	2	2	3.50 4.00	SPS		0		0	0	0	0						
MP-1	3	1	4.00 5.80	SPS		0		55	35	10	0		NON	POR	LSE	DRY	
MP-1	3	2	5.80 6.00	SPS		0		0	0	0	0						
MP-1	4	1	6.00 9.00	NS		0		0	0	0	0						
MP-1	5	1	9.00 10.60	SPS		0		50	35	15	0		NON	POR	LSE	DRY	
MP-1	5	2	10.60 11.00	SPS		0		0	0	0	0						
MP-1	6	1	11.00 14.00	NS		0		0	0	0	0						
MP-1	7	1	14.00 15.80	SPS		0		20	50	30	0		NON	POR	LSE	DRY	
MP-1	7	2	15.80 16.00	SPS		0		0	0	0	0						
MP-1	8	1	16.00 19.00	NS		0		0	0	0	0						
MP-1	9	1	19.00 20.50	SPS		0		25	50	25	0		NON	POR	LSE	MST	
MP-1	9	2	20.50 21.00	SPS		0		0	0	0	0						
MP-1	10	1	21.00 23.00	NS		0		0	0	0	0						
MP-1	11	1	23.00 24.60	SPS		0		20	50	30	0		NON	POR	LSE	MST	
MP-1	11	2	24.60 25.00	SPS		0		0	0	0	0						

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/30/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 10/31/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Silty sand with gravel, SM	ORG-BRN	LSE	MST	2 2 3	OVM 0.0	
-1	1			No Sample Recovered						
-2	2		75	Silty sand, SM	ORG-BRN	LSE	DRY	3 3 5	OVM 0.0	MICACEOUS.
-3	3			No Sample Recovered						
-4	4		90	Silty sand, SM	ORG-BRN	LSE	DRY	2 4 9 8	OVM 0.0	
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL.
-7	7									
-8	8									
-9	9		80	Silty sand, SM	ORG-BRN	LSE	DRY	10 16 17 21	OVM 1.2	MICACEOUS; SAMPLE MP-01-011=VOC & TPH.
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/30/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 10/31/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	ORG-BRN	LSE	DRY	10 16 17 21	OVM 1.2	MICACEOUS: SAMPLE MP-01-011=VOC & TPH.
-11	11			No Sample Recovered						AUGERED INTERVAL.
				Interval Not Sampled						
-12	12									
-13	13									
-14	14		90	Silt with sand, ML	ORANGE-BRN	LSE	DRY	9 15 18 24	OVM 1.6	BLACK SILT LENSES AT 14.3-14.4'.
-15	15									
-16	16			No Sample Recovered						AUGERED INTERVAL.
				Interval Not Sampled						
-17	17									
-18	18									
-19	19		75	Silt with sand, ML	ORG-BRN	LSE	MST	9 14 15 16	OVM 0.0	BLACK LAYER FROM 19.2-19.5'.
-20	20									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-1	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/30/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 10/31/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	LSE	MST	9	OVM 0.0	BLACK LAYER FROM 19.2-19.5'
				No Sample Recovered				14		
				Interval Not Sampled				15		
-21	21							16		AUGERED INTERVAL.
-22	22									
-23	23		80	Silt with sand, ML	ORG-BRN	LSE	MST	16	OVM 0.0	MICACEOUS. SAPROLITE.
								17		
								18		
								25		
-24	24									
				No Sample Recovered						
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : MP-2
PROJECT : PILOT TEST BEGIN DATE : 10/31/96
SITE/AREA : TANK FARM 2 END DATE : 11/01/96
LOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0
Total Depth : 25.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00
Interval: 0.00 ft. to 25.00 ft. BGS
Method : HSA Fluid : NONE
Borehole Diameter #2:
Interval:
Method : Fluid :
Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000

Well Permit.....(Y)es (N)o: N Permit # :

Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0

Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-2	1	1	0.00 1.30	SPS		10		40	30	20	0		NON	POR	LSE	MST	
MP-2	1	2	1.30 2.00	SPS		0		0	0	0	0						
MP-2	2	1	2.00 3.00	SPS		0		40	40	20	0		NON	POR	LSE	MST	
MP-2	2	2	3.00 3.30	SPS		0		0	0	0	0						
MP-2	3	1	3.30 4.00	NS		0		0	0	0	0						
MP-2	4	1	4.00 5.10	SPS		0		35	45	20	0		LOW	POR	LSE	MST	
MP-2	4	2	5.10 6.00	SPS		0		0	0	0	0						
MP-2	5	1	6.00 9.00	NS		0		0	0	0	0						
MP-2	6	1	9.00 10.50	SPS		0		40	40	20	0		LOW	POR	LSE	MST	
MP-2	6	2	10.50 11.00	SPS		0		0	0	0	0						
MP-2	7	1	11.00 14.00	NS		0		0	0	0	0						
MP-2	8	1	14.00 15.80	SPS		0		20	55	25	0		NON	POR	LSE	DRY	
MP-2	8	2	15.80 16.00	SPS		0		0	0	0	0						
MP-2	9	1	16.00 19.00	NS		0		0	0	0	0						
MP-2	10	1	19.00 20.50	SPS		0		20	45	35	0		LOW	POR	LSE	DRY	
MP-2	10	2	20.50 21.00	SPS		0		0	0	0	0						
MP-2	11	1	21.00 23.00	NS		0		0	0	0	0						
MP-2	12	1	23.00 25.00	SPS		0		20	50	30	0		NON	POR	FRM	DRY	

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Silty sand, SM	ORG-BRN	LSE	MST	1	OVM 0.0	QUARTZ FRAGMENTS.
-1	1			No Sample Recovered						
			76	Sandy silt, ML	ORG-BRN	LSE	MST		OVM 1.3	REFUSAL @ 3.3'. OFFSET 1' AND REDRILL.
-2	2			No Sample Recovered						
-3	3			Interval Not Sampled						AUGERED INTERVAL.
			55	Sandy silt, ML	ORG-BRN	LSE	MST	1	OVM 6.0	
-4	4			No Sample Recovered						
-5	5			Interval Not Sampled						AUGERED INTERVAL.
-6	6									
-7	7									
-8	8									
			75	Sandy silt, ML	ORG-BRN	LSE	MST	1	OVM 19.0	SAMPLE MP-2-011: VOC & TPH.
-9	9									
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-11	11			Sandy silt, ML	ORG-BRN	LSE	MST	1	OVN 19.0	SAMPLE MP-2-011: VOC & TPH.
				No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL.
-12	12									
-13	13									
-14	14		90	Silt with sand, ML	ORG-BRN	LSE	DRY	5 12 17 18	OVN 1.5	
-15	15									
-16	16			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-17	17									
-18	18									
-19	19		75	Silt with sand, ML	ORG-BRN	LSE	DRY	12 15 19 20	OVN 1.3	
-20	20									



# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	LSE	DRY	12	OVM 1.3	
				No Sample Recovered				15		
				Interval Not Sampled				19		
								20		
-21	21									AUGERED INTERVAL-SAME AS ABOVE.
-22	22									
-23	23		100	Silt with sand, ML	ORG-BRN	FRM	DRY	12	OVM 0.0	WEATHERED MICACEOUS SCHIST; SAPROLITE.
								20		
								23		
								26		
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									

**Location Identification Data**

**Roy F. Weston, Inc.**

CLIENT : B&D  
 PROJECT : PILOT TEST  
 SITE/AREA : TANK FARM 2  
 LOCATION ID : MP-3  
 BEGIN DATE : 10/31/96  
 END DATE : 11/01/96  
 LOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : O  
 Total Depth : 25.00                      Depth to Bedrock : 0

Borehole Diameter #1: 10.00  
     Interval: 0.00 ft. to 25.00 ft. BGS  
     Method : HSA                              Fluid : NONE

Borehole Diameter #2:  
     Interval:  
     Method :                                  Fluid :

Borehole Diameter #3:  
     Interval:  
     Method :                                  Fluid :

Drilling Company : WALTON CORP.  
 Driller : GARY TRUVER, SR.  
 Drill Rig Type : AUGER RIG

	Estimated	Surveyed
Surface Elevation :	0.000	
N. Coordinate :	0.0000	
E. Coordinate :	0.0000	

Well Permit.....(Y)es (N)o: N      Permit # :

Hole Abandoned...(Y)es (N)o: N  
 Well Installed...(Y)es (N)o: N  
 Well Cluster.....(Y)es (N)o: N      No. of Wells : 0  
 Well Nest.....(Y)es (N)o: N      No. of Wells : 0

Pumps Installed..(Y)es (N)o: N	Type	Depth
	Purge :	0
	Sample :	0

Borehole Testing  
 Borehole Geophysics.....(Y)es (N)o: N  
 Slug Tests.....(Y)es (N)o: N  
 Packer Tests.....(Y)es (N)o: N  
 Pumping Tests.....(Y)es (N)o: N

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT.. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-3	1	1	0.00	0.50	SPS	0	80	20	0	0			NON	POR	LSE	DRY	
MP-3	1	2	0.50	2.00	SPS	0	0	0	0	0							
MP-3	2	1	2.00	4.00	SPS	0	0	0	0	0							
MP-3	3	1	4.00	5.60	SPS	0	30	50	20	0			LOW	POR	LSE	DRY	
MP-3	3	2	5.60	6.00	SPS	0	0	0	0	0							
MP-3	4	1	6.00	9.00	NS	0	0	0	0	0							
MP-3	5	1	9.00	10.50	SPS	0	30	50	20	0			LOW	POR	LSE	DRY	
MP-3	5	2	10.50	11.00	SPS	0	0	0	0	0							
MP-3	6	1	11.00	14.00	NS	0	0	0	0	0							
MP-3	7	1	14.00	15.80	SPS	0	20	55	25	0			NON	POR	FIR	DRY	
MP-3	7	2	15.80	16.00	SPS	0	0	0	0	0							
MP-3	8	1	16.00	19.00	NS	0	0	0	0	0							
MP-3	9	1	19.00	20.70	SPS	0	15	60	25	0			NON	POR	FIR	DRY	
MP-3	9	2	20.70	21.00	SPS	0	0	0	0	0							
MP-3	10	1	21.00	23.00	NS	0	0	0	0	0							
MP-3	11	1	23.00	25.00	SPS	0	15	60	25	0			NON	POR	FRM	DRY	

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			25	Silty sand, SM	BROWN/LT BROWN	LSE	DRY	2 2 5	OVM 0.0	WELL GRADED SAND (FILL).
-1	1			No Sample Recovered						
-2	2			No Sample Recovered				9 10 19		ROCK STRUCK IN SHOE OF SPOON.
-3	3									
-4	4		80	Sandy silt, ML	ORG-BRN	LSE	DRY	2 6 16	OVM 0.0	MICACEOUS, BLACK SILT LENSES THROUGHOUT.
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-7	7									
-8	8									
-9	9		75	Sandy silt, ML	ORG-BRN	LSE	DRY	2 6 10	OVM 0.0	
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy silt, ML	ORG-BRN	LSE	DRY	2 6 10	OMV 0.0	
				No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-11	11									
-12	12									
-13	13									
-14	14		90	Silt with sand, ML	ORG-BRN	FIR	DRY	6 12 17 23	OMV 0.0	SAPROLITE. IRON STAINING; MICACEOUS; BLACK LENSES (AUGITE)
-15	15									
-16	16			No Sample Recovered						
-16	16			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-17	17									
-18	18									
-19	19		85	Silt with sand, ML	ORG-BRN	FIR	DRY	10 16 28 26	OMV 0.0	QUARTZ PIECES AT 20.5'. HIGHLY WEATHERED SCHIST.
-20	20									

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 25.00
SITE NAME : TANK FARM 2	LOGGER : C. HARRIS
BORING ID : MP-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 10/31/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	FIR	DRY	10 16 28 26	OVM 0.0	QUARTZ PIECES AT 20.5' HIGHLY WEATHERED SCHIST.
-21	21			No Sample Recovered						AUGERED INTERVAL-SAME AS ABOVE.
				Interval Not Sampled						
-22	22									
-23	23		100	Silt with sand, ML	ORG-BRN/RED-BRN	FRM	DRY	19 43 46 40	OVM 0.0	SAPROLITE.
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									

**NORTHEAST CORNER OF THE BUILDING AREA**

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : SVE-2
PROJECT : PILOT TEST BEGIN DATE : 11/04/96
END DATE : 11/05/96
SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 38.00 Depth to Bedrock : 0

Borehole Diameter #1: 12.00
Interval: 0.00 ft. to 36.00 ft. BGS
Method : HSA Fluid : NONE

Borehole Diameter #2: 2.00
Interval: 36.00 ft. to 38.00 ft. BGS
Method : SSA Fluid : NONE

Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000
Well Permit.....(Y)es (N)o: N Permit # :
Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0
Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

Comments :



BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
SVE-2	1	1	0.00	1.50	NS	0	0	0	0	0	0						
SVE-2	2	1	1.50	2.50	SPS	0	20	50	30	0	0		LOW	POR	SFT	DRY	
SVE-2	2	2	2.50	3.50	SPS	0	0	0	0	0	0						
SVE-2	3	1	3.50	4.80	SPS	0	20	50	30	0	0		LOW	POR	SFT	DRY	
SVE-2	3	2	4.80	5.50	SPS	0	0	0	0	0	0						
SVE-2	4	1	5.50	8.00	NS	0	0	0	0	0	0						
SVE-2	5	1	8.00	10.00	SPS	0	15	50	35	0	0		LOW	POR	SFT	MST	
SVE-2	6	1	10.00	13.50	NS	0	0	0	0	0	0						
SVE-2	7	1	13.50	15.40	SPS	0	25	50	25	0	0		LOW	POR	SFT	MST	
SVE-2	7	2	15.40	15.50	SPS	0	0	0	0	0	0						
SVE-2	8	1	15.50	18.50	NS	0	0	0	0	0	0						
SVE-2	9	1	18.50	20.50	SPS	0	15	60	25	0	0		NON	POR	FRM	DRY	
SVE-2	10	1	20.50	23.50	NS	0	0	0	0	0	0						
SVE-2	11	1	23.50	24.80	SPS	0	15	45	40	0	0		LOW	POR	FRM	MST	
SVE-2	11	2	24.80	25.50	SPS	0	0	0	0	0	0						
SVE-2	12	1	25.50	28.50	NS	0	0	0	0	0	0						
SVE-2	13	1	28.50	30.00	SPS	0	10	50	40	0	0		NON	POR	FRM	MST	
SVE-2	13	2	30.00	30.40	SPS	0	0	0	0	0	0						
SVE-2	14	1	30.40	33.50	NS	0	0	0	0	0	0						
SVE-2	15	1	33.50	34.80	SPS	0	15	45	40	0	0		LOW	POR	FRM	MST	
SVE-2	16	1	34.80	36.00	NS	0	0	0	0	0	0						
SVE-2	17	1	36.00	38.00	SPS	0	10	50	45	0	0		NON	POR		MST	

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						AUGERED INTERVAL - 0-1.5' = CONCRETE/CRUSHED STONE. 1.0-1.5' = SOIL-DK BRN SANDY SILT W/SOME GRAV.
-1	1		50	Silt with sand, ML	LT ORG-BRN	SFT	DRY	3 5 7 10	OVM 19.0	MICACEOUS.
-2	2			No Sample Recovered				12 15 19 37		
-3	3		65	Silt with sand, ML	LT ORG-BRN	SFT	DRY	5 8 11 12	OVM 19.0	SAMPLE SVE-2-005 = VOC & TPH.
-4	4			No Sample Recovered						
-5	5			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-6	6									
-7	7									
-8	8		100	Silt with sand, ML	LT ORG-BRN/GRAY	SFT	MST	7 9 11 12	OVM 10.0	
-9	9									
-10	10			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-11	11			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-12	12									
-13	13									
-14	14		95	Silt with sand, ML	LT ORG-BRN	SFT	MST	4 10 10 11	OVM 6.0	
-15	15									
-16	16			No Sample Recovered Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-17	17									
-18	18									
-19	19		100	Silt with sand, ML	ORG-BRN/GRAY	FRM	DRY	19 29 34 34	OVM 6.0	SAMPLE SVE-2-021 (VOC & TPH). HIGHLY WEATHERED SCHIST.
-20	20									

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN/GRAY	FRM	DRY	19 20 34	OVM 6.0	SAMPLE SVE-2-021 (VOC & TPH) HIGHLY WEATHERED SCHIST.
-21	21			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-22	22									
-23	23									
			65	Clayey silt with sand, ML	ORG-BRN/GRAY	FRM	MST	12 19 30 36	OVM 5.0	QUARTZITE FRAGMENTS. HIGHLY WEATHERED SCHIST.
-24	24									
-25	25			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-26	26									
-27	27									
-28	28									
			78	Clayey silt, ML	ORG-BRN/GRAY	FRM	MST	12 22 32 50	OVM 6.0	SPOON REFUSAL AT 30.4'. QUARTZ FRAGMENTS.
-29	29									
-30	30			No Sample Recovered						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				12		
				Interval Not Sampled				50		AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34		100	Clayey silt with sand, ML	ORG-BRN	FRM	MST	17 51 50 0	OVM 22.0	MICACEOUS- BLACK AUGITE LENSES THROUGHOUT. SAMPLE SVE-2-035 (VOC & TPH).
-35	35			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-36	36		100	Clayey silt, ML	ORG-BRN/RED BRN		MST	12 15 19 37	OVM 58.0	SAPROLITE.
-37	37									
-38	38									
-39	39									
-40	40									

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : SVE-3
PROJECT : PILOT TEST BEGIN DATE : 11/06/96
END DATE : 11/08/96
SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0
Total Depth : 36.00 Depth to Bedrock : 0

Borehole Diameter #1: 12.00
Interval: 0.00 ft. to 36.00 ft. BGS
Method : Fluid :
Borehole Diameter #2:
Interval:
Method : Fluid :
Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000
Well Permit.....(Y)es (N)o: N Permit # :
Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0
Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
SVE-3	1	1	0.00	3.50	NS		0	0	0	0	0						
SVE-3	2	1	3.50	5.00	SPS		5	25	55	15	0		NON	POR	LSE	DRY	
SVE-3	2	2	5.00	5.50	SPS		0	0	0	0	0						
SVE-3	3	1	5.50	8.50	NS		0	0	0	0	0						
SVE-3	4	1	8.50	10.40	SPS		0	15	60	25	0		NON	POR	LSE	MST	
SVE-3	4	2	10.40	10.50	SPS		0	0	0	0	0						
SVE-3	5	1	10.50	13.50	NS		0	0	0	0	0						
SVE-3	6	1	13.50	15.30	SPS		0	20	50	30	0		NON	POR	FIR	MST	
SVE-3	6	2	15.30	15.50	SPS		0	0	0	0	0						
SVE-3	7	1	15.50	18.50	NS		0	0	0	0	0						
SVE-3	8	1	18.50	20.00	SPS		0	15	65	20	0		NON	POR	LSE	MST	
SVE-3	8	2	20.00	20.50	SPS		0	0	0	0	0						
SVE-3	9	1	20.50	23.50	NS		0	0	0	0	0						
SVE-3	10	1	23.50	25.50	SPS		5	20	40	35	0		NON	POR	FIR	MST	
SVE-3	11	1	25.50	28.50	NS		0	0	0	0	0						
SVE-3	12	1	28.50	29.50	SPS		0	20	45	35	0		NON	POR	FIR	DRY	
SVE-3	12	2	29.50	29.90	SPS		0	0	0	0	0						
SVE-3	13	1	29.90	30.50	NS		0	0	0	0	0						
SVE-3	14	1	30.50	33.50	NS		0	0	0	0	0						
SVE-3	15	1	33.50	35.30	SPS		0	20	40	40	0		NON	POR	FIR	DRY	
SVE-3	15	2	35.30	35.50	SPS		0	0	0	0	0						
SVE-3	16	1	35.50	36.00	NS		0	0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96


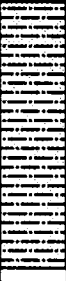
ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN/GRAY	FRM	DRY	19 20 34	OVM 6.0	SAMPLE SVE-2-021 (VOC & TPH). HIGHLY WEATHERED SCHIST.
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-21	21									
-22	22									
-23	23									
			65	Clayey silt with sand, ML	ORG-BRN/GRAY	FRM	MST	12 19 30 36	OVM 5.0	QUARTZITE FRAGMENTS. HIGHLY WEATHERED SCHIST.
-24	24									
-25	25			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-26	26									
-27	27									
-28	28									
			78	Clayey silt, ML	ORG-BRN/GRAY	FRM	MST	12 22 32 50	OVM 6.0	SPOON REFUSAL AT 30.4'. QUARTZ FRAGMENTS.
-29	29									
-30	30			No Sample Recovered						



# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 38.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-2	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/04/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/05/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				12		
				Interval Not Sampled				50		AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34		100	Clayey silt with sand, ML	ORG-BRN	FRM	MST	17 51 50 0	OMV 22.0	MICACEOUS- BLACK AUGITE LENSES THROUGHOUT. SAMPLE SVE-2-035 (VOC & TPH).
-35	35			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-36	36		100	Clayey silt, ML	ORG-BRN/RED BRN		MST	12 15 19 37	OMV 58.0	SAPROLITE.
-37	37									
-38	38									
-39	39									
-40	40									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 36.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						0-0.8'=CEMENT 0.8-3'=GRAVEL (RAILROAD BED).
-1	1									
-2	2									
-3	3									
-4	4		75	Sandy silt, ML	ORG-BRN	LSE	DRY	8 10 9	OVM 7.0	
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-7	7									
-8	8									
-9	9		95	Silt with sand, ML	ORG-BRN	LSE	MST	6 12 18 20	OVM 28.0	SLIGHT ODOR ("SWEET"). SAMPLE SVE-3-011 (VOC & TPH).
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 36.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	LSE	MST	6	OVN 28.0	SLIGHT ODOR ("SHEET"). SAMPLE SVE-3-011 (VOC & TPH).  AUGERED INTERVAL-SAME AS ABOVE.
-11	11			No Sample Recovered Interval Not Sampled				13 18 20		
			90	Silt with sand, ML	ORG-BRN/GRAY	FIR	MST	6	OVN 10.0	AUGERED INTERVAL-SAME AS ABOVE.
-14	14			No Sample Recovered Interval Not Sampled				15 16		
			90	Silt with sand, ML	ORG-BRN	LSE	MST	7	OVN 20.0	BLACK AUGITE AND QUARTZ VEINS. SAMPLE SVE-3-020 (VOC & TPH).
-19	19			No Sample Recovered				8 10 13		
-20	20			No Sample Recovered						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 36.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				7		
				Interval Not Sampled				8		
-21	21							13		AUGERED INTERVAL-SAME AS ABOVE.
-22	22									
-23	23									
-24	24		100	Clayey silt with sand, ML	REDDISH/PINKISH	FIR	MST	10 14 19 23	OVM 7.0	HIGHLY WEATHERED MICACEOUS SCHIST.
-25	25									
-26	26			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-27	27									
-28	28									
-29	29		71	Clayey silt with sand, ML		FIR	DRY	16 24 50 0	OVM 17.0	MICACEOUS.
-30	30			No Sample Recovered						
				Interval Not Sampled						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 36.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : SVE-3	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34		90	Clayey silt with sand, ML	ORG-BRN	FIR	DRY	10 18 25 43	OVM 30.0	HIGHLY WEATHERED SCHIST; SAMPLE SVE-3-036.
-35	35			No Sample Recovered						
-36	36			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-37	37									
-38	38									
-39	39									
-40	40									

**Location Identification Data**

**Roy F. Weston, Inc.**

CLIENT : B&D  
 PROJECT : PILOT TEST  
 SITE/AREA : NE CORNER OF BUILDING  
 LOCATION ID : MP-4  
 BEGIN DATE : 11/05/96  
 END DATE : 11/06/96  
 LOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : O  
 Total Depth : 33.00                      Depth to Bedrock : 0

Borehole Diameter #1: 10.00  
     Interval: 0.00 ft. to 33.00 ft. BGS  
     Method : HSA                      Fluid : NONE

Borehole Diameter #2:  
     Interval:  
     Method :                      Fluid :

Borehole Diameter #3:  
     Interval:  
     Method :                      Fluid :

Drilling Company : WALTER CORP.  
 Driller : GARY TRUVER, SR.  
 Drill Rig Type : AUGER RIG

	Estimated	Surveyed
Surface Elevation :	0.000	
N. Coordinate :	0.0000	
E. Coordinate :	0.0000	
Well Permit.....(Y)es (N)o: N	Permit # :	
Hole Abandoned...(Y)es (N)o: N		
Well Installed...(Y)es (N)o: N		
Well Cluster.....(Y)es (N)o: N	No. of Wells : 0	
Well Nest.....(Y)es (N)o: N	No. of Wells : 0	
Pumps Installed..(Y)es (N)o: N	Type	Depth
	Purge :	0
	Sample :	0

Borehole Testing  
 Borehole Geophysics.....(Y)es (N)o: N  
 Slug Tests.....(Y)es (N)o: N  
 Packer Tests.....(Y)es (N)o: N  
 Pumping Tests.....(Y)es (N)o: N

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-4	1	1	0.00	1.50	NS		0	0	0	0	0						
MP-4	2	1	1.50	3.20	SPS		0	35	55	10	0		NON	POR	LSE	DRY	
MP-4	2	2	3.20	3.50	SPS		0	0	0	0	0						
MP-4	3	1	3.50	5.30	SPS		0	25	60	15	0		NON	POR	LSE	DRY	
MP-4	3	2	5.30	5.50	SPS		0	0	0	0	0						
MP-4	4	1	5.50	8.50	NS		0	0	0	0	0						
MP-4	5	1	8.50	10.30	SPS		0	15	60	25	0		NON	POR	LSE	DRY	
MP-4	5	2	10.30	10.50	SPS		0	0	0	0	0						
MP-4	6	1	10.50	13.50	NS		0	0	0	0	0						
MP-4	7	1	13.50	14.80	SPS		5	15	55	25	0		NON	POR	FIR	DRY	
MP-4	7	2	14.80	15.50	SPS		0	0	0	0	0						
MP-4	8	1	15.50	18.50	NS		0	0	0	0	0						
MP-4	9	1	18.50	20.30	SPS		5	20	50	25	0		NON	POR	FIR	MST	
MP-4	9	2	20.30	20.50	SPS		0	0	0	0	0						
MP-4	10	1	20.50	23.50	NS		0	0	0	0	0						
MP-4	11	1	23.50	25.00	SPS		5	10	45	40	0		NON	POR	FIR	DRY	
MP-4	11	2	25.00	25.50	SPS		0	0	0	0	0						
MP-4	12	1	25.50	28.50	NS		0	0	0	0	0						
MP-4	13	1	28.50	30.00	SPS		5	10	50	35	0		LOW	POR	FIR	MST	
MP-4	13	2	30.00	30.50	SPS		0	0	0	0	0						
MP-4	14	1	30.50	33.00	NS		0	0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-4	DRILLING COMPANY : WALTER CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/05/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/06/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-1	1			Interval Not Sampled						AUGERED INTERVAL (CONCRETE AND GRAVEL BASE).
-2	2		85	Sandy silt, ML	ORG-BRN	LSE	DRY	3 6 8	OVM 20.0	
-3	3			No Sample Recovered						
-4	4		90	Silt with sand, ML	ORG-BRN	LSE	DRY	3 8 11	OVM 32.0	
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-7	7									
-8	8									
-9	9		90	Silt with sand, ML	ORG-BRN	LSE	DRY	7 10 13 15	OVM 72.0	QUARTZ FRAGMENTS.
-10	10									



# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-4	DRILLING COMPANY : WALTER CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/05/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/06/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	LSE	DRY	7	OVM 72.0	QUARTZ FRAGMENTS.
				No Sample Recovered				10		
				Interval Not Sampled				13		AUGERED INTERVAL-SAME AS ABOVE.
-11	11									
-12	12									
-13	13									
			65	Silt with sand, ML	ORG-BRN	FIR	DRY	7	OVM 45.0	BLACK ANGITE VEINS THROUGHOUT. QUARTZ FRAGMENTS.
-14	14							13		
								20		
								21		
-15	15			No Sample Recovered						
-16	16			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-17	17									
-18	18									
			85	Silt with sand, ML	ORG-BRN	FIR	MST	13	OVM 171	QUARTZ FRAGMENTS.
-19	19							17		
								27		
								34		
-20	20									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-4	DRILLING COMPANY : WALTER CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/05/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/06/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	FIR	MST	13	OVM 171	QUARTZ FRAGMENTS.
				No Sample Recovered				17		
				Interval Not Sampled				27		AUGERED INTERVAL-SAME AS ABOVE.
								34		
-21	21									
-22	22									
-23	23									
			75	Clayey silt with sand, ML	ORG-BRN	FIR	DRY	16	OVM 150	MICACEOUS: BLACK VEIN (1" AT 23.9-24.0') (ANGITE); QUARTZ; SAPROLITE.
-24	24							23		
								27		
								57		
-25	25			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-26	26									
-27	27									
-28	28									
			75	Clayey silt with sand, ML	ORG-BRN	FIR	MST	15	OVM 205	QUARTZ FRAGMENTS; SAMPLE MP-4-030 (VOC & TPH).
-29	29							15		
								17		
								26		
-30	30			No Sample Recovered						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-4	DRILLING COMPANY : WALTER CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/05/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/06/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				15		
				Interval Not Sampled				15 15 26		AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

**Location Identification Data**

**Roy F. Weston, Inc.**

CLIENT : B&D LOCATION ID : MP-5  
 PROJECT : PILOT TEST BEGIN DATE : 11/06/96  
 END DATE : 11/08/96  
 SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 33.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00  
 Interval: 0.00 ft. to 33.00 ft. BGS  
 Method : HSA Fluid :

Borehole Diameter #2:  
 Interval:  
 Method : Fluid :

Borehole Diameter #3:  
 Interval:  
 Method : Fluid :

Drilling Company : WALTON CORP.  
 Driller : GARY TRUVER, SR.  
 Drill Rig Type : AUGER RIG

	Estimated	Surveyed
Surface Elevation :	0.000	
N. Coordinate :	0.0000	
E. Coordinate :	0.0000	
Well Permit.....(Y)es (N)o: N	Permit # :	
Hole Abandoned...(Y)es (N)o: N		
Well Installed...(Y)es (N)o: N		
Well Cluster.....(Y)es (N)o: N	No. of Wells : 0	
Well Nest.....(Y)es (N)o: N	No. of Wells : 0	
Pumps Installed..(Y)es (N)o: N	Type	Depth
	Purge :	0
	Sample :	0
Borehole Testing		
Borehole Geophysics.....(Y)es (N)o: N		
Slug Tests.....(Y)es (N)o: N		
Packer Tests.....(Y)es (N)o: N		
Pumping Tests.....(Y)es (N)o: N		

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-5	1	1	0.00	1.50	NS	0		0	0	0	0						
MP-5	2	1	1.50	3.10	SPS	0		30	50	20	0		NON	POR	LSE	DRY	
MP-5	2	2	3.10	3.50	SPS	0		0	0	0	0						
MP-5	3	1	3.50	4.90	SPS	5		25	50	20	0		NON	POR	LSE	DRY	
MP-5	3	2	4.90	5.50	SPS	0		0	0	0	0						
MP-5	4	1	5.50	8.50	NS	0		0	0	0	0						
MP-5	5	1	8.50	10.10	SPS	0		20	55	25	0		NON	POR	LSE	DRY	
MP-5	5	2	10.10	10.50	SPS	0		0	0	0	0						
MP-5	6	1	10.50	13.50	NS	0		0	0	0	0						
MP-5	7	1	13.50	15.00	SPS	0		15	55	30	0		NON	POR	FIR	DRY	
MP-5	7	2	15.00	15.50	SPS	0		0	0	0	0						
MP-5	8	1	15.50	18.50	NS	0		0	0	0	0						
MP-5	9	1	18.50	20.50	SPS	0		15	60	25	0		NON	POR	FIR	DRY	
MP-5	10	1	20.50	23.50	NS	0		0	0	0	0						
MP-5	11	1	23.50	25.10	SPS	0		15	45	40	0		NON	POR	FIR	DRY	
MP-5	11	2	25.10	25.50	SPS	0		0	0	0	0						
MP-5	12	1	25.50	28.50	NS	0		0	0	0	0						
MP-5	13	1	28.50	30.10	SPS	0		10	45	45	0		LOW	POR	FIR	DRY	
MP-5	13	2	30.10	30.50	SPS	0		0	0	0	0						
MP-5	14	1	30.50	33.00	NS	0		0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-5	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						0-0.8'=CONCRETE. 0.8-1.5'=GRAVEL BASE.
-1	1		80	Sandy silt, ML	ORG-BRN	LSE	DRY	3 6 8	OVM 3.0	
-2	2			No Sample Recovered						
-3	3		70	Sandy silt, ML	ORG-BRN	LSE	DRY	5 8 10 10	OVM 5.0	QUARTZ FRAGMENTS.
-4	4			No Sample Recovered						
-5	5			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-6	6									
-7	7									
-8	8		80	Silt with sand, ML	ORG-BRN	LSE	DRY	5 7 10 11	OVM 7.0	MICACEOUS; BLACK AUGITE VEINS.
-9	9									
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-5	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-11	11			Silt with sand, ML No Sample Recovered Interval Not Sampled	ORG-BRN	LSE	DRY	5 7 10 11	OMV 7.0	MICACEOUS; BLACK AUGITE VEINS.  AUGERED INTERVAL-SAME AS ABOVE.
-14	14		75	Silt with sand, ML  No Sample Recovered Interval Not Sampled	ORG-BRN	FIR	DRY	7 13 15	OMV 7.0	MICA- BLACK VEINS THROUGHOUT; IRON STAINING.  AUGERED INTERVAL-SAME AS ABOVE.
-19	19		100	Silt with sand, ML	ORG-BRN	FIR	DRY	10 15 20 25	OMV 9.0	MICACEOUS; HIGHLY WEATHERED; SCHIST. SAPROLITE; TRACE GRAVEL FRAGMENT.

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-5	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	ORG-BRN	FIR	DRY	10 15 20 25	OVM 9.0	MICACEOUS; HIGHLY WEATHERED SCHIST. SAPROLITE; TRACE GRAVEL FRAGMENT. AUGERED INTERVAL-SAME AS ABOVE.
-21	21			Interval Not Sampled						
-22	22									
-23	23									
			80	Silt with sand, ML	ORG-BRN	FIR	DRY	5 17 18 17	OVM 0.7	AUGERED INTERVAL-SAME AS ABOVE.
-24	24									
-25	25			No Sample Recovered						
				Interval Not Sampled						
-26	26									
-27	27									
-28	28									
			80	Clayey silt, ML	ORG-BRN/PINKISH	FIR	DRY	5 10 11 24	OVM 0.5	MICACEOUS; HIGHLY WEATHERED SCHIST.
-29	29									
-30	30									



# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-5	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Clayey silt; ML	ORG-BRN/PINKISH	FIR	DRY	5	OVM 0.5	MICACEOUS; HIGHLY WEATHERED SCHIST.  AUGERED INTERVAL-SAME AS ABOVE.
				No Sample Recovered				10		
				Interval Not Sampled				11		
-31	31							24		
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : MP-6
PROJECT : PILOT TEST BEGIN DATE : 11/06/96
END DATE : 11/08/96
SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 33.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00
Interval: 0.00 ft. to 33.00 ft. BGS
Method : HSA Fluid : NONE

Borehole Diameter #2:
Interval:
Method : Fluid :

Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000

Well Permit.....(Y)es (N)o: N Permit # :

Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0

Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-6	1	1	0.00 1.50	NS		0		0	0	0	0						
MP-6	2	1	1.50 3.30	SPS		5		35	50	10	0		NON	POR	LSE	DRY	
MP-6	2	2	3.30 3.50	SPS		0		0	0	0	0						
MP-6	3	1	3.50 5.00	SPS		0		35	50	15	0		NON	POR	FIR	DRY	
MP-6	3	2	5.00 5.50	SPS		0		0	0	0	0						
MP-6	4	1	5.50 8.50	NS		0		0	0	0	0						
MP-6	5	1	8.50 10.00	SPS		0		25	55	20	0		NON	POR	LSE	DRY	
MP-6	5	2	10.00 10.50	SPS		0		0	0	0	0						
MP-6	6	1	10.50 13.50	NS		0		0	0	0	0						
MP-6	7	1	13.50 15.10	SPS		0		20	60	20	0		NON	POR	FIR	DRY	
MP-6	7	2	15.10 15.50	SPS		0		0	0	0	0						
MP-6	8	1	15.50 18.50	NS		0		0	0	0	0						
MP-6	9	1	18.50 20.00	SPS		0		15	60	25	0		NON	POR	LSE	DRY	
MP-6	9	2	20.00 20.50	SPS		0		0	0	0	0						
MP-6	10	1	20.50 23.50	NS		0		0	0	0	0						
MP-6	11	1	23.50 25.20	SPS		5		10	45	40	0		NON	POR	FIR	DRY	
MP-6	11	2	25.20 25.50	SPS		0		0	0	0	0						
MP-6	12	1	25.50 28.50	NS		0		0	0	0	0						
MP-6	13	1	28.50 29.80	SPS		0		10	50	40	0		NON	POR	DEN	DRY	
MP-6	14	1	29.80 30.50	NS		0		0	0	0	0						
MP-6	15	1	30.50 33.00	NS		0		0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-6	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						0-0.8'=CONCRETE 0.8-1.5'=GRAVEL
-1	1									
			90	Sandy silt, ML	LT BRN	LSE	DRY	3 9 11	OVM 6.0	
-2	2									
			75	No Sample Recovered Sandy silt, ML	ORG-BRN	FIR	DRY	3 19 22	OVM 15.0	SAMPLE MP-6-005 (VOC & TPH).
-3	3									
				No Sample Recovered						
-4	4									
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-5	5									
			75	Silt with sand, ML	LT ORG-BRN	LSE	DRY	5 7 10	OVM 5.0	MICACEOUS; BLACK VEINS THROUGHOUT.
-6	6									
-7	7									
-8	8									
-9	9									
-10	10			No Sample Recovered						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-6	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				5		
				Interval Not Sampled				10		AUGERED INTERVAL-SAME AS ABOVE.
-11	11									
-12	12									
-13	13									
			80	Silt with sand, ML	LT ORG-BRN	FIR	DRY	12	OVM 5.0	HIGHLY WEATHERED SCHIST.
-14	14							20		
								24		
								32		
-15	15			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-16	16									
-17	17									
-18	18									
			75	Silt with sand, ML	ORG-BRN	LSE	DRY	9	OVM 5.0	HIGHLY WEATHERED SCHIST; BLACK VEINS THROUGHOUT.
-19	19							10		
								11		
								12		
-20	20			No Sample Recovered						

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-6	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				9		
				Interval Not Sampled				10		
				Interval Not Sampled				11		AUGERED INTERVAL-SAME AS ABOVE.
				Interval Not Sampled				12		
-21	21									
-22	22									
-23	23									
-24	24		85	Clayey silt with sand, ML	PINKISH/ORG-BRN	FIR	DRY	9	0VM 5.0	WEATHERED SCHIST; MICACEOUS; BLACK VEINS.
-25	25							11		
-26	26			No Sample Recovered						
-26	26			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-27	27									
-28	28									
-29	29		100	Clayey silt, ML	PINKISH/ORG-BRN	DEN	DRY	20	0VM 3.0	
-29	29							50		
-29	29							0		
-30	30			Interval Not Sampled						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-6	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/06/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

**Location Identification Data**

**Roy F. Weston, Inc.**

CLIENT : B&D LOCATION ID : MP-7  
PROJECT : PILOT TEST BEGIN DATE : 11/07/96  
END DATE : 11/07/96  
SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 33.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00  
Interval: 0.00 ft. to 33.00 ft. BGS  
Method : HSA Fluid : NONE

Borehole Diameter #2:  
Interval:  
Method : Fluid :

Borehole Diameter #3:  
Interval:  
Method : Fluid :

Drilling Company : WALTON CORP.  
Driller : GARY TRUVER, SR.  
Drill Rig Type : AUGER RIG

	Estimated	Surveyed
Surface Elevation :	0.000	
N. Coordinate :	0.0000	
E. Coordinate :	0.0000	
Well Permit.....(Y)es (N)o:	N	Permit # :
Hole Abandoned...(Y)es (N)o:	N	
Well Installed...(Y)es (N)o:	N	
Well Cluster.....(Y)es (N)o:	N	No. of Wells : 0
Well Nest.....(Y)es (N)o:	N	No. of Wells : 0
Pumps Installed..(Y)es (N)o:	N	Type
	Purge :	Depth
	Sample :	0
		0

Borehole Testing  
Borehole Geophysics.....(Y)es (N)o: N  
Slug Tests.....(Y)es (N)o: N  
Packer Tests.....(Y)es (N)o: N  
Pumping Tests.....(Y)es (N)o: N

Comments :



BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-7	1	1	0.00 3.50	NS		0		0	0	0	0						
MP-7	2	1	3.50 4.80	SPS		5		30	50	15	0		NON	POR	FIR	DRY	
MP-7	2	2	4.80 5.50	SPS		0		0	0	0	0						
MP-7	3	1	5.50 8.50	NS		0		0	0	0	0						
MP-7	4	1	8.50 10.30	SPS		0		20	55	25	0		LOW	POR	SFT	MST	
MP-7	4	2	10.30 10.50	SPS		0		0	0	0	0						
MP-7	5	1	10.50 13.50	NS		0		0	0	0	0						
MP-7	6	1	13.50 15.30	SPS		0		25	60	15	0		NON	POR	LSE	MST	
MP-7	6	2	15.30 15.50	SPS		0		0	0	0	0						
MP-7	7	1	15.50 18.50	NS		0		0	0	0	0						
MP-7	8	1	18.50 20.20	SPS		10		15	50	25	0		NON	POR	FIR	MST	
MP-7	8	2	20.20 20.40	SPS		0		0	0	0	0						
MP-7	9	1	20.40 23.50	NS		0		0	0	0	0						
MP-7	10	1	23.50 23.90	SPS		5		10	50	35	0		NON	POR	DEN	DRY	
MP-7	11	1	23.90 28.50	NS		0		0	0	0	0						
MP-7	12	1	28.50 30.30	SPS		0		10	50	40	0		NON	POR	FIR	MST	
MP-7	12	2	30.30 30.50	SPS		0		0	0	0	0						
MP-7	13	1	30.50 33.00	NS		0		0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-7	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/07/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-1	1			Interval Not Sampled						AUGERED INTERVAL: 0-1' = CONCRETE 1-2.5' = GRAVEL
-2	2									
-3	3									
-4	4		65	Sandy silt, ML	ORG-BRN	FIR	DRY	4 7 13 22	OVM 0.0	
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-7	7									
-8	8									
-9	9		90	Silt with sand, ML	ORG-BRN	SFT	MST	7 8 6 7	OVM 0.0	WHITE CLAY LENSE; BLACK/ RED VEINS.
-10	10									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-7	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/07/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-11	11			Silt with sand, ML No Sample Recovered Interval Not Sampled	ORG-BRN	SFT	MST	7 8 8	OVM 0.0	WHITE CLAY LENSE; BLACK/ RED VEINS.  AUGERED INTERVAL-SAME AS ABOVE.
-12	12									
-13	13									
-14	14		90	Silt with sand, ML No Sample Recovered Interval Not Sampled	ORG-BRN/PINKISH	LSE	MST	5 7 8 14	OVM 0.0	    AUGERED INTERVAL-SAME AS ABOVE.
-15	15									
-16	16									
-17	17									
-18	18									
-19	19		89	Silt with sand, ML	ORG-BRN	FIR	MST	7 13 22 50	OVM 0.0	QUARTZ VEIN (FRAGMENTED) AT 19.5' MICACEOUS; HIGHLY WEATHERED.
-20	20									

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-7	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/07/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-21	21			Silt with sand, ML No Sample Recovered Interval Not Sampled	ORG-BRN	FIR	MST	7 13 23 50	OVM 0.0	QUARTZ VEIN (FRAGMENTED) AT 19.5'; MICACEOUS; HIGHLY WEATHERED. AUGERED INTERVAL-SAME AS ABOVE.
-22	22									
-23	23									
-24	24		100	Silt with sand, ML Interval Not Sampled	PINKISH/REDDISH	DEN	DRY	50 00 0	OVM 0.0	HIGHLY WEATHERED. AUGERED INTERVAL-SAME AS ABOVE.
-25	25									
-26	26									
-27	27									
-28	28									
-29	29		90	Clayey silt, ML	ORG-BRN	FIR	MST	18 13 12 35	OVM 2.0	MICACEOUS; SAMPLE MP-7-031 (VOC & TPH).
-30	30									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-7	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/07/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-31	31			Clayey silt, ML	ORG-BRN	FIR	MST	18	OVM 2.0	MICACEOUS; SAMPLE MP-7-031 (VOC & TPH).
				No Sample Recovered						
				Interval Not Sampled						
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

Location Identification Data

Roy F. Weston, Inc.

CLIENT : B&D LOCATION ID : MP-8
PROJECT : PILOT TEST BEGIN DATE : 11/07/96
END DATE : 11/08/96
SITE/AREA : NE CORNER OF BUILDINGLOGGER : C. HARRIS

Borehole Completed In (<O>verburden <B>edrock) : 0

Total Depth : 33.00 Depth to Bedrock : 0

Borehole Diameter #1: 10.00
Interval: 0.00 ft. to 33.00 ft. BGS
Method : HSA Fluid : NONE

Borehole Diameter #2:
Interval:
Method : Fluid :

Borehole Diameter #3:
Interval:
Method : Fluid :

Drilling Company : WALTON CORP.
Driller : GARY TRUVER, SR.
Drill Rig Type : AUGER RIG

Surface Estimated Surveyed
Elevation : 0.000
N. Coordinate : 0.0000
E. Coordinate : 0.0000
Well Permit.....(Y)es (N)o: N Permit # :
Hole Abandoned...(Y)es (N)o: N
Well Installed...(Y)es (N)o: N
Well Cluster.....(Y)es (N)o: N No. of Wells : 0
Well Nest.....(Y)es (N)o: N No. of Wells : 0
Pumps Installed..(Y)es (N)o: N Type Depth
Purge : 0
Sample : 0

Borehole Testing
Borehole Geophysics.....(Y)es (N)o: N
Slug Tests.....(Y)es (N)o: N
Packer Tests.....(Y)es (N)o: N
Pumping Tests.....(Y)es (N)o: N

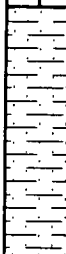

Comments :

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)	SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
MP-8	1	1	0.00 3.50	NS		0		0	0	0	0						
MP-8	2	1	3.50 5.40	SPS		0		40	50	10	0		NON	POR	LSE	MST	
MP-8	2	2	5.40 5.50	SPS		0		0	0	0	0						
MP-8	3	1	5.50 8.50	NS		0		0	0	0	0						
MP-8	4	1	8.50 10.20	SPS		5		20	55	20	0		LOW	POR	LSE	MST	
MP-8	4	2	10.20 10.50	SPS		0		0	0	0	0						
MP-8	5	1	10.50 13.50	NS		0		0	0	0	0						
MP-8	6	1	13.50 15.40	SPS		15		25	30	30	0		LOW	POR	FIR	MST	
MP-8	6	2	15.40 15.50	SPS		0		0	0	0	0						
MP-8	7	1	15.50 18.50	NS		0		0	0	0	0						
MP-8	8	1	18.50 20.50	SPS		0		20	50	30	0		NON	POR	FIR	DRY	
MP-8	9	1	20.50 23.50	NS		0		0	0	0	0						
MP-8	10	1	23.50 25.10	SPS		0		10	50	40	0		NON	POR	FIR	DRY	
MP-8	10	2	25.10 25.50	SPS		0		0	0	0	0						
MP-8	11	1	25.50 28.50	NS		0		0	0	0	0						
MP-8	12	1	28.50 30.50	SPS		0		15	45	40	0		NON	POR	FIR	DRY	
MP-8	13	1	30.50 33.00	NS		0		0	0	0	0						

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-8	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-1	1			Interval Not Sampled						AUGERED INTERVAL: 0-2.5' = GRAVEL (RAILROAD BED) 2.5-3.5' = SOIL/GRAVEL
-2	2									
-3	3									
-4	4		95	Sandy silt, ML	PINKISH/ORG-BRN	LSE	MST	4	OVM 1.2	
-5	5			No Sample Recovered						
-6	6			Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-7	7									
-8	8									
-9	9		85	Silt with sand, ML	ORG-BRN/PINKISH	LSE	MST	3 5 10 17	OVM 2.1	QUARTZ FRAGMENTS AT 8.8'.
-10	10									



# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-8	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-11	11			Silt with sand, ML No Sample Recovered Interval Not Sampled	ORG-BRN/PINKISH	LSE	MST	3 10 17	OVM 2.1	QUARTZ FRAGMENTS AT 8.8'.  AUGERED INTERVAL-SAME AS ABOVE.
-14	14		95	Sandy silt with gravel, ML  No Sample Recovered Interval Not Sampled	ORG-BRN	FIR	MST	9 20 15 10	OVM 0.8	QUARTZ VEIN FROM 14.4-14.9'. RED/WHITE CLAY BELOW.  AUGERED INTERVAL-SAME AS ABOVE.
-19	19		100	Silt with sand, ML	PINKISH/ORANGIS	FIR	DRY	17 24 22 23	OVM 0.0	MICACEOUS; HIGHLY WEATHERED SCHIST.

**Borehole Log**

**Roy F. Weston, Inc.**

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-8	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt with sand, ML	PINKISH/ORANGIS	FIR	DRY	17	OVM 0.0	MICACEOUS; HIGHLY WEATHERED SCHIST.
				Interval Not Sampled				24 25 25		AUGERED INTERVAL-SAME AS ABOVE.
-21	21									
-22	22									
-23	23									
			80	Clayey silt, ML	PINKISH BRN	FIR	DRY	20	OVM 0.0	MICACEOUS; HIGHLY WEATHERED SCHIST.
-24	24							30 38 29		
-25	25			No Sample Recovered						
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-26	26									
-27	27									
-28	28									
			100	Clayey silt with sand, ML	PINKISH/REDDISH	FIR	DRY	18	OVM 0.0	WEATHERED SCHIST.
-29	29							24 39 39		
-30	30									

# Borehole Log

Roy F. Weston, Inc.

PROJECT : PILOT TEST	TOTAL DEPTH : 33.00
SITE NAME : NE CORNER OF BUILDING	LOGGER : C. HARRIS
BORING ID : MP-8	DRILLING COMPANY : WALTON CORP.
NORTHING : 0.0000 estimated	DRILLING RIG : AUGER RIG
EASTING : 0.0000 estimated	DATE STARTED : 11/07/96
ELEVATION : 0.000 estimated	DATE COMPLETED : 11/08/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Clayey silt with sand, ML	PINKISH/REDDISH	FIR	DRY	18 24 30 39	OMV 0.0	WEATHERED SCHIST.
				Interval Not Sampled						AUGERED INTERVAL-SAME AS ABOVE.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

**APPENDIX B**  
**LABORATORY DATA SUMMARY SHEETS**

**SOIL ANALYTICAL DATA PACKAGES**



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

**LIONVILLE LABORATORY  
ANALYTICAL REPORT**

**Client : BLACK & DECKER-HAMPSTEAD**  
**RFW# : 9611L037**

**W.O. #: 02501-004-001-0300-00**  
**Date Received: 11-01-96**

**INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 7 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature is recorded on the chain-of-custody.
5. The method blanks were within method criteria with the exception of sample 96LHC126-MB1 for Petroleum Hydrocarbons (PHC) which was above the reporting limit.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Alkalinity, Total Kjeldahl Nitrogen (TKN) and Total Phosphate were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for TKN sample SVE-1-011 and Alkalinity sample SVE-1-019 were within the 75-125% control limits. The matrix spike duplicate for TKN was within the 20% RPD control limit.
8. The replicate analysis for TKN was within the 20% RPD control limit, however the replicate analysis for Alkalinity was outside the control limit. The poor reproducibility for the Alkalinity replicate analysis may be attributed to the variable rate of reactivity of the soil and the sulfuric acid used in the potentiometric titration.
9. Results for solid samples are reported on a dry weight basis.

*J. Michael Taylor*  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

11.22.96  
Date

njp/11-037

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.



# WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	_ D2216-80		
%Moisture	_ D2216-80		✓ ILMO4.0 (e)
%Solids			_ ILMO4.0 (e)
%Volatile Solids	_ D2216-80		
ASTM Extraction in Water	_ D3987-81/85		
BTU	_ D240-87		
CEC		_ 9081	_ c
Corrosivity __by coupon __by pH		_ 1110 (mod) _ 9045	
Cyanide, Total		_ 9010	_ ILMO4.0 (e)
Cyanide, Reactive		_ Sec 7.3	
Density			_ b
Halides, Extractable Organic			_ EPA 600/4/84-008 (mod)
Halides, Total			_ EPA 600/4/84-008 (mod)
EP-Toxicity		_ 1310A	
Flash Point		_ 1010	
Ignitability		_ 1010	
Carbon, Total Organic (by LOI)			_ c
Oil and Grease		_ 9071A	
Carbon, Total Organic		_ 9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	_ D240-87 (mod)	_ 5050	
Petroleum Hydrocarbons, Total Recoverable		✓ 9071	✓ EPA 418.1 (mod)
pH, Soil		_ 9045B	
Sulfide, Reactive		_ Sec 7.3	
Specific Gravity	_ D1429-76C		
Sulfur, Total		_ 9056	
TCLP		_ 1311	
TCLV		_ 1311	
Synthetic Precipitation Leach		_ 1312	
Chlorine, Total		_ 9056	
Paint Filter		_ 9095	
Total Kjeldahl Nitrogen		EPA 351.4	
Other: <u>Alkalinity</u>		EPA 305.1	
<u>Total Phosphate</u>		EPA 365.2	

## METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

RFW 21-21L-034/D-06/96



ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/21/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	MP-1-011	% Solids	90.8	%	0.10	1.0
		Petroleum Hydrocarbons	11.1	MG/KG	3.7	1.0
-002	MP-2-011	% Solids	81.7	%	0.10	1.0
		Petroleum Hydrocarbons	80600	MG/KG	1020	250
-003	SVE-1-005	% Solids	81.8	%	0.10	1.0
		Petroleum Hydrocarbons	1320	MG/KG	40.8	10.0
-004	SVE-1-011	% Moisture	16.5	%	0.10	1.0
		% Solids	83.5	%	0.10	1.0
		Alkalinity	150	MG/KG	11.7	1.0
		TKN	121	MG/KG	28.1	1.0
		pH	7.4	SOIL PH	0.01	1.0
		Phosphate, as P - Total	850	MG/KG	127	25.0
-005	SVE-1-013	% Solids	79.9	%	0.10	1.0
		Petroleum Hydrocarbons	118	MG/KG	4.2	1.0
-006	SVE-1-017	% Solids	84.8	%	0.10	1.0
		Petroleum Hydrocarbons	18.2	MG/KG	3.9	1.0
-007	SVE-1-019	% Moisture	15.4	%	0.10	1.0
		% Solids	84.6	%	0.10	1.0
		Alkalinity	145	MG/KG	11.8	1.0
		TKN	115	MG/KG	29.5	1.0
		pH	7.3	SOIL PH	0.01	1.0
		Phosphate, as P - Total	884	MG/KG	136	25.0

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/21/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	96LHC126-MB1	Petroleum Hydrocarbons	4.3	MG/KG	3.3	1.0
BLANK10	96LAKA32-MB1	Alkalinity	5.0	u MG/KG	5.0	1.0
BLANK10	96LAMC63-MB1	TKN	25.0	u MG/KG	25.0	1.0
BLANK10	96LTPC60-MB1	Phosphate, as P - Total	5.0	u MG/KG	5.0	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/21/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-004	SVE-1-011	TKN	1300	121	1180	99.9	1.0
		TKN MSD	1260	121	1130	100.7	1.0
-007	SVE-1-019	Alkalinity	747	145	591	101.8	1.0
BLANK10	96LHC126-MB1	Petroleum Hydrocarbons	142	4.3	140	98.3	1.0
BLANK10	96LAKA32-MB1	Alkalinity	990	5.0 u	1000	99.0	1.0
		Alkalinity MSD	991	5.0 u	1000	99.1	1.0
BLANK10	96LAMC63-MB1	TKN	999	25.0 u	1000	99.9	1.0
		TKN MSD	1010	25.0 u	1000	101.4	1.0
BLANK10	96LTPC60-MB1	Phosphate, as P - Tot.	26.5	5.0 u	26.1	101.5	1.0
		Phosphate, as P - Tot.	26.3	5.0 u	26.1	100.8	1.0

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/21/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
-004	SVE-1-011	TKN	99.9	100.7	0.79
BLANK10	96LAKA32-MB1	Alkalinity	99.0	99.1	0.1
BLANK10	96LAMC63-MB1	TKN	99.9	101.4	1.5
BLANK10	96LTPC60-MB1	Phosphate, as P - Tot.	101.5	100.8	0.66

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/21/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-004REP	SVE-1-011	TKN	121	128	5.3	1.0
-007REP	SVE-1-019	Alkalinity	145	115	23.1	1.0

Roy F. Weston, Inc. - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/01/96

RFW LOT # :9611L037

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MP-1-011						
% SOLIDS	001	S	96L*S224	10/30/96	11/04/96	11/05/96
PETROLEUM HYDROCARBO	001	S	96LHC126	10/30/96	11/15/96	11/15/96
MP-2-011						
% SOLIDS	002	S	96L*S224	10/31/96	11/04/96	11/05/96
PETROLEUM HYDROCARBO	002	S	96LHC126	10/31/96	11/15/96	11/15/96
SVE-1-005						
% SOLIDS	003	S	96L*S224	10/31/96	11/04/96	11/05/96
PETROLEUM HYDROCARBO	003	S	96LHC126	10/31/96	11/15/96	11/15/96
SVE-1-011						
% MOISTURE	004	S	96L*S224	10/31/96	11/04/96	11/05/96
% SOLIDS	004	S	96L*S224	10/31/96	11/04/96	11/05/96
ALKALINITY	004	S	96LAKA32	10/31/96	11/12/96	11/12/96
TOTAL KJELDAHL NITRO	004	S	96LAMC63	10/31/96	11/06/96	11/07/96
TKN	004 REP	S	96LAMC63	10/31/96	11/06/96	11/07/96
TKN	004 MS	S	96LAMC63	10/31/96	11/06/96	11/07/96
TKN	004 MSD	S	96LAMC63	10/31/96	11/06/96	11/07/96
PH	004	S	96LPH142	10/31/96	11/06/96	11/06/96
TOTAL PHOSPHATE AS P	004	S	96LTPC60	10/31/96	11/13/96	11/13/96
SVE-1-013						
% SOLIDS	005	S	96L*S224	10/31/96	11/04/96	11/05/96
PETROLEUM HYDROCARBO	005	S	96LHC126	10/31/96	11/15/96	11/15/96
SVE-1-017						
% SOLIDS	006	S	96L*S224	10/31/96	11/04/96	11/05/96
PETROLEUM HYDROCARBO	006	S	96LHC126	10/31/96	11/15/96	11/15/96
SVE-1-019						
% MOISTURE	007	S	96L*S224	10/31/96	11/04/96	11/05/96

Roy F. Weston, Inc. - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/01/96

RFW LOT # :9611L037

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
% SOLIDS	007	S	96L&S224	10/31/96	11/04/96	11/05/96
ALKALINITY	007	S	96LAKA32	10/31/96	11/12/96	11/12/96
ALKALINITY	007 REP	S	96LAKA32	10/31/96	11/12/96	11/12/96
ALKALINITY	007 MS	S	96LAKA32	10/31/96	11/12/96	11/12/96
TOTAL KJELDAHL NITRO	007	S	96LAMC63	10/31/96	11/06/96	11/07/96
PH	007	S	96LPH142	10/31/96	11/06/96	11/06/96
TOTAL PHOSPHATE AS P	007	S	96LTPC60	10/31/96	11/13/96	11/13/96

LAB QC:

PETROLEUM HYDROCARBO	MB1	S	96LHC126	N/A	11/15/96	11/15/96
PETROLEUM HYDROCARBO	MB1 BS	S	96LHC126	N/A	11/15/96	11/15/96
ALKALINITY	MB1	W	96LAKA32	N/A	11/12/96	11/12/96
ALKALINITY	MB1 BS	W	96LAKA32	N/A	11/12/96	11/12/96
ALKALINITY	MB1 BSD	W	96LAKA32	N/A	11/12/96	11/12/96
TOTAL KJELDAHL NITRO	MB1	S	96LAMC63	N/A	11/06/96	11/07/96
TKN	MB1 BS	S	96LAMC63	N/A	11/06/96	11/07/96
TKN	MB1 BSD	S	96LAMC63	N/A	11/06/96	11/07/96
TOTAL PHOSPHATE AS P	MB1	S	96LTPC60	N/A	11/13/96	11/13/96
TOTAL PHOSPHATE AS P	MB1 BS	S	96LTPC60	N/A	11/13/96	11/13/96
TOTAL PHOSPHATE AS P	MB1 BSD	S	96LTPC60	N/A	11/13/96	11/13/96

9611L037

# Custody Transfer Record/Lab Work Request

11

Client <b>Black &amp; Decker - HAMPSHIRE</b>		Refrigerator #	660					
Est. Final Proj. Sampling Date <b>8 Nov 1996</b>	#/Type Container	Liquid <b>2/CG</b>						
Work Order # <b>02501-004-001-0300-00</b>		Solid <b>1/CG</b>	<b>1/AG 1/AG 1/AG</b>					
Project Contact/Phone # <b>CHRIS HARRIS/610-701-7203</b>	Volume	Liquid <b>40.1m</b>						
AD Project Manager <b>DYANA SAGGES</b>		Solid <b>125</b>	<b>250 250 500</b>					
QC <b>500</b> Del <b>500</b> TAT <b>14 DAY</b>	Preservatives	<b>LIQUID HCL</b>						
Date Rec'd <b>11-01-96</b> Date Due <b>11/15/96</b>	ANALYSES REQUESTED →	ORGANIC					INORG	
Account # <b>micrham</b>		VOA	BNA	Pest/PCB	Herb	TPH	Total Pb	Total Cu

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only																		
			MS	MSD				VOA	BNA	Pest/PCB	Herb	TPH	Total Pb	Total Cu	Metal	CN										
	001	MP-1-011			S	10/30/96	1500	X																		
	2	MP-2-011				10/31/96	0905	X																		
	3	SVE-1-005					1200	X																		
	4	SVE-1-011					1228							X(2)	X(2)											
	5	SVE-1-013					1225	X						X												
	6	SVE-1-017					1245	X						X												
	7	SVE-1-019					1250								X	X										
	8	TRIP BLANKS			W		-	X																		

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS				DATE/REVISIONS:				WESTON Analytics Use Only			
Special Instructions: VOA method 8240 TPH method 418.1 (1) TKN, pH, Alkalinity, Total phosphorous (2) Sample bottle not full - use leftover volume from sample SVE-1-013, if available and needed.				11/6/96 1. CLIENT ID FOR 004 2. CORRECTED PER UNIT 3. REVIEW REVISION				Samples were: 1) Shipped <input type="checkbox"/> or Hand Delivered <input checked="" type="checkbox"/> Airbill # _____ 2) Ambient or Chilled <input checked="" type="checkbox"/> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N			
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N <input checked="" type="checkbox"/> NOTES:			
Chittam	Joder	11-1-96	1709					COC Tape was: 1) Present on Outer Package Y or N <input checked="" type="checkbox"/> 2) Unbroken on Outer Package Y or N <input checked="" type="checkbox"/> 3) Present on Sample Y or N <input checked="" type="checkbox"/> 4) Unbroken on Sample Y or N <input checked="" type="checkbox"/> COC Record Present Upon Sample Rec't Y or N <input checked="" type="checkbox"/>			





Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : BLACK & DECKER-HAMPSTEAD  
RFW# : 9611L037

W.O.# : 02501-004-001-0300-00  
Date Received: 11-01-96

### METALS CASE NARRATIVE

1. This narrative covers the analysis of 2 soil samples.
2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All cooler temperatures have been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.
7. The preparation/method blank was within method criteria.
8. All ICP Interference Check Standards were within control limits.
9. The Laboratory Control Sample (LCS) was within the laboratory control limits.
10. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for Iron were outside the 80-120% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP matrix spike is out-of-control, a post-digestion matrix spike (PDS) and serial dilution are performed. A PDS was prepared at a meaningful concentration level, due to high concentration of the following analyte:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
SVE-1-011	Iron	25000	103.7

12. The MSD was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.





13. The duplicate analysis was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
14. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

*for Bruce C. Miller, unit leader*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

11-22-96  
Date

11/14/96

# METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this RFW Lot#: 9611L037

Leaching Procedure: 1310 1311 1312 Other: \_\_\_\_\_

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A  3050A 3051 200.7 SS17  
Other: \_\_\_\_\_

## Metals Analysis Methods

	SW846	EPA	EPA OSWR	USATHAMA
Aluminum	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Antimony	<u>6010A</u> <u>7041</u> <sup>5</sup>	<u>200.7</u>	<u>204.2</u>	<u>99</u>
Arsenic	<u>6010A</u> <u>7060A</u> <sup>5</sup>	<u>200.7</u>	<u>206.2</u>	<u>99</u>
Barium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Beryllium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Bismuth	<u>6010A</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>	<u>1620</u>	<u>99</u>
Boron	<u>6010A</u> <sup>1</sup>	<u>200.7</u>		<u>99</u>
Cadmium	<u>6010A</u> <u>7131A</u> <sup>5</sup>	<u>200.7</u>	<u>213.2</u>	<u>99</u>
Calcium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Chromium	<u>6010A</u> <u>7191</u> <sup>5</sup>	<u>200.7</u>	<u>218.2</u>	<u>SS17</u>
Cobalt	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Copper	<u>6010A</u> <u>7211</u> <sup>5</sup>	<u>200.7</u>	<u>220.2</u>	<u>99</u>
Iron	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Lead	<u>6010A</u> <u>7421</u> <sup>5</sup>	<u>200.7</u>	<u>239.2</u>	<u>99</u>
Lithium	<u>6010A</u> <u>7430</u> <sup>4</sup>	<u>200.7</u>	<u>1620</u>	<u>99</u>
Magnesium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Manganese	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Mercury	<u>7470A</u> <sup>3</sup> <u>7471A</u> <sup>3</sup>	<u>245.1</u> <sup>2</sup>	<u>245.5</u> <sup>2</sup>	<u>99</u>
Molybdenum	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Nickel	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Potassium	<u>6010A</u> <u>7610</u> <sup>4</sup>	<u>200.7</u>	<u>258.1</u> <sup>4</sup>	<u>99</u>
Rare Earths	<u>6010A</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>	<u>1620</u>	<u>99</u>
Selenium	<u>6010A</u> <u>7740</u> <sup>5</sup>	<u>200.7</u>	<u>270.2</u>	<u>99</u>
Silicon	<u>6010A</u> <sup>1</sup>	<u>200.7</u>	<u>1620</u>	<u>99</u>
Silica	<u>6010A</u> <sup>1</sup>	<u>200.7</u>	<u>1620</u>	<u>99</u>
Silver	<u>6010A</u> <u>7761</u> <sup>5</sup>	<u>200.7</u>	<u>272.2</u>	<u>99</u>
Sodium	<u>6010A</u> <u>7770</u> <sup>4</sup>	<u>200.7</u>	<u>273.1</u> <sup>4</sup>	<u>99</u>
Strontium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Thallium	<u>6010A</u> <u>7841</u> <sup>5</sup>	<u>200.7</u>	<u>279.2</u>	<u>99</u>
Tin	<u>6010A</u> <sup>1</sup>	<u>200.7</u>		<u>99</u>
Titanium	<u>6010A</u> <sup>1</sup>	<u>200.7</u>		<u>99</u>
Uranium	<u>6010A</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>	<u>1620</u>	<u>99</u>
Vanadium	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Zinc	<u>6010A</u>	<u>200.7</u>		<u>99</u>
Zirconium	<u>6010A</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>	<u>1620</u>	<u>99</u>

Other: \_\_\_\_\_

Method: \_\_\_\_\_

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

- MB = Method or Preparation Blank.  
MS = Matrix Spike.  
MSD = Matrix Spike Duplicate.  
REP = Sample Replicate  
LCS = Laboratory Control Sample.  
NC = Not calculated.

## ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

000004

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	SVE-1-011	Iron, Total	44200	MG/KG	5.6	5.0
-007	SVE-1-019	Iron, Total	29900	MG/KG	5.6	5.0

000005

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	96L2510-MB1	Iron, Total	3.0	MG/KG	0.94	1.0

000006

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-004	SVE-1-011	Iron, Total	41800	44200	120	-2000. *	5.0
		Iron, Total MSD	34900	44200	120	-7700. *	5.0

000007

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-004	SVE-1-011	Iron, Total	-2000.	-7700. *	NO 117.5

*MP*  
*11/14/96*



ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-004REP	SVE-1-011	Iron, Tctal	44200	27800	45.5	5.0

000009

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/13/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L037

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
=====	=====	=====	=====	=====	=====	=====
LCS1	96L2510-LC1	Iron, LCS	540	500	MG/KG	108.0

000010

Roy F. Weston, Inc. - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/01/96

RFW LOT # :9611L037

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SVE-1-011						
IRON, TOTAL	004	S	96L2510	10/31/96	11/08/96	11/11/96
IRON, TOTAL	004 REP	S	96L2510	10/31/96	11/08/96	11/11/96
IRON, TOTAL	004 MS	S	96L2510	10/31/96	11/08/96	11/11/96
IRON, TOTAL	004 MSD	S	96L2510	10/31/96	11/08/96	11/11/96
SVE-1-019						
IRON, TOTAL	007	S	96L2510	10/31/96	11/08/96	11/11/96
LAB QC:						
<hr/>						
IRON LABORATORY	LC1 BS	S	96L2510	N/A	11/08/96	11/11/96
IRON, TOTAL	MB1	S	96L2510	N/A	11/08/96	11/11/96

000011

9611L037

# Custody Transfer Record/Lab Work Request

Client <b>Black &amp; Decker - HAMPSTEAD</b>	Refrigerator #	1	6	6	0
Est. Final Proj. Sampling Date <b>8 Nov 1996</b>	#/Type Container	Liquid <b>3/CG</b>			
Work Order # <b>02501-004-001-0300-UU</b>		Solid <b>1/CG</b>		<b>1/AG 1/AG 1/AG</b>	
Project Contact/Phone # <b>CHRIS HARRIS/610-701-7203</b>	Volume	Liquid <b>40.0</b>			
AD Project Manager <b>DIANA SAGGES</b>		Solid <b>125</b>		<b>250 250 500</b>	
QC <b>SDP</b> Del <b>SDP</b> TAT <b>14 DAY</b> com <b>12/10</b>	Preservatives	<b>LIQUID HCL</b>			
Date Rec'd <b>11-01-96</b> Date Due <b>11/15/96</b>	ANALYSES REQUESTED				
Account # <b>016282 HAMP</b>					

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only															
						Matrix QC Chosen (✓)		ORGANIC		INORG											
						MS	MSD	VOA	BNA	Pes/PCB	Herb	TPH	Total Pb	Total Cd	Total Hg	Total Cu	Metal	CN			
	001	MP-1-011	S	10/30/96	1500	X															
	2	MP-2-011		10/31/96	0905	X															
	3	SVE-1-005			1200	X															
	4	SVE-1-011(W)			1220							X	X								
	5	SVE-1-013			1225	X						X									
	6	SVE-1-017			1245	X						X									
	7	SVE-1-019			1250							X	X								
	8	TRIP BLANKS	W		-	X															

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS				DATE/REVISIONS:				WESTON Analytics Use Only			
Special Instructions: VOA method: 8240 TPH method 418.1 (1) TKN, pH, Alkalinity, Total phosphorous (2) Sample bottle not foil - use leftover volume from sample SVE-1-013, if available and needed.				1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____				Samples were: 1) Shipped <input type="checkbox"/> or Hand Delivered <input checked="" type="checkbox"/> Airbill # _____ 2) Ambient of <input checked="" type="checkbox"/> Chilled 3) Received in Good Condition <input checked="" type="checkbox"/> Y or N 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> Y or N 5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N			
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N <input checked="" type="checkbox"/>			
Christman	Joder	11-1-96	1709					NOTES:			

000012



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

### LIONVILLE LABORATORY ANALYTICAL REPORT

**Client :** BLACK AND DECKER-HAMPSTEAD  
**RFW# :** 9611L037

**W.O #:** 02501-004-001-0300-00  
**Date Received:** 11-01-96

#### GC/MS VOLATILE

The set of samples consisted of one (1) water sample and five (5) soil samples collected on 10-30,31-96.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 11-08,09,10,14-96.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in sample MP-2-011.
4. Sample MP-2-011 required medium level analysis and an additional two-fold dilution because it contained high levels of target compounds.
5. One (1) of fifty-four (54) surrogate recoveries was outside EPA QC limits. Sample MP-2-011 was diluted, reanalyzed on 11-14-96, and reported.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.
8. The method blanks contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

*Bruce C. Taylor*  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

mmz/voa/11-037v.cn

11-2296  
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 22 pages.



**GLOSSARY OF VOA DATA****DATA QUALIFIERS**

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

	Cust ID:	MP-1-011	MP-2-011	MP-2-011	SVE-1-005	SVE-1-013	SVE-1-017
Sample Information	RFW#:	001	002	002 DL	003	005	006
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.90	1.00	0.980	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Level:	LOW	LOW	MED	LOW	LOW	LOW
Surrogate	Toluene-d8	96 %	117 %	92 %	99 %	102 %	106 %
Recovery	Bromofluorobenzene	90 %	79 %	89 %	93 %	101 %	104 %
	1,2-Dichloroethane-d4	92 %	139 * %	95 %	97 %	101 %	104 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Chloromethane		11 U	12 U	2900 U	12 U	12 U	12 U
Bromomethane		11 U	12 U	2900 U	12 U	12 U	12 U
Vinyl Chloride		11 U	12 U	2900 U	12 U	12 U	12 U
Chloroethane		11 U	12 U	2900 U	12 U	12 U	12 U
Methylene Chloride		11 B	17 B	1900 BD	11 B	11 B	14 B
Acetone		7 JB	35 B	4700 BD	10 BJ	10 JB	8 BJ
Carbon Disulfide		6 U	6 U	1500 U	6 U	6 U	6 U
1,1-Dichloroethene		6 U	6 U	1500 U	6 U	6 U	6 U
1,1-Dichloroethane		6 U	82	1500 U	6 U	6 U	6 U
1,2-Dichloroethene (total)		6 U	350	390 JD	6 U	6 U	6 U
Chloroform		6 U	17	1500 U	6 U	6 U	6 U
1,2-Dichloroethane		6 U	6 U	1500 U	6 U	6 U	6 U
2-Butanone		11 U	10 J	2900 U	12 U	12 U	12 U
1,1,1-Trichloroethane		6 U	1500 E	3900 D	6 U	6 U	6 U
Carbon Tetrachloride		6 U	6 U	1500 U	6 U	6 U	6 U
Vinyl Acetate		11 U	12 U	2900 U	12 U	12 U	12 U
Bromodichloromethane		6 U	6 U	1500 U	6 U	6 U	6 U
1,2-Dichloropropane		6 U	6 U	1500 U	6 U	6 U	6 U
cis-1,3-Dichloropropene		6 U	6 U	1500 U	6 U	6 U	6 U
Trichloroethene		6 U	2300 E	11000 D	10	10	6 U
Dibromochloromethane		6 U	6 U	1500 U	6 U	6 U	6 U
1,1,2-Trichloroethane		6 U	20	1500 U	6 U	6 U	6 U
Benzene		6 U	7	1500 U	6 U	6 U	6 U
Trans-1,3-Dichloropropene		6 U	6 U	1500 U	6 U	6 U	6 U
Bromoform		6 U	6 U	1500 U	6 U	6 U	6 U
4-Methyl-2-pentanone		11 U	12 U	2900 U	12 U	12 U	12 U
2-Hexanone		11 U	26	2900 U	12 U	12 U	12 U
Tetrachloroethene		6 U	1500 E	33000 D	130	190	6 U
1,1,2,2-Tetrachloroethane		6 U	6 U	1500 U	6 U	6 U	6 U

\*= Outside of EPA CLP QC limits.

004



Cust ID: MP-1-011 MP-2-011 MP-2-011 SVE-1-005 SVE-1-013 SVE-1-017

	RFW#:	001	002	002 DL	003	005	006
	Level:	LOW	LOW	MED	LOW	LOW	LOW
Toluene		6 U	10	1500 U	8	6 U	1 J
Chlorobenzene		6 U	6 U	1500 U	6 U	6 U	6 U
Ethylbenzene		6 U	6 U	1500 U	6 U	6 U	6 U
Styrene		6 U	6 U	1500 U	6 U	6 U	6 U
Xylene (total)		6 U	6 U	1500 U	3 J	6 U	1 J

\*= Outside of EPA CLP QC limits.

005

Sample Information	RFW#:	006 MS	006 MSD	008	96LVX268-MB1	96LVX268-MB1	96LVX269-MB1
	Matrix:	SOIL	SOIL	WATER	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/L	UG/KG	UG/KG	UG/KG
	Level:	LOW	LOW	LOW	LOW	LOW	LOW

Surrogate Recovery	Toluene-d8	108 %	107 %	99 %	95 %	98 %	100 %
Bromofluorobenzene	103 %	104 %	96 %	93 %	99 %	98 %	
1,2-Dichloroethane-d4	95 %	98 %	97 %	93 %	93 %	97 %	
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Chloromethane	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	17 B	10 B	8 B	6	5 JB	7	
Acetone	12 B	19 B	7 JB	5 J	8 JB	9 J	
Carbon Disulfide	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	114 %	100 %	5 U	5 U	75 %	5 U	5 U
1,1-Dichloroethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Chloroform	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	12 U	12 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Vinyl Acetate	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	96 %	97 %	5 U	5 U	88 %	5 U	5 U
Dibromochloromethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Benzene	94 %	93 %	5 U	5 U	87 %	5 U	5 U
Trans-1,3-Dichloropropene	6 U	6 U	5 U	5 U	5 U	5 U	5 U
Bromoform	6 U	6 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	12 U	12 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	12 U	12 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	6 U	6 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	6 U	6 U	5 U	5 U	5 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

906

Cust ID: SVE-1-017 SVE-1-017 TRIP BLANKS VBLKTK VBLKTK BS VBLKTL

RFW#: 006 MS 006 MSD 008 96LVX268-MB1 96LVX268-MB1 96LVX269-MB1  
 Level: LOW LOW LOW LOW LOW LOW

	006 MS	006 MSD	008	96LVX268-MB1	96LVX268-MB1	96LVX269-MB1
	LOW	LOW	LOW	LOW	LOW	LOW
Toluene	97 %	98 %	5 U	5 U	93 %	5 U
Chlorobenzene	96 %	99 %	5 U	5 U	92 %	5 U
Ethylbenzene	6 U	6 U	5 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

200

Roy F. Weston, Inc. - Monville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/22/96 10:28

RFW Batch Number: 9611L037

Client: BLACK&DECKER-HAMPSTEAD

Work Order: 02501004001 Page: 3a

Cust ID: VBLKTL BS      VBLKUL      VBLKTM      VBLKTM BS      VBLKTF      VBLKTF BS

Sample Information	RFW#:	96LVX269-MB1	96LVW231-MB1	96LVX270-MB1	96LVX270-MB1	96LVW225-MB1	96LVW225-MB1
Matrix:		SOIL	SOIL	SOIL	SOIL	WATER	WATER
D.F.:		1.00	1.00	1.00	1.00	1.00	1.00
Units:		UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L
Level:		LOW	MED	LOW	LOW	LOW	LOW

008

Surrogate		100 %	102 %	100 %	106 %	97 %	98 %
Toluene-d8							
Bromofluorobenzene		99 %	100 %	100 %	101 %	96 %	97 %
1,2-Dichloroethane-d4		94 %	102 %	93 %	97 %	102 %	103 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Chloromethane		10 U	1200 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	1200 U	10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	1200 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	1200 U	10 U	10 U	10 U	10 U
Methylene Chloride		9 B	730	6	7 B	7	7 B
Acetone		8 JB	750 J	15	19 B	1 J	3 JB
Carbon Disulfide		5 U	620 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		170 %	620 U	5 U	92 %	5 U	87 %
1,1-Dichloroethane		5 U	620 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	620 U	5 U	5 U	5 U	5 U
Chloroform		5 U	620 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	620 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	1200 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	620 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	620 U	5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	1200 U	10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	620 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	620 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	620 U	5 U	5 U	5 U	5 U
Trichloroethene		85 %	620 U	5 U	95 %	5 U	97 %
Dibromochloromethane		5 U	620 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	620 U	5 U	5 U	5 U	5 U
Benzene		86 %	620 U	5 U	94 %	5 U	97 %
Trans-1,3-Dichloropropene		5 U	620 U	5 U	5 U	5 U	5 U
Bromoform		5 U	620 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	1200 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	1200 U	10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	620 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	620 U	5 U	5 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

Cust ID: VBLKTL BS VBLKUL VBLKTM VBLKTM BS VBLKTF VBLKTF BS

RFW#: 96LVX269-MB1 96LVW231-MB1 96LVX270-MB1 96LVX270-MB1 96LVW225-MB1 96LVW225-MB1  
 Level: LOW MED LOW LOW LOW LOW

Compound	96LVX269-MB1	96LVW231-MB1	96LVX270-MB1	96LVX270-MB1	96LVW225-MB1	96LVW225-MB1
Toluene	84 %	620 U	5 U	97 %	5 U	96 %
Chlorobenzene	83 %	620 U	5 U	97 %	5 U	98 %
Ethylbenzene	5 U	620 U	5 U	5 U	5 U	5 U
Styrene	5 U	620 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	620 U	5 U	5 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

009

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MP-1-011

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 9611L037-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XB818

Level: (low/med) LOW

Date Received: 11/01/96

% Moisture: not dec. 9

Date Analyzed: 11/08/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MP-2-011

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL Lab Sample ID: 9611L037-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: XB907

Level: (low/med) LOW Date Received: 11/01/96

% Moisture: not dec. 18 Date Analyzed: 11/09/96

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 5

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	21.680	90	J
2.	ALKANE	23.061	200	J
3.	UNKNOWN	23.292	90	J
4.	UNKNOWN	23.775	100	J
5.	ALKANE	24.282	100	J

1E  
 VOLATILE ORGANICS ANALYSIS SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SVE-1-005

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 9611L037-003

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XBA10

Level: (low/med) LOW

Date Received: 11/01/96

% Moisture: not dec. 18

Date Analyzed: 11/10/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SVE-1-013

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 9611L037-005

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: XB912

Level: (low/med) LOW

Date Received: 11/01/96

% Moisture: not dec. 20

Date Analyzed: 11/09/96

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SVE-1-017

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 9611L037-006

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XB913

Level: (low/med) LOW

Date Received: 11/01/96

% Moisture: not dec. 15

Date Analyzed: 11/09/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
 VOLATILE ORGANICS ANALYSIS SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP BLANKS

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER Lab Sample ID: 9611L037-008

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W110807

Level: (low/med) LOW Date Received: 11/01/96

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 11/08/96

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKTK

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 96LVX268-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XB806

Level: (low/med) LOW

Date Received: 11/08/96

% Moisture: not dec. 0

Date Analyzed: 11/08/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKTL

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 96LVX269-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XB904

Level: (low/med) LOW

Date Received: 11/09/96

% Moisture: not dec. 0

Date Analyzed: 11/09/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
 VOLATILE ORGANICS ANALYSIS SHEET  
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKUL

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL Lab Sample ID: 96LVW231-MB1

Sample wt/vol: 4.00 (g/mL) G Lab File ID: W111404

Level: (low/med) MED Date Received: 11/14/96

% Moisture: not dec. 0 Date Analyzed: 11/14/96

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKTM

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 96LVX270-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: XBA04

Level: (low/med) LOW

Date Received: 11/10/96

% Moisture: not dec. 0

Date Analyzed: 11/10/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKTF

Lab Name: Roy F. Weston, Inc. Contract: 02501004001

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER

Lab Sample ID: 96LVW225-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W110803

Level: (low/med) LOW

Date Received: 11/08/96

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 11/08/96

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



Roy F. Weston, Inc. - Lionville Laboratory  
 VOA ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/01/96

RFW LOT # :9611L037

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MP-1-011	001	S	96LVX268	10/30/96	N/A	11/08/96
MP-2-011	002	S	96LVX269	10/31/96	N/A	11/09/96
MP-2-011	002	M2 S	96LVW231	10/31/96	N/A	11/14/96
SVE-1-005	003	S	96LVX270	10/31/96	N/A	11/10/96
SVE-1-013	005	S	96LVX269	10/31/96	N/A	11/09/96
SVE-1-017	006	S	96LVX269	10/31/96	N/A	11/09/96
SVE-1-017	006 MS	S	96LVX270	10/31/96	N/A	11/10/96
SVE-1-017	006 MSD	S	96LVX270	10/31/96	N/A	11/10/96
TRIP BLANKS	008	W	96LVW225	10/31/96	N/A	11/08/96

LAB QC:

VBLKTK	MB1	S	96LVX268	N/A	N/A	11/08/96
VBLKTK	MB1 BS	S	96LVX268	N/A	N/A	11/08/96
VBLKTL	MB1	S	96LVX269	N/A	N/A	11/09/96
VBLKTL	MB1 BS	S	96LVX269	N/A	N/A	11/09/96
VBLKUL	MB1	S	96LVW231	N/A	N/A	11/14/96
VBLKTM	MB1	S	96LVX270	N/A	N/A	11/10/96
VBLKTM	MB1 BS	S	96LVX270	N/A	N/A	11/10/96
VBLKTF	MB1	W	96LVW225	N/A	N/A	11/08/96
VBLKTF	MB1 BS	W	96LVW225	N/A	N/A	11/08/96

WESTON Analytics Use Only

9611037

# Custody Transfer Record/Lab Work Request



Client <b>Black &amp; Decker - HAMPSTEAD</b>	Refrigerator #	1	6	6	0
Est. Final Proj. Sampling Date <b>8 Nov 1996</b>	#/Type Container	Liquid <b>2/CG</b>			
Work Order # <b>02501-004-001-0300-00</b>		Solid <b>1/CG</b>		<b>1/AG</b>	<b>1/AG</b>
Project Contact/Phone # <b>CHRIS HARRIS/610-701-7203</b>	Volume	Liquid <b>40 ml</b>			
AD Project Manager <b>DYANA SAGGES</b>		Solid <b>125</b>		<b>250</b>	<b>500</b>
QC <b>500</b> Del <b>STO</b> TAT <b>14 DAY</b>	Preservatives	<b>LIGUID HCL</b>			
Date Rec'd <b>11-01-96</b> Date Due <b>11/15/96</b>	ANALYSES REQUESTED		ORGANIC		
Account # <b>0161270</b>			VOA	BNA	Pes/PCB
			Herb	TPH	Total P
				2% Moist.	DTN, pH
				ALL, etc	Metal
					CN
					INORG

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only														
			MS	MSD				VOA	BNA	Pes/PCB	Herb	TPH	Total P	2% Moist.	DTN, pH	ALL, etc	Metal	CN				
	001	MP-1-011			S	10/30/96	1500	X														
	2	MP-2-011				10/31/96	0905	X														
	3	SVE-1-005					1200	X														
	4	SVE-1-011					1220					X(2)	X(2)									
	5	SVE-1-013					1225	X				X										
	6	SVE-1-017					1245	X				X										
	7	SVE-1-019					1250							X	X							
	8	TRIP BLANKS			W		-	X														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
 VOA method 8240  
 TPH method 418.1  
 (1) TKN, pH, Alkalinity, Total phosphorous  
 (2) Sample bottle not full - use leftover volume from sample SVE-1-013, if available and needed.

DATE/REVISIONS:  
 11/6/96. CLIENT ID FOR 004  
 2. CORRECTED PER UNIT  
 3. REVIEW REVISION  
 4.  
 5.  
 6.

WESTON Analytics Use Only

Samples were:	COC Tape was:
1) Shipped <input type="checkbox"/> or <input checked="" type="checkbox"/>	1) Present on Outer Package Y or <input checked="" type="checkbox"/> N
Hand Delivered <input checked="" type="checkbox"/>	2) Unbroken on Outer Package Y or <input checked="" type="checkbox"/> N
Airbill # _____	3) Present on Sample Y or <input checked="" type="checkbox"/> N
2) Ambient of <input checked="" type="checkbox"/> Chilled	4) Unbroken on Sample Y or <input checked="" type="checkbox"/> N
3) Received in Good Condition <input checked="" type="checkbox"/> Y or N	COC Record Present Upon Sample Rec'l <input checked="" type="checkbox"/> Y or N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> Y or N	
5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N	

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Chittam	Jodler	11-1-96	1709				

Discrepancies Between Samples Labels and COC Record? Y or  N  
 NOTES:

022

# Gascoyne Laboratories, Inc.



YOUR **ON-TIME** QUALITY LAB...

Baltimore, MD 21224

(410) 633-1800

(800) GAS-COYN

## REPORT OF ANALYSIS

FAX NO.

(410) 633-5443

Report No. 96-10-689

Report Date: November 13, 1996

Report To: Roy F. Weston

Page: 1 of 1

Sample I.D. Submitted Soil: Black & Decker, dated 10/31/96

Sample Description	Total Plate Count	Detection Limits	By	Date Analyzed
SVE-1-005 (1200)	1,100,000	12,000	TMV	11/02/96
SVE-1-013 (1225)	<12000	12,000	TMV	11/02/96
SVE-1-019 (1250)	<12000	12,000	TMV	11/02/96

### Notes

- (1) Results expressed as a colony forming unit (CFU) per gram on a dry weight basis.
- (2) Analysis performed according to method SM 9215B.
- (3) Date/Time Test Started: 10/31/96 (1800)  
Date/Time Test Completed: 11/02/96 (1800)

William L. Lock  
Laboratory Director

# Custody Transfer Record/Lab Work Request

Lab # 9610689

Client <u>WESTON / Black &amp; Decker</u>	Refrigerator #																			
Est. Final Proj. Sampling Date <u>31 OCT 1996</u>	#/Type Container	Liquid																		
Work Order # <u>02501-004-001</u>		Solid																		
Project Contact/Phone # <u>DYANA SAGES / 610-701-6100</u>	Volume	Liquid																		
AD Project Manager <u>GENISE FLEMING</u>		Solid																		
QC <u>Del</u> <u>TAT</u> <u>14 DAY</u>	Preservatives																			
Date Rec'd	Date Due	<b>ANALYSES REQUESTED</b> →										<b>ORGANIC</b>				<b>INORG</b>				
Account #		VOA	BNA	Pest/PCB	Herb	Total Plate Ct														

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only													
			MS	MSD																	
		<u>SVE-1-005</u>			<u>S</u>	<u>10/21/96</u>	<u>1200</u>														
		<u>SVE-1-013</u>			<u>↓</u>	<u>↓</u>	<u>1225</u>														
		<u>SVE-1-019</u>			<u>↓</u>	<u>↓</u>	<u>1250</u>														

<b>FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS</b>	<b>DATE/REVISIONS:</b>	<b>WESTON Analytics Use Only</b>	
Special Instructions: <u>* Total Plate Count (method 9215B)</u>	1. _____ 2. _____ 3. _____ 4. _____ 5. _____	Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # _____ 2) Ambient or Chilled 3) Received in Good Condition Y or N 4) Labels Indicate Properly Preserved Y or N 5) Received Within Holding Times Y or N	
WESTON Project Contacts: <u>Chris Harris (610) 701-7203 / Dyana Sages (610) 701-6100</u>		COC Tape was: 1) Present on Outer Package Y or N 2) Unbroken on Outer Package Y or N 3) Present on Sample Y or N 4) Unbroken on Sample Y or N COC Record Present Upon Sample Rec't Y or N	

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>10/31</u>	<u>16:30</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>10/31</u>	<u>17:30</u>



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : BLACK & DECKER-HAMPSTEAD  
RFW# : 9611L106

W.O #: 02501-004-001-0300-00  
Date Received: 11-07-96

### GC/MS VOLATILE

The set of samples consisted of five (5) soil samples collected on 11-04,05,06-96.

The samples and their associated QC sample were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 11-14,15-96.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. Matrix spike analyses are associated with RFW lot 9611L037.
6. The method blank contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

*J. Michael Taylor*  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

*11-26-96*

Date

mmz/voa/11-106v.cn

001





## GLOSSARY OF VOA DATA

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF VOA DATA

### ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

	Cust ID:	SVE-2-005	SVE-2-021	SVE-2-035	MP-4-030	MP-6-005	VBLKWE
Sample Information	RFW#:	001	002	003	004	005	96LVX279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.02	0.980	1.04	0.980	0.943	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate	Toluene-d8	102 %	101 %	100 %	96 %	100 %	101 %
Recovery	Bromofluorobenzene	102 %	98 %	100 %	96 %	97 %	102 %
	1,2-Dichloroethane-d4	98 %	94 %	96 %	95 %	95 %	101 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Chloromethane		12 U	12 U	12 U	12 U	11 U	10 U
Bromomethane		12 U	12 U	12 U	12 U	11 U	10 U
Vinyl Chloride		12 U	12 U	12 U	12 U	11 U	10 U
Chloroethane		12 U	12 U	12 U	12 U	11 U	10 U
Methylene Chloride		9 B	9 B	6 B	9 B	8 B	7
Acetone		13 B	12 U	12 U	12 U	11 U	15
Carbon Disulfide		6 U	6 U	6 U	6 U	6 U	5 U
1,1-Dichloroethene		6 U	6 U	6 U	6 U	6 U	5 U
1,1-Dichloroethane		6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	6 U	6 U	5 U
Chloroform		6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	6 U	6 U	5 U
2-Butanone		12 U	12 U	12 U	12 U	11 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	6 U	6 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	6 U	6 U	5 U
Vinyl Acetate		12 U	12 U	12 U	12 U	11 U	10 U
Bromodichloromethane		6 U	6 U	6 U	6 U	6 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	6 U	6 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	6 U	6 U	5 U
Trichloroethene		4 J	6 U	6 U	10	6 U	5 U
Dibromochloromethane		6 U	6 U	6 U	6 U	6 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	22	6 U	5 U
Benzene		6 U	6 U	6 U	6 U	6 U	5 U
Trans-1,3-Dichloropropene		6 U	6 U	6 U	6 U	6 U	5 U
Bromoform		6 U	6 U	6 U	6 U	6 U	5 U
4-Methyl-2-pentanone		12 U	12 U	12 U	12 U	11 U	10 U
2-Hexanone		12 U	12 U	12 U	12 U	11 U	10 U
Tetrachloroethene		6 U	6 U	6 U	6 U	6 U	5 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	6 U	6 U	5 U

\*= Outside of EPA CLP QC limits.

004



Cust ID: SVE-2-005 SVE-2-021 SVE-2-035 MP-4-030 MP-6-005 VBLKWE

RFW#: 001 002 003 004 005 96LVX279-MB1

Toluene	6 U	6 U	6 U	6 U	6 U	5 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	5 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	5 U
Styrene	6 U	6 U	6 U	6 U	6 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	5 U

\*= Outside of EPA CLP QC limits.

005

Roy F. Weston, Inc. - Lionville Laboratory  
VOA ANALYTICAL DATA PACKAGE FOR  
BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/07/96

RFW LOT # :9611L106

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SVE-2-005	001	S	96LVX279	11/04/96	N/A	11/15/96
SVE-2-021	002	S	96LVX279	11/04/96	N/A	11/15/96
SVE-2-035	003	S	96LVX279	11/04/96	N/A	11/15/96
MP-4-030	004	S	96LVX279	11/05/96	N/A	11/15/96
MP-6-005	005	S	96LVX279	11/06/96	N/A	11/15/96

LAB QC:

VBLKWE	MB1	S	96LVX279	N/A	N/A	11/14/96
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WESTON Analytics Use Only

9611106

# Custody Transfer Record/Lab Work Request

200

Client <b>BLACK &amp; DECKER - HAMPSHIRE</b>		Refrigerator #	1											
Est. Final Proj. Sampling Date <b>8 NOV. 1996</b>		#/Type Container	Liquid											
Work Order # <b>02501-004-001-0300-00</b>		Solid	<b>1/CG</b>	<b>1/AG</b>										
Project Contact/Phone # <b>CHRIS HARRIS/610-701-7203</b>		Volume	Liquid											
AD Project Manager <b>OVANA SAGGES</b>		Solid	<b>125</b>	<b>250</b>										
QC <b>STD</b> Del <b>STD</b> TAT <b>14 DAY</b>		Preservatives												
Date Rec'd <b>11/7/96</b> Date Due <b>11-21-96</b>		ANALYSES REQUESTED →	ORGANIC					INORG						
Account # <b>BLADCHAMP</b>			VOA	BNA	Res/PCB	Herb	TPH	Metal	CN					

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only													
			MS	MSD																	
	001	SVE-2-005			S	11/4/96	1440	X													
	2	SVE-2-021*			I	↓	1515	X													
	3	SVE-2-035			I	↓	1640	X													
	4	MP-4-030			I	↓	11/5/96	1615	X												
	5	MP-6-005			I	↓	11/6/96	1230	X												

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
 VOA method 8240  
 TPH method 418.1  
 \*(2) 115ml VOA bottles included for "SVE-2-021"  
 \*14 DAY TAT\*  
 11.80C

DATE/REVISIONS:

- 
- 
- 
- 
- 
- 

WESTON Analytics Use Only

Samples were 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered <input type="checkbox"/> Airbill # <b>X</b>	COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample Y or <input checked="" type="checkbox"/> N 4) Unbroken on Sample Y or <input checked="" type="checkbox"/> N COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N
2) Ambient or Chilled <input checked="" type="checkbox"/> or N	3) Received in Good Condition <input checked="" type="checkbox"/> or N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N	5) Received Within Holding Times <input checked="" type="checkbox"/> or N

Discrepancies Between Samples Labels and COC Record? Y or  N

NOTES:  
 \* 0893927434

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<i>Chris Harris</i>	FED EX	11/6/96	1500				
<i>Debra</i>	<i>Sagges</i>	11/7/96	0900				





Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

### LIONVILLE LABORATORY ANALYTICAL REPORT

Client : BLACK & DECKER-HAMPSTEAD  
RWF# : 9611L124

W.O #: 02501-004-001-0300-00  
Date Received: 11-08-96

#### GC/MS VOLATILE

The set of samples consisted of four (4) soil samples collected on 11-06,07-96.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 11-19,20-96.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. Matrix spike analyses are associated with RFW lot 9611L037.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks contained the common contaminants Methylene Chloride and Acetone at levels less than 3x the CRQL.

*Bruce C. Miller, Vice President*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

11-26-96  
Date

mmz/voa/11-124v.cn

001





## GLOSSARY OF VOA DATA

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF VOA DATA

### ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.

Roy F. Weston, Inc. Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/25/96 18:08

RFW Batch Number: 9611L124

Client: BLACK&DECKER-HAMPSTEAD

Work Order: 02501004001 Page: 1a

	Cust ID:	SVE-3-011	SVE-3-020	SVE-3-036	MP-7-031	VBLKVJ	VBLKVJ BS
Sample Information	RFW#:	001	002	003	004	96LVX285-MB1	96LVX285-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

	Toluene-d8	102 %	104 %	104 %	102 %	104 %	104 %
Surrogate Bromofluorobenzene	102 %	99 %	102 %	97 %	104 %	106 %	
Recovery 1,2-Dichloroethane-d4	98 %	94 %	95 %	100 %	98 %	97 %	

	fl	fl	fl	fl	fl	fl
Chloromethane	12 U	13 U	12 U	12 U	10 U	10 U
Bromomethane	12 U	13 U	12 U	12 U	10 U	10 U
Vinyl Chloride	12 U	13 U	12 U	12 U	10 U	10 U
Chloroethane	12 U	13 U	12 U	12 U	10 U	10 U
Methylene Chloride	8 B	11 B	9 B	11 B	10	7 B
Acetone	10 BJ	11 BJ	7 BJ	8 BJ	8 J	11 B
Carbon Disulfide	6 U	6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene	6 U	6 U	6 U	6 U	5 U	71 %
1,1-Dichloroethane	6 U	6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)	6 U	6 U	6 U	6 U	5 U	5 U
Chloroform	6 U	6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	5 U	5 U
2-Butanone	12 U	13 U	12 U	12 U	10 U	10 U
1,1,1-Trichloroethane	6 U	6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride	6 U	6 U	6 U	6 U	5 U	5 U
Vinyl Acetate	12 U	13 U	12 U	12 U	10 U	10 U
Bromodichloromethane	6 U	6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane	6 U	6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	5 U	5 U
Trichloroethene	6 U	18	6 U	6 U	5 U	94 %
Dibromochloromethane	6 U	6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	5 U	5 U
Benzene	6 U	6 U	6 U	6 U	5 U	93 %
Trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	5 U	5 U
Bromoform	6 U	6 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone	12 U	13 U	12 U	12 U	10 U	10 U
2-Hexanone	12 U	13 U	12 U	12 U	10 U	10 U
Tetrachloroethene	6 U	6 U	6 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

004



Cust ID: SVE-3-011 SVE-3-020 SVE-3-036 MP-7-031 VBLKVJ VBLKVJ BS

RFW#:	001	002	003	004	96LVX285-MB1	96LVX285-MB1
Toluene	6 U	6 U	6 U	6 U	5 U	95 %
Chlorobenzene	6 U	6 U	6 U	6 U	5 U	92 %
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

500

Cust ID: VBLKVP

Sample Information RFW#: 96LVX287-MB1  
 Matrix: SOIL  
 D.F.: 1.00  
 Units: UG/KG

300

Surrogate	Recovery	Concentration	Units
Toluene-d8		103	%
Bromofluorobenzene		99	%
1,2-Dichloroethane-d4		102	%
=====fl=====fl=====fl=====fl=====fl=====fl=====fl			
Chloromethane		10	U
Bromomethane		10	U
Vinyl Chloride		10	U
Chloroethane		10	U
Methylene Chloride		6	
Acetone		9	J
Carbon Disulfide		5	U
1,1-Dichloroethene		5	U
1,1-Dichloroethane		5	U
1,2-Dichloroethene (total)		5	U
Chloroform		5	U
1,2-Dichloroethane		5	U
2-Butanone		10	U
1,1,1-Trichloroethane		5	U
Carbon Tetrachloride		5	U
Vinyl Acetate		10	U
Bromodichloromethane		5	U
1,2-Dichloropropane		5	U
cis-1,3-Dichloropropene		5	U
Trichloroethene		5	U
Dibromochloromethane		5	U
1,1,2-Trichloroethane		5	U
Benzene		5	U
Trans-1,3-Dichloropropene		5	U
Bromoform		5	U
4-Methyl-2-pentanone		10	U
2-Hexanone		10	U
Tetrachloroethene		5	U
1,1,2,2-Tetrachloroethane		5	U

\*= Outside of EPA CLP QC limits.

Cust ID: VBLKVP

RFW#: 96LVX287-MB1

---

Toluene	5	U
Chlorobenzene	5	U
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

\*= Outside of EPA CLP QC limits.

100

Roy F. Weston, Inc. - Lionville Laboratory  
VOA ANALYTICAL DATA PACKAGE FOR  
BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/08/96

RFW LOT # :9611L124

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SVE-3-011	001	S	96LVX285	11/06/96	N/A	11/19/96
SVE-3-020	002	S	96LVX285	11/06/96	N/A	11/19/96
SVE-3-036	003	S	96LVX285	11/06/96	N/A	11/19/96
MP-7-031	004	S	96LVX287	11/07/96	N/A	11/20/96

LAB QC:

VBLKVJ	MB1	S	96LVX285	N/A	N/A	11/19/96
VBLKVJ	MB1 BS	S	96LVX285	N/A	N/A	11/19/96
VBLKVP	MB1	S	96LVX287	N/A	N/A	11/20/96

WESTON Analytics Use Only  
9611124

# Custody Transfer Record/Lab Work Request

Client Black & Decker - HAMPSTEAD  
 Est. Final Proj. Sampling Date 8 NOV. 96  
 Work Order # 02501-004-001-0300-00  
 Project Contact/Phone # CHRIS HARRIS / X7203  
 AD Project Manager PVANA SAGES  
 QC STD Del STD TAT 14 DAY  
 Date Rec'd 11/8/96 Date Due 11-22-96  
 Account # BLADE CHAMP

Refrigerator #	1	6																		
#/Type Container	Liquid																			
	Solid	<u>1/CF</u>								<u>1/AG</u>										
Volume	Liquid																			
	Solid	<u>125</u>								<u>250</u>										
Preservatives		<u>1</u>								<u>1</u>										
ANALYSES REQUESTED →	ORGANIC					INORG														
	VOA	BNA	Pes/PCB	Herb		Metal	CN													
										<u>TPH</u>										

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only														
			MS	MSD				VOA	BNA	Pes/PCB	Herb	Metal	CN									
	<u>001</u>	<u>SVE-3-011</u>			<u>S</u>	<u>11/6/96</u>	<u>1620</u>	<u>X</u>														
	<u>2</u>	<u>SVE-3-020</u>			<u>I</u>	<u>↓</u>	<u>1640</u>	<u>X</u>														
	<u>3</u>	<u>SVE-3-036</u>			<u>↓</u>	<u>↓</u>	<u>1725</u>	<u>X</u>														
	<u>4</u>	<u>MP-7-031</u>			<u>V</u>	<u>11/7/96</u>	<u>1315</u>	<u>X</u>														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
VOA method 8240  
TPH Method 418.1

DATE/REVISIONS:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

WESTON Analytics Use Only	
Samples were: 1) Shipped <input type="checkbox"/> or Hand Delivered <input checked="" type="checkbox"/> Airbill # _____	COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> Y or N
2) Ambient or <u>Chilled</u>	2) Unbroken on Outer Package <input checked="" type="checkbox"/> Y or N
3) Received in Good Condition <input checked="" type="checkbox"/> Y or N	3) Present on Sample Y or <input checked="" type="checkbox"/> N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> Y or N	4) Unbroken on Sample Y or <input checked="" type="checkbox"/> N
5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N	COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> Y or N

\* 14 DAY TAT

11.30C

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11/8/96</u>	<u>1030</u>				

Discrepancies Between Samples Labels and COC Record? Y or  N  
 NOTES:



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

### LIONVILLE LABORATORY ANALYTICAL REPORT

Client : BLACK & DECKER-HAMPSTEAD  
RFW# : 9611L106

W.O. #: 02501-004-001-0300-00  
Date Received: 11-07-96

#### INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 5 soil samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Holding time for Total Recoverable Petroleum Hydrocarbons (PHC) is not specified in the soil extraction method 9071 (SW846) or test method 418.1 (EPA 600/4-79-020).
4. The cooler temperature is recorded on the chain-of-custody.
5. The method blank for PHC was within method criteria.
6. The Laboratory Control Sample (LCS) for PHC was within the laboratory control limits.
7. The matrix spike recovery for PHC was within the 75-125% control limits.
8. The replicate analysis for Percent Solids sample MP-6-005 was within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid PHC samples are reported on a dry weight basis.

*Bruce C. Gillis*  
p2 J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

12-4-96  
Date

njp/skl/11-106

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



# WET CHEMISTRY

## METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	_ D2216-80		
%Moisture	_ D2216-80		_ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	_ D2216-80		
ASTM Extraction in Water	_ D3987-81/85		
BTU	_ D240-87		
CEC		_ 9081	_ c
Corrosivity _ by coupon _ by pH		_ 1110 (mod) _ 9045	
Cyanide, Total		_ 9010	_ ILMO4.0 (e)
Cyanide, Reactive		_ Sec 7.3	
Density			_ b
Halides, Extractable Organic			_ EPA 600/4/84-008 (mod)
Halides, Total			_ EPA 600/4/84-008 (mod)
EP-Toxicity		_ 1310A	
Flash Point		_ 1010	
Ignitability		_ 1010	
Carbon, Total Organic (by LOI)			_ c
Oil and Grease		_ 9071A	
Carbon, Total Organic		_ 9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	_ D240-87 (mod)	_ 5050	
Petroleum Hydrocarbons, Total Recoverable		✓ 9071	✓ EPA 418.1 (mod)
pH, Soil		_ 9045B	
Sulfide, Reactive		_ Sec 7.3	
Specific Gravity	_ D1429-76C		
Sulfur, Total		_ 9056	
TCLP		_ 1311	
TCLV		_ 1311	
Synthetic Precipitation Leach		_ 1312	
Chlorine, Total		_ 9056	
Paint Filter		_ 9095	

Other: \_\_\_\_\_

Method: \_\_\_\_\_

## METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

RFW 21-21L-034/D-06/96



ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/25/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L106

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	SVE-2-005	% Solids	86.2	%	0.10	1.0
		Petroleum Hydrocarbons	13.2	MG/KG	3.9	1.0
-002	SVE-2-021	% Solids	80.9	%	0.10	1.0
		Petroleum Hydrocarbons	13.1	MG/KG	4.1	1.0
-003	SVE-2-035	% Solids	85.4	%	0.10	1.0
		Petroleum Hydrocarbons	8.8	MG/KG	3.9	1.0
-004	MP-4-030	% Solids	81.9	%	0.10	1.0
		Petroleum Hydrocarbons	19.9	MG/KG	4.1	1.0
-005	MP-6-005	% Solids	82.6	%	0.10	1.0
		Petroleum Hydrocarbons	4.0	u MG/KG	4.0	1.0

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/25/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L106

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	96LHC130-MB1	Petroleum Hydrocarbons	3.3	u MG/KG	3.3	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/25/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L106

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-005	MP-6-005	Petroleum Hydrocarbons	1310	2.2	1360	96.8	10.0
BLANK10	96LHC130-MB1	Petroleum Hydrocarbons	133	3.3 u	140	95.2	1.0

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/25/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L106

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-005REP	MP-6-005	% Solids	82.6	82.9	0.42	1.0

Roy F. Weston, Inc. - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/07/96

RFW LOT # :9611L106

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SVE-2-005						
% SOLIDS	001	S	96L&S228	11/04/96	11/08/96	11/11/96
PETROLEUM HYDROCARBO	001	S	96LHC130	11/04/96	11/21/96	11/21/96
SVE-2-021						
% SOLIDS	002	S	96L&S228	11/04/96	11/08/96	11/11/96
PETROLEUM HYDROCARBO	002	S	96LHC130	11/04/96	11/21/96	11/21/96
SVE-2-035						
% SOLIDS	003	S	96L&S228	11/04/96	11/08/96	11/11/96
PETROLEUM HYDROCARBO	003	S	96LHC130	11/04/96	11/21/96	11/21/96
MP-4-030						
% SOLIDS	004	S	96L&S228	11/05/96	11/08/96	11/11/96
PETROLEUM HYDROCARBO	004	S	96LHC130	11/05/96	11/21/96	11/21/96
MP-6-005						
% SOLIDS	005	S	96L&S228	11/06/96	11/08/96	11/11/96
% SOLIDS	005 REP	S	96L&S228	11/06/96	11/08/96	11/11/96
PETROLEUM HYDROCARBO	005	S	96LHC130	11/06/96	11/21/96	11/21/96
PETROLEUM HYDROCARBO	005 MS	S	96LHC130	11/06/96	11/21/96	11/21/96

LAB QC:

PETROLEUM HYDROCARBO	MB1	S	96LHC130	N/A	11/21/96	11/21/96
PETROLEUM HYDROCARBO	MB1 BS	S	96LHC130	N/A	11/21/96	11/21/96

9611106

# Custody Transfer Record/Lab Work Request



Client <b>BLACK &amp; DECKER - HAMPSHIRE</b>	Refrigerator #	1	6														
Est. Final Proj. Sampling Date <b>8 NOV. 1996</b>	#/Type Container	Liquid															
Work Order # <b>02501-004-001-0300-00</b>		Solid	1/CG														
Project Contact/Phone # <b>CHRIS HARRIS/610-701-7203</b>	Volume	Liquid															
AD Project Manager <b>OVANA SAGLES</b>		Solid	125														
QC <b>STD</b> Del <b>STD</b> TAT <b>14 DAY</b>	Preservatives		250														
Date Rec'd <b>11/7/96</b> Date Due <b>11-21-96</b>	ANALYSES REQUESTED	<table border="1"> <tr> <th colspan="5">ORGANIC</th> <th colspan="2">INORG</th> </tr> <tr> <td>VOA</td> <td>BNA</td> <td>Pest/PCB</td> <td>Herb</td> <td>TPH</td> <td>Metal</td> <td>CN</td> </tr> </table>		ORGANIC					INORG		VOA	BNA	Pest/PCB	Herb	TPH	Metal	CN
ORGANIC					INORG												
VOA	BNA	Pest/PCB	Herb	TPH	Metal	CN											
Account # <b>BLACK CHAMP</b>																	

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only														
			MS	MSD				1	2	3	4	5	6	7								
										8	9	10	11	12								
	001	SVE-2-005			S	11/4/96	1440	X														
	2	SVE-2-021*					1515	X														
	3	SVE-2-035					1640	X														
	4	MP-4-030				11/5/96	1615	X														
	5	MP-6-005				11/6/96	1230	X														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS				DATE/REVISIONS:				WESTON Analytics Use Only			
Special Instructions: VOA method 8240 TPH method 418-1 *(2) 115 ml VOA bottles included for "SVE-2-021" *14 DAY TAT* Cooling 11.80C				1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____				Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # <input checked="" type="checkbox"/> 2) Ambient or <input checked="" type="checkbox"/> Chilled 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample Y or N 4) Unbroken on Sample Y or N COC Record Present Upon Sample Rec'l <input checked="" type="checkbox"/> or N			
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N <input checked="" type="checkbox"/>			
Clinton	FED EX	11/6/96	1500					NOTES: * 12893927434			
Deled	Jinder	11/7/96	0900								



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
610-701-6100 • Fax 610-701-6140

**LIONVILLE LABORATORY  
ANALYTICAL REPORT**

**Client : BLACK & DECKER-HAMPSTEAD**  
**RFW# : 9611L124**

**W.O. #: 02501-004-001-0300-00**  
**Date Received: 11-08-96**

**INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature is recorded on the chain-of-custody.
5. The method blanks were within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries for PHC sample MP-7-031 were within the 75-125% control limits. The matrix spike duplicate for was outside the 20% Relative Percent Difference control limit. The poor reproducibility may be attributed to sample inhomogeneity.
8. Results for solid samples are reported on a dry weight basis.

*Bruce C. Taylor, Vice President*  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

12/4/96  
Date

njpl11-124

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



# WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	_ D2216-80		
%Moisture	_ D2216-80		_ ILMO4.0 (e)
%Solids			_ ILMO4.0 (e)
%Volatile Solids	_ D2216-80		
ASTM Extraction in Water	_ D3987-81/85		
BTU	_ D240-87		
CEC		_ 9081	_ c
Corrosivity __ by coupon __ by pH		_ 1110 (mod) _ 9045	
Cyanide, Total		_ 9010	_ ILMO4.0 (e)
Cyanide, Reactive		_ Sec 7.3	
Density			_ b
Halides, Extractable Organic			_ EPA 600/4/84-008 (mod)
Halides, Total			_ EPA 600/4/84-008 (mod)
EP-Toxicity		_ 1310A	
Flash Point		_ 1010	
Ignitability		_ 1010	
Carbon, Total Organic (by LOI)			_ c
Oil and Grease		_ 9071A	
Carbon, Total Organic		_ 9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	_ D240-87 (mod)	_ 5050	
Petroleum Hydrocarbons, Total Recoverable		_ 9071	_ EPA 418.1 (mod)
pH, Soil		_ 9045B	
Sulfide, Reactive		_ Sec 7.3	
Specific Gravity	_ D1429-76C		
Sulfur, Total		_ 9056	
TCLP		_ 1311	
TCLV		_ 1311	
Synthetic Precipitation Leach		_ 1312	
Chlorine, Total		_ 9056	
Paint Filter		_ 9095	

Other: \_\_\_\_\_

Method: \_\_\_\_\_



## METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

- MB = Method or Preparation Blank.  
MS = Matrix Spike.  
MSD = Matrix Spike Duplicate.  
REP = Sample Replicate  
LC = Laboratory Control Sample.  
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

RFW 21-21L-034/D-06/96

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/27/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L124

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	SVE-3-011	% Solids	84.4	%	0.10	1.0
		Petroleum Hydrocarbons	8.5	MG/KG	3.9	1.0
-002	SVE-3-020	% Solids	77.2	%	0.10	1.0
		Petroleum Hydrocarbons	13.2	MG/KG	4.3	1.0
-003	SVE-3-036	% Solids	86.3	%	0.10	1.0
		Petroleum Hydrocarbons	9.6	MG/KG	3.9	1.0
-004	MP-7-031	% Solids	84.8	%	0.10	1.0
		Petroleum Hydrocarbons	7.5	MG/KG	3.9	1.0

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/27/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L124

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	96LHC130-MB1	Petroleum Hydrocarbons	3.3	u MG/KG	3.3	1.0
BLANK10	96LHC132-MB1	Petroleum Hydrocarbons	3.3	u MG/KG	3.3	1.0

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/27/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
 WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L124

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-004	MP-7-031	Petroleum Hydrocarbons	1120	7.5	1320	84.1	10.0
		Petroleum Hydrocarbons	1440	7.5	1320	108.1	10.0
BLANK10	96LHC130-MB1	Petroleum Hydrocarbons	133	3.3 u	140	95.2	1.0
BLANK10	96LHC132-MB1	Petroleum Hydrocarbons	140	3.3 u	140	100	1.0

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/27/96

CLIENT: BLACK&DECKER-HAMPSTEAD  
WORK ORDER: 02501-004-001-0300-00

WESTON BATCH #: 9611L124

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
-----	-----	-----	-----	-----	-----	-----
-004	MP-7-031	Petroleum Hydrocarbons	84.1	108.1	25.0	

Roy F. Weston, Inc. - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 BLACK&DECKER-HAMPSTEAD

DATE RECEIVED: 11/08/96

RFW LOT # :9611L124

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SVE-3-011						
% SOLIDS	001	S	96L&S229	11/06/96	11/11/96	11/12/96
PETROLEUM HYDROCARBO	001	S	96LHC130	11/06/96	11/21/96	11/21/96
SVE-3-020						
% SOLIDS	002	S	96L&S229	11/06/96	11/11/96	11/12/96
PETROLEUM HYDROCARBO	002	S	96LHC130	11/06/96	11/21/96	11/21/96
SVE-3-036						
% SOLIDS	003	S	96L&S229	11/06/96	11/11/96	11/12/96
PETROLEUM HYDROCARBO	003	S	96LHC130	11/06/96	11/21/96	11/21/96
MP-7-031						
% SOLIDS	004	S	96L&S229	11/07/96	11/11/96	11/12/96
PETROLEUM HYDROCARBO	004	S	96LHC132	11/07/96	11/22/96	11/26/96
PETROLEUM HYDROCARBO	004 MS	S	96LHC132	11/07/96	11/22/96	11/26/96
PETROLEUM HYDROCARBO	004 MSD	S	96LHC132	11/07/96	11/22/96	11/26/96

LAB QC:

PETROLEUM HYDROCARBO	MB1	S	96LHC130	N/A	11/21/96	11/21/96
PETROLEUM HYDROCARBO	MB1 BS	S	96LHC130	N/A	11/21/96	11/21/96
PETROLEUM HYDROCARBO	MB1	S	96LHC132	N/A	11/22/96	11/26/96
PETROLEUM HYDROCARBO	MB1 BS	S	96LHC132	N/A	11/22/96	11/26/96

96114124

# Custody Transfer Record/Lab Work Request



Client <b>Black &amp; Decker - HAMPSTEAD</b>	Refrigerator #	1	6				
Est. Final Proj. Sampling Date <b>8 NOV. 96</b>	#/Type Container	Liquid					
Work Order # <b>02501-004-001-0300-00</b>		Solid	1/125				
Project Contact/Phone # <b>CHRIS HARRIS / X7203</b>	Volume	Liquid					
AD Project Manager <b>DYANA SAGES</b>		Solid	1/250				
QC <b>STD</b> Del <b>STD</b> TAT <b>14 DAY</b>	Preservatives						
Date Rec'd <b>11/8/96</b> Date Due <b>11-22-96</b>	ANALYSES REQUESTED →	ORGANIC				INORG	
Account # <b>BLADE CHAMP</b>		VOA	BNA	Pest/PCB	Herb	Metal	CN

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS MSD	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only									
							2624H	1PHC								
							001	SVE-3-011	S	11/6/96	1620	X				
12	SVE-3-020	↓	↓	1640	X											
13	SVE-3-036	↓	↓	1725	X											
14	MP-7-031	↓	11/7/96	1315	X											

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS				DATE/REVISIONS:				WESTON Analytics Use Only			
Special Instructions: VOA method 8240 TPH method 418.1  * 14 DAY TAT				1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____				Samples were: 1) Shipped ___ or Hand Delivered <input checked="" type="checkbox"/> Airbill # _____ 2) Ambient or Chilled <input checked="" type="checkbox"/> 3) Received in Good Condition <input checked="" type="checkbox"/> 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> 5) Received Within Holding Times <input checked="" type="checkbox"/>			
Circ Temp = 11.30C				COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> 2) Unbroken on Outer Package <input checked="" type="checkbox"/> 3) Present on Sample Y or N <input checked="" type="checkbox"/> 4) Unbroken on Sample Y or N <input checked="" type="checkbox"/> COC Record Present Upon Sample Rec'l <input checked="" type="checkbox"/>							
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N <input checked="" type="checkbox"/> NOTES:			
	Joller	11/8/96	1030								

**Table 1**  
**Geotechnical Tests Performed, Reference Methods and Test Numbers**

Test Parameter	Method <sup>1</sup>	Test Numbers
Total Porosity	D 854/2937	2
Permeability of Fine Grain Soils	D 5084	2

<sup>1</sup> All analytical methods derived from the Annual Book of ASTM Standards, Section 4. Volume 4.08, Soil and Rock; building Stones; Geotextiles. American Society of Testing Materials, Philadelphia, PA, 1993 unless noted otherwise.



ROY F. WESTON, INC. ENVIRONMENTAL TECHNOLOGY LABORATORY

ASTM D 5084 - HYDRAULIC CONDUCTIVITY OF SATURATED MATERIALS  
USING A FLEXI-WALL PERMEAMETER WITH BACK PRESSURE

PROJECT	Black & Decker	PROJECT SAMPLE I. D.	SVE-1-009
JOB NUMBER	9611X001	ETL SAMPLE NUMBER	001
W. O. NUMBER	02501-004-001	TEST PERIOD	11/08/96 to 11/15/96

SPECIMEN DESCRIPTION

Specimen extruded from a 2.8" diameter by 30" long Shelby tube. Specimen recovered from the 5-11" interval as measured from the bottom of the tube. Sample is an orange-brown gravelly silt-like material.

SPECIMEN DATA	Initial(1)	Final(2)
Wet Weight, grams	978	1039
Dry Weight, grams	808	816
Diameter, cm	7.12	6.81
Length, cm	14.13	12.87
Volume, cc	562	469
Moisture Content, % dry	21.0	27.3
Wet Unit Weight, pcf	108	138
Dry Unit Weight, pcf	90	109
Specific Gravity	2.67	2.67
Void Ratio	0.86	0.54
Porosity, %	46.3	34.9
Pore Volume, cc	260	164
Degree of Saturation, %	65.3	136.1

TEST CRITERIA

Soil Type, USCS Classification	ML
Average Sample Depth, feet	< 10
Average Wet Unit Weight, pcf	108
Effective Stress Envelope, degrees	32
Earth Pressure Coefficient, Ko	0.47
Effective Horizontal Stress, psi	3.2
Maximum Possible Gradient	10.9
Selected Target Gradient	10.9
Target Differential Pressure, psi	2.2
Target Cell Burette Pressure, psi	63.0
Target Outlet Burette Pressure, psi	60.0
Target Inlet Burette Pressure, psi	62.0

SATURATED HYDRAULIC CONDUCTIVITY  
AVERAGE TEST RESULTS (3)

Cell Pressure, psi	63.1
Outlet Pressure, psi	60.0
Inlet Pressure, psi	62.3
Differential Pressure, psi	2.3
Confining Pressure, psi	3.1
Hydraulic Gradient	12.6
Inlet Volume/Outlet Volume Ratio	1.0
Permeation Time, days	1.6
Permeation Volume, liters	0.06
Permeation Volume, pore volumes	0.39
Hydraulic Conductivity, cm/sec @ 20C	1.00 E-06
Intrinsic Permeability, darcys @ 20C	1.04 E-03

NOTES

- (1) Initial: parameters measured after compaction and extrusion from mold and prior to saturation and consolidation.
- (2) Final: parameters measured after saturation and consolidation at reported confining pressure.
- (3) Average of last four measurements.

ROY F. WESTON, INC. ENVIRONMENTAL TECHNOLOGY LABORATORY

ASTM D 5084 - HYDRAULIC CONDUCTIVITY OF SATURATED MATERIALS  
USING A FLEXI-WALL PERMEAMETER WITH BACK PRESSURE

PROJECT	Black & Decker	PROJECT SAMPLE I. D.	SVE-1-015
JOB NUMBER	9611X001	ETL SAMPLE NUMBER	002
W. O. NUMBER	02501-004-001	TEST PERIOD	11/07/96 to 11/15/96

SPECIMEN DESCRIPTION

Specimen extruded from a 2.8" diameter by 30" long Shelby tube. Specimen recovered from the 1-7" interval as measured from the bottom of the tube. Sample is an orange-brown gravelly silt-like material.

SPECIMEN DATA	Initial(1)	Final(2)
Wet Weight, grams	572	635
Dry Weight, grams	494	456
Diameter, cm	7.24	7.20
Length, cm	8.34	8.21
Volume, cc	344	334
Moisture Content, % dry	15.9	39.3
Wet Unit Weight, pcf	104	119
Dry Unit Weight, pcf	90	85
Specific Gravity	2.85	2.85
Void Ratio	0.99	1.09
Porosity, %	49.7	52.2
Pore Volume, cc	171	174
Degree of Saturation, %	46.1	102.9

TEST CRITERIA	
Soil Type, USCS Classification	ML
Average Sample Depth, feet	14.0
Average Wet Unit Weight, pcf	104
Effective Stress Envelope, degrees	32
Earth Pressure Coefficient, Ko	0.47
Effective Horizontal Stress, psi	4.8
Maximum Possible Gradient	31.6
Selected Target Gradient	30.0
Target Differential Pressure, psi	3.6
Target Cell Burette Pressure, psi	64.6
Target Outlet Burette Pressure, psi	60.0
Target Inlet Burette Pressure, psi	63.4

SATURATED HYDRAULIC CONDUCTIVITY AVERAGE TEST RESULTS (3)	
Cell Pressure, psi	64.6
Outlet Pressure, psi	60.0
Inlet Pressure, psi	63.5
Differential Pressure, psi	3.5
Confining Pressure, psi	4.6
Hydraulic Gradient	30.0
Inlet Volume/Outlet Volume Ratio	1.0
Permeation Time, days	0.1
Permeation Volume, liters	0.89
Permeation Volume, pore volumes	5.12
Hydraulic Conductivity, cm/sec @ 20C	1.33 E-04
Intrinsic Permeability, darcys @ 20C	1.38 E-01

NOTES

- (1) Initial: parameters measured after compaction and extrusion from mold and prior to saturation and consolidation.
- (2) Final: parameters measured after saturation and consolidation at reported confining pressure.
- (3) Average of last four measurements.

9611 X 001

# Custody Transfer Record/Lab Work Request

Client <b>Black &amp; Decker</b>	Refrigerator #																		
Est. Final Proj. Sampling Date <b>31 Oct 1996</b>	#/Type Container	Liquid																	
Work Order # <b>02501-004-001-</b>		Solid																	
Project Contact/Phone # <b>CHRIS HARRIS / x 7203</b>	Volume	Liquid																	
AD Project Manager <b>JOE MARTINO</b>		Solid																	
QC <b>Del TAT 14 DAY</b>	Preservatives																		
Date Rec'd _____ Date Due _____	ANALYSES REQUESTED →	ORGANIC				INORG													
Account # _____		VOA	BNA	Pest/PCB	Herb	Metal	CN												

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only														
			MS	MSD																		
			001	SVE-1-009						S	10/31/96	1010										
002	SVE-1-015			↓	↓	1230																

<b>FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS</b>				<b>DATE/REVISIONS:</b>				<b>WESTON Analytics Use Only</b>			
Special Instructions: <b>Shelby Tubes -</b> • Hydraulic Cond. (ASTM D5084) • Porosity (ASA 18-21)				1. _____				<b>Samples were:</b> 1) Shipped ___ or Hand Delivered ___ Airbill # _____ 2) Ambient or Chilled 3) Received in Good Condition Y or N 4) Labels Indicate Properly Preserved Y or N 5) Received Within Holding Times Y or N  <b>COC Tape was:</b> 1) Present on Outer Package Y or N 2) Unbroken on Outer Package Y or N 3) Present on Sample Y or N 4) Unbroken on Sample Y or N COC Record Present Upon Sample Rec't Y or N			
				2. _____							
				3. _____							
				4. _____							
				5. _____							
				6. _____							
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N NOTES:			
<i>[Signature]</i>	<i>[Signature]</i>	11/1/96	1100								

**AIR ANALYTICAL DATA PACKAGES**

January 07, 1997

Mr. Chris Harris  
Roy F. Weston, Inc.  
1 Weston Way  
West Chester, PA 19380-1499

RE: PACE Project No. 961212.502  
Client Reference: Black and Decker -Hampstead

Dear Mr. Harris:

Enclosed is the report of laboratory analyses for samples received  
December 12, 1996.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free  
to contact us.

Sincerely,



Joseph W. Novotny  
Project Manager

Enclosures

**REPORT OF LABORATORY ANALYSIS**

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc.

# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Roy F. Weston, Inc.  
1 Weston Way  
West Chester, PA 19380-1499

January 07, 1997  
PACE Project Number: 961212502

Attn: Mr. Chris Harris

Client Reference: Black and Decker -Hampstead

PACE Sample Number: 10 0216224  
Date Collected: 12/10/96  
Time Collected: 13:40  
Date Received: 12/12/96  
ASMP2D-01

<u>Parameter</u>	<u>Units</u>	<u>PRI</u>	<u>          </u>
------------------	--------------	------------	-------------------

## ORGANIC ANALYSIS

TO13: POLY AROMATIC HYDROCARBONS IN AIR

Date Analyzed			26DEC96 1
Date Extracted			12/18/96
Naphthalene	ug	1.5	ND
1-Methylnaphthalene	ug	1.5	15
2-Methylnaphthalene	ug	1.5	17
Acenaphthylene	ug	1.5	2.9
Acenaphthene	ug	2.0	ND
Fluorene	ug	0.31	ND
Phenanthrene	ug	0.20	ND
Anthracene	ug	0.050	ND
Fluoranthene	ug	0.30	ND
Pyrene	ug	0.10	ND
Benzo(a)anthracene	ug	0.10	ND
Chrysene	ug	0.10	ND
Benzo(b)fluoranthene	ug	0.30	ND
Benzo(k)fluoranthene	ug	0.10	ND
Benzo(a)pyrene	ug	0.10	ND
Dibenzo(a,h)anthracene	ug	0.20	ND
Benzo(g,h,i)perylene	ug	0.20	ND
Indeno(1,2,3-cd)pyrene	ug	0.20	ND
Carbazole (Surrogate)	%		102
Terphenyl (Surrogate)	%		95

## REPORT OF LABORATORY ANALYSIS

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# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Mr. Chris Harris  
Page 2

January 07, 1997  
PACE Project Number: 961212502

Client Reference: Black and Decker -Hampstead

These data have been reviewed and are approved for release.



Joseph W. Novotny  
Project Manager

## REPORT OF LABORATORY ANALYSIS

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# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Mr. Chris Harris  
Page 3

FOOTNOTES  
for pages 1 through 2

January 07, 1997  
PACE Project Number: 961212502

Client Reference: Black and Decker -Hampstead

ND Not detected at or above the PRL.  
PRL PACE Reporting Limit

## REPORT OF LABORATORY ANALYSIS

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# Pace Analytical

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1710 Douglas Drive North  
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Client: ROY F WESTON, INC.

Page 1 of 2

PACE Sample No.: 10 021228.8  
Date Collected: 12/3/96  
Date Received: 12/7/96  
Date Analyzed: 12/12/96  
Dilution Factor: 1.0  
Sample Desc.: AS01-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	0.13	0.71	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	1.1	7.6	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Client: ROY F WESTON, INC.

Page 2 of 2

PACE Sample No.: 10 021228.8  
Date Collected: 12/3/96  
Date Received: 12/7/96  
Date Analyzed: 12/12/96  
Dilution Factor: 1.0  
Sample Desc.: AS01-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	
TOTAL VOC			1.2	8.3	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVOTNY  
Project Manager

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Client: ROY F. WESTON, INC.

Page 1 of 2

PACE Sample No.: 10 021230.0  
Date Collected: 12/3/96  
Date Received: 12/7/96  
Date Analyzed: 12/12/96  
Dilution Factor: 1.0  
Sample Desc.: AS02-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	0.21	1.2	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	0.37	2.0	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	2.6	18	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Page 2 of 2

PACE Sample No.: 10 021230.0  
Date Collected: 12/3/96  
Date Received: 12/7/96  
Date Analyzed: 12/12/96  
Dilution Factor: 1.0  
Sample Desc.: AS02-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	
TOTAL VOC			3.2	21	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVOTNY  
Project Manager

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Page 1 of 2

PACE Sample No.: 10 021234.2  
Date Collected: 12/4/96  
Date Received: 12/7/96  
Date Analyzed: 12/13/96  
Dilution Factor: 1.0  
Sample Desc.: AS03-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mq/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	0.40	2.2	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	0.71	3.9	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	4.4	30	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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PACE Sample No.: 10 021234.2  
Date Collected: 12/4/96  
Date Received: 12/7/96  
Date Analyzed: 12/13/96  
Dilution Factor: 1.0  
Sample Desc.: AS03-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	
TOTAL VOC			5.5	36	

### Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

### Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
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JOE NOVOTNY  
Project Manager

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PACE Sample No.: 10 021242.3

Date Collected: 12/4/96

Date Received: 12/7/96

Date Analyzed: 12/13/96

Dilution Factor: 1.0

Sample Desc.: AS04-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.50	16	87	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	0.18	1.2	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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PACE Sample No.: 10 021242.3

Date Collected: 12/4/96

Date Received: 12/7/96

Date Analyzed: 12/13/96

Dilution Factor: 1.0

Sample Desc.: AS04-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

## Q Qualifiers

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Project Manager

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PACE Sample No.: 10 021243.1

Date Collected: 12/5/96

Date Received: 12/7/96

Date Analyzed: 12/13/96

Dilution Factor: 1.0

Sample Desc.: AS05-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	4.6	25	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F WESTON, INC.

Page 2 of 2

PACE Sample No.: 10 021243.1  
Date Collected: 12/5/96  
Date Received: 12/7/96  
Date Analyzed: 12/13/96  
Dilution Factor: 1.0  
Sample Desc.: AS05-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

ppmv = mg/scm x 24.04 + Molecular Weight

**Q Qualifiers**

B Analyte also found in blank

E Estimated concentration, amount exceeds calibration.

J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.

N Presumptive identification based on spectral library search.

\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVOTNY  
Project Manager

## REPORT OF LABORATORY ANALYSIS

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Client: ROY F WESTON, INC.

Page 1 of 2

PACE Sample No.: 10 021244.0  
Date Collected: 12/5/96  
Date Received: 12/7/96  
Date Analyzed: 12/16/96  
Dilution Factor: 1.0  
Sample Desc.: AS06-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mq/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	2.0	48	260	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Client: ROY F WESTON, INC.

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PACE Sample No.: 10 021244.0

Date Collected: 12/5/96

Date Received: 12/7/96

Date Analyzed: 12/16/96

Dilution Factor: 1.0

Sample Desc.: AS06-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVOTNY  
Project Manager

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Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: 10 021245.8  
Date Collected: 12/5/97  
Date Received: 12/7/97  
Date Analyzed: 1/6/96  
Dilution Factor: 6.5  
Sample Desc.: AS07-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.65	ND	ND	
Chloromethane	50.5	0.65	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.65	ND	ND	
Vinyl Chloride	62.5	3.3	ND	ND	
Bromomethane	95.0	3.3	ND	ND	
Chloroethane	64.5	3.3	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.65	ND	ND	
1,1-Dichloroethane	97.0	0.65	ND	ND	
Trichlorotrifluoroethane	187.4	0.65	ND	ND	
Methylene Chloride	84.9	3.3	ND	ND	
1,1-Dichloroethane	99.0	0.65	ND	ND	
cis-1,2-Dichloroethene	97.0	0.65	ND	ND	
Chloroform	119.4	0.65	ND	ND	
1,1,1-Trichloroethane	133.4	0.65	ND	ND	
1,2-Dichloroethane	99.0	0.65	ND	ND	
Benzene	78.1	0.65	ND	ND	
Carbon Tetrachloride	153.8	0.65	ND	ND	
1,2-Dichloropropane	113.0	0.65	ND	ND	
Trichloroethene	131.4	0.65	11	60	
cis-1,3-Dichloropropene	111.0	0.65	ND	ND	
trans-1,3-Dichloropropene	111.0	3.3	ND	ND	
Toluene	92.1	0.65	ND	ND	
1,1,2-Trichloroethane	133.4	0.65	ND	ND	
1,2-Dibromoethane	187.9	0.65	ND	ND	
Tetrachloroethene	165.9	0.65	ND	ND	
Chlorobenzene	112.6	0.65	ND	ND	
Ethylbenzene	106.2	0.65	ND	ND	
m,p-Xylene	106.2	0.65	ND	ND	
Styrene	104.1	6.5	ND	ND	*

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Page 2 of 2

PACE Sample No.: 10 021245.8  
Date Collected: 12/5/97  
Date Received: 12/7/97  
Date Analyzed: 1/6/96  
Dilution Factor: 6.5  
Sample Desc.: AS07-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.65	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.65	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.65	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.65	ND	ND	
1,3-Dichlorobenzene	147.0	0.65	ND	ND	
1,4-Dichlorobenzene	147.0	0.65	ND	ND	
1,2-Dichlorobenzene	147.0	0.65	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.65	ND	ND	
Hexachlorobutadiene	260.8	0.65	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

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DUPLICATE REPORT

Page 1 of 2

PACE Sample No.: 10 021245.8DUP

Date Collected: 12/5/97

Date Received: 12/7/97

Date Analyzed: 1/6/96

Dilution Factor: 6.5

Sample Desc.: AS07-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Duplicate Concentration ppmv</u>	<u>RPD</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.65	ND	ND	0.0
Chloromethane	50.5	0.65	ND	ND	0.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.65	ND	ND	0.0
Vinyl Chloride	62.5	3.3	ND	ND	0.0
Bromomethane	95.0	3.3	ND	ND	0.0
Chloroethane	64.5	3.3	ND	ND	0.0
Trichlorofluoromethane (Freon 11)	137.4	0.65	ND	ND	0.0
1,1-Dichloroethene	97.0	0.65	ND	ND	0.0
Trichlorotrifluoroethane	187.4	0.65	ND	ND	0.0
Methylene Chloride	84.9	3.3	ND	ND	0.0
1,1-Dichloroethane	99.0	0.65	ND	ND	0.0
cis-1,2-Dichloroethene	97.0	0.65	ND	ND	0.0
Chloroform	119.4	0.65	ND	ND	0.0
1,1,1-Trichloroethane	133.4	0.65	ND	ND	0.0
1,2-Dichloroethane	99.0	0.65	ND	ND	0.0
Benzene	78.1	0.65	ND	ND	0.0
Carbon Tetrachloride	153.8	0.65	ND	ND	0.0
1,2-Dichloropropane	113.0	0.65	ND	ND	0.0
Trichloroethene	131.4	0.65	11	9.8	12
cis-1,3-Dichloropropene	111.0	0.65	ND	ND	0.0
trans-1,3-Dichloropropene	111.0	3.3	ND	ND	0.0
Toluene	92.1	0.65	ND	ND	0.0
1,1,2-Trichloroethane	133.4	0.65	ND	ND	0.0
1,2-Dibromoethane	187.9	0.65	ND	ND	0.0
Tetrachloroethene	165.9	0.65	ND	ND	0.0
Chlorobenzene	112.6	0.65	ND	ND	0.0
Ethylbenzene	106.2	0.65	ND	ND	0.0
m,p-Xylene	106.2	0.65	ND	ND	0.0
Styrene	104.1	6.5	ND	ND	0.0

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Page 2 of 2

PACE Sample No.: 10 021245.8DUP

Date Collected: 12/5/97

Date Received: 12/7/97

Date Analyzed: 1/6/96

Dilution Factor: 6.5

Sample Desc.: AS07-OUT

Misc. Info.:

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Duplicate Concentration ppmv</u>	<u>Q</u>
<u>Method Analytes</u>					
o-Xylene	106.2	0.65	ND	ND	0.0
1,1,2,2-Tetrachloroethane	167.9	0.65	ND	ND	0.0
1,3,5-Trimethylbenzene	120.2	0.65	ND	ND	0.0
1,2,4-Trimethylbenzene	120.2	0.65	ND	ND	0.0
1,3-Dichlorobenzene	147.0	0.65	ND	ND	0.0
1,4-Dichlorobenzene	147.0	0.65	ND	ND	0.0
1,2-Dichlorobenzene	147.0	0.65	ND	ND	0.0
1,2,4-Trichlorobenzene	181.5	0.65	ND	ND	0.0
Hexachlorobutadiene	260.8	0.65	ND	ND	0.0

Limit: 30%

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
 $\mu\text{g}/\text{scm}$  Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg}/\text{scm} \times 24.04 + \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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Page 1 of 2

PACE Sample No.: 10 021246.6  
Date Collected: 12/6/96  
Date Received: 12/7/96  
Date Analyzed: 1/6/96  
Dilution Factor: 26  
Sample Desc.: AS08-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	2.6	ND	ND	
Chloromethane	50.5	2.6	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	2.6	ND	ND	
Vinyl Chloride	62.5	13.0	ND	ND	
Bromomethane	95.0	13	ND	ND	
Chloroethane	64.5	13	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	2.6	ND	ND	
1,1-Dichloroethene	97.0	2.6	ND	ND	
Trichlorotrifluoroethane	187.4	2.6	ND	ND	
Methylene Chloride	84.9	13	ND	ND	
1,1-Dichloroethane	99.0	2.6	ND	ND	
cis-1,2-Dichloroethene	97.0	2.6	ND	ND	
Chloroform	119.4	2.6	ND	ND	
1,1,1-Trichloroethane	133.4	2.6	ND	ND	
1,2-Dichloroethane	99.0	2.6	ND	ND	
Benzene	78.1	2.6	ND	ND	
Carbon Tetrachloride	153.8	2.6	ND	ND	
1,2-Dichloropropane	113.0	2.6	ND	ND	
Trichloroethene	131.4	2.6	24	130	
cis-1,3-Dichloropropene	111.0	2.6	ND	ND	
trans-1,3-Dichloropropene	111.0	13	ND	ND	
Toluene	92.1	2.6	ND	ND	
1,1,2-Trichloroethane	133.4	2.6	ND	ND	
1,2-Dibromoethane	187.9	2.6	ND	ND	
Tetrachloroethene	165.9	2.6	ND	ND	
Chlorobenzene	112.6	2.6	ND	ND	
Ethylbenzene	106.2	2.6	ND	ND	
m,p-Xylene	106.2	2.6	ND	ND	
Styrene	104.1	26	ND	ND	

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Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: 10 021246.6  
Date Collected: 12/6/96  
Date Received: 12/7/96  
Date Analyzed: 1/6/96  
Dilution Factor: 26.0  
Sample Desc.: AS08-OUT  
Misc. Info.:

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	2.6	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	2.6	ND	ND	
1,3,5-Trimethylbenzene	120.2	2.6	ND	ND	
1,2,4-Trimethylbenzene	120.2	2.6	ND	ND	
1,3-Dichlorobenzene	147.0	2.6	ND	ND	
1,4-Dichlorobenzene	147.0	2.6	ND	ND	
1,2-Dichlorobenzene	147.0	2.6	ND	ND	
1,2,4-Trichlorobenzene	181.5	2.6	ND	ND	
Hexachlorobutadiene	260.8	2.6	ND	ND	

### Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

### Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: 10 021618.6  
Date Collected: 12/6/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: AS09-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	1.0	31	170	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: 10 021618.6  
Date Collected: 12/6/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: AS09-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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PACE Sample No.: 10 021619.4  
Date Collected: 12/6/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: AS010-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	2.0	57	310	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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PACE Sample No.: 10 021619.4  
Date Collected: 12/6/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: AS010-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

## Definitions:


ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 + \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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PACE Sample No.: 10 021620.8  
Date Collected: 12/9/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: AS011-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	1.0	27	150	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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PACE Sample No.: 10 021620.8  
Date Collected: 12/9/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: AS011-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

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PACE Sample No.: 10 021621.6  
Date Collected: 12/10/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: AS012-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	2.0	76	420	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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Client: ROY F. WESTON, INC

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PACE Sample No.: 10 021621.6  
Date Collected: 12/10/96  
Date Received: 12/12/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: AS012-OUT  
Misc. Info.:

PACE Proj. No.: 961212.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	
TOTAL VOC			76	420	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

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PACE Sample No.: 10 021894.4  
Date Collected: 12/10/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: ASS01-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	2.0	60	330	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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Client: ROY F. WESTON, INC

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PACE Sample No.: 10 021894.4  
Date Collected: 12/10/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: ASS01-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

ppmv = mg/scm x 24.04 ÷ Molecular Weight

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

## REPORT OF LABORATORY ANALYSIS

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# Pace Analytical

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1710 Douglas Drive North  
Minneapolis, MN 55422  
Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: 10 021895.2  
Date Collected: 12/11/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: ASS02-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	2.0	44	240	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: 10 021895.2  
Date Collected: 12/11/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/97  
Dilution Factor: 1.0  
Sample Desc.: ASS02-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

### Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

### Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
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Project Manager

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PACE Sample No.: 10 021896.0  
Date Collected: 12/12/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: ASS03-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<u>Method Analytes</u>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethane	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethane	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	1.0	30	160	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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PACE Sample No.: 10 021896.0  
Date Collected: 12/12/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/97  
Dilution Factor: 1.0  
Sample Desc.: ASS03-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<u>Method Analytes</u>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
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These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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Page 1 of 2

PACE Sample No.: 10 021897.9  
Date Collected: 12/13/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1  
Sample Desc.: ASS04-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	1.0	28	150	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: 10 021897.9  
Date Collected: 12/13/96  
Date Received: 12/14/96  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: ASS04-OUT  
Misc. Info.:

PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

### Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

### Q

### Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
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These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

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## DUPLICATE REPORT

Page 1 of 2

PACE Sample No.: 10 021897.9DUP

Date Collected: 12/13/96

Date Received: 12/14/96

Date Analyzed: 1/6/96

Dilution Factor: 1

Sample Desc.: ASS04-OUT

Misc. Info.:

PACE Proj. No.: 961214.501

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Duplicate Concentration ppmv</u>	<u>RPD</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	0.0
Chloromethane	50.5	0.10	ND	ND	0.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	0.0
Vinyl Chloride	62.5	0.50	ND	ND	0.0
Bromomethane	95.0	0.50	ND	ND	0.0
Chloroethane	64.5	0.50	ND	ND	0.0
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	0.0
1,1-Dichloroethene	97.0	0.10	ND	ND	0.0
Trichlorotrifluoroethane	187.4	0.10	ND	ND	0.0
Methylene Chloride	84.9	0.50	ND	ND	0.0
1,1-Dichloroethane	99.0	0.10	ND	ND	0.0
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	0.0
Chloroform	119.4	0.10	ND	ND	0.0
1,1,1-Trichloroethane	133.4	0.10	ND	ND	0.0
1,2-Dichloroethane	99.0	0.10	ND	ND	0.0
Benzene	78.1	0.10	ND	ND	0.0
Carbon Tetrachloride	153.8	0.10	ND	ND	0.0
1,2-Dichloropropane	113.0	0.10	ND	ND	0.0
Trichloroethene	131.4	1.0	28	28	0.0
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	0.0
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	0.0
Toluene	92.1	0.10	ND	ND	0.0
1,1,2-Trichloroethane	133.4	0.10	ND	ND	0.0
1,2-Dibromoethane	187.9	0.10	ND	ND	0.0
Tetrachloroethene	165.9	0.10	ND	ND	0.0
Chlorobenzene	112.6	0.10	ND	ND	0.0
Ethylbenzene	106.2	0.10	ND	ND	0.0
m,p-Xylene	106.2	0.10	ND	ND	0.0
Styrene	104.1	1.0	ND	ND	0.0

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PACE Sample No.: 10 021897.9DUP

Date Collected: 12/13/96

Date Received: 12/14/96

Date Analyzed: 1/6/96

Dilution Factor: 1.0

Sample Desc.: ASS04-OUT

Misc. Info.:

PACE Proj. No.: 961214.501

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Duplicate Concentration ppmv</u>	<u>RPD</u>
<u>Method Analytes</u>					
o-Xylene	106.2	0.10	ND	ND	0.0
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	0.0
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	0.0
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	0.0
1,3-Dichlorobenzene	147.0	0.10	ND	ND	0.0
1,4-Dichlorobenzene	147.0	0.10	ND	ND	0.0
1,2-Dichlorobenzene	147.0	0.10	ND	ND	0.0
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	0.0
Hexachlorobutadiene	260.8	0.10	ND	ND	0.0

Limit: 30%

## Definitions:

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

## Q Qualifiers

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

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JOE NOVONTY  
Project Manager

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 Fax: 612-525-3377

Mr. Chris Harris  
 Page 4

## QUALITY CONTROL DATA

January 07, 1997  
 PACE Project Number: 961212502

Client Reference: Black and Decker -Hampstead

TO13: POLY AROMATIC HYDROCARBONS IN AIR  
 Batch: 10 89421  
 Samples: 10 0216224

### METHOD BLANK:

Parameter	Units	PRL	Method Blank
Date Analyzed			26DEC96
Naphthalene	ug	1.5	ND
1-Methylnaphthalene	ug	1.5	ND
2-Methylnaphthalene	ug	1.5	ND
Acenaphthylene	ug	1.5	ND
Acenaphthene	ug	2.0	ND
Fluorene	ug	0.31	ND
Phenanthrene	ug	0.20	ND
Anthracene	ug	0.050	ND
Fluoranthene	ug	0.30	ND
Pyrene	ug	0.10	ND
Benzo(a)anthracene	ug	0.10	ND
Chrysene	ug	0.10	ND
Benzo(b)fluoranthene	ug	0.30	ND
Benzo(k)fluoranthene	ug	0.10	ND
Benzo(a)pyrene	ug	0.10	ND
Dibenzo(a,h)anthracene	ug	0.20	ND
Benzo(g,h,i)perylene	ug	0.20	ND
Indeno(1,2,3-cd)pyrene	ug	0.20	ND
Carbazole (Surrogate)	%		80
Terphenyl (Surrogate)	%		80

### LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	PRL	Reference Value	Recv	Dupl Recv	RPD
Naphthalene	ug	1.5	10	86%	82%	5%
1-Methylnaphthalene	ug	1.5	10	180%	180%	0%
2-Methylnaphthalene	ug	1.5	10	79%	78%	1%
Acenaphthylene	ug	1.5	20	55%	50%	10%
Acenaphthene	ug	2.0	10	96%	99%	3%
Fluorene	ug	0.31	2.0	95%	100%	5%
Phenanthrene	ug	0.20	1.0	100%	100%	0%

## REPORT OF LABORATORY ANALYSIS

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Page 5

## QUALITY CONTROL DATA

January 07, 1997  
PACE Project Number: 961212502

Client Reference: Black and Decker -Hampstead

TO13: POLY AROMATIC HYDROCARBONS IN AIR  
Batch: 10 89421  
Samples: 10 0216224

### LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

<u>Parameter</u>	<u>Units</u>	<u>PRI</u>	<u>Reference Value</u>	<u>Recy</u>	<u>Dupl Recy</u>	<u>RPD</u>
Anthracene	ug	0.050	1.0	100%	100%	0%
Fluoranthene	ug	0.30	2.0	110%	110%	0%
Pyrene	ug	0.10	1.0	110%	110%	0%
Benzo(a)anthracene	ug	0.10	1.0	100%	100%	0%
Chrysene	ug	0.10	1.0	100%	100%	0%
Benzo(b)fluoranthene	ug	0.30	2.0	105%	110%	5%
Benzo(k)fluoranthene	ug	0.10	1.0	100%	110%	10%
Benzo(a)pyrene	ug	0.10	1.0	110%	110%	0%
Dibenzo(a,h)anthracene	ug	0.20	2.0	95%	100%	5%
Benzo(g,h,i)perylene	ug	0.20	2.0	95%	95%	0%
Indeno(1,2,3-cd)pyrene	ug	0.20	1.0	99%	100%	0%

## REPORT OF LABORATORY ANALYSIS

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Mr. Chris Harris  
Page 6

FOOTNOTES  
for pages 4 through 5

January 07, 1997  
PACE Project Number: 961212502

Client Reference: Black and Decker -Hampstead

ND Not detected at or above the PRL.  
PRL PACE Reporting Limit  
RPD Relative Percent Difference

**REPORT OF LABORATORY ANALYSIS**

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# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: MB348SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 12/13/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	ND	ND	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

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Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: MB348SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 12/13/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

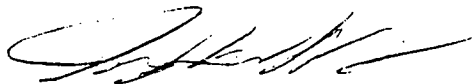
ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

ppmv = mg/scm x 24.04 ÷ Molecular Weight

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

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Page 1 of 2

PACE Sample No.: MB347SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 12/12/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502  
Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	ND	ND	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: MB347SRC

Date Collected: N/A

Date Received: N/A

Date Analyzed: 12/12/96

Dilution Factor: 1.0

Sample Desc.: Method Blank

Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502

Report Date: 12/23/96

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager+B24

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Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: MB006SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

961207.502  
961212.502  
PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b><u>Method Analytes</u></b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	ND	ND	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: MB006SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

961207.502  
961212.502  
PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.



JOE NOVONTY  
Project Manager

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Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: MB351SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 12/16/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
1,1-Dichloroethene	97.0	0.10	ND	ND	
Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	ND	ND	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
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Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	

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Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: MB351SRC

Date Collected: N/A

Date Received: N/A

Date Analyzed: 12/16/96

Dilution Factor: 1.0

Sample Desc.: Method Blank

Misc. Info.: Nitrogen Blank

PACE Proj. No.: 961207.502

Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
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**Definitions:**

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Project Manager

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Client: ROY F. WESTON, INC

Page 1 of 2

PACE Sample No.: MB006SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

961207.502  
961212.502  
PACE Proj. No.: 961214.501  
Report Date: 1/6/97

Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
Dichlorodifluoromethane (Freon 12)	120.9	0.10	ND	ND	
Chloromethane	50.5	0.10	ND	ND	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (F-114)	170.9	0.10	ND	ND	
Vinyl Chloride	62.5	0.50	ND	ND	
Bromomethane	95.0	0.50	ND	ND	
Chloroethane	64.5	0.50	ND	ND	
Trichlorofluoromethane (Freon 11)	137.4	0.10	ND	ND	
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Trichlorotrifluoroethane	187.4	0.10	ND	ND	
Methylene Chloride	84.9	0.50	ND	ND	
1,1-Dichloroethane	99.0	0.10	ND	ND	
cis-1,2-Dichloroethene	97.0	0.10	ND	ND	
Chloroform	119.4	0.10	ND	ND	
1,1,1-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dichloroethane	99.0	0.10	ND	ND	
Benzene	78.1	0.10	ND	ND	
Carbon Tetrachloride	153.8	0.10	ND	ND	
1,2-Dichloropropane	113.0	0.10	ND	ND	
Trichloroethene	131.4	0.10	ND	ND	
cis-1,3-Dichloropropene	111.0	0.10	ND	ND	
trans-1,3-Dichloropropene	111.0	0.50	ND	ND	
Toluene	92.1	0.10	ND	ND	
1,1,2-Trichloroethane	133.4	0.10	ND	ND	
1,2-Dibromoethane	187.9	0.10	ND	ND	
Tetrachloroethene	165.9	0.10	ND	ND	
Chlorobenzene	112.6	0.10	ND	ND	
Ethylbenzene	106.2	0.10	ND	ND	
m,p-Xylene	106.2	0.10	ND	ND	
Styrene	104.1	1.0	ND	ND	*

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc.



# Pace Analytical

Pace Analytical Services, Inc.  
1710 Douglas Drive North  
Minneapolis, MN 55422

Tel: 612-544-5543  
Fax: 612-525-3377

Client: ROY F. WESTON, INC

Page 2 of 2

PACE Sample No.: MB006SRC  
Date Collected: N/A  
Date Received: N/A  
Date Analyzed: 1/6/96  
Dilution Factor: 1.0  
Sample Desc.: Method Blank  
Misc. Info.: Nitrogen Blank

961207.502  
961212.502  
PACE Proj. No.: 961207.502  
Report Date: 1/6/97  
Method No: Modified Compendium TO-14  
Gas Loop Injection

<u>Analytical Parameters</u>	<u>Molecular Weight</u>	<u>Practical Quant. Limit ppmv</u>	<u>Analyte Concentration ppmv</u>	<u>Analyte Concentration mg/scm</u>	<u>Q</u>
<b>Method Analytes</b>					
o-Xylene	106.2	0.10	ND	ND	
1,1,2,2-Tetrachloroethane	167.9	0.10	ND	ND	
1,3,5-Trimethylbenzene	120.2	0.10	ND	ND	
1,2,4-Trimethylbenzene	120.2	0.10	ND	ND	
1,3-Dichlorobenzene	147.0	0.10	ND	ND	
1,4-Dichlorobenzene	147.0	0.10	ND	ND	
1,2-Dichlorobenzene	147.0	0.10	ND	ND	
1,2,4-Trichlorobenzene	181.5	0.10	ND	ND	
Hexachlorobutadiene	260.8	0.10	ND	ND	

**Definitions:**

ppbv Parts Per Billion (by volume)  
ppmv Parts Per Million (by volume)  
µg/scm Micrograms/Standard Cubic Meter  
mg/scm Milligrams/Standard Cubic Meter  
ND Not Detected at or above the MDL  
NA Not Applicable or Not Available

$$\text{ppmv} = \text{mg/scm} \times 24.04 \div \text{Molecular Weight}$$

**Q Qualifiers**

B Analyte also found in blank  
E Estimated concentration, amount exceeds calibration.  
J Estimated concentration, amount is either below the detection limit or an estimate for a Tentatively Identified Compound.  
N Presumptive identification based on spectral library search.  
\* Estimated for a Tentatively Identified Compound.

These data have been reviewed and are approved for release.

  
JOE NOVONTY  
Project Manager

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc.

# Pace Analytical

~~SECRET~~

## CHAIN-OF-CUSTODY RECORD Analytical Request

Client: Roy F. WESTON, INC.  
 Address: 1 WESTON WAY  
WEST CHESTER, PA 19380  
 Phone: (610) 701-7203

Report To: CHRIS HARRIS  
 Bill To: ROY F. WESTON, INC.  
 P.O. # / Billing Reference \_\_\_\_\_  
 Project Name / No. BLACK & DECKER - HAMPSTEAD

Pace Client No. 125038  
 Pace Project Manager JWN  
 Pace Project No. 961207502  
 Requested Due Date: STD?

Sampled By (PRINT): P. SCHAUBLE, C. TUCCI  
 Sampler Signature \_\_\_\_\_ Date Sampled \_\_\_\_\_  
 --SEE 'DATE COLLECTED' COLUMN

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES					ANALYSES REQUEST	DATE COLLECTED (1996)	REMARKS
						UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	VOA TO-14	TCE/PCE TO-14			
1	AS01-OUT	1615	AIR	583	1	X		X				21228.8	12/3/96 CN 583
2	AS02-OUT	2000		758		X		X				21230.0	12/3/96 CN 758
3	AS03-OUT	1135		520		X		X				21234.2	12/4/96 CN 520
4	AS04-OUT	1516		137		X			X			21242.3	12/4/96 CN 137
5	AS05-OUT	1125		567		X			X			21243.1	12/5/96 CN 567
6	AS06-OUT	1530		490		X			X			21244.0	12/5/96 CN 490
7	AS07-OUT	1840		351		X			X			21245.8	12/5/96 CN 351
8	AS08-OUT	1040		107		X			X			21246.6	12/6/96 CN 107

COOLER NOS.	BAILERS	SHIPMENT METHOD	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
		OUT/DATE RETURNED/DATE		<u>Chris Harris / Weston</u>	<u>Fed Ex</u>	<u>12/6/96</u>	<u>2000</u>
					<u>Lisa A. Matt / Pace</u>	<u>12/7/96</u>	<u>1100</u>

Additional Comments  
USE ppb DETECTION LIMITS  
Shipment consists of Two Boxes  
With 4 canisters each.

961212502

# Pace Analytical

## CHAIN-OF-CUSTODY RECORD Analytical Request

Client ROY F. WESTON, INC.  
 Address 1 WESTON WAY  
WEST CHESTER, PA 19380  
 Phone (610) 701-7203

Report To: CHRIS HARRIS  
 Bill To: ROY F. WESTON, INC.  
 P.O. # / Billing Reference \_\_\_\_\_  
 Project Name / No. BLACK & DECKER - HAMPSTEAD

Pace Client No. \_\_\_\_\_  
 Pace Project Manager \_\_\_\_\_  
 Pace Project No. \_\_\_\_\_  
 \*Requested Due Date: \_\_\_\_\_

Sampled By (PRINT):  
P. Schauble, C. Tucci  
 Sampler Signature \_\_\_\_\_ Date Sampled \_\_\_\_\_  
 - SEE 'DATE COLLECTED' COLUMN

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES				ANALYSES REQUEST				REMARKS	
						UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	VOA	TCE/PCE by TO-14 TO-13 SVOCs TO-14 VOCs					
1	AS09-OUT	1615	AIR	128	1	X					X				12/6/96
2	AS10-OUT	1310		73	1	X					X				12/9/96
3	AS11-OUT	1335		3	1	X					X				12/9/96
4	AS12-OUT	1340		9189B 155	1	X					X	X			12/10/96
5	ASMP20-01	1410	XAD		1	X					X		Sample		12/9/96
6															
7															
8															

COOLER NOS.	BAILERS	SHIPMENT OUT/DATE	METHOD RETURNED/DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Christine Tucci/WESTON	FED EX	12/11/96	830
					Bryan Butler	Pace	12/12/96	

Additional Comments  
 Use ppb detection limits.  
 Shipment consists of one box w/ four canisters and one XAD tube.  
 - Approximately 100 liters of air were drawn through the canisters.

# Pace Analytical

366082

## CHAIN-OF-CUSTODY RECORD Analytical Request

Client Roy F. Weston Inc  
 Address One Weston Way  
West Chester, PA 19380  
 Phone 610 701-7203

Report To: Chris Hattis  
 Bill To: Roy F. Weston, Inc  
 P.O. # / Billing Reference \_\_\_\_\_  
 Project Name / No. Black & Dacker - Humpstead

Page Client No. \_\_\_\_\_  
 Pace Project Manager \_\_\_\_\_  
 Pace Project No. 961214501  
 Requested Due Date: \_\_\_\_\_

Sampled By (PRINT): P. Schauble  
 Sampler Signature \_\_\_\_\_ Date Sampled \_\_\_\_\_  
 See "Date Collected Column"

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES				ANALYSES REQUEST	Date Collected	Can # REMARKS
						UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	VOA			
1	ASS01-OUT	1705	A	14	1	X				X	21894.4	12/10/96 14
2	ASS02-OUT	1340	↓	121	1	X				X	21895.2	12/11/96 121
3	ASS03-OUT	1420		14972	1	X				X	21896.0	12/12/96 14972
4	ASS04-OUT	0930		301	1	X				X	21897.9	12/13/96 301
5												
6												
7												
8												

COOLER NOS.	BAILERS	SHIPMENT METHOD		ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
OUT/DATE	RETURNED/DATE							
				1-4	<u>Roy F. Weston</u>	<u>Fed-Ex</u> <u>H. Munson</u>	12/13/96	1400
							12/14/96	1135

Additional Comments  
Use PPb Detection Limits

SEE REVERSE SIDE FOR INSTRUCTIONS

# Pace Analytical

## Sample Condition upon Receipt

PACE Project Manager JWN

PACE Project # 961207502 Client: Roy F Weston Rec. By: LAA

Proposal # \_\_\_\_\_ Client Ref.: Black + Decker-Hampstead Date Rec.: 12/7/96

Method of Shipment / Control # Fed EX 1 2646041683

Custody Seals: Present / Absent Intact / Broken Shipping Container / Sample Bottles

Temperature of Blanks upon Arrival (If not 1.0 to 4.0 Deg. C. contact PM)

Cooler ID: 

—							
---	--	--	--	--	--	--	--

Temp. (Celsius): 

—							
---	--	--	--	--	--	--	--

Temperature Blank not present, condition of coolant is: 2 Boxes of 4 cans

List Client Sample Descriptions for any samples that are frozen: \_\_\_\_\_

Yes No  
  1 Short holding time analyses requested

Short Hold Analyses: \_\_\_\_\_

2 Sampled four or more days prior to receipt (If "yes", contact supervisor and PM Immediately)

Earliest date of sampling: 12/3/96

3 Rush Due Date (one week or less) requested (If "yes", contact supervisor and PM Immediately)

Requested Due Date: \_\_\_\_\_

4 Sample Containers are intact: (List Client Sample Description and container types)

\_\_\_\_\_

5 Samples Correspond to Client Documentation. (Note Discrepancies below)

\_\_\_\_\_

6 Samples are properly preserved. (See preservation record)

7 VOA samples are free of head space. (List Client Sample Description and containers with headspace)

\_\_\_\_\_

8 Sample volume appears sufficient.

9 Internal Chain of Custody (ICOC) Required.

Notify Project Manager immediately with any concerns regarding discrepancies (circle responses)

Project Manager Review: JWN Date: \_\_\_\_\_ Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Pace Analytical

## Sample Condition upon Receipt

PACE Project Manager JWN

PACE Project # 961214501 Client: Roy F Weston Rec. By: Hm

Proposal # \_\_\_\_\_ Client Ref.: Black & Decker Date Rec.: 12-14-96

Method of Shipment / Control # Fed Ex / 1

Custody Seals: Present / Absent Intact / Broken Shipping Container / Sample Bottles

Temperature of Blanks upon Arrival (If not 1.0 to 4.0 Deg. C. contact PM)

Cooler ID:	—							
Temp. (Celsius):	—							

Temperature Blank not present, condition of coolant is: No coolant

List Client Sample Descriptions for any samples that are frozen: \_\_\_\_\_

- Yes No
- 1 Short holding time analyses requested  
Short Hold Analyses: \_\_\_\_\_
  - 2 Sampled four or more days prior to receipt (If "yes", contact supervisor and PM Immediately)  
Earliest date of sampling: \_\_\_\_\_
  - 3 Rush Due Date (one week or less) requested (If "yes", contact supervisor and PM Immediately)  
Requested Due Date: \_\_\_\_\_
  - 4 Sample Containers are intact: (List Client Sample Description and container types)  
\_\_\_\_\_
  - 5 Samples Correspond to Client Documentation. (Note Discrepancies below)  
\_\_\_\_\_
  - 6 Samples are properly preserved. (See preservation record)
  - 7 VOA samples are free of head space. (List Client Sample Description and containers with headspace)  
\_\_\_\_\_
  - 8 Sample volume appears sufficient.
  - 9 Internal Chain of Custody (ICOC) Required.

Notify Project Manager immediately with any concerns regarding discrepancies (circle responses)

Project Manager Review: JWN Date: \_\_\_\_\_ Comments: \_\_\_\_\_

# Pace Analytical

## Sample Condition upon Receipt

D  
BDB  
12-12-96

PACE Project Manager JWN

PACE Project # 961212502 Client: Roy F Weston Rec. By: BJR

Proposal # \_\_\_\_\_ Client Ref.: Black+Decker-Hampstead Date Rec.: 12-12-96

Method of Shipment / Control # FED EX 12646041 661

Custody Seals: Present / Absent Intact / Broken Shipping Container / Sample Bottles

Temperature of Blanks upon Arrival (If not 1.0 to 4.0 Deg. C. contact PM)

Cooler ID:	<u>1/1</u>								
Temp. (Celsius):									

Temperature Blank not present, condition of coolant is: AIR CANS

List Client Sample Descriptions for any samples that are frozen: \_\_\_\_\_

Yes  No

1 Short holding time analyses requested

Short Hold Analyses: \_\_\_\_\_

2 Sampled four or more days prior to receipt (If "yes", contact supervisor and PM Immediately)

Earliest date of sampling: 12-6-96 sample # AS09 - OUT

3 Rush Due Date (one week or less) requested (If "yes", contact supervisor and PM Immediately)

Requested Due Date: \_\_\_\_\_

4 Sample Containers are intact: (List Client Sample Description and container types)

\_\_\_\_\_

5 Samples Correspond to Client Documentation. (Note Discrepancies below)

\_\_\_\_\_

6 Samples are properly preserved. (See preservation record)

7 VOA samples are free of head space. (List Client Sample Description and containers with headspace)

\_\_\_\_\_

8 Sample volume appears sufficient.

9 Internal Chain of Custody (ICOC) Required.

Notify Project Manager immediately with any concerns regarding discrepancies (circle responses)

Project Manager Review: JWN Date: \_\_\_\_\_ Comments: \_\_\_\_\_

**APPENDIX C**  
**OPERATIONAL MEASUREMENTS**



TABLE 1

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #1

Configuration: SVE-1 fully open  
Operating Pressure: -40 inches H<sub>2</sub>O

Start Date/Time 12-3-96 at 1332  
Shutdown Date/Time 12-3-96 at 1615

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	3-Dec-96 13:32	-40.0							Ps at blower intake after dilution air.
SVE-1	3-Dec-96 13:35	-36.0	0.04	56	>100	16	68		
MP-2(S)	3-Dec-96 13:44	-0.82							
MP-2(D)	3-Dec-96 13:44	-1.00							
MP-1(S)	3-Dec-96 13:46	-0.35							
MP-1(D)	3-Dec-96 13:46	-0.60							
MP-3(S)	3-Dec-96 13:48	-0.35							
MP-3(D)	3-Dec-96 13:48	-0.42							
Blower Exhaust	3-Dec-96 14:05	24.5	3.0	97	10	141	5		
Dilution Air	3-Dec-96 14:35	-5.0	2.3	46	58	125			
SVE-1	3-Dec-96 14:50	-32.0							
MP-1(S)	3-Dec-96 14:50	-0.42							
MP-1(D)	3-Dec-96 14:50	-0.66							
MP-2(D)	3-Dec-96 14:50	-0.98							
MP-2(S)	3-Dec-96 14:50	-0.92							
MP-3(S)	3-Dec-96 14:50	-0.38							
MP-3(D)	3-Dec-96 14:50	-0.43							
MP-8(S)	3-Dec-96 14:50	0.04							
MP-8(D)	3-Dec-96 14:50	0.05							
Blower Exhaust	3-Dec-96 15:00	24.0	3.0	100	10	141	4		
Dilution Air	3-Dec-96 15:10	-5.0	2.3	48	61	125			Ps at blower intake after dilution air.
Manifold	3-Dec-96 15:10	-40.0							Pv was reported as < 0.01.
SVE-1	3-Dec-96 15:30	-34.0	0.01	50	89	8	66		
MP-1(S)	3-Dec-96 15:30	-0.44							
MP-1(D)	3-Dec-96 15:30	-0.66							
MP-2(D)	3-Dec-96 15:30	-1.00							
MP-2(S)	3-Dec-96 15:30	-0.92							
MP-3(D)	3-Dec-96 15:30	-0.48							
MP-3(S)	3-Dec-96 15:30	-0.40							
Manifold	3-Dec-96 15:30	-40.0							Ps at blower intake after dilution air.
Blower Exhaust	3-Dec-96 15:30	25.0	3.0	97	8	142	5		
Dilution Air	3-Dec-96 15:30	-5.0	2.0	55	55	116			
Blower Exhaust	3-Dec-96 16:15							AS01-OUT	VOC sample

Note: Depth to water in well RFW-8 was 55.62 and Ps in MP-2(D) was + .08 inches of H<sub>2</sub>O before starting

TABLE 2

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #2

Configuration: SVE-1 fully open  
Operating Pressure: -80 inches H2O

Start Date/Time 12-3-96 at 1735  
Shutdown Date/Time 12-3-96 at 2002

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	3-Dec-96 17:35	-80.0							Ps at blower intake after dilution air. Pv recorded as <.01. May be inaccurate.
SVE-1	3-Dec-96 17:40	-76.0	0.01	47	>100	7			
MP-1(S)	3-Dec-96 17:55	-1.25							
MP-1(D)	3-Dec-96 17:55	-1.80							
MP-2(S)	3-Dec-96 17:55	-2.5							
MP-2(D)	3-Dec-96 17:55	-3.0							
MP-3(S)	3-Dec-96 18:00	-1.10							
MP-3(D)	3-Dec-96 18:00	-1.25							
Manifold	3-Dec-96 18:00	-78.0							
Blower Exhaust	3-Dec-96 18:00	18.5	1.60	118	2	101	10		
Dilution Air	3-Dec-96 18:00	-3.0	1.00	43		83			
SVE-1	3-Dec-96 18:50	-80.0	0.06	55	>100	18	30		Ps at blower intake after dilution air.
MP-1(S)	3-Dec-96 18:50	-1.25							
MP-1(D)	3-Dec-96 18:50	-1.80							
MP-2(S)	3-Dec-96 18:50	-2.5							
MP-2(D)	3-Dec-96 18:50	-2.7							
MP-3(S)	3-Dec-96 18:50	-1.00							
MP-3(D)	3-Dec-96 18:50	-1.15							
SVE-1	3-Dec-96 19:00	-78.0	0.04	55		15	35		
Manifold	3-Dec-96 19:00	-80.0							
Blower Exhaust	3-Dec-96 19:10	18.0	1.80	120	10	107	10		
Dilution Air	3-Dec-96 19:10	-3.0	1.15	42	58	89			
SVE-1	3-Dec-96 19:30	-78.0	0.05	55	92	17	34		T not measured. Used previous value for calc. Ps at blower intake after dilution air.
MP-1(S)	3-Dec-96 19:30	-1.25							
MP-1(D)	3-Dec-96 19:30	-1.80							
MP-2(S)	3-Dec-96 19:30	-2.7							
MP-2(D)	3-Dec-96 19:30	-3.0							
MP-3(S)	3-Dec-96 19:30	-1.00							
MP-3(D)	3-Dec-96 19:30	-1.20							
Blower Exhaust	3-Dec-96 19:30	18.0	1.90	120		109	10		
Dilution Air	3-Dec-96 19:30	-3.0	1.20	42		91			
Blower Exhaust	3-Dec-96 20:00							AS02-OUT	
GAC1-OUT	3-Dec-96 20:00						Backgd		T not measured. Used previous value for calc. VOC sample
GAC2-OUT	3-Dec-96 20:00						Backgd		

TABLE 3

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #3

Configuration: SVE-1 fully open  
Operating Pressure: -135 inches H2O

Start Date/Time 12-4-96 at 0835  
Shutdown Date/Time 12-4-96 at 1145

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
SVE-1	4-Dec-96 8:50	-122		54	96		55		Pv recorded as 9.5. Assumed unac. FID taken at manifold.
MP-1(S)	4-Dec-96 8:50	-2.2							
MP-1(D)	4-Dec-96 8:50	-3.5							
MP-2(S)	4-Dec-96 8:50	-5.5							
MP-2(D)	4-Dec-96 8:50	-6.0							
MP-3(S)	4-Dec-96 8:50	-2.0							
MP-3(D)	4-Dec-96 8:50	-2.1							
Manifold	4-Dec-96 8:50	-134							Ps at blower intake after dilution air.
Dilution Air	4-Dec-96 8:50	-1.10	0.40	43	92	53			RH inaccurate due to instrument malfunction.
Blower Exhaust	4-Dec-96 8:50	12.0	1.40	153	98	91	18		RH inaccurate due to instrument malfunction.
SVE-1	4-Dec-96 9:50	-120	<0.01						Pv may be inaccurate.
MP-1(D)	4-Dec-96 9:50	-3.5							
MP-1(S)	4-Dec-96 9:50	-2.3							
MP-2(D)	4-Dec-96 9:50	-5.5							
MP-2(S)	4-Dec-96 9:50	-5.0							
MP-3(S)	4-Dec-96 9:50	-1.95							
MP-3(D)	4-Dec-96 9:50	-2.3							
Manifold	4-Dec-96 9:50	-135							Ps at blower intake after dilution air.
Blower Exhaust	4-Dec-96 9:50	11.0	1.35	132		91	10		
Dilution Air	4-Dec-96 9:50	-1.0	0.40	49		52			
SVE-1	4-Dec-96 10:30	-118	0.12	52	95	24			
MP-1(S)	4-Dec-96 10:30	-2.0							
MP-1(D)	4-Dec-96 10:30	-3.3							
MP-2(D)	4-Dec-96 10:30	-5.3							
MP-2(S)	4-Dec-96 10:30	-5.0							
MP-3(S)	4-Dec-96 10:30	-1.90							
MP-3(D)	4-Dec-96 10:30	-2.0							
Manifold	4-Dec-96 10:30	-130							Ps at blower intake after dilution air.
Dilution Air	4-Dec-96 10:30	-1.0	0.40	43	60	53			
Blower Exhaust	4-Dec-96 10:30	11.5	1.35	130	5	91	2		
SVE-1	4-Dec-96 11:00	-120	0.16	52		28			T not measured. Used previous value for calc.

**TABLE 3**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #3

Configuration: SVE-1 fully open  
 Operating Pressure: -135 inches H2O

Start Date/Time 12-4-96 at 0835  
 Shutdown Date/Time 12-4-96 at 1145

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-1(S)	4-Dec-96 11:00	-2.3							
MP-1(D)	4-Dec-96 11:00	-3.5							
MP-2(S)	4-Dec-96 11:00	-5.3							
MP-2(D)	4-Dec-96 11:00	-5.5							
MP-3(S)	4-Dec-96 11:00	-1.90							
MP-3(D)	4-Dec-96 11:00	-2.3							
Dilution Air	4-Dec-96 11:00	-1.00	0.38	48		51			
Blower Exhaust	4-Dec-96 11:00	11.0	1.40	132		92	10		
Manifold	4-Dec-96 11:00	-132							Ps at blower intake after dilution air.
SVE-1	4-Dec-96 11:20	-120	0.15	58		27	30		FID taken at manifold. Ps not measured. Used previous value
MP-8(S)	4-Dec-96 11:20	0.00							
MP-8(D)	4-Dec-96 11:20	-0.05							
MP-7(S)	4-Dec-96 11:20	0.00							
MP-7(D)	4-Dec-96 11:20	0.00							
Blower Exhaust	4-Dec-96 11:35							AS03-OUT	VOC sample.

Notes: Prior to shutdown, the following gas concentrations were measured at the manifold: CO2=6.6%; O2=16.6%; CH4=0%.

**TABLE 4**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #4

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -40 inches H2O

Start Date/Time 12-4-96 at 1155  
 Shutdown Date/Time 12-4-96 at 1522

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments	
Manifold	4-Dec-96 11:55	-40.0							Ps at blower intake after dilution air. Pv recorded as <0.01. FID measured at manifold.	
SVE-3(S)	4-Dec-96 11:55	-36.0	0.01	60	97	8	240			
SVE-3(D)	4-Dec-96 11:55	-1.70								
MP-6(D)	4-Dec-96 11:55	-0.25								
MP-6(S)	4-Dec-96 11:55	-0.44								
MP-5(S)	4-Dec-96 11:55	-0.10								
MP-5(D)	4-Dec-96 11:55	-0.08								
MP-4(S)	4-Dec-96 11:55	-0.36								
MP-4(D)	4-Dec-96 11:55	-0.38								
SVE-2(D)	4-Dec-96 11:55	-0.15								
SVE-2(S)	4-Dec-96 11:55	-0.03								
MP-7(D)	4-Dec-96 11:55	-0.15								
MP-7(S)	4-Dec-96 11:55	-0.27								
MP-8(S)	4-Dec-96 11:55	-0.05								
MP-8(D)	4-Dec-96 11:55	-0.04								
Dilution Air	4-Dec-96 11:55	-5.0	2.3	47		125				T not measured. Used subsequent value for calc.
Blower Exhaust	4-Dec-96 12:10	23.5	2.0	80		117	25			T not measured. Used subsequent value for calc.
SVE-3(S)	4-Dec-96 13:15	-32.0	0.03	60		14	320			T not measured. Used previous value for calc.
SVE-3(D)	4-Dec-96 13:15	-1.75								
MP-4(S)	4-Dec-96 13:15	-0.38								
MP-4(D)	4-Dec-96 13:15	-0.40								
SVE-2(D)	4-Dec-96 13:15	-0.16								
SVE-2(S)	4-Dec-96 13:15	-0.05								
MP-6(D)	4-Dec-96 13:15	-0.26								
MP-6(S)	4-Dec-96 13:15	-0.48								
MP-5(S)	4-Dec-96 13:15	-0.10								
MP-5(D)	4-Dec-96 13:15	-0.09								
MP-7(S)	4-Dec-96 13:15	-0.30								
MP-7(D)	4-Dec-96 13:15	-0.20								
MP-8(D)	4-Dec-96 13:15	-0.08								
MP-8(S)	4-Dec-96 13:15	-0.09								

**TABLE 4**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #4

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -40 inches H2O

Start Date/Time 12-4-96 at 1155  
 Shutdown Date/Time 12-4-96 at 1522

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Dilution Air	4-Dec-96 13:15	-5.0	2.3	47	28	125			
Blower Exhaust	4-Dec-96 13:15	23.0	2.8	80	12	139	10		
Manifold	4-Dec-96 13:15	-40.0							Ps at blower intake after dilution air.
SVE-3(S)	4-Dec-96 14:15	-32.0	0.01	50	>100	8	280		
SVE-3(D)	4-Dec-96 14:15	-1.75							
MP-4(D)	4-Dec-96 14:15	-0.42							
MP-4(S)	4-Dec-96 14:15	-0.36							
SVE-2(D)	4-Dec-96 14:15	-0.16							
SVE-2(S)	4-Dec-96 14:15	-0.04							
MP-6(D)	4-Dec-96 14:15	-0.30							
MP-6(S)	4-Dec-96 14:15	-0.45							
MP-5(S)	4-Dec-96 14:15	-0.12							
MP-5(D)	4-Dec-96 14:15	-0.10							
MP-7(S)	4-Dec-96 14:15	-0.37							
MP-7(D)	4-Dec-96 14:15	-0.16							
MP-8(S)	4-Dec-96 14:15	-0.10							
MP-8(D)	4-Dec-96 14:15	-0.07							
Dilution Air	4-Dec-96 14:15	-5.5	2.3	47	46	125			T not measured. Used previous value for calc.
Blower Exhaust	4-Dec-96 14:15	25.0	2.8	80	10	139	28		T not measured. Used previous value for calc.
Manifold	4-Dec-96 14:15	-40.0							Ps at blower intake after dilution air.
Blower Exhaust	4-Dec-96 15:15							AS04-OUT	TCE and PCE sample.

**TABLE 5**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #5

Configuration: SVE-3 (D) fully open  
 Operating Pressure: -40 inches H2O

Start Date/Time 12-5-96 at 0825  
 Shutdown Date/Time 12-5-96 at 1130

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	5-Dec-96 8:35	-40.0							Ps at blower intake after dilution air. Pv reported as .015 Assume T=50°F for calculation
SVE-3(D)	5-Dec-96 8:35	-35.0	0.02	50	70	11			
SVE-3(S)	5-Dec-96 8:35	-0.30							
MP-4(S)	5-Dec-96 8:35	-0.02							
MP-4(D)	5-Dec-96 8:35	-0.33							
SVE-2(D)	5-Dec-96 8:35	-0.03							
SVE-2(S)	5-Dec-96 8:35	0.00							
MP-6(D)	5-Dec-96 8:35	-1.00							
MP-6(S)	5-Dec-96 8:35	-0.10							
MP-5(S)	5-Dec-96 8:35	-0.08							
MP-5(D)	5-Dec-96 8:35	-0.25							
MP-7(D)	5-Dec-96 8:35	-0.50							
MP-7(S)	5-Dec-96 8:35	-0.23							
MP-8(S)	5-Dec-96 8:35	-0.20							
MP-8(D)	5-Dec-96 8:35	-0.24							
Dilution Air	5-Dec-96 8:35	-6.0	2.5	37	49	132			
Blower Exhaust	5-Dec-96 8:35	25.0	2.8	43		144	5		
Manifold	5-Dec-96 9:00						300		
SVE-3(D)	5-Dec-96 9:15	-36.0	0.01	60	50	8	340		
SVE-3(S)	5-Dec-96 9:15	-0.31							
MP-4(S)	5-Dec-96 9:15	-0.02							
MP-4(D)	5-Dec-96 9:15	-0.33							
SVE-2(D)	5-Dec-96 9:15	-0.03							
SVE-2(S)	5-Dec-96 9:15	0.01							
MP-6(S)	5-Dec-96 9:15	-0.06							
MP-6(D)	5-Dec-96 9:15	-0.90							
MP-7(S)	5-Dec-96 9:15	-0.16							
MP-7(D)	5-Dec-96 9:15	-0.37							
MP-8(S)	5-Dec-96 9:15	-0.11							
MP-8(D)	5-Dec-96 9:15	-0.12							
Dilution Air	5-Dec-96 9:15	-6.0	2.5	38		132			

**TABLE 5**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #5

Configuration: SVE-3 (D) fully open  
 Operating Pressure: -40 inches H2O

Start Date/Time 12-5-96 at 0825  
 Shutdown Date/Time 12-5-96 at 1130

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Blower Exhaust	5-Dec-96 9:15	25.0	2.8	80		139	5		T not measured. Assume T=80°F.
Manifold	5-Dec-96 9:15	-42.0							Ps at blower intake after dilution air.
SVE-3(D)	5-Dec-96 10:40	-35.0	0.01	50		8	500		Assume T=50°F for calc. FID taken at manifold. Ps reported as -01
SVE-3(S)	5-Dec-96 10:40	-0.30							
MP-4(S)	5-Dec-96 10:40	0.00							
MP-4(D)	5-Dec-96 10:40	-0.37							
SVE-2(D)	5-Dec-96 10:40	-0.02							
SVE-2(S)	5-Dec-96 10:40	0.00							
MP-6(S)	5-Dec-96 10:40	-0.05							
MP-6(D)	5-Dec-96 10:40	-1.10							
MP-5(S)	5-Dec-96 10:40	-0.05							
MP-5(D)	5-Dec-96 10:40	-0.16							
MP-7(D)	5-Dec-96 10:40	-0.48							
MP-7(S)	5-Dec-96 10:40	-0.19							
MP-8(S)	5-Dec-96 10:40	-0.14							
MP-8(D)	5-Dec-96 10:40	-0.12							
Manifold	5-Dec-96 10:40	-40.0							Ps at blower intake after dilution air.
Blower Exhaust	5-Dec-96 10:40	-25.0	2.8	80	13	131	7		T not measured. Assume T=80°F.
Dilution Air	5-Dec-96 10:40	-6.0	2.5	40	40	131			
MP-5(D)	5-Dec-96 11:00	-0.15							
MP-5(S)	5-Dec-96 11:00	-0.05							
Blower Exhaust	5-Dec-96 11:25							AS05-OUT	TCE and PCE sample.

Note: Missing temperature readings are due to a malfunctioning probe.



**TABLE 6**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #6

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -80 inches H2O

Start Date/Time 12-5-96 at 1300  
 Shutdown Date/Time 12-5-96 at 1535

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
SVE-3(S)	5-Dec-96 13:00	-75.0	0.08	50		21			No T recorded. Used final value for calc. Ps at blower intake after dilution air.
Manifold	5-Dec-96 13:00	-80.0							
SVE-3(D)	5-Dec-96 13:20	-3.5							
MP-4(S)	5-Dec-96 13:20	-0.90							
MP-4(D)	5-Dec-96 13:20	-1.05							
SVE-2(D)	5-Dec-96 13:20	-0.35							
SVE-2(S)	5-Dec-96 13:20	-0.08							
MP-6(D)	5-Dec-96 13:20	-0.43							
MP-6(S)	5-Dec-96 13:20	-1.35							
MP-7(S)	5-Dec-96 13:20	-0.56							
MP-7(D)	5-Dec-96 13:20	-0.19							
MP-8(S)	5-Dec-96 13:20	-0.08							
MP-8(D)	5-Dec-96 13:20	-0.01							
Dilution Air	5-Dec-96 13:20	-2.5	1.10	45	51	87			
Blower Exhaust	5-Dec-96 13:20	18.0	1.8	110	9	107	65		
Manifold	5-Dec-96 13:20						300		
SVE-3(S)	5-Dec-96 13:20						300	FID measured at manifold.	
SVE-3(S)	5-Dec-96 14:00	-75.0	0.07	50	>100	20		No T recorded. Used final value for calc.	
SVE-3(D)	5-Dec-96 14:00	-3.50							
MP-4(S)	5-Dec-96 14:00	-0.90							
MP-4(D)	5-Dec-96 14:00	-1.05							
SVE-2(D)	5-Dec-96 14:00	-0.35							
SVE-2(S)	5-Dec-96 14:00	-0.07							
MP-6(S)	5-Dec-96 14:00	-1.35							
MP-6(D)	5-Dec-96 14:00	-0.55							
MP-5(S)	5-Dec-96 14:00	-0.22							
MP-5(D)	5-Dec-96 14:00	-0.06							
MP-7(S)	5-Dec-96 14:00	-0.65							
MP-7(D)	5-Dec-96 14:00	-0.24							
MP-8(S)	5-Dec-96 14:00	-0.15							
MP-8(D)	5-Dec-96 14:00	-0.07							

**TABLE 6**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #6

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -80 inches H2O

Start Date/Time 12-5-96 at 1300  
 Shutdown Date/Time 12-5-96 at 1535

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Dilution Air	5-Dec-96 14:00	-2.5	1.15	45	60	89			
Blower Exhaust	5-Dec-96 14:15	18.0	2.0	110		113	70		No T recorded. Used final value for calc.
Manifold	5-Dec-96 14:15						280		
SVE-3(S)	5-Dec-96 14:15						280		FID taken at manifold.
GAC1-OUT	5-Dec-96 14:15						Backgd		
GAC2-OUT	5-Dec-96 14:15						Backgd		
SVE-3(S)	5-Dec-96 15:05	-75.0	0.09	50	>100	22			No T recorded. Used final value for calc.
SVE-3(D)	5-Dec-96 15:05	-3.7							
MP-4(S)	5-Dec-96 15:05	-0.95							
MP-4(D)	5-Dec-96 15:05	-1.10							
SVE-2(D)	5-Dec-96 15:05	-0.38							
SVE-2(S)	5-Dec-96 15:05	-0.10							
MP-6(D)	5-Dec-96 15:05	-0.56							
MP-6(S)	5-Dec-96 15:05	-1.35							
MP-5(S)	5-Dec-96 15:05	-0.22							
MP-5(D)	5-Dec-96 15:05	-0.08							
MP-7(S)	5-Dec-96 15:05	-0.64							
MP-7(D)	5-Dec-96 15:05	-0.29							
MP-8(S)	5-Dec-96 15:05	-0.15							
MP-8(D)	5-Dec-96 15:05	-0.09							
Dilution Air	5-Dec-96 15:20	-2.5	1.15	44	57	89			
Blower Exhaust	5-Dec-96 15:20	18.0	1.95	110		112	60		
Manifold	5-Dec-96 15:20	-80.0					280		Ps at blower intake after dilution air.
SVE-3(S)	5-Dec-96 15:20						280		FID measured at manifold.
Blower Exhaust	5-Dec-96 15:30							AS06-OUT	TCE and PCE sample.

Note: Missing temperature readings are due to a malfunctioning probe.

TABLE 7

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #7

Configuration: SVE-3 (D) fully open  
Operating Pressure: -80 inches H<sub>2</sub>O

Start Date/Time 12-5-96 at 1625  
Shutdown Date/Time 12-5-96 at 1845

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	5-Dec-96 16:30	-80.0					450		Ps at blower intake after dilution air. T not measured. Assume 50°F for calc. FID taken at manifold
SVE-3(D)	5-Dec-96 16:30	-75.0	0.01	50		7	450		
Blower Exhaust	5-Dec-96 16:30	18.5	1.90	104	9	111	30		
MP-6(D)	5-Dec-96 16:30	-3.0							
MP-6(S)	5-Dec-96 16:30	-0.15							
SVE-3(S)	5-Dec-96 16:30	-0.55							
MP-4(D)	5-Dec-96 16:30	-1.00							
MP-4(S)	5-Dec-96 16:30	-0.02							
SVE-2(D)	5-Dec-96 16:30	-0.13							
SVE-2(S)	5-Dec-96 16:30	0.00							
MP-5(S)	5-Dec-96 16:30	-0.18							
MP-5(D)	5-Dec-96 16:30	-0.60							
MP-7(S)	5-Dec-96 16:30	-0.65							
MP-7(D)	5-Dec-96 16:30	-1.35							
MP-8(S)	5-Dec-96 16:30	-0.37							
MP-8(D)	5-Dec-96 16:30	-0.40							
Dilution Air	5-Dec-96 16:30	-3.7	1.80	39	68	112			
Manifold	5-Dec-96 17:00						610		FID taken at manifold.
SVE-3(D)	5-Dec-96 17:00						610		
Blower Exhaust	5-Dec-96 17:00						20		
SVE-3(D)	5-Dec-96 17:25	-75.0	0.01	50		7			Assume T = 50 F for calculation. Pv was reported as 0.01
SVE-3(S)	5-Dec-96 17:25	-0.50							
MP-4(S)	5-Dec-96 17:25	-0.02							
MP-4(D)	5-Dec-96 17:25	-1.00							
SVE-2(D)	5-Dec-96 17:25	-0.10							
SVE-2(S)	5-Dec-96 17:25	0.00							
MP-6(S)	5-Dec-96 17:25	-0.17							
MP-6(D)	5-Dec-96 17:25	-2.7							
MP-5(D)	5-Dec-96 17:25	-0.65							
MP-5(S)	5-Dec-96 17:25	-0.18							
MP-7(S)	5-Dec-96 17:25	-0.70							

**TABLE 7**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #7

Configuration: SVE-3 (D) fully open  
 Operating Pressure: -80 inches H2O

Start Date/Time 12-5-96 at 1625  
 Shutdown Date/Time 12-5-96 at 1845

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-7(D)	5-Dec-96 17:25	-1.35							
MP-8(S)	5-Dec-96 17:25	-0.50							
MP-8(D)	5-Dec-96 17:25	-0.50							
Manifold	5-Dec-96 17:25	-78.0					560		Ps at blower intake after dilution air.
SVE-3(D)	5-Dec-96 17:25						560		FID taken at manifold.
Dilution Air	5-Dec-96 17:25	-3.5	1.75	39		110			No T recorded. Used initial value for calc.
Blower Exhaust	5-Dec-96 17:25	18.5	1.85	104		110	20		No T recorded. Used initial value for calc.
SVE-3(D)	5-Dec-96 18:15	-75.0	0.02	50		11			T not measured. Assume 50°F for calc.
SVE-3(S)	5-Dec-96 18:15	-0.50							
MP-4(D)	5-Dec-96 18:15	-1.00							
MP-4(S)	5-Dec-96 18:15	-0.01							
SVE-2(D)	5-Dec-96 18:15	-0.05							
SVE-2(S)	5-Dec-96 18:15	0.04							Positive Ps in vent
MP-6(D)	5-Dec-96 18:15	-2.7							
MP-6(S)	5-Dec-96 18:15	-0.14							
MP-5(S)	5-Dec-96 18:15	-0.20							
MP-5(D)	5-Dec-96 18:15	-0.65							
MP-7(D)	5-Dec-96 18:15	-1.45							
MP-7(S)	5-Dec-96 18:15	-0.80							
MP-8(S)	5-Dec-96 18:30	-0.55							
MP-8(D)	5-Dec-96 18:30	-0.65							
Dilution Air	5-Dec-96 18:30	-4.0	1.75	39		110			No T recorded. Used initial value for calc.
Blower Exhaust	5-Dec-96 18:30	18.5	1.90	104		111	70		No T recorded. Used initial value for calc.
Manifold	5-Dec-96 18:30	-78.0					560		Ps at blower intake after dilution air.
SVE-3(D)	5-Dec-96 18:30						560		FID taken at manifold.
Blower Exhaust	5-Dec-96 18:40							AS07-OUT	TCE and PCE sample.

Note: Missing temperature readings are due to a malfunctioning probe.

**TABLE 8**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #8

Configuration: SVE-2 (S) fully open  
 Operating Pressure: -140 inches H2O

Start Date/Time 12-6-96 at 0725  
 Shutdown Date/Time 12-6-96 at 1044

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
SVE-2(S)	6-Dec-96 7:35	-135	0.07	50	>100	18			T not measured. Assume 50°F for calc.
SVE-2(D)	6-Dec-96 7:35	-0.95							
MP-4(S)	6-Dec-96 7:35	-0.50							
MP-4(D)	6-Dec-96 7:35	-0.35							
SVE-3(S)	6-Dec-96 7:35	-0.10							
SVE-3(D)	6-Dec-96 7:35	-0.07							
MP-6(S)	6-Dec-96 7:45	-0.06							
MP-6(D)	6-Dec-96 7:45	-0.05							
MP-5(S)	6-Dec-96 7:45	-0.03							
MP-5(D)	6-Dec-96 7:45	-0.03							
Manifold	6-Dec-96 7:45	-140					70		Ps at blower intake after dilution air.
SVE-2(S)	6-Dec-96 7:45						70		FID taken at manifold.
MP-7(S)	6-Dec-96 7:45	-0.06							
MP-7(D)	6-Dec-96 7:45	-0.25							
MP-8(S)	6-Dec-96 7:45	-0.02							
MP-8(D)	6-Dec-96 7:45	-0.06							
Dilution Air	6-Dec-96 7:45	-1.15	0.28	39	76	44			
Blower Exhaust	6-Dec-96 8:00	11.0	1.20	123	8	86	20		
SVE-2(S)	6-Dec-96 8:30	-135	0.08	50		19	140		T not measured. Assume 50°F for calc. FID taken at manifold.
SVE-2(D)	6-Dec-96 8:30	-1.10							
MP-4(D)	6-Dec-96 8:30	-0.48							
MP-4(S)	6-Dec-96 8:30	-0.50							
SVE-3(S)	6-Dec-96 8:30	-0.13							
SVE-3(D)	6-Dec-96 8:30	-0.14							
MP-6(D)	6-Dec-96 8:30	-0.24							
MP-6(S)	6-Dec-96 8:30	-0.11							
MP-5(S)	6-Dec-96 8:30	-0.08							
MP-5(D)	6-Dec-96 8:30	-0.15							
MP-7(S)	6-Dec-96 8:30	-0.20							
MP-7(D)	6-Dec-96 8:30	-0.15							
MP-8(S)	6-Dec-96 8:30	-0.14							

**TABLE 8**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #8

Configuration: SVE-2 (S) fully open  
 Operating Pressure: -140 inches H2O

Start Date/Time 12-6-96 at 0725  
 Shutdown Date/Time 12-6-96 at 1044

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(D)	6-Dec-96 8:30	-0.15							
Manifold	6-Dec-96 8:30	-137					140		Ps at blower intake after dilution air.
Dilution Air	6-Dec-96 8:30	-1.20	0.35	43	70	49			
Blower Exhaust	6-Dec-96 8:30	11.5	1.10	122	5	83	30		
SVE-2(S)	6-Dec-96 9:10	-135	0.10	50		21			T not measured. Assume 50°F for calc.
SVE-2(D)	6-Dec-96 9:10	-1.30							
MP-4(S)	6-Dec-96 9:10	-1.75							Double checked Ps.
MP-4(D)	6-Dec-96 9:10	-0.50							
SVE-3(S)	6-Dec-96 9:10	-0.14							
SVE-3(D)	6-Dec-96 9:10	-0.13							
MP-6(D)	6-Dec-96 9:10	-0.21							
MP-6(S)	6-Dec-96 9:10	-0.11							
MP-5(S)	6-Dec-96 9:10	-0.09							
MP-5(D)	6-Dec-96 9:10	-0.15							
MP-7(D)	6-Dec-96 9:10	-0.12							
MP-7(S)	6-Dec-96 9:10	-0.14							
MP-8(S)	6-Dec-96 9:10	-0.08							
MP-8(D)	6-Dec-96 9:10	-0.11							
Dilution Air	6-Dec-96 9:30	-1.10	0.36	43		50			No T recorded. Used subsequent value for calc.
Blower Exhaust	6-Dec-96 9:30	11.0	0.90	122		75	40		No T recorded. Used subsequent value for calc.
Manifold	6-Dec-96 9:30	-136					150		Ps at blower intake after dilution air.
SVE-2(S)	6-Dec-96 9:30						150		FID taken at manifold.
SVE-2(S)	6-Dec-96 10:10	-132	0.01	50		7	200		Assume T=50°F for calc. Ps recorded as 01 FID at manifold
SVE-2(D)	6-Dec-96 10:10	-1.50							
MP-4(S)	6-Dec-96 10:10	-1.80							
MP-4(D)	6-Dec-96 10:10	-0.50							
SVE-3(S)	6-Dec-96 10:10	-0.13							
SVE-3(D)	6-Dec-96 10:10	-0.13							
MP-6(S)	6-Dec-96 10:10	-0.09							
MP-6(D)	6-Dec-96 10:10	-0.19							
MP-5(S)	6-Dec-96 10:10	-0.07							

TABLE 8

Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements

Test Run #8

Configuration: SVE-2 (S) fully open  
Operating Pressure: -140 inches H2O

Start Date/Time 12-6-96 at 0725  
Shutdown Date/Time 12-6-96 at 1044

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-5(D)	6-Dec-96 10:10	-0.14							
MP-7(S)	6-Dec-96 10:10	-0.14							
MP-7(D)	6-Dec-96 10:10	-0.10							
MP-8(S)	6-Dec-96 10:10	-0.11							
MP-8(D)	6-Dec-96 10:10	-0.13							
Dilution Air	6-Dec-96 10:10	-1.00	0.38	44	65				
Blower Exhaust	6-Dec-96 10:10	11.0	1.05	136	7		60		
Manifold	6-Dec-96 10:10	-135					200		
Blower Exhaust	6-Dec-96 10:40							AS08-OUT	TCE and PCE sample.

TABLE 9

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #9

Configuration: SVE-2 (D) fully open  
Operating Pressure: -140 inches H2O

Start Date/Time 12-6-96 at 1240  
Shutdown Date/Time 12-6-96 at 1620

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	12:/6/96 12:40	-140							Ps at blower intake after dilution air. T not measured. Assume 50°F for calc.
SVE-2(D)	12:/6/96 12:40	-136	0.04	50	>100	14			
SVE-2(S)	12:/6/96 12:40	-0.60							
MP-4(S)	6-Dec-96 13:00	-2.3							
MP-4(D)	6-Dec-96 13:00	-7.0							
SVE-3(S)	6-Dec-96 13:00	-0.41							
SVE-3(D)	6-Dec-96 13:00	-0.85							
MP-6(S)	6-Dec-96 13:00	-0.26							
MP-6(D)	6-Dec-96 13:00	-0.55							
MP-5(S)	6-Dec-96 13:00	-0.13							
MP-5(D)	6-Dec-96 13:00	-0.18							
MP-7(D)	6-Dec-96 13:00	-0.17							
MP-7(S)	6-Dec-96 13:00	-0.33							
MP-8(D)	6-Dec-96 13:00	-0.07							
MP-8(S)	6-Dec-96 13:00	-0.08							
Dilution Air	6-Dec-96 13:15	-1.15	0.40	39		53			
Blower Exhaust	6-Dec-96 13:15	11.0	1.00	130		78	140		
Manifold	6-Dec-96 13:15	-137					890		
SVE-2(D)	6-Dec-96 13:15						890	Ps at blower intake after dilution air. FID taken at manifold.	
SVE-2(D)	6-Dec-96 13:45	-135	0.04	50		14	760	Assume T=50°F for calc. FID taken at manifold.	
SVE-2(S)	6-Dec-96 13:45	-0.65							
MP-4(S)	6-Dec-96 13:45	-2.5							
MP-4(D)	6-Dec-96 13:45	-7.3							
SVE-3(S)	6-Dec-96 13:45	-0.44							
SVE-3(D)	6-Dec-96 13:45	-0.95							
MP-6(S)	6-Dec-96 13:45	-0.32							
MP-6(D)	6-Dec-96 13:45	-0.70							
MP-5(S)	6-Dec-96 13:45	-0.18							
MP-5(D)	6-Dec-96 13:45	-0.22							
MP-7(S)	6-Dec-96 13:45	-0.43							
MP-7(D)	6-Dec-96 13:45	-0.30							



**TABLE 9**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #9

Configuration: SVE-2 (D) fully open  
 Operating Pressure: -140 inches H2O

Start Date/Time 12-6-96 at 1240  
 Shutdown Date/Time 12-6-96 at 1620

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	6-Dec-96 13:45	-0.15							
MP-8(D)	6-Dec-96 13:45	-0.20							
Dilution Air	6-Dec-96 13:45	-1.10	0.40	42		53			
Blower Exhaust	6-Dec-96 13:45	11.0	1.10	134		82	120		
Manifold	6-Dec-96 13:45	-140					760		
SVE-2(D)	6-Dec-96 15:20	-135	0.20	50		30	840		Ps at blower intake after dilution air. Pv recorded as .01 to 25 FID taken at manifold Assume T=50 F
SVE-2(S)	6-Dec-96 15:20	-0.50							
MP-4(D)	6-Dec-96 15:20	-4.0							
MP-4(S)	6-Dec-96 15:20	-2.5							
SVE-3(S)	6-Dec-96 15:20	-0.28							
SVE-3(D)	6-Dec-96 15:20	-0.55							
MP-6(S)	6-Dec-96 15:20	-0.24							
MP-6(D)	6-Dec-96 15:20	-0.40							
MP-5(S)	6-Dec-96 15:20	-0.13							
MP-5(D)	6-Dec-96 15:20	-0.20							
MP-7(S)	6-Dec-96 15:20	-0.27							
MP-7(D)	6-Dec-96 15:20	-0.17							
MP-8(S)	6-Dec-96 15:20	-0.09							
MP-8(D)	6-Dec-96 15:20	-0.11							
Dilution Air	6-Dec-96 15:20	-1.15	0.41	40		54			
Blower Exhaust	6-Dec-96 15:20	11.0	1.25	141		87	88		
Manifold	6-Dec-96 15:20	-143					840		Ps at blower intake after dilution air.
Blower Exhaust	6-Dec-96 16:15							AS09-OUT	TCE and PCE sample.

Notes: Water was gurgling in SVE-2(D) during the 1520 readings.  
 Missing temperature and relative humidity readings are due to malfunctioning probes.

**TABLE 10**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #10

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -140 inches H2O

Start Date/Time 12-9-96 at 0910  
 Shutdown Date/Time 12-9-96 at 1315

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
SVE-3(S)	9-Dec-96 9:25	-135	0.25	55	>100	34			No T recorded. Used subsequent value for calc.
SVE-3(D)	9-Dec-96 9:25	-6.0							
MP-4(S)	9-Dec-96 9:25	-0.90							
MP-4(D)	9-Dec-96 9:25	-3.0							
SVE-2(S)	9-Dec-96 9:25	-0.25							
SVE-2(D)	9-Dec-96 9:25	-1.40							
MP-6(S)	9-Dec-96 9:25	-1.70							
MP-6(D)	9-Dec-96 9:25	-1.25							
MP-5(S)	9-Dec-96 9:25	-0.45							
MP-5(D)	9-Dec-96 9:25	-0.45							
MP-7(S)	9-Dec-96 9:25	-1.25							
MP-7(D)	9-Dec-96 9:25	-0.65							
MP-8(S)	9-Dec-96 9:25	-0.36							
MP-8(D)	9-Dec-96 9:25	-0.31							
Dilution Air	9-Dec-96 9:25	-1.00	0.38	30	28	52			
Blower Exhaust	9-Dec-96 9:25	11.5	1.25	120	8	88	110		
Manifold	9-Dec-96 9:15	-135							
Manifold	9-Dec-96 10:00						220		
SVE-3(S)	9-Dec-96 10:00						220		
SVE-3(S)	9-Dec-96 11:00	-130	0.25	55	>100	34	200		
SVE-3(D)	9-Dec-96 11:00	-6.0							
MP-4(S)	9-Dec-96 11:00	-1.90							
MP-4(D)	9-Dec-96 11:00	-3.0							
SVE-2(S)	9-Dec-96 11:00	-0.24							
SVE-2(D)	9-Dec-96 11:00	-1.35							
MP-6(S)	9-Dec-96 11:00	-2.0							
MP-6(D)	9-Dec-96 11:00	-1.25							
MP-5(S)	9-Dec-96 11:00	-0.50							
MP-5(D)	9-Dec-96 11:00	-0.45							
MP-7(S)	9-Dec-96 11:00	-1.25							
MP-7(D)	9-Dec-96 11:00	-0.50							

**TABLE 10**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #10

Configuration: SVE-3 (S) fully open  
 Operating Pressure: -140 inches H<sub>2</sub>O

Start Date/Time 12-9-96 at 0910  
 Shutdown Date/Time 12-9-96 at 1315

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	9-Dec-96 11:00	-0.36							
MP-8(D)	9-Dec-96 11:00	-0.30							
Dilution Air	9-Dec-96 11:00	-1.00	0.35	37	39	50			
Blower Exhaust	9-Dec-96 11:00	12.0	1.35	122	8	91	100		
Manifold	9-Dec-96 11:00	-130					200		
SVE-3(S)	9-Dec-96 12:55	-135	0.27	56	>100	35	160		P's and FID measured at manifold before bleed air. Used initial P's value
SVE-3(D)	9-Dec-96 12:55	-6.0							
MP-4(S)	9-Dec-96 12:55	-1.85							
MP-4(D)	9-Dec-96 12:55	-3.0							
SVE-2(S)	9-Dec-96 12:55	-0.23							
SVE-2(D)	9-Dec-96 12:55	-1.35							
MP-6(S)	9-Dec-96 12:55	-2.3							
MP-6(D)	9-Dec-96 12:55	-1.15							
MP-5(S)	9-Dec-96 12:55	-0.40							
MP-5(D)	9-Dec-96 12:55	-0.34							
MP-7(S)	9-Dec-96 12:55	-1.10							
MP-7(D)	9-Dec-96 12:55	-0.43							
MP-8(S)	9-Dec-96 12:55	-0.30							
MP-8(D)	9-Dec-96 12:55	-0.24							
Dilution Air	9-Dec-96 12:55	-1.00	0.38	38	43	52			
Blower Exhaust	9-Dec-96 12:55	12.0	1.40	12	8	103	100		
Manifold	9-Dec-96 12:55	-120					160		
Blower Exhaust	9-Dec-96 13:10							AS10-OUT	TCE and PCE sample.

TABLE 11

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #11

Configuration: SVE-3 (D) fully open  
Operating Pressure: -140 inches H<sub>2</sub>O

Start Date/Time 12-9-96 at 1535  
Shutdown Date/Time 12-9-96 at 1840

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	9-Dec-96 15:50	-144							
Blower Intake	9-Dec-96 15:50	-140							
SVE-3(D)	9-Dec-96 15:50	-140	0.03	44	82	12	340		Blower intake is after bleed air. FID and T taken at manifold.
SVE-3(S)	9-Dec-96 15:50	-0.70							
MP-4(S)	9-Dec-96 15:50	-0.27							
MP-4(D)	9-Dec-96 15:50	-2.3							
SVE-2(S)	9-Dec-96 15:50	-0.03							
SVE-2(D)	9-Dec-96 15:50	-0.50							
MP-6(D)	9-Dec-96 15:50	-5.7							
MP-6(S)	9-Dec-96 15:50	-0.33							
MP-5(S)	9-Dec-96 15:50	-0.40							
MP-5(D)	9-Dec-96 15:50	-1.63							
MP-7(S)	9-Dec-96 15:50	-1.20							
MP-7(D)	9-Dec-96 15:50	-2.5							
MP-8(S)	9-Dec-96 15:50	-0.95							
MP-8(D)	9-Dec-96 15:50	-1.10							
Dilution Air	9-Dec-96 15:50	-1.20	0.43	37	40	55			
Manifold	9-Dec-96 15:50	-140		44			340		
Blower Exhaust	9-Dec-96 15:50	10.5	1.10	123	4	82	58		
SVE-3(D)	9-Dec-96 17:15	-140	0.04	44		14	240		Used previous manifold values for P's and T. FID taken at manifold
SVE-3(S)	9-Dec-96 17:15	-0.75							
MP-4(D)	9-Dec-96 17:30	-2.5							
MP-4(S)	9-Dec-96 17:30	-0.31							
SVE-2(D)	9-Dec-96 17:30	-0.60							
SVE-2(S)	9-Dec-96 17:30	-0.05							
MP-6(D)	9-Dec-96 17:30	-6.3							
MP-6(S)	9-Dec-96 17:30	-0.38							
MP-5(S)	9-Dec-96 17:30	-0.42							
MP-5(D)	9-Dec-96 17:30	-1.70							
MP-7(D)	9-Dec-96 17:30	-2.5							
MP-7(S)	9-Dec-96 17:30	-1.20							

**TABLE 11**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #11

Configuration: SVE-3 (D) fully open  
 Operating Pressure: -140 inches H2O

Start Date/Time 12-9-96 at 1535  
 Shutdown Date/Time 12-9-96 at 1840

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	9-Dec-96 17:30	-0.95							
MP-8(D)	9-Dec-96 17:30	-1.05							
Dilution Air	9-Dec-96 17:40	-1.20	0.38	35	59	52			
Blower Exhaust	9-Dec-96 17:40	10.5	1.10	133	5	82	60		
Manifold	9-Dec-96 17:40	-140		48			240		Ps not measured. Used initial value.
SVE-3(D)	9-Dec-96 18:20	-140	0.03	44		12	320		Used manifold values for Ps, T, FID
SVE-3(S)	9-Dec-96 18:20	-0.70							
MP-4(S)	9-Dec-96 18:20	-0.32							
MP-4(D)	9-Dec-96 18:20	-2.5							
SVE-2(D)	9-Dec-96 18:20	-0.52							
SVE-2(S)	9-Dec-96 18:20	-0.05							
MP-6(S)	9-Dec-96 18:20	-0.37							
MP-6(D)	9-Dec-96 18:20	-6.3							
MP-5(S)	9-Dec-96 18:20	-0.48							
MP-5(D)	9-Dec-96 18:20	-1.75							
MP-7(S)	9-Dec-96 18:20	-1.30							
MP-7(D)	9-Dec-96 18:20	-2.5							
MP-8(S)	9-Dec-96 18:20	-0.95							
MP-8(D)	9-Dec-96 18:20	-1.10							
Dilution Air	9-Dec-96 18:20	-1.15	0.43	34	68	55			
Blower Exhaust	9-Dec-96 18:20	11.0	1.10	143	4	81	64		
Manifold	9-Dec-96 18:20			44			320		
Blower Exhaust	9-Dec-96 18:35							AS11-OUT	TCE and PCE sample.

TABLE 12

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Test Run #12

Configuration: All four vents in NE corner fully open  
Operating Pressures: -40, -80, -125, and -110 inches H<sub>2</sub>O

Start Date/Time 12-10-96 at 0810  
Shutdown Date/Time: Continue into SO

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	10-Dec-96 8:10	-40.0					170		
SVE-3(D)	10-Dec-96 8:10	-38.0	0.01	61	>100	8	400		
SVE-3(S)	10-Dec-96 8:10	-38.0	0.02	60	>100	11	100		
SVE-2(D)	10-Dec-96 8:25	-38.0	0.01	65	>100	8	380		Pv reported as: 0.01. Used 0.01 for calc.
SVE-2(S)	10-Dec-96 8:25	-38.0	0.01	64	>100	8	62		
MP-4(D)	10-Dec-96 8:25	-2.5							
MP-4(S)	10-Dec-96 8:25	-1.45							
MP-6(D)	10-Dec-96 8:25	-1.70							
MP-6(S)	10-Dec-96 8:25	-0.60							
MP-5(D)	10-Dec-96 8:25	-0.45							
MP-5(S)	10-Dec-96 8:25	-0.26							
MP-7(S)	10-Dec-96 8:25	-0.60							
MP-7(D)	10-Dec-96 8:25	-0.75							
MP-8(S)	10-Dec-96 8:25	-0.35							
MP-8(D)	10-Dec-96 8:25	-0.30							
Dilution Air	10-Dec-96 8:25	-4.5	1.80	35	51	112			
Blower Exhaust	10-Dec-96 8:25	25.0	2.7	75	14	137	32		
GAC1-OUT	10-Dec-96 8:25						Backgd		
Manifold	10-Dec-96 9:50	-80.0					100		System Ps increased to -80 inches of water.
SVE-3(S)	10-Dec-96 9:50	-80.0	0.13	60		27	80		T and RH not measured. Used previous T.
SVE-3(D)	10-Dec-96 9:50	-80.0	0.02	61		10	240		T and RH not measured. Used previous T.
SVE-2(D)	10-Dec-96 9:50	-80.0	0.01	65		7	300		T and RH not measured. Used previous T.
SVE-2(S)	10-Dec-96 9:50	-80.0	0.03	64		13	50		T and RH not measured. Used previous T.
MP-4(D)	10-Dec-96 10:15	-8.0							
MP-4(S)	10-Dec-96 10:15	-4.3							
MP-6(S)	10-Dec-96 10:15	-1.75							
MP-6(D)	10-Dec-96 10:15	-5.0							
MP-5(S)	10-Dec-96 10:15	-0.70							
MP-5(D)	10-Dec-96 10:15	-1.45							
MP-7(S)	10-Dec-96 10:15	-1.55							
MP-7(D)	10-Dec-96 10:15	-1.95							

**TABLE 12**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Test Run #12

Configuration: All four vents in NE corner fully open  
 Operating Pressures: -40, -80, -125, and -110 inches H2O

Start Date/Time 12-10-96 at 0810  
 Shutdown Date/Time: Continue into SO

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	10-Dec-96 10:15	-0.90							
MP-8(D)	10-Dec-96 10:15	-0.90							
Dilution Air	10-Dec-96 10:25	-1.30	0.43	35	55	55			
Blower Exhaust	10-Dec-96 10:25	17.5	1.90	100		111	100		
GAC1-OUT	10-Dec-96 10:25						Backgd		
Manifold	10-Dec-96 10:40	-143					90		System P's increased to -143. Dilution air valve fully closed.
Dilution Air	10-Dec-96 10:40					0			Fully closed. No flow
SVE-3(S)	10-Dec-96 11:15	-125	0.31	60		38	54		T and RH not measured. Used previous T.
SVE-3(D)	10-Dec-96 11:15	-125	0.03	61		12	200		T and RH not measured. Used previous T.
SVE-2(S)	10-Dec-96 11:15	-125	0.06	64		17	66		T and RH not measured. Used previous T.
SVE-2(D)	10-Dec-96 11:15	-125	0.03	65		12	200		T and RH not measured. Used previous T.
MP-4(S)	10-Dec-96 11:15	-6.0							
MP-4(D)	10-Dec-96 11:15	-10.6							
MP-6(S)	10-Dec-96 11:15	-2.5							
MP-6(D)	10-Dec-96 11:15	-7.0							
MP-5(S)	10-Dec-96 11:15	-1.00							
MP-5(D)	10-Dec-96 11:15	-1.90							
MP-7(S)	10-Dec-96 11:30	-2.3							
MP-7(D)	10-Dec-96 11:30	-3.0							
MP-8(S)	10-Dec-96 11:30	-1.20							
MP-8(D)	10-Dec-96 11:30	-1.25							
Dilution Air	10-Dec-96 11:30					0			Fully closed. No flow
Blower Exhaust	10-Dec-96 11:30	11.0	1.30	130	11	89			Activate heat exchanger to lower exhaust T.
Manifold	10-Dec-96 11:35	-140	1.40	60	>100	79	100		T not measured. Assume T 60°F
Manifold	10-Dec-96 11:50	-110							Decrease operating P's to 110. Vac relief engaging.
Manifold	10-Dec-96 12:50	-110	0.50	60	>100	50	100		T not measured. Assume T 60 F Begin SO.
SVE-3(S)	10-Dec-96 12:50	-105	0.23	62	>100	34	60		
SVE-3(D)	10-Dec-96 12:50	-105	0.02	62		10	260		Pv recorded as .015. Used T from SVE-3(S).
SVE-2(S)	10-Dec-96 12:50	-105	0.06	62		17	56		Used T from SVE-3(S)
SVE-2(D)	10-Dec-96 12:50	-105	0.02	62		10	180		Used T from SVE-3(S)
MP-4(S)	10-Dec-96 12:50	-5.0							

TABLE 12

Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements

Test Run #12

Configuration: All four vents in NE corner fully open  
Operating Pressures: -40, -80, -125, and -110 inches H2O

Start Date/Time 12-10-96 at 0810  
Shutdown Date/Time: Continue into SO

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-4(D)	10-Dec-96 12:50	-8.5							
MP-6(S)	10-Dec-96 13:30	-2.0							
MP-6(D)	10-Dec-96 13:30	-5.5							
MP-5(S)	10-Dec-96 13:30	-0.85							
MP-5(D)	10-Dec-96 13:30	-1.55							
MP-7(S)	10-Dec-96 13:30	-1.85							
MP-7(D)	10-Dec-96 13:30	-2.3							
MP-8(S)	10-Dec-96 13:30	-0.95							
MP-8(D)	10-Dec-96 13:30	-0.95							
Dilution Air	10-Dec-96 13:30	-0.45	0.19	52	47	36			
Blower Exhaust	10-Dec-96 13:30	14.0	1.35	102	14	93	110		
Blower Exhaust	10-Dec-96 13:40							AS12-OUT	VOC sample also represents initial SO conditions

Notes: System was not shut down between Run #12 and sustained operations.  
Sustained operations were initiated on 12-10-96 at 1250 once the system was adjusted to optimal conditions during the end of Run 12.  
Therefore, the final round of measurements and associated air sample collected during Run #12 also represent the initial conditions for sustained operations.



TABLE 13

Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements

Sustained Operations

Configuration: All four vents in NE corner open  
Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Manifold	10-Dec-96 12:50	-110	0.50	60	>100	50	100		T not measured. Assume T= 60°F. Begin SO.
SVE-3(S)	10-Dec-96 12:50	-105	0.23	62	>100	34	60		
SVE-3(D)	10-Dec-96 12:50	-105	0.02	62		10	260		Pv reported as 015. Used T from SVE-3(S).
SVE-2(S)	10-Dec-96 12:50	-105	0.06	62		17	56		Used T from SVE-3(S)
SVE-2(D)	10-Dec-96 12:50	-105	0.02	62		10	180		Used T from SVE-3(S)
MP-4(S)	10-Dec-96 12:50	-5.0							
MP-4(D)	10-Dec-96 12:50	-8.5							
MP-6(S)	10-Dec-96 13:30	-2.0							
MP-6(D)	10-Dec-96 13:30	-5.5							
MP-5(S)	10-Dec-96 13:30	-0.85							
MP-5(D)	10-Dec-96 13:30	-1.55							
MP-7(S)	10-Dec-96 13:30	-1.85							
MP-7(D)	10-Dec-96 13:30	-2.3							
MP-8(S)	10-Dec-96 13:30	-0.95							
MP-8(D)	10-Dec-96 13:30	-0.95							
Dilution Air	10-Dec-96 13:30	-0.45	0.19	52	47	36			
Blower Exhaust	10-Dec-96 13:30	14.0	1.35	102	14	93	110		
Blower Exhaust	10-Dec-96 13:40							AS12-OUT	VOC sample also represents initial SO conditions
Manifold	10-Dec-96 16:20	-108					110		
SVE-3(D)	10-Dec-96 16:20	-105	0.01	63	>100	7	490		
SVE-3(S)	10-Dec-96 16:20	-105	0.22	63	>100	33	110		
SVE-2(D)	10-Dec-96 16:20	-105	0.03	63	>100	12	210		Used T from SVE-3(S). Water gurgling in vent.
SVE-2(S)	10-Dec-96 16:20	-105	0.06	63	>100	17	78		Used T from SVE-3(S)
MP-4(S)	10-Dec-96 16:20	-4.5							
MP-4(D)	10-Dec-96 16:20	-7.0							
MP-6(S)	10-Dec-96 16:20	-2.0							
MP-6(D)	10-Dec-96 16:20	-5.0							
MP-5(S)	10-Dec-96 16:20	-0.75							
MP-5(D)	10-Dec-96 16:20	-1.50							
MP-7(D)	10-Dec-96 16:20	-1.30							
MP-7(S)	10-Dec-96 16:20	-1.45							

**TABLE 13**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
 Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
 Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	10-Dec-96 16:20	-0.90							
MP-8(D)	10-Dec-96 16:20	-0.90							
Dilution Air	10-Dec-96 16:20	-0.45	0.20	42	35	37			
Blower Exhaust	10-Dec-96 16:20	14.0	1.40	90	15	96	120		
Manifold	10-Dec-96 17:00	-108	0.80	60		63	100		Ps and T not measured. Used previous values.
GAC1-OUT	10-Dec-96 17:00						2		
Blower Exhaust	10-Dec-96 17:05							ASS01-OUT	PCE, TCE sample.
Manifold	11-Dec-96 8:50	-110					90		
SVE-3(D)	11-Dec-96 8:50	-108	0.01	63	>100	7	180		No water gurgling. Pv reported as 0 to .02. Used previous T.
SVE-3(S)	11-Dec-96 8:50	-105	0.23	63	>100	34	50		No water gurgling. Pv reported as approx. .23. Used previous T.
SVE-2(D)	11-Dec-96 8:50	-105	0.03	63		12			Pv reported as 0 to .05. Used previous T.
SVE-2(S)	11-Dec-96 8:50	-105					40		No Pv. Sand being suctioned up vent. Shutdown.
SVE-2(S)	11-Dec-96 9:35	-68	0.02	60	>100	11	32		Restart at 0915. Valve partially closed. Assume T=60°F.
SVE-2(D)	11-Dec-96 9:35	-108	0.01	60	>100	7	450		Assume T=60°F.
SVE-3(D)	11-Dec-96 9:35	-108	0.01	59		7	400		
SVE-3(S)	11-Dec-96 9:35	-108	0.25	64		35	90		
MP-4(S)	11-Dec-96 9:55	-3.5							
MP-4(D)	11-Dec-96 9:55	-6.7							
MP-6(S)	11-Dec-96 9:55	-2.0							
MP-6(D)	11-Dec-96 9:55	-4.3							
MP-5(S)	11-Dec-96 9:55	-0.70							
MP-5(D)	11-Dec-96 9:55	-1.25							
MP-7(S)	11-Dec-96 9:55	-1.30							
MP-7(D)	11-Dec-96 9:55	-1.10							
MP-8(S)	11-Dec-96 9:55	-0.80							
MP-8(D)	11-Dec-96 9:55	-0.80							
Manifold	11-Dec-96 10:10	-110	0.75	60	>100	61	100		
Dilution Air	11-Dec-96 10:10	-0.43	0.14	45	76	31			
Blower Exhaust	11-Dec-96 10:10	13.5	1.50	110	11	98	105		
GAC1-OUT	11-Dec-96 10:15						Backgd		
Manifold	11-Dec-96 12:30	-110					100		

TABLE 13

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
SVE-3(D)	11-Dec-96 12:45	-108	0.01	60		7	480		Ps reported as <.01. Assume T=60°F.
SVE-3(S)	11-Dec-96 12:45	-108	0.27	60		37	100		Assume T= 60°F.
SVE-2(S)	11-Dec-96 12:45	-70	0.02	60		11	45		Assume T= 60°F.
SVE-2(D)	11-Dec-96 12:45	-110	0.01	60		7	360		Ps reported as <.01. Assume T= 60°F.
MP-4(S)	11-Dec-96 13:00	-2.5							
MP-4(D)	11-Dec-96 13:00	-3.5							
MP-6(S)	11-Dec-96 13:00	-2.0							
MP-6(D)	11-Dec-96 13:00	-4.0							
MP-5(S)	11-Dec-96 13:00	-0.65							
MP-5(D)	11-Dec-96 13:00	-1.10							
MP-7(S)	11-Dec-96 13:00	-1.20							
MP-7(D)	11-Dec-96 13:00	-2.0							
MP-8(S)	11-Dec-96 13:00	-0.60							
MP-8(D)	11-Dec-96 13:00	-0.60							
Dilution Air	11-Dec-96 13:20	-0.50	0.21	38	>100	38			
Blower Exhaust	11-Dec-96 13:20	13.0	1.40	110	13	94	94		
Manifold	11-Dec-96 13:30	-110	0.70	60		59			Used Ps from previous measurement. Assume T= 60°F.
Blower Exhaust	11-Dec-96 13:40							ASS02-OUT	PCE, TCE sample.
Manifold	12-Dec-96 10:00	-115		58			80		
SVE-3(D)	12-Dec-96 10:00	-113	0.01	60	>100	7	370		
SVE-3(S)	12-Dec-96 10:00	-113	0.27	61	>100	36	100		
SVE-2(D)	12-Dec-96 10:10	-113	0.01	62	>100	7	220		Pv reported as <.01
SVE-2(S)	12-Dec-96 10:10	-68	0.01	62	>100	7	50		Pv reported as .015
MP-4(S)	12-Dec-96 10:30	-2.3							
MP-4(D)	12-Dec-96 10:30	-3.0							
MP-6(S)	12-Dec-96 10:30	-1.95							
MP-6(D)	12-Dec-96 10:30	-3.5							
MP-5(S)	12-Dec-96 10:30	-0.70							
MP-5(D)	12-Dec-96 10:30	-1.10							
MP-7(S)	12-Dec-96 10:30	-2.5							
MP-7(D)	12-Dec-96 10:30	-0.90							

**TABLE 13**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
 Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
 Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-8(S)	12-Dec-96 10:30	-0.63							
MP-8(D)	12-Dec-96 10:30	-0.63							
Dilution Air	12-Dec-96 10:40	-0.47	0.20	46	>100	37			
Blower Exhaust	12-Dec-96 10:40	13.0	1.45	122	12	95	82		Increase flow through heat exchanger.
Manifold	12-Dec-96 10:40	-115	0.63	58	>100	55			Used Ps and T from previous measurement.
GAC1-OUT	12-Dec-96 10:40						Backgd		
GAC2-OUT	12-Dec-96 10:40						Backgd		
Manifold	12-Dec-96 13:15	-115		60			100		
SVE-3(D)	12-Dec-96 13:15	-110	0.01	63	>100	7	390		
SVE-3(S)	12-Dec-96 13:15	-110	0.27	62	>100	36	90		
SVE-2(S)	12-Dec-96 13:30	-68	0.01	66	>100	7	40		
SVE-2(D)	12-Dec-96 13:30	-110	0.01	66	>100	7	190		Ps reported as .01
MP-4(S)	12-Dec-96 13:50	-2.5							
MP-4(D)	12-Dec-96 13:50	-3.0							
MP-6(S)	12-Dec-96 13:50	-2.0							
MP-6(D)	12-Dec-96 13:50	-3.3							
MP-5(S)	12-Dec-96 13:50	-0.65							
MP-5(D)	12-Dec-96 13:50	-1.05							
MP-7(S)	12-Dec-96 13:50	-2.0							
MP-7(D)	12-Dec-96 13:50	-0.90							
Dilution Air	12-Dec-96 14:00	-0.50	0.16	48	>100	33			
Blower Exhaust	12-Dec-96 14:00	13.0	1.50	120	12	97	80		
Manifold	12-Dec-96 14:00	-115	0.63	62	>100	55			Used Ps and T from subsequent measurement.
MP-8(S)	12-Dec-96 14:00	-0.65							
MP-8(D)	12-Dec-96 14:00	-0.65							
Blower Exhaust	12-Dec-96 14:20							ASS03-OUT	PCE, TCE sample.
Manifold	12-Dec-96 15:30	-115		62			105		
SVE-3(D)	12-Dec-96 15:30	-110	0.01	64		7	360		Ps reported as .01
SVE-3(S)	12-Dec-96 15:30	-110	0.27	64		36	100		
SVE-2(D)	12-Dec-96 15:30	-110		64			210		
SVE-2(S)	12-Dec-96 15:30	-70	0.01	64		7	50		Ps reported as .015

TABLE 13

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-4(S)	12-Dec-96 15:40	-2.5							
MP-4(D)	12-Dec-96 15:40	-3.0							
MP-6(S)	12-Dec-96 15:40	-2.0							
MP-6(D)	12-Dec-96 15:40	-3.3							
MP-5(S)	12-Dec-96 15:40	-0.60							
MP-5(D)	12-Dec-96 15:40	-0.90							
MP-7(S)	12-Dec-96 15:40	-2.5							
MP-7(D)	12-Dec-96 15:40	-0.80							
MP-8(S)	12-Dec-96 15:40	-0.60							
MP-8(D)	12-Dec-96 15:40	-0.60							
Dilution Air	12-Dec-96 16:00	-0.50	0.20	48	>100	37			
Blower Exhaust	12-Dec-96 16:00	13.0	1.45	120	12	95			
Manifold	12-Dec-96 16:00	-115	0.65	62		56			Used Ps and T from previous measurement.
Manifold	13-Dec-96 8:30	-115		61			100		
SVE-3(D)	13-Dec-96 8:30	-110	0.01	61	>100	7	410		Ps reported as .01
SVE-3(S)	13-Dec-96 8:30	-110	0.26	61	>100	36	82		
SVE-2(D)	13-Dec-96 8:50	-110	0.01	62	>100	7	180		Ps reported as .01
SVE-2(S)	13-Dec-96 8:50	-70	0.01	62	>100	7	50		
MP-4(S)	13-Dec-96 9:00	-2.5							
MP-4(D)	13-Dec-96 9:00	-3.0							
MP-6(S)	13-Dec-96 9:00	-2.5							
MP-6(D)	13-Dec-96 9:00	-3.3							
MP-5(S)	13-Dec-96 9:00	-0.75							
MP-5(D)	13-Dec-96 9:00	-1.05							
MP-7(S)	13-Dec-96 9:10	-3.0							
MP-7(D)	13-Dec-96 9:10	-2.3							Double-checked Ps.
MP-8(S)	13-Dec-96 9:10	-0.80							
MP-8(D)	13-Dec-96 9:10	-0.90							
Dilution Air	13-Dec-96 9:20	-0.05	0.21	50	>100	38			
Blower Exhaust	13-Dec-96 9:20	13.0	1.50	115	12	97	70		
Manifold	13-Dec-96 9:20	-115	0.65	61		56			Used T and Ps from previous measurement.

**TABLE 13**  
**Black and Decker Hampstead Maryland**  
**SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
 Operating Pressure: -110 inches H2O

Start Date/Time 12-10-96 at 1250  
 Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H2O)	Velocity Pressure (inches H2O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
Blower Exhaust	13-Dec-96 9:30							ASS04-OUT	
Manifold	13-Dec-96 10:30	-115		63			100		
SVE-3(D)	13-Dec-96 10:30	-110	0.01	63			400		Ps reported as <.01
SVE-3(S)	13-Dec-96 10:30	-110	0.26	64			82		
SVE-2(D)	13-Dec-96 10:45	-110	0.01	64			200		Ps reported as <.01
SVE-2(S)	13-Dec-96 10:45	-70	0.01	64			48		
MP-4(S)	13-Dec-96 10:50	-2.5							
MP-4(D)	13-Dec-96 10:50	-3.0							
MP-6(S)	13-Dec-96 10:50	-2.5							
MP-6(D)	13-Dec-96 10:50	-3.3							
MP-5(S)	13-Dec-96 10:50	-0.75							
MP-5(D)	13-Dec-96 10:50	-0.95							
MP-7(S)	13-Dec-96 11:00	-3.0							
MP-7(D)	13-Dec-96 11:00	-2.0							
MP-8(S)	13-Dec-96 11:00	-0.75							
MP-8(D)	13-Dec-96 11:00	-0.60							
Dilution Air	13-Dec-96 11:15	-0.50	0.21	50		38			Used T previous measurement.
Blower Exhaust	13-Dec-96 11:15	13.0	1.40	115		94	68		Used T previous measurement.
Manifold	13-Dec-96 11:15	-115	0.63	63		55			Used T and Ps from previous measurement.
GAC1-OUT	13-Dec-96 11:15						Backgd		
GAC2-OUT	13-Dec-96 11:15						Backgd		
Manifold	13-Dec-96 13:30	-115							Restart system. Operate over weekend.
Dilution Air	16-Dec-96 12:45	-0.42	0.03	42	>100	14			Double-checked Pv. May be clogged pitot.
Blower Exhaust	16-Dec-96 12:45	13.0	1.40	112	12	94	44		
Manifold	16-Dec-96 12:45	-115	0.60	60	>100	54	60		Pv fluctuating. Assume T=60°F.
SVE-2(D)	16-Dec-96 13:50						115		FIDs collected using a vacuum pump to withdraw a sample.
SVE-2(S)	16-Dec-96 13:50						28		FIDs collected using a vacuum pump to withdraw a sample.
MP-4(D)	16-Dec-96 13:50						550		FIDs collected using a vacuum pump to withdraw a sample.
MP-4(S)	16-Dec-96 13:50						44		FIDs collected using a vacuum pump to withdraw a sample.
SVE-3(D)	16-Dec-96 13:50						280		FIDs collected using a vacuum pump to withdraw a sample.
SVE-3(S)	16-Dec-96 13:50						50		FIDs collected using a vacuum pump to withdraw a sample.

**Black and Decker Hampstead Maryland  
SVE Pilot Study Operational Measurements**

Sustained Operations

Configuration: All four vents in NE corner open  
Operating Pressure: -110 inches H<sub>2</sub>O

Start Date/Time 12-10-96 at 1250  
Shutdown Date/Time: 12-16-96 at 1500

Monitor Location	Date/Time	Static Pressure (inches H <sub>2</sub> O)	Velocity Pressure (inches H <sub>2</sub> O)	Temperature (°F)	Relative Humidity (%)	Air Flowrate (SCFM)	FID	Air Sample	Comments
MP-6(D)	16-Dec-96 14:00						90		FIDs collected using a vacuum pump to withdraw a sample.
MP-6(S)	16-Dec-96 14:00						2		FIDs collected using a vacuum pump to withdraw a sample.
MP-5(D)	16-Dec-96 14:00						20		FIDs collected using a vacuum pump to withdraw a sample.
MP-5(S)	16-Dec-96 14:00						Backgd		FIDs collected using a vacuum pump to withdraw a sample.
MP-7(D)	16-Dec-96 14:10						3		FIDs collected using a vacuum pump to withdraw a sample.
MP-7(S)	16-Dec-96 14:10						Backgd		FIDs collected using a vacuum pump to withdraw a sample.
MP-8(S)	16-Dec-96 14:20						5		FIDs collected using a vacuum pump to withdraw a sample.
MP-8(D)	16-Dec-96 14:20						24		FIDs collected using a vacuum pump to withdraw a sample.
GAC1-OUT	16-Dec-96 14:30						Backgd		
GAC2-OUT	16-Dec-96 14:30						Backgd		

## Notes:

System was not shut down between Run #12 and sustained operations.

Sustained operations were initiated on 12-10-96 at 1250 once the system was adjusted to optimal conditions during the end of Run 12.

Therefore, the final round of measurements and associated air sample collected during Run #12 also represent the initial conditions for sustained operations.

Temperature measurements from the dilution air and blower exhaust were collected using a thermometer.

System shutdown on 12/11/96 at 0845 due to sand being drawn into manifold via SVE-2(S). Restarted at 0915 with lower Ps on SVE-2(S).

System shutdown on 12/13/96 at 1215. Decide to continue run through weekend. Restart at 1330 at -115 inches of water on manifold.