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de maximis, inc.

P.O. Box 90348
Knoxville, TN 37990
615-691-5052

August 29, 1990

Michelle M. Glenn
USEPA Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

SUBJECT: Bluff Road Site
Vacuum Extraction Pilot Test Report

Dear Ms. Glenn:

Enclosed are four (4) bound and one (1) unbound copy of the SCRDI-Bluff Road Site Vacuum Extraction Pilot Test Report. As you requested, three copies are being sent directly to Keith Lindler (SCDHEC) and one copy to Jim Ashworth (RAI).

The pilot test and bench test were successful in demonstrating that vacuum extraction is applicable for vadose zone soils remediation at the Bluff Road Site. This confirms our previous correspondence that identified this technology as the most technically appropriate, cost effective and timely treatment technology for this application.

If you or your staff have questions concerning this report or would like to arrange a meeting to discuss the results, please contact me at (615) 691-5052.

Best regards,

Bennie L. Underwood
Project Manager

cc: J. Ashworth - RAI
K. Lindler - SCDHEC
Lynn Wright

AUG 31 1990
ATLANTA, GA.

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TERRA VAC

SCRDI - BLUFF ROAD SITE
VACUUM EXTRACTION PILOT TEST
COLUMBIA, SOUTH CAROLINA
TERRA VAC PROJECT: 90-204

AUGUST 29, 1990

PREPARED BY:

TERRA VAC
1555 WILLIAMS DRIVE
SUITE 110
MARIETTA, GEORGIA 30066

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Volatile

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I. EXECUTIVE SUMMARY

A pilot test of the Terra Vac Vacuum Extraction Process was conducted at the SCRDI - Bluff Road Site in Columbia, South Carolina to establish the applicability of the technology for soils remediation. Three vacuum extraction pilot test wells were installed July 24 and 25, 1990. The Field Pilot Test operations were initiated July 26 and continued over a ten day period for a total system operating time of 190 hours. Concurrently, a short term bench scale vacuum extraction test was conducted on two undisturbed soil columns to evaluate organic compound reductions. The bench test was operated for 170 hours over the period July 25 to August 3, 1990.

A total of approximately 1186 pounds of volatile and 143 pounds of semi-volatile compounds were extracted during the field pilot test. The initial volatile organic compound (VOC) extraction rate was 436 pounds/day, decreasing to 111 pounds/day at the completion of the test. Based on available literature, experience at other sites and the results of the SITE Program, these are considered typical results. Initial semi-volatile extraction rates were low at approximately 0.13 pounds/day. However, this rate increased dramatically during the test period to a final extraction rate of 131 pounds/day from the three pilot test wells. This is a significant rate for semi-volatile removal. The extracted semi-volatiles identified in the vapor stream included a list of approximately 30 compounds in addition to the target compounds specified in Table 3-3 of the approved Feasibility Study.

The short term bench test analytical data demonstrated significant reductions in both volatile and semi-volatile concentrations and indicated the ability to achieve the target cleanup levels developed during the Feasibility Study.

The major conclusions made based on the results of this testing are:

* Site stratigraphy is amenable to vacuum extraction with sandy/silty soils resulting in a large vacuum extraction well radius of influence and no significant preferential air flow.

* The vacuum extraction process created and maintained subsurface aerobic conditions amenable to enhanced natural biodegradation. Subsurface oxygen concentrations taken several days after system shut-down had dropped significantly, indicating potential biological activity.

* The pilot test results in conjunction with bench test results provide conclusive demonstration of the applicability of the tested vacuum extraction technology for target volatile and semi-volatile compound removal to achieve soils remediation at the Bluff Road Site.

* Adequate information was obtained to initiate a full scale system design.

II. INTRODUCTION

Previous investigations at the SCRDI-Bluff Road site conducted by the U.S. Environmental Protection Agency (USEPA) and others have identified volatile and semi-volatile compounds in the soils.

A pilot test of the Terra Vac Vacuum Extraction Process was conducted to demonstrate the feasibility of utilizing vacuum extraction as the remedial technology for soils at the site. Pilot test activities were defined in the approved Work Plan, Vacuum Extraction Pilot Test - SCRDI Bluff Road Site, dated July 1990. The objectives of the pilot test were as follows:

* Demonstrate extraction of organics from site soils and quantify site specific extraction rates of volatile and semi-volatile organic compounds from the vadose zone.

* Utilize a short term bench test study to demonstrate reduction of organic compound concentrations on an undisturbed site soil column.

* Determine the site specific radius of influence and vacuum extraction well flow rates.

* Determine site specific operating criteria to design a cost effective full-scale vacuum extraction and air emission treatment system.

This report summarizes the field activities, findings, evaluations and conclusions of the pilot test.

III. FIELD ACTIVITIES

Mobilization

On July 23, 1990, Terra Vac mobilized a vacuum extraction unit and the associated equipment to the SCRDI-Bluff Road Site in Columbia, South Carolina. A mobile laboratory equipped with a gas chromatograph and a flame ionization detector, (FID) was also mobilized to perform on-site VOC analysis of soil and vapor samples.

Representatives from Terra Vac, de maximis inc., Mid Atlantic Environmental, and Resource Applications Inc. (RAI) met at the site to finalize well locations and equipment staging areas. Before any work was begun, the site specific Health and Safety Plan was reviewed by all personnel involved with on-site activities. After the safety meeting, the drilling crew set-up the decontamination equipment and supplies on the existing decontamination pad. The drilling equipment was decontaminated per the requirements of EPA's Region IV Standard Operating Procedures and Quality Assurance Manual or approved variances.

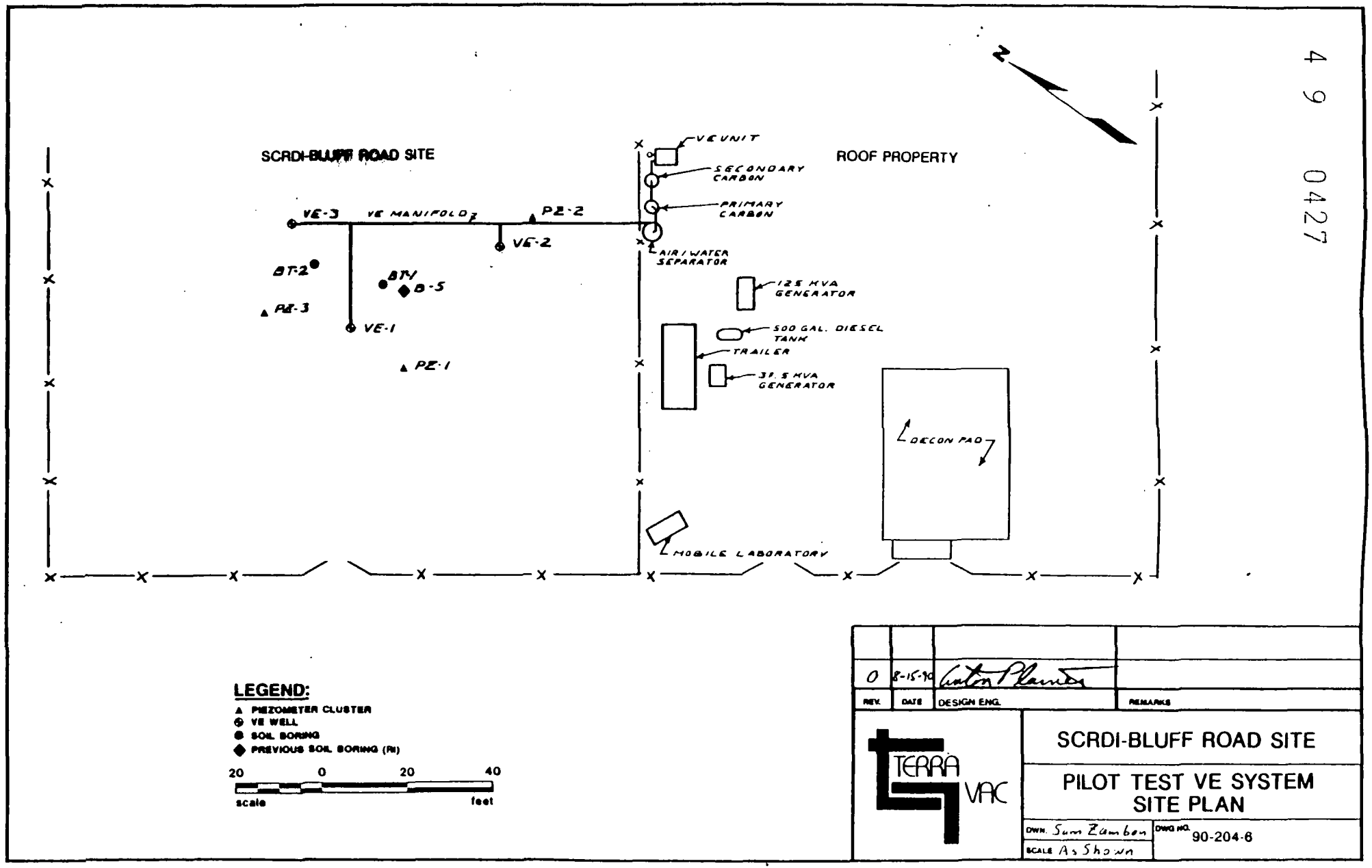
Well Installation/Soil Sampling

Drilling operations for vacuum extraction well VE-3 commenced the afternoon of July 24. The borings were completed using a 6 1/4 inch ID hollow stem auger. The soils were sampled continuously using a 2 foot SPT split spoon soil sampler. Each split spoon sample was screened as it was opened with an HNu photoionization detector. Terra Vac analyzed every other sample using the on-site

gas chromatograph to quantify specific volatile organic compounds by the quantitative headspace method. The USEPA oversight contractor (RAI) selected and obtained 7 soil samples for off-site analysis. In addition, a single soil sample from each vacuum extraction well boring was collected and sent off-site for analysis of pH, nitrogen, phosphate, sulfate and potassium.

Soil samples were classified by Terra Vac's geologist using standard Unified Soil Classification procedures. Boring VE-3 was sampled to a depth of 12 feet, at which depth water saturated soils were encountered and sampling was terminated. The boring was completed by advancing the 6 1/4 inch hollow stem augers to 10.5 feet. A vacuum extraction well was installed using 4 inch slotted PVC well screen and riser. The well screen and riser were installed through the hollow stem augers. The anular space was filled with a silica sand filter pack to a level even with the top of the screen. A four inch bentonite seal was then added to the anular space and allowed to hydrate overnight. The remaining anular space was filled with neat cement grout to the ground surface. Borings VE-1 and VE-2 were completed on July 25 and were installed in the same manner as VE-3. The details of the well construction and lithology are shown in the well logs in Appendix A. Well locations are shown on the Site Plan, Drawing 90-204-6.

Three piezometer clusters were installed to monitor subsurface vacuum levels at various distances (9.5 to 57.5 feet) from the vacuum extraction wells at the site. Each piezometer was


SCRDI-BLUFF ROAD SITE
ROOF PROPERTY
VE UNIT
SECONDARY CARBON
PRIMARY CARBON
AIR/WATER SEPARATOR
VE-3
VE MANIFOLD
PZ-2
VE-2
BT-2
BT-1
B-5
PZ-3
VE-1
PZ-1
125 KVA GENERATOR
500 GAL. DIESEL TANK
TRAILER
37.5 KVA GENERATOR
DECON PAD
MOBILE LABORATORY
LEGEND:
PIEZOMETER CLUSTER
VE WELL
SOIL BORING
PREVIOUS SOIL BORING (RI)
20 0 20 40
scale
feet
0
8-15-90
REV.
DATE
DESIGN ENG.
REMARKS
TERRA VAC
SCRDI-BLUFF ROAD SITE
PILOT TEST VE SYSTEM
SITE PLAN
DWN. Sam Zambon
SCALE As Shown
DWG NO. 90-204-6

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constructed out of 0.5 inch diameter black iron pipe, with a series of perforations at the base. Each cluster consisted of piezometers installed at 3, 7, and 9 feet below grade to define the vertical subsurface vacuum variability. Piezometer construction details can be found in Appendix A. The locations are shown on the Site Plan, Drawing 90-204-6.

Bench Test Soil Sampling

On July 25 two borings, BT-1 and BT-2 were completed near SB-5 for the purpose of obtaining undisturbed soil samples for the bench test study. At each location the boring was advanced, using a 4 1/4 inch ID hollow stem auger, to a depth of 2.5 feet. A soil sample was obtained from a depth of 2.5 to 3.0 feet using a stainless steel hand auger. The boring was advanced to 3.0 feet and a split spoon, lined with a brass sleeve was driven from 3.0 to 5.0 feet. The brass sleeve was removed from the split spoon and caps were put on both ends. The orientation was marked on the sleeve and it was taken to the on-site trailer where it was installed in the bench test set-up. The boring was then advanced to 5.0 feet and another sample was taken with the hand auger. The two hand auger samples were combined and sent off-site for analysis to characterize the initial VOC and semi-volatile soil concentrations in the brass sleeves. BT-1 and BT-2 were then grouted to the surface with neat cement grout. The locations of BT-1 and BT-2 are shown on the Site Plan, Drawing 90-204-6.

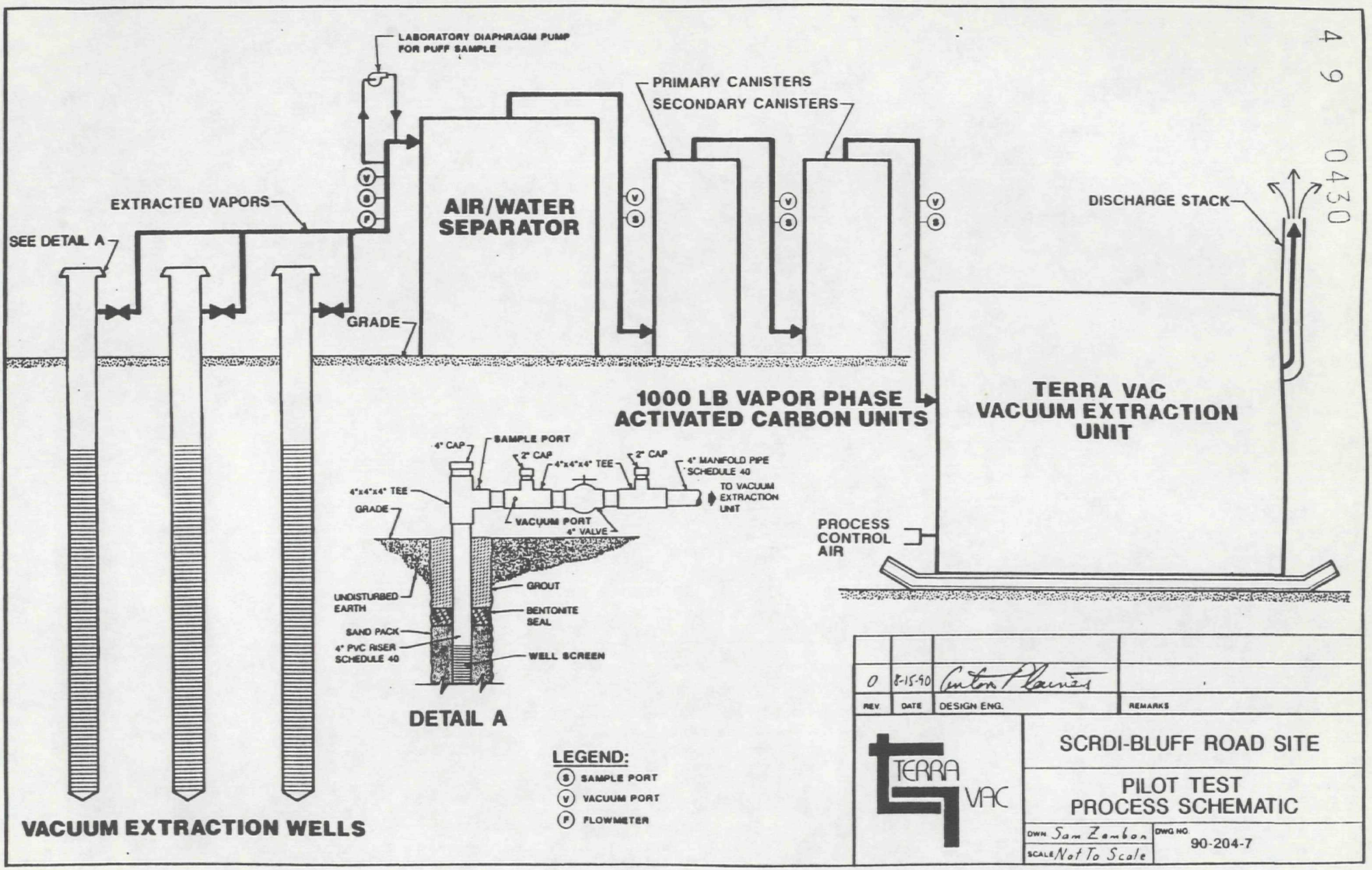
Vacuum Extraction System Installation

A portable vacuum extraction system was installed. The system included a vacuum extraction unit, air/water separator tank, vapor phase activated carbon, manifold materials and associated monitoring equipment. The vacuum extraction wells were equipped with a wellhead containing a sample port, vacuum gauge port, and flow meter connections. The wellheads were connected to the vacuum extraction unit via a 4 inch schedule 40 PVC manifold system. A vapor phase activated carbon system, consisting of a primary and secondary carbon canister, was installed between the air/water separator tank and the vacuum extraction unit to control air emissions. The process schematic for the pilot test is shown on Drawing 90-204-7.

Vacuum Extraction System Operations

On July 26, 1990 at 0930 hours, vacuum extraction operations began when VE-3 was placed in operation. Each vacuum extraction well was individually developed to determine its initial VOC extraction rate, flow rate and radius of influence. During the well development period, wellhead flow and vacuum measurements were quantified using a rotometer and vacuum gauge.

During Development of VE 3, subsurface vacuums were measured at extraction wells VE-1 and VE-2 and piezometers PZ-1, PZ-2, and PZ-3. Flows, vacuum levels and extraction rates for each well were determined.



REV.	DATE	DESIGN ENG.	REMARKS
0	8-15-90	Carlton Planas	

TERRA VAC

SCRDI-BLUFF ROAD SITE

PILOT TEST PROCESS SCHEMATIC

DWN. Sam Zambon

SCALE Not To Scale

DWG. NO. 90-204-7

Vacuum extraction well VE-3 was developed from 0930 to 1545 hours. Vacuum extraction well VE-2 was developed from 1600 to 1820 hours at which time both VE-3 and VE-2 were placed into operation. Both wells were operated until 2330 hours. During the well development period, the system was only operated while attended so that individual extraction well operating characteristics could be determined.

On July 27, 1990 at 0945 hours the vacuum extraction system was restarted. Vacuum extraction well VE-1 was developed from 0945 to 1200 hours to establish its initial operating conditions.

At 1200 hours all three vacuum extraction wells (VE-1, VE-2, and VE-3) were placed into service. The vacuum extraction system was operated at various operating conditions over the next 8 days. Flows, vacuum levels and extraction rates were determined for each well and the system as a whole. Subsurface vacuum levels were measured at the piezometers during the course of the operations. The system was shutdown on August 4, 1990 at 1330 hours, after approximately 190 hours of operation over a 10 day period.

At the conclusion of operations the vacuum extraction system was dismantled and demobilized. The vacuum extraction wells were left in an operable condition for use during future operations, if required.

Vapor Phase Sampling

During the well development period, samples were obtained from each wellhead and at the discharge of the primary carbon canister (See Drawing 90-204-7). These samples were analyzed in the on-site mobile laboratory utilizing an FID gas chromatograph, to determine the initial wellhead VOC extraction rates during the development period.

After all three vacuum extraction wells were placed into service, samples were routinely taken at each wellhead, discharge of the primary and secondary carbon canisters and the system total and analyzed for VOC's on the on-site gas chromatograph.

Daily tedlar bag samples of the extracted vapor stream were taken and sent off-site for VOC analysis at an approved laboratory.

A semi-volatile sampling train was connected to a sampling port in the vacuum extraction manifold system immediately before the primary carbon canister. The semi-volatile sampling apparatus (EPA method TO-10) consisted of a laboratory vacuum pump, manifold tubing, polyurethane foam (puff), glass resin holder and a flowmeter. The semi-volatile sampling equipment was set-up in the office/storage trailer and was connected to the vacuum extraction system using manifold tubing.

The semi-volatile sampling train was placed in operation when vacuum extraction operations began. A measured flow rate of the pilot test extracted vapor steam was drawn through the

polyurethane foam (puff). The polyurethane foam preferentially adsorbs the semi-volatile compounds.

Bench Test

The bench test was assembled utilizing the two sealed brass split spoon sleeve soil samples (BT1 and BT2). The two soil samples were connected in parallel via a manifold to a laboratory vacuum pump. Each soil sample set-up was equipped with a sample port, vacuum gauge port, flow meter connection and flow control valve.

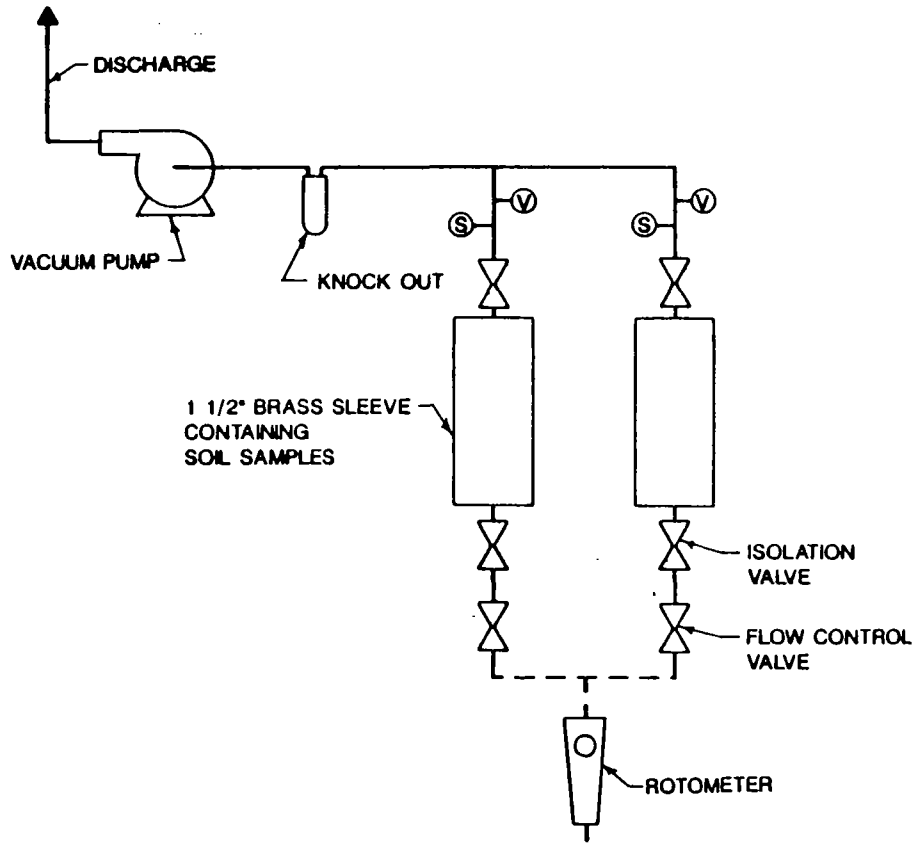
A schematic diagram of the bench test components is shown on Drawing 90-204-8.

On July 25, 1990 at 1500 hours the bench test study was initiated. The soil samples were treated by the vacuum extraction process utilizing the same vacuum levels and monitoring techniques used in the pilot test. During the course of operations vacuum levels and flowrates were varied over the operating ranges that were encountered in the Pilot Test. The bench test ended on August 3 at 0930 hours. Post operation soil samples from each brass sleeve (BT-1 and BT-2) were obtained and sent off-site for analysis.

IV. FINDINGS

Site Stratigraphy

Soil samples obtained during the well installation indicate that there is approximately one to two feet of fill covering the pilot test study area. The fill is typically six to eight inches of dark red silty to fine grain sand. Beneath the sand a plastic



LEGEND:

Ⓥ VACUUM PORT
Ⓢ SAMPLE PORT

REV.	DATE	DESIGN ENG.	REMARKS
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SCRDI-BLUFF ROAD SITE

BENCH TEST
PROCESS SCHEMATIC

DWN. Sam A. Zamba
SCALE Not To Scale
DWG NO. 90-204-8

liner which covered the study area was encountered, followed by eight to twelve inches of gravel. Typically throughout the study area undisturbed soils consisting of silty fine grain sand which became coarser and less sorted near a depth of 12 feet.

Soil Analysis

Terra Vac analyzed the soil samples obtained from borings VE-1, VE-2, and VE-3 for the compounds listed in Table 1 using the on-site gas chromatograph and the quantitative headspace method. To determine the concentration of specific VOC's in the soils, the concentrations of VOC's in the headspace was measured. The sample weight, and estimated soil density, porosity, water saturation and Henry's Law coefficient for the individual components were used to calculate the concentrations of individual VOC's in the soils. These results are consistent with those obtained by screening the soil samples with an HNu. The on-site analytical results indicate that the highest total VOC soil concentrations were found in VE-1 and the lowest total VOC soil concentrations were found in VE-3. Complete on-site soil VOC analysis is presented in Table 2.

The soil samples collected by RAI and sent off-site for analysis are presented in Appendix E and indicate the highest total volatile and semi-volatile concentrations were found in VE-1. A summary of this data is presented in Table 17.

Soil nutrients and pH levels varied widely across the pilot test area. Nutrient results indicate availability of potassium and nitrogen. The pH of the soils ranges from 3.7 at VE-1 to 8.2 at

Table 1

SCRDI-BLUFF ROAD SITE

TARGET VOLATILE ORGANIC COMPOUNDS

Carbon Tetrachloride
Acetone
Chloroform
1,1,1-Trichloroethane
Methylene Chloride
1,1-Dichloroethane
2-Butanone (MEK)
Trichloroethene
1,1,2,2-Tetrachloroethane
Ethylbenzene
1,1,2-Trichloroethane
4-Methyl-2-Pentanone (MIBK)
Toluene
Chlorobenzene
Tetrachloroethene
1,2-Dichloroethene
Total Xylenes
Vinyl Chloride
1,1-Dichloroethene
Benzene
1,2-Dichloroethene

Table 2

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PROJECT #90-204

SCRDI-BLUFF ROAD SITE
COLUMBIA, S.C.

SOIL BORING # VE-1 TO VE-3
SAMPLED 7-24-90

QUANTITATIVE HEADSPACE METHOD
CALCULATED SOIL CONCENTRATIONS
ANALYZED 7-24-90 - 7-25-90

WELL NAME	DEPTH (FEET)	VINYL CHLORIDE (ug/kg)	ACETONE (ug/kg)	1,1-DICHLORO ETHENE (ug/kg)	METHYLENE CHLORIDE (ug/kg)	TRANS-1,2-DICHLORO ETHENE (ug/kg)	1,1-DICHLORO ETHANE (ug/kg)	METHYL ETHYL KETONE (ug/kg)	CIS-1,2-DICHLORO ETHENE (ug/kg)	CHLOROFORM (ug/kg)	1,2-DICHLORO ETHANE (ug/kg)	1,1,1-TRICHLORO ETHANE (ug/kg)	BENZENE (ug/kg)	CARBON TETRA CHLORIDE (ug/kg)	TRICHLORO ETHENE (ug/kg)	METHYL ISOBUTYL KETONE (ug/kg)	TRICHLORO ETHANE (ug/kg)	TOLUENE (ug/kg)	CHLORO BENZENE (ug/kg)	ETHYL BENZENE (ug/kg)	M,P-XYLENES (ug/kg)	O-XYLENE AND OTHER VOC'S 1,1,2,2-TETRA CHLOROETHANE (ug/kg)	BENZ EQUIV. (ug/kg)	ESTIMATED TOTAL VOC'S SOIL (ug/kg)	ESTIMATED TOTAL VOC'S HEADSPACE (ug/kg)
VE-1	2-4	.18	54.36	.16	BDL	BDL	BDL	5.09	1.42	46.43	24.25	4.14	.25	2.14	6.20	2.31	BDL	19.45	.98	6.61	18.48	12.53	20.85	226	8972
VE-1	4-6	.14	68.54	.12	BDL	BDL	BDL	7.73	1.20	11.30	4.93	1.24	.13	.61	3.07	.69	BDL	7.90	.61	3.81	12.18	10.29	10.45	145	6316
VE-1	8-10	BDL	19.51	.16	BDL	BDL	BDL	3.14	.58	40.96	21.69	5.52	.58	2.35	2.18	1.26	BDL	18.40	.42	7.52	21.20	13.75	34.02	193	18951
VE-2	2-4	.04	6.40	.13	.32	BDL	.11	.25	.03	9.13	2.11	.46	.18	1.90	.58	.14	.04	5.49	.03	.09	.28	.19	2.75	31	1398
VE-2	6-8	.06	9.86	.19	.50	BDL	.17	.32	.04	15.64	3.60	.75	.26	2.21	.83	.13	.08	6.53	.04	.07	.23	.17	1.75	43	1496
VE-2	10-12	.20	29.67	.17	1.12	.03	.24	1.04	.09	37.66	19.76	.65	.71	4.35	.74	.05	.57	11.71	.02	.06	.18	.20	2.19	111	3053
VE-3	2-4	.03	2.20	.04	.05	BDL	.08	BDL	.05	.84	.21	.44	< 0.01	BDL	.17	.09	BDL	.92	BDL	.02	.10	.07	.27	6	136
VE-3	6-8	BDL	1.71	.18	BDL	BDL	BDL	BDL	.14	2.46	.86	1.38	.02	BDL	.51	.09	BDL	2.77	BDL	.07	.32	.17	.77	11	639
VE-3	10-12	BDL	.93	.15	BDL	BDL	BDL	BDL	.21	1.72	.64	.77	.02	.08	.33	.10	BDL	2.09	BDL	.05	.21	.12	.54	8	461

NOTE: BENZ-PPM = BENZENE EQUIVALENT PPM
< 1.00 = MINIMUM QUANTITATION LIMIT FOR TOTAL BENZ-PPM VOC's
BDL = BELOW DETECTABLE LIMITS IN HEADSPACE
(MINIMUM DETECTION LIMIT 0.01 ug/L)
< 0.01 = MINIMUM QUANTITATION LIMIT FOR INDIVIDUAL COMPOUNDS
SAT'D = EXCEEDS SATURATION LIMIT OF HEADSPACE

VE-3. Complete results of these analysis can be found in Appendix C.

System Flowrates

Flow rates from the vacuum extraction wells were measured during the system's operation. The flowrates at each extraction well increased steadily during system operations. The total system flowrate increased from approximately 50 CFM on July 27 to 135 CFM on August 3. Individual vacuum extraction flowrates ranged from 9 to 65 CFM. Wellhead vacuums ranged from 6.6 to 11 inches of mercury. Vacuum extraction well flow rates and wellhead vacuum levels are shown in Table 3.

Subsurface Vacuum Levels

Subsurface vacuum levels were measured during vacuum extraction system operations. These levels were measured at the vacuum extraction wells and piezometer cluster locations using a water manometer. The subsurface vacuum levels measured at various system operating conditions and distances from a vacuum source are summarized in Appendix B. This data indicates that the operation of each individual vacuum extraction well and the system as a whole produced a measurable subsurface vacuum at each piezometer in each of the three clusters.

During system operations, subsurface vacuum levels increased with increasing wellhead vacuums. On July 28 with wellhead vacuums of 8 inches of mercury, subsurface vacuums ranged from 3.5 to 10.3 inches of water. On August 3, with wellhead vacuums of 10.8

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TABLE 3

SCRDI - BLUFF ROAD SITE

PILOT TEST
VACUUM EXTRACTION
FLOW RATES/VACUUMS

DATE	VE - 1 VAC (in Hg)	VE - 1 FLOW (cfm)	VE - 2 VAC (in Hg)	VE - 2 FLOW (cfm)	VE - 3 VAC (in Hg)	VE - 3 FLOW (cfm)
7/26/90			7.0	26	9.0	10
7/27/90	8.0	12	8.0	27	8.0	10
7/28/90	9.5	25	9.5	37	9.5	13
7/29/90	9.5	31	9.5	37	9.5	16
7/30/90	9.0	30	9.0	35	9.0	15
7/31/90	10.0	40	10.0	32	10.0	19
8/01/90	7.2	40	7.2	29	7.2	17
8/02/90	7.0	40	7.0	25	7.0	16
8/03/90	10.8	65	10.8	42	10.8	26
8/04/90	8.8	54	8.8	43	8.8	22

inches of mercury, subsurface vacuums ranged from 7.0 to 20.1 inches of water.

An indication that the pneumatic permeability of the soils had reached equilibrium is shown by the subsurface vacuum data from August 1. The wellhead vacuums were reduced from 11 to 7.5 inches of mercury with no resultant change in subsurface vacuum levels.

Wellhead and System VOC Concentrations

Individual wellhead concentrations of the compounds listed in Table 1 were determined utilizing the on-site gas chromatograph. The highest wellhead concentration of total VOC's was measured at VE-2, immediately after start-up of the vacuum extraction system, and was in excess of 275,000 ug/l. Wellhead concentrations for VE-2 decreased during the course of the Pilot Test to approximately 71,000 ug/l.

VE-1 had a maximum total VOC concentration, of approximately 127,000 ug/l decreasing to 14,000 ug/l at test completion.

The observed decrease in the extracted vapor VOC concentration is typical of vacuum extraction operations. The extracted vapor stream concentration will decrease exponentially during vacuum extraction operations. The initial extraction rates are attributable to removal of vaporous VOC's already in the soil matrix. In later stages of remediation, the rate limiting factor is the volatilization of contaminants adsorbed and absorbed to

the soil particles, present as free product or dissolved in the soil pore water.

VE-3 had a maximum total VOC concentration of approximately 125,000 ug/l decreasing to 18,000 ug/l at test completion.

A summary of the vacuum extraction system flows and VOC concentrations is presented in Tables 4, 5, 6, 7, 8 and 9. The total system and wellhead VOC concentrations are shown graphically in Figures 1, 2, 3 and 4.

Off-site analysis of the daily tedlar bag samples for VOC's indicate a good correlation with the on-site VOC analysis. The results of the off-site tedlar bag samples are found in Appendix D.

System Semi-Volatile Concentrations

The results of sampling the total extracted vapor stream for semi-volatiles, using EPA method TO-10, show that the concentrations of the semi-volatile compounds increased during system operations, from an initial concentration of 8.16 ug/l to 8074 ug/l at the completion of the test.

A summary of the estimated extracted semi-volatile concentrations is presented in Table 10. Table 11 lists additional organic compounds (Non-Target) and associated concentrations detected based on GC/MS analysis and a library search of puff 7. The analytical results for the polyurethane puff samples can be found in Appendix D. Estimated semi-volatile concentrations in the extracted vapors were obtained by dividing the total

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PROJECT # 90-204

SCPDI - BLUFF ROAD SITE
COLUMBIA, S.C.

Table 4

TOTAL SYSTEM RATES AND CONCENTRATIONS

DATE	FLOW (SCFM)	EXTRACTED VAPOR CONCENTRATIONS: VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	EXTRACTION RATE (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS REMOVED	
7/26/90	START																									.00	0	
7/27/90	172	BDL	41.5	343	BDL	22.3	BDL	BDL	331	11896	3137	1585	86.5	1042	1562	13.7	BDL	3735	52.0	206	611	409	3127	28218	436	.54	236	
7/27/90	165	BDL	48.4	280	BDL	BDL	BDL	613	543	7400	2040	1427	62.9	1245	293	121	BDL	2853	BDL	149	431	307	3107	21420	317	.72	303	
7/27/90	168	BDL	50.9	283	97.6	BDL	BDL	26.8	773	6421	1797	1579	58.1	693	891	129	BDL	3791	39.3	172	608	425	3712	21047	317	.87	350	*
7/27/90	170	BDL	50.0	317	BDL	14.4	BDL	BDL	832	6045	1676	1522	51.3	627	1137	19.8	BDL	2937	47.3	197	601	413	3036	19522	298	90	360	
7/28/90	171	BDL	56.7	211	BDL	BDL	68.2	BDL	678	3245	914	1342	13.8	146	463	53.7	BDL	1827	BDL	105	331	247	1377	11059	170	1.43	485	
7/28/90	134	BDL	89.9	344	BDL	BDL	BDL	BDL	970	4603	1339	2111	37.9	483	954	48.0	BDL	3016	51.6	179	571	15.8	2727	17541	211	1.58	512	
7/28/90	127	BDL	90.3	325	BDL	BDL	123	51.8	893	4127	1225	2113	34.6	423	612	42.9	BDL	3069	43.5	190	641	509	2526	17111	195	1.69	535	
7/28/90	126	BDL	94.4	318	BDL	BDL	122	54.8	785	3754	1133	2186	31.8	867	873	51.7	BDL	2947	42.1	181	601	490	1317	15850	179	1.87	569	
7/29/90	195	BDL	66.4	186	BDL	BDL	65.0	135	375	1837	566	1366	16.2	190	341	47.9	BDL	1491	21.7	102	359	309	1422	8891	156	2.29	640	
7/29/90	192	BDL	76.0	194	BDL	BDL	65.2	41.2	316	1607	502	1397	15.0	191	316	44.0	BDL	1316	17.0	76.3	255	206	1191	7825	135	2.52	673	*
7/30/90	180	20.9	79.4	200	BDL	3.1	62.4	42.7	263	1630	500	1464	16.6	466	BDL	50.0	BDL	1297	20.3	85.1	297	273	1277	8048	130	3.27	772	
7/31/90	186	14.3	64.4	128	BDL	BDL	37.0	34.0	112	812	227	1840	8.5	137	242	39.5	BDL	771	10.5	46.1	172	182	869	4946	83	4.11	861	
7/31/90	184	21.0	105	188	BDL	BDL	51.9	75.8	151	1164	314	1599	12.4	164	349	87.6	BDL	1149	18.9	67.7	242	270	1268	7299	121	4.30	881	
7/31/90	170	19.5	96.6	169	BDL	BDL	46.6	69.2	138	1059	282	1470	11.7	139	322	79.2	BDL	1060	14.3	60.1	229	258	1108	6632	101	4.36	887	
8/ 1/90	185	17.4	103	136	BDL	BDL	41.8	51.7	89.5	931	231	1269	9.2	147	279	71.8	BDL	897	12.3	47.7	177	205	1063	5779	96	5.11	962	
8/ 1/90	167	17.2	109	137	BDL	BDL	41.6	53.0	86.0	402	249	1235	9.1	159	280	55.8	BDL	870	12.4	46.4	173	196	1119	5246	79	5.31	978	*
8/ 2/90	163	18.5	125	121	BDL	BDL	40.6	55.1	71.8	980	216	1306	9.6	153	287	67.0	BDL	910	12.4	41.8	156	190	1028	5789	85	6.12	1045	
8/ 3/90	163	53.0	271	154	BDL	BDL	52.0	87.0	80.4	1302	247	1681	13.9	232	405	94.9	BDL	1218	17.0	50.5	185	272	1861	8226	120	7.15	1151	
8/ 3/90	169	25.8	161	120	BDL	BDL	38.2	61.8	55.2	971	178	1325	10.8	160	311	80.2	BDL	911	13.0	35.7	135	194	1300	6083	92	7.32	1169	*
8/ 4/90	192	25.9	170	128	BDL	BDL	44.0	53.7	61.4	1167	226	1413	11.9	189	341	81.7	BDL	984	13.0	39.0	139	196	1046	6339	111	7.48	1185	
8/ 4/90	STOP																								111	7.48	1186	*

* DENOTES CARBON CHANGE

49 0442

TERRA VAC

TERRA VAC
PROJECT # 90 - 204

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

Table 5

WELLHEAD CONCENTRATIONS
VE-1

DATE	FLOW (SCFM)	EXTRACTED VAPOR CONCENTRATIONS: VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	EXTRACTION RATE (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS* REMOVED
7/27/90	START																									.00	.0
7/27/90	9.0	33.1	324	BDL	1168	149	BDL	106	2505	54914	18195	3767	186	2393	BDL	88.8	BDL	7570	281	2072	5651	4535	23672	127591	103	.01	1.0
7/27/90	11.9	103	429	661	142	174	BDL	259	3857	49757	17043	3614	199	2500	BDL	77.7	BDL	7057	241	2014	5557	3600	28188	125471	134	.05	6.0
7/27/90	12.3	90.1	367	442	BDL	133	BDL	241	6248	22417	7978	1998	143	1500	3574	134	BDL	5570	183	1487	4228	2922	14622	74484	83	.23	25.3
7/28/90	18.2	65.3	BDL	BDL	385	BDL	BDL	BDL	8836	3095	882	1500	66.7	715	1800	192	BDL	4200	191	945	2645	2155	9655	37328	61	1.02	82.1
7/29/90	26.2	BDL	279	146	BDL	14.5	BDL	187	2170	4283	1621	1194	34.8	372	1294	263	BDL	3233	69.4	364	1216	1167	2504	20411	48	1.91	130
7/30/90	24.1	73.8	384	392	BDL	12.1	BDL	248	1660	4100	1554	2608	37.1	373	1030	403	BDL	3363	73.3	350	1228	1217	4024	23130	50	2.97	193
7/31/90	33.5	69.2	401	516	BDL	BDL	BDL	243	851	3083	1112	3488	BDL	281	401	386	BDL	3095	62.8	276	1026	1191	3860	20337	61	3.70	223
8/ 1/90	35.3	37.9	248	236	BDL	BDL	64.3	145	271	1359	474	1797	15.0	257	646	37.1	BDL	1483	30.4	116	434	543	1980	10171	32	4.11	271
8/ 2/90	34.9	59.7	421	282	BDL	BDL	85.0	210	287	1776	576	2492	22.7	444	906	303	BDL	2260	42.7	135	508	777	2505	14091	44	5.73	310
8/ 3/90	43.6	60.8	507	308	BDL	BDL	86.6	238	216	1627	484	2592	22.2	449	897	250	BDL	2119	41.1	111	418	716	2634	13775	54	6.88	362
8/ 4/90	46.5	57.0	460	260	BDL	BDL	75.8	204	202	1918	560	2234	21.7	413	925	277	BDL	2104	40.6	112	413	617	3543	14436	60	6.94	370
8/ 4/90	STOP																								60	7.04	376

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TERRA VAC

TERRA VAC
PROJECT # 30 - 204

Table 6

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

WELLHEAD CONCENTRATIONS
VE-2

DATE	FLOW (SCFM)	EXTRACTED VAPOR CONCENTRATIONS: VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	EXTRACTION RATE (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS REMOVED
7/26/90	START																									.00	.0
7/26/90	22.4	42.0	147	1201	984	BDL	BDL	BDL	132	155915	32120	8354	912	5920	6000	BDL	149	22924	201	261	706	423	37767	275160	553	.01	5.6
7/26/90	23.3	BDL	137	1258	893	BDL	BDL	BDL	149	130122	28343	7904	771	7239	6052	BDL	BDL	21339	211	248	669	393	42770	248489	519	.08	41.1
7/26/90	20.8	BDL	137	1273	820	BDL	BDL	BDL	153	115149	26081	8030	733	7404	5923	BDL	BDL	22123	202	248	689	414	39140	229518	427	.11	59.2
7/27/90	STOP																								427	.32	140
7/27/90	START																								427	.32	140
7/27/90	23.6	BDL	118	1090	575	BDL	BDL	BDL	206	51409	12164	5468	417	4827	4091	716	BDL	16759	150	218	630	432	12136	111407	237	.36	162
7/27/90	25.3	BDL	161	1696	802	56.7	BDL	BDL	446	47553	11504	7849	423	5455	4844	28.6	70.4	19996	192	285	845	540	10565	113312	257	.58	216
7/28/90	25.3	BDL	139	690	265	BDL	BDL	51.4	199	12614	3259	4091	121	1582	1868	297	BDL	9482	142	252	795	574	5591	42220	96	1.29	341
7/29/90	31.0	42.3	162	500	BDL	BDL	BDL	462	87.2	5909	1638	3236	69.5	1421	1196	154	BDL	4535	97.2	230	787	574	1945	23045	64	2.26	419
7/30/90	28.0	37.5	188	359	BDL	BDL	64.2	BDL	51.0	4349	1197	2318	47.2	335	903	BDL	BDL	3296	34.8	127	463	338	2632	17348	41	3.27	472
7/31/90	26.9	39.8	195	155	BDL	BDL	BDL	147	42.6	1077	572	1013	53.3	480	BDL	11.2	BDL	2244	32.3	108	109	356	4037	10669	26	4.03	497
8/ 1/90	25.6	41.1	199	51.2	43.7	BDL	BDL	119	158	1396	338	339	17.1	451	222	45.7	BDL	1412	22.1	65.3	259	280	2953	8413	19	5.07	520
8/ 2/90	22.3	35.7	211	38.4	34.1	BDL	BDL	BDL	BDL	662	264	210	12.8	359	158	8.7	BDL	1053	15.8	47.5	189	189	2472	5961	12	6.04	536
8/ 3/90	27.9	37.9	221	25.4	28.8	BDL	BDL	46.9	18.4	769	183	134	9.3	304	109	21.0	BDL	788	16.8	36.7	147	176	2127	5200	13	7.07	548
8/ 4/90	37.0	38.1	255	34.8	34.5	BDL	BDL	BDL	22.8	1489	351	242	36.9	233	211	8.5	BDL	1166	17.5	47.3	183	184	2580	7133	24	7.25	552
8/ 4/90	STOP																								24	7.30	553

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TERRA VAC

Table 7

TERRA VAC
PROJECT # 90 - 204

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

WELLHEAD CONCENTRATIONS
VE-3

DATE	FLOW (SCFM)	VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	EXTRACTION RATE (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS REMOVED
		EXTRACTED VAPOR CONCENTRATIONS																									
7/26/90	START																									.00	.0
7/26/90	8.4	BDL	19.0	1197	BDL	28.2	BDL	BDL	237	69539	22752	8390	54.8	BDL	2966	484	BDL	6067	4.9	181	700	277	12450	125347	95	.01	1.3
7/26/90	8.7	BDL	BDL	BDL	2860	BDL	BDL	BDL	321	70353	23219	10284	56.2	1306	2637	393	BDL	5414	BDL	158	551	216	13367	131137	103	.09	9.2
7/26/90	STOP																								103	.13	12.4
7/26/90	START																								103	.13	12.4
7/26/90	9.1	BDL	BDL	1204	BDL	BDL	BDL	BDL	251	15472	7289	6664	49.0	425	1455	139	BDL	3684	BDL	86.7	365	170	9507	46822	38	.14	12.9
7/27/90	STOP																								38	.35	20.9
7/27/90	START																								38	.35	20.9
7/27/90	8.8	BDL	BDL	1461	BDL	BDL	942	BDL	258	6065	2961	8739	26.1	BDL	751	50.8	176	1891	62.9	68.7	287	215	3065	27011	21	.53	26.3
7/27/90	7.8	BDL	32.5	1620	BDL	BDL	949	845	301	6382	2962	10675	27.5	2242	884	90.0	BDL	2220	BDL	70.4	302	160	1707	31469	22	.61	29.1
7/28/90	9.5	BDL	BDL	1114	BDL	BDL	490	BDL	98.7	2809	1133	7936	BDL	BDL	472	BDL	BDL	1309	BDL	79.4	80.2	BDL	2032	17253	15	1.36	41.9
7/29/90	13.5	9.6	22.7	1218	BDL	BDL	BDL	203	BDL	3116	749	9807	6.3	896	262	22.4	BDL	3195	8.7	16.7	66.0	51.1	948	20677	25	2.29	60.4
7/30/90	13.0	10.8	19.4	1169	BDL	BDL	299	BDL	31.0	1959	710	10440	17.7	698	546	25.0	BDL	3293	14.1	20.8	67.7	50.8	1107	20478	24	3.30	85.2
7/31/90	15.9	11.2	17.7	938	BDL	BDL	245	155	20.9	3678	587	9911	4.5	741	569	23.3	BDL	3275	8.9	20.3	72.5	57.6	1133	21465	31	4.08	106
8/ 1/90	14.9	6.0	8.5	357	BDL	BDL	112	BDL	BDL	2114	243	4714	14.6	BDL	341	10.2	BDL	1575	4.8	10.9	39.3	30.4	557	10138	14	5.01	127
8/ 2/90	14.3	10.4	14.6	481	BDL	BDL	178	4.9	12.9	4124	381	7328	30.9	43.3	628	14.6	BDL	2554	7.2	21.8	68.5	49.5	891	16843	22	6.07	146
8/ 3/90	21.2	11.5	15.6	423	BDL	BDL	151	BDL	BDL	4483	308	6922	34.2	38.3	772	12.8	BDL	2561	8.3	24.1	80.3	56.6	888	16789	32	7.05	172
8/ 4/90	18.8	12.2	16.8	461	BDL	BDL	170	BDL	BDL	5028	396	7528	38.1	40.3	900	13.6	BDL	2805	9.1	27.5	89.4	62.0	1101	18698	32	7.28	179
8/ 4/90	STOP																								32	7.33	181

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Table 8

TERRA VAC
PROJECT # 90-204

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

PRIMARY CARBON RATES AND CONCENTRATIONS

DATE	FLOW (SCFM)	EXTRACTED VAPOR CONCENTRATIONS: VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	PCU DISCHARGE RATE TO SCU (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS TO SCU	
7/26/90	START																									.00	.00	
7/26/90	172	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.00	.09	.00	
7/26/90	188	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	13.3	BDL	BDL	BDL	BDL	60.1	73.5	1.2	.20	.07	
7/26/90	187	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	47.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	38.3	BDL	BDL	4.1	BDL	9.9	99.6	1.7	.30	.21	*
7/26/90	194	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.7	.43	.43	
7/27/90	129	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4.5	BDL	BDL	5.4	BDL	BDL	9.9	.12	.58	.49	
7/27/90	155	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.8	BDL	BDL	BDL	BDL	4.9	8.7	.12	.59	.58	
7/27/90	159	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.6	BDL	.3	1.7	.9	65.7	71.2	1.0	.72	.58	
7/27/90	160	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.7	BDL	BDL	1.6	BDL	42.3	46.6	.67	.87	.70	
7/28/90	170	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	25.8	25.8	.39	1.43	1.0	
7/28/90	132	18.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4.7	BDL	BDL	BDL	BDL	BDL	20.8	.25	1.82	1.1	
7/28/90	127	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.2	BDL	BDL	.7	BDL	BDL	20.4	.23	1.69	1.1	
7/28/90	121	17.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.3	BDL	BDL	BDL	BDL	5.1	24.2	.27	1.87	1.1	
7/29/90	169	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.5	BDL	BDL	2.7	6.2	.09	2.28	1.2	
7/29/90	195	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	7.4	7.4	.13	2.29	1.2	
7/29/90	192	19.6	51.0	284	BDL	BDL	48.4	BDL	287	380	28.6	32.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.3	1.1	1.6	15.7	1159	20	2.52	3.5	*
7/31/90	186	24.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.2	BDL	3.0	31.1	.52	4.15	20.2	
7/31/90	184	31.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	31.9	.53	4.30	20.3	
8/ 1/90	184	25.7	142	340	BDL	BDL	240	BDL	271	782	240	915	BDL	42.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	778	3275	50	5.25	44.4	*
8/ 2/90	162	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	20.3	.30	6.18	67.8	
8/ 2/90	161	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	20.1	.29	6.27	67.8	
8/ 3/90	162	36.1	BDL	59.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.4	98.6	1.4	7.20	68.6	
8/ 3/90	169	33.1	11.8	136	BDL	BDL	BDL	BDL	BDL	34.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	18.3	234	3.5	7.32	68.9	*
8/ 4/90	192	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	22.3	.4	7.48	69.2	*
8/ 4/90	STOP																								.4	7.48	69.2	*

* DENOTES CARBON CHANGE

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Table 9

SCRDE - BLUFF ROAD SITE
COLUMBIA, S.C.

SECONDARY CARBON RATES AND CONCENTRATIONS

			EXTRACTED VAPOR CONCENTRATIONS																									
DATE	FLOW (SCFM)	VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	EMISSION RATE (LB/DAY)	RUN TIME (DAYS)	ACCUM. TOTAL POUNDS EMITTED
7/26/90	START	-																								.00	.00
7/26/90	197	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	6.7	BDL	BDL	BDL	BDL	4.0	10.7	.18	.30	.05
7/26/90	194	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.18	.43	.08
7/28/90	132	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	6.4	BDL	BDL	BDL	BDL	BDL	6.4	.08	1.62	.23
7/29/90	169	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	3.0	.05	2.26	.27
7/30/90	154	14.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	14.2	.21	3.42	.42
7/31/90	170	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	18.8	.29	4.36	.65
8/ 1/90	184	16.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	BDL	BDL	BDL	BDL	BDL	19.6	.32	5.25	.92
8/ 2/90	161	14.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	14.2	.21	6.27	1.19

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TABLE 10

TO -10 (PUFF)
SEMI-VOLATILE SAMPLES
ESTIMATED CONCENTRATIONS

PUFF #	FLOW (ml/min)	TIME (HOURS)	VACUUM (IN. Hg)	TOTAL VOLUME (liters)	ACTUAL CONCENTRATIONS (ug/l) PHENOL	2-Cl PHENOL	4-Cl PHENOL	OTHERS	TOTAL
1	55	3.5	9	11.55	2.59	5.57	BDL	-	8.16
2	65	89	9	347.1	20.5	57.4	4.92	-	82.8
3	70	24	9	100.8	102	593	83.3	-	778
4	70	25.3	8	106.26	97.6	886	154	-	1138
5	70	24.75	8	103.95	116	1575	114	-	1805
6	65	22.5	12	87.75	137	1349	95	-	1581
7	65	10.5	9	40.95	255	6286	629	907	8074

FORMULA:

$$\text{ACTUAL CONCENTRATION (ug/l)} = \frac{\text{PUFF CONC.(ug)}}{\text{TOTAL VOLUME(liters)}} \times \frac{30}{(30 - \text{VACUUM})}$$

NOTE: Expanded analysis not performed on Puffs 1 through 6.

TABLE 11

TO - 10 (PUFF)
SEMI-VOLATILE SAMPLES
ESTIMATED CONCENTRATIONS
EXPANDED ANALYSIS PUFF 7

	ESTIMATED CONCENTRATION (ug/l)
CYCLOHEXANOL	192
METHYL-PROPYL BENZENE	49
1,1-OXYBIS BENZENE	42
UNKNOWN	38
CYCLOHEXANONE	31
CYCLOHEXYL BENZENE	27
1,2 DIHYDROACENAPHTHYLENE	25
UNKNOWN	25
METHYL-ETHYL BENZENE	18
CAMPHOR	14
UNKNOWN	12
UNKNOWN	12
TRIMETHYLCYCLOHEXAMETHANOL	9
BENZENOACETIC ACID	9
DICHLOR-ETHYL BENZENE	8
PENTACHLOROPROPANE	7
TETRAMETHYL BENZENE	6
1-METHYL NAPHTHALENE	6
3,5,5-TRIMETHYL 2-CYCLOHEXENONE	4
4-CHLOROPHENOL	629
PHENOL	255
2-CHLOROPHENOL	6286
1,4 DICHLOROBENZENE	2
BENZYL ALCOHOL	56
2-METHYLPHENOL	20
4-METHYLPHENOL	13
NITROBENZENE	230
ISOPHORONE	6
2,4 DIMETHYLPHENOL	32
2,4 DICHLOROPHENOL	9
1,2,4 TRICHLOROBENZENE	2
NAPHTHLENE	14
HEXACHLOROBUTADIENE	1
2-METHYLNAPHTHALENE	10
2-CHLORONAPHTHALENE	0
TOTAL	8074

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TABLE 12

TO - 10 (PUFF)
SEMI-VOLATILE SAMPLES
ESTIMATED EXTRACTION RATES

PUFF #	TOTAL ACTUAL SEMI-VOLATILE CONC.(ug/l)	TOTAL VE SYSTEM FLOW (CFM)	EXTRACTION RATE (#/DAY)	TOTAL POUNDS EXTRACTED
1	8.16	172	.13	.02
2	82.8	163	1.22	4.52
3	778	180	12.6	12.6
4	1138	178	18.2	19.2
5	1805	165	26.8	27.6
6	1581	163	23.2	21.8
7	8074	181	131	57.5

				143

FORMULA:

(#/DAY) = ((ACTUAL CONC.(ug/l) X FLOW(CFM) X 0.09)/1000)

TOTAL POUNDS = (#/DAY) X TIME(hours)/24

NOTE: 0.09 IS A CONVERSION FACTOR

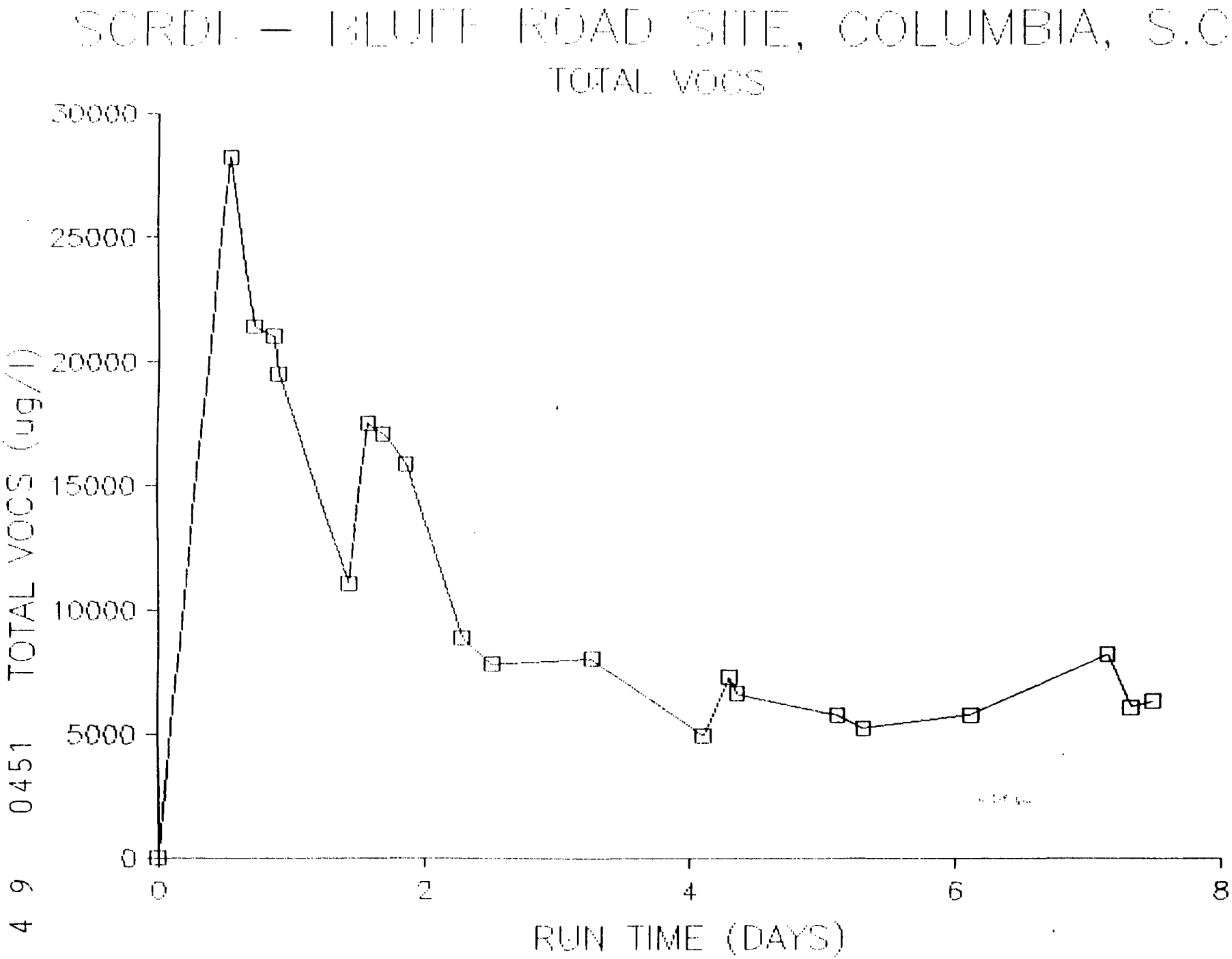
SCRDI — BLUFF ROAD SITE, COLUMBIA, S.C.
TOTAL VOCS
TOTAL VOCS (ug/l)
30000
25000
20000
15000
10000
5000
0
0
2
4
6
8
RUN TIME (DAYS)

Figure 1

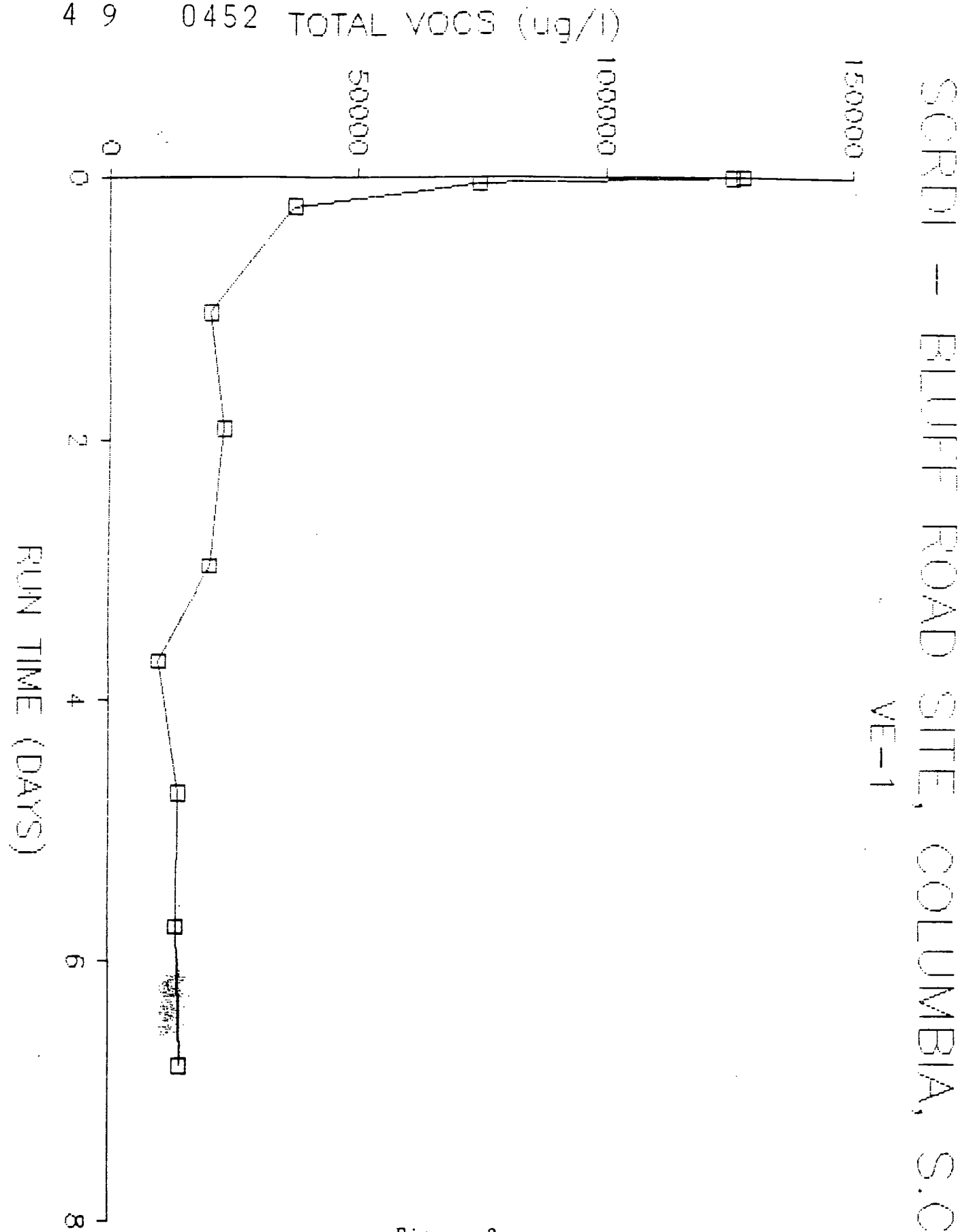
SCRDM - BLUFF ROAD SITE, COLUMBIA, S.C.
VE-1
150000
100000
50000
0
0
2
4
6
8
RUN TIME (DAYS)
4 9 0452 TOTAL VOCS (ug/l)

Figure 2

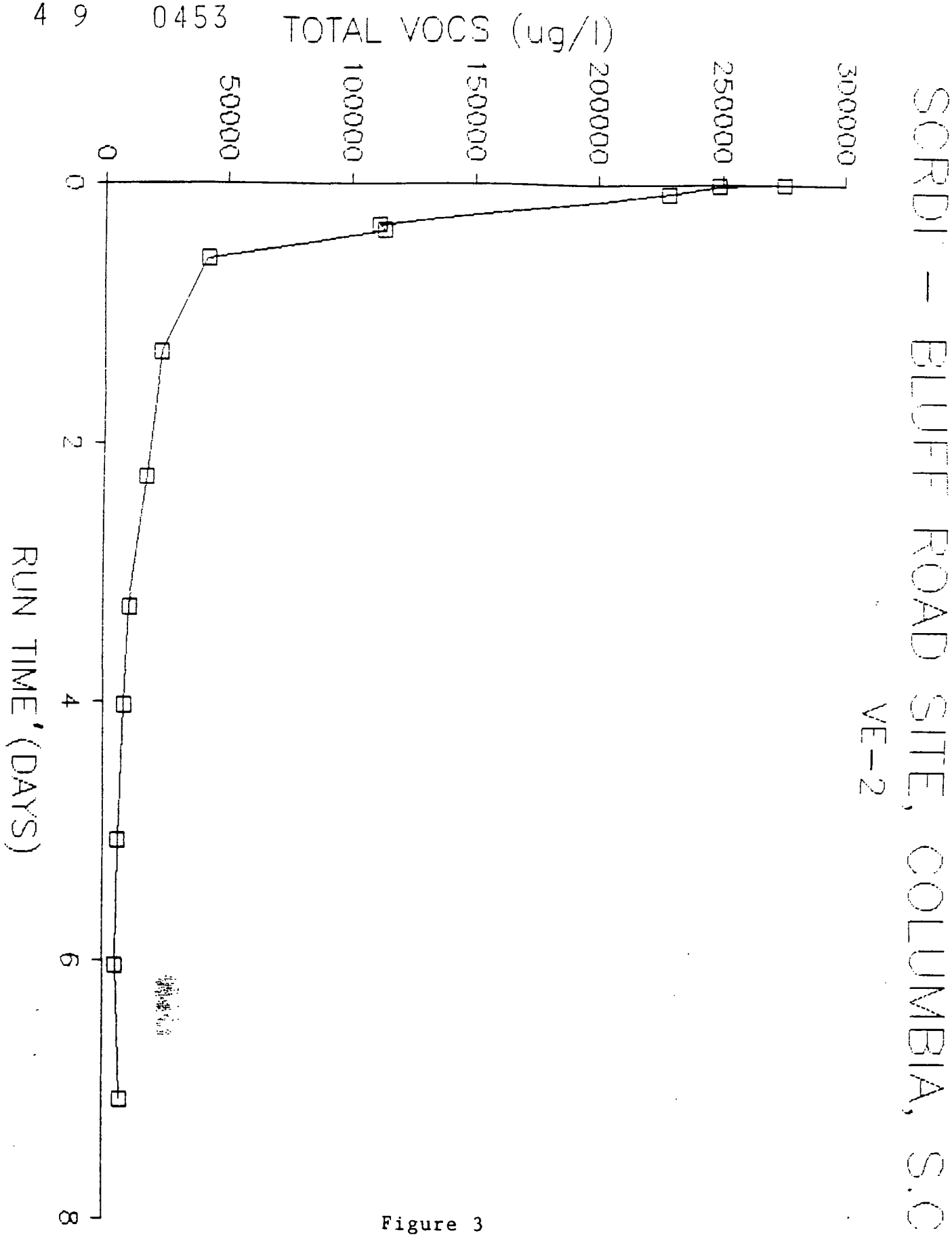
SCRDI - BLUFF ROAD SITE, COLUMBIA, S.C.
VE-2
TOTAL VOCS (ug/l)
300000
250000
200000
150000
100000
50000
0
RUN TIME (DAYS)
0
2
4
6
8

Figure 3

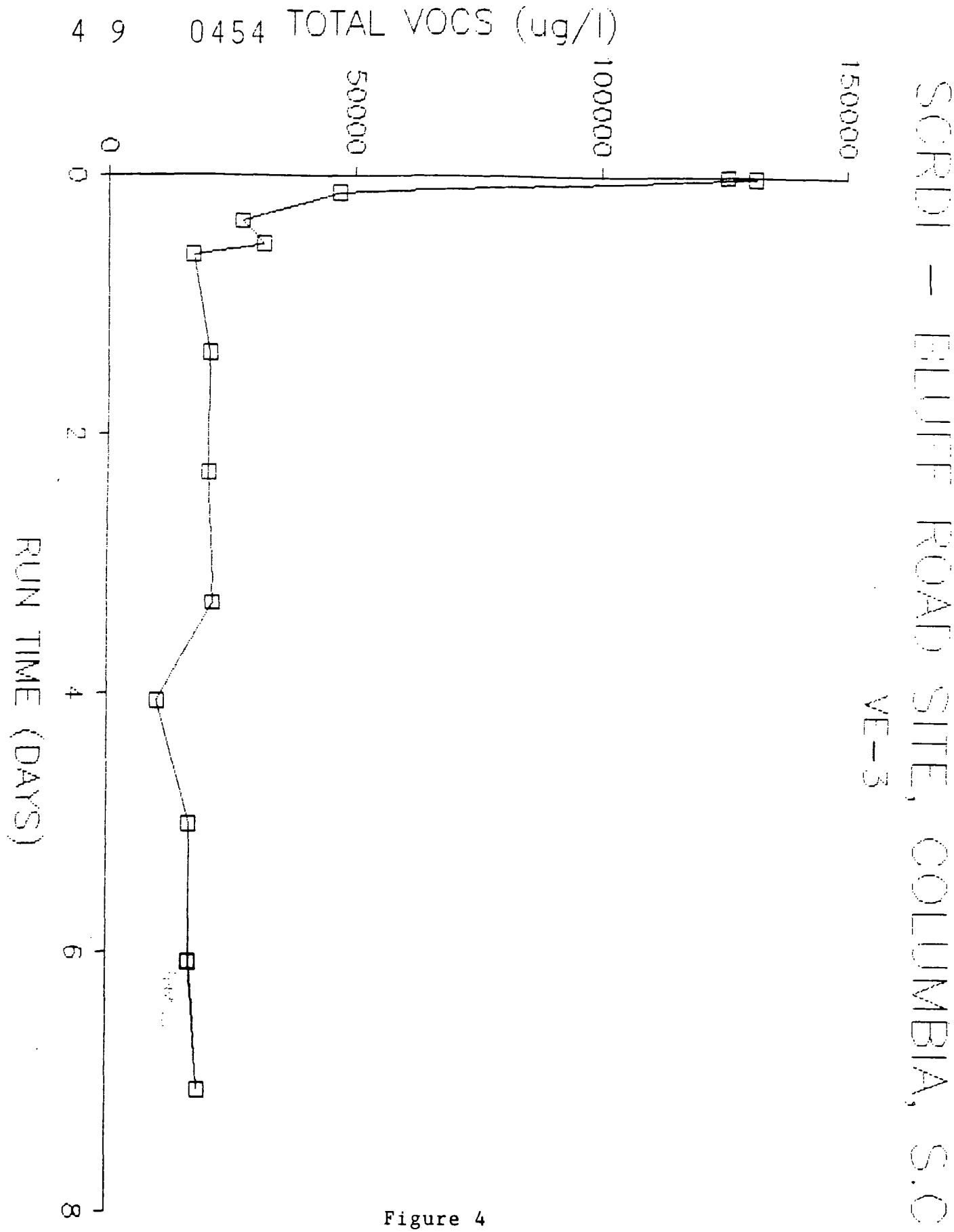
SCRDI - ELLIOTT ROAD SITE, COLUMBIA, S.C.
VE-3
150000
100000
50000
0
TOTAL VOCS (ug/l)
0
2
4
6
8
RUN TIME (DAYS)

Figure 4

micrograms (ug) of each individual compound extracted from the polyurethane puff sample by the total volume of extracted air passed through the sample.

The semi-volatiles extracted vapor stream data is shown in Table 10 and is displayed graphically on Figure 8.

Additional Analysis

Two samples of activated carbon were obtained and sent off-site for analysis of their VOC and semi-volatile concentrations. The first and third carbon canister utilized were sampled. The analytical results of the carbon samples can be found in Appendix C. Due to the difficulty in sample extraction for activated carbon and the absence of standard extraction methodology, the off-site analytical results indicate no volatile or semi-volatile compounds above the quantification limit. However, other on-site and off-site analysis demonstrate the presence of volatile and semi-volatile compounds in the extracted vapor streams.

Tables 8 and 9 show the concentrations of VOC's from the primary and secondary carbon canisters. The analytical results indicate that the 1200 pound vapor phase activated carbon canisters exhibited an average loading efficiency of approximately 27% for VOC's as determined by on-site GC analysis. The results also indicate compliance with air discharge requirements as defined in the approved work plan.

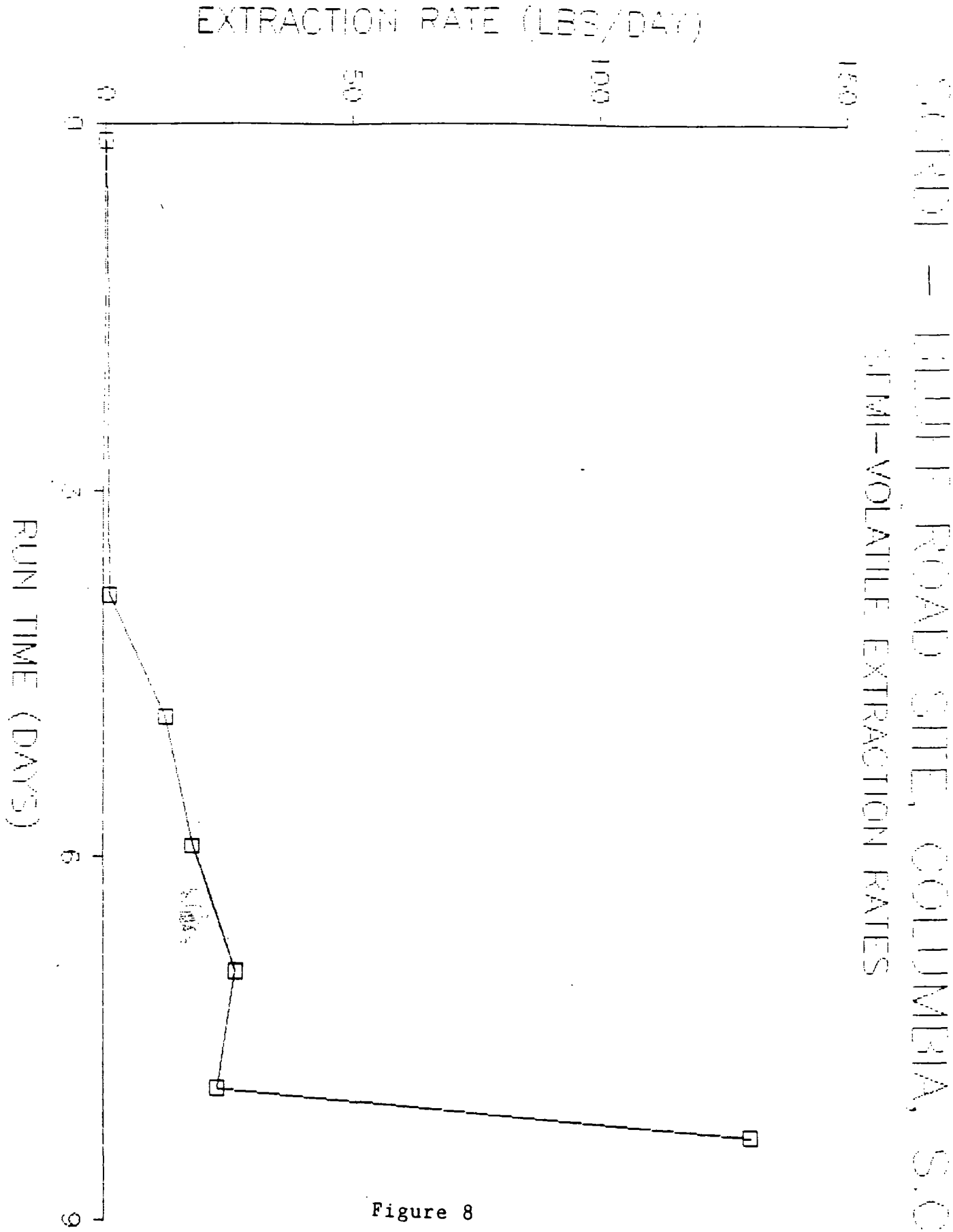
SCRDI - BLUFF ROAD SITE, COLUMBIA, S.C.
SEMI-VOLATILE EXTRACTION RATES
EXTRACTION RATE (LBS/DAY)
0
50
100
150
RUN TIME (DAYS)
0
3
6
9

Figure 8

Oxygen levels in the extracted vapor stream increased from 12.7% at the beginning of vacuum extraction operations to 21.0% at the end of operations. A summary of extracted vapor stream oxygen levels are shown in Table 13. This data confirms creation of subsurface aerobic conditions in the test area.

Bench Test

Representative samples of the bench test soil samples, BT-1 and BT-2, were collected and sent off-site for analysis of their initial VOC and semi-volatile concentrations. Boring BT-1 had initial VOC concentrations ranging from 490 mg/kg of toluene to 3000 mg/kg of 1,1,2,2, tetrachloroethane. Boring BT-2 had significantly lower initial VOC concentrations.

Both samples BT-1 and BT-2 had significant initial concentrations of phenol and 2-chlorophenol. BT-2 also had significant quantities of 2,4-dichlorophenol and 2-methylphenol (O - cresol).

A summary of the pre and post Bench Test soil analytical results are presented in Table 14. The analytical results for the bench test soil samples can be found in Appendix C.

The bench test flowrates and applied vacuum levels were varied during operations. Vacuums ranged from 8.5 to 15 inches of mercury, with measured flow rates ranging from 15 to 50 ml/min from each soil column.

The highest concentration, as determined by the on-site GC, of total VOC's in the extracted vapor stream, was measured at BT-1, immediately after start-up of the bench test study and was in

TABLE 13

SCRDI - BLUFF ROAD SITE
EXTRACTED SOIL VAPOR OXYGEN LEVELS

DATE	LOCATION	%O2
7/27/90	VE-1	12.7
7/27/90	VE-2	13.8
7/27/90	VE-3	13.0
7/28/90	VE-1	15.0
7/28/90	VE-2	16.0
7/28/90	VE-3	15.6
7/29/90	VE-1	16.8
7/29/90	VE-2	18.1
7/29/90	VE-3	17.2
7/30/90	VE-1	18.3
7/30/90	VE-2	19.3
7/30/90	VE-3	19.1
7/31/90	VE-1	19.1
7/31/90	VE-2	20.6
7/31/90	VE-3	19.6
8/ 1/90	VE-1	20.0
8/ 1/90	VE-2	21.0
8/ 1/90	VE-3	20.6
8/ 2/90	VE-1	19.9
8/ 2/90	VE-2	20.6
8/ 2/90	VE-3	20.2
8/ 3/90	VE-1	21.0
8/ 3/90	VE-2	21.0
8/ 3/90	VE-3	20.8
8/ 4/90	VE-1	19.5
8/ 4/90	VE-2	20.7
8/ 4/90	VE-3	19.4
8/ 9/90	PZ-1 3'	18.8
8/ 9/90	PZ-1 7'	14.6
8/ 9/90	PZ-1 9'	16.5
8/ 9/90	PZ-2 3'	16.4
8/ 9/90	PZ-2 6'	18.8
8/ 9/90	PZ-2 9'	14.0
8/ 9/90	PZ-3 3'	19.1
8/ 9/90	PZ-3 7'	17.7
8/ 9/90	PZ-3 9'	14.1

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TABLE 14

SCRDI - BLUFF ROAD SITE
BENCH TEST SOIL CONCENTRATIONS

	BT-1 CONCENTRATIONS			BT-2 CONCENTRATIONS		
SEMI-VOCS	INITIAL (mg/kg)	FINAL (mg/kg)	% REDUCTION	INITIAL (mg/kg)	FINAL (mg/kg)	% REDUCTION
2-CHLOROPHENOL	1000	96	90.4	1700	<0.33	>99
PHENOL	4400	900	79.6	4900	2.2	>99
2,4-DICHLOROPHENOL	<370	<3.3	-	86	<0.33	>99
2-MEHTYLPHENOL (o-cresol)	<370	5.9	-	2200	<0.33	>99
4-METHYLPHENOL (p-cresol)	<370	10	-	<36	<0.33	-
VOLATILES	INITIAL	FINAL	% REDUCTION	INITIAL	FINAL	% REDUCTION
ACETONE	310	<0.13	>99	.67	.05	92.5
CHLOROFORM	37	<0.025	>99	<0.027	<0.005	-
MEK	120	<0.05	>99	.16	<0.01	>94
1,1,1-TCA	19	<0.025	>99	<0.027	.0067	-
1,1,2,2-PCA	3000	.67	>99	<0.027	.082	-
TRANS-1,3-DCP	17	<0.025	>99	<0.027	<0.005	-
TCE	270	<0.025	>99	<0.027	<0.005	-
MIBK	23	.061	>99	.12	.028	76.7
PCE	180	<0.025	>99	<0.027	.0091	-
TOLUENE	490	<0.025	>99	.031	.029	-
CHLOROBENZENE	33	<0.025	>99	<0.027	<0.005	-
ETHYLBENZENE	54	<0.025	>99	.053	.034	-

NOTE: <0.025 INDICATES THE RESULT IS LESS THAN THE PRACTICAL QUANTIFICATION LIMIT FOR THE METHOD

excess of 9000 ug/l. The concentrations decreased over the course of operations to 13 ug/l.

Extracted vapors from BT-2 had a maximum total VOC concentration of 42 ug/l as determined by the on-site GC and decreased to below detectable limits at the completion of operations.

A summary of the extracted vapor VOC concentrations for the bench test are shown in Tables 15 and 16. These VOC concentrations are shown graphically in Figures 5 and 6.

After completion of the bench test study, the soils in samples BT-1 and BT-2 were sent off-site for analysis of the final VOC and semi-volatile concentrations. The results of the post bench test soil samples indicate substantial reductions in the VOC and semi-volatile concentrations in borings BT-1 and BT-2. Final VOC and semi-volatile concentrations and associated reductions are shown in Table 14. The analytical results for the post bench test soil samples can be found in Appendix C.

V. EVALUATIONS AND CONCLUSION

Data from both the pilot and bench test studies conducted at the site were evaluated and the following conclusions drawn:

Subsurface Contamination

Test results confirm the results reported in the Remedial Investigation that the area around B-5 is contaminated from the surface to the water table with volatile and semi-volatile compounds. The soils at VE-1 contained the highest

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PROJECT # 90 - 204

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

Table 15

BENCHTEST CONCENTRATIONS
BT-1

EXTRACTED VAPOR CONCENTRATIONS

DATE	VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	RUN TIME (DAYS)
7/25/90																								.00
7/25/90	47.0	784	5.2	BDL	BDL	255	172	22.1	1466	498	217	20.9	123	775	24.2	BDL	2177	75.4	24.3	57.9	1334	974	9043	.01
7/26/90	BDL	606	BDL	BDL	BDL	BDL	129	BDL	506	135	BDL	BDL	BDL	284	BDL	BDL	1233	49.2	BDL	52.9	1063	874	4929	.08
7/26/90	BDL	233	10.2	BDL	BDL	BDL	BDL	34.3	BDL	10.1	BDL	BDL	BDL	BDL	BDL	BDL	295	13.7	BDL	4.7	325	402	1388	.13
7/27/90	BDL	61.5	BDL	BDL	BDL	BDL	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	88.6	5.6	BDL	6.4	212	27.5	427	.33
7/28/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	6.1	BDL	6.8	BDL	14.5	88.9	96.3	1.2
7/29/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.4	BDL	BDL	BDL	BDL	BDL	3.4	2.3
7/30/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	11.0	11.0	3.3
7/31/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	9.5	9.5	4.3
8/ 1/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.2
8/ 2/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	13.5	13.5	6.2
8/ 3/90																								7.1

4 9 0461

TERRA VAC

Table 16

TERRA VAC
PROJECT # 90 - 204

SCRDI - BLUFF ROAD SITE
COLUMBIA, S.C.

BENCHTEST CONCENTRATIONS
BT-2

DATE	EXTRACTED VAPOR CONCENTRATIONS																							RUN TIME (DAYS)
	VINYL CHLORIDE (ug/l)	ACETONE (ug/l)	1,1-DICHLORO ETHENE (ug/l)	METHYLENE CHLORIDE (ug/l)	TRANS-1,2-DICHLORO ETHENE (ug/l)	1,1-DICHLORO ETHANE (ug/l)	METHYL ETHYL KETONE (ug/l)	CIS-1,2-DICHLORO ETHENE (ug/l)	CHLOROFORM (ug/l)	1,2-DICHLORO ETHANE (ug/l)	1,1,1-TRICHLORO ETHANE (ug/l)	BENZENE (ug/l)	CARBON TETRA-CHLORIDE (ug/l)	TRICHLORO ETHENE (ug/l)	METHYL ISOBUTYL KETONE (ug/l)	1,1,2-TRICHLORO ETHANE (ug/l)	TOLUENE (ug/l)	CHLORO-BENZENE (ug/l)	ETHYL-BENZENE (ug/l)	M,P-XYLENES (ug/l)	O-XYLENE AND 1,1,2,2-TETRACHLORO ETHANE (ug/l)	OTHER VOC (ug/l)	ESTIMATED TOTAL VOC (ug/l)	
7/25/90																								.00
7/25/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.9	BDL	2.9	9.3	7.7	16.6	42.4	.01
7/26/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.08
7/26/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	26.6	26.6	.13
7/27/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.33
7/28/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4.1	BDL	BDL	28.3	32.4	1.29
7/29/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.1	BDL	BDL	BDL	BDL	BDL	3.1	2.25
7/30/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	9.3	9.3	3.33
7/31/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4.26
8/ 1/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.23
8/ 2/90	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	6.18
8/ 3/90																								7.08

SCRDI – BLUFF ROAD SITE, COLUMBIA, S.C.

BT-1

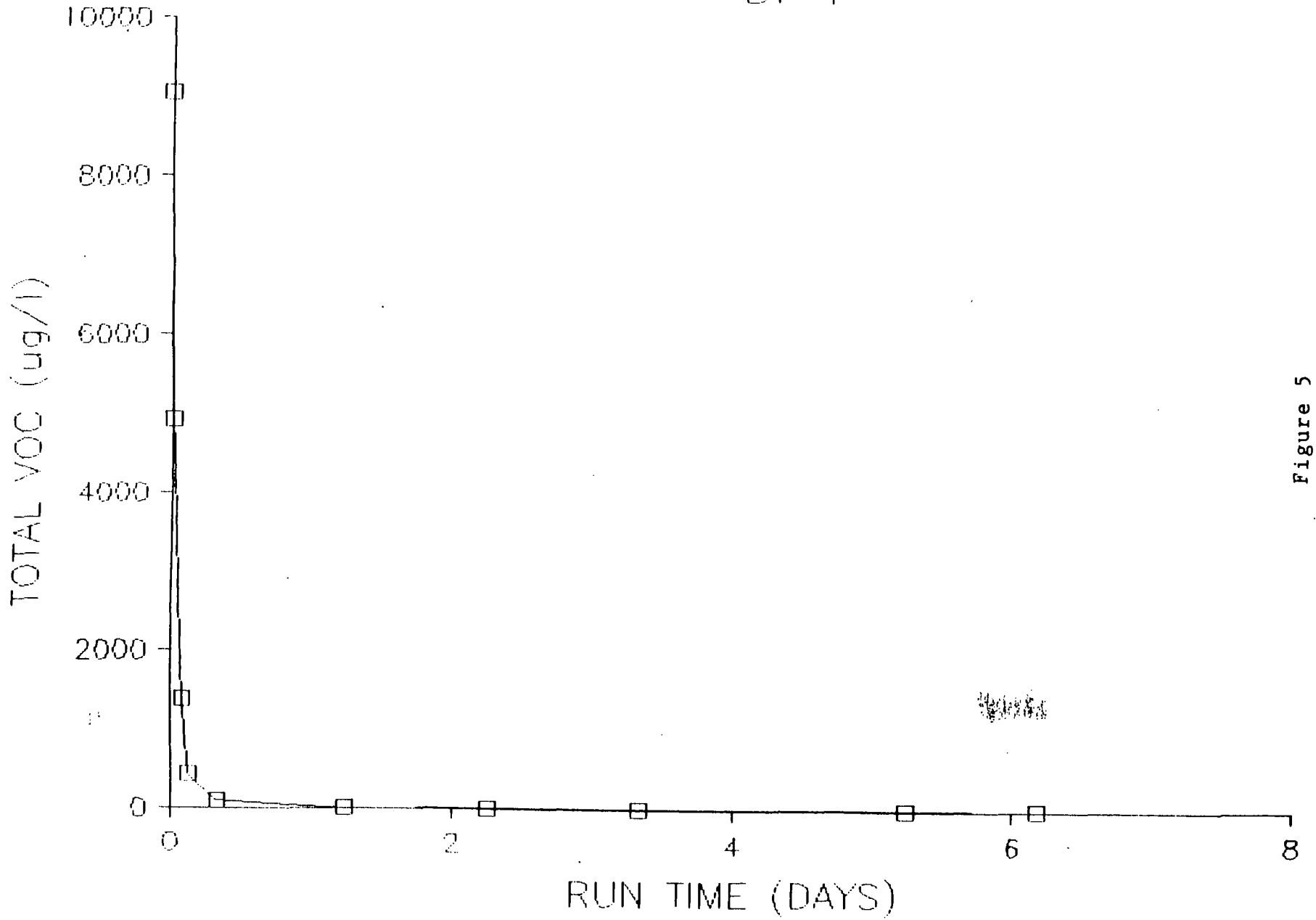


Figure 5

SCRDI — BLUFF ROAD SITE, COLUMBIA, S.C.

BT-2

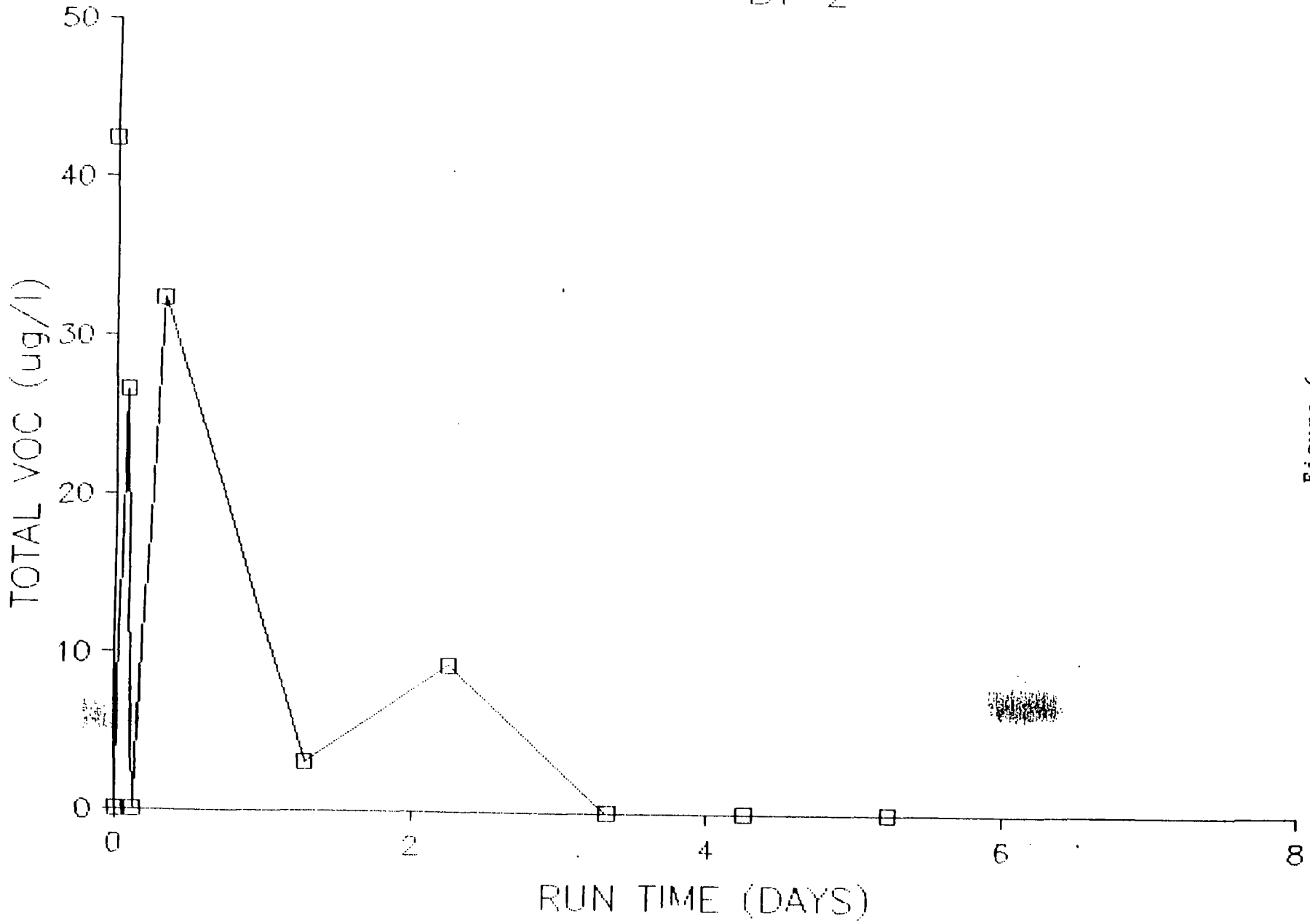


Figure 6

concentrations of volatile and semi-volatile compounds and these concentrations generally decreased with depth.

Radius of Influence

The radius of influence (distance from extraction well where subsurface vacuum is measured) measured at this site is typical of an area that has extensive surface covering. The plastic liner and 6 to 8 inches of sand covering, creates a low permeability barrier which forces the recharge airflow to come from a greater lateral distance, thus increasing the radius of influence of the vacuum extraction wells.

A graph of the subsurface vacuum versus distance from the vacuum source will produce a plot that indicates the theoretical maximum radius of influence of the vacuum extraction well being tested. Plotting this data on semi-logarithmic graph paper (data decreases exponentially) and selecting a best fit line will generate the theoretical subsurface vacuum at a specified distance from the source well. Figure 7 is an example using the data from vacuum extraction well VE-1.

Radius of influence data is a necessary parameter required for the full scale system design. An analysis of the site data indicates that the measured radius of influence (subsurface vacuum levels) is in excess of 60 feet. The minor variations in the subsurface vacuum measurements observed at piezometers was caused by the presence of two sand zones with slightly different pneumatic permeabilities. Based on Terra Vac's experience at

TERRA VAC

TABLE 17

USEPA SOIL BORING
PRETEST DATA SUMMARY

COMPOUND	VE1-1 ug/kg	VE1-2 ug/kg	VE1-3 ug/kg	VE2-1 ug/kg	VE2-2 ug/kg	VE3-1 ug/kg	VE3-2 ug/kg
ACETONE	-	-	-	1,800*	2,500*	-	-
MEK	-	-	-	320*	-	-	-
CHLOROFORM	-	-	-	190	200*	27*	-
1,2 DCA	-	-	-	120	220*	-	-
TCE	18,000*	1,200*	-	-	-	-	-
TOLUENE	160,000	13,000	1,800*	60*	48*	47*	23*
1,1,2 TCA	-	-	-	7.6*	-	-	-
PCE	310,000	58,000	14,000	21*	-	-	-
XYLENES, M/P	630,000	60,000	1,400*	-	-	16*	-
O-XYLENE	220,000	19,000	-	-	-	-	-
1,1,2,2 PCA	100,000	11,000	-	9.8*	-	-	-
ETHYL BENZENE	170,000	15,000	-	-	-	-	-
NITROBENZENE	20,000	3,100	590*	-	-	-	-
ISOPHORONE	-	170*	160*	-	-	-	-
NAPTHALENE	680*	-	-	-	-	-	-
2-METHYLNAPTHALENE	2,200	-	-	-	-	-	-
DIBENZOFURAN	670*	-	-	-	-	-	-
DI-N-OCTYLPHTHALAT	-	-	-	-	-	3,100	-
PHENOL	36,000	6,700	3,800	550*	1,000*	210*	-
2-CHLOROPHENOL	27,000	5,000	6,200	-	-	150*	-
BENZOIC ACID	-	-	610*	500*	-	-	-
2,4-DICHLOROPHENOL	650*	390*	-	-	-	-	-

NOTE: * ESTIMATED VALUE

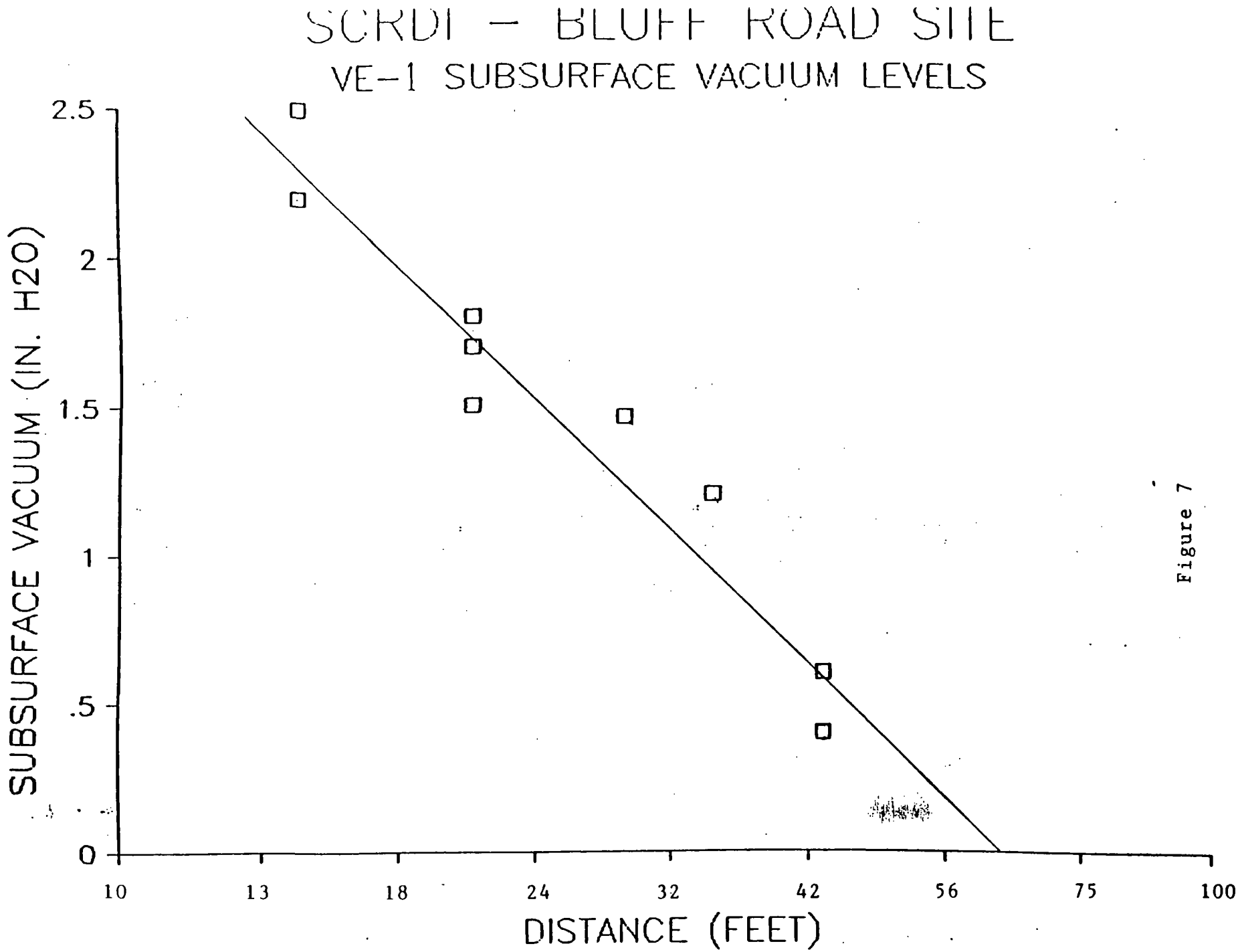

SCRDI - BLUFF ROAD SITE
VE-1 SUBSURFACE VACUUM LEVELS
SUBSURFACE VACUUM (IN. H2O)
2.5
2
1.5
1
.5
0
10
13
18
24
32
42
56
75
100
DISTANCE (FEET)

Figure 7

other sites, these minor differences in permeability are not sufficient to cause significant preferential air flow zones.

Extraction Rates and Wellhead Concentrations

VOC concentrations and associated extraction rates for the vacuum extraction wells decreased after initial well development. This decline is typical and will continue as vacuum extraction operations proceed. VE-2 recorded the highest initial VOC extraction rate at 553 pounds per day of total VOC's. This extraction rate declined to approximately 24 pounds per day at the end of operations. VE-1 had an initial VOC extraction rate of 134 pounds per day, which declined to 60 pounds per day at the end of operations. VE-3 had an initial VOC extraction rate of 103 pounds per day, which declined to 32 pounds per day at the end of operations.

The results from the analysis of the semi-volatile puff samples indicated that the extraction rates of semi-volatiles in the total extracted vapor stream increased dramatically from 0.13 pounds per day to 131 pounds per day during the course of operations. Table 12 shows the estimated semi-volatile extraction rates. A total of approximately 143 pounds of semi-volatiles were extracted from the subsurface soils during the vacuum extraction system operations.

Soil Nutrient and Oxygen Concentrations

The results of the soil nutrient analysis indicate that conditions should be favorable to sustain microbial activity.

Monitoring of the extracted vapor stream indicated that subsurface aerobic conditions were developed and maintained during vacuum extraction operations. Subsurface oxygen concentration measurements taken several days after system shutdown decreased, indicating potential biological activity.

Reducing the concentrations of VOC's (which may retard biological activity) present in the soils and maintaining the soils under aerobic conditions may further impact the soils remediation by enhancing the natural biodegradation process.

Bench Test Study

The analytical results of the bench test indicate that substantial reductions in both VOC and semi-volatile concentrations were obtained.

The single most important demonstration made by the bench test is the achievability of the target soil clean-up levels as established in the Feasibility Study.

The percent reductions and final concentrations obtained during the bench test are provided in Table 14. The target clean-up levels from the Feasibility Study are 3.95ppm and 0.55ppm for phenol and 2-chlorophenol respectively. BT-2 results achieved phenol reduction (>99%) to 2.2ppm and 2-chlorophenol reduction (>99%) to less than detection (<0.33ppm). Volatile compound final concentrations were below target clean-up levels or detection limits, with the exception of 1,1,2,2-tetrachloroethane. However, as seen in BT-1, the initial

concentration of the component was reduced by more than 99.97 percent during this short term test.

Applicability of the Vacuum Extraction Process

The following conclusive statements can be made concerning the pilot test results:

* Over 1300 pounds of volatile and semi-volatile compounds were extracted over the 190 hours of field pilot test operations.

* At least 57 volatile and semi-volatile compounds were extracted during field pilot test operations, including every compound identified for potential soil remediation in Table 3-3 of the approved Feasibility Study.

* Pre and post bench test soil analytical results demonstrate that the target soil cleanup levels can be achieved.

* Site stratigraphy is ideal for vacuum extraction with sandy/silty soils resulting in a large vacuum extraction well radius of influence and no significant preferential air flow.

* Vacuum extraction created and maintained subsurface conditions amenable to enhanced natural biodegradation.

It is Terra Vac's opinion that the data necessary for full scale system design is available. Based on the data available and extensive previous experience, a timeframe for site soils remediation can be projected. It is estimated that this technology can achieve soils remediation within a two year timeframe, given an effective design and the proper vacuum

extraction equipment. This estimate can be refined during remedial design.

As a result, this pilot test, in conjunction with the bench test results, provides conclusive demonstration of the applicability of the tested vacuum extraction technology for soils remediation at the Bluff Road Site.

4 9 0472

Appendix A

TERRA VAC

TERRA VAC

4 9 0473

WELL LOG

COMPANY SCRDI-Bluff Road Superfund Site WELL NO. VE-1

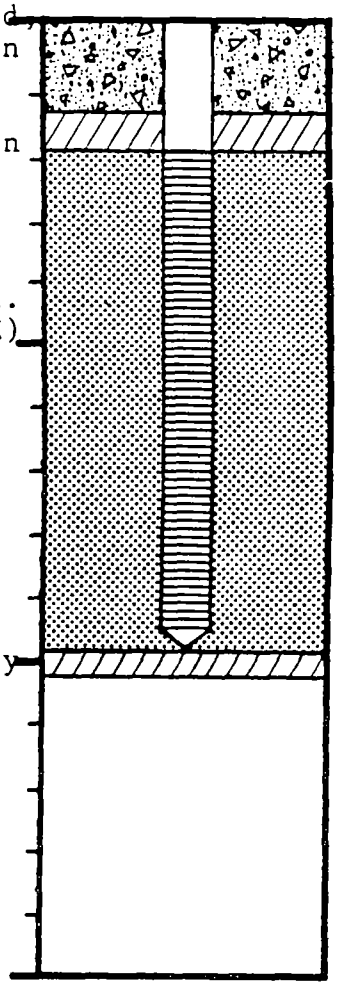
PROJECT NO. 90-204 DATE COMPLETED 7/24/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD Split Spoon DRILLING CO. Mid Atlantic Environ.

FT.	L	GEOLOGICAL DESCRIPTION	N	S
0		Fill/Sand: Red, silty-fine grain sand (SM), Plastic liner, brown to dull green, sand and gravel, (GW), Fill SW=.50	15	2.6
		Sand: Reddish Brown, silty-fine grain sand, Mod. sort, (SM), SW=.50	2	20
		Sand: Same as above	5	28
5		Sand: Lt. Red-Orange, Silty-fine-med. grain sand, some mottling, (SM) SW=.50	7	50
		Sand: Reddish Brown, Tan, Mottled, Silty-fine-coarse grain sand, (SW), SW=.50	16	150
10		Sand: Red-orange, Tan, mottled, silty fine-coarse grain sand, some pebbles to 7mm, (SW), SW=.50	13	110
15				

WELL DESIGN SECTION



LEGEND

- (GW)WELL GRADED GRAVELS
- (GP)POORLY GRADED GRAVELS
- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N= STANDARD PENETRATION (BLOWS/FT.)

S= SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 4"

SCREEN TYPE PVC

SLOT NO. .020

FILTER MAT. Silica

FILTER SIZE 10-20 Mesh

TERRA VAC

4 9 0474

WELL LOG

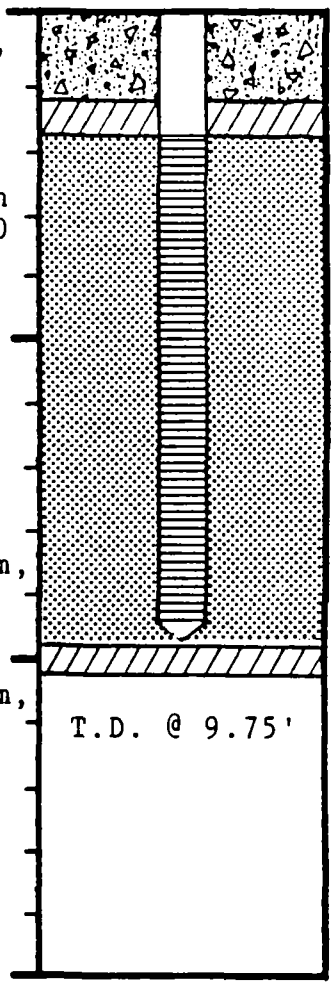
COMPANY SCRDI-Bluff Road Superfund Site WELL NO. VE-2

PROJECT NO. 90-204 DATE COMPLETED 7/24/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD Split Spoon DRILLING CO. Mid Atlantic Environ.

FT.	L	GEOLOGICAL DESCRIPTION	N	S
0		Fill/Sand: Dk. Red, Silty-fine grain sand, (SM), plastic liner, brown to dull green, sand and gravel, (GW), Fill, SW =.50	42	4.5
		Sand: Reddish-brown, silty-fine grain sand, mod. sort, (SM), SW = .50	5	1.4
		Sand: Same as above	5	3.2
5		Sand: Orange, silty-fine-med. grain sand, mottles, (SM), SW=.50	6	1.4
		Sand: Lt. orange, silty-fine-coarse grain sand, some pebbles to 3mm, (SW), SW=.50	14	2.4
10		Sand: Lt. Orange, silty-fine-coarse grain snad, some pebbles to 4mm, (SW), SW-.75, wet at 11.5'	13	10.5
		T.D. @ 9.75'		
15				



LEGEND

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- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N= STANDARD PENETRATION (BLOWS/FT.)

S= SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 4"

SCREEN TYPE PVC

SLOT NO. .020

FILTER MAT. Silica

FILTER SIZE 10-20 Mesh

TERRA VAC

4 9 0475

WELL LOG

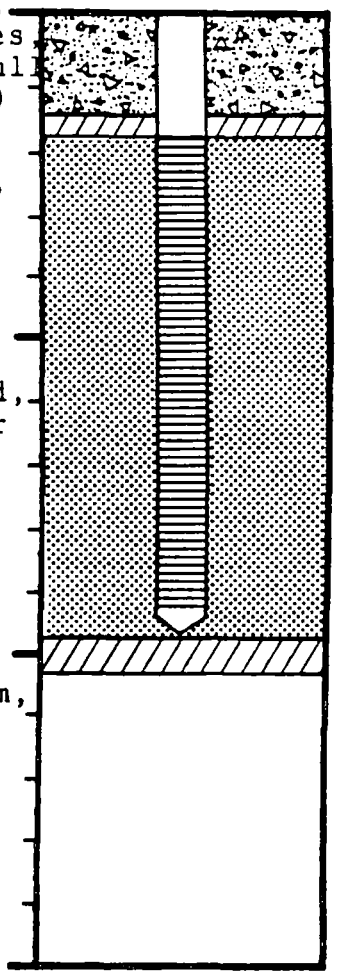
COMPANY SCRDI-Bluff Road Superfund Site WELL NO. VE-3

PROJECT NO. 90-204 DATE COMPLETED 7/24/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD Split Spoon DRILLING CO. Mid Atlantic Environ.

FT.	L	GEOLOGICAL DESCRIPTION	WELL DESIGN SECTION	N	S
0		Fill/Sand: red, fine-med. grain sand, (SW), some silt and pebbles plastic liner, brown to dull green, sand and silt, (SM) SW=.50		10	.3
		Sand: Lt. Red, Silty-fine grain sand, mod. sort, (SM), SW=.50		5	.1
		Sand: Same as above		6	1.5
5		Sand: Lt. Brown-orange-red, slight mottling, silty-fine grain sand, some clay and coarse sand, poor sort (SM), SW=.50		7	1.5
		Sand: Lt. Red-orange, tan, mottled, silty-fine-coarse grain sand, some clay, (SW), SW=.50		16	.8
10		Sand: Lt. orange, silty-fine-coarse grain sand, some pebbles to 7mm, (SW), SW=.75 @ 11.0', White clayey layer approx. 5" thick @ 11.0'		15	—
15					



LEGEND

- (GW)WELL GRADED GRAVELS
- (GP)POORLY GRADED GRAVELS
- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N= STANDARD PENETRATION (BLOWS/FT.)

S= SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 4"

SCREEN TYPE PVC

SLOT NO. .020

FILTER MAT. Silica

FILTER SIZE 10-20 Mesh

TERRA VAC
TAMPA FLORIDA

4 9 0476

WELL LOG

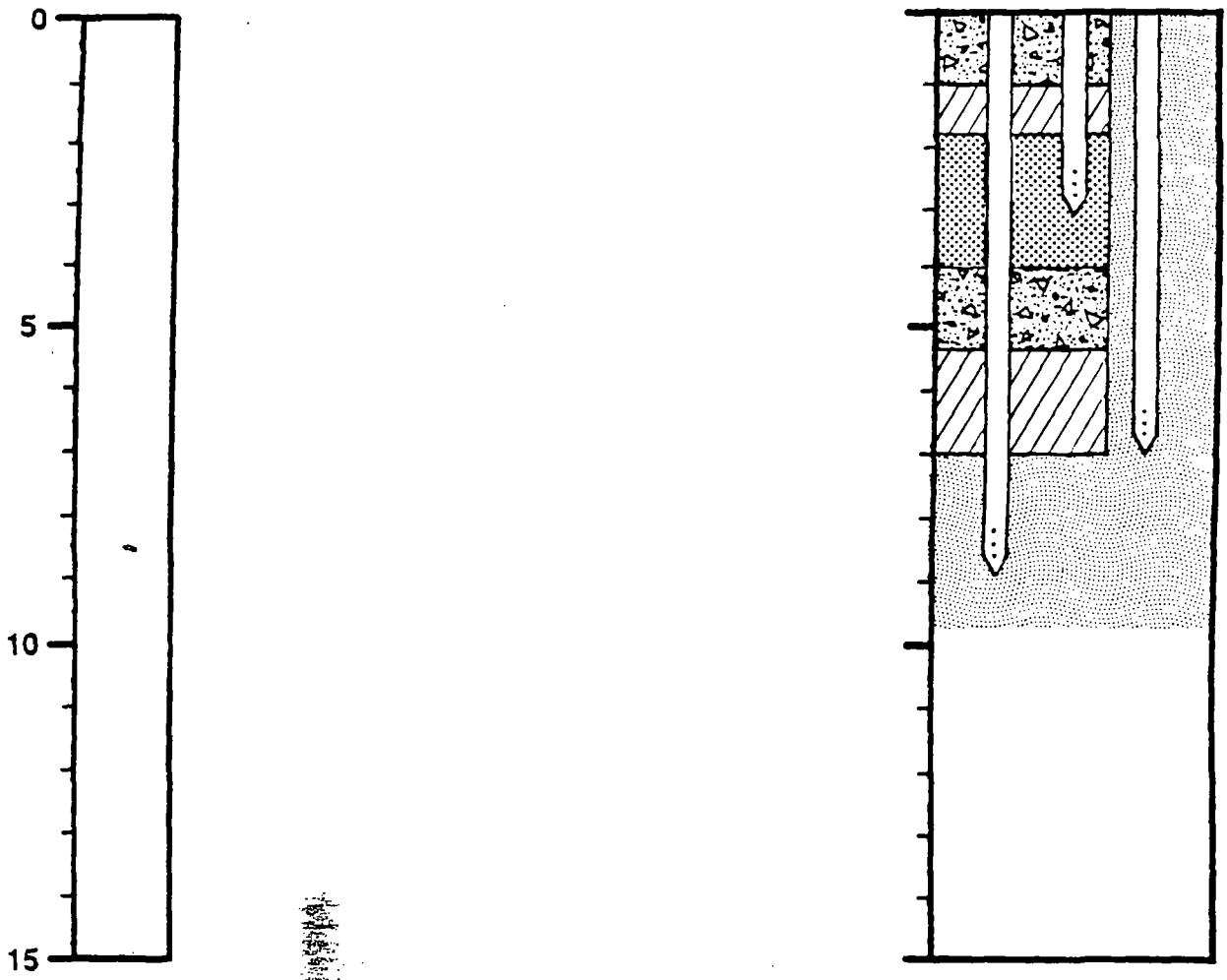
COMPANY SCRDI-Bluff Road Superfund Site WELL NO. PZ-1

PROJECT NO. 90-204 DATE COMPLETED 7/25/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD ——— DRILLING CO. ———

FT.	L	GEOLOGICAL DESCRIPTION	WELL DESIGN SECTION	N	S



LEGEND

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- (GP)POORLY GRADED GRAVELS
- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N = STANDARD PENETRATION (BLOWS/FT.)

S = SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 1/2"

SCREEN TYPE Black Steel

SLOT NO. 3/16" Holes

FILTER MAT. -------

FILTER SIZE -------

TERRA VAC

4 9 0477

WELL LOG

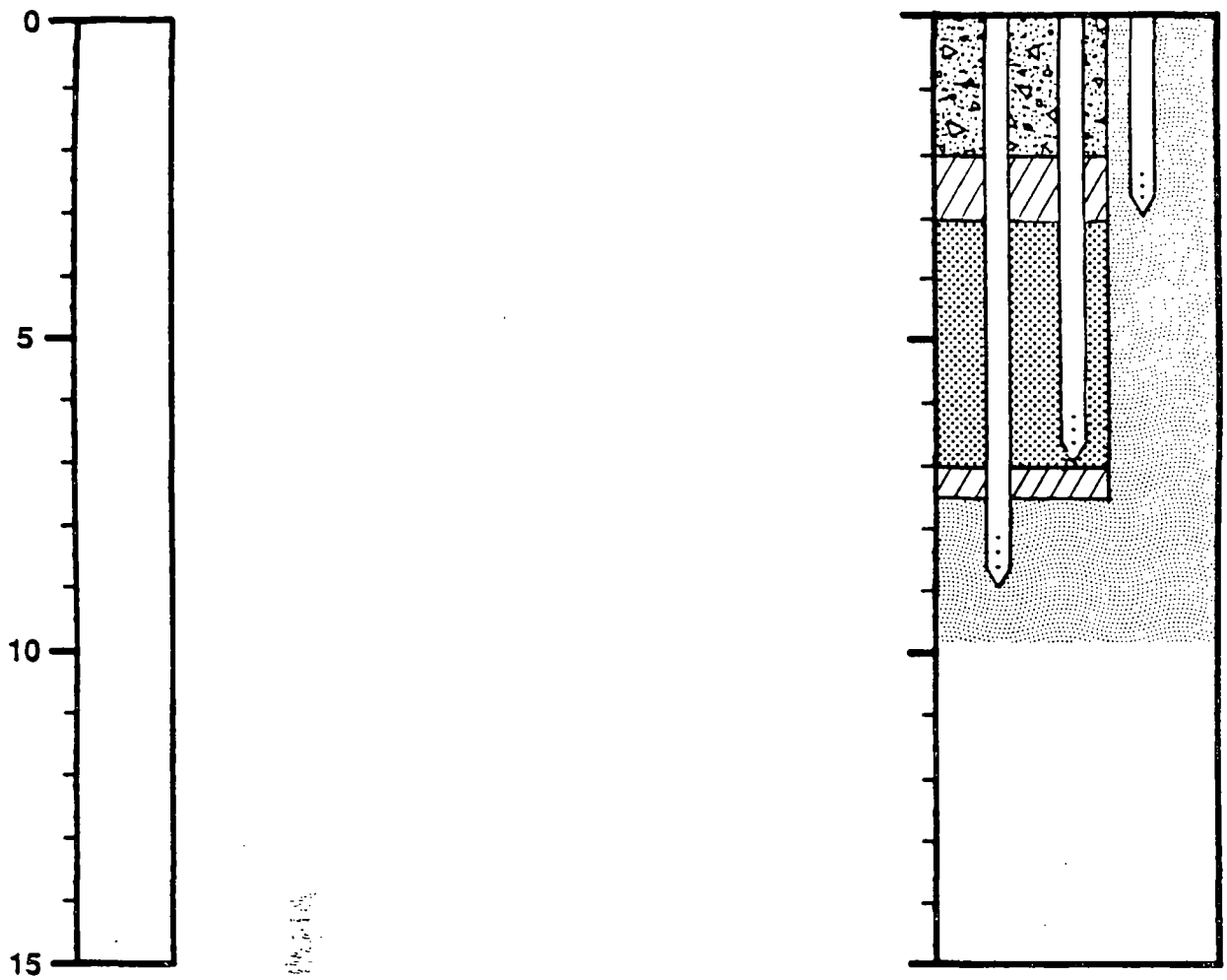
COMPANY SCRDI-Bluff Road Superfund Site WELL NO. PZ-2

PROJECT NO. 90-204 DATE COMPLETED 7/25/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD — DRILLING CO. —

FT.	L	GEOLOGICAL DESCRIPTION	WELL DESIGN SECTION	N	S



LEGEND

- (GW)WELL GRADED GRAVELS
- (GP)POORLY GRADED GRAVELS
- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N = STANDARD PENETRATION (BLOWS/FT.)

S = SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 1/2"

SCREEN TYPE Black Steel

SLOT NO. 3/16" Holes

FILTER MAT. —

FILTER SIZE —

4 9 0478

TERRA VAC

WELL LOG

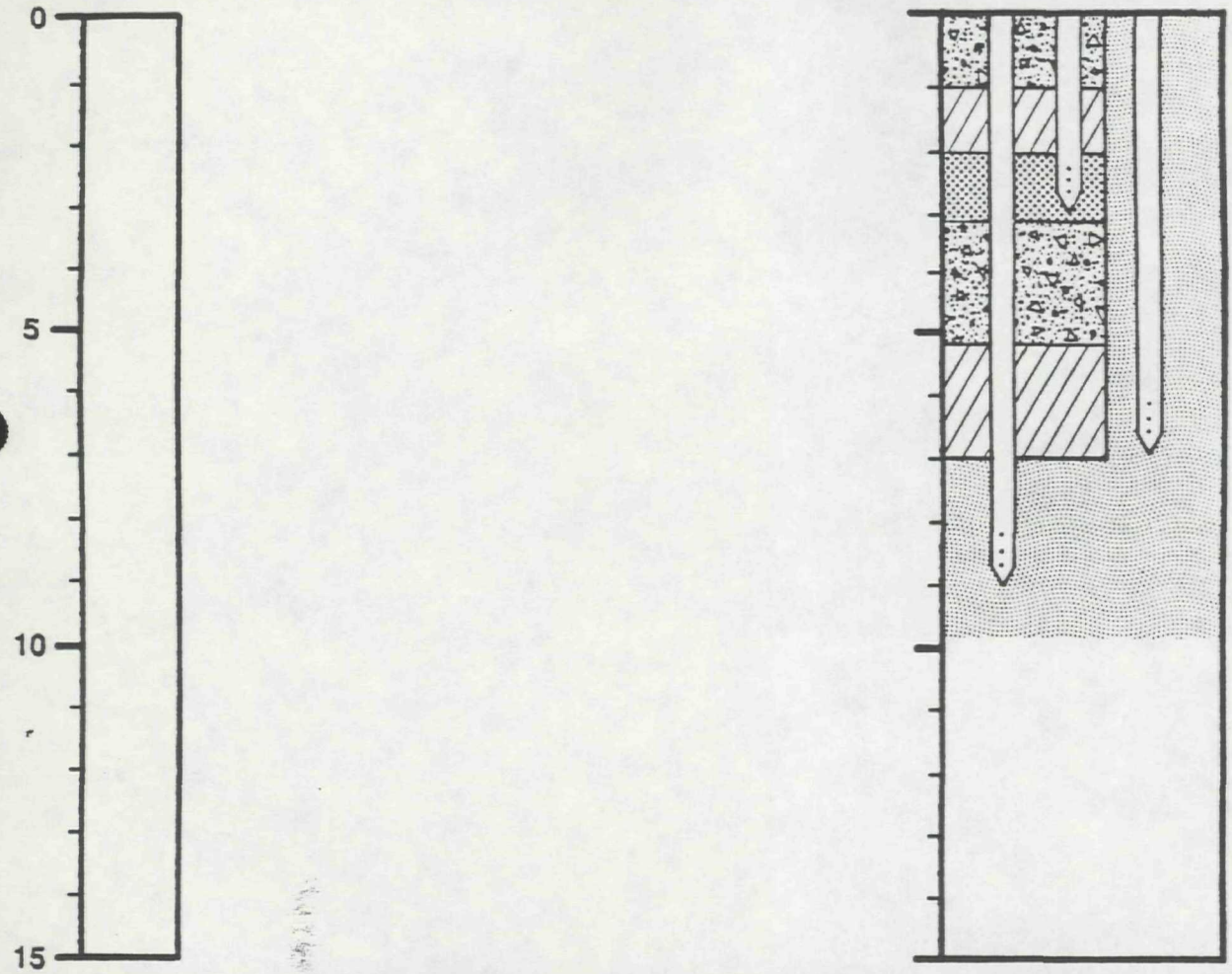
COMPANY SCRDI-Bluff Road Superfund Site WELL NO. PZ-3

PROJECT NO. 90-204 DATE COMPLETED 7/25/90

LOCATION Columbia, SC GEOLOGIST F.H. McKay

SAMPLING METHOD ——— DRILLING CO. ———

FT.	L	GEOLOGICAL DESCRIPTION	WELL DESIGN SECTION	N	S



LEGEND

- (GW)WELL GRADED GRAVELS
- (GP)POORLY GRADED GRAVELS
- (GM)SILTY GRAVELS
- (GC)CLAYEY GRAVELS
- (SW)WELL GRADED SANDS
- (SP)POORLY GRADED SANDS
- (SM)SILTY SANDS
- (SC)CLAYED SANDS
- (CL)INORGANIC CLAYS, MEDIUM PLASTICITY
- (OL)ORGANIC SILTS, LOW PLASTICITY
- (CH)INORGANIC CLAYS, HIGH PLASTICITY
- (PT)PEAT, HIGHLY ORGANIC SOILS
- (LS)LIMESTONE

N= STANDARD PENETRATION (BLOWS/FT.)

S= SOIL CONCENTRATION (P.P.M.)

▼ = WATER ENCOUNTERED

WELL DESIGN

- GROUT
- BENTONITE
- SILICA PACK
- WELL SCREEN

CASING DIA. 1/2"

SCREEN TYPE Black Steel

SLOT NO. 3/16" Holes

FILTER MAT. -------

FILTER SIZE -------

4 9 0479

TERRA VAC

Appendix B

TERRA VAC

SCRDI - BLUFF ROAD
PILOT TEST

R A D I U S O F I N F L U E N C E

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION		DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
7/26/90	VE-3	PZ-1	3'	44	9.5"	.6"
			7'	"	"	.5"
			9'	"	"	.2"
		PZ-2	3'	54	"	.3
			7'	"	"	.4
			9'	"	"	.1"
		PZ-3	3'	25	"	.9"
			7'	"	"	.8"
			9'	"	"	.6"
		VE-1		29	"	.7"
		VE-2		49	"	.5"

7/26/90	VE-2	PZ-1	3'	32	7.0"	2.3"
			7'	"	"	2.0"
			9'	"	"	.9"
		PZ-2	3'	9.5	"	4.7"
			7'	"	"	5.8"
			9'	"	"	.9"
		PZ-3	3'	57.5	"	1.2"
			7'	"	"	1.3"
			9'	"	"	1.2"
		VE-1		34.5	"	1.9"
		VE-3		49.0	"	1.5"

TERRA VAC

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION		DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
7/27/90	VE-1	PZ-1	3'	14.5	9.0"	2.5"
			7'	"	"	2.2"
			9'	"	"	1.0"
		PZ-2	3'	44	"	.4"
			7'	"	"	.6"
			9"	"	"	.2"
		PZ-3	3'	21	"	1.7"
			7'	"	"	1.8"
			9'	"	"	1.5"
		VE-2		34.5	"	1.2"
		VE-3		29	"	1.6"

7/28/90	VE-1	PZ-1	3'		8.0	10.3"
	VE-2		7'		"	9.5"
	VE-3		9'		"	3.9"
		PZ-2	3'		"	10.0"
			7'		"	11.4"
			9'		"	3.5"
		PZ-3	3'		"	7.1"
			7'		"	7.3"
			9'		"	6.5"

TERRA VAC

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION	DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
7/29/90	VE-1	PZ-1 3'		10.0	11.2"
	VE-2	7'		"	10.2"
	VE-3	9'		"	3.6"
		PZ-2 3'		"	8.6"
		7'		"	10.0"
		9'		"	4.0"
		PZ-3 3'		"	8.1"
		7'		"	8.3"
		9'		"	7.7"

7/30/90	VE-1	PZ-1 3'		9.0"	11.3"
	VE-2	7'		"	10.4"
	VE-3	9'		"	4.7"
		PZ-2 3'		"	10.0"
		7'		"	11.4"
		9'		"	5.3"
		PZ-3 3'		"	8.0"
		7'		"	8.1"
		9'		"	7.8"

TERRA VAC

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION	DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
7/31/90	VE-1	PZ-1 3'		11.0"	13.7"
	VE-2	7'		"	12.7"
	VE-3	9'		"	7.5"
		PZ-2 3'		"	10.0"
		7'		"	11.8"
		9'		"	6.2"
		PZ-3 3'		"	9.9"
		7'		"	10.0"
		9'		"	9.6"

8/1/90	VE-1	PZ-1 3'		7.5"	13.4"
	VE-2	7'		"	12.4"
	VE-3	9'		"	5.0"
		PZ-2 3'		"	10.0"
		7'		"	10.4"
		9'		"	8.9"
		PZ-3 3'		"	8.9"
		7'		"	8.9
		9'		6	9.3"

TERRA VAC

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION		DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
8/2/90	VE-1	PZ-1	3'		7.0"	13.3"
	VE-2		7'		"	12.6"
	VE-3		9'		"	3.9"
		PZ-2	3'		"	8.2"
			7'		"	9.7"
			9'		"	2.5"
		PZ-3	3'		"	9.4"
			7'		"	9.6"
			9'		"	9.0"

8/3/90	VE-1	PZ-1	3'		10.8"	20.1"
	VE-2		7'		"	18.0"
	VE-3		9'		"	9.5"
		PZ-2	3'		"	14.0"
			7'		"	16.1"
			9'		"	7.0"
		PZ-3	3'		"	14.6"
			7'		"	14.8"
			9'		"	14.3"

TERRA VAC

DATE	VACUUM SOURCE LOCATION	PIEZOMETER LOCATION	DISTANCE (FEET)	SOURCE VACUUM (IN Hg)	PIEZOMETER VACUUM (IN H_2O)
8/4/90	VE-1	PZ-1 3'		8.8"	19.4"
	VE-2	7'		"	17.3"
	VE-3	9'		"	7.0"
		PZ-2 3'		"	13.5"
		7'		"	15.2"
		9'		"	6.3"
		PZ-3 3'		"	13.3"
		7'		"	13.2"
		9'		"	12.7"

FROM	TO	DISTANCE (Feet)
VE-1	VE-2	34.5'
	VE-3	29.25'
	PZ-1	14.5'
	PZ-2	44.0'

VE-2	VE-3	49.0'
	PZ-1	32.0'
	PZ-2	9.5'
	PZ-3	57.5'

VE-3	PZ-1	44.0'
	PZ-2	54.0'
	PZ-3	25.0'

4 9 0486

TERRA VAC

Appendix C

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

:102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

Received: 27 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09069-9	VE-1 (07.25.90)	Client
09069-10	VE-2 (07.25.90)	
09069-11	VE-3 (07.25.90)	

PARAMETER	09069-9	09069-10	09069-11
pH, units	3.7	5.8	8.2
⁻⁻tho Phosphate-P, mg/kg dw	<1.2	<1.1	<1.1
.assium, mg/kg dw	380	260	1800
..monia-N, mg/kg dw	15	6.4	6.6
Sulfate as SO4, mg/kg dw	940	<100	<110
Percent Solids, %	86 %	89 %	93 %

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

,102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

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Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09069-7	Tube #BT-1-Prebench (07.25.90)	Client
09069-8	Tube #BT-2-Prebench (07.25.90)	

PARAMETER	09069-7	09069-8
Semivolatile Organics (8270)		
2-Chlorophenol, mg/kg dw	1000	1700
`-Nitrophenol, mg/kg dw	<370	<36
nenol, mg/kg dw	4400	4900
2,4-Dimethylphenol, mg/kg dw	<370	<36
2,4-Dichlorophenol, mg/kg dw	<370	86
2,4,6-Trichlorophenol, mg/kg dw	<370	<36
4-Chloro-3-methylphenol, mg/kg dw	<370	<36
2,4-Dinitrophenol, mg/kg dw	<1900	<180
2-Methyl-4,6-dinitrophenol, mg/kg dw	<1900	<180
Pentachlorophenol, mg/kg dw	<1900	<180
4-Nitrophenol, mg/kg dw	<1900	<180
2-Methylphenol (o-cresol), mg/kg dw	<370	2200
4-Methylphenol (p-cresol), mg/kg dw	<370	<36
2,4,5-Trichlorophenol, mg/kg dw	<370	<36

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

Received: 27 JUL 90

Mr. Dave Fuerst
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4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION . SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09069-7	Tube #BT-1-Prebench (07.25.90)	Client
09069-8	Tube #BT-2-Prebench (07.25.90)	

PARAMETER	09069-7	09069-8
Volatiles by GC/MS		
Chloromethane, ug/kg dw	<23000	<54
Bromomethane, ug/kg dw	<23000	<54
inyl Chloride, ug/kg dw	<23000	<54
chloroethane, ug/kg dw	<23000	<54
Methylene Chloride, ug/kg dw	<11000	<27
Acetone, ug/kg dw	310000	670
Carbon Disulfide, ug/kg dw	<11000	<27
1,1-Dichloroethylene, ug/kg dw	<11000	<27
1,1-Dichloroethane, ug/kg dw	<11000	<27
Cis-trans-1,2-Dichloroethylene, ug/kg dw	<11000	<27
Chloroform, ug/kg dw	37000	<27
1,2-Dichloroethane, ug/kg dw	<11000	<27
2-Butanone, ug/kg dw	120000	160
1,1,1-Trichloroethane, ug/kg dw	19000	<27
Carbon Tetrachloride, ug/kg dw	<11000	<27
Vinyl Acetate, ug/kg dw	<23000	<54
Bromodichloromethane, ug/kg dw	<11000	<27
1,1,2,2-Tetrachloroethane, ug/kg dw	3000000	<27
1,2-Dichloropropane, ug/kg dw	<11000	<27
Trans-1,3-Dichloropropene, ug/kg dw	17000	<27
Trichloroethylene, ug/kg dw	270000	<27
Dibromochloromethane, ug/kg dw	<11000	<27

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

Received: 27 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09069-7	Tube #BT-1-Prebench (07.25.90)	Client
09069-8	Tube #BT-2-Prebench (07.25.90)	

PARAMETER	09069-7	09069-8
1,1,2-Trichloroethane, ug/kg dw	<11000	<27
Benzene, ug/kg dw	<11000	<27
s-1,3-Dichloropropene, ug/kg dw	<11000	<27
Chloroethylvinyl Ether, ug/kg dw	<23000	<54
Bromoform, ug/kg dw	<11000	<27
2-Hexanone, ug/kg dw	<23000	<54
4-methyl-2-pentanone, ug/kg dw	<23000	120
Tetrachloroethylene, ug/kg dw	180000	<27
Toluene, ug/kg dw	490000	31
Chlorobenzene, ug/kg dw	33000	<27
Ethylbenzene, ug/kg dw	54000	53
Styrene, ug/kg dw	<11000	<27
Xylenes, ug/kg dw	<11000	<27
Percent Solids, %	89 %	92 %

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09598

Received: 04 AUG 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09598-2	Post Bench Test #BT-1 (08.03.90)	Client
09598-3	Post Bench Test #BT-2 (08.03.90)	
09598-4	Spent Carbon #112531 (08.03.90)	
09598-5	Spent Carbon #115485 (08.03.90)	

PARAMETER	09598-2	09598-3	09598-4	09598-5
nivolatile Organics (8270)				
-Chlorophenol, ug/kg dw	96000	<330	<330	<330
2-Nitrophenol, ug/kg dw	<3300	<330	<330	<330
Phenol, ug/kg dw	900000	2200	<330	<330
2,4-Dimethylphenol, ug/kg dw	<3300	<330	<330	<330
2,4-Dichlorophenol, ug/kg dw	<3300	<330	<330	<330
2,4,6-Trichlorophenol, ug/kg dw	<3300	<330	<330	<330
4-Chloro-3-methylphenol, ug/kg dw	<3300	<330	<330	<330
2,4-Dinitrophenol, ug/kg dw	<17000	<1700	<1700	<1700
2-Methyl-4,6-dinitrophenol, ug/kg dw	<17000	<1700	<1700	<1700
Pentachlorophenol, ug/kg dw	<17000	<1700	<1700	<1700
4-Nitrophenol, ug/kg dw	<17000	<1700	<1700	<1700
2-Methylphenol (o-cresol), ug/kg dw	5900	<330	<330	<330
4-Methylphenol (p-cresol), ug/kg dw	10000	<330	<330	<330
2,4,5-Trichlorophenol, ug/kg dw	<3300	<330	<330	<330

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09598

Received: 04 AUG 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09598-2	Post Bench Test #BT-1 (08.03.90)	Client
09598-3	Post Bench Test #BT-2 (08.03.90)	
09598-4	Spent Carbon #112531 (08.03.90)	
09598-5	Spent Carbon #115485 (08.03.90)	

PARAMETER	09598-2	09598-3	09598-4	09598-5
latiles by GC/MS				
ıloromethane, ug/kg dw	<50	<10	<200	<200
Bromomethane, ug/kg dw	<50	<10	<200	<200
Vinyl Chloride, ug/kg dw	<50	<10	<200	<200
Chloroethane, ug/kg dw	<50	<10	<200	<200
Methylene Chloride, ug/kg dw	<25	<5.0	<100	<100
Acetone, ug/kg dw	<130	50	<520	<520
Carbon Disulfide, ug/kg dw	<25	<5.0	<100	<100
1,1-Dichloroethylene, ug/kg dw	<25	<5.0	<100	<100
1,1-Dichloroethane, ug/kg dw	<25	<5.0	<100	<100
Cis-trans-1,2-Dichloroethylene, ug/kg dw	<25	<5.0	<100	<100
Chloroform, ug/kg dw	<25	<5.0	<100	<100
1,2-Dichloroethane, ug/kg dw	<25	<5.0	<100	<100
2-Butanone, ug/kg dw	<50	<10	<200	<200
1,1,1-Trichloroethane, ug/kg dw	<25	6.7	<100	<100
Carbon Tetrachloride, ug/kg dw	<25	<5.0	<100	<100
Vinyl Acetate, ug/kg dw	<50	<10	<200	<200
Bromodichloromethane, ug/kg dw	<25	<5.0	<100	<100
1,1,2,2-Tetrachloroethane, ug/kg dw	670	82	<100	<100
1,2-Dichloropropane, ug/kg dw	<25	<5.0	<100	<100
Trans-1,3-Dichloropropene, ug/kg dw	<25	<5.0	<100	<100

4 9 0493

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09598

Received: 04 AUG 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
09598-2	Post Bench Test #BT-1 (08.03.90)	Client
09598-3	Post Bench Test #BT-2 (08.03.90)	
09598-4	Spent Carbon #112531 (08.03.90)	
09598-5	Spent Carbon #115485 (08.03.90)	

PARAMETER	09598-2	09598-3	09598-4	09598-5
Trichloroethylene, ug/kg dw	<25	<5.0	<100	<100
bromochloromethane, ug/kg dw	<25	<5.0	<100	<100
,1,2-Trichloroethane, ug/kg dw	<25	<5.0	<100	<100
Benzene, ug/kg dw	<25	<5.0	<100	<100
Cis-1,3-Dichloropropene, ug/kg dw	<25	<5.0	<100	<100
2-Chloroethylvinyl Ether, ug/kg dw	<50	<10	<200	<200
Bromoform, ug/kg dw	<25	<5.0	<100	<100
2-Hexanone, ug/kg dw	<50	<10	<200	<200
4-methyl-2-pentanone, ug/kg dw	61	28	<200	<200
Tetrachloroethylene, ug/kg dw	<25	9.1	<100	<100
Toluene, ug/kg dw	<25	29	<100	220
Chlorobenzene, ug/kg dw	<25	<5.0	<100	<100
Ethylbenzene, ug/kg dw	<25	34	<100	180
Styrene, ug/kg dw	<25	<5.0	<100	<100
Xylenes, ug/kg dw	<25	26	<100	<100
Percent Solids, %	99 %	100 %	98 %	98 %

4 9 0494

TERRA VAC

Appendix D

4 9 0495

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

846 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T0-07688

Received: 27 JUL 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI-Bluff Rd.

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
07688-1	Puff #1	Client

PARAMETER	07688-1
Phenol, ug	21
2-Chlorophenol, ug	45
3-Chlorophenol, ug	<13
Chlorophenol, ug	<13

Method: EPA 600/4-79-020
HRS Certification #'s:81291,87279,E81005,E87052

Kathy Sheffield
Kathy Sheffield

4 9 0496

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

546 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T0-08244

Received: 06 AUG 90

Mr. David Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI-Bluff Rd.

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
08244-1	Puff #2	Client
08244-2	Puff #3	
08244-3	Puff #4	
08244-4	Puff #5	
08244-5	Puff #6	

PARAMETER	08244-1	08244-2	08244-3	08244-4	08244-5
enol, ug	5000	7200	7600	8800	7200
2-Chlorophenol, ug	14000	42000	69000	120000	71000
3-Chlorophenol, ug	<1000	<1000	<1000	<1000	<1000
4-Chlorophenol, ug	1200	5900	12000	8700	5000

Method: EPA SW-846
HRS Certification #'s:81291,87279,E81005,E87052

4 9 0497

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

2846 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T0-08244

Received: 06 AUG 90

Mr. David Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI-Bluff Rd.

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
08244-6	Puff #7	Client

PARAMETER	08244-6
Phenol, ug	7300
2-Chlorophenol, ug	180000
3-Chlorophenol, ug	<1000
4-Chlorophenol, ug	18000

Method: EPA SW-846
HRS Certification #'s:81291,87279,E81005,E87052

for Janet B. Pruitt
Kathy Sheffield

Semivolatile Target Compounts

ENT: Terra-Vac PROJECT:

LOG NUMBER: T008244 SAMPLE DESCRIPTION: Puff #7

MATRIX: Expanded Foam Puff

CAS#	Compound	Conc. ug
1.	Phenol	760 *
2.	2-Chlorophenol	3600 *
3.	1,4 Dichlorobenzene	54 **
4.	Benzyl alcohol	1600
5.	2-Methylphenol	560
6.	4-Methylphenol	370
7.	Nitrobenzene	6600 *
8.	Isophorone	170
	2,4 Dimethylphenol	930
10.	2,4 Dichlorophenol	270
11.	1,2,4 Trichlorobenzene	62 **
12.	Naphthalene	400
13.	Hexachlorobutadiene	25 **
14.	2-Methylnaphthalene	290
15.	2-Chloronaphthalene	12 **

* -indicates concentration is estimated (value beyond calibration range)

** -indicates concentration is estimated (value beyond calibration range but above zero)

Semivolatile TICs

ENT: Terra-Vac PROJECT:

LOG NUMBER: T008244 SAMPLE DESCRIPTION: Puff #7

MATRIX: Expanded Foam Puff

	CAS#	Compound	Est. Conc. ug
1.	79-34-5	Ethane, 1,1,2,2-tetrachloro	6000
2.	108-93-0	Cyclohexanol	5500
3.		Benzene, unknown methyl-propyl isomer	1400
4.	101-84-8	Benzene, 1,1'-oxybis	1200
5.		Unknown triazine derivative	1100
6.	108-94-1	Cyclohexanone	890
7.	827-52-1	Benzene, cyclohexyl	760
8.	000-17-0	Acenaphthylene, 1,2-dihydro	710
		Unknown	710
10.		Benzene, unknown methyl-ethyl isomer	520
11.		Camphor	400
12.		Unknown	340
13.		Unknown	330
14.		Cyclohexanemethanol, .alpha.,.alpha., trimethyl-	270
15.		Benzeneacetic acid, .alpha., methoxy-, methyl ester	270
16.		Benzene, unknown dichlor-ethyl isomer	220
17.	15104-61-7	Propane, pentachloro-	210
18.		Benzene, unknown tetramethyl isomer	180
19.	90-12-0	Naphthalene, 1-methyl-	170
0	000-13-0	2-Cyclohexen-1-one, 3,5,5-trimethyl	110

No additional TICs searched or detected

4 9 0500

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09100

Received: 27 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204

Project: 90-204-2-3386/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09100-1	VE-2 (07.26.90)	Client

PARAMETER	09100-1
Volatiles by GC/MS	
Chloromethane, ug/l	65
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
Chloroethane, ug/l	<50
Methylene Chloride, ug/l	1200
Acetone, ug/l	300
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	1200
1,1-Dichloroethane, ug/l	400
Cis-trans-1,2-Dichloroethylene, ug/l	65
Chloroform, ug/l	15000
1,2-Dichloroethane, ug/l	800
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	3300
Carbon Tetrachloride, ug/l	680
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	<25
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	1200
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09100

Received: 27 JUL 90

Purchase Order: 90-204

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Project: 90-204-2-3386/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09100-1	VE-2 (07.26.90)	Client

PARAMETER	09100-1
Benzene, ug/l	<25
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<50
-methyl-2-pentanone, ug/l	<50
Tetrachloroethylene, ug/l	3200
Toluene, ug/l	5700
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	580
Styrene, ug/l	<25
Xylenes, ug/l	80

Methods: EPA SW-846

Janette D. Long

4 9 0502

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09123

Received: 30 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-338

Project: 90-204/SCRDI/Bluff Rd

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09123-1	Total (07.27.90)	Client

PARAMETER	09123-1
Volatiles by GC/MS	
Chloromethane, ug/l	<50
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
Chloroethane, ug/l	<50
Methylene Chloride, ug/l	120
Acetone, ug/l	<130
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	56
1,1-Dichloroethane, ug/l	81
Cis-trans-1,2-Dichloroethylene, ug/l	<25
Chloroform, ug/l	2100
1,2-Dichloroethane, ug/l	91
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	1100
Carbon Tetrachloride, ug/l	300
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	54
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	640
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

4 9 0503

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09123

Received: 30 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-338

Project: 90-204/SCRDI/Bluff Rd

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09123-1	Total (07.27.90)	Client

PARAMETER	09123-1
Benzene, ug/l	58
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<50
4-methyl-2-pentanone, ug/l	<50
Tetrachloroethylene, ug/l	1700
Toluene, ug/l	1800
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	580
Styrene, ug/l	<25
Xylenes, ug/l	110

Methods: EPA SW-846

Janette D. Long

Janette D. Long

4 9 0504

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09131

Received: 30 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 902-04/SCRDI-Bluff R

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09131-1	Total (07.28.90)	Client

PARAMETER	09131-1
Volatiles by GC/MS	
Chloromethane, ug/l	<50
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
Chloroethane, ug/l	<50
Methylene Chloride, ug/l	130
Acetone, ug/l	200
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	310
1,1-Dichloroethane, ug/l	100
Cis-trans-1,2-Dichloroethylene, ug/l	<25
Chloroform, ug/l	3500
1,2-Dichloroethane, ug/l	140
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	200
Carbon Tetrachloride, ug/l	180
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	110
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	540
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09131

Received: 30 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 902-04/SCRDI-Bluff R

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09131-1	Total (07.28.90)	Client

PARAMETER	09131-1
Benzene, ug/l	42
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<50
4-methyl-2-pentanone, ug/l	<50
Tetrachloroethylene, ug/l	2600
Toluene, ug/l	2800
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	690
Styrene, ug/l	<25
Xylenes, ug/l	140

Methods: EPA SW-846

Janette D. Long

Janette D. Long

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

3102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09151

Received: 31 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-204/SCRDI-Bluff R

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09151-1	Total (07.30.90)	Client

PARAMETER	09151-1
Volatiles by GC/MS	
Chloromethane, ug/l	<50
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
hloroethane, ug/l	<50
ethylene Chloride, ug/l	42
Acetone, ug/l	130
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	240
1,1-Dichloroethane, ug/l	39
Cis-trans-1,2-Dichloroethylene, ug/l	<25
Chloroform, ug/l	610
1,2-Dichloroethane, ug/l	32
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	11
Carbon Tetrachloride, ug/l	98
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	<25
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	220
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09151

Received: 31 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-204/SCRDI-Bluff R

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09151-1	Total (07.30.90)	Client

PARAMETER	09151-1
Benzene, ug/l	<25
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<50
-methyl-2-pentanone, ug/l	<50
Tetrachloroethylene, ug/l	2000
Toluene, ug/l	110
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	320
Styrene, ug/l	<25
Xylenes, ug/l	63

Methods: EPA SW-846.

Janette D. Long

4 9 0508

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09171

Received: 01 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-206/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09171-1	Total (07.31.90)	Client

PARAMETER	09171-1
Volatiles by GC/MS	
Chloromethane, ug/l	<50
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
Chloroethane, ug/l	<50
Methylene Chloride, ug/l	30
Acetone, ug/l	170
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	190
1,1-Dichloroethane, ug/l	27
Cis-trans-1,2-Dichloroethylene, ug/l	<25
Chloroform, ug/l	380
1,2-Dichloroethane, ug/l	<25
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	880
Carbon Tetrachloride, ug/l	48
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	180
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	130
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

4 9 0509

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09171

Received: 01 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-206/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09171-1	Total (07.31.90)	Client

PARAMETER	09171-1
Benzene, ug/l	<25
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<50
,-methyl-2-pentanone, ug/l	<50
Tetrachloroethylene, ug/l	950
Toluene, ug/l	570
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	160
Styrene, ug/l	<25
Xylenes, ug/l	34

Methods: EPA SW-846.

Janette D. Long

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09572

Received: 03 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Project: 90-204-2-3388

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09572-1	Total (08.02.90)	Client

PARAMETER	09572-1
Volatiles by GC/MS	
Chloromethane, ug/l	<50
Bromomethane, ug/l	<50
Vinyl Chloride, ug/l	<50
Chloroethane, ug/l	<50
Methylene Chloride, ug/l	<25
Acetone, ug/l	72
Carbon Disulfide, ug/l	<25
1,1-Dichloroethylene, ug/l	<25
1,1-Dichloroethane, ug/l	<25
Cis-trans-1,2-Dichloroethylene, ug/l	<25
Chloroform, ug/l	430
1,2-Dichloroethane, ug/l	<25
2-Butanone, ug/l	<50
1,1,1-Trichloroethane, ug/l	900
Carbon Tetrachloride, ug/l	75
Vinyl Acetate, ug/l	<50
Bromodichloromethane, ug/l	<25
1,1,2,2-Tetrachloroethane, ug/l	130
1,2-Dichloropropane, ug/l	<25
Trans-1,3-Dichloropropene, ug/l	<25
Trichloroethylene, ug/l	160
Dibromochloromethane, ug/l	<25
1,1,2-Trichloroethane, ug/l	<25

4 9 0511

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09572

Received: 03 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Project: 90-204-2-3388

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09572-1	Total (08.02.90)	Client

PARAMETER	09572-1
Benzene, ug/l	<25
Cis-1,3-Dichloropropene, ug/l	<25
2-Chloroethylvinyl Ether, ug/l	<50
Bromoform, ug/l	<25
-Hexanone, ug/l	<25
-methyl-2-pentanone, ug/l	<25
Tetrachloroethylene, ug/l	1400
Toluene, ug/l	600
Chlorobenzene, ug/l	<25
Ethylbenzene, ug/l	140
Styrene, ug/l	<25
Xylenes, ug/l	28

Methods: EPA SW-846.

Janette D. Long

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09530

Received: 02 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-204

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09530-1	Total (08.01.90)	Client

PARAMETER	09530-1
Volatiles by GC/MS	
Chloromethane, ug/l	<13
Bromomethane, ug/l	<6.5
inyl Chloride, ug/l	<9.5
loroethane, ug/l	<9.5
Methylene Chloride, ug/l	25
Acetone, ug/l	310
Carbon Disulfide, ug/l	<8.0
1,1-Dichloroethylene, ug/l	170
1,1-Dichloroethane, ug/l	28
Cis-trans-1,2-Dichloroethylene, ug/l	<6.5
Chloroform, ug/l	440
1,2-Dichloroethane, ug/l	<6.2
2-Butanone, ug/l	<8.5
1,1,1-Trichloroethane, ug/l	1000
Carbon Tetrachloride, ug/l	79
Vinyl Acetate, ug/l	<7.0
Bromodichloromethane, ug/l	<3.8
1,1,2,2-Tetrachloroethane, ug/l	250
1,2-Dichloropropane, ug/l	<5.5
Trans-1,3-Dichloropropene, ug/l	<5.5
Trichloroethylene, ug/l	160
Dibromochloromethane, ug/l	<3.0
1,1,2-Trichloroethane, ug/l	<4.6

4 9 0513

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09530

Received: 02 AUG 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3388

Project: 90-204

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09530-1	Total (08.01.90)	Client

PARAMETER	09530-1
Benzene, ug/l	<8.0
Cis-1,3-Dichloropropene, ug/l	<5.5
2-Chloroethylvinyl Ether, ug/l	<5.5
Bromoform, ug/l	<2.4
-Hexanone, ug/l	<6.0
,-methyl-2-pentanone, ug/l	<6.0
Tetrachloroethylene, ug/l	1200
Toluene, ug/l	630
Chlorobenzene, ug/l	<5.5
Ethylbenzene, ug/l	170
Styrene, ug/l	<6.0
Xylenes, ug/l	35

Methods: EPA SW-846.

Janette D. Long

Janette D. Long

4 9 0514

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09598

Received: 04 AUG 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09598-1	Total (08.03.90)	Client

PARAMETER	09598-1
Volatiles by GC/MS	
Chloromethane, ug/l	<13
Bromomethane, ug/l	<6.5
Vinyl Chloride, ug/l	<9.5
Chloroethane, ug/l	<9.5
Methylene Chloride, ug/l	30
Acetone, ug/l	440
Carbon Disulfide, ug/l	<8.0
1,1-Dichloroethylene, ug/l	180
1,1-Dichloroethane, ug/l	30
Cis-trans-1,2-Dichloroethylene, ug/l	<6.5
Chloroform, ug/l	750
1,2-Dichloroethane, ug/l	<6.2
2-Butanone, ug/l	<8.5
1,1,1-Trichloroethane, ug/l	1800
Carbon Tetrachloride, ug/l	110
Vinyl Acetate, ug/l	<7.0
Bromodichloromethane, ug/l	<3.8
1,1,2,2-Tetrachloroethane, ug/l	420
1,2-Dichloropropane, ug/l	<5.5
Trans-1,3-Dichloropropene, ug/l	<5.5
Trichloroethylene, ug/l	220
Dibromochloromethane, ug/l	<3.0
1,1,2-Trichloroethane, ug/l	<4.6

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09598

Received: 04 AUG 90

Mr. Dave Fuerst
Terra-Vac
1555 Williams Drive, Suite 110
Marietta, GA 30066

Purchase Order: 90-204-2-3386

Project: 90-204/SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , AIR SAMPLES	SAMPLED BY
09598-1	Total (08.03.90)	Client

PARAMETER	09598-1
Benzene, ug/l	<8.0
Cis-1,3-Dichloropropene, ug/l	<5.5
2-Chloroethylvinyl Ether, ug/l	<5.5
Bromoform, ug/l	<2.4
-Hexanone, ug/l	<6.0
,-methyl-2-pentanone, ug/l	<6.0
Tetrachloroethylene, ug/l	2600
Toluene, ug/l	880
Chlorobenzene, ug/l	<5.5
Ethylbenzene, ug/l	180
Styrene, ug/l	<6.0
Xylenes, ug/l	39

4 9 0516

TERRA VAC

Appendix E

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 08/16/90

PROJECT NO. 90-759 SAMPLE NO. 48479 SAMPLE TYPE: SOIL PROG ELEM: SSF COLLECTED BY: J ASHWORTH
SOURCE: BLUFF RD (SCRDI) CITY: COLUMBIA ST: SC
STATION ID: VE-1-1 COLLECTION START: 07/24/90 1715 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
110000U	CHLOROMETHANE
110000U	VINYL CHLORIDE
110000U	BROMOMETHANE
110000U	CHLOROETHANE
110000U	TRICHLOROFLUOROMETHANE
110000U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
1.1E6U	ACETONE
1.1E6U	CARBON DISULFIDE
110000U	METHYLENE CHLORIDE
110000U	TRANS-1,2-DICHLOROETHENE
110000U	1,1-DICHLOROETHANE
1.1E6U	VINYL ACETATE
110000U	CIS-1,2-DICHLOROETHENE
110000U	2,2-DICHLOROPROPANE
1.1E6U	METHYL ETHYL KETONE
110000U	BROMOCHLOROMETHANE
110000U	CHLOROFORM
110000U	1,1,1-TRICHLOROETHANE
110000U	1,1-DICHLOROPROPENE
110000U	CARBON TETRACHLORIDE
110000U	1,2-DICHLOROETHANE
110000U	BENZENE
18000J	TRICHLOROETHENE(TRICHLOROETHYLENE)
110000U	1,2-DICHLOROPROPANE
110000U	DIBROMOMETHANE
110000U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
110000U	CIS-1,3-DICHLOROPROPENE
1.1E6U	METHYL ISOBUTYL KETONE
160000	TOLUENE
110000U	TRANS-1,3-DICHLOROPROPENE
110000U	1,1,2-TRICHLOROETHANE
310000	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
110000U	1,3-DICHLOROPROPANE
1.1E6U	METHYL BUTYL KETONE
110000U	DIBROMOCHLOROMETHANE
110000U	CHLOROBENZENE
110000U	1,1,1,2-TETRACHLOROETHANE
170000	ETHYL BENZENE
630000	(M- AND/OR P-)XYLENE
220000	O-XYLENE
110000U	STYRENE
110000U	BROMOFORM
110000U	BROMOBENZENE
100000J	1,1,2,2-TETRACHLOROETHANE
110000U	1,2,3-TRICHLOROPROPANE
110000U	O-CHLOROTOLUENE
110000U	P-CHLOROTOLUENE
110000U	1,3-DICHLOROBENZENE
110000U	1,4-DICHLOROBENZENE
110000U	1,2-DICHLOROBENZENE
6.7	PERCENT MOISTURE

4 9 0517

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/16/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48479 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-1

PROG ELE: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1715 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

200000.JN [redacted]ETHYLBENZENE
400000.JN [redacted]YLBENZENE

4 9 0518

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48479 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-1

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1715 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1400U	BIS(2-CHLOROETHYL) ETHER
1400U	BIS(2-CHLOROISOPROPYL) ETHER
1400U	N-NITROSODI-N-PROPYLAMINE
1400U	HEXACHLOROETHANE
20000	NITROBENZENE
1400U	ISOPHORONE
1400U	BIS(2-CHLOROETHOXY) METHANE
1400U	1,2,4-TRICHLOROBENZENE
680J	NAPHTHALENE
1400U	4-CHLOROANILINE
1400U	HEXACHLOROBUTADIENE
2200	2-METHYLNAPHTHALENE
1400U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1400U	2-CHLORONAPHTHALENE
1400U	2-NITROANILINE
1400U	DIMETHYL PHTHALATE
1400U	ACENAPHTHYLENE
1400U	2,6-DINITROTOLUENE
1400U	3-NITROANILINE
1400U	ACENAPHTHENE
670J	DIBENZOFURAN
1400U	2,4-DINITROTOLUENE
1400U	DIETHYL PHTHALATE
1400U	FLUORENE
1400U	4-CHLOROPHENYL PHENYL ETHER
1400U	4-NITROANILINE
1400U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1400U	4-BROMOPHENYL PHENYL ETHER
1400U	HEXACHLOROBENZENE (HCB)
1400U	PHENANTHRENE
1400U	ANTHRACENE
1400U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1400U	FLUORANTHENE
1400U	PYRENE
1400U	BENZYL BUTYL PHTHALATE
1400U	3,3'-DICHLOROBENZIDINE
1400U	BENZO(A)ANTHRACENE
1400U	CHRYSENE
1400U	BIS(2-ETHYLHEXYL) PHTHALATE
1400U	DI-N-OCTYLPHTHALATE
1400U	BENZO(B AND/OR K)FLUORANTHENE
1400U	BENZO-A-PYRENE
1400U	INDENO (1,2,3-CD) PYRENE
1400U	DIBENZO(A,H)ANTHRACENE
1400U	BENZO(GHI)PERYLENE
36000	PHENOL
27000	2-CHLOROPHENOL
2800U	BENZYL ALCOHOL
2000	2-METHYLPHENOL
1400U	(3-AND/OR 4-)METHYLPHENOL
1400U	2-NITROPHENOL
1400U	2,4-DIMETHYLPHENOL
2800U	BENZOIC ACID
650J	2,4-DICHLOROPHENOL
1400U	4-CHLORO-3-METHYLPHENOL
1400U	2,4,6-TRICHLOROPHENOL
1400U	2,4,5-TRICHLOROPHENOL
2800U	2,4-DINITROPHENOL
2800U	4-NITROPHENOL
1400U	2,3,4,6-TETRACHLOROPHENOL
2800U	2-METHYL-4,6-DINITROPHENOL
2800U	PENTACHLOROPHENOL
6.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES*
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48479 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SORDI)
STATION ID: VE-1-1

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1715 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

80000JN	Octahydromethanoindene
10000JN	Phosphorodithioic acid, trimethyl ester
3000JN	1-Methylnaphthalene
500000JN	Oxybisbenzene
300000JN	Biphenyl
100000JN	Methidathion (2-isomers)
60000JN	Metetilachlor
30000J	1-unidentified compound

4 9 0520

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 08/16/90

PROJECT NO. 90-759 SAMPLE NO. 48480 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1748 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
11000U	CHLOROMETHANE
11000U	VINYL CHLORIDE
11000U	BROMOMETHANE
11000U	CHLOROETHANE
11000U	TRICHLOROFLUOROMETHANE
11000U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
110000U	ACETONE
110000U	CARBON DISULFIDE
11000U	METHYLENE CHLORIDE
11000U	TRANS-1,2-DICHLOROETHENE
11000U	1,1-DICHLOROETHANE
110000U	VINYL ACETATE
11000U	CIS-1,2-DICHLOROETHENE
11000U	2,2-DICHLOROPROPANE
110000U	METHYL ETHYL KETONE
11000U	BROMOCHLOROMETHANE
11000U	CHLOROFORM
11000U	1,1,1-TRICHLOROETHANE
11000U	1,1-DICHLOROPROPENE
11000U	CARBON TETRACHLORIDE
11000U	1,2-DICHLOROETHANE
11000U	BENZENE
1200J	TRICHLOROETHENE(TRICHLOROETHYLENE)
11000U	1,2-DICHLOROPROPANE
11000U	DIBROMOMETHANE
11000U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
11000U	CIS-1,3-DICHLOROPROPENE
110000U	METHYL ISOBUTYL KETONE
13000	TOLUENE
11000U	TRANS-1,3-DICHLOROPROPENE
11000U	1,1,2-TRICHLOROETHANE
58000	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
11000U	1,3-DICHLOROPROPANE
110000U	METHYL BUTYL KETONE
11000U	DIBROMOCHLOROMETHANE
11000U	CHLOROBENZENE
11000U	1,1,1,2-TETRACHLOROETHANE
15000	ETHYL BENZENE
60000	(M- AND/OR P-)XYLENE
19000	O-XYLENE
11000U	STYRENE
11000U	BROMOFORM
11000U	BROMOBENZENE
11000	1,1,2,2-TETRACHLOROETHANE
11000U	1,2,3-TRICHLOROPROPANE
11000U	O-CHLOROTOLUENE
11000U	P-CHLOROTOLUENE
11000U	1,3-DICHLOROBENZENE
11000U	1,4-DICHLOROBENZENE
11000U	1,2-DICHLOROBENZENE
13.0	PERCENT MOISTURE

0521

49

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/16/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48480 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1748 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

20000JN TRIMETHYLBENZENE

4 9 0522

FOOTNOTES*
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-750 SAMPLE NO. 48480 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1748 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
3100	NITROBENZENE
170J	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
1500U	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
6700	PHENOL
5000	2-CHLOROPHENOL
3000U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
3000U	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
390J	2,4-DINITROPHENOL
3000U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
3000U	2-METHYL-4,6-DINITROPHENOL
3000U	PENTACHLOROPHENOL
13.0	PERCENT MOISTURE

0523 9

REMARKS

REMARKS

FOOTNOTES*
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48480 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1748 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

800JN	(Formyloxy)phenylethanone
2000JN	Caprolactam
1000JN	Biphenyl
3000JN	Oxybisbenzene
600JN	Methidathion
2000JN	Metetilachlor
30000J	4-unidentified compounds

4 9 0524

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/16/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48481 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-1-3

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1805 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
11000U	CHLOROMETHANE
11000U	VINYL CHLORIDE
11000U	BROMOMETHANE
11000U	CHLOROETHANE
11000U	TRICHLOROFLUOROMETHANE
11000U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
110000U	ACETONE
110000U	CARBON DISULFIDE
11000U	METHYLENE CHLORIDE
11000U	TRANS-1,2-DICHLOROETHENE
11000U	1,1-DICHLOROETHANE
110000U	VINYL ACETATE
11000U	CIS-1,2-DICHLOROETHENE
11000U	2,2-DICHLOROPROPANE
110000U	METHYL ETHYL KETONE
11000U	BROMOCHLOROMETHANE
11000U	CHLOROFORM
11000U	1,1,1-TRICHLOROETHANE
11000U	1,1-DICHLOROPROPENE
11000U	CARBON TETRACHLORIDE
11000U	1,2-DICHLOROETHANE
11000U	BENZENE
11000U	TRICHLOROETHENE(TRICHLOROETHYLENE)
11000U	1,2-DICHLOROPROPANE
11000U	DIBROMOMETHANE
11000U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
11000U	CIS-1,3-DICHLOROPROPENE
110000U	METHYL ISOBUTYL KETONE
1800J	TOLUENE
11000U	TRANS-1,3-DICHLOROPROPENE
11000U	1,1,2-TRICHLOROETHANE
14000	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
11000U	1,3-DICHLOROPROPANE
110000U	METHYL BUTYL KETONE
11000U	DIBROMOCHLOROMETHANE
11000U	CHLOROBENZENE
11000U	1,1,1,2-TETRACHLOROETHANE
11000U	ETHYL BENZENE
1400J	(M- AND/OR P-)XYLENE
11000U	O-XYLENE
11000U	STYRENE
11000U	BROMOFORM
11000U	BROMOBENZENE
11000U	1,1,2,2-TETRACHLOROETHANE
11000U	1,2,3-TRICHLOROPROPANE
11000U	O-CHLOROTOLUENE
11000U	P-CHLOROTOLUENE
11000U	1,3-DICHLOROBENZENE
11000U	1,4-DICHLOROBENZENE
11000U	1,2-DICHLOROBENZENE
13.0	PERCENT MOISTURE

4 9 0525

REMARKS

REMARKS

FOOTNOTES
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*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

** PROJECT NO. 90-759 SAMPLE NO. 48481 SAMPLE TYPE: SOIL
** SOURCE: BLUFF RD (SCRDI)
** STATION ID: VE-1-3

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1805 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
590J	NITROBENZENE
160J	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
1500U	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
3800	PHENOL
6200	2-CHLOROPHENOL
3000U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
610J	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
3000U	2,4-DINITROPHENOL
3000U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
3000U	2-METHYL-4,6-DINITROPHENOL
3000U	PENTACHLOROPHENOL
13.2	PERCENT MOISTURE

0526

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48481 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCADI)
STATION ID: VE-1-9

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1805 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

500JN	2,5-Dihydromethylfuranone
700JN	Caprolactam
200JN	Biphenyl
300JN	Oxybisbenzene
200JN	Metetilachlor
10000J	3-Unidentified compounds

4 9 0527

FOOTNOTES
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48482 SAMPLE TYPE: SOIL PROG ELEM: SSF COLLECTED BY: J ASHWORTH
SOURCE: BLUFF RD (SCRDI) CITY: COLUMBIA ST: SC
STATION ID: VE-2-1 COLLECTION START: 07/24/90 1410 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
70U	CHLOROMETHANE
70U	VINYL CHLORIDE
70U	BROMOMETHANE
70U	CHLOROETHANE
70U	TRICHLOROFLUOROMETHANE
70U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
1800J	ACETONE
700U	CARBON DISULFIDE
70U	METHYLENE CHLORIDE
70U	TRANS-1,2-DICHLOROETHENE
70U	1,1-DICHLOROETHANE
700U	VINYL ACETATE
70U	CIS-1,2-DICHLOROETHENE
70U	2,2-DICHLOROPROPANE
320J	METHYL ETHYL KETONE
70U	BROMOCHLOROMETHANE
190	CHLOROFORM
70U	1,1,1-TRICHLOROETHANE
70U	1,1-DICHLOROPROPENE
70U	CARBON TETRACHLORIDE
120	1,2-DICHLOROETHANE
70U	BENZENE
70U	TRICHLOROETHENE(TRICHLOROETHYLENE)
70U	1,2-DICHLOROPROPANE
70U	DIBROMOMETHANE
70U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
70U	CIS-1,3-DICHLOROPROPENE
700U	METHYL ISOBUTYL KETONE
60J	TOLUENE
70U	TRANS-1,3-DICHLOROPROPENE
7.6J	1,1,2-TRICHLOROETHANE
21J	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
70U	1,3-DICHLOROPROPANE
700U	METHYL BUTYL KETONE
70U	DIBROMOCHLOROMETHANE
70U	CHLOROBENZENE
70U	1,1,1,2-TETRACHLOROETHANE
70U	ETHYL BENZENE
70U	(M- AND/OR P-)XYLENE
70U	O-XYLENE
70U	STYRENE
70U	BROMOFORM
70U	BROMOBENZENE
9.8J	1,1,2,2-TETRACHLOROETHANE
70U	1,2,3-TRICHLOROPROPANE
70U	O-CHLOROTOLUENE
70U	P-CHLOROTOLUENE
70U	1,3-DICHLOROBENZENE
70U	1,4-DICHLOROBENZENE
70U	1,2-DICHLOROBENZENE
11.1	PERCENT MOISTURE

4 9 0528

FOOTNOTES*
*A-AVERAGE VALUE *NA-NOT ANALYZED *MAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48482 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-2-1

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1410 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

500JN	Isopropanol
70JN	Methylethylmethyloxirane
90JN	Pentanol
3000JN	Cyclohexanone
20JN	Benzaldehyde

0529 49

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48482 SAMPLE TYPE: SOIL PROG ELEM: SSF COLLECTED BY: J ASHWORTH
SOURCE: BLUFF RD (SCRDI) CITY: COLUMBIA ST: SC
STATION ID: VE-2-1 COLLECTION START: 07/24/90 1410 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
1500U	NITROBENZENE
1500U	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
1500U	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
550J	PHENOL
1500U	2-CHLOROPHENOL
3000U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
500J	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
3000U	2,4-DINITROPHENOL
3000U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
3000U	2-METHYL-4,6-DINITROPHENOL
3000U	PENTACHLOROPHENOL
11.1	PERCENT MOISTURE

0530

4 9

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48482 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-2-1

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1410 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

800JW Triethyleneglycol

4 9 0531

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48483 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: WE-2-2

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1435 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
280U	CHLOROMETHANE
280U	VINYL CHLORIDE
280U	BROMOMETHANE
280U	CHLOROETHANE
280U	TRICHLOROFLUOROMETHANE
280U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
2500J	ACETONE
2800U	CARBON DISULFIDE
280U	METHYLENE CHLORIDE
280U	TRANS-1,2-DICHLOROETHENE
280U	1,1-DICHLOROETHANE
2800U	VINYL ACETATE
280U	CIS-1,2-DICHLOROETHENE
280U	2,2-DICHLOROPROPANE
300U	METHYL ETHYL KETONE
280U	BROMOCHLOROMETHANE
200J	CHLOROFORM
280U	1,1,1-TRICHLOROETHANE
280U	1,1-DICHLOROPROPENE
280U	CARBON TETRACHLORIDE
220J	1,2-DICHLOROETHANE
280U	BENZENE
280U	TRICHLOROETHENE(TRICHLOROETHYLENE)
280U	1,2-DICHLOROPROPANE
280U	DIBROMOMETHANE
280U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
280U	CIS-1,3-DICHLOROPROPENE
2800U	METHYL ISOBUTYL KETONE
48J	TOLUENE
280U	TRANS-1,3-DICHLOROPROPENE
280U	1,1,2-TRICHLOROETHANE
280U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
280U	1,3-DICHLOROPROPANE
2800U	METHYL BUTYL KETONE
280U	DIBROMOCHLOROMETHANE
280U	CHLOROBENZENE
280U	1,1,1,2-TETRACHLOROETHANE
280U	ETHYL BENZENE
280U	(M- AND/OR P-)XYLENE
280U	O-XYLENE
280U	STYRENE
280U	BROMOFORM
280U	BROMOBENZENE
280U	1,1,2,2-TETRACHLOROETHANE
280U	1,2,3-TRICHLOROPROPANE
280U	O-CHLOROTOLUENE
280U	P-CHLOROTOLUENE
280U	1,3-DICHLOROBENZENE
280U	1,4-DICHLOROBENZENE
280U	1,2-DICHLOROBENZENE
10.6	PERCENT MOISTURE

4 9 0532

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48483 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-2-2

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1435 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

2000JN	Isopropanol
300JN	Tetrahydrofuran
200JN	Pentanol
2000JN	Cyclohexanone

0533

49

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48483 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-2-2

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1435 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
1500U	NITROBENZENE
1500U	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
1500U	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
1000J	PHENOL
1500U	2-CHLOROPHENOL
2900U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
2900U	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
2900U	2,4-DINITROPHENOL
2900U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
2900U	2-METHYL-4,6-DINITROPHENOL
2900U	PENTACHLOROPHENOL
10.6	PERCENT MOISTURE

0534

49

REMARKS

REMARKS

FOOTNOTES
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48483 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-2-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1435 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

1000JN Methylpyrrolidinone

4 9 0535

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD. ATHENS. GA.

PURGEABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-759 SAMPLE NO. 48484 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-1

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
80U	CHLOROMETHANE
80U	VINYL CHLORIDE
80U	BROMOMETHANE
80U	CHLOROETHANE
80U	TRICHLOROFLUOROMETHANE
80U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
800U	ACETONE
800U	CARBON DISULFIDE
80U	METHYLENE CHLORIDE
80U	TRANS-1,2-DICHLOROETHENE
80U	1,1-DICHLOROETHANE
800U	VINYL ACETATE
80U	CIS-1,2-DICHLOROETHENE
80U	2,2-DICHLOROPROPANE
800U	METHYL ETHYL KETONE
80U	BROMOCHLOROMETHANE
27J	CHLOROFORM
80U	1,1,1-TRICHLOROETHANE
80U	1,1-DICHLOROPROPENE
80U	CARBON TETRACHLORIDE
80U	1,2-DICHLOROETHANE
80U	BENZENE
80U	TRICHLOROETHENE(TRICHLOROETHYLENE)
80U	1,2-DICHLOROPROPANE
80U	DIBROMOMETHANE
80U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
80U	CIS-1,3-DICHLOROPROPENE
800U	METHYL ISOBUTYL KETONE
47J	TOLUENE
80U	TRANS-1,3-DICHLOROPROPENE
80U	1,1,2-TRICHLOROETHANE
80U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
80U	1,3-DICHLOROPROPANE
800U	METHYL BUTYL KETONE
80U	DIBROMOCHLOROMETHANE
80U	CHLOROBENZENE
80U	1,1,1,2-TETRACHLOROETHANE
80U	ETHYL BENZENE
16J	(M- AND/OR P-)XYLENE
80U	O-XYLENE
80U	STYRENE
80U	BROMOFORM
80U	BROMOBENZENE
80U	1,1,2,2-TETRACHLOROETHANE
80U	1,2,3-TRICHLOROPROPANE
80U	O-CHLOROTOLUENE
80U	P-CHLOROTOLUENE
80U	1,3-DICHLOROBENZENE
80U	1,4-DICHLOROBENZENE
80U	1,2-DICHLOROBENZENE
11.2	PERCENT MOISTURE

4 9 0536

FOOTNOTES
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48484 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-1

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1000 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

70JN Trimethylbenzene

0537 49

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 08/13/90

PROJECT NO. 90-750 SAMPLE NO. 48484 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-1

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
1500U	NITROBENZENE
1500U	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
3100	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
210J	PHENOL
150J	2-CHLOROPHENOL
2900U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
2900U	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
2900U	2,4-DINITROPHENOL
2900U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
2900U	2-METHYL-4,6-DINITROPHENOL
2900U	PENTACHLOROPHENOL
11.2	PERCENT MOISTURE

0538

49

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48484 SAMPLE TYPE: SOIL PROG ELEM: SSF COLLECTED BY: J ASHWORTH
SOURCE: BLUFF RD (SCRDI) CITY: COLUMBIA ST: SC
STATION ID: VE-3-1 COLLECTION START: 07/24/90 1000 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

700JN	Caprolactam
800JN	Biphenyl
800JN	Oxybisbenzene
600JN	Simazine
200JN	Hexadecanoic Acid
2000J	1-Unidentified compound

4 9 0539

FOOTNOTES
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ESD ATHENS 404 347-4464 Aug 22 '90 10:01 No.010 P.19
ESD 3343 P.19

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48485 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
56U	CHLOROMETHANE
56U	VINYL CHLORIDE
56U	BROMOMETHANE
56U	CHLOROETHANE
56U	TRICHLOROFLUOROMETHANE
56U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
560U	ACETONE
560U	CARBON DISULFIDE
56U	METHYLENE CHLORIDE
56U	TRANS-1,2-DICHLOROETHENE
56U	1,1-DICHLOROETHANE
560U	VINYL ACETATE
56U	CIS-1,2-DICHLOROETHENE
56U	2,2-DICHLOROPROPANE
560U	METHYL ETHYL KETONE
56U	BROMOCHLOROMETHANE
26J	CHLOROFORM
56U	1,1,1-TRICHLOROETHANE
56U	1,1-DICHLOROPROPENE
56U	CARBON TETRACHLORIDE
56U	1,2-DICHLOROETHANE
56U	BENZENE
56U	TRICHLOROETHENE(TRICHLOROETHYLENE)
56U	1,2-DICHLOROPROPANE
56U	DIBROMOMETHANE
56U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
56U	CIS-1,3-DICHLOROPROPENE
560U	METHYL ISOBUTYL KETONE
23J	TOLUENE
56U	TRANS-1,3-DICHLOROPROPENE
56U	1,1,2-TRICHLOROETHANE
56U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
56U	1,3-DICHLOROPROPANE
560U	METHYL BUTYL KETONE
56U	DIBROMOCHLOROMETHANE
56U	CHLOROBENZENE
56U	1,1,1,2-TETRACHLOROETHANE
56U	ETHYL BENZENE
56U	(M- AND/OR P-)XYLENE
56U	O-XYLENE
56U	STYRENE
56U	BROMOFORM
56U	BROMOBENZENE
56U	1,1,2,2-TETRACHLOROETHANE
56U	1,2,3-TRICHLOROPROPANE
56U	O-CHLOROTOLUENE
56U	P-CHLOROTOLUENE
56U	1,3-DICHLOROBENZENE
56U	1,4-DICHLOROBENZENE
56U	1,2-DICHLOROBENZENE
10.4	PERCENT MOISTURE

4 9 0540

FOOTNOTES
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Aug 22,90 16:01 No.016 P.24
FAX 3343 P.24

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48485 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-2

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1020 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

200JN	Isopropanol
10JN	Tetrahydrofuran

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

02/13/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. SD-750 SAMPLE NO. 49465 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-2

PROG ELEM: SSF COLLECTED BY: J ASHWORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1030 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1500U	BIS(2-CHLOROETHYL) ETHER
1500U	BIS(2-CHLOROISOPROPYL) ETHER
1500U	N-NITROSODI-N-PROPYLAMINE
1500U	HEXACHLOROETHANE
1500U	NITROBENZENE
1500U	ISOPHORONE
1500U	BIS(2-CHLOROETHOXY) METHANE
1500U	1,2,4-TRICHLOROBENZENE
1500U	NAPHTHALENE
1500U	4-CHLOROANILINE
1500U	HEXACHLOROBUTADIENE
1500U	2-METHYLNAPHTHALENE
1500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1500U	2-CHLORONAPHTHALENE
1500U	2-NITROANILINE
1500U	DIMETHYL PHTHALATE
1500U	ACENAPHTHYLENE
1500U	2,6-DINITROTOLUENE
1500U	3-NITROANILINE
1500U	ACENAPHTHENE
1500U	DIBENZOFURAN
1500U	2,4-DINITROTOLUENE
1500U	DIETHYL PHTHALATE
1500U	FLUORENE
1500U	4-CHLOROPHENYL PHENYL ETHER
1500U	4-NITROANILINE
1500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1500U	4-BROMOPHENYL PHENYL ETHER
1500U	HEXACHLOROBENZENE (HCB)
1500U	PHENANTHRENE
1500U	ANTHRACENE
1500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1500U	FLUORANTHENE
1500U	PYRENE
1500U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
1500U	BENZO(A)ANTHRACENE
1500U	CHRYSENE
1500U	BIS(2-ETHYLHEXYL) PHTHALATE
1500U	DI-N-OCTYLPHTHALATE
1500U	BENZO(B AND/OR K)FLUORANTHENE
1500U	BENZO-A-PYRENE
1500U	INDENO (1,2,3-CD) PYRENE
1500U	DIBENZO(A,H)ANTHRACENE
1500U	BENZO(GHI)PERYLENE
1500U	PHENOL
1500U	2-CHLOROPHENOL
2900U	BENZYL ALCOHOL
1500U	2-METHYLPHENOL
1500U	(3-AND/OR 4-)METHYLPHENOL
1500U	2-NITROPHENOL
1500U	2,4-DIMETHYLPHENOL
2900U	BENZOIC ACID
1500U	2,4-DICHLOROPHENOL
1500U	4-CHLORO-3-METHYLPHENOL
1500U	2,4,6-TRICHLOROPHENOL
1500U	2,4,5-TRICHLOROPHENOL
2900U	2,4-DINITROPHENOL
2900U	4-NITROPHENOL
1500U	2,3,4,6-TETRACHLOROPHENOL
2900U	2-METHYL-4,6-DINITROPHENOL
2900U	PENTACHLOROPHENOL
10.4	PERCENT MOISTURE

0542

49

REMARKS

REMARKS

FOOTNOTES
A-AVERAGE VALUE NA-NOT ANALYZED NAI-INTERFERENCES J-ESTIMATED VALUE N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

08/13/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-759 SAMPLE NO. 48485 SAMPLE TYPE: SOIL
SOURCE: BLUFF RD (SCRDI)
STATION ID: VE-3-2

PROG ELEM: SSF COLLECTED BY: J ASHMORTH
CITY: COLUMBIA ST: SC
COLLECTION START: 07/24/90 1020 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

6000J 2-Unidentified compounds

49 0543

*FOOTNOTES**
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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4 9 0544

TERRA VAC

Appendix F

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

Received: 27 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
09069-1	Tap Water-Decon (07.25.90)	Client

PARAMETER	09069-1
Semivolatile Organics (8270)	
2-Chlorophenol, ug/l	<10
2-Nitrophenol, ug/l	<10
Phenol, ug/l	<10
,4-Dimethylphenol, ug/l	<10
2,4-Dichlorophenol, ug/l	<10
2,4,6-Trichlorophenol, ug/l	<10
4-Chloro-3-methylphenol, ug/l	<10
2,4-Dinitrophenol, ug/l	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50
Pentachlorophenol, ug/l	<50
4-Nitrophenol, ug/l	<50
2-Methylphenol (o-cresol), ug/l	<10
4-Methylphenol (p-cresol), ug/l	<10
2,4,5-Trichlorophenol, ug/l	<10

4 9 0546

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-09069

Received: 27 JUL 90

Mr. Dave Fuerst
Terra Vac
4897J W. Waters Ave.
Tampa, FL 33634

Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
09069-1	Tap Water-Decon (07.25.90)	Client

PARAMETER	09069-1
Volatiles by GC/MS	
Chloromethane, ug/l	<10
Bromomethane, ug/l	<10
Vinyl Chloride, ug/l	<10
Chloroethane, ug/l	<10
Methylene Chloride, ug/l	<5.0
Acetone, ug/l	<25
Carbon Disulfide, ug/l	<5.0
1,1-Dichloroethylene, ug/l	<5.0
1,1-Dichloroethane, ug/l	<5.0
Cis-trans-1,2-Dichloroethylene, ug/l	<5.0
Chloroform, ug/l	22
1,2-Dichloroethane, ug/l	<5.0
2-Butanone, ug/l	<10
1,1,1-Trichloroethane, ug/l	<5.0
Carbon Tetrachloride, ug/l	<5.0
Vinyl Acetate, ug/l	<10
Bromodichloromethane, ug/l	5.7
1,1,2,2-Tetrachloroethane, ug/l	<5.0
1,2-Dichloropropane, ug/l	<5.0
Trans-1,3-Dichloropropene, ug/l	<5.0
Trichloroethylene, ug/l	<5.0
Dibromochloromethane, ug/l	<5.0
1,1,2-Trichloroethane, ug/l	<5.0

4 9 0547

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Terra Vac
4897J W. Waters Ave.
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Purchase Order: 90-204-2-3386

Project: SCRDI

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
09069-1	Tap Water-Decon (07.25.90)	Client

PARAMETER	09069-1
Benzene, ug/l	<5.0
Cis-1,3-Dichloropropene, ug/l	<5.0
2-Chloroethylvinyl Ether, ug/l	<10
Bromoform, ug/l	<5.0
-Hexanone, ug/l	<10
4-methyl-2-pentanone, ug/l	<10
Tetrachloroethylene, ug/l	<5.0
Toluene, ug/l	<5.0
Chlorobenzene, ug/l	<5.0
Ethylbenzene, ug/l	<5.0
Styrene, ug/l	<5.0
Xylenes, ug/l	<5.0