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ENVIRONMENTAL ENGINEERING CORPORATION

April 30, 1994

Mr. Glenn Celerier, P.E.
EPA Project Coordinator (6H-SC)
Superfund Programs Branch
U.S. Environmental Protection Agency, Region VI
Allied Bank Tower @ Fountain Place
1445 Ross Avenue
Dallas, TX 75202

SUBJECT: Additional Soil Delineation Report
South Cavalcade Superfund Site
Houston, Texas

Dear Mr. Celerier:

On behalf of Beazer East, Inc. (Beazer), McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) is pleased to submit three (3) copies of the Additional Soil Delineation Report for the South Cavalcade Superfund Site, located in Houston, Texas. This report is submitted as Appendix I of the Soil Delineation Report prepared by Keystone Environmental Resources, Inc. and dated August 1992.

If you have any questions or comments regarding this report, please contact Mr. Steve Radel, Beazer Associate Program Manager, at (412) 227-2004.

Sincerely,

McLAREN/HART

Neale J. Misquitta
Project Hydrogeologist

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SOIL DELINEATION REPORT
SOUTH CAVALCADE SITE
HOUSTON, SITE

Prepared for:

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PROJECT NO. 157345

AUGUST 1992

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1.0 INTRODUCTION

This report was prepared on behalf of Beazer East, Inc. (Beazer) to describe the soil boring and analytical program which has taken place as part of the Remedial Design activities for the South Cavalcade site in Houston, Texas. This investigation was conducted in two boring programs. The first boring program took place in January 1992, and the second program in February 1992. The purpose of the two boring programs was to determine the volume and extent of soils exceeding the remedial goals presented in the Record of Decision (ROD) and the Statement of Work (SOW). The remedial goals are 700 parts per millions (ppm) total potentially carcinogenic polynuclear aromatic hydrocarbons (cPAHs) and "no leaching potential". "No leaching potential" was measured by the Toxicity Characteristic Leaching Procedure (TCLP) and analysis for potentially cPAH.

Based on review of the analytical data from the first soil boring program, it was determined that some additional information was required to fully delineate the extent of soils exceeding the remedial goal; therefore, a second soil boring program was conducted to fulfill these data gaps. Correspondence between the U.S. Environmental Protection Agency (EPA) and Beazer concerning this investigation is included in Appendix A.

The "no leaching potential" of the soils was estimated using the Organic Leaching Model (OLM) and the Vertical and Horizontal Spread (VHS) model, resulting in total potentially cPAH concentrations of 100 mg/kg, 125 mg/kg, and 250 mg/kg in the southwestern, northern, and southeastern areas, respectively (Keystone 1991). At the suggestion of EPA these estimates were to be confirmed or revised based on this soil delineation study.

Section 2.0 of this report presents the methods of investigation. Section 3.0 provides a discussion of the results of the investigation and the impacts on the modeling effort. The detailed data obtained from this investigation and contained herein was evaluated with reference to the remedial goals and selected remedies. The additional field information indicates that soil flushing will not be required to attain the desired remedial objective in the northern and southwestern areas of the site.

Soil washing and groundwater treatment will satisfy the site-specific remedial goals. This evaluation and the summary and conclusions of the investigation are presented in Section 4.0 of this report.

2.0 SUMMARY OF FIELD INVESTIGATION

2.1 Soil Boring Grid

The first task associated with the soil boring program was to establish the sampling grid over each area of the site. This was conducted the week of January 3, 1992. The locations of the soil boring grids were proposed in the approved Remedial Design Work Plan (September 1991) prepared for Beazer East, Inc. by Bechtel Environmental, Inc., based on visual staining identified during the Remedial Investigation. The four areas of investigation were:

- Southwestern Area - located on the southern portion of Trucking Properties, Inc.
- Southeastern Area - located on the eastern and northern sides of Palletized Trucking Company
- Northeastern Area - located on the eastern side of Baptist Foundation property
- Northwestern area - located in the center of Baptist Foundation property

The original grid spacing for all four of the investigative areas was approximately 100 feet by 100 feet. Limitations for this spacing were introduced by the railroad right-of-way and paved areas. Boring locations were established at less than the 100 foot x 100 foot grid due to asphalt-paving along the west side of the southeastern area, site buildings, and property/fence lines at Palletized Trucking. The boring affected by paving and a site building was G17. The Record of Decision (ROD) states that if monitoring shows leaching from soils now under existing structures, then the site will need to be revisited to determine if further remediation is necessary. Borings G51, G52, and G53 were located only 60 feet from borings G13, G26 and G28, respectively, due to the property/fenceline. Borings G1 through G13 and G51 are located along the eastern property line of Palletized Trucking with the

Houston Belt and Terminal Railroad right-of-way. Refer to Figure 2-1 for a location plan of the four investigative areas and sampling grids. As stated in the Work Plan, a total of 50 borings were initially proposed for the four areas; however, the boring grid in the southeastern area was expanded to ensure that the area was sampled to the northern property fence. This resulted in the addition of three borings along the Palletized Trucking fence line. These additional borings, G51, G52, and G53, are also presented on Figure 2-1.

Based on analytical data from the initial boring program, a second boring program was conducted to further define the limits of soil remediation. The SAP indicated that if two adjacent borings on the original 100-foot grid were determined to be "clean", one sample from each depth interval would be collected from halfway between the two points. After the analytical results of the actual 100-foot grid sampling were received, it was determined that there were many more "clean" samples than originally anticipated. To ensure that soils needing remediation were identified in an efficient manner, additional sampling was performed between adjacent "clean" samples as follows:

- Southeastern area - on the east-west grid lines, not on the north-south grid lines;
- Southwestern area - in the center of grid squares where each of the four corners were "clean";
- Northeastern area - on internal grid lines, not on external grid lines; and
- Northwestern area - in the center of grid square where each of the four corners were "clean".

The additional northeast area boring locations for the second boring program were initially proposed to be located in the center of the grid squares. This variation in the Sampling and Analysis Plan was presented to the EPA for their approval in a letter dated February 5, 1992 (refer to Appendix A). These locations were proposed

prior to the availability of analytical data for this area, based on the assumption that the corners did not require remediation. After analytical results were received and evaluated, it was determined that the additional borings should be located on the internal grid lines. These revised locations were agreed upon during a telephone conversation between EPA and Keystone on February 6, 1992.

During the second boring program, an additional 35 soil borings were drilled. These locations are presented on Figure 2-2. Twenty-three additional borings were drilled in the southeastern area, seven additional borings were drilled in the southwestern area, four additional borings were drilled in the northeastern area, and one boring was drilled in the northwestern area.

Soil boring G8 could not be drilled at the staked grid location because concrete foundations were present in this area. Concrete and rubble are visible on the surface in this area, as are the outlines of the concrete foundation. The drilling rig could not reach the staked location so it was offset to the south by approximately 15 feet. Three attempts were made to advance the borehole below the four-foot depth, without success. The location was moved within a three to five-foot radius from the initial boring for the other two attempts. Boring G66 also could not be sampled below the four-foot depth. Spoon and/or auger refusal was encountered, due to concrete and/or rubble from the foundation in this area. The initial boring was drilled at the prescribed grid location. The other two attempts were drilled within a three to five-foot radius from the initial borehole. During remediation, the four to six-foot intervals at borings G8 and G66 will be sampled and analyzed to determine if remediation is necessary.

2.2 Drilling Methodology

Each of the soil borings was drilled using the hollow stem auger method of drilling, with a truck mounted rig, either a CME 55 or Mobile B 61. Soil samples were collected continuously using a 24-inch split spoon sampling device as the hole was advanced to the termination depth of six feet at each boring location.

Samples were collected continuously in order to classify the soils with respect to textural composition and the presence/absence of visually identifiable potential site-related constituents. Soil boring logs showing detailed soil lithology and sampling intervals are provided in Appendix B. Visible or odorous evidence of potential site-related constituents was documented and noted on the boring logs.

Split-spoon samplers with a two-inch outside diameter (OD) were generally used for the zero to two-foot surface sample. The surface sample was collected prior to drilling by driving a two-inch split-spoon into the soils a number of times. This allowed collection of enough sample for analysis. The three-inch OD samplers were used to collect samples below the upper two-foot interval because the larger diameter sampler could recover more soils. Samples were logged in the field by the site hydrogeologist, composited for the individual spoon sample interval, and placed in clean, laboratory prepared glass jars with Teflon-lined lids for submittal to the analytical laboratory. All soil samples were classified according to the Unified Soil Classification System.

Following completion of each boring, the borehole was sealed to the surface using a cement/bentonite grout. The split-spoon sampler was cleaned after collection of each sample using a soapy water bath followed by a clean water rinse, an acetone rinse, and a final distilled water rinse. Before arriving on-site, between each borehole, and prior to leaving the site, the drilling rig, hollow stem augers, drilling rods and associated drilling tools were steam cleaned at the on-site decontamination area. The cuttings from the drilling operations were contained on-site in roll-off boxes for eventual treatment or disposal. All washwater was contained on-site in temporary storage tanks for eventual treatment in the on-site water treatment system.

2.3 Chemical Analysis

The Sampling and Analysis Plan (SAP) indicated that a mobile GC would be used to screen soil samples for concentrations of potentially cPAH. If the screening results were below 700 ppm total potentially cPAH, the results would be confirmed in a laboratory. To provide an economic savings and a higher degree of quality

data, all initial soil analyses on the original 100-foot grid samples were performed in the laboratory with a two-day verbal response. The verbal report was followed by a complete data package on a normal turnaround. The additional samples were analyzed in the laboratory on a normal two-week turnaround. This variation to the SAP was approved by EPA in a letter dated January 31, 1992 (Appendix A).

The soil samples collected from each depth interval of the grid boring locations were submitted for chemical analysis. The samples were analyzed for potentially cPAHs using EPA Method SW 8270. Samples that exhibited concentrations less than 700 ppm potentially cPAHs were submitted for TCLP extraction, and analysis for potentially cPAH, to determine the leaching potential of the sample. All analytical work was performed in accordance with the site-specific Quality Assurance Project Plan (QAPP). An analytical sampling summary is presented in Table 2-1. The analytical results are provided in Appendix C and discussed in Section 3.0.

As part of the soil delineation, a Quality Assurance/Quality Control (QA/QC) sampling program was completed and consisted of collecting matrix spike/matrix spike duplicate samples along with field blanks. Samples G55-C and G89-C were blind duplicate samples submitted to the laboratory for analysis. These duplicates were splits with samples G40-C and G75-C, respectively. The QAPP required that blind duplicates be submitted for analysis as part of the QA/QC requirements. Since these were blind duplicate samples (splits), no A or B interval samples were collected. Also, there are no locations for these two samples to be shown on the figures.

TABLE 2-1

ANALYTICAL SUMMARY
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

# Borings Original Program	# Borings Program Two	Potentially cPAH Analysis									Number TCLP Samples
		Number of Soil Samples	Rinsate Blanks		Lab Blanks		MS/MSD		Duplicates		
			Actual	Required(1)	Actual	Required(1)	Actual	Required(1)	Actual	Required(1)	
53	34	263	14	13	18	18	20	13	13	13	255

(1) Requirements based on Quality Assurance Project Plan, with the exception of Lab Blanks. Lab Blanks requirement is based on analytical methods.

(2) Number of soil samples does not include QA samples.

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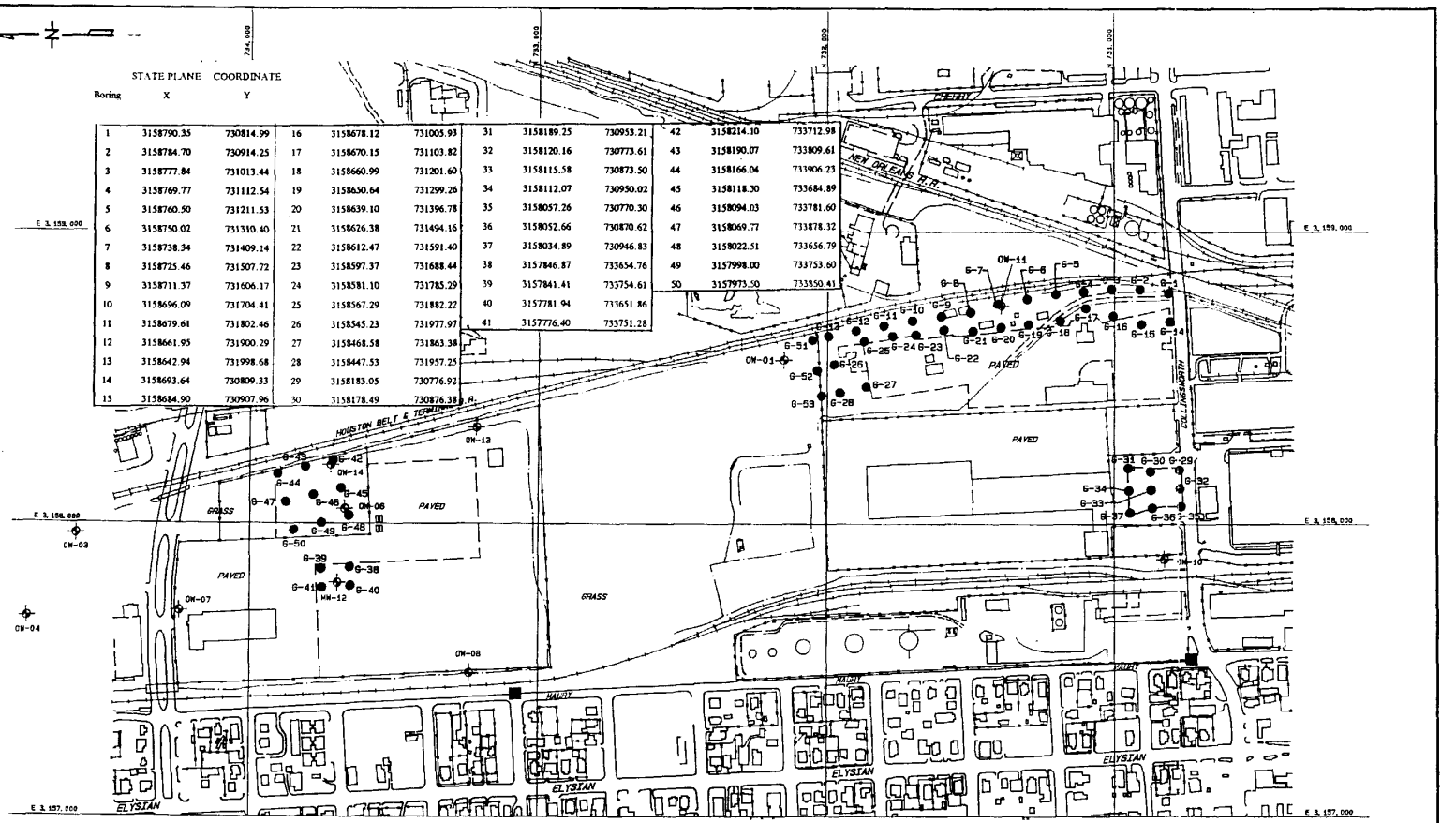
Boring	STATE PLANE COORDINATE X	Y	Boring	X	Y	Boring	X	Y	Boring	X	Y
1	3158790.35	730814.99	16	3158678.12	731005.93	31	3158189.25	730953.21	42	3158214.10	733712.98
2	3158784.70	730914.25	17	3158670.15	731103.82	32	3158120.16	730773.61	43	3158190.07	733809.61
3	3158777.84	731013.44	18	3158660.99	731201.60	33	3158115.58	730873.50	44	3158166.04	733906.23
4	3158769.77	731112.54	19	3158650.64	731299.26	34	3158112.07	730950.02	45	3158118.30	733684.89
5	3158760.50	731211.53	20	3158639.10	731396.78	35	3158057.26	730770.30	46	3158094.03	733781.60
6	3158750.02	731310.40	21	3158626.38	731494.16	36	3158052.66	730870.62	47	3158069.77	733878.32
7	3158738.34	731409.14	22	3158612.47	731591.40	37	3158034.89	730946.83	48	3158022.51	733656.79
8	3158725.46	731507.72	23	3158597.37	731688.44	38	3157846.87	733654.76	49	3157998.00	733753.60
9	3158711.37	731606.17	24	3158581.10	731785.29	39	3157841.41	733754.61	50	3157973.50	733850.41
10	3158696.09	731704.41	25	3158567.29	731882.22	40	3157781.94	733651.86			
11	3158679.61	731802.46	26	3158545.23	731977.97	41	3157776.40	733751.28			
12	3158661.95	731900.29	27	3158468.58	731863.38						
13	3158642.94	731998.68	28	3158447.53	731957.25						
14	3158693.64	730809.33	29	3158183.05	730776.92						
15	3158684.90	730907.96	30	3158178.49	730876.38						



LEGEND

- MONITORING WELL LOCATION
- SOIL SAMPLING LOCATION
- CITY OF HOUSTON SURVEY MARKER

SCALE (FEET)
0 150 300

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 2-1

ORIGINAL BORING PROGRAM
S. CAVALCADE SITE
HOUSTON, TEXAS

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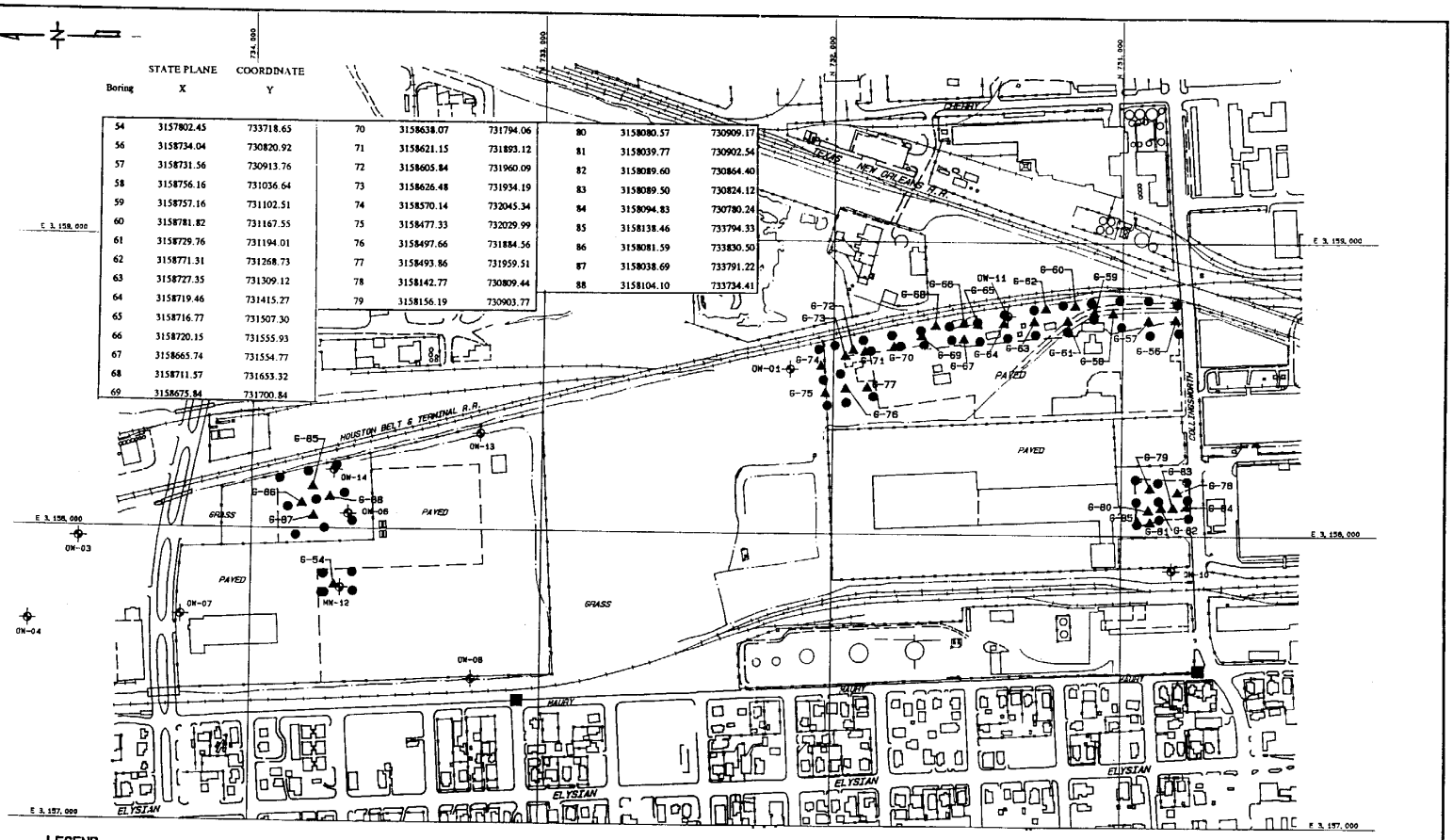
Boring	STATE PLANE X	COORDINATE Y						
54	3157802.45	733718.65	70	3158638.07	731794.06	80	3158080.57	730909.17
56	3158734.04	730820.92	71	3158621.15	731893.12	81	3158039.77	730902.54
57	3158731.56	730913.76	72	3158605.84	731960.09	82	3158089.60	730864.40
58	3158756.16	731036.64	73	3158626.48	731934.19	83	3158089.50	730824.12
59	3158757.16	731102.51	74	3158570.14	732045.34	84	3158094.83	730780.24
60	3158781.82	731167.55	75	3158477.33	732029.99	85	3158138.46	733794.33
61	3158729.76	731194.01	76	3158497.66	731884.56	86	3158081.59	733830.50
62	3158771.31	731268.73	77	3158493.86	731959.51	87	3158038.69	733791.22
63	3158727.35	731309.12	78	3158142.77	730809.44	88	3158104.10	733734.41
64	3158719.46	731415.27	79	3158156.19	730903.77			
65	3158716.77	731507.30						
66	3158720.15	731555.93						
67	3158665.74	731554.77						
68	3158711.57	731653.32						
69	3158675.84	731700.84						



LEGEND

- ⌖ - MONITORING WELL LOCATION
- ● - SOIL SAMPLING LOCATION
- ▲ - PROGRAM 2 SOIL SAMPLING LOCATION
- ■ - CITY OF HOUSTON SURVEY MARKER

SCALE (FEET)
0 150 300

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 2-2

PROGRAM 2 BORING LOCATIONS
S. CAVALCADE SITE
HOUSTON, TEXAS

8/1/92 A107961

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3.0 PRESENTATION OF RESULTS

3.1 Soils Description

In general, approximately two feet to three feet of fill was encountered in the southeastern area. This fill material is predominantly silty clay with varying amounts of sand. Gravel and oyster shells are also present within the fill material. The original soils are silty clay with little to some sand. Generally, there appears to be an increase in clay content with depth.

The soils in the southwestern area are comprised of a shallow silty clay fill layer, with some gravel and oyster shells. Natural soils are silty clay. Again there appears to be an increase in clay content with depth.

Two feet to three feet of a sandy silt fill was encountered in the two northern areas on Baptist Foundation property. Natural soils are comprised of a sandy silty clay with a general increase in clay content with depth.

3.2 Delineation of Soils for Remediation

The remedial goals for the South Cavalcade site, as stated in both the Record of Decision (ROD) and Statement of Work (SOW), are 700 ppm total cPAH and "no leaching potential". The soil's "no leaching potential" was evaluated using TCLP extraction with potentially cPAH analysis by EPA Method SW 8270.

A total of 255 samples were submitted for TCLP extraction, and the results were nondetect for potentially cPAHs for each sample submitted. Detection limits for potentially cPAHs ranged between 10 ug/L and 1,000 ug/L. The samples with detection limits exceeding 10 ug/L, and the associated detection limits, are presented in Table 3-1.

The method detection limit for potentially cPAHs analyzed from the TCLP leachate was 10 ug/L; however, due to elevated levels of naphthalene in some samples, a dilution was required to satisfy QC criteria (EPA SW846 Method 8270).

Additionally, detection limits were elevated due to matrix interference. Possible solidification of the extract during the 8270 extraction process did not permit some samples to be concentrated to a final volume of 1 ml; therefore, a dilution was necessary.

Eleven of the 255 TCLP extracts submitted for analysis had detection limits higher than 10 ug/L. Table 3-1 presents the sample numbers, associated detection limits, and a rationale for why each sample achieves the "no leaching potential". Two locations (G60-A and G67-A) of the eleven samples with elevated leachate detection limits will require remediation based on total potentially cPAH concentrations greater than 700 ppm. The remaining nine samples (G60-B, G65-B, G65-C, G67-B, G67-C, G78-C, G79-B, G34-C, and G35-A) had total potentially cPAH soil concentrations ranging from 8 ppm to 442 ppm. These are considered to have achieved the "no leaching potential" because there are many samples with higher total potentially cPAH concentrations (up to 1200 ppm) and associated TCLP extract analyses that did achieve a detection limit of 10 ug/L. The detection limit is lower than the "no leaching potential" concentration; therefore, these samples represent locations where remediation is not necessary.

The areas requiring remediation were delineated based on the 700 ppm total potentially cPAH concentration only, because it was determined that 700 ppm meets the "no leaching potential". The areas requiring remediation were delineated assuming the extent of impact is midway between a "clean" point and an adjacent impacted point. The volume of soils exceeding the remedial goals was calculated based on the areas requiring remediation and the depth at which the exceedance was noted. In the southwestern and northeastern areas, the estimated volume includes soils from the surface to the bottom of the impacted interval. In the southeastern area only the impacted interval will be remediated. To further ensure that soils excavated from above the impacted intervals in the southeastern area are "clean", a statistical, EPA-approved sampling program will be implemented.

Total potentially cPAH concentrations were calculated by adding together detectable concentrations of each of the seven individual potentially cPAHs, including those values flagged with a "J", estimated, by the laboratory. If a

potentially cPAH was not detected, no value for that compound was included in the calculation of the total, with several exceptions. The detection limits for samples G3-B, G20-A, G31-B, G36-B, and G49-A were elevated and there was no certainty that an undetected value would not cause the total potentially cPAH concentration to exceed 700 ppm. The most widely accepted way of handling elevated detection limits is to divide the value by two (U.S. EPA Risk Assessment Guidance for Superfund, 1990), if the assumption of normality is appropriate to describe the underlying data distribution.

If one-half of the detection limit is used as a positive result for those samples having elevated detection limits, the following results are obtained.

Sample ID	Total Potentially cPAHs (ppm)
G3-B	674
G20-A	574
G20-B	704
G31-B	439
G36-B	376
G49-A	978

Only samples G20-B and G49-A exceed the exposure based clean-up goal of 700 ppm; therefore, these locations will be considered for remediation.

Southeastern Area

The analytical results (Table 3-2) of the samples collected from 53 soil boring locations in the southeastern area were used to delineate the horizontal and vertical boundaries of soils for remediation. The locations in this area which exhibited total potentially cPAH concentrations greater than 700 ppm were grid locations G60, G5 and G61; G64, G65, G67, G9, G20, G22, G23, G24, G25; and also grid location G73. Figure 3-1 presents the locations of these grid sampling points and associated concentrations. Soils delineated for remediation are confined to the upper two feet, except for six locations. Locations G73, G65, G20, and G22 show soils exceeding

700 ppm total potentially cPAH in the two-foot to four-foot interval, and G22 and G61 showed total potentially cPAH exceeding 700 ppm in the zero-foot to four-foot interval. Approximately 3,828 cubic yards of soils in this area exceed remedial goals. Detailed volume calculations are presented in Appendix D.

Southwestern Area

A total of 16 soil borings were drilled in the southwestern area. The analytical results for this area are presented in Table 3-3. Grid sampling locations G80, G81, G82, G83, G35, and G36 exhibited total potentially cPAH concentrations above 700 ppm. Refer to Figure 3-2 for the locations of these grid sampling points and associated concentrations. Soils intervals delineated for remediation are limited to a small portion of this area and are generally from two to six feet. Boring location G83 exhibited potentially cPAH concentrations above 700 ppm, in the zero-foot to two-foot interval, boring G81 exceeded remedial goals in the two-foot to four-foot interval and borings G80, G82, G35, and G36 exceeded the goals in the four-foot to six-foot interval. Approximately 1,877 cubic yards of soils in this area exceed the remedial goals. This volume includes excavation of soils previously delineated as "clean" which lie above depth intervals requiring remediation. A detailed calculation of volume is presented in Appendix D.

Northeastern Area

In the northeastern area (Table 3-4) grid sampling locations G46 G49, and G87, between zero to two feet, exceeded the risk-based criteria of 700 ppm for total potentially cPAHs. Refer to Figure 3-3 for the locations of these grid sampling points and associated concentrations. Approximately 1,257 cubic yards of soils present in this area exceed remedial goals. The calculations performed to estimate this volume are presented in Appendix D.

Northwestern Area

No grid sampling locations in the northwestern area exhibited total potentially cPAH concentrations above 700 ppm (Table 3-5). Refer to Figure 3-3 for grid

sampling locations and associated concentrations. To ensure that the boring locations in the northwestern area covered the complete area of concern, aerial photos of the apparent staining were compared with the boring locations. This comparison showed that the apparent staining that is not currently covered by pavement was adequately sampled by this program.

3.3 Evaluation of the Soil Delineation Analytical Data

To ensure the validity of the soils delineation analytical data, laboratory control quality assurance/quality control (QA/QC) samples, matrix spike/matrix spike duplicate and field rinsate blank analyses were performed, and a laboratory audit was conducted by Flour Daniel, Inc. on behalf of EPA.

Data validation was initially completed by the quality assurance manager of the analytical laboratory. Additionally, evaluation of the analytical data was performed on all full data packages, and field and laboratory quality control samples by the Project Quality Assurance Supervisor (PQAS).

The Level III analyses completed by the laboratory and evaluated by the PQAS, consisted of soil samples and their corresponding TCLP extracts analyzed for the potentially carcinogenic polynuclear aromatic hydrocarbons (cPAH). Samples analyzed for potentially cPAH from the TCLP leachate required contract laboratory program (CLP) documentation. All other analyses performed during this portion of the Remedial Design (RD) followed methods equivalent to CLP, without CLP supporting documentation, as stated in the approved Quality Assurance Project Plan (QAPP).

Two types of Level III data packages were submitted by the laboratory; non-CLP and CLP. The non-CLP data packages consisted of tabulated results, chain of custody, date extracted, date analyzed, matrix spike/matrix spike duplicate (MS/MSD) recoveries, field duplicates, blind duplicates, method blanks, field blanks and percent moisture, where applicable. The CLP data packages contained initial and continuing calibrations, instrument tuning data, and surrogate recoveries,

in addition to all items submitted with a non-CLP data package. All information submitted was in accordance with the approved QAPP.

The data evaluation process assessed the quality of the analytical data, in relationship to both the field activities and laboratory procedures. The factors evaluated include: holding times, sample storage, methods used for aliquoting, methods used for calibrating, methods used for tuning, frequency of calibration and tuning, calibration acceptance criteria, method used for determining the practical quantitative limits, selection of matrix spiking compounds and their levels, acceptance criteria for the relative percent difference (RPD) between the recoveries in MS and MSD analysis, acceptance criteria for the RPD between duplicate analysis, selection of surrogate compounds (if any), acceptance criteria for the recoveries of surrogate compounds, frequency of method blank and lab duplicates, and frequency and type of performance evaluation sample analysis.

The final evaluation of the above factors indicates that the QA/QC requirements described in the QAPP were met, with the following exceptions.

- The potentially cPAH TCLP leachate for sample SC-G74-A was prepared two days beyond the required holding time.

- The potentially cPAH TCLP extracts were not maintained at 4°C for the following samples: SC-G64-A, SC-G64-B, SC-G64-C and SC-G64-C Duplicate.

- Seven percent of the surrogates associated with the TCLP potentially cPAHs and five percent of the reported soil potentially cPAHs were outside the QC limits. Poor surrogate recoveries were most likely due to the sample matrix.

- Two data packages, H92-01.101 and H92-01.257 were inadvertently spiked with the TCLP matrix spike solution instead of the CLP matrix spike solution.

- Several soil and TCLP potentially cPAH matrix spike/matrix spike duplicates (MS/MSD) had percent recoveries outside the control limits. Tables E-4 and E-5 summarize all MS/MSD outside the control limits.

- The MS/MSD percent recoveries for acenaphthene and pyrene were outside the control limits for test well sample SC-STW02.

- The MS percent recovery for toluene and the RPD for benzene and toluene were outside the control limits for test well sample SC-STW02.

- The field duplicate RPD for samples SC-G33-A, SC-G33-C, and SC-G5-A were outside the QC limits. Heterogeneity and sample matrix are possible reasons for poor RPDs.

The Data Quality Report, which presents a more detailed description of the data evaluation, is presented in Appendix E of this report.

The QAPP did not recommend following the EPA Functional Guidelines during the validation process; therefore, samples were not qualified as reliable or unreliable. Percent completeness achieved is based on the total number of samples collected, and not the number of reliable or unreliable results. Percent completeness achieved (total number of collected results divided by the total number of analyzed, multiplied by 100) is 99% for the TCLP potentially cPAHs and 100% for the soil potentially cPAHs. The percent completeness achieved for the analytical data met the goals set forth in the Work Plan and the QAPP for all analyses.

Appendices E and F present a summary of the data evaluation process, as well as an overview of the analytical laboratory's QA/QC.

Data validation was initially completed by the quality assurance manager of the analytical laboratory to ensure that proper laboratory QC was met. Additionally, the Quality Assurance Supervisor evaluated the analytical data associated with all

full CLP-like data packages, and field and laboratory quality control samples in the other packages. Based on this evaluation, the data meets QC requirements, such as frequencies, and is suitable for the intended use.

Appendices E and F present a summaries of the data evaluation process, as well as an overview of the analytical laboratory's QA/QC. A copy of the laboratory audit report is presented in Appendix G.

3.4 Affects on the Site Conceptual Model of Constituent Transport

To determine soil action levels for the potentially cPAHs protective of underlying groundwater, a conceptual model of potential constituent migration at the South Cavalcade site was developed. The site conceptual model consists of two elements: 1) leaching of constituents from the potentially affected soils; and 2) migration and dispersion of the constituents with respect to groundwater flow direction.

The Organic Leachate Model (OLM) was used to describe the leaching potential of the potentially cPAHs present in the soil (Element I), while the Vertical and Horizontal Spreading (VHS) model was selected to describe dilution associated with dispersion of the potentially cPAH in groundwater (Element II). The conceptual model is conservative (from a modeling standpoint) in that biodegradation and retardation in soils and groundwaters are not considered. Figure 3-4 depicts the site conceptual model developed for the South Cavalcade site.

A semi-quantitative sensitivity analysis was performed on the results of the site conceptual model. Element I, leaching as predicted by the OLM, was the most influential portion of the modeling effort. Element II had little impact on the final modeled results because of the shallow nature of the uppermost water bearing zone and proximity of the potential source areas to the alternate point of compliance (APC). As a result, leachate testing was performed to determine whether the use of the OLM was representative of site conditions. EPA suggested the use of TCLP analyses of soil samples taken from each of the potential source areas.

Element I, represented by the OLM, is a multiple regression equation:

$$C_l = 0.000211 \times \underset{\text{(Soil concentration)}}{(C_s)^{0.678}} \times \underset{\text{(Water solubility)}}{(W_s)^{0.373}}$$

where: C_l is the estimated leachate concentration.

TCLP data collected to confirm the validity of the above equation indicates that for potentially cPAH soil concentrations below 1200 ppm (C_S < 1200 mg/kg) the leachate concentration is:

$$C_l = 0$$

The first element of the conceptual model is, therefore, undefined from a practical standpoint using site-specific leaching data, given the following:

$$C_l = \begin{cases} 0, \ @ \ C_s \leq 1200 \ mg/kg \\ \{x\} \ @ \ C_s > 1200 \ mg/kg \end{cases}$$

where: $\{x\}$ = any number

Site soils containing in excess of 1200 mg/Kg (C_S) total potentially cPAHs did not produce detectable concentrations in their respective leachate (C_l), and mathematical correlation between soil concentration and site-specific potentially cPAH leachate values beyond the previously stated relationship could not be established. Soils with potentially cPAH levels greater than 1200 mg/kg were not submitted for TCLP analysis.

Based on the site-specific conditions, the use of the OLM model in the site conceptual model of constituent transport was an overly conservative assumption and its use in describing leaching at the South Cavalcade site is inappropriate for the establishment of cleanup goals. The cleanup goals derived by the use of the model are, therefore, not valid in lieu of site-specific information regarding

constituent leaching. The ROD specified direct contact cleanup goal of 700 mg/kg total potentially cPAHs is protective of the "no leaching potential" for this particular site.

TABLE 3-1

TCLP EXTRACT SAMPLES WITH DETECTION LIMITS >10 UG/L

Sample #	Detection Limit, ug/l	Rationale for Achieving No Leaching Potential
G-60A	20	This sample will be remediated based on a total potentially cPAH concentration of 1743 ppm.
G-60B	20	The total potentially cPAH concentration for this sample was 255 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-65B	50	The total potentially cPAH concentration for this sample was 171 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-65C	50	The total potentially cPAH concentration for this sample was 442 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-67A	20	This sample will be remediated anyway based on a total potentially cPAH concentration of 1670 ppm.
G-67B	20	The total potentially cPAH concentration for this sample was 54 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-67C	20	The total potentially cPAH concentration for this sample was 100 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.

TABLE 3-1 (Continued)

TCLP EXTRACT SAMPLES WITH DETECTION LIMITS > 10 UG/L

Sample #	Detection Limit, ug/l	Rationale for Achieving No Leaching Potential
G-78C	20	The total potentially cPAH concentration for this sample was 27 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-79B	20	The total potentially cPAH concentration for this sample was 315 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-34C	100	The total potentially cPAH concentration for this sample was 158 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.
G-35A	1,000	The total potentially cPAH concentration for this sample was 8 ppm, and there are many samples with higher total potentially cPAH concentrations (up to 1500 ppm) with associated TCLP extract analyses that did achieve a detection limit of 10 ug/l.

TABLE 3-2
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G1-A	G1-B	G1-C	G2-A	G2-B	G2-C	G3-A	G3-B
DATE RECEIVED	DETECTION	01/08/92	01/08/92	01/08/92	01/08/92	01/08/92	01/08/92	01/15/92	01/15/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920156	H920156	H920156	H920156	H920156	H920156	H9201133	H9201133
PARAMETER									
BENZO(A)ANTHRACENE	660	71000	400 U	400 U	14000	410 U	410 U	69000 *	170000
CHRYSENE	660	68000	400 U	400 U	13000	410 U	410 U	96000 *	170000
BENZO(B)FLUORANTHENE	660	100000	400 U	400 U	22000	410 U	410 U	93000 *	140000
BENZO(K)FLUORANTHENE	660	19000 U	400 U	400 U	7900 U	410 U	410 U	7800 U	84000 U
BENZO(A)PYRENE	660	67000	400 U	400 U	12000	410 U	410 U	41000	76000 J
INDENO(1,2,3-CD)PYRENE	660	32000	400 U	400 U	10000	410 U	410 U	33000	34000 J
DIBENZO(A,H)ANTHRACENE	660	19000 U	400 U	400 U	2400 J	410 U	410 U	11000	84000 U
TOTAL		338000	0	0	73400	0	0	343000	674000 (2)

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G3-C	G4-A	G4-B	G4-C	G5-A	G5-B	G5-C	G5-A (D)
DATE RECEIVED	DETECTION	01/15/92	01/15/92	01/15/92	01/15/92	01/15/92	01/15/92	01/15/92	01/15/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201133	H9201133	H9201133	H9201133	H9201133	H9201133	H9201133	H9201133
PARAMETER									
BENZO(A)ANTHRACENE	660	49000	61000	34000	60000	110000	25000 J	820 U	260000
CHRYSENE	660	47000	82000	31000	51000	120000	22000 J	820 U	240000
BENZO(B)FLUORANTHENE	660	44000	120000	36000	48000	190000	24000 J	820 U	380000
BENZO(K)FLUORANTHENE	660	20000 U	36000 U	20000 U	20000 U	98000 U	41000 U	820 U	50000 U
BENZO(A)PYRENE	660	23000	50000	21000	25000	95000 J	12000 J	820 U	180000
INDENO(1,2,3-CD)PYRENE	660	13000 J	47000	11000 J	13000 J	72000 J	5100 J	820 U	130000
DIBENZO(A,H)ANTHRACENE	660	2100 J	9900 J	1200 J	2500 J	13000 J	41000 U	820 U	37000 J
TOTAL		178100	369900	134200	199500	600000	88100	0	1227000

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G6-A	G6-B	G6-C	G7-A	G7-B	G7-C	G8-A	G8-B
DATE RECEIVED	DETECTION	01/22/92	01/22/92	01/22/92	01/23/92	01/23/92	01/23/92	01/29/92	01/29/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201208	H9201208	H9201208	H9201226	H9201226	H9201226	H9201313	H9201313
PARAMETER									
BENZO(A)ANTHRACENE	660	22000	14000 J	5600 J	970	400 U	400 U	730 U	820 U
CHRYSENE	660	19000	18000 J	5800 J	800	400 U	400 U	730 U	820 U
BENZO(B)FLUORANTHENE	660	33000	23000 J	8300	2700	400 U	400 U	740	820 U
BENZO(K)FLUORANTHENE	660	17000	28000 U	8000 U	770 U	400 U	400 U	730 U	820 U
BENZO(A)PYRENE	660	15000 J	12000 J	4500 J	1600	400 U	400 U	730 U	820 U
INDENO(1,2,3-CD)PYRENE	660	2800 J	5000 J	3000 J	2600	400 U	400 U	730 U	820 U
DIBENZO(A,H)ANTHRACENE	660	16000 U	28000 U	8000 U	800	400 U	400 U	730 U	820 U
TOTAL		108800	72000	27200	9470	0	0	740	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G9-A	G9-B	G9-C	G10-A	G10-B	G10-C	G11-A	G11-B
DATE RECEIVED	DETECTION	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/29/92	01/29/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201257	H9201257	H9201257	H9201257	H9201257	H9201257	H9201313	H9201313
PARAMETER									
BENZO(A)ANTHRACENE	660	160000	780 U	410 U	24000	890 J	780 U	7100 J	2000 U
CHRYSENE	660	150000	780 U	410 U	28000	1000 J	780 U	6100 J	2000 U
BENZO(B)FLUORANTHENE	660	250000	780 U	410 U	39000	7900 U	780 U	8200	2000 U
BENZO(K)FLUORANTHENE	660	38000 U	780 U	410 U	19000 U	7900 U	780 U	7800 U	2000 U
BENZO(A)PYRENE	660	150000	780 U	410 U	24000	7900 U	780 U	3700 J	2000 U
INDENO(1,2,3-CD)PYRENE	660	110000	780 U	410 U	16000 J	7900 U	780 U	1800 J	2000 U
DIBENZO(A,H)ANTHRACENE	660	40000	780 U	410 U	5500 J	7900 U	780 U	7800 U	2000 U
TOTAL		860000	0	0	136500	1890	0	26900	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G11-C	G12-A	G12-B	G12-C	G13-A	G13-B	G13-C	G14-A
DATE RECEIVED	DETECTION	01/29/92	01/26/92	01/26/92	01/26/92	01/28/92	01/28/92	01/28/92	01/26/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201313	H9201257	H9201257	H9201257	H9201297	H9201297	H9201297	H9201257
PARAMETER									
BENZO(A)ANTHRACENE	660	2000 U	1200	790	780 U	8000 J	810 U	2700 J	2400 J
CHRYSENE	660	2000 U	1400	940	780 U	7400 J	810 U	2100 J	3400 J
BENZO(B)FLUORANTHENE	660	2000 U	3700	790 U	780 U	13000 J	810 U	3100 J	6200 J
BENZO(K)FLUORANTHENE	660	2000 U	770 U	790 U	780 U	24000 U	810 U	4100 U	7900 U
BENZO(A)PYRENE	660	2000 U	1500	790 U	780 U	5300 J	810 U	1300 J	2300 J
INDENO(1,2,3-CD)PYRENE	660	2000 U	1200	790 U	780 U	2900 J	810 U	4100 U	2300 J
DIBENZO(A,H)ANTHRACENE	660	2000 U	770 U	790 U	780 U	24000 U	810 U	4100 U	7900 U
TOTAL		0	9000	1730	0	36600	0	9200	16600

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G14-B	G14-C	G15-A	G15-B	G15-B (DUP)	G15-C	G16-A	G16-B
DATE RECEIVED	DETECTION	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201257	H9201257	H9201257	H9201257	H9201257	H9201257	H9201257	H9201257
PARAMETER									
BENZO(A)ANTHRACENE	660	770 U	390 U	1100 J	390 U	410 U	410 U	1400 J	9400 J
CHRYSENE	660	770 U	390 U	1300 J	390 U	410 U	410 U	1400 J	13000 J
BENZO(B)FLUORANTHENE	660	770 U	390 U	1900	390 U	410 U	410 U	1300 J	30000
BENZO(K)FLUORANTHENE	660	770 U	390 U	1500 U	390 U	410 U	410 U	870 J	20000 U
BENZO(A)PYRENE	660	770 U	390 U	1300 J	390 U	410 U	410 U	930 J	10000 J
INDENO(1,2,3-CD)PYRENE	660	770 U	390 U	1500 U	390 U	410 U	410 U	1800 U	9700 J
DIBENZO(A,H)ANTHRACENE	660	770 U	390 U	1500 U	390 U	410 U	410 U	1800 U	20000 U
TOTAL		0	0	5600	0	0	0	5900	72100

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G16-C	G17-A	G17-B	G17-C	G18-C DUP	G18-A	G18-B	G18-C
DATE RECEIVED	DETECTION	01/26/92	02/10/92	02/10/92	02/10/92	01/23/92	01/23/92	01/23/92	01/23/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201257	H920298	H920298	H920298	H9201226	H9201226	H9201226	H9201226
PARAMETER									
BENZO(A)ANTHRACENE	660	400 U	960	25000	390 U	3900 U	5600 J	2000	760 J
CHRYSENE	660	400 U	1100	1900 J	390 U	3900 U	7300 J	2400	1000 J
BENZO(B)FLUORANTHENE	660	400 U	1800	58000	390 U	1200 J	16000	4500	2200 J
BENZO(K)FLUORANTHENE	660	400 U	1000	17000	390 U	3900 U	15000 U	1500 U	3900 U
BENZO(A)PYRENE	660	400 U	1400	32000	390 U	3900 U	6000 J	2100	790 J
INDENO(1,2,3-CD)PYRENE	660	400 U	1100	26000	390 U	3900 U	4400 J	1000 J	3900 U
DIBENZO(A,H)ANTHRACENE	660	400 U	740 U	3200 J	390 U	3900 U	15000 U	1500 U	3900 U
TOTAL		0	7360	163100	0	1200	39300	12000	4750

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

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TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G19-A	G19-B	G19-C	G20-A	G20-B	G20-C	G21-A	G21-B
DATE RECEIVED	DETECTION	01/23/92	01/23/92	01/23/92	01/23/92	01/23/92	01/23/92	01/27/92	01/27/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201226	H9201226	H9201226	H9201226	H9201226	H9201226	H9201277	H9201277
PARAMETER									
BENZO(A)ANTHRACENE	660	28000	5500	800 U	110000	150000	55000	7300	160000
CHRYSENE	660	38000	7400	740 J	130000	170000	47000	6300	120000
BENZO(B)FLUORANTHENE	660	43000	19000	990	140000	160000	46000	13000	68000
BENZO(K)FLUORANTHENE	660	19000 U	4100 U	800 U	74000 U	38000 U	20000 U	3700 U	39000 U
BENZO(A)PYRENE	660	26000	7900	800 U	76000	110000	28000	5300	24000 J
INDENO(1,2,3-CD)PYRENE	660	21000	7500	800 U	44000 J	73000	19000 J	4600	5700 J
DIBENZO(A,H)ANTHRACENE	660	4800 J	3300 J	800 U	74000 U	22000 J	4600 J	710 J	39000 U
TOTAL		160800	50600	1730	574000 (2)	704000 (2)	199600	37210	377700

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G21-C	G22-A	G22-B	G22-C	G23-A	G23-B	G23-C	G24-A
DATE RECEIVED	DETECTION	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201277	H9201277	H9201277	H9201277	H9201277	H9201277	H9201277	H9201277
PARAMETER									
BENZO(A)ANTHRACENE	660	400 U	130000	580000	44000	350000	880 J	1900 U	630000
CHRYSENE	660	400 U	140000	560000	18000	350000	820 J	1900 U	520000
BENZO(B)FLUORANTHENE	660	400 U	150000	480000	45000	350000	6600 U	1900 U	680000
BENZO(K)FLUORANTHENE	660	400 U	92000	360000	7800 U	300000	6600 U	1900 U	120000 U
BENZO(A)PYRENE	660	400 U	110000	430000	25000	300000	6600 U	1900 U	300000
INDENO(1,2,3-CD)PYRENE	660	400 U	72000 J	200000 J	12000	160000 J	6600 U	1900 U	43000 J
DIBENZO(A,H)ANTHRACENE	660	400 U	11000 J	18000 J	2600 J	19000 J	6600 U	1900 U	120000 U
TOTAL		0	705000	2628000	146600	1829000	1700	0	2173000

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G24-B	G24-C	G25-A	G25-B	G25-C	G26-A	G26-B	G26-C
DATE RECEIVED	DETECTION	01/27/92	01/27/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201277	H9201277	H9201261	H9201261	H9201261	H9201261	H9201261	H9201261
PARAMETER									
BENZO(A)ANTHRACENE	660	390 U	400 U	330000	2900	2000	2900 J	2100	11000 J
CHRYSENE	660	390 U	400 U	280000	2200	2000	3700 J	2200	13000 J
BENZO(B)FLUORANTHENE	660	390 U	400 U	340000	3700	3100	4900	930 J	11000 J
BENZO(K)FLUORANTHENE	660	390 U	400 U	250000	800 U	1600 U	4100 U	1900 U	9400 J
BENZO(A)PYRENE	660	390 U	400 U	290000	2200	1800	3000 J	1900 U	9300 J
INDENO(1,2,3-CD)PYRENE	660	390 U	400 U	210000 J	2300	1000 J	2500 J	1900 U	3400 J
DIBENZO(A,H)ANTHRACENE	660	390 U	400 U	79000 J	720 J	1600 U	4100 U	1900 U	20000 U
TOTAL		0	0	1779000	14020	9900	17000	5230	57100

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

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TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G27-A	G27-B	G27-C	G28-A	G28-B	G28-C	G89-C DUP (3)
DATE RECEIVED	DETECTION	01/29/92	01/29/92	01/29/92	01/28/92	01/28/92	01/28/92	02/09/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201313	H9201313	H9201313	H9201297	H9201297	H9201297	H9202100
PARAMETER								
BENZO(A)ANTHRACENE	660	26000	770 U	790 U	750 J	2500 J	380 U	850 U
CHRYSENE	660	24000	770 U	790 U	990 J	3300 J	380 U	850 U
BENZO(B)FLUORANTHENE	660	47000	770 U	790 U	1600 J	4700 J	380 U	850 U
BENZO(K)FLUORANTHENE	660	7400 U	770 U	790 U	7500 U	7700 U	380 U	850 U
BENZO(A)PYRENE	660	22000	770 U	790 U	880 J	2500 J	380 U	850 U
INDENO(1,2,3-CD)PYRENE	660	24000	770 U	790 U	7500 U	7700 U	380 U	850 U
DIBENZO(A,H)ANTHRACENE	660	4000 J	770 U	790 U	7500 U	7700 U	380 U	850 U
TOTAL		147000	0	0	4220	13000	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because detection limit was elevated.
(3) Sample G89-C DUP is a blind duplicate of sample G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (CONTINUED)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G51-A	G51-B	G51-C	G52-A	G52-B	G52-C	G53-A	G53-B
DATE RECEIVED	DETECTION	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92	01/29/92	01/29/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201297	H9201297	H9201297	H9201297	H9201297	H9201297	H9201313	H9201313
PARAMETER									
BENZO(A)ANTHRACENE	660	5800 U	980 J	2000 U	5400	410 U	410 U	2800 J	18000
CHRYSENE	660	1800 J	1500 J	680 J	6800	410 U	410 U	3000 J	16000
BENZO(B)FLUORANTHENE	660	5800 U	8000 U	2000 U	13000	410 U	410 U	5500 J	25000
BENZO(K)FLUORANTHENE	660	5800 U	8000 U	2000 U	3800 U	410 U	410 U	7400 U	8300 U
BENZO(A)PYRENE	660	5800 U	8000 U	2000 U	5900	410 U	410 U	2700 J	13000
INDENO(1,2,3-CD)PYRENE	660	5800 U	8000 U	2000 U	5700	410 U	410 U	2000 J	6900 J
DIBENZO(A,H)ANTHRACENE	660	5800 U	8000 U	2000 U	1500 J	410 U	410 U	7400 U	2400 J
TOTAL		1800	2480	680	38300	0	0	16000	81300

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G53-C	G56-A	G56-B	G56-C	G57-A	G57-B	G57-C	G58-A
DATE RECEIVED	DETECTION	01/29/92	02/05/92	02/05/92	02/05/92	02/05/92	02/05/92	02/05/92	02/05/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201313	H920245	H920245	H920245	H920245	H920245	H920245	H920245
PARAMETER									
BENZO(A)ANTHRACENE	660	400 U	7000 J	410 U	400 U	780 U	9100	56000	730 J
CHRYSENE	660	400 U	5000 J	410 U	400 U	780 U	7600	39000	760 U
BENZO(B)FLUORANTHENE	660	400 U	10000	410 U	400 U	1000	11000	42000	1800
BENZO(K)FLUORANTHENE	660	400 U	7700 U	410 U	400 U	780 U	4000 U	8200 U	760 U
BENZO(A)PYRENE	660	400 U	5600 J	410 U	400 U	780 U	5300	27000	950
INDENO(1,2,3-CD)PYRENE	660	400 U	5700 J	410 U	400 U	780 U	4400	4000 J	760 U
DIBENZO(A,H)ANTHRACENE	660	400 U	1200 J	410 U	400 U	780 U	1400 J	6700 J	760 U
TOTAL		0	34500	0	0	1000	38800	174700	3480

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G58-B	G58-C	G59-A	G59-B	G59-C	G60-A	G60-B	G60-C
DATE RECEIVED	DETECTION	02/05/92	02/05/92	02/10/92	02/10/92	02/10/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920245	H920245	H920298	H920298	H920298	H920282	H920282	H920282
PARAMETER									
BENZO(A)ANTHRACENE	660	390 U	3400	5900 J	5100	400 U	330000	74000	22000
CHRYSENE	660	390 U	2800	6400 J	4700	400 U	310000	67000	16000 J
BENZO(B)FLUORANTHENE	660	390 U	1800	5800 J	5100	400 U	530000	59000	17000 J
BENZO(K)FLUORANTHENE	660	390 U	770 U	1800 J	2000 U	400 U	190000 U	40000 U	19000 U
BENZO(A)PYRENE	660	390 U	1100	2500 J	2300	400 U	290000	38000 J	9400 J
INDENO(1,2,3-CD)PYRENE	660	390 U	770 U	1300 J	1300 J	400 U	230000	17000 J	4700 J
DIBENZO(A,H)ANTHRACENE	660	390 U	770 U	7400 U	2000 U	400 U	53000 J	40000 U	19000 U
TOTAL		0	9100	23700	18500	0	1743000	255000	69100

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G61-A	G61-B	G61-C	G62-A	G62-B	G62-C	G63-A	G63-B
DATE RECEIVED	DETECTION	02/05/92	02/05/92	02/05/92	02/07/92	02/07/92	02/07/92	02/05/92	02/05/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920245	H920245	H920245	H920282	H920282	H920282	H920245	H920245
PARAMETER									
BENZO(A)ANTHRACENE	660	980000	2400000	1300	25000	800 U	3900	8900 J	880
CHRYSENE	660	810000	2500000	1200	27000	800 U	3400	9200 J	910
BENZO(B)FLUORANTHENE	660	10000	3000000	1400	43000	800 U	3400	12000 J	1200
BENZO(K)FLUORANTHENE	660	570000 U	1100000 U	790 U	20000 U	800 U	770 U	15000 U	790 U
BENZO(A)PYRENE	660	670000	2000000	960	22000	800 U	2100	7500 J	750 J
INDENO(1,2,3-CD)PYRENE	660	460000 J	1600000	790 U	22000	800 U	1100	4500 J	790 U
DIBENZO(A,H)ANTHRACENE	660	140000 J	460000 J	790 U	5200 J	800 U	770 U	1400 J	790 U
TOTAL		3070000	11960000	4860	144200	0	13900	43500	3740

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

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TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G63-C	G64-A	G64-B	G64-C	G64-C DUP	G65-A	G65-B	G65-C
DATE RECEIVED	DETECTION	02/05/92	02/05/92	02/05/92	02/05/92	02/05/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920245	H920245	H920245	H920245	H920245	H920282	H920282	H920282
PARAMETER									
BENZO(A)ANTHRACENE	660	790 U	320000 J	54000	4600	4000	750 U	350000 *	120000
CHRYSENE	660	790 U	520000	50000	3100	3000	750 U	340000 *	100000
BENZO(B)FLUORANTHENE	660	790 U	380000 J	61000	3600	2700	750 U	380000 *	110000
BENZO(K)FLUORANTHENE	660	790 U	510000 U	20000 U	790 U	790 U	750 U	58000 U	39000 U
BENZO(A)PYRENE	660	790 U	280000 J	43000	2200	1600	750 U	400000	65000
INDENO(1,2,3-CD)PYRENE	660	790 U	140000 J	32000	1200	940	750 U	190000	40000
DIBENZO(A,H)ANTHRACENE	660	790 U	26000 J	9200 J	790 U	790 U	750 U	47000 J	7100 J
TOTAL		0	1666000	249200	14700	12240	0	1707000	442100

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G66-A	G66-B	G67-A	G67-B	G67-C	G68-A	G68-B	G68-C
DATE RECEIVED	DETECTION	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920282	H920282	H920282	H920282	H920282	H920282	H920282	H920282
PARAMETER									
BENZO(A)ANTHRACENE	660	770 U	370 U	380000 J	15000 J	25000	52000	2000 U	1100 J
CHRYSENE	660	770 U	370 U	380000 J	12000 J	22000	50000	800 J	1600 J
BENZO(B)FLUORANTHENE	660	770 U	370 U	440000 J	15000 J	28000	96000	1100 J	2000 U
BENZO(K)FLUORANTHENE	660	770 U	370 U	630000 U	19000 U	20000 U	37000	2000 U	2000 U
BENZO(A)PYRENE	660	770 U	370 U	300000 J	7800 J	16000 J	51000	2000 U	2000 U
INDENO(1,2,3-CD)PYRENE	660	770 U	370 U	170000 J	4300 J	8600 J	33000 J	2000 U	2000 U
DIBENZO(A,H)ANTHRACENE	660	770 U	370 U	630000 U	19000 U	20000 U	7600 J	2000 U	2000 U
TOTAL		0	0	1670000	54100	99600	326600	1900	2700

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G69-A	G69-B	G69-C	G70-A	G70-B	G70-C	G71-A	G71-B
DATE RECEIVED	DETECTION	02/10/92	02/10/92	02/10/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920298	H920298	H920298	H920282	H920282	H920282	H920282	H920282
PARAMETER									
BENZO(A)ANTHRACENE	660	3900 U	860 J	7800 U	3700 J	2000 U	1900 U	20000 J	7800 U
CHRYSENE	660	940 J	1400 J	1200 J	4800 J	2000 U	1900 U	20000	7800 U
BENZO(B)FLUORANTHENE	660	3900 U	2000 U	7800 U	6200 J	2000 U	1900 U	35000	7800 U
BENZO(K)FLUORANTHENE	660	3900 U	2000 U	7800 U	18000 U	2000 U	1900 U	20000 U	7800 U
BENZO(A)PYRENE	660	3900 U	2000 U	7800 U	4400 J	2000 U	1900 U	17000 J	7800 U
INDENO(1,2,3-CD)PYRENE	660	3900 U	2000 U	7800 U	18000 U	2000 U	1900 U	13000 J	7800 U
DIBENZO(A,H)ANTHRACENE	660	3900 U	2000 U	7800 U	18000 U	2000 U	1900 U	34000 J	7800 U
TOTAL		940	2260	1200	19100	0	0	139000	0

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G71-B	G71-C	G72-A	G72-B	G72-B	G72-C	G73-A	G73-B
DATE RECEIVED	DETECTION	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920282	H920282	H920282	H920282	H920282	H920282	H920282	H920282
PARAMETER									
BENZO(A)ANTHRACENE	660	780 U	770 U	6600 J	2000 U	7900 U	800 U	22000	450000 J
CHRYSENE	660	780 U	770 U	6600 J	2000 U	7900 U	800 U	28000	380000 J
BENZO(B)FLUORANTHENE	660	780 U	770 U	12000 J	2000 U	7900 U	800 U	43000	550000 J
BENZO(K)FLUORANTHENE	660	780 U	770 U	20000 U	2000 U	7900 U	800 U	20000 U	560000 U
BENZO(A)PYRENE	660	780 U	770 U	6500 J	2000 U	7900 U	800 U	23000	360000 J
INDENO(1,2,3-CD)PYRENE	660	780 U	770 U	4200 J	2000 U	7900 U	800 U	17000 J	150000 J
DIBENZO(A,H)ANTHRACENE	660	780 U	770 U	20000 U	2000 U	7900 U	800 U	3900 J	560000 U
TOTAL		0	0	35900	0	0	0	136900	1890000

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G73-C	G74-A	G74-B	G74-C	G75-A	G75-B	G75-B	G75-C
DATE RECEIVED	DETECTION	02/07/92	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920282	H920298	H920298	H920298	H920298	H920298	H920298	H920298
PARAMETER									
BENZO(A)ANTHRACENE	660	410 U	4500 J	790 U	810 U	4700	780 U	3900 U	830 U
CHRYSENE	660	410 U	5600 J	790 U	810 U	5400	780 U	3900 U	830 U
BENZO(B)FLUORANTHENE	660	410 U	9100	790 U	810 U	6500	780 U	3900 U	830 U
BENZO(K)FLUORANTHENE	660	410 U	7800 U	790 U	810 U	4400	780 U	3900 U	830 U
BENZO(A)PYRENE	660	410 U	4600 J	790 U	810 U	4500	780 U	3900 U	830 U
INDENO(1,2,3-CD)PYRENE	660	410 U	2500 J	790 U	810 U	3900	780 U	3900 U	830 U
DIBENZO(A,H)ANTHRACENE	660	410 U	7800 U	790 U	810 U	3800 U	780 U	3900 U	830 U
TOTAL		0	26300	0	0	29400	0	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-2 (Continued)
SOUTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G76-A	G76-B	G76-C	G77-A	G77-B	G77-C
DATE RECEIVED	DETECTION	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92	02/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920282	H920282	H920282	H920282	H920282	H920282
PARAMETER							
BENZO(A)ANTHRACENE	660	2000	760 U	3100	720	1900 U	780 U
CHRYSENE	660	4900	760 U	2900	790	1900 U	780 U
BENZO(B)FLUORANTHENE	660	4400 *	760 U	4400	1100	1900 U	780 U
BENZO(K)FLUORANTHENE	660	790 U	760 U	790 U	560 U	1900 U	780 U
BENZO(A)PYRENE	660	4100	760 U	2500	700	1900 U	780 U
INDENO(1,2,3-CD)PYRENE	660	2300	760 U	1500	310 J	1900 U	780 U
DIBENZO(A,H)ANTHRACENE	660	790 U	760 U	790 U	560 U	1900 U	780 U
TOTAL		17700	0	14400	3620	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.
* - Compound concentration was taken from a 1:7,800 dilution.

TABLE 3-3
SOUTHWESTERN AREA
SOILS ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G29-A	G29-A (D)	G29-B	G29-B (D)	G29-C	G29-C (D)	G31-A	G31-B
DATE RECEIVED	DETECTION	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201113	H9201113	H9201113	H9201113	H9201113	H9201113	H9201113	H9201113
PARAMETER									
BENZO(A)ANTHRACENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	120000
CHRYSENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	110000
BENZO(B)FLUORANTHENE	660	890	800	380 U	390 U	390 U	380 U	780 U	89000 J
BENZO(K)FLUORANTHENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	92000 U
BENZO(A)PYRENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	35000 J
INDENO(1,2,3-CD)PYRENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	8100 J
DIBENZO(A,H)ANTHRACENE	660	770 U	770 U	380 U	390 U	390 U	380 U	780 U	92000 U
TOTAL		890	800	0	0	0	0	0	454100 (2)

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-3 (Continued)
SOUTHWESTERN AREA
SOILS ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G31-C	G32-A	G32-B	G32-C	G34-A	G34-B	G34-C	G35-A
DATE RECEIVED	DETECTION	01/14/92	01/14/92	01/14/92	01/14/92	01/07/92	01/07/92	01/07/92	01/07/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201113	H9201113	H9201113	H9201113	H920147	H920147	H920147	H920147
PARAMETER									
BENZO(A)ANTHRACENE	660	10000	1900 U	390 U	400 U	5800	16000 J	62000	1200
CHRYSENE	660	9800	1900 U	390 U	400 U	5400	16000 J	50000	860
BENZO(B)FLUORANTHENE	660	4800	1300 J	390 U	400 U	4600	9600 J	34000	3500
BENZO(K)FLUORANTHENE	660	3800 U	1900 U	390 U	400 U	4000 U	39000 U	20000 U	780 U
BENZO(A)PYRENE	660	2600 J	1900 U	390 U	400 U	1500 J	2400 J	12000 J	1300
INDENO(1,2,3-CD)PYRENE	660	3800 U	900 J	390 U	400 U	4000 U	39000 U	20000 U	1500
DIBENZO(A,H)ANTHRACENE	660	3800 U	1900 U	390 U	400 U	4000 U	39000 U	20000 U	780 U
TOTAL		27200	2200	0	0	17300	44000	158000	8360

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-3 (Continued)
SOUTHWESTERN AREA
SOILS ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G35-B	G35-C	G36-B	G36-C	G37-A	G78-A	G78-B	G78-C
DATE RECEIVED	DETECTION	01/07/92	01/07/92	01/07/92	01/07/92	01/07/92	02/10/92	02/10/92	02/10/92
UNITS	LIMIT	UG/KG	MG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920147	H920147	H920147	H920147	H920147	H920298	H920298	H920298
PARAMETER									
BENZO(A)ANTHRACENE	660	26000	450 J	55000 J	370	930 J	750 U	780 U	11000
CHRYSENE	660	32000	410 J	74000 J	450	1200 J	750 U	780 U	7600
BENZO(B)FLUORANTHENE	660	51000	240 J	160000 U	250	4700 J	750 U	780 U	3600
BENZO(K)FLUORANTHENE	660	8400 U	520 U	61000 J	250 U	7700 U	750 U	780 U	1200 J
BENZO(A)PYRENE	660	17000	96 J	23000 J	120 J	1600 J	750 U	780 U	2600
INDENO(1,2,3-CD)PYRENE	660	6500 J	12 J	3200 J	57 J	1600 J	750 U	780 U	690 J
DIBENZO(A,H)ANTHRACENE	660	8400 U	520 U	160000 U	12 J	7700 U	750 U	780 U	1800 U
TOTAL		132500	1208	376000 (2)	1259	10030	0	0	26690

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-3 (Continued)
SOUTHWESTERN AREA
SOILS ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G81-B	G81-C	G82-A	G82-B	G82-B	G82-C	G83-A	G83-B
DATE RECEIVED	DETECTION	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100
PARAMETER									
BENZO(A)ANTHRACENE	660	570000	42000	770 U	19000	25000	360000	770 U	390 U
CHRYSENE	660	430000	28000	780	12000	16000 J	270000	770 U	390 U
BENZO(B)FLUORANTHENE	660	370000	35000	1700	12000	15000 J	150000	880	390 U
BENZO(K)FLUORANTHENE	660	97000 J	8700 U	770 U	2500	4500 J	48000 J	770 U	390 U
BENZO(A)PYRENE	660	200000	15000	770 U	4600	4400 J	77000 J	770 U	390 U
INDENO(1,2,3-CD)PYRENE	660	110000 J	9800	910	1100 J	22000 U	23000 J	770 U	390 U
DIBENZO(A,H)ANTHRACENE	660	120000 U	1700 J	770 U	2200 U	22000 U	95000 U	770 U	390 U
TOTAL		1777000	131500	3390	51200	64900	928000	880	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

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TABLE 3-3 (Continued)
SOUTHWESTERN AREA
SOILS ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G83-C	G83-C	G84-A	G84-B	G84-C
DATE RECEIVED	DETECTION	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9202100	H9202100	H9202100	H9202100	H9202100
PARAMETER						
BENZO(A)ANTHRACENE	660	9300	11000	770 U	400 U	390 U
CHRYSENE	660	4900	9000	770 U	400 U	390 U
BENZO(B)FLUORANTHENE	660	4000	3900 J	770 U	400 U	390 U
BENZO(K)FLUORANTHENE	660	1200	1200 J	770 U	400 U	390 U
BENZO(A)PYRENE	660	2200	1900 J	770 U	400 U	390 U
INDENO(1,2,3-CD)PYRENE	660	820	7800 U	770 U	400 U	390 U
DIBENZO(A,H)ANTHRACENE	660	780 U	7800 U	770 U	400 U	390 U
TOTAL		22420	27000	0	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

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TABLE 3-4
NORTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G42-A	G42-B	G42-C	G43-A	G43-B	G43-C	G45-A	G45-B
DATE RECEIVED	DETECTION	01/15/92	01/15/92	01/15/92	01/22/92	01/22/92	01/22/92	01/15/92	01/15/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201133	H9201133	H9201133	H9201208	H9201208	H9201208	H9201133	H9201133
PARAMETER									
BENZO(A)ANTHRACENE	660	7900 U	790 U	790 U	4900 J	41000 U	49000	400 U	390 U
CHRYSENE	660	1100 J	850	670 J	11000	8900 J	48000	400 U	390 U
BENZO(B)FLUORANTHENE	660	6800 J	3500	2000	42000	49000	47000	400 U	390 U
BENZO(K)FLUORANTHENE	660	7900 U	790 U	790 U	6300 U	41000 U	8200 U	400 U	390 U
BENZO(A)PYRENE	660	1800 J	1900	1100	14000	15000 J	25000	400 U	390 U
INDENO(1,2,3-CD)PYRENE	660	2700 J	1400	710 J	22000	8900 J	15000	400 U	390 U
DIBENZO(A,H)ANTHRACENE	660	7900 U	790 U	790 U	8100	41000 U	4900 J	400 U	390 U
TOTAL		12400	7650	4480	102000	81800	188900	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-4 (Continued)
NORTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G45-C	G46-A	G46-B	G46-C	G47-A	G47-B	G47-C	G48-A
DATE RECEIVED	DETECTION	01/15/92	01/22/92	01/22/92	01/22/92	01/14/92	01/14/92	01/14/92	01/15/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201133	H9201208	H9201208	H9201208	H9201113	H9201113	H9201113	H9201133
PARAMETER									
BENZO(A)ANTHRACENE	660	390 U	610000	350 U	390 U	5700 J	390 U	390 U	9400 J
CHRYSENE	660	390 U	790000	350 U	390 U	7300 J	390 U	390 U	27000
BENZO(B)FLUORANTHENE	660	390 U	480000	350 U	390 U	15000	390 U	390 U	85000
BENZO(K)FLUORANTHENE	660	390 U	210000 U	350 U	390 U	7900 U	390 U	390 U	20000 U
BENZO(A)PYRENE	660	390 U	240000	350 U	390 U	6400 J	390 U	390 U	26000
INDENO(1,2,3-CD)PYRENE	660	390 U	94000 J	350 U	390 U	4700 J	390 U	390 U	20000
DIBENZO(A,H)ANTHRACENE	660	390 U	210000 U	350 U	390 U	900 J	390 U	390 U	5200 J
TOTAL		0	2214000	0	0	40000	0	0	172600

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-4 (Continued)
NORTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G48-B	G48-C	G49-A	G49-B	G49-C	G50-A	G50-B	G50-C
DATE RECEIVED	DETECTION	01/15/92	01/15/92	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92	01/14/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201133	H9201133	H9201113	H9201113	H9201113	H9201113	H9201113	H9201113
PARAMETER									
BENZO(A)ANTHRACENE	660	7900 U	770 U	150000 J	17000	790 U	5200	400 U	390 U
CHRYSENE	660	2100 J	1400	190000 J	19000	790 U	6500	400 U	390 U
BENZO(B)FLUORANTHENE	660	9400	3000	130000 J	22000	790 U	14000	400 U	390 U
BENZO(K)FLUORANTHENE	660	7900 U	770 U	310000 U	7800 U	790 U	3900 U	400 U	390 U
BENZO(A)PYRENE	660	3100 J	1300	43000 J	9400	790 U	5400	400 U	390 U
INDENO(1,2,3-CD)PYRENE	660	2000 J	770	310000 U	3100 J	790 U	4000	400 U	390 U
DIBENZO(A,H)ANTHRACENE	660	7900 U	770 U	310000 U	7800 U	790 U	3900 U	400 U	390 U
TOTAL		16600	6470	978000 (2)	70500	0	35100	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

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TABLE 3-4 (Continued)
NORTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G85-A	G85-B	G85-C	G86-A	G86-B	G86-C	G87-A	G87-B
DATE RECEIVED	DETECTION	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100	H9202100
PARAMETER									
BENZO(A)ANTHRACENE	660	1900 U	390 U	410 U	15000 J	390 U	400 U	120000 J	1500
CHRYSENE	660	700 J	390 U	410 U	19000 J	390 U	400 U	160000 J	1300
BENZO(B)FLUORANTHENE	660	4500	390 U	410 U	43000	390 U	400 U	260000	2500
BENZO(K)FLUORANTHENE	660	1100 J	390 U	410 U	14000 J	390 U	400 U	73000 J	680 J
BENZO(A)PYRENE	660	1800 J	390 U	410 U	19000 J	390 U	400 U	120000 J	1200
INDENO(1,2,3-CD)PYRENE	660	2400	390 U	410 U	14000 J	390 U	400 U	54000 J	730 J
DIBENZO(A,H)ANTHRACENE	660	1900	390 U	410 U	39000 U	390 U	400 U	180000 U	780 U
TOTAL		12400	0	0	124000	0	0	787000	7910

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-4 (Continued)
NORTHEASTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G87-C	G88-A	G88-B	G88-C
DATE RECEIVED	DETECTION	02/09/92	02/09/92	02/09/92	02/09/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9202100	H9202100	H9202100	H9202100
PARAMETER					
BENZO(A)ANTHRACENE	660	400 U	4400	400 U	400 U
CHRYSENE	660	400 U	3600	400 U	400 U
BENZO(B)FLUORANTHENE	660	400 U	11000	400 U	400 U
BENZO(K)FLUORANTHENE	660	400 U	2900	400 U	400 U
BENZO(A)PYRENE	660	400 U	4300	400 U	400 U
INDENO(1,2,3-CD)PYRENE	660	400 U	4200	400 U	400 U
DIBENZO(A,H)ANTHRACENE	660	400 U	940 J	400 U	400 U
TOTAL		0	31340	0	0

(1) Detection limit may vary based on dilution requirements and dry weight.
(2) Total cPAH concentration calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the detection limit was elevated.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

SOUTH CAVALCADE SITE
BEAZER EAST, INC.

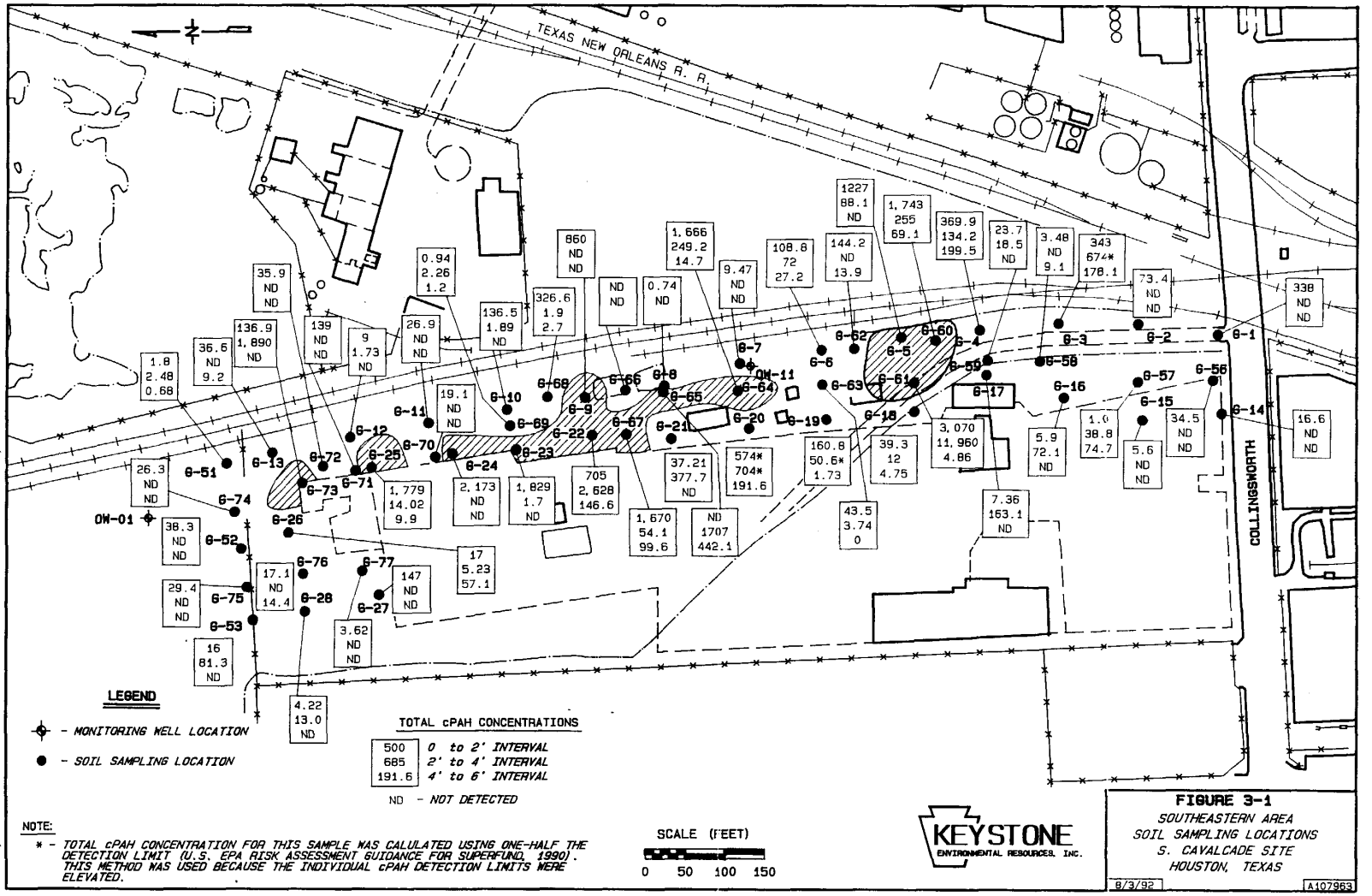
LOCATION	MINIMUM(1)	G38-A	G38-B	G38-C	G39-A	G39-B	G39-C	G40-A	G40-B
DATE RECEIVED	DETECTION	01/29/92	01/29/92	01/29/92	02/04/92	02/04/92	02/04/92	02/04/92	02/04/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H9201313	H9201313	H9201313	H920232	H920232	H920232	H920232	H920232
PARAMETER									
BENZO(A)ANTHRACENE	660	59000	39000	130000	760 U	390 U	390 U	2700	400 U
CHRYSENE	660	66000	38000	100000	760 U	390 U	390 U	3900	400 U
BENZO(B)FLUORANTHENE	660	120000	57000	99000	760 U	390 U	390 U	6800	400 U
BENZO(K)FLUORANTHENE	660	38000 U	16000 U	17000 U	760 U	390 U	390 U	2000 U	400 U
BENZO(A)PYRENE	660	40000	21000	44000	760 U	390 U	390 U	2400	400 U
INDENO(1,2,3-CD)PYRENE	660	16000 J	6300 J	11000 J	760 U	390 U	390 U	1500 J	400 U
DIBENZO(A,H)ANTHRACENE	660	3900 J	1800 J	3900 J	760 U	390 U	390 U	2000 U	400 U
TOTAL		304900	163100	387900	0	0	0	17300	0

(1) Minimum detection limit may vary based on dry weight and dilution factors.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE 3-5 (CONTINUED)
NORTHWESTERN AREA
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G40-C	G41-A	G41-B	G41-A	G54-A	G54-B	G54-C
DATE RECEIVED	DETECTION	02/04/92	02/04/92	02/04/92	02/04/92	02/04/92	02/04/92	02/04/92
UNITS	LIMIT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
WORK ORDER	UG/KG	H920232	H920232	H920232	H920232	H920232	H920232	H920232
PARAMETER								
BENZO(A)ANTHRACENE	660	390 U	780 U	390 U	400 U	12000 J	7900 U	20000
CHRYSENE	660	390 U	680 J	390 U	400 U	19000 J	1700 J	4300 J
BENZO(B)FLUORANTHENE	660	390 U	780 U	390 U	400 U	36000 J	7600 J	16000
BENZO(K)FLUORANTHENE	660	390 U	780 U	390 U	400 U	38000 U	7900 U	11000
BENZO(A)PYRENE	660	390 U	780 U	390 U	400 U	14000 J	2300 J	11000
INDENO(1,2,3-CD)PYRENE	660	390 U	780 U	390 U	400 U	6400 J	1200 J	3000 J
DIBENZO(A,H)ANTHRACENE	660	390 U	780 U	390 U	400 U	38000 U	7900 U	660 J
TOTAL		0	680	0	0	87400	12800	65960

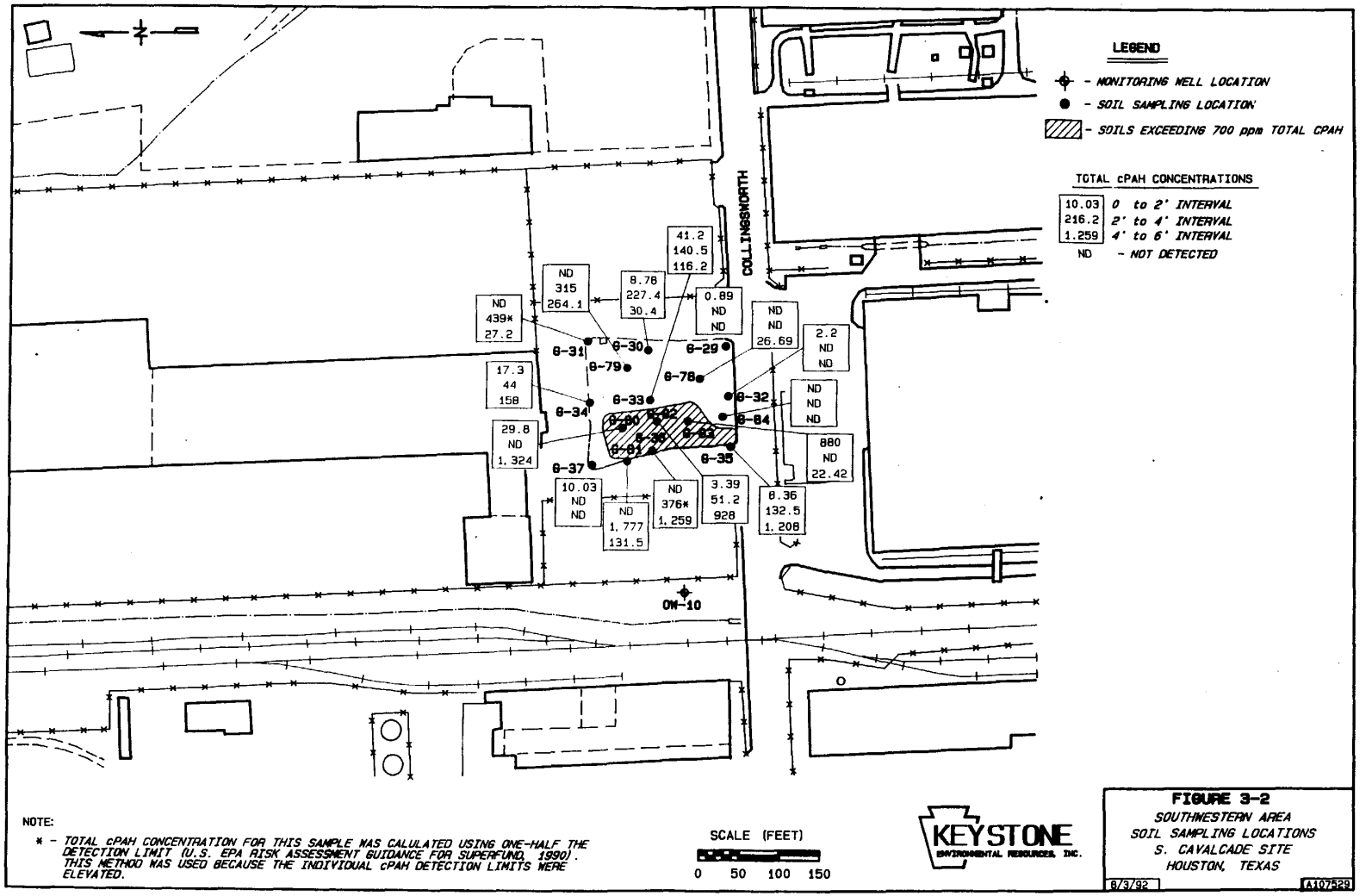
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
J - Estimated Value
D or DUP - Known field duplicate sample - this was designated by field personnel.



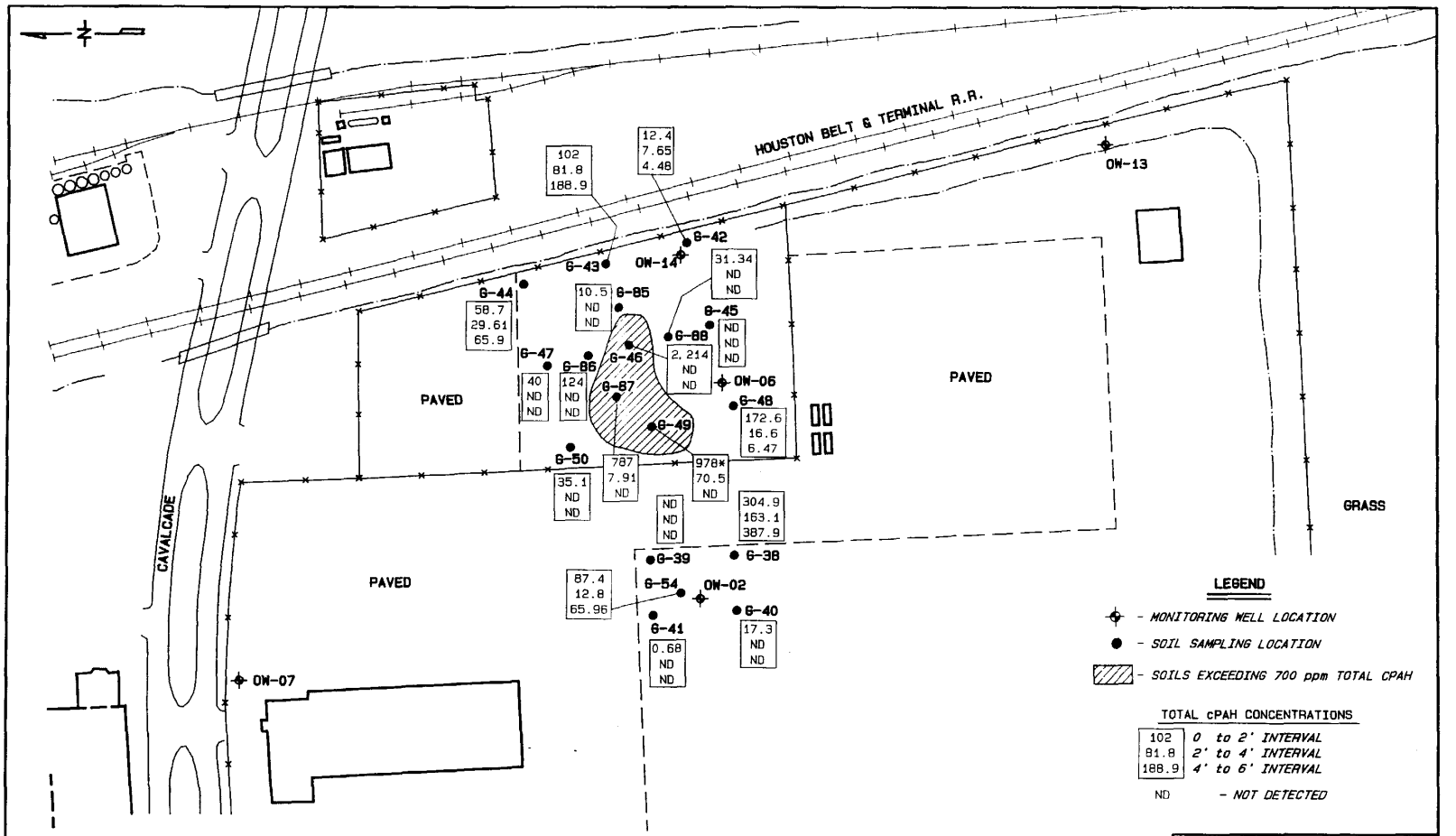
NOTE:
* - TOTAL cPAH CONCENTRATION FOR THIS SAMPLE WAS CALULATED USING ONE-HALF THE DETECTION LIMIT (U.S. EPA RISK ASSESSMENT GUIDANCE FOR SUPERFUND, 1990). THIS METHOD WAS USED BECAUSE THE INDIVIDUAL cPAH DETECTION LIMITS WERE ELEVATED.

FIGURE 3-1
SOUTHEASTERN AREA
SOIL SAMPLING LOCATIONS
S. CAVALCADE SITE
HOUSTON, TEXAS

012370


LEGEND
- MONITORING WELL LOCATION
- SOIL SAMPLING LOCATION
- SOILS EXCEEDING 700 ppm TOTAL CPAH
TOTAL cPAH CONCENTRATIONS
10.03 0 to 2' INTERVAL
216.2 2' to 4' INTERVAL
1.259 4' to 6' INTERVAL
ND - NOT DETECTED
COLLINSWORTH
ND 439* 27.2
ND 315 264.1
8.78 227.4 30.4
41.2 140.5 116.2
0.89 ND ND
ND ND 26.69
2.2 ND ND
17.3 44 158
29.8 ND 1.324
ND ND ND
880 ND 22.42
10.03 ND ND
ND 1.777 131.5
ND 376* 1.259
3.39 51.2 928
8.36 132.5 1.208
B-29
B-30
B-31
B-32
B-33
B-34
B-35
B-37
B-78
B-79
B-80
B-81
B-82
B-83
B-84
OW-10
NOTE:
* - TOTAL cPAH CONCENTRATION FOR THIS SAMPLE WAS CALULATED USING ONE-HALF THE DETECTION LIMIT (U.S. EPA RISK ASSESSMENT GUIDANCE FOR SUPERFUND, 1990). THIS METHOD WAS USED BECAUSE THE INDIVIDUAL cPAH DETECTION LIMITS WERE ELEVATED.
SCALE (FEET)
0 50 100 150
KEYSTONE
ENVIRONMENTAL RESOURCES, INC.
FIGURE 3-2
SOUTHWESTERN AREA
SOIL SAMPLING LOCATIONS
S. CAVALCADE SITE
HOUSTON, TEXAS
8/3/92
A107529

012371



NOTE:

* - TOTAL cPAH CONCENTRATION FOR THIS SAMPLE WAS CALULATED USING ONE-HALF THE DETECTION LIMIT (U.S. EPA RISK ASSESSMENT GUIDANCE FOR SUPERFUND, 1990). THIS METHOD WAS USED BECAUSE THE INDIVIDUAL cPAH DETECTION LIMITS WERE ELEVATED.

FIGURE 3-3
NORTHERN AREA
SOIL SAMPLING LOCATIONS
S. CAVALCADE SITE
HOUSTON, TEXAS

7/10/92 A107528

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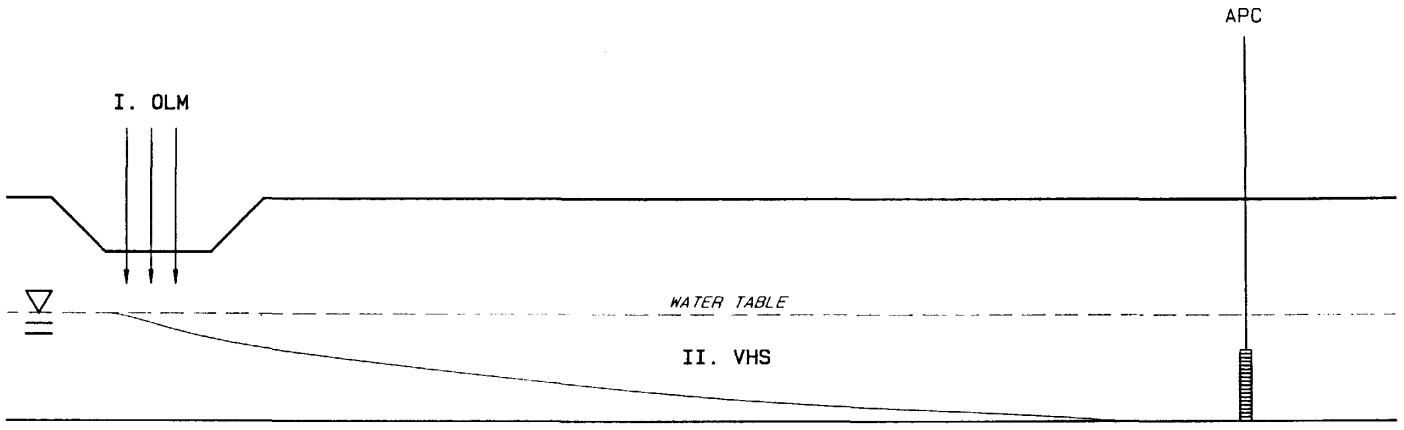
012372



ELEMENT NO.

I. - ORGANIC LEACHING MODEL (OLM)

II. - VERTICAL AND HORIZONTAL SPREADING MODEL (VHS)

NOTE:
APC - ALTERNATE POINT OF COMPLIANCE

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 3-4
CONCEPTUAL MODEL OF POTENTIAL CONSTITUENT TRANSPORT
SOUTH CAVALCADE SITE
HOUSTON, TX

7/2/92 | C69240

012373

4.0 CONCLUSION

The soil delineation study was conducted to determine the extent and volumes of soils exceeding remedial goals in the northeastern, northwestern, southeastern, and southwestern areas at the South Cavalcade site. Based on the review of the analytical data gathered from the first program, it was determined that additional information was needed to fully delineate the extent of soils exceeding the remedial goals; therefore, a second boring program was conducted. It is concluded that, with the analytical data gathered from the second boring program, the extent of soils exceeding remedial goals in each of the four areas has been fully characterized. The volumes of soils requiring remediation have also been estimated. Major conclusions of this study are presented below.

4.1 Soil Volumes

The volumes were estimated by first delineating the extent of impact, which was assumed to be at the midpoint between a "clean" boring and an adjacent impacted boring. The volume of soils requiring remediation was then calculated. To calculate volumes of soils in the southeastern area, the area of impact was multiplied by the depth of impact at individual intervals. In the southwestern and northeastern areas, the estimate was calculated by multiplying the area of impact by the depth from surface to the bottom of the impacted interval.

After review of the analytical and soil classification data gathered from the soil boring programs, the total volume of soils exceeding remedial goals was 7,318 cubic yards. The volume of soils exceeding remedial goals in the southeastern area is 3,828 cubic yards. The volumes of soils exceeding remedial goals in the southwestern and northeastern areas are 1,876 cubic yards and 1,257 cubic yards, respectively; these estimates include intervals located above impacted intervals. No soils in the northwestern area exceeded remedial goals. The actual methodology incorporated in the field may increase the volume of soil requiring remediation; however, the total amount of soil is still considerably less than originally estimated.

At the request of EPA, Beazer will conduct additional sampling of excavated soils previously characterized as "clean" by this study. The sampling will be performed using the procedures outlined in the following EPA-approved, statistical sampling program. The basis for this sampling program is presented in Appendix H.

Beazer estimates that approximately 600 yards of the soils previously identified as clean lie above intervals delineated for remediation. This soil is found in three zones within the southeastern area, with an approximate volume of 200 yards each. Beazer intends to excavate the clean soils in each of these areas to within one-half foot (0.5 feet) of the depth interval requiring remediation. The soil from each of the three areas will be segregated into three distinct piles within the soil washing area. The material will be staged separately, or sequentially, to reduce the potential heterogeneity which may exist across the site. This will also result in a manageable volume which will be resampled to verify the previous delineation results.

The soils within each area will be further segregated, if necessary, to remove oversize particles (debris and concrete rubble, for example) and discolored material. Stained soil will be segregated and sampled, or processed through the soil washing system and evaluated. The oversize material will be stockpiled and evaluated. At this time, it is premature to outline a program for handling these materials, since there may be a variety of oversize material. However, if oversize hard rubble material such as concrete debris and oversize rock particles are encountered, one effective cleaning procedure would involve pressure washing and wipe testing delineated lot sizes. Samples would be analyzed for total potentially carcinogenic Polynuclear Aromatic Hydrocarbons (cPAHs). The actual plan for dealing with debris will be finalized during the development of a Remedial Action Plan.

Following excavation and staging of the clean soil, a three dimensional grid system will be utilized to locate sampling locations within the pile. Based on an estimate of the expected mean and variation, seven (7) composite samples per pile are scheduled to be collected.

The on-site equipment (excavator) will be used to access sampling locations within the pile. A 2-foot x 2-foot x 2-foot grid will be established to select sampling

locations. Each of the points within the pile represented by the intersection of the three grid lines will be given an equal chance for selection through the use of a random number generator or random number table. The intersecting points will be numbered prior to selection of the sampling locations to avoid any bias. In the event that a particular length, width, and depth point does not exist, another random number will be selected. The selection process will continue until all seven (7) sample locations have been identified. The 10 individual grab samples for each composite will be collected in the area of each delineated random location.

Following the identification of the sample locations, corresponding measurements (i.e. length, width and depth) will be made on the pile, and those locations will be accessed for sampling with the equipment on-site. As a starting point for the grid system, the most northerly corner of the pile has been arbitrarily selected. Prior to initiation of sampling activities on the clean piles, the equipment bucket or shovel will be decontaminated. Once accessed, a convenient soil sampling tool can be used to remove surface material and collect the sample. The segregated clean soil will be sampled and analyzed for total potentially cPAHs. Material characterized as less than 700 ppm total potentially cPAHs will be redistributed as fill in on-site excavations. Material characterized in excess of the cleanup criteria will be processed through the soil washing system and evaluated.

4.2 Remedial Alternatives

The ROD stated that the preferred alternative for remediation of soils in the two northern areas and the southwestern area was in situ soil flushing. Soils exceeding remedial goals in the southeastern area were to be excavated and soil washed. As discussed with the EPA Project Coordinator during the March 5, 1992 progress meeting at the site, both EPA and Beazer recognize that the extensive data generated by this investigation indicates soil flushing is not a necessary or appropriate remedy for this site (Appendix A).

The soil delineation study has provided extensive information demonstrating that the volumes and areas of soils requiring remediation are much smaller than originally specified by the ROD. Soil flushing is no longer appropriate for

treatment of soils in the northwestern area, the original pilot test area, because no soils were identified in this area that exceeded the remedial goals. The findings of the soil delineation indicated that the northwestern area actually requiring remediation is approximately 70 percent less than originally anticipated, and remediation is required only in the impacted interval, rather than the entire six-foot interval. A similar reduction of 65 percent occurred in the southwestern area. The northeastern area will not require remediation, based on the results of this delineation study.

The original estimate of soil volumes requiring remediation was based solely on visible staining and totaled approximately 30,000 cubic yards; 19,500 cubic yards to be treated by soil washing and the remaining soils to be left in place and treated by soil flushing. Based on the analytical testing performed as part of the delineation, the total volume of soils for remediation is approximately 6,900 cubic yards; 3,800 cubic yards for soil washing and 3,100 cubic yards from the three site areas previously designated for soil flushing. This is 75 percent less than originally anticipated.

Soil flushing is no longer the most effective technology for the targeted areas because while both technologies could be designed to comply with all Applicable or Relevant and Appropriate Requirements (ARARs), achieve community acceptance, or permanently reduce the toxicity, mobility, and volume of the potentially cPAHs in the soils, are effective in the long term, and are protective of human health and the environment, there are additional benefits to treatment by soil washing rather than soil flushing. The length of time required for Remedial Design would be decreased by approximately two months, because the schedule was dictated by the length of time required for the soil flushing pilot test, which would be eliminated. The time required to complete the excavation and soil washing cannot be quantified at this time; however, previous experience with both of these technologies indicates that soil washing would remove the exposure pathway more quickly than the one to two years required by in situ soil flushing, because of the decreased volume of soil to be treated.

In reality, where the Remedial Design schedule of pilot programs indicates a two month schedule reduction by eliminating soil flushing, additional time over the duration of Remedial Action should be saved. The pilot system design of both the water treatment plant and the soil washing unit have been prepared with planning toward full-scale operation. Although these time savings are not quantifiable on the current schedule, they should be realized. The full-scale detailed design process can be expedited due to the detailed pilot system design, utilizing full-scale system components. Time will also be saved during construction of the full-scale system, since some full-scale components will be built during construction of the pilot system.

In addition, the reduced volume of soil in areas designated for soil flushing is divided among three areas of the site; therefore, three separate systems would need to be constructed to remediate the revised volume of approximately 3100 cubic yards. This would significantly increase the unit costs of implementing the soil flushing program to remediate the revised soil volumes.

Ease of implementability is also somewhat less for soil flushing than for soil washing because the three soil flushing areas would have to be dedicated to the treatment and could not be used for other purposes until treatment is complete; whereas if soil washing is implemented, the areas can be used immediately after excavation and backfilling is complete.

The revised cost of soil washing the soils originally intended for soil flushing is approximately $200/cubic yard or a total of $620,000. The total cost of designing, installing, and operating soil flushing equipment in both of the affected areas would be approximately $1,600,000. Further savings would be gained through the elimination of operation and maintenance required to operate the soil flushing system.

There are several reasons for eliminating soil flushing from the remedial plan for the South Cavalcade site. The main reason is the large decrease in total volume of soils requiring remediation and the associated decrease in soils to be treated by in situ soil flushing. Further, the reduced volume of soils previously designated for soil

flushing is divided among three separate areas. This decrease in volume divided among three separate areas, results in a preference for washing the soils previously intended for flushing, based on time for implementation cost, and ease of implementation. The soil washing unit will be present on-site for remediation of the soils in the southeastern area and the additional time and cost to wash the soils previously intended for in situ flushing will be less than the time and cost required by flushing. In addition, after the soils requiring remediation are excavated, the area can be used for other purposes; however, if soil flushing is implemented, the area must be dedicated to treatment until remedial goals are achieved.

4.3 Organic Leachate Model (OLM)

The results of this study also indicate that the OLM was extremely conservative in predicting the "no leaching potential". The model estimated that the "no leaching potential" ranged from 100 ppm total potentially cPAH to 250 ppm, while the results of this study did not show leaching of cPAH concentrations as high as 1200 ppm.

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APPENDIX A

CORRESPONDENCE AND DOCUMENTATION OF AGREED AND NECESSARY ALTERATION TO WORK PLAN

JAN 0 3 1992

012381

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

December 27, 1991

VIA FACSIMILE AND CERTIFIED MAIL:
RETURN RECEIPT REQUESTED

Ms. Shannon Craig
Beazer East, Inc.
436 7th Avenue, Suite 1450
Pittsburgh, Pennsylvania 15219

Dear Shannon:

I have finished my review of the final Remedial Design Workplan (RDWP) for the South Cavalcade Street site, and by this letter, I am approving the workplan. There were two items which were either missing or incomplete. First, please supply the final bar chart schedule for Section 7.0 of the Sampling and Analysis Plan, which should be consistent with the schedule change agreement you and I executed. Next, please provide a complete Contingency Plan. It appears that portions of the plan were omitted from the Health and Safety Plan.

I have also completed my review of the final Development of Soil Action Levels document, and by this letter, I am approving this modelling effort with the following clarifications. EPA maintains that the maximum dimensions determined through sampling for any given area should be utilized to confirm the soil cleanup levels established by the model. In particular, this applies to the southeastern source area and the associated cleanup level (150 ppm vs. 250 ppm).

Additionally, there appear to be some errors in the deep ground water calculations in Appendix B (p. B-6). I will have Fluor Daniel review this portion of the report, and we will provide comments at a later time. However, I do not expect this to impact the soil cleanup levels.

012382

I look forward to our kickoff meeting on January 6, 1992. Thank you for all of your hard work in finalizing the RDWP and modelling document.

Sincerely,

Mark J. Fite
Remedial Project Manager

cc: Billie S. Nolan, Beazer East, Inc.
Louis Rogers, Texas Water Commission
Mark McDonnell, Fluor Daniel, Inc.
Marvin Benton, EPA (6C-WT)

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.
3000 Tech Center Drive
Monroeville, PA 15146
412 825-9600
FAX 412 825-9699

012383

Ref. No. 157345-00

February 5, 1992

Mr. Mark Fite
EPA Project Coordinator (6H-SC)
Superfund Programs Branch
U.S. Environmental Protection Agency
Allied Bank Tower
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Mr. Fite:

Re: South Cavalcade Pre-Design Investigation

The purpose of this letter is to detail the Beazer/Keystone proposals verbally described to you at the Quality Assurance (QA) Management Review Meeting (January 29, 1992 at the South Cavalcade site) or the conference call of January 31, 1992. A report on all of the issues discussed at the QA Management Review Meeting is included as Attachment 1. The QA report required in the Quality Assurance Project Plan will be submitted monthly as part of the Monthly Progress Report.

Proposed borings to further delineate the extent of soils requiring remediation are included as Attachment 2 to this letter. The field work for these borings is scheduled to begin the week of February 3. As discussed during the conference call, analyses for potentially carcinogenic PAHs (cPAH) and TCLP analyses for the additional borings will be submitted to the lab for a 14-day turnaround.

Statistical verification and revision of the potential area of remediation of the Organic Leaching Model (OLM) will be performed after the Pre-Design Investigation and before remediation. During remediation, TCLP will be performed on 25 percent of the confirmation samples with total potentially cPAH concentrations below the soil cleanup levels derived by the revised OLM. If sufficient data from the OLM verification exists, the confirmational TCLP frequency may be decreased, with concurrence by U.S. EPA.

TCLP data that do not achieve the 10 ppb detection limit for cPAH will trigger a review of the soil classification as determined through the field logs and a laboratory attempt to qualify the interferences for the sample. If the cPAH soil concentration is above the existing OLM levels (e.g., 250 ppm in the Palletized area), Beazer proposes to sample the soil depth interval that exhibited the interference within approximately 5 feet of the original boring. If the 10 ppb detection limit in the second sample can not be achieved and the cPAH is below 700 mg/kg, it is Beazer's contention that the sample is "clean."

012384

If you have any questions or comments regarding this letter, please contact James Cook at (412)227-2092 or me at (412)825-9712.

Sincerely,

Diane E. McCausland

Diane E. McCausland
Project Manager

DEM:dac dm-197

Attachments

cc: J. Cook - BES
S. Craig - BEI
B. Flaherty - BEI
M. White - Baker & Botts

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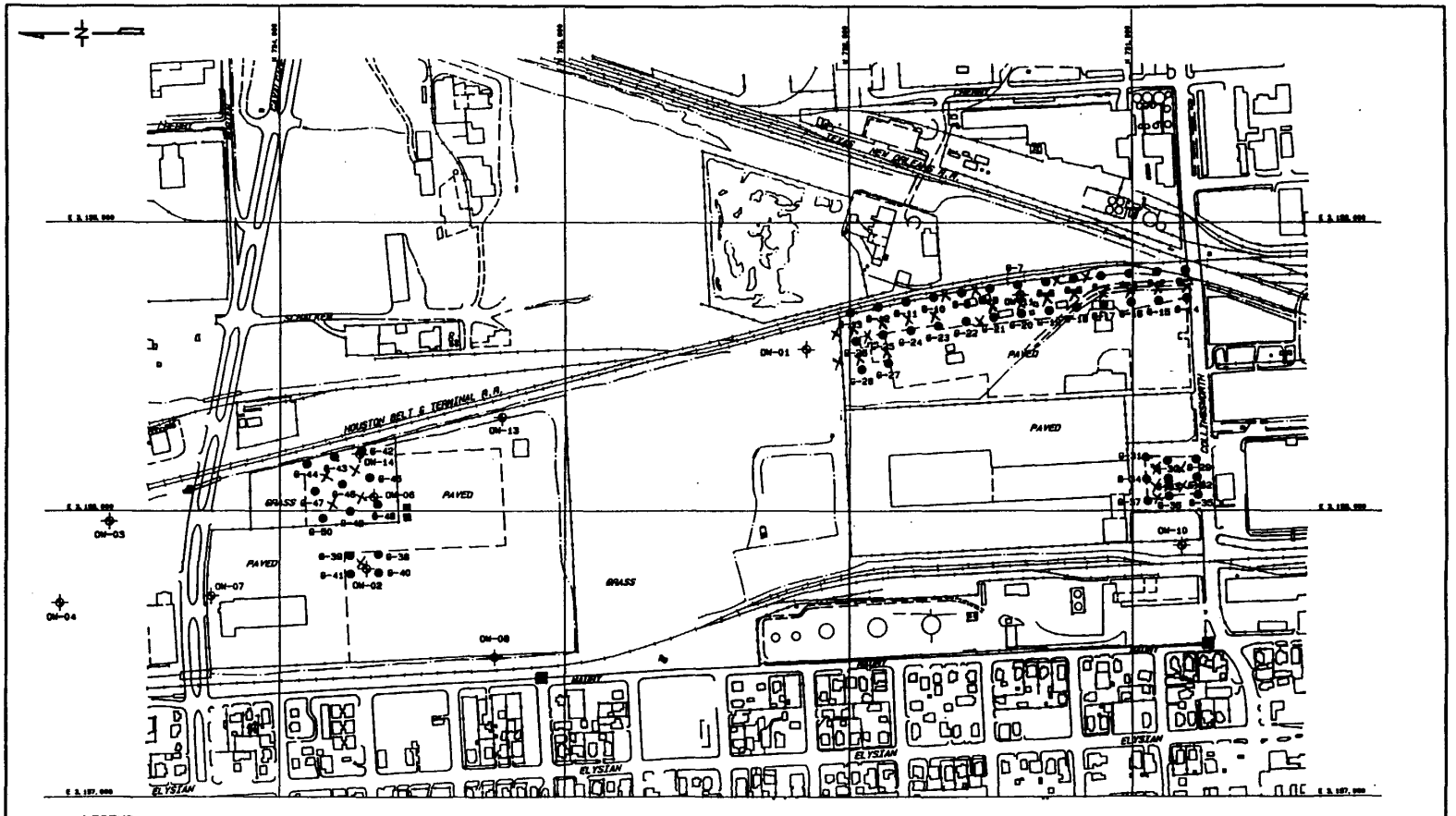

LEGEND

- MONITORING WELL LOCATION
- SOIL SAMPLING LOCATION
- CITY OF HOUSTON SURVEY MARKER
- X - Proposed Additional Borings

SCALE (FEET)
0 150 300

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ENVIRONMENTAL RESOURCES, INC.

FIGURE 2-1
SOIL SAMPLE AND
MONITORING WELL LOCATIONS
S. CAVALCADE SITE
HOUSTON, TEXAS

2/4/92 A107380

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012385

SOUTH CAVALCADE SITE
MEETING MINUTES
QA MANAGEMENT REVIEW MEETING
JANUARY 29, 1992

Attendees: Mark Fite -- US Environmental Protection Agency
Mark McDonnell -- Fluor Daniel, Inc.
James Cook -- Beazer Environmental Services, Inc.
Diane McCausland -- Keystone Environmental Resources, Inc.

Location: Conference Room at Palletized Trucking

Discussion:

I. Project Status

A. Soil Delineation -- As of the end of the day, January 28, 1992, all borings in the southwest, northeast and southeast, with the exception of numbers 8, 11, and 53, were complete. No borings in the northwest had been completed.

Beazer/Keystone and USEPA discussed the placement of additional borings. Beazer/Keystone suggested that if four "clean" borings are present in a square, that one sample be collected in the middle of the square. USEPA indicated that Beazer's definition of "clean" differed from USEPA's. Beazer defined "clean" as less than 700 ppm total potentially cPAH and no leaching based on the TCLP results, while USEPA defined "clean" as total potentially cPAH concentrations less than the concentrations determined in the OLM modeling report. A conference call between Beazer, USEPA, and Keystone was scheduled for Friday, January 31, 1992 to discuss this issue further.

B. Well Installation -- As of the end of the day, January 28, 1992, two observation wells in the north, four observation wells in the south, and the shallow pumping wells were complete.

Beazer has agreed to abandon the intermediate pumping wells in the north and south areas and install new wells using centralizers and surface casing. The existing well and screen will be used, if possible, in the new wells. After the southern intermediate pumping well had been pulled, it was determined that the well and screen could not be reused; therefore new materials will be used. The surface casing in the newly installed southern intermediate pumping well had been installed. No reinstallation activities have begun on the northern well.

No work has begun on the deep well. The 14-inch surface casing had been damaged upon delivery to the site. To avoid delay in installation of the deep well, Beazer/Keystone proposed the use of couplings in place of the damaged threaded sections to join the ends of the casings. USEPA will evaluate the proposal and respond to Beazer.

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C. Analytical -- USEPA handed out a spread sheet showing all the data they have received to date, including several split samples analyzed by Fluor Daniel. All split samples correlated well with the corresponding analyses performed by Beazer/Chester LabNet.

USEPA indicated that the field duplicate of sample SC-G5-A showed approximately double the concentration of potentially cPAH found in sample SC-G5-A. Keystone will check the results to determine if there is a calculation error.

D. Laboratory Audit -- USEPA indicated that the audit report is not yet available, although the auditor has indicated that the laboratory performed favorably.

II. Quality Program Accomplishments

A. QA/QC Update -- USEPA has previously indicated that Chester LabNet - Houston lab does not have a copy of the Quality Assurance Project Plan, and Keystone confirmed this. Keystone will submit a copy to the lab.

USEPA asked if rinsate blanks were being collected. Keystone confirmed that they were being collected and submitted for analysis.

Keystone indicated that although submittal of blind duplicates to the lab is noted in the QAPP, no submittal frequency is included. Keystone proposed submitting two or three blind duplicates and USEPA agreed.

Beazer/Keystone and EPA agreed that submittal of raw analytical data to EPA will not be required until the associated report is submitted.

USEPA indicated that they do not want soils analytical data disregarded during remediation based on validation. Keystone reminded USEPA that formal validation is not required and will not be performed. In response, USEPA said that areas marked for remediation during this soil delineation activity must be remediated and they do not want remediation to proceed in small lifts with frequent confirmational sampling.

USEPA asked about calibration log books for the on-site instruments. Keystone informed USEPA that no separate log book is kept for calibration; however it is recorded in the field log books. USEPA agreed that was sufficient. Keystone also informed USEPA that no calibration frequency for HNu's was included in the QAPP and that the QAPP will be revised to include it; however Keystone's Health and Safety Manager informed the field team that no field calibration of the HNu is necessary. Keystone will evaluate this further.

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

012388

USEPA asked about the final disposal of used Tyveks and the material contained in the roll off boxes. Beazer will handle this; however a final decision has not been made.

B. Identify Key Personnel --

Program Manager: Shannon Craig (Beazer)
Project Manager: Diane McCausland (Keystone)
Project Quality Assurance Supervisor: Mary Anna Babich (Keystone)
Task Project Manager: Ed Kleinkauf (Keystone)
Site Health and Safety Officer: Scott Lodge (Keystone)
Health and Safety Manager: James Thomas (Keystone)

C. Beazer Evidence Files -- Beazer/Keystone requested guidance on what should be kept in the evidence files. Specifically, does the inherent duplication of files between Beazer and Keystone meet the duplication requirements, and do raw analytical calculations need to be duplicated. Duplication of the raw calculations would be onerous and the calculations can be recreated at any time based on output from the analytical instruments (the output is saved on both tape and paper). USEPA will review the requirements and respond to Beazer.

III. Items Requiring Action

A. Implementation of Corrective Action -- Beazer/Keystone and USEPA reviewed the corrective actions taken at the site in response to USEPAs letter to Beazer on January 17, 1992 concerning health and safety issues. USEPA informed Beazer/Keystone that the actions were satisfactory.

B. Access -- Beazer informed USEPA that formal permanent access permission has not yet been provided to Beazer by the property owners, and that the property owners have proposed a two-week extension of the temporary access.

C. Tentative Schedule for Remaining Field Activities -- Deep well installation will begin on Monday, February 3, pending USEPAs decision on the use of couplings to join the ends of the damaged casing sections.

The schedule for the remaining tasks is dependent upon USEPAs decision on the placement of additional borings.

D. TCLP Detection Limits -- Beazer/Keystone informed USEPA that the 10 ppb detection limit for potentially cPAH analysis was not achieved in analysis of all TCLP leachates, and recommended that any nondetect, whether 10 ppb, 100 ppb, or 1000 ppb, be considered a "clean" sample. USEPA will evaluate the proposal and respond to Beazer during the conference call on January 31, 1992.

dm-197

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

JAN 31 1992

CERTIFIED MAIL:
RETURN RECEIPT REQUESTED

FEB 10 1992

Ms. Shannon Craig
Beazer East, Inc.
436 7th Avenue, Suite 1450
Pittsburgh, Pennsylvania 15219

Dear Shannon:

As you are aware, Keystone Environmental has submitted letters on behalf of Beazer East, Inc. requesting a number of deviations from the Remedial Design Workplan for the South Cavalcade site. EPA's position on each of these deviations is outlined below:

-EPA has no objection to Beazer's use of laboratory analysis with a 2-day turnaround in lieu of an on-site GC.

-EPA has no objection to the use of stainless steel pumping wells in place of the PVC wells required in the SAP.

-EPA has no objection to the use of a 14-inch surface casing instead of the 10-inch casing proposed in the SAP. EPA agrees that there may be a need for additional casing(s) to ensure that contamination between groundwater zones does not occur.

-Beazer has proposed not to collect samples from 0 to 200 ft., whereas the SAP calls for samples at 5 foot intervals to a depth of 70 ft., with geophysical logging throughout the remaining depth. EPA has evaluated the data available in the RI for the 220 ft. well installed adjacent to the proposed location of the 530 ft. well. Only five samples were collected during this well installation at depths of 71, 140, 185, 191, and 209 ft. Additionally, the well log for the 220 ft. well only covers the interval from 160 to 220 ft. While this data is not comprehensive for the 0 to 220 ft. interval, EPA will agree to reduce the required samples from 40 to between 5 and 10. Since contamination in the clay soils off-site is unlikely, EPA suggests collecting samples and analyzing for cPAH in all sand zones encountered throughout the 200 ft. interval as a minimum. This information could be used to guide Beazer's decision concerning the need for additional isolation casing(s) to prevent cross-contamination.

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-During recent field activities, two intermediate pumping wells were installed without surface casing, as required by Appendix B of the SAP. Keystone has stated plans to replace the southern well but keep the northern well. EPA disagrees with this decision for two reasons. First, the SAP clearly calls for surface casing to a depth of about 30 ft. Secondly, EPA's hydrogeologist has indicated that the absence of surface casing may lead to the vertical migration of contamination from the shallow groundwater to the intermediate zone. While both zones are contaminated in this area, the intermediate zone is less contaminated, and EPA believes that vertical migration of contamination through this improperly installed pumping well may compromise the effectiveness of future groundwater remediation systems. EPA is therefore directing that both improperly installed intermediate pumping wells be replaced in a manner consistent with the SAP. Keystone's proposed re-use of the stainless steel casing and screen from these wells will depend on the condition of these materials upon removal from the well. EPA directs that no punctured, torn, or otherwise damaged casing or screen be re-used.

-Keystone has proposed the use of schedule 40 PVC surface casing instead of the schedule 80 PVC required in the SAP for the intermediate pumping wells. EPA has no objection to this proposed change.

Fluor Daniel has advised me that the HNu's used at the site for air monitoring in the work areas continue to be problematic. Evidently, erratic background readings and poor responses to highly odorous and visibly stained samples continue to occur. While Drager tubes provide an instantaneous snapshot of air quality, I believe a method should be adopted which offers continuous real-time information yet is not susceptible to the Houston humidity. Establishing an accurate understanding of background air quality is also crucial here. I understand that some air monitoring was done during the RI (1986), but Beazer may wish to re-evaluate background air quality to account for changes in commercial and industrial operations in the area.

I want to commend Beazer and Keystone for their recent responsiveness in resolving EPA's compliance concerns. This type of cooperation will advance the interests of both EPA and Beazer in remediating the South Cavalcade site.

Sincerely,

Mark J. Fite
Remedial Project Manager

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cc: Billie S. (Nolan) Flaherty, Beazer East, Inc. (certified)
James A. Cook, Beazer Environmental Services, Inc.
Diane McCausland, Keystone Environmental Resources, Inc.
Mark McDonnell, Fluor Daniel, Inc.
Louis Rogers, Texas Water Commission (certified)

bcc: Carl Edlund (6H-S)
Marvin Benton (6C-WT)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

012392

MAR 16 1992

March 9, 1992

MEMORANDUM

SUBJECT: RD Progress meeting on March 5, 1992 for South Cavalcade site

FROM: Mark J. Fite
Remedial Project Manager

TO: South Cavalcade files

ATTENDEES

Shannon Craig--Beazer East
Jim Cook--Beazer Environmental
Cindy Zuch--Beazer East
Steve Radel--Beazer East
Diane McCausland--Keystone
Rex King--Palletized
Robert Sternenburg--TPI
Keith Bahrt--TPI
Terrell Hunt--counsel for TPI
Mark Fite--EPA

REVIEW OF DATA

I provided a copy of Fluor Daniel's Laboratory audit report to Beazer. Beazer did not have a data summary available yet, but promised to provide this with the monthly report. Beazer estimates that the total volume of soil to be remediated will be between 6,000 and 10,000 cubic yards.

I pointed out that EPA expects Beazer to excavate in any particular location to the depth at which the deepest contamination above the action level was detected. More specifically, I indicated that if the 0-2 ft. interval in clean, but the 2-4 ft. interval is dirty, that the whole 0-4 ft. interval must be excavated and treated. Beazer disagrees with this, indicating that they plan to scrape off the "clean" soils in order to get to the deeper dirty soils. I pointed out that there was no way to confirm that they had not removed dirty soil. We tabled this issue, but I requested that any contaminated soil volume estimates address both approaches.

REMAINING FIELD WORK

Pump tests: The pump tests were to begin on March 5, but they were having some trouble getting electricity to the pump. Pumping did begin using a generator brought from the Keystone lab in Houston. I raised a few questions concerning Keystone's SOP for the pump tests: I asked Beazer to consider taking analytical samples (cPAH) before and after the pumping tests, which they said they would consider. I also pointed out that the SOW calls for water level measurements in observation wells during the 24 hour recovery period after the pump tests. Beazer agreed to do this. Finally, I asked about the modelling that would be done with the pump test data. Beazer indicated they would plot drawdown curves, and these would be included in the Extraction Well Pilot Study report.

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Trench/geotech samples: Beazer said the trench would be moved to another location because of the apparent dearth of contamination in the original soil flushing location. It will be constructed during the other pilot studies. The geotech samples required for the trench construction have already been completed.

500 ft. well: The well has not yet been developed due to problems with the pump, so no samples have been taken yet.

Schedule: The field work should continue for another 3 to 4 weeks. The draft soil investigation report and the groundwater extraction pilot report are due on April 5.

REMEDY/WORKPLAN CHANGES

I indicated that EPA was in agreement with Beazer's suggestion to excavate contaminated soil from the former "soil flushing areas" and treat it in the soil washing unit. However, I noted that EPA would have to process an Explanation of Significant Difference (ESD), which would include public comment. I also indicated that if no soil flushing pilot was required, EPA would expect a significant reduction in the RD schedule. Beazer indicated that their formal proposal to switch from soil flushing to soil washing would be submitted with the soil investigation report.

Beazer tentatively plans to use a 2 ton/hr unit for the soil washing pilot study. They hope to use the same unit for the actual RA. In general, Beazer would like to only build one SW unit and one GW treatment unit for both the pilot and full scale operations. The plants should be of modular design so that any refinements needed can just be added on to the existing plants.

MISCELLANEOUS

RD Workplan revisions: I asked if Beazer had finalized the minor revisions to the RD Workplan which were required in EPA's approval letter. Bechtel is still revising this. I asked Beazer to submit this to me by March 31 at the latest.

Public meeting: I told Beazer that EPA has tentatively scheduled an Open House for April 7. This will be a joint meeting for both North and South Cavalcade. Shannon Craig plans to attend.

Pilot plant location: Beazer and Trucking Properties, Inc. (TPI) discussed possible locations for the pilot and full scale treatment plants. Beazer prefers to locate on the TPI property just north of Palletized. TPI seemed to be willing to work with this, provided that they had some input on layout and tank sizes/styles. Beazer indicated that treatment of the soils would probably last for about 1.5 years, while the ground water treatment could go as long as 30 years. TPI stressed that they did not want any of the washed soil from Palletized replaced on their property.

cc: Shannon Craig (Beazer) Mark McDonnell (Fluor Daniel)
Louis Rogers (TWC)

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APPENDIX B

BORING LOGS

012394

012395

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TEXAS
CLIENT: BEAZER EAST, Inc.

WELL LOG: LEGEND

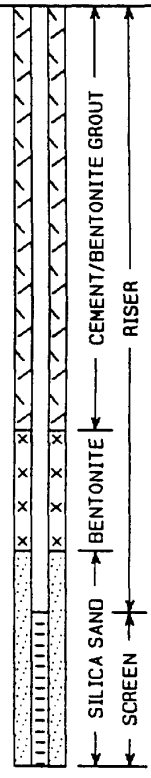
GROUND ELEVATION: -
WELL ELEVATION: -
WELL DEPTH: 0
DEVELOPMENT METHOD: AIR

ELEV. DATUM: MEAN SEA LEVEL
DATUM: FEET, TOP OF CASING

DRILLING METHOD: HOLLOW STEM AUGER / MUD ROTARY
DRILLER: LAYNE ENVIRONMENTAL SERVICES
DATE DRILLED: -
GEOLOGIST: S.LODGE / P.CARLSON / E.KLEINKAUF

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						FINE, MEDIUM, AND COARSE SAND
						COARSE SAND
5						MEDIUM SAND
						FINE SAND
						SILT
10						SAND AND SILT
						SILT OR SAND AND CLAY
15						CLAY
						SANDY OR SILTY CLAY
						FILL / TOP SOIL
20						
25						2 INCH TO 3 INCH SPLIT SPOON - OR - 5 FOOT CONTINUOUS SAMPLER
						SHELBY TUBE
30		NA				NOT APPLICABLE
35						
40						

WELL DIAGRAM



012396

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G1

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Brown SILT, some Gravel
	NA	NA	X			Brown SILT, moist
5	NA	NA	X			Brown / grey SILT
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012396

012397

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G2

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown SILT, grading darker with depth
	NA	NA				Brown / grey SILT. trace clay, trace wood
5	NA	NA				Grey SILT, moist, staining, odor
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012397

012398

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G3

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X	10		Brown/white/gray silty CLAY, black (bottom 2"), moist.
	NA	2.0	X	100		Brown-gray silty CLAY, little wood, black staining, odor.
5	NA	2.0	X	80		Gray-brown silty CLAY, moist, visible staining, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012399

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G4

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Brown silty CLAY, trace Gravel and Sand, black staining, moist, odor.
	NA	2.0	X			Gray/brown silty CLAY and rust fine Sand, black staining, trace roots, odor.
5	NA	2.0	X	300		Gray/brown silty CLAY, black staining, saturated, very soft, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012399

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G5

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown Top Soil upper 5", black and white gravel and blacktop.
	NA	2.0		120		Gray clayey SILT, brown mottles, fractures, moist, very soft, odor.
5	NA	2.0				Gray-brown clayey SILT, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012401

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G6

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 22 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown silty CLAY, trace fine Sand, moist, soft.
	NA	2.0	X	5.0		Lt. brown/reddish-brown mottled fine sandy SILT, dry, soft.
						Black, shells, little coarse Gravel.
	NA	2.0	X	5.0		Gray silty CLAY, trace rust colored mottles, wet, soft.
5	NA	2.0	X	5.0		
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012402

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G7

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 22 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Dk. brown silty CLAY, roots, moist, soft.
	NA	2.0				Rust-red SILT, little medium-coarse Gravel, dry, soft.
						Gray clayey SILT, moist, soft, diesel odor.
	NA	2.0				Gray clayey SILT, increased Clay, moist, soft.
5	NA	2.0				Gray silty CLAY, trace black mottles, moist, soft, diesel odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012402

012403

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G8

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 29 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown silty CLAY and fine-coarse Sand, trace rock and shell fragments (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand, trace rock fragments and wood, wet (possible FILL).
5	NA	0.0				No Recovery.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012404

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G9

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 25 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Reddish-brown, brown, black, silty CLAY, little/some fine-coarse Sand trace coal (FILL).
	NA	2.0				Lt. brown/gray silty CLAY, some fine Sand, moist.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012404

012405

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G10

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkaut

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 25 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Reddish-brown, brown, black silty CLAY and fine-medium Sand, diesel odor (FILL), 6" of lt.brown fine-coarse Sand layer at 1'.
	NA	2.0				Gray silty CLAY, some/little fine Sand, slight diesel odor.
5	NA	2.0				Tan/lt. gray silty CLAY, slightly mottled, little fine Sand, slight diesel odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
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012405

012406

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G11

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 29 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown fine-coarse SAND, some silty Clay (FILL).
	NA	2.0				Gray/brown silty CLAY and fine Sand.
	NA	2.0				
						Increase in CLAY.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012407

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G12

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 25 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Coal, black, brown, reddish-brown silty CLAY, some fine-coarse Sand, slight diesel odor (FILL).
	NA	2.0				Tan/lt. gray silty CLAY, some fine Sand.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012407

012408

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G13

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 27 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Gray/brown/black fine-coarse SAND, some silty Clay (FILL).
	NA	2.0				Gray/brown silty CLAY and fine Sand, diesel odor.
	NA	2.0				Increase in CLAY.
5	NA	2.0				Increase in CLAY.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012409

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G14

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 24 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown silty CLAY, trace fine Sand, trace fine and coarse Gravel, roots moist, soft.
						Brown clayey SILT, little fine Sand, moist, soft.
	NA	2.0				Brown/lt. brown silty fine SAND, moist, loose.
						Lt. brown/gray mottled silty CLAY, moist, firm.
5	NA	2.0				Gray/lt.brown mottled silty CLAY, trace red mottles, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
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012410

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G15

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 24 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	0.0				FILL, fragments of cement, brick, etc.
	NA	1.0				Brown silty CLAY, moist, very stiff.
						Black sandy SILT, cement fragments and Gravel, dry, loose (fall-in?).
	NA	2.0				Brown silty CLAY, trace fine Sand, moist, soft.
5	NA	2.0				Gray/lt.brown mottled silty CLAY, trace fine Sand, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
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012410

012411

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G16

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 24 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	0.0				FILL, fragments of cement, brick, etc.
	NA	1.0				Brown clayey SILT, trace Gravel, dry, firm.
	NA	2.0				Brown/gray mottled silty CLAY, moist, firm.
5	NA	2.0				Gray/brown mottled silty CLAY, trace fine Sand streaks, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012411

012412

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G17

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						SILT, SAND, GRAVEL, SHELL
	NA	2				Grey SILT, little fine Sand, trace roots, moist
						Brown wood bark and leaf matter
	NA	2				Grey Silt, little fine sand, moist
						Grey SILT, trace Sand, trace Clay, semi-sticky, moist
5	NA	2				
						Bottom of Boring = 6.0 feet
10						
15						
20						

012413

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G18

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 23 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	0.0				FILL, fragments of cement, brick, etc.
	NA	1.0				Gray clayey SILT, trace shells and Gravel, dry.
						Brown clayey SILT, trace wood, moist, soft.
	NA	2.0				Gray clayey SILT, increasing Clay with depth, moist, soft.
5	NA	2.0				Gray silty CLAY, trace roots, little yellow mottles, moist, soft, black silty CLAY upper 4".
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012414

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G19

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 22 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	0.0				FILL, fragments of cement, brick, etc.
	NA	1.0				Unsorted Gravel, sandstone fragments and shells, dry, loose.
	NA	2.0		90		Gray clayey SILT, increasing Clay with depth.
5	NA	2.0		8.0		Gray silty CLAY, black/gold mottles, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012414

012415

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G20

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 22 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown SILT, little Gravel, trace Clay, trace shells, cement fragment, dry, loose.
						Black SILT, some shells, trace Clay, dry, hard, odor.
	NA	2.0				Gray clayey SILT, odor.
						Gray clayey SILT, black layers, odor.
5	NA	2.0				Gray clayey SILT grading to silty CLAY, trace black and red mottles.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012416

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G21

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 27 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown silty CLAY and fine-medium Sand, little coarse Sand, trace rock fragments (FILL).
	NA	2.0				Black fine-coarse SAND, trace shell fragments, creosote odor (FILL).
5	NA	2.0				Gray silty CLAY and fine Sand.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012416

012417

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G22

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 27 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Black/brown silty CLAY, trace shell and rock fragments (FILL).
	NA	2.0				Gray, brown silty CLAY and fine Sand.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012418

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G23

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 27 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/black silty CLAY and fine-coarse Sand, trace rock fragments, trace coal, creosote (FILL).
	NA	2.0				Gray/brown silty CLAY and fine Sand, creosote odor.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012419

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G24

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 27 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/black silty CLAY and fine-coarse Sand, trace shell fragments, creosote/tar (thick) (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand, creosote odor.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012420

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G25

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 25 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Black, brown silty CLAY and fine-coarse Sand, trace shells and coal diesel odor (FILL).
	NA	2.0				Gray/lt. brown silty CLAY, little fine Sand, slight diesel odor.
5	NA	2.0				Lt. gray/lt. brown silty CLAY, trace/little fine Sand, slight organic odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012421

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G26

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 25 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Tan, black, brown fine-coarse SAND, little silty Clay, trace fine gravel, slight creosote odor (FILL).
	NA	2.0				Lt. gray/lt. brown silty CLAY, little fine Sand, slight creosote odor.
5	NA	2.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012422

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G27

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 28 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/black fine-coarse SAND, some silty Clay, trace shell fragments, moist (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand, electrical wire (possible FILL).
5	NA	2.0				Gray/brown silty CLAY and fine Sand, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012423

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G28

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 28 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/gray silty CLAY and fine-coarse Sand, trace shell fragments, moist (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand, moist.
5	NA	2.0				Increase in CLAY.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012424

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G29

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 14 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown silty CLAY, trace fine Sand, roots, wet, soft.
	NA	2.0				Tan fine sandy SILT, brown mottles, moist, soft.
	NA	2.0		200+		Tan/lt. brown silty CLAY, trace Sand, brown mottles.
5	NA	2.0				Tan fine sandy SILT, brown mottles, moist, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012425

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G30

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 13 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Brown silty CLAY, moist, soft.
						Tan silty CLAY, brown mottles, moist, stiff.
	NA	2.0	X	60		Black silty CLAY, shells, medium-coarse Gravel, dry, stiff, odor.
5	NA	2.0	X	40		Brown clayey SILT, gray mottles, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012426

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G31

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 13 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown silty CLAY, trace fine Sand, organic material, moist, soft.
	NA	2.0		40		Black, shells, roots, dry.
5	NA	2.0				Brown clayey SILT, gray mottles, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G32

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 14 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0		200+		Brown silty CLAY, trace Sand, roots, moist, soft.
						Lt. brown fine sandy SILT, trace Clay, brown mottles, moist, soft.
	NA	2.0		200+		Lt. brown/tan silty CLAY, trace Sand, brown mottles, moist, soft.
5	NA	2.0		200+		Tan fine sandy SILT, trace Clay, little fine Sand, brown mottles, moist/wet, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G33

012428

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 13 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0		1.5		Lt. brown silty CLAY, trace fine Sand and medium-coarse Gravel, moist, soft.
						Black, some shells, dry, hard, diesel odor.
	NA	2.0		200+		Lt. brown silty CLAY, trace Sand, brown mottles, moist, soft, odor.
5	NA	2.0		100+		Tan silty CLAY, trace Sand, brown/lt. brown mottles, hard, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012429

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G34

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Brown sandy SILT, trace roots, soft, moist
	NA	NA	X			Brown SILT, little sand, wood, product, odor
5	NA	NA	X			Brown SILT, odor
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012430

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G35

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown sandy SILT, little roots, moist
	NA	NA				Brown SILT, trace sand, moist
5	NA	NA				Brown SILT, mottled, grey sand, stiff, moist
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
OCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G36

012431

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown SILT, moist
	NA	NA				Brown SILT, some sand, product, odor
5	NA	NA				FILL, Silt and Wood, product
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G37

012432

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Brown SILT, little sand, moist
	NA	NA	X			SILT and SAND, little wood, product, odor
5	NA	NA	X			FILL, Wood debris, product
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012433

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G38

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 25.0 DEPTH DATUM: Feet
DATE DRILLED: 29 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown sandy SILT, little roots, moist, semi-loose.
	- 4 5 3	1.8				Brown sandy SILT, moist, semi-loose.
	- 3 5 8	1.0				Dk. brown/gray sandy SILT, sheen, wet, odor.
5						
	- 3 1 2	1.6				
	- 1 1 2	1.5				Push Shelby Tube
	Shelby Tube					
10						Grey very fine to fine SAND; little Silt; loose; black staining; odor wet.
	- 4 6 7	1.5				Grey fine SAND; loose; product staining; odor; wet.
	- 3 6 8	1.0				Grey fine SAND; loose; product staining; odor; sheen; wet.
15						
	- 7 10 16	2.0				
	- 4 10 12	2.0				
20	- 5 9 15	1.3				

012434

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G38

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 25.0 DEPTH DATUM: Feet
DATE DRILLED: 29 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Red-grey CLAY; stiff; moist.
	- 7 9 12	1.5				No data available
	NA	NA				Push Shelby Tube
25	Shelby Tube					Bottom of Boring = 25.0 Feet.
30						
35						
40						

012435

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G39

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 4 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.8				Brown silty fine SAND, trace roots, moist, semi-loose.
	NA	1.8				Brown silty fine SAND, moist, semi-loose.
5	NA	1.8				Gray-brown/brown mottled fine SAND and SILT, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012436

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G40

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 4 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown SILT and fine SAND, moist, semi-loose.
	NA	1.8				Brown fine sandy SILT, moist, semi-loose.
5	NA	1.9				Lt. gray SILT and fine SAND, rust/tan mottles, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G41

012437

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 4 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.8	X			Dk. brown silty SAND, trace roots, moist, semi-loose.
	NA	1.8	X			Dk. grayish-brown fine SAND and SILT, very moist.
5	NA	1.8	X			Brownish-gray sandy SILT, wet, very soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012438

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G42

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X	10		Dk. brown fine sandy SILT, roots, moist/wet, soft, increasing fine Sand from 18-24".
	NA	2.0	X	17		Lt. brown/tan mottled silty CLAY, little fine sand, moist, soft.
5	NA	2.0	X	5.0		Lt. brown/tan mottled clayey SILT, trace red streaks, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012439

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G43

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 21 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown fine sandy SILT, trace Clay, trace roots, moist, soft.
	NA	2.0				Brown SAND and SILT, Clay near top, trace roots, moist, soft.
5	NA	2.0				Brown/tan mottled silty CLAY, fine Sand, wet, soft, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012440

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G44

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 12 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown clayey SILT some red and black mottles, trace fine Sand and medium-coarse Gravel, fine Sand (bottom 0.25'), wet, soft.
	NA	2.0				Brown fine sandy SILT, trace Clay, some lt brown/gray mottling (bottom 1'), moist, soft.
						Brown fine sandy SILT, trace Clay, moist, soft.
5	NA	2.0		700+		Silty CLAY, trace fine Sand, moist/wet, soft, sheen, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012441

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G45

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X	100		Dk. brown fine sandy SILT, roots, moist/wet, soft.
	NA	2.0	X	5.0		Lt. brown silty CLAY, trace Sand, tan/lt brown mottled lower 1 ft, moist, soft.
5	NA	2.0	X	20+		Lt. brown/tan mottled clayey SILT, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012442

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SG-G46

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 21-22 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Black silty CLAY, trace wood, cloth and cardboard, dry, hard.
	NA	2.0		110		Brown silty fine SAND, dk. brown mottles, moist, soft.
	NA	2.0		4.0		Lt. brown/tan silty fine SAND, trace Clay, wet, soft.
5	NA	2.0		120		Lt. brown silty CLAY, trace fine Sand, yellow mottles.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012443

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G47

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 14 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Dk. brown clayey SILT, trace fine Sand, roots, wet, soft.
						Lt. brown silty CLAY, reddish-brown mottles, moist, stiff.
	NA	2.0	X	200+		Tan silty CLAY, brown mottles, moist, soft.
5	NA	2.0	X	150		Lt. brown silty CLAY, trace fine Sand, moist, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012444

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G48

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 15 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X	3.0		Dk. brown fine sandy SILT, roots, moist, soft.
						Lt. brown fine SAND, moist, soft.
	NA	2.0	X	200+		Lt. brown silty CLAY, trace fine Sand, trace tan mottles, moist, soft. Upper 3" is continuation of 1.5-2 ft.
5	NA	2.0	X	200+		Lt. brown/tan mottled clayey SILT, trace Sand, moist, stiff. Upper 4" continuation of 2-4 ft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012445

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G49

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 14 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X	250+		Dk. brown silty CLAY, little fine Sand, moist, soft. Layer of black with shells, hard, odor at 1.0 ft.
	NA	2.0	X	200+		Lt. brown/tan mottled fine sandy SILT, moist, odor.
5	NA	2.0	X	200+		Tan/gray mottled fine sandy SILT, wet, soft, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012446

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G50

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Paul D. Carlson

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 14 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0		150		Brown silty fine SAND, trace Clay, roots, moist, soft.
	NA	2.0		170		Brown/tan silty fine SAND, trace Clay, moist, soft.
5	NA	2.0		160		Tan fine sandy SILT, trace Clay, moist, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012447

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G51

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 28 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/black fine-coarse SAND and silty Clay, trace shell and rock fragments, diesel odor (FILL).
	NA	2.0				Gray/brown silty CLAY and fine Sand, moist, diesel odor, slight evidence of fuel.
5	NA	2.0				Increase in CLAY, moist, slight odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012448

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G52

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 28 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown/gray fine-coarse SAND and clayey Silt, trace rock fragments, moist (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand, moist.
5	NA	2.0				Increase in CLAY.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012449

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G53

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Edward J. Kleinkauf

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 29 January 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0				Brown fine-coarse SAND, little silty Clay, trace shell and rock fragments (FILL).
	NA	2.0				Brown/gray silty CLAY and fine Sand (probable original ground).
5	NA	2.0				Brown/lt. brown silty CLAY and fine Sand.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012450

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G54

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 4 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.6				Dk. brown SILT little-some fine Sand, trace roots, moist.
	NA	1.7				
5	NA	2.0				Lt./Dk. gray silty SAND, moist-very moist, soft, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G56

012451

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.0				Brown SILT some Sand and Gravel, little roots, moist.
	NA	1.8				Brown sandy SILT, trace roots, moist, semi-stiff.
5	NA	1.7				Brown/lt. brown mottled SILT, trace Clay, trace fine Sand, trace medium Gravel, moist, stiff.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012452

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G57

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.0	X			Brown SILT darkening with depth, some fine-medium Gravel, stiff.
	NA	2.0	X			Dk. gray SILT, trace Clay, some Gravel, trace wood.
5	NA	1.4	X			Gray SILT, trace roots, moist, stiff, black staining, odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012453

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G58

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.2				Brown SILT and white SAND; some medium, coarse Gravel; stiff; moist.
	NA	1.4				Grey SILT with little sand; trace Gravel; moist.
5	NA	NA				Dark grey SILT with brown mottling; little fine Sand; moist; slight odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G59

012454

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.3				Dark brown SILT and SAND; some Gravel and Shells; moist.
	NA	0.5				Dark brown SILT; Little Gravel and Shells; slight odor; wet
5	NA	NA				Grey SILT, with brown mottling; little to some Sand; trace Clay; staining; odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G60

012455

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.0	X			Brown SILT and black TAR; hard.
	NA	1.3	X			Brown Sandy SILT; loose; heavy black staining; strong odor; moist.
5	NA	1.2	X			Brown Sandy SILT; brown mottling; odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G61

012456

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.2	X			Brown SILT and coarse GRAVEL; some oyster shells; stiff stringy tar; visible product; odor.
	NA	0.6	X			Brown SILT and coarse GRAVEL; some oyster shells.
5	NA	1.2	X			Grey SILT with little Clay; trace very fine sand; trace brown mottling; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012457

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G62

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown SILT and SAND; loose; moist.
	NA	NA				Brown-grey SILT; some Sand; odor; very moist.
5	NA	NA				Grey SILT; little Sand; brown-green mottling; black staining; odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012457

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G63

012458

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						GRAVEL and TAR.
	NA	1.6				Fine SAND; grey.
						Grey Sandy SILT; moist.
	NA	NA				Grey SILT; little to some Clay; trace fine Sand.
5	NA	1.7				Grey SILT; little fine Sand; trace Clay; brown mottles.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012459

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G64

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.5				Brown SILT; little very fine Sand; moist.
						GRAVEL and TAR; hard.
	NA	1.8				Grey SILT; little medium Sand; moist.
5	NA	1.8				Grey SILT; little medium Sand; trace coarse Gravel; little black staining; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012459

012460

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G65

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.0				Brown SILT and GRAVEL; sheen; stiff; moist.
	NA	2.0				Brown SILT; little fine Sand; black staining; sheen; moist.
						Coarse GRAVEL and PRODUCT; odor.
5	NA	1.9				Grey SILT; some fine Sand; black staining; sheen; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012460

012461

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G66

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 4.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.3				Brown SILT and GRAVEL; trace roots; moist.
	NA	0.7				Black GRAVEL and SAND; saturated Brown SILT and GRAVEL.
5						Bottom of Boring = 4.0 Feet. (Auger refusal)
10						
15						
20						

012461

012462

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G67

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.8				Brown fine SAND and GRAVEL; loose; moist.
						Dense GRAVEL with SHELLS and TAR.
	NA	1.5				Grey brown SILT; some fine Sand; odor; moist.
5	NA	1.7				Grey SILT; green brown mottles; some fine Sand; little black staining, odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012462

012463

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G68

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown SILT and GRAVEL.
	NA	1.4				GRAVEL and TAR; hard.
	NA	NA				Brown-black Sandy SILT; mottled; stained; odor; moist.
5	NA	NA				Grey Sandy SILT; light brown mottling; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

Page 1 of 1

012464

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G69

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown very fine SAND and SILT;black staining; odor.
	NA	2.0				Brown very fine Sandy SILT, grading to very fine SAND and SILT; slightly loose; staining; odor; moist.
5	NA	2.0				Grey SILT; some very fine Sand; brown mottling; black staining; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012465

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G70

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Grey SAND and SILT; soft; odor; moist.
	NA	1.5				Brown fine SAND; loose.
	NA	1.8				Grey Sandy SILT; staining; sheen; odor; moist.
5	NA	NA				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G71

012466

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown SILT and GRAVEL; little Wood fragments.
	NA	1.0				Grey SAND and GRAVEL; loose.
	NA	1.0				Grey SILT; little very fine Sand; sheen; odor; moist.
5	NA	2.0				Grey SILT; little very fine Sand; brown mottles.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012467

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G72

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 5 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						SAND, GRAVEL, and SHELLS; loose.
	NA	2.0				Brown SILT; trace Sand and Shells; moist.
						Dark grey SILT; some fine Sand; slight sheen; odor; moist.
	NA	2.0				Light grey SILT; some fine Sand.
						Grey SILT; some fine Sand; slight sheen, odor; moist.
5	NA	1.0				
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012467

012468

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G73

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						White-grey fine to medium SAND and GRAVEL.
	NA	1.1				Brown SILT and GRAVEL; moist
						Grey very fine to fine SAND; loose.
	NA	1.1				Brown-black SILT and SAND; little medium Gravel; black staining; odor.
5	NA	NA				Grey fine Sandy SILT; staining; odor; very moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012469

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G74

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Grey SILT, SAND, and GRAVEL; moist.
						Fill, black WOOD.
						Brown fine SAND; (lower .4 feet stained; odor)
	NA	1.8	X			Brown SILT and very fine SAND; black staining; odor; very moist.
5	NA	NA	X			Brown-grey SILT; some fine Sand; trace Clay; semi sticky; black staining; very moist to wet.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012470

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G75

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 8.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Grey SILT, SAND, and GRAVEL.
	NA	1.4				Grey SILT; some fine SAND; little medium Gravel
	NA	1.8				Brown-grey Silty SAND, grading to Sandy SILT; odor; moist.
5	NA	2.0				Grey Sandy SILT, with brown mottling; soft; staining; odor, very moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012470

012471

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G76

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Grey white SAND and GRAVEL.
	NA	1.0				Brown SILT and GRAVEL.
	NA	NA				Dark brown SILT; little staining; odor; moist.
5	NA	1.5				Grey SILT; some fine Sand; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012471

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G77

012472

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 6 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown SILT and GRAVEL.
	NA	0.7				Black TAR and GRAVEL; hard.
	NA	1.1				Grey SILT with green mottling; some fine Sand; moist.
5	NA	NA				Grey-dark grey SILT; some fine Sand; sheen; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G78

012473

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.5				Brown-grey SAND and SILT; little Roots; moist.
	NA	1.5				Brown-grey SAND and SILT, with trace brown mottling; little Roots; moist.
5	NA	NA				Grey-brown Sandy SILT, mottled; some black staining; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012474

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G79

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.5				Brown-light brown Sandy SILT, mottled; little Gravel; trace Roots; moist.
	NA	1.4				Black SILT and SAND; hard; odor.
						Fill, WOOD with product.
						Brown SILT and very fine SAND; stiff; odor.
5	NA	NA				Brown SILT; dry; odor.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012474

012475

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G80

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	1.0	X			Grey-brown SILT; trace very fine Sand; little roots; very soft; very moist.
	NA	NA	X			Brown Clayey SILT; some fine to medium Sand; product; black staining; odor; wood.
5	NA	0.4	X			Fill, Shredded WOOD fibers with product.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012475

012476

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G81

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 7 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						Brown-light brown SILT, mottled; little Sand; trace Clay; moist.
	NA	1.3				Brown medium SAND; loose; wet
	NA	1.0				SILT and SAND, with product; little Wood; odor.
5	NA	0.0				Fill, WIRE and WOOD debris with product.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012476

012477

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G82

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Brown SILT, with pink mottling; little fine to medium Gravel and Shells; little Roots; moist.
	NA	NA	X			Brown SILT; little Sand; trace Roots and Gravel; black staining; odor; moist.
5	NA	NA	X			Brown SILT and FIBER; little fine Sand; black product; odor; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012478

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G83

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA	X			Brown Sandy SILT; little Roots; trace Gravel; moist.
	NA	NA	X			Grey-brown SILT; trace Clay; trace Sand; trace Roots; moist.
5	NA	NA	X			Brown-grey SILT, mottled; little fine Sand; slightly stiff; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012478

012479

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G84

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	NA				Brown Sandy SILT; little Roots; moist.
	NA	NA				Brown SILT, with tan-orange mottling; trace-little Sand; semi stiff; moist.
5	NA	NA				Brown SILT, with tan-orange mottling; trace-little grey Sand; semi stiff; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012479

012480

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G85

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 9 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Gray very fine SAND and SILT, little dark mottling (?), moist, under top soil and shells.
	NA	2.0	X			Brown-gray sandy SILT, trace rust threads, moist.
5	NA	2.0	X			Brown-gray SILT, some very fine Sand, very moist-wet, very soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012481

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G86

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 9 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Brown/gray sandy SILT, moist, semi-loose, under top soil and shells.
	NA	2.0	X			Dk. brown-gray sandy SILT, trace roots, moist.
5	NA	2.0	X			Gray/yellow mottled SILT, some Sand, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012482

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G87

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 9 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Brown SILT, little/some fine Sand, trace/little organics (roots, wood, bark).
	NA	2.0	X			Brown sandy SILT, moist.
5	NA	2.0	X			Gray-brown SILT, very fine Sand and Clay, rust threads, very moist, soft.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G88

012483

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 9 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
	NA	2.0	X			Brown fine sandy SILT grading to silty fine Sand, trace/little roots and wood, black staining, moist.
	NA	2.0	X			Brown sandy SILT, trace roots, moist.
5	NA	2.0	X			Gray/yellow mottled sandy SILT, moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

PROJECT: SOUTH CAVALCADE
LOCATION: HOUSTON, TX
CLIENT: BEAZER EAST, INC.

BORING NUMBER: SC-G89

012484

DRILLING METHOD: Hollow-Stem Auger
DRILLER: Layne Environmental Services
GEOLOGIST: Scott Lodge

GROUND ELEVATION:
ELEVATION DATUM: Mean Sea Level
BORING DEPTH: 6.0 DEPTH DATUM: Feet
DATE DRILLED: 8 February 1992

DEPTH (feet)	BLOW COUNT (SPT)	RECOVERY	SAMPLES	HNU (ppm)	GRAPHIC LOG	DESCRIPTION
						SILT, SAND, GRAVEL, and SHELLS.
	NA	2.0				Grey SILT; little fine Sand; trace Roots; moist.
						Brown WOOD BARK (leaves).
	NA	2.0				Grey SILT; little fine Sand; moist.
5	NA	2.0				Grey SILT; trace Clay; trace Sand; semi sticky; moist.
						Bottom of Boring = 6.0 Feet.
10						
15						
20						

012485

APPENDIX C

ANALYTICAL DATA
TCLP

TABLE C
NORTHWESTERN AREA
RESULTS OF TCLP WITH ePAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G38-A	G38-B	G38-C	G39-A	G39-B	G39-C	G39-C DUP	G40-A
DATE RECEIVED	DETECTION	01/29/92	01/29/92	01/29/92	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920223	H920223	H920223	H920294	H920294	H920294	H920294	H920294
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.
(2) G55-C DUP is a blind duplicate of G40-C.

TABLE C (CONTINUED)
NORTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G40-B	G40-C	G41-A	G41-B	G41-C	G46-C	G54-A	G54-B
DATE RECEIVED	DETECTION	02/09/92	02/09/92	02/09/92	02/09/92	02/09/92	01/27/92	02/09/92	02/09/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920294	H920294	H920294	H920294	H920294	H9201273	H920294	H920294
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.
(2) G55-C DUP is a blind duplicate of G40-C.

TABLE C (CONTINUED)
NORTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G54-C	G55-C DUP(2)
DATE RECEIVED	DETECTION	02/09/92	02/09/92
UNITS	LIMIT	UG/L	UG/L
WORK ORDER	UG/L	H920294	H920294
PARAMETER			
BENZO(A)ANTHRACENE	10	10 U	10 U
CHRYSENE	10	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U
TOTAL		0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.
(2) G55-C DUP is a blind duplicate of G40-C.

TABLE D
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G1-A	G1-B	G1-C	G2-A	G2-B	G2-C	G3-A	G3-B
DATE RECEIVED	DETECTION	01/09/92	01/09/92	01/09/92	01/09/92	01/09/92	01/09/92	02/15/92	02/15/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920170	H920170	H920170	H920170	H920170	H920170	H9201178	H9201178
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

012489

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G3-C	G4-A	G4-B	G4-C	G5-A	G5-B	G5-C	G5-A (D)
DATE RECEIVED	DETECTION	02/15/92	02/15/92	02/15/92	02/15/92	02/15/92	02/15/92	02/15/92	02/15/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201178	H9201178	H9201178	H9201178	H9201178	H9201178	H9201178	H9201178
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G6-A	G6-B	G6-C	G7-A	G7-B	G7-C	G8-A
DATE RECEIVED	DETECTION	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/29/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201273	H9201273	H9201273	H9201275	H9201275	H9201275	H920223
PARAMETER								
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G8-B	G9-A	G9-B	G9-C	G10-A	G10-B	G10-C	G11-A
DATE RECEIVED	DETECTION	01/29/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/29/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920223	H920218	H920218	H920218	H920218	H920218	H920218	H920223
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G11-B	G11-C	G12-A	G12-B	G12-C	G13-A	G13-B
DATE RECEIVED	DETECTION	01/29/92	01/29/92	01/26/92	01/26/92	01/26/92	01/28/92	01/28/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920223	H920223	H920218	H920218	H920218	H920226	H920226
PARAMETER								
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G13-C	G14-A	G14-B	G14-C	G15-A	G15-B	G15-C	G16-A
DATE RECEIVED	DETECTION	01/28/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92	01/26/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920226	H920218	H920218	H920218	H920218	H920218	H920218	H920218
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G09-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G16-B	G16-C	G17-A	G17-B	G17-C	G18-A	G18-B	G18-C
DATE RECEIVED	DETECTION	01/26/92	01/26/92	02/10/92	02/10/92	02/10/92	01/27/92	01/27/92	01/27/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920218	H920218	H9202128	H9202128	H9202128	H9201275	H9201275	H9201275
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G09-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G19-A	G19-B	G19-C	G20-A	G20-B	G20-C	G21-A	G21-B
DATE RECEIVED	DETECTION	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201275	H9201275	H9201275	H9201275	H9201275	H9201275	H920228	H920228
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G21-C	G22-A	G22-C	G23-B	G23-C	G24-B	G24-C	G25-B
DATE RECEIVED	DETECTION	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92	01/27/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920228	H920228	H920228	H920228	H920228	H920228	H920228	H920228
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G09-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION DATE RECEIVED UNITS WORK ORDER	MINIMUM(1) DETECTION LIMIT UG/L	G25-C 01/27/92 UG/L H920228	G26-A 01/27/92 UG/L H920228	G26-B 01/27/92 UG/L H920228	G26-C 01/27/92 UG/L H920228	G27-A 01/29/92 UG/L H920223	G27-B 01/29/92 UG/L H920223	G27-C 01/29/92 UG/L H920223	G28-A 01/28/92 UG/L H920226
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G28-B	G28-C	G51-A	G51-B	G51-C	G52-A	G52-B	G52-C
DATE RECEIVED	DETECTION	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92	01/28/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920226	H920226	H920226	H920226	H920226	H920226	H920226	H920226
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G53-A	G53-B	G53-C	G56-A	G56-B	G56-C	G57-A	G57-B
DATE RECEIVED	DETECTION	01/29/92	01/29/92	01/29/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920223	H920223	H920223	H9202131	H9202131	H9202131	H9202131	H9202131
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

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TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G57-C	G58-A	G58-B	G58-C	G59-A	G59-B	G59-C	G60-A
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/10/92	02/10/92	02/10/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202131	H9202131	H9202131	H9202131	H9202128	H9202128	H9202128	H9202130
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G60-B	G60-C	G61-A	G61-B	G61-C	G62-A	G62-B	G62-C
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202130	H9202129	H9202131	H9202131	H9202131	H9202129	H9202129	H9202129
PARAMETER									
BENZO(A)ANTHRACENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G63-A	G63-B	G63-C	G64-A	G64-B	G64-C	G64-C DUP	G65-A
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202131	H9202131	H9202131	H9202134	H9202134	H9202134	H9202134	H9202130
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G65-B	G65-C	G66-A	G66-B	G67-A	G67-B	G67-C	G68-A
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202130	H9202130	H9202130	H9202130	H9202130	H9202130	H9202130	H9202129
PARAMETER									
BENZO(A)ANTHRACENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
CHRYSENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
BENZO(B)FLUORANTHENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
BENZO(K)FLUORANTHENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
BENZO(A)PYRENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
INDENO(1,2,3-CD)PYRENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
DIBENZO(A,H)ANTHRACENE	10	50 U	50 U	10 U	10 U	20 U	20 U	20 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G68-B	G68-C	G69-A	G69-B	G69-C	G70-A	G70-B	G70-C
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/10/92	02/10/92	02/10/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202129	H9202129	H9202128	H9202128	H9202128	H9202129	H9202129	H9202129
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G71-A	G71-B	G71-C	G72-A	G72-B	G72-C	G73-A
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202129	H9202129	H9202129	H9202129	H9202129	H9202129	H9202129
PARAMETER								
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE D (CONTINUED)
SOUTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSIS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G73-B	G73-C	G74-A	G74-B	G74-C	G75-A	G75-B	G75-C
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/10/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202129	H9202129	H9202128	H9202130	H9202130	H9202130	H9202130	H9202130
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

LOCATION	MINIMUM(1)	G76-A	G76-B	G76-C	G77-A	G77-B	G77-C
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202129	H9202131	H9202131	H9202131	H9202131	H9202131
PARAMETER							
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
(2) G89-C Dup is a blind duplicate of G75-C.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE E
NORTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G42-A	G42-B	G42-C	G43-A	G43-B	G43-C	G44-A	G44-B
DATE RECEIVED	DETECTION	02/15/92	02/15/92	02/15/92	01/27/92	01/27/92	01/27/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201178	H9201178	H9201178	H9201273	H9201273	H9201273	H9201150	H9201150
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.

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TABLE E (CONTINUED)
NORTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G44-C	G45-A	G45-B	G45-C	G46-A	G46-B	G46-C	G47-A
DATE RECEIVED	DETECTION	02/13/92	02/15/92	02/15/92	02/15/92	01/27/92	01/27/92	01/27/92	02/14/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201150	H9201178	H9201178	H9201178	H9201273	H9201273	H9201273	H9201174
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.

TABLE E (CONTINUED)
NORTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G47-B	G47-C	G48-A	G48-B	G48-C	G49-A	G49-B	G49-C
DATE RECEIVED	DETECTION	02/14/92	02/14/92	02/15/92	02/15/92	02/15/92	02/14/92	02/14/92	02/14/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201174	H9201174	H9201178	H9201178	H9201178	H9201174	H9201174	H9201174
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.

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TABLE E (CONTINUED)
NORTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G50-A	G50-B	G50-C	G85-A	G85-B	G85-C	G86-A	G86-B
DATE RECEIVED	DETECTION	02/14/92	02/14/92	02/14/92	02/11/92	02/11/92	02/11/92	02/10/92	02/10/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201174	H9201174	H9201174	H9202106	H9202106	H9202106	H9202106	H9202106
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.

TABLE E (CONTINUED)
NORTHEASTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G86-C	G87-A	G87-B	G87-C	G88-A	G88-B	G88-C
DATE RECEIVED	DETECTION	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92	02/10/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202106	H9202128	H9202128	H9202128	H9202128	H9202128	H9202128
PARAMETER								
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0

(1) Detection limit may vary if sample dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.

TABLE F
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G29-A	G29-A (D)	G29-B	G29-B (D)	G29-C	G29-C (D)	G30-A	G30-B
DATE RECEIVED	DETECTION	02/14/92	02/14/92	02/14/92	02/14/92	02/14/92	02/14/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201174	H9201174	H9201174	H9201174	H9201174	H9201174	H9201150	H9201150
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G30-C	G31-A	G31-B	G31-C	G32-A	G32-B	G32-C	G33-A
DATE RECEIVED	DETECTION	02/13/92	02/14/92	02/15/92	02/14/92	02/14/92	02/14/92	02/14/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201150	H9201174	H9201178	H9201174	H9201174	H9201174	H9201174	H9201150
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G33-A (D)	G33-B	G33-C	G33-C (D)	G34-A	G34-B	G34-C	G35-B
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/13/92	02/13/92	01/09/92	01/09/92	01/09/92	01/09/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9201150	H9201150	H9201150	H9201150	H920170	H920170	H920170	H920170
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G36-A	G36-B	G37-A	G37-B	G37-C	G78-A	G78-B	G78-C
DATE RECEIVED	DETECTION	01/09/92	01/09/92	01/09/92	01/09/92	01/09/92	02/13/92	02/13/92	02/13/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H920170	H920170	H920170	H920170	H920170	H9202130	H9202130	H9202130
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G79-A	G79-B	G79-C	G80-A	G80-B	G80-C	G81-A	G81-B
DATE RECEIVED	DETECTION	02/13/92	02/13/92	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202130	H9202130	H9202106	H9202106	H9202106	H9202106	H9202106	H9202106
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G81-C	G82-A	G82-B	G82-C	G83-A	G83-B	G83-C	G84-A
DATE RECEIVED	DETECTION	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92	02/11/92
UNITS	LIMIT	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
WORK ORDER	UG/L	H9202106	H9202106	H9202106	H9202106	H9202106	H9202106	H9202106	H9202106
PARAMETER									
BENZO(A)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL		0	0	0	0	0	0	0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

TABLE F (CONTINUED)
SOUTHWESTERN AREA
RESULTS OF TCLP WITH cPAH ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

LOCATION	MINIMUM(1)	G84-B	G84-C
DATE RECEIVED	DETECTION	02/11/92	02/11/92
UNITS	LIMIT	UG/L	UG/L
WORK ORDER	UG/L	H9202106	H9202106
PARAMETER			
BENZO(A)ANTHRACENE	10	10 U	10 U
CHRYSENE	10	10 U	10 U
BENZO(B)FLUORANTHENE	10	10 U	10 U
BENZO(K)FLUORANTHENE	10	10 U	10 U
BENZO(A)PYRENE	10	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10	10 U	10 U
TOTAL		0	0

(1) Detection limit may vary if dilution is necessary.
A - Sample was collected from the 0 to 2-foot interval.
B - Sample was collected from the 2 to 4-foot interval.
C - Sample was collected from the 4 to 6-foot interval.
U - Compound was analyzed for but not detected. The sample quantitation limit is corrected for dilutions and percent solids.
D or DUP - Known field duplicate sample - this was designated by field personnel.

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APPENDIX D

CALCULATION OF VOLUME

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South Caralcade Site

· Southeastern Area

Map Scale: 0.875 = 100

$0.766\ in^2 = 10{,}000\ ft^2$ $\quad 1\ in^2 = 13{,}055\ ft$

AREA 1 - 2 to 4 ft interval

$(0.16\ in^2)(13{,}055\ \frac{ft^2}{in^2})(2\ ft)(\frac{1\ cy}{27\ cf}) = 158\ cy$

AREA 2 - 0 to 2 ft interval

$(0.18\ in^2)(13{,}055\ \frac{ft^2}{in^2})(2\ ft)(\frac{1\ cy}{27\ cf}) = 177\ cy$

AREA 3 - 0 to 2 ft interval

$(0.53\ in^2)(13{,}055)(2)(\frac{1}{27}) = 512\ cy$

AREA 4 - 0 to 4 ft interval

$(0.23)(13{,}055)(4)(\frac{1}{27}) = 1{,}354\ cy$

AREA 5 - 2 to 4 ft interval

$(0.15)(13{,}055)(2)(\frac{1}{27}) = 145\ cy$

AREA 6 - 0 to 2 ft interval

$(0.23)(13{,}055)(2)(\frac{1}{27}) = 222\ cy$

AREA 7 - 0 to 2 ft interval

$(0.18)(13{,}055)(2)(\frac{1}{27}) = 177\ cy$

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AREA 8 0 to 2 ft interval

$(0.44)(13{,}055)(2)(\frac{1}{27}) = 425$ cy

AREA 9 0 to 4 ft interval

$(0.19)(13{,}055)(4)(\frac{1}{27}) = 374$ cy

AREA 10 2 to 4 ft interval

$(0.29)(13{,}055)(2)(\frac{1}{27}) = 284$ cy

Total Volume = 3828 cy

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- Southwestern Area

Area 1 – 0 to 2 feet interval

1.) $0.08\ in^2$
2.) $0.13\ in^2$
3.) $0.25\ in^2$

AVG = $0.08\ in^2$

$$\frac{0.08\ in^2}{x} = \frac{0.766\ in^2}{10\,000\ ft^2} = 1044\ ft^2$$

$$1044\ ft^2 \times 2ft = 2089\ ft^3$$

$$2089\ ft^3 \times \frac{1yd^3}{27ft^3} = 77.4\ yds^3$$

Area 2 – 0 to 6 feet

1.) $0.63\ in^2$
2.) $1.13\ in^2$
3.) $1.86\ in^2$

AVG = $0.62\ in^2$

$$\frac{0.62\ in^2}{x} = \frac{0.766\ in^2}{10\,000\ ft^2} = 8094\ ft^2$$

$$8094\ ft^2 \times 6ft = 48564\ ft^3$$

$$48564\ ft^3 \times \frac{1yd^3}{27ft^3} = 1799\ yds^3$$

Total Area = $1876\ yds^3$

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• Northern Area

0 to 2 ft interval

1.) $1.1\ in^2$

2.) $2.2\ in^2$

3.) $3.9\ in^2$

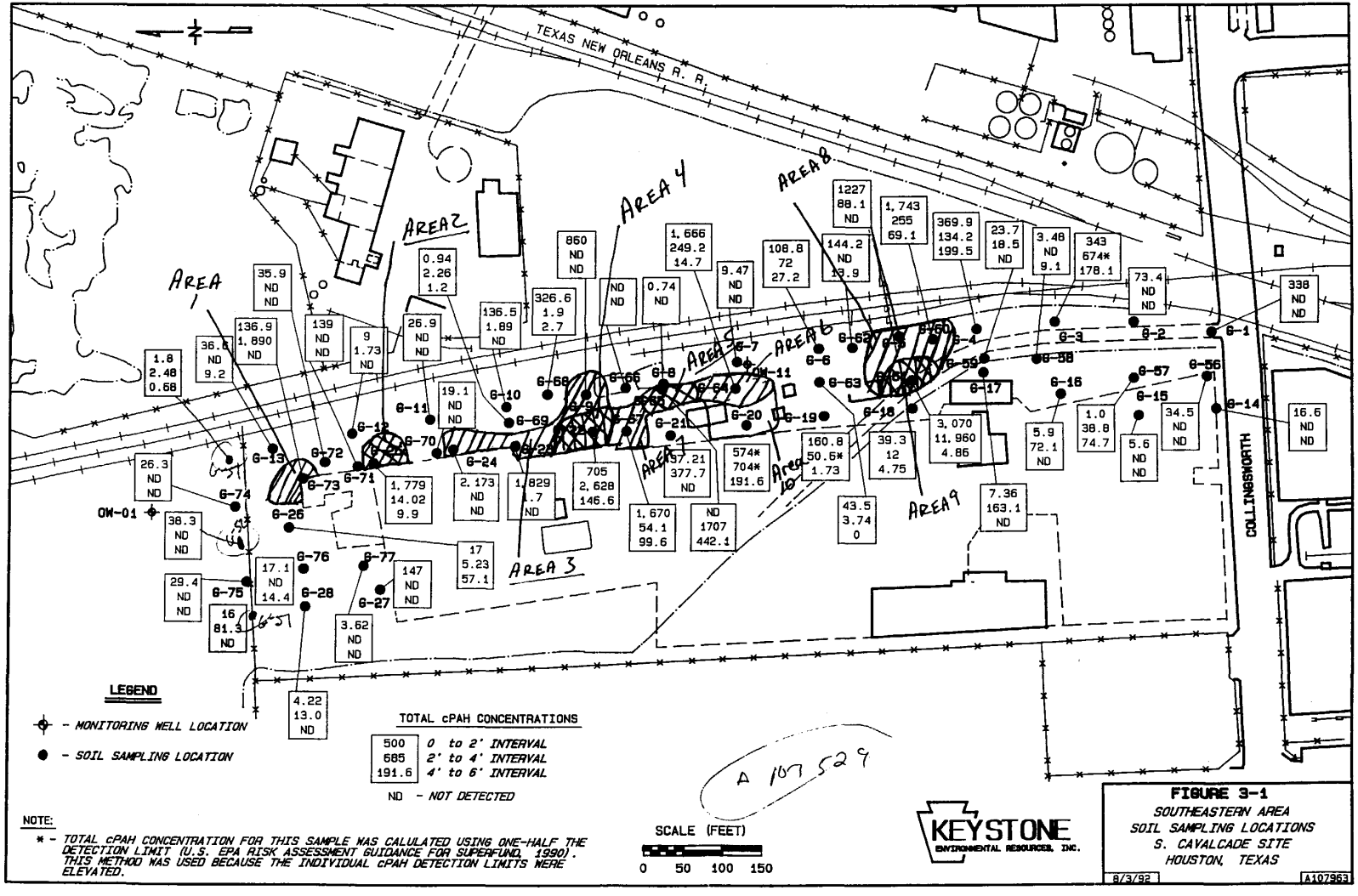
AVG = $1.3\ in^2$

$$\frac{1.3\ in^2}{x} = \frac{0.766\ in^2}{10\,000\ ft^2} = 16971\ ft^2$$

$$16971\ ft^2 \times 2ft = 33943\ ft^3$$

$$33943\ ft^3 \times \frac{1yd^3}{27ft^3} = 1257\ yds^3$$

Total Area = $1257\ yds^3$



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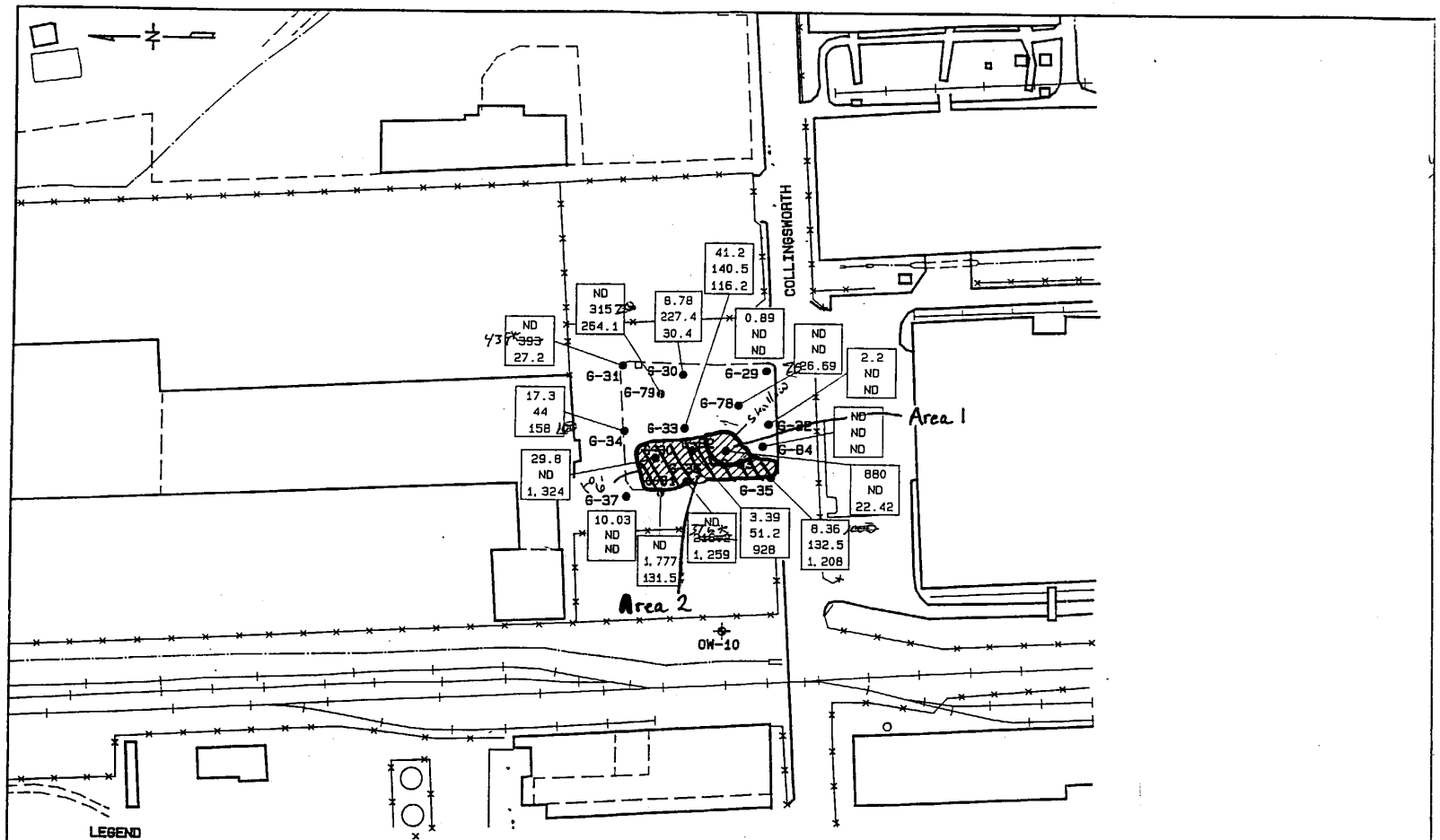

* Total cPAH concentration for this sample was calculated using one-half the detection limit - (U.S. EPA Risk Assessment Guidance for Superfund, 1990). This method was used because the individual cPAH detection limits were elevated

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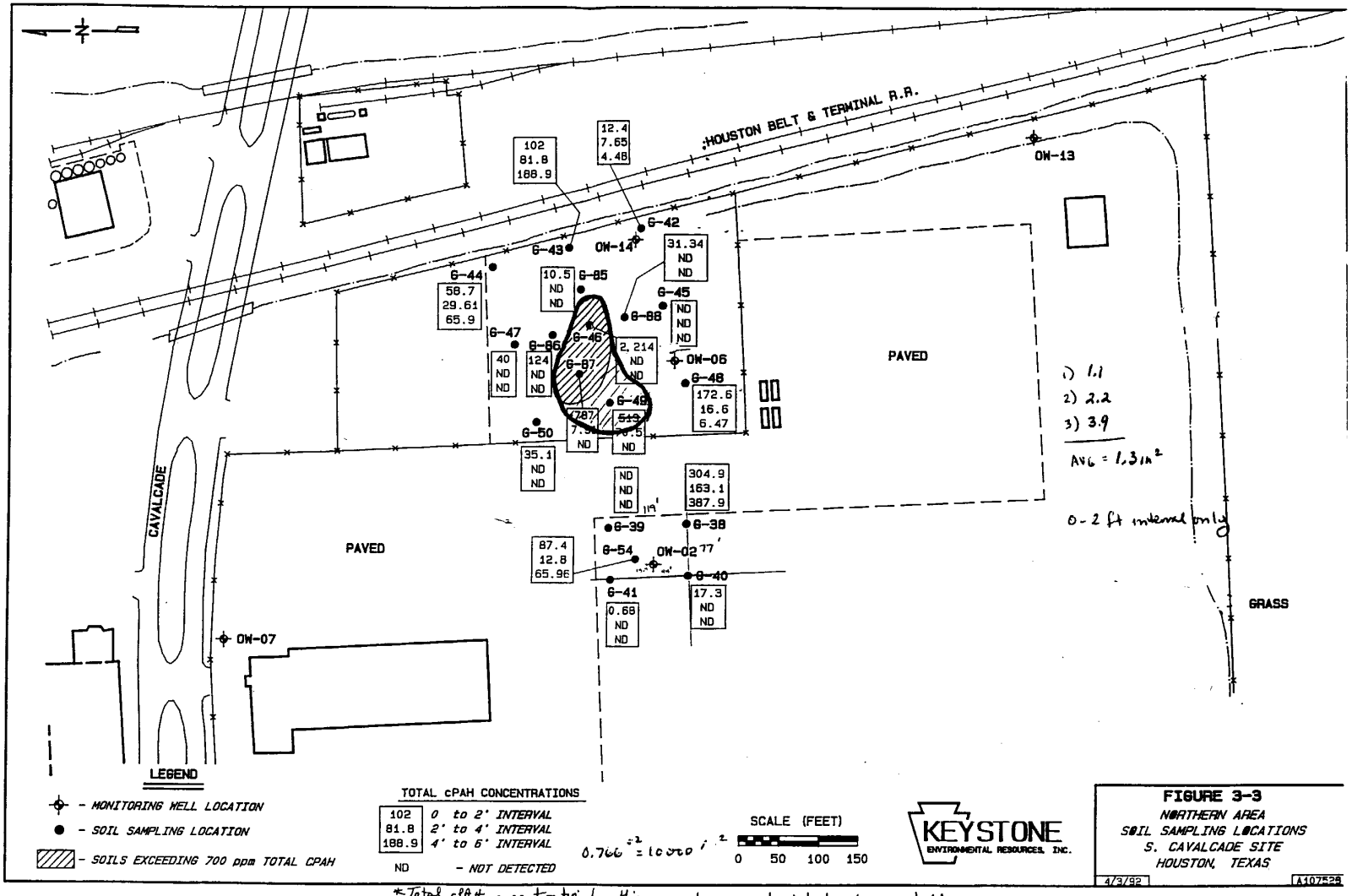

*Total cPAH concentration for this sample was calculated using one-half the detection limit (U.S. EPA Risk Assessment Guidance for Superfund, 1980). This method was used because [illegible]

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APPENDIX E

DATA QUALITY REPORT

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1.0 INTRODUCTION

1.1 Quality Assurance Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements specified to ensure that data of known and appropriate quality are obtained during remedial response activities to support decision making. Data generated during this portion of the remedial design (RD) were used for:

- Model verification,
- Delineation of soils requiring remediation, and
- Design of selected alternatives.

DQOs are defined as the minimum quality characteristics that dissociate usable data from unusable data, in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC).

2.0 DATA QUALITY LEVELS

There are five analytical levels of data quality as follows:

- Level I - field screening,
- Level II - field analysis,
- Level III - non-Contract Laboratory Program (non-CLP) Routine Analytical Services (RAS),
- Level IV - CLP RAS, and
- Level V - nonstandard methods.

Of the five levels available, the analytical data supporting this portion of the remedial design were analyzed by the Level III, as required by the approved Quality Assurance Project Plan (QAPP) (March 1992).

2.1 Non-CLP Laboratory Methods (Level III)

Level III analyses consisted of analyzing soil samples and corresponding TCLP extracts for potentially carcinogenic polynuclear aromatic hydrocarbons (cPAH), and analysis of pumping test well groundwater samples for benzene, toluene, ethylbenzene, xylene (BTEX), chemical oxygen demand (COD), hardness, oil and grease, total dissolved solids (TDS), potentially cPAH, total organic carbon (TOC) and a suite of metals (arsenic, chromium, copper, iron, manganese, lead and zinc). A summary of the analytical methods used follows:

Soil

cPAH	EPA 8270

TCLP Leachates

TCLP extract	EPA 1311
cPAH	EPA 8270

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012533.001

Test Well Groundwater

BTEX	EPA 8020	Arsenic	EPA 7060
Potentially cPAH	EPA 8270	Chromium	EPA 6010
COD	EPA 410.1	Copper	EPA 6010
Hardness	EPA 130.2	Iron	EPA 6010
Oil and Grease	EPA 413.1	Manganese	EPA 6010
TDS	EPA 160.1	Lead	EPA 7421
TOC	EPA 415.1	Zinc	EPA 6010

The TCLP leachate samples analyzed for potentially cPAH required CLP documentation. All other analyses performed during this portion of the RD followed methods equivalent to CLP, without CLP supporting documentation, as stated in the approved QAPP.

3.0 QUALITY CONTROL PARAMETER

Detection limits and data precision, accuracy, representativeness, completeness, and comparability are quality control parameters for evaluation of data. Each of these parameters is described below.

- **Detection limit** - The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

- **Precision** - A measure of the mutual agreement among individual measurements of the same property under prescribed similar conditions. Precision is determined based on the relative percent difference (RPD) of duplicates or duplicate spikes as appropriate. (See Section 9.0 in the QAPP for method calculation).

- **Accuracy** - The degree of agreement of a measurement with an accepted reference or true value. Accuracy is determined by calculating the percent recovery of spiked samples. Section 9.0 of the Quality Assurance Project Plan (QAPP) describes the method for calculation.

- **Representativeness** - The sampling program was designed to obtain an adequate number of samples representative of the South Cavalcade Site. A sufficient number of samples was obtained to insure that site conditions are adequately represented.

- **Completeness** - A measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under normal conditions. Completeness is based upon the number of valid samples analyzed during this investigation. A minimum completeness of 90% has been set for all level III parameters as required by the QAPP.

- **Comparability** - A qualitative parameter expressing the confidence with which one data set can be compared with another. Uniform sampling techniques and standard analytical methods are required to compare all data.

4.0 DATA VALIDATION

Prior to submitting analytical data packages, the internal quality assurance manager of the laboratory is responsible for reviewing all data for proper quality assurance checks.

Two types of Level III data packages were produced by the laboratory; non-CLP and CLP. The non-CLP data packages consisted of tabulated results, chain-of-custody, date extracted, date analyzed, matrix spike/matrix spike duplicate (MS/MSD) recoveries, field duplicates, blind duplicates, method blanks, field blanks and percent moisture, where applicable. The CLP data packages contained initial and continuing calibrations, instrument tuning data, and surrogates, in addition to all items submitted with non-CLP data package. All information was produced in accordance with the approved QAPP.

4.1 Validation Guidelines

This section describes the validation guidelines used by the Project Quality Assurance Supervisor (PQAS) for evaluation of samples collected at the South Cavalcade site.

The validation process assesses the quality of the analytical data, in relationship to both the field activities and laboratory procedures. Many factors must be considered when evaluating the data. The following factors were considered for analyses, where appropriate:

- Holding times,
- Sample storage,
- Method used for aliquoting,
- Method used for calibrating,
- Method used for tuning,
- Frequency of calibrating and tuning,
- Calibration acceptance criteria,
- Method used for determining the practical quantitation limits,

- Selection of surrogate compounds (if any),
- Acceptance criteria for the recoveries of surrogate compounds,
- Selection of matrix spiking compounds and their levels,
- Acceptance criteria for the RPD between the recoveries in MS and MSD analysis,
- Acceptance criteria for the RPD between duplicate analysis,
- Frequency of method blank and lab duplicates, and
- Frequency and type of performance evaluation sample analysis.

A detailed description of each of these factors and the requirements that must be met are presented below. The information contained in the parenthesis after the section name indicates the parameters that were evaluated using the specific factor.

4.1.1 Holding Times (All Parameters)

Holding times are measured from the time of collection to the time of analysis or sample preparation, where appropriate. Table E-1 summarizes the holding time requirements for each analysis performed during the delineation.

4.1.2 Sample Storage (All Parameters)

Improper storage or preservation may cause degradation of any parameter. To obtain accurate analytical results, all samples must be preserved properly and stored at 4° C prior to preparation and analysis. See the appropriate analytical method or QAPP for storage requirements. Preservative requirements are presented in Table E-1.

4.1.3 Methods Used for Aliquoting (All Parameters)

Accuracy and precision may be jeopardized when improper methods are used for aliquoting. Aliquoting incorrectly or using improper equipment during sample preparation and analysis, may erroneously inflate or reduce the sample concentration. See the standard operating procedure in either SW 846 or the QAPP for each analytical method to determine the requirements.

TABLE E-1

HOLDING TIMES AND PRESERVATIVES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Parameter	Matrix	Preservative	Holding Time
Potentially cPAH	Soil	Cool 4°C	Extraction within 14 days(1) Analysis within 40 days(2)
TCLP	Leachate	Cool 4°C	14 days
Potentially cPAH	TCLP	Cool 4°C	Extraction within 14 days Analysis within 7 days
BTEX	Water	HCL to pH <2 Cool 4°C	14 days
Arsenic	Water	HNO_3 to pH <2	6 months
Chromium	Water	HNO_3 to pH <2	6 months
Copper	Water	HNO_3 to pH <2	6 months
Lead	Water	HNO_3 to pH <2	6 months
Zinc	Water	HNO_3 to pH <2	6 months
Oil & Grease	Water	H_2SO_4 to pH <2	28 days
TOC	Water	H_2SO_4 to pH <2	28 days
COD	Water	H_2SO_4 to pH <2	28 days
BOD	Water	Cool 4°C	48 hours
TDS	Water	Cool 4°C	7 days
Phenols	Water	H_2SO_4 to pH <2	28 days
Hardness	Water	Cool 4°C	28 days
Iron	Water	HNO_3 to pH <2	6 months
Manganese	Water	HNO_3 to pH <2	6 months

Notes:

(1) Holding time starts from the day of collection.

(2) In general, soil potentially cPAH analysis was performed within 48 hours.

4.1.4 Methods Used for Calibration (Potentially cPAH from TCLP Extract)

Analysis of samples for potentially cPAH compounds is preceded by a five-point instrument calibration. The calibration procedure involves injection of five different concentrations of a standard which includes all potentially cPAHs. Instrument calibration is based on meeting specific chromatographic retention time and response factor criteria.

4.1.4.1 Frequency and Criteria Used for Calibration

The criterion used for calibration is the response factor (RF). This is a measure of the response exhibited by the chromatographic detection system. The response factors for each compound are calculated as follows:

$$RF = \frac{(A_x C_{is})}{(A_{is} C_x)}$$

where:

A_x = Area of the characteristic ion for the compound being measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_x = Concentration of the compound being measured (ng/uL).
C_{is} = Concentration of the specific internal standard (ng/uL).

The response factors obtained for each concentration range are then averaged and reported as RF. Certain compounds are used as system performance check compounds (SPCC). The RF values for these compounds must be greater than the minimum RF value of 0.05 for semi-volatiles. Semi-volatile SPCCs typically have very low RFs (0.1-0.2) and tend to decrease in response as the chromatographic system begins to deteriorate or the standard material begins to deteriorate. These compounds are usually the first to show poor performance.

Other compounds are used as calibration check compounds (CCC). The RF values for the five concentration ranges are used to calculate the relative deviation (RSD) for all CCC compounds. The RSD must be less than 30 percent for all CCC compounds. Relative standard deviation is calculated as:

$$RSD = \frac{\text{Std. Dev.}}{\text{Mean}} \times 100$$

where:

Std. Dev. = standard deviation for initial five response factors (per compound).
Mean = mean of initial five response factors (per compound).

The initial calibration is valid only after both the RSD for the CCC compounds and the minimum RF for SPCC have been met. Only after both of these criteria are met can sample analysis begin. Significant deviation from these criteria should be described and the results rejected.

4.1.4.2 Continuing Calibration Check

A midrange calibration standard must be analyzed every twelve hours to ensure that the instrument remains calibrated. The RF values for the SPCC compounds must be greater than the minimum RF value, 0.05 for semi-volatiles as stated in the CLP Statement of Work (SOW) 3/90. In addition, RF values for the CCC compounds must be within 25 percent of the average response factors determined in the initial five-point calibration. These criteria must be met, or corrective action such as recalibration must be taken.

4.1.5 Methods Used for Tuning and Performance Check (cPAH from TCLP Extract)

Decafluorotriphenyl phosphine (DFTPP) is used as the performance standard, to verify that the instrument is properly tuned prior to analysis.

4.1.5.1 Frequency and Criteria Used for Tuning

Every twelve hours the DFTPP standard must be analyzed. If the criteria specified in the analytical method are not met the instrument must be re-calibrated.

4.1.6 Practical Quantitation Limits (All Parameters)

A detection limit is described as the minimum level at which a positive detection of a compound can be reported; however, under this definition two types of detection limits can be specified. These are the contract required detection limits (CRDLs) for CLP analyses and practical quantitation limits (PQL) for non-CLP analyses. PQLs and CRDLs are based on wet weight; therefore, detection limits will be proportionally higher than the minimum limits stated in method descriptions, based on the percent moisture of each sample. In addition, PQLs and CRDLs are highly matrix and method of preparation dependent, as stated in SW 846. The CRDLs or PQLs are summarized in the CLP SOW 3/90 or under the appropriate SW 846 method. Tables 3-2 through 3-5 of the Soil Delineation Report summarize the detection limits for all parameters analyzed during this part of the remedial design.

4.1.7 Surrogates (cPAH from TCLP Extract, Soils, cPAHs and Test Well Volatile Samples)

All samples, including standards and blanks, are spiked with known concentrations of surrogate standards prior to sample preparation. Evaluation of the surrogate recoveries provide evidence of matrix interferences and high concentrations of analytes. Tables E-2 and E-3 summarize the QA control limits of the potentially cPAH surrogates as established by the CLP SOW 3/90.

4.1.7.1 Surrogate Criteria

Surrogate recoveries must be within the limits as specified by the SOW. If any two surrogates are outside the range of specification or if any surrogate has a recovery of less than 10 percent, then there should be a reanalysis. Upon reanalysis, if the recoveries remain outside the limits, the results are attributed to matrix effect.

TABLE E-2

SURROGATES OUTSIDE THE QC LIMITS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Client ID	WORK ORDER (Data Package)	S2 (FBP)	S3 (TPH)
SC G11-B	H92-02.23-008	132*	
SC G12-B	H92-02.18-011		24*
SC G12-C	H92-02.18-012		25*
SC G13-B	H92-02.26-003	34*	
SC G1-C	H92-01.70-016	117*	
SC G21-B	H92-02.28-008		30*
SC G33-A(D)	H92-01.150-008	157*	
SC G35-A	H92-01.70-005	DL	DL
SC G37-A	H92-01.70-009	118*	
SC G38-A	H92-02.23-013	30*	39*
SC G38-A RE (1)	H92-02.23-013	63	41
SC G40-A	H92-02-94.005		28*
SC G41-A	H92-02-94.008		27*
SC G43-A	H92-01.273-005		30*
SC G46-A	H92-01.273-008		26*
SC G46-A RE	H92-01.273-009		DL
SC G46-C	H92-01.273-010	120*	
SC G51-A	H92-02.26-005		31*
SC G53-C	H92-02.23-012	9*	9*
SC G53-C RE (1)	H92-02.23-012	80	66
SC G61-B	H92-01.131-019		32*
SC G66-A	H92-02.130-017	36*	
SC G67-A	H92-02.130-019	38*	
SC G73-B	H92-02.129-015	67	74
SC G73-B DL (2)	H92-02.129-015	DL	DL
SC G78-A	H92-02.130-009	42*	
SC G79-B	H92-02.130-013	40*	
SC G9-C	H92-02.18-006	41*	

SURROGATE NAME	QC LIMITS
S2(FBP) = 2-Fluorobiphenyl	43-116
S3(TPH) = Terphenyl-d14	33-141

NOTES:

(1) = Two surrogates were outside the QC limits, sample was reanalyzed. Reanalyses were with the QC limits. Acceptable recoveries are reported on this table.

(2) = Surrogate was outside QC limits, sample required a dilution. Surrogates were diluted out in reanalysis.

* = Indicates values are outside of QC limits.

DL = Indicates surrogates were diluted out.

Blank cell indicates the surrogate was with the required QC limits.

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TABLE E-3

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G10-A	H92-01.257-007	NS	NS
SC G10-B	H92-01.257-008	NS	NS
SC G10-C	H92-01.257-009	NS	NS
SC G11-A	H92-01.313-008	NS	NS
SC G11-B	H92-01.313-009	NS	NS
SC G11-C	H92-01.313-010	NS	NS
SC G11-C RIN	H92-01.313-011	NS	NS
SC G12-A	H92-01.257-010	NS	NS
SC G12-B	H92-01.257-011	NS	NS
SC G12-C	H92-01.257-012	NS	NS
SC G13-A	H92-01.297-002	NS	NS
SC G13-B	H92-01.297-003	NS	NS
SC G13-C	H92-01.297-004	NS	NS
SC G14-A	H92-01.257-020	NS	NS
SC G14-B	H92-01.257-021	NS	NS
SC G14-C	H92-01.257-022	NS	NS
SC G15-A	H92-01.257-016	NS	NS
SC G15-B	H92-01.257-017	NS	NS
SC G15-B(D)	H92-01.257-018	NS	NS
SC G15-C	H92-01.257-019	NS	NS
SC G16-A	H92-01.257-013	NS	NS
SC G16-B	H92-01.257-014	NS	NS
SC G16-C	H92-01.257-015	NS	NS
SC G17-B	H92-02.98-003	DL	DL
SC G18-A	H92-01.226-013	NS	NS
SC G18-B	H92-01.226-014	NS	NS
SC G18-C	H92-01.226-015	NS	NS
SC G18-C MS	H92-01.226-016	NS	NS
SC G18-C MSD	H92-01.226-017	NS	NS
SC G18-C(D)	H92-01.226-012	NS	NS
SC G19-A	H92-01.226-005	NS	NS
SC G19-B	H92-01.226-006	NS	NS
SC G19-C	H92-01.226-007	NS	NS
SC G1-A	H92-01.56-002	NS	NS
SC G1-B	H92-01.56-003	NS	NS

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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G1-C	H92-01.56-004	NS	NS
SC G20-A	H92-01.226-002	NS	NS
SC G20-B	H92-01.226-003	NS	NS
SC G20-C	H92-01.226-004	NS	NS
SC G21-A	H92-01.277-002	NS	NS
SC G21-A RIN	H92-01.277-016	NS	NS
SC G21-B	H92-01.277-003	NS	NS
SC G21-C	H92-01.277-004	NS	NS
SC G22-A	H92-01.277-005	NS	NS
SC G22-B	H92-01.277-006	NS	NS
SC G22-C	H92-01.277-007	NS	NS
SC G23-A	H92-01.277-008	NS	NS
SC G23-B	H92-01.277-009	NS	NS
SC G23-C	H92-01.277-010	NS	NS
SC G24-A	H92-01.277-011	NS	NS
SC G24-B	H92-01.277-012	NS	NS
SC G24-C	H92-01.277-013	NS	NS
SC G24-C MS	H92-01.277-014	NS	NS
SC G24-C MSD	H92-01.277-015	NS	NS
SC G25-A	H92-01.261-002	NS	NS
SC G25-B	H92-01.261-003	NS	NS
SC G25-C	H92-01.261-004	NS	NS
SC G26-A	H92-01.261-005	NS	NS
SC G26-B	H92-01.261-006	NS	NS
SC G26-B MS	H92-01.261-007	NS	NS
SC G26-B MSD	H92-01.261-008	NS	NS
SC G26-C	H92-01.261-009	NS	NS
SC G27-A	H92-01.313-002	NS	NS
SC G27-A RIN	H92-01.313-005	NS	NS
SC G27-B	H92-01.313-003	NS	NS
SC G27-C	H92-01.313-004	NS	NS
SC G28-A	H92-01.297-013	NS	NS
SC G28-B	H92-01.297-014	NS	NS
SC G28-C	H92-01.297-015	NS	NS
SC G29-A	H92-01.113-005	NS	NS

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TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G29-A(D)	H92-01.113-008	NS	NS
SC G29-B	H92-01.113-006	NS	NS
SC G29-B(D)	H92-01.113-009	NS	NS
SC G29-C	H92-01.113-007	NS	NS
SC G29-C(D)	H92-01.113-010	NS	NS
SC G2-A	H92-01.56-005	NS	NS
SC G2-B	H92-01.56-006	NS	NS
SC G2-C	H92-01.56-007	NS	NS
SC G30-A	H92-01.101-002	NS	NS
SC G30-B	H92-01.101-003	NS	NS
SC G30-C	H92-01.101-004	NS	NS
SC G31-A	H92-01.113-020	NS	NS
SC G31-B	H92-01.113-021	NS	NS
SC G31-B(re)	H92-01.113-021	NS	NS
SC G31-C	H92-01.113-022	NS	NS
SC G31-C MS	H92-01.113-023	NS	NS
SC G31-C MSD	H92-01.113-024	NS	NS
SC G32-A	H92-01.113-002	NS	NS
SC G32-B	H92-01.113-003	NS	NS
SC G32-C	H92-01.113-004	NS	NS
SC G33-A	H92-01.101-005	NS	NS
SC G33-A MS	H92-01.101-006	NS	NS
SC G33-A MSD	H92-01.101-007	NS	NS
SC G33-A(D)	H92-01.101-010	NS	NS
SC G33-B	H92-01.101-008	NS	NS
SC G33-C	H92-01.101-009	NS	NS
SC G33-C(D)	H92-01.101-012	NS	NS
SC G34-A	H92-01.47-002	NS	NS
SC G34-B	H92-01.47-003	NS	NS
SC G34-C	H92-01.47-004	NS	NS
SC G35-A	H92-01.47-005	NS	NS
SC G35-B	H92-01.47-006	NS	NS
SC G35-C(ML)	H92-01.47-007	NS	NS
SC G36-A MS/MSD	H92-01.47-008	NS	NS
SC G36-B	H92-01.47-015	NS	NS

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TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G36-C	H92-01.47-016	NS	NS
SC G36-C MS (ML)	H92-01.47-017	NS	NS
SC G36-C MSD (ML)	H92-01.47-018	NS	NS
SC G37-A	H92-01.47-011	NS	NS
SC G37-B	H92-01.47-012	NS	NS
SC G37-C	H92-01.47-013	NS	NS
SC G38-A	H92-01.313-015	NS	NS
SC G38-B	H92-01.313-016	NS	NS
SC G38-C	H92-01.313-017	NS	NS
SC G38-C MS	H92-01.313-018	NS	NS
SC G38-C MSD	H92-01.313-019	NS	NS
SC G39-A	H92-02.32-015	NS	NS
SC G39-B	H92-02.32-016	NS	NS
SC G39-C	H92-02.32-002	NS	NS
SC G39-C MS	H92-02.32-003	NS	NS
SC G39-C MSD	H92-02.32-004	NS	NS
SC G39-C DUP	H92-02.32-017	NS	NS
SC G3-A	H92-01.133-013	NS	NS
SC G3-B	H92-01.133-014	NS	NS
SC G3-C	H92-01.133-015	NS	NS
SC G40-A	H92-02.32-005	NS	NS
SC G40-B	H92-02.32-006	NS	NS
SC G40-C	H92-02.32-007	NS	NS
SC G41-A	H92-02.32-008	NS	NS
SC G41-B	H92-02.32-009	NS	NS
SC G41-C	H92-02.32-010	NS	NS
SC G42-A	H92-01.133-008	NS	NS
SC G42-B	H92-01.133-009	NS	NS
SC G42-C	H92-01.133-010	NS	NS
SC G42-C MS	H92-01.133-011	NS	NS
SC G42-C MSD	H92-01.133-012	NS	NS
SC G43-A	H92-01.208-005	NS	NS
SC G43-B	H92-01.208-006	NS	NS
SC G43-C	H92-01.208-007	NS	NS
SC G44-A	H92-01.101-013	NS	NS

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TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G44-B	H92-01.101-014	NS	NS
SC G44-C	H92-01.101-015	NS	NS
SC G45-A	H92-01.133-005	NS	NS
SC G45-B	H92-01.133-006	NS	NS
SC G45-C	H92-01.133-007	NS	NS
SC G46-A	H92-01.208-008	NS	NS
SC G46-B	H92-01.208-009	NS	NS
SC G46-C	H92-01.208-010	NS	NS
SC G46-C MS	H92-01.208-011	NS	NS
SC G46-C MSD	H92-01.208-012	NS	NS
SC G47-A	H92-01.113-011	NS	NS
SC G47-B	H92-01.113-012	NS	NS
SC G47-C	H92-01.113-013	NS	NS
SC G48-A	H92-01.133-002	NS	NS
SC G48-B	H92-01.133-003	NS	NS
SC G48-C	H92-01.133-004	NS	NS
SC G49-A	H92-01.113-017	NS	NS
SC G49-B	H92-01.113-018	NS	NS
SC G49-C	H92-01.113-019	NS	NS
SC G4-A	H92-01.133-016	NS	NS
SC G4-B	H92-01.133-017	NS	NS
SC G4-C	H92-01.133-018	NS	NS
SC G50-A	H92-01.113-014	NS	NS
SC G50-B	H92-01.113-015	NS	NS
SC G50-C	H92-01.113-016	NS	NS
SC G51-A	H92-01.297-005	NS	NS
SC G51-B	H92-01.297-006	NS	NS
SC G51-C	H92-01.297-007	NS	NS
SC G52-A	H92-01.297-008	NS	NS
SC G52-B	H92-01.297-009	NS	NS
SC G52-C MS/MSD	H92-01.297-010	NS	NS
SC G53-A	H92-01.313-012	NS	NS
SC G53-B	H92-01.313-013	NS	NS
SC G53-C	H92-01.313-014	NS	NS
SC G54-A	H92-02.32-011	NS	NS

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KEYSTONE ENVIRONMENTAL RESOURCES, INC

TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G54-B	H92-02.32-012	NS	NS
SC G54-C	H92-02.32-013	NS	NS
SC G55-C	H92-02.32-014	NS	NS
SC G55-C	H92-02.45-002	DL	DL
SC G57-B	H92-02.45-006	DL	DL
SC G57-C	H92-02.45-007	DL	DL
SC G58-A	H92-02.45-008	NS	NS
SC G59-A	H92-02.98-007	DL	DL
SC G5-A	H92-01.133-019	NS	NS
SC G5-A(D)	H92-01.133-022	NS	NS
SC G5-B	H92-01.133-020	NS	NS
SC G5-C	H92-01.133-021	NS	NS
SC G60-A	H92-02.82-010	DL	DL
SC G60-B	H92-02.82-011	DL	DL
SC G60-C	H92-02.82-012	DL	DL
SC G61-A	H92-02.45-011	DL	DL
SC G61-B	H92-02.45-012	DL	DL
SC G62-A	H92-02.82-013	DL	DL
SC G63-A	H92-02.45-014	DL	DL
SC G64-A	H92-02.45-017	DL	DL
SC G64-A MS	H92-02.45-017 MS	DL	DL
SC G64-A MSD	H92-02.45-017 MSD	DL	DL
SC G64-B	H92-02.45-020	DL	DL
SC G65-A	H92-02.82-002	DL	DL
SC G65-B	H92-02.82-003	DL	DL
SC G65-C	H92-02.82-004	DL	DL
SC G67-A	H92-02.82-007	DL	DL
SC G67-B	H92-02.82-008	DL	DL
SC G67-C	H92-02.82-009	DL	DL
SC G68-A	H92-02.82-028	DL	DL
SC G69-A	H92-02.98-010	DL	DL
SC G69-C	H92-02.98-012	DL	DL
SC G6-A	H92-01.208-002	NS	NS
SC G6-B	H92-01.208-003	NS	NS
SC G6-C	H92-01.208-004	NS	NS

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TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
SC G70-A	H92-02.82-031	DL	DL
SC G71-A	H92-02.82-019	DL	DL
SC G72-A	H92-02.82-022	DL	DL
SC G73-A	H92-02.82-025	DL	DL
SC G73-B	H92-02.82-026	DL	DL
SC G74-A	H92-02.98-013	DL	DL
SC G75-A RE	H92-02.98-016	DL	DL
SC G77-A	H92-02.82-041	DL	DL
SC G79-B	H92-02.98-023	DL	DL
SC G79-C RE	H92-02.100-002	DL	DL
SC G79-C MS	H92-02.100-002 MS	DL	DL
SC G79-C MSD	H92-02.100-002 MSD	DL	DL
SC G7-A	H92-01.226-008	NS	NS
SC G7-B	H92-01.226-009	NS	NS
SC G7-C	H92-01.226-010	NS	NS
SC G80-C	H92-02.100-007	DL	DL
SC G81-B	H92-02.100-009	DL	DL
SC G81-C	H92-02.100-010	DL	DL
SC G82-B	H92-02.100-012	10*	10*
SC G82-B RE	H92-02.100-012	DL	DL
SC G82-C	H92-02.100-013	DL	DL
SC G83-C	H92-02.100-016	DL	DL
SC G86-A	H92-02.100-024	DL	DL
SC G86-B	H92-02.100-025		11*
SC G86-C	H92-02.100-026		12*
SC G87-A	H92-02.100-029	DL	DL
SC G8-A	H92-01.313-006	NS	NS
SC G8-B	H92-01.313-007	NS	NS
SC G9-A	H92-01.257-002	NS	NS
SC G9-A MS	H92-01.257-003	NS	NS
SC G9-A MSD	H92-01.257-004	NS	NS
SC G9-B	H92-01.257-005	NS	NS
SC G9-C	H92-01.257-006	NS	NS
LCSW-01 188-190'	H92-02.174-002	1*	2*
LCSW-01 208-212'	H92-02.174-003	1*	2*

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TABLE E-3 (Continued)

SUMMARY OF SURROGATES OUTSIDE QC LIMITS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Sample No.	WORK ORDER (Data package)	S2 FBP	S3 TPH
LCSW-01 208-212' MS	H92-02.174-003 MS	8*	13*
LCSW-01 208-212' MSD	H92-02.174-003 MSD	6*	8*
RINSATE BLANK	H92-01.226-018	NS	NS
RINSATE BLANK	H92-01.133-023	NS	NS
RINSATE BLANK	H92-01.257-023	NS	NS
RINSATE BLANK	H92-01.113-025	NS	NS

SURROGATE NAME	QC LIMITS
S2(FBP) = 2-FLUROBIPHENYL	30-115
S3(TPH) = TERPHENYL-d14	18-137

NOTES

* = Indicates value is outside the QC limits.
NS = Indicates surrogate recovery not submitted with data package (not required in QAPP).
DL = Indicates surrogate were diluted out.

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KEYSTONE ENVIRONMENTAL RESOURCES, INC

4.1.8 Matrix Spike/Matrix Spike Duplicate (All Parameters, Where Applicable)

Matrix spikes and matrix spike duplicates (MS/MSD) are performed to determine accuracy and precision. The compounds used as matrix spikes must provide recoveries that are within the QA limits (see Tables E-4 and E-5). The matrix spike percent recovery is calculated as follows:

$$\text{MS percent recovery} = \frac{SSR-SR}{SA} \times 100$$

where:

SSR = Spike Sample Result
SR = Sample Result
SA = Spike Added from Spiking Solution

Additionally, the concentration obtained for each of the duplicates must agree within the required relative percent difference (RPD) limits. The relative percent difference is calculated as:

$$RPD = \frac{D1-D2}{1/2\,(D1-D2)} \times 100$$

where:

D1 = first sample
D2 = second sample

Percent recovery results pertain only to the individual sample and may result in approximating or rejecting the sample. Relative percent difference results for duplicate matrix spikes can result in approximating or rejecting entire fractions. The decision for approximating or rejecting is made on a case-by-case basis depending on how well the duplicates agree. This also holds for blind field duplicates. Note that duplicate soil samples may not agree due to sampling

TABLE E-4

SUMMARY OF MS/MSD QC DATA
POTENTIALLY cPAH (SOIL)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

012553

Client ID	WORK ORDER (Data Package)	Acenaphthene MS	Acenaphthene MSD	Acenaphthene % RPD	Pyrene MS	Pyrene MSD	Pyrene % RPD
		% R	% R		% R	% R	
SC G17-A	H92-02.98-003	35	41	14	126	143 *	13
SC G18-C	H92-01.226-016	70	80	6	346 *	281 *	21
SC G24-C	H92-01.277-014	55	75	31 *	60	80	29
SC G26-B	H92-01.261-007	NA	NA *	NA	NA *	NA	36
SC G31-C	H92-01.113-023	NC *	NC *	NC *	NC *	NC *	NC *
SC G36-A	H91-01.47-017	NC *	NC *	NC *	397 *	317 *	22
SC G38-C	H92-01.313-018	DL	DL	DL	DL	DL	DL
SC G39-C	H92-02.32-003	68	79	14	79	89	13
SC G42-C	H92-01.133-011	110	130	17	180	140	55 *
SC G46-C	H92-01.208-011	87	82	6	113	113	0
SC G47-A	H92-01.226-016	75	80	6	346 *	281 *	21
SC G52-C	H92-01.297-011	70	60	15	80	70	13
SC G62-C	H92-02.82-016	NC *	NC *	NC *	NC *	NC *	NC *
SC G64-C	H92-02.45-018	DL	DL	DL	DL	DL	DL
SC G77-C	H92-02.82-044	100	85	16	82	102	22
SC G86-C	H92-02.100-027	75	80	6	70	70	0
LCSW-01 152-154'	H92-02.111-005	80	65	21 *	95	80	17
LCSW-01 208-212'	H92-02.174-004	0 *	0 *	NC *	0 *	0 *	NC *
SC G33-A	H92-01.101-006	DL	DL	DL	DL	DL	DL
Blank Spike (1)	H92-01.101-006	88	NA	NA	82	NA	NA
SC G9-A	H92-01.257-003	DL	DL	DL	DL	DL	DL
Blank Spike (1)	H92-01.257-003	79	NA	NA	79	NA	NA
Blank Spike (2)	H92-02.100	67	NA	NA	67	NA	NA
Blank Spike (2)	H92-02.100	67	NA	NA	73	NA	NA

SPIKE ADDED	MS %R	QC LIMITS (soil) MSD %R	RDP	QC LIMITS (blank spike) MS %R
Acenaphthene	31-137	31-137	19	31-137
Pyrene	28-89	28-89	36	35-142

NOTES

(1)= A MS/MSD was analyzed; however, it was diluted out. The laboratory also performed a blank spike to show that the extraction process was performed adequately.
(2)= A blank spike was analyzed with the data package.
* = Indicates the values were outside the QC limits.
NA = An MSD was not performed. No RPD could be calculated.
NC = The percent recovery could not be calculated.
DL = The MS/MSD were diluted out.

KEYSTONE ENVIRONMENTAL RESOURCES, INC

BB/DCCR0310 8/92

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TABLE E-5

SUMMARY OF MS/MSD QC DATA
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Client ID	WORK ORDER (Data Package)	Acenaphthene MS % R	Acenaphthene MSD % R	Acenaphthene % RPD	Pyrene MS % R	Pyrene MSD % R	Pyrene % RPD
SC G9-A	H92-02.18-002	92	79	15	65	57	13
SC G18-C	H92-01.275-014	89	92	3	91	93	2
SC G24-C	H92-02.28-015	110	114	4	88	86	2
SC G31-C	H92-01.174-023	(1)	(1)	(1)	(1)	(1)	(1)
SC G37-C	H92-01.70-011	286 *	148 *	64 *	119	124	4
SC G38-C	H92-02.23-015	680 *	724 *	6	120	124	3
SC G39-C	H92-02.94-002	47	50	6	57	60	5
SC G42-C	H92-01.178-021	84	85	1	129 *	115	11
SC G44-C	H92-01.150-013	(1)	(1)	(1)	(1)	(1)	(1)
SC G46-C	H92-01.273-010	86	94	9	78	87	11
SC G52-C	H92-02.26-010	92	92	0	70	72	3
SC G62-C	H92-02.129-005	296 *	280 *	6	170 *	146 *	15
SC G64-A	H92-02.134-002	792 *	860 *	8	156 *	152*	3
SC G74-B	H92-02.130-002	84	75	11	90	77	16
SC G77-C	H92-02.131-006	70	79	12	73	27	31
SC G79-C	H92-02.106-002	1336 *	1096 *	20	103	97	6
SC G86-C	H92-02.128-005	77	72	7	73	82	12

SPIKE ADDED	QC LIMITS MS %R	MSD %R	RDP
Acenaphthene	46-118	46-118	31
Pyrene	26-127	26-127	31

NOTES

(1) = A MS/MSD was analyzed in the data package. However, no PAH compounds were used in the spiking solution. The laboratory inadvertenly used the 8270 list of compounds.

* = Indicates the values were outside the QC limits.

procedures and/or the heterogeneous nature of the sample. Tables E-4 and E-5 summarizes QA limits for spike recoveries and RPDs.

4.1.8.1 Frequency of Matrix Spike/Matrix Spike Duplicates

A MS/MSD must be prepared and analyzed once per data package or once for every twenty samples analyzed, whichever is more frequent.

4.1.9 Field Duplicates (All Parameters)

Field duplicate samples are collected and analyzed to measure the precision of the sampling and the analysis. Field duplicates are a useful tool in assessing factors of variance in sampling and analysis by evaluation of the comparability of analytical results for duplicate samples. Sample homogeneity, sample matrix, chemical interference, equipment decontamination, standardization of sampling procedures for field related problems and handling, holding times, extraction (if required), and standardization of analytical method procedures for laboratory related problems are the factors to consider when RPD fall outside the control limits.

4.1.9.1 Field Duplicate Criteria

One field duplicate is required for every twenty samples collected. The RPD control limit used during the validation for soil and aqueous samples is 35% and 20%, respectively.

4.1.10 Blank Contamination (All Parameters)

Blanks (i.e., field blank, method blank or laboratory blank) are a measure of contamination introduced not only in the field but from the laboratory. Compounds detected in a blank should be evaluated for their relative concentrations when found in samples.

4.1.10.1 Blank Criteria

A field blank is required for every 20 samples collected or once per day, which ever is more frequent. A method blank is required for each data package or for every 20 samples, whichever is more frequent. If the compound found in any blank is detected in a sample at or less than five times those in the blank, the value should be qualified.

5.0 EVALUATION OF DATA

The purpose of this evaluation was to identify items not meeting the QC requirements described in the QAPP.

To facilitate the PQAS task of data evaluation, a QA/QC worksheet was developed. The table summarizes all samples analyzed, the data package ID (i.e., work order), date of collection, extraction date, analysis date, samples having a MS/MSD or surrogate outside the QC limits, sample selected as MS/MSD within a data package, and verification of proper frequency for method blanks, lab blanks and MS/MSD per data package. Table E-6 presents a copy of worksheets prepared during the validation process.

QA/QC data were not submitted for metals data or conventional analyses. This information was not required by the QAPP.

5.1 Holding Times

All analyses were within the holding time criteria set by the QAPP, except for TCLP sample SC-G74-A. The TCLP leachate for this sample was inadvertently broken during the SW 8270 extraction procedure. A second TCLP leachate was prepared; however, it was two days beyond the holding time. Based on sample concentration and in relationship to other potentially cPAH TCLP samples, the data obtained for TCLP sample SC-G74-A should be considered reliable.

To ensure that all holding times were met for TCLP analyses, the TCLP extractions (Method 1311) and the potentially cPAH leachate extraction (Method 3500) were performed in the Chester LabNet Monroeville facility. This laboratory change was discussed with and approved by the EPA during a telephone conversation between Keystone and EPA on February 13, 1992. Table E-7 summarizes all samples sent to the Monroeville laboratory for extraction.

TABLE E-6

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD	
HYDRANT WATER	H92-01.47-014	2/17/92	2-20-92	3-15-92				X	X	X	208-212	
SC G10-A	H92-01.257-007	1-25-92	1-26-92	1-27-92				X	X	X	G-9A	
SC G10-A(D)												
SC G10-B	H92-01.257-008	1-25-92	1-26-92	1-27-92				X	X	X	G-9A	
SC G10-C	H92-01.257-009	1-25-92	1-26-92	1-27-92				X	X	X	↓	
SC G11-A	H92-01.313-008	1-21-92	1-30-92	1-30-92				X	X	X	G-38C	
SC G11-B	H92-01.313-009	↓	↓	↓				X	X	X	↓	
SC G11-C	H92-01.313-010							X	X	X		
SC G11-C RIN	H92-01.313-011							X	X	X		
SC G12-A	H92-01.257-010	1-25-92	1-26-92	1-27-92				X	X	X	G-9A	
SC G12-B	H92-01.257-011	1-25-92	1-26-92	1-27-92				X	X	X	↓	
SC G12-C	H92-01.257-012	1-25-92	1-26-92	1-27-92				X	X	X	↓	
SC G13-A	H92-01.297-002	1-27-92	1-29-92	1-29-92				X	X	X	G-52	
SC G13-B	H92-01.297-003	1-28-92	1-29-92	1-30-92				X	X	X	↓	
SC G13-C	H92-01.297-004	1-27-92	1-29-92	1-29-92				X	X	X	↓	
SC G14-A	H92-01.257-020	1-25-92	1-26-92	1-27-92				X	X	X	G-9A	
SC G14-B	H92-01.257-021	↓	↓	1-27-92				X	X	X	↓	
SC G14-C	H92-01.257-022			1-27-92				X	X	X		
SC G15-A	H92-01.257-016		1-26-92	1-28-92				X	X	X		
SC G15-B	H92-01.257-017		↓	1-27-92				X	X	X		
SC G15-B(D)	H92-01.257-018			1-28-92				X	X	X		
SC G15-C	H92-01.257-019			1-27-92				X	X	X		
SC G16-A	H92-01.257-013	1-25-92	1-26-92	1-27-92				X	X	X		
SC G16-B	H92-01.257-014	1-25-92	1-26-92	1-27-92				X	X	X	↓	
SC G16-C	H92-01.257-015	1-25-92	1-26-92	1-27-92				X	X	X	↓	
SC G17-A	H92-02.98-002	2-8-92	2-14-92	3-8-92				X	X	X	G17A	
SC G17-B	H92-02.98-003	↓	2-14-92	3-7-92			DL	X	X	X	↓	
SC G17-C	H92-02.98-004	↓	2-14-92	3-7-92	JJ	JJ		X	X	X	↓	FULL CLP
SC G18-A	H92-01.226-013	1-22-92	1-24-92	1-24-92				X	X	X	G-18C	
SC G18-B	H92-01.226-014	↓	1-24-92	1-24-92				X	X	X	↓	
SC G18-C	H92-01.226-016	↓	1-24-92	1-24-92	DD	DD		X	X	X	↓	

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G18-C(D)	H92-01.226-012	1-22-92	1-24-92	1-24-92				X	X	X	G-18C
SC G19-A	H92-01.226-005	1-22-92	1-24-92	1-24-92				X	X	X	
SC G19-B	H92-01.226-006	1-22-92	1-24-92	1-25-92				X	X	X	
SC G19-C	H92-01.226-007	1-22-92	1-24-92	1-24-92				X	X	X	
SC G1-A	H92-01.56-002	1/7/92	1/8/92	1/8/92				X	X	X	G 36C
SC G1-B	H92-01.56-003	1/7/92	1/8/92	1/8/92				X	X	X	
SC G1-C	H92-01.56-004	1/7/92	1/8/92	1/8/92				X	X	X	
SC G20-A	H92-01.226-002	1-22-92	1-24-92	1-24-92				X	X	X	G-18C
SC G20-A(D)											
SC G20-B	H92-01.226-003	1-22-92	1-24-92	1-24-92				X	X	X	G-18C
SC G20-C	H92-01.226-004	1-22-92	1-24-92	1-24-92				X	X	X	G-18C
SC G21-A	H92-01.277-002	1-27-92	1-28-92	1-28-92				X	X	X	G-24C
SC G21-A RIN	H92-01.277-016		1-28-92	1-28-92				X	X	X	
SC G21-B	H92-01.277-003		1-28-92	1-29-92				X	X	X	
SC G21-C	H92-01.277-004		1-28-92	1-28-92				X	X	X	
SC G22-A	H92-01.277-005		1-28-92	1-29-92				X	X	X	
SC G22-B	H92-01.277-006							X	X	X	
SC G22-C	H92-01.277-007							X	X	X	
SC G23-A	H92-01.277-008							X	X	X	
SC G23-B	H92-01.277-009							X	X	X	
SC G23-C	H92-01.277-010							X	X	X	
SC G24-A	H92-01.277-011							X	X	X	
SC G24-B	H92-01.277-012							X	X	X	
SC G24-C	H92-01.277-013				FF	FF		X	X	X	G-24C
SC G25-A	H92-01.261-002	1-25-92	1-26-92	1-28-92				X	X	X	
SC G25-B	H92-01.261-003							X	X	X	G 26B
SC G25-C	H92-01.261-004							X	X	X	
SC G26-A	H92-01.261-005							X	X	X	
SC G26-B	H92-01.261-006				EE	EE		X	X	X	
SC G26-C	H92-01.261-009							X	X	X	
SC G27-A	H92-01.313-002	1-27-92	1-30-92	1-31-92				X	X	[illegible]	
SC G27-A RIN	H92-01.313-005		1-30-92	1-30-92				X	X	[illegible]	

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G35-B	H92-01.47-006	1/7/92	1/7/92	1/9/92			N/A	X	X	X	G36A
SC G35-C(ML)	H92-01.47-007	↓	1/8/92	1/8/92				X	X	X	G36C
SC G36-A	H92-01.47-008	1/7/92	1/7/92	1/8/92	AA	AA		X	X	X	G36A
SC G36-B	H92-01.47-015	1/7/92	1/7/92	1/8/92				X	X	X	G36A
SC G36-C	H92-01.47-016	1/7/92	1/8/92	1/8/92	AA	AA		X	X	X	G36C
SC G37-A	H92-01.47-011	1/7/92	1/7/92	1/8/92				X	X	X	G36C
* SC G37-B	H92-01.47-012	1-7-92	1-7-92	1-8-92				X	X	X	
* SC G37-C	H92-01.47-013	1-7-92	1-7-92	1-8-92				X	X	X	
SC G38-A	H92-01.313-015	1-29-92	1-30-92	1-30-92				X	X	X	G-38C
SC G38-B	H92-01.313-016		1-30-92	1-30-92				X	X	X	
SC G38-C	H92-01.313-017		1-30-92	1-31-92	MS/MSD not given	NO		X	X	X	
SC G39-A	H92-02.32-015	2-4-92	2-5-92	2-6-92				X	X	X	G-39C
SC G39-B	H92-02.32-016		2-5-92	2-5-92				X	X	X	
SC G39-C	H92-02.32-002		2-5-92	2-5-92				X	X	X	
SC G39-C DUP	H92-02.32-017							X	X	X	
SC G3-A	H92-01.133-013	1-15-92	1-16-92	1-17-92				X	X	X	G42C
SC G3-B	H92-01.133-014		1-16-92	1-16-92				X	X	X	
SC G3-C	H92-01.133-015		1-16-92	1-17-92				X	X	X	
SC G40-A	H92-02.32-005	2-4-92	2-5-92	2-5-92				X	X	X	G-39C
SC G40-B	H92-02.32-006		2-5-92	2-5-92				X	X	X	
SC G40-C	H92-02.32-007		2-5-92	2-6-92				X	X	X	
SC G41-A	H92-02.32-008		2-5-92	2-5-92				X	X	X	
SC G41-B	H92-02.32-009		2-5-92	2-5-92				X	X	X	
SC G41-C	H92-02.32-010		2-5-92	2-5-92				X	X	X	
SC G42-A	H92-01.133-008	1-15-92	1-16-92	1-16-92				X	X	X	G42C
SC G42-B	H92-01.133-009		1-16-92	1-16-92				X	X	X	
SC G42-C	H92-01.133-010		1-16-92	1-17-92	CC	CC	NR	X	X	X	
SC G43-A	H92-01.208-005	1-22-92	1-22-92	1-23-92				X	X	X	G46-C
SC G43-B	H92-01.208-006		1-22-92	1-23-92				X	X	X	
SC G43-C	H92-01.208-007		1-22-92	1-23-92				X	X	X	
SC G44-A	H92-01.101-013	1/13/92	1/14/92	1/14/92				X	X	X	G33A
SC G44-B	H92-01.101-014	1/13/92	↓	↓				X	X	X	G33A

* Form I "X" out ?

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G44-C	H92-01.101-015	1/13/92	1/14/92	1/14/92	NR	NR	NR	X	X	X	G33A
SC G45-A	H92-01.133-005	1-15-92	1-16-92	1-16-92				X	X	X	G-42C
SC G45-B	H92-01.133-006	↓	1-16-92	1-16-92				X	X	X	↓
SC G45-C	H92-01.133-007	↓	1-16-92	1-16-92				X	X	X	↓
SC G46-A	H92-01.208-008	1-22-92	1-22-92	1-23-92				X	X	X	G46C
SC G46-B	H92-01.208-009	↓	↓	↓				X	X	X	↓
SC G46-C	H92-01.208-010	↓	↓	↓				X	X	X	↓
SC G47-A	H92-01.113-011	1/14/92	1/15/92	1/16/92				X	X	X	G-31C
SC G47-B	H92-01.113-012	↓	1/15/92	1/15/92				X	X	X	↓
SC G47-C	H92-01.113-013	↓	1/15/92	1/16/92				X	X	X	↓
SC G48-A	H92-01.133-002	1-15-92	1-16-92	1-16-92				X	X	X	G-42C
SC G48-B	H92-01.133-003	↓	1-16-92	1-16-92				X	X	X	↓
SC G48-C	H92-01.133-004	↓	1-16-92	1-16-92				X	X	X	↓
SC G49-A	H92-01.113-016	1/14/92	1/15/92	1/15/92				X	X	X	G-31C
SC G49-B	H92-01.113-017	↓	↓	↓				X	X	X	↓
SC G49-C	H92-01.113-018	↓	↓	↓				X	X	X	↓
SC G4-A	H92-01.133-016	1-15-92	1-16-92	1-17-92				X	X	X	G-42C
SC G4-B	H92-01.133-017	↓	1-16-92	1-17-92				X	X	X	↓
SC G4-C	H92-01.133-018	↓	1-16-92	1-17-92				X	X	X	↓
SC G50-A	H92-01.113-014	1/14/92	1/15/92	1/15/92				X	X	X	G-31C
SC G50-B	H92-01.113-015	↓	↓	↓				X	X	X	↓
SC G50-C	H92-01.113-016	↓	↓	↓				X	X	X	↓
SC G51-A	H92-01.297-005	1-28-92	1-29-92	1-30-92				X	X	X	G52C
SC G51-B	H92-01.297-006	1-27-92	1-29-92	1-29-92				X	X	X	↓
SC G51-C	H92-01.297-007	1-28-92	1-29-92	1-30-92				X	X	X	↓
SC G52-A	H92-01.297-008	1-28-92	1-29-92	1-30-92				X	X	X	↓
SC G52-B	H92-01.297-009	1-28-92	1-29-92	1-29-92				X	X	X	↓
SC G52-C	H92-01.297-010	1-28-92	1-29-92	1-29-92	GG	GG		X	X	X	↓
SC G53-A	H92-01.313-012	1-29-92	1-30-92	1-31-92				X	X	X	G38C
SC G53-B	H92-01.313-013	↓	1-30-92	1-30-92				X	X	X	↓
SC G53-C	H92-01.313-014	↓	1-30-92	1-30-92				X	X	X	↓
SC G54-A	H92-02.32-011	2-4-92	2-5-92	2-6-92				X	X	X	

NR - Not Required

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G54-B	H92-02.32-012	2-4-92	2-5-92	2-6-92				X	X	X	G39C
SC G54-C	H92-02.32-013	↓	2-5-92	2-6-92				X	X	X	↓
SC G55-C	H92-02.32-014	↓	2-5-92	2-5-92				X	X	X	↓
SC G56-A	H92-02.45-002	2-5-92	2-8-92	2-21-92			OK	X	X	X	G64A
SC G56-B	H92-02.45-003	↓	2-8-92	2-20-92			↓	X	X	X	↓
SC G56-C	H92-02.45-004	↓	2-8-92	2-21-92			↓	X	X	X	↓
SC G57-A	H92-02.45-005	↓	2-8-92	2-21-92			↓	X	X	X	↓
SC G57-B	H92-02.45-006	↓	2-8-92	2-21-92			↓	X	X	X	↓
SC G57-C	H92-02.45-007	↓	2-8-92	2-21-92			↓	X	X	X	↓
SC G58-A	H92-02.45-008	↓	↓	↓			TBP 8 % R	X	X	X	↓
SC G58-B	H92-02.45-009	↓	↓	↓			↓	X	X	X	↓
SC G58-C	H92-02.45-010	↓	↓	↓			↓	X	X	X	↓
SC G59-A	H92-02.98-007	2-8-92	2-14-92	3-7-92			DL	X	X	X	G17A
SC G59-B	H92-02.98-008	↓	2-14-92	3-8-92			↓	X	X	X	↓
SC G59-C	H92-02.98-009	↓	2-14-92	3-7-92			↓	X	X	X	↓
SC G5-A	H92-01.133-019	1-15-92	1-16-92	1-17-92			↓	X	X	X	G42C
SC G5-A(D)	H92-01.133-022	↓	1-16-92	1-17-92			↓	X	X	X	G42C
SC G5-B	H92-01.133-020	1-15-92	1-16-92	1-16-92			↓	X	X	X	G42C
SC G5-C	H92-01.133-021	1-15-92	1-16-92	1-16-92			↓	X	X	X	↓
SC G60-A	H92-02.82-010	2-6-92	2-10-92	2-24-92			DL	X	X	X	↓
SC G60-B	H92-02.82-011	2-6-92	2-11-92	2-24-92			↓	X	X	X	G62C/G77C
SC G60-C	H92-02.82-012	2-6-92	2-11-92	2-24-92			↓	X	X	X	↓
SC G61-A	H92-02.45-011	2-5-92	2-8-92	2-21-92			OK	X	X	X	G64A
SC G61-B	H92-02.45-012	↓	2-8-92	2-24-92			OK	X	X	X	↓
SC G61-C	H92-02.45-013	↓	2-8-92	2-21-92			SEP 87 2CP 141	X	X	X	↓
SC G62-A	H92-02.82-013	2-6-92	2-11-92	2-24-92			DL	X	X	X	G62C/77C
SC G62-B	H92-02.82-014	2-6-92	↓	↓			↓	X	X	X	↓
SC G62-C	H92-02.82-015	2-6-92	↓	↓	HH/II	HH/II		X	X	X	G62C
SC G63-A	H92-02.45-014	2-5-92	2-8-92	2-21-92			OK	X	X	X	G64A

DL = Diluted Out

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T. E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G72-C	H92-02.82-024	2-6-92	2-11-92	2-25-92				X	X	X	G62C/77C Full CLP
SC G73-A	H92-02.82-025						DL	X	X	X	
SC G73-B	H92-02.82-026						DL	X	X	X	
SC G73-C	H92-02.82-027							X	X	X	
SC G74-A	H92-02.98-013	2-8-92	2-14-92	3-8-92			DL	X	X	X	G-17A
SC G74-B	H92-02.98-014		2-14-92	3-8-92				X	X	X	
SC G74-C	H92-02.98-015		2-14-92	3-9-92				X	X	X	
SC G75-A	H92-02.98-016		2-14-92	3-8-92			DL	X	X	X	
SC G75-B	H92-02.98-017		2-14-92	3-9-92			DL RC 0% TBP	X	X	X	
SC G75-C	H92-02.98-018		2-14-92	3-8-92				X	X	X	
SC G76-A	H92-02.82-037	2-6-92	2-11-92	2-27-92				X	X	X	G62C/77C
SC G76-B	H92-02.82-038		2-11-92	2-27-92				X	X	X	
SC G76-C	H92-02.82-039		2-11-92	2-26-92				X	X	X	
SC G77-A	H92-02.82-041		2-11-92	2-26-92			DL	X	X	X	
SC G77-B	H92-02.82-042		2-11-92	2-27-92				X	X	X	
SC G77-C	H92-02.82-043		2-11-92	2-26-92	HH/II	HH/II		X	X	X	G77C
SC G78-A	H92-02.98-019	2-8-92	2-14-92	3-9-92				X	X	X	G17A
SC G78-B	H92-02.98-020							X	X	X	
SC G78-C	H92-02.98-021							X	X	X	
SC G79-A	H92-02.98-022							X	X	X	
SC G79-B	H92-02.98-023						DL	X	X	X	
SC G79-C	H92-02.100-002	2-8-92	2-12-92	3-14-92	JS	JJ		X	X	X	G79C/G86C
SC G7-A	H92-01.226-008	1-22-92	1-24-92	1-25-92				X	X	X	G-18C
SC G7-B	H92-01.226-009	1-22-92	1-24-92	1-24-92				X	X	X	
SC G7-C	H92-01.226-010	1-22-92	1-24-92	1-24-92				X	X	X	
SC G80-A	H92-02.100-005	2-7-92	2-12-92	3-14-92				X	X	X	G79C/86C
SC G80-B	H92-02.100-006		2-12-92	3-10-92				X	X	X	
SC G80-C	H92-02.100-007		2-12-92	3-13-92				X	X	X	
SC G81-A	H92-02.100-008		2-12-92	3-10-92				X	X	X	
SC G81-B	H92-02.100-009		2-12-92	3-13-92				X	X	X	
SC G81-C	H92-02.100-010		2-12-92	3-13-92				X	X	X	
SC G82-A	H92-02.100-011	2-8-92	2-12-92	3-13-92				X	X	X	

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T. . E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

8270 ANALYSES

Sample No.	WORK ORDER 8270-SOIL	DATE COLLECTED	DATE EXTRACTED	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	CALIBRATION	PROPER FREQUENCY METHOD BLANK	LAB BLANK	8270 MS/MSD
SC G82-B	H92-02.100-012	2-8-92	2-12-92	3-14-92				X	X	X	G79C/80C
SC G82-C	H92-02.100-013		2-12-92	3-13-92			TBP 128%	X	X	X	
SC G83-A	H92-02.100-014		2-12-92	3-13-92				X	X	X	
SC G83-B	H92-02.100-015		2-10-92	3-10-92				X	X	X	
SC G83-C	H92-02.100-016		2-12-92	3-13/15-92				X	X	X	
SC G84-A	H92-02.100-017		2-12-92	3-10-92				X	X	X	
SC G84-B	H92-02.100-018		2-12-92	3-10-92				X	X	X	
SC G84-C	H92-02.100-019		2-12-92	3-10-92				X	X	X	
SC G84-C (D)	H92-02.100-023	2-8-92	2-14-92	3-11-92				X	X	X	
SC G85-A	H92-02.100-020	2-9-92	2-12-92	3-14-92				X	X	X	
SC G85-B	H92-02.100-021		2-14-92	3-10-92				X	X	X	
SC G85-C	H92-02.100-022		2-14-92	3-10-92				X	X	X	
SC G86-A	H92-02.100-024	2-9-92	2-14-92	3-14-92				X	X	X	
SC G86-B	H92-02.100-025		2-14-92	3-12-92	MS/R			X	X	X	
SC G86-C	H92-02.100-026		2-14-92	3-11-92	110%, PCP			X	X	X	
SC G87-A	H92-02.100-029		2-14-92	3-13-92				X	X	X	
SC G87-B	H92-02.100-030		2-14-92	3-13-92				X	X	X	
SC G87-C	H92-02.100-031		2-14-92	3-11-92				X	X	X	
SC G88-A	H92-02.100-032		2-14-92	3-13-92				X	X	X	
SC G88-B	H92-02.100-033		2-14-92	3-11-92				X	X	X	
SC G88-C	H92-02.100-034		2-14-92	3-11-92				X	X	X	
SC G89-C	H92-02.100-035		2-14-92	3-12-92				X	X	X	
SC G8-A	H92-01.313-006	1-29-92	1-30-92	1-30-92				X	X	X	G38C
SC G8-B	H92-01.313-007							X	X	X	
SC G8-C											
SC G9-A	H92-01.257-002	1-25-92	1-26-92	1-27-92				X	X	X	G-9A
SC G9-B	H92-01.257-005	1-25-92	1-26-92	1-27-92				X	X	X	
SC G9-C	H92-01.257-006	1-25-92	1-26-92	1-27-92				X	X	X	

* [illegible]

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TABL. 6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP Ext	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
HYDRANT WATER	N/R	—	—	—				X	X	X	
SC G10-A 2-5	H92-02.18-007	1-25-92	2-5-92	2-17-92				X	X	X	G 9A
SC G10-A(D)											
SC G10-B 2-5	H92-02.18-008	1-25-92	2-5-92	2-17-92				X	X	X	G-9A
SC G10-C ↓	H92-02.18-009	1-25-92	2-5-92	2-17-92				X	X	X	↓
SC G11-A 2-6	H92-02.23-007	1-29-92	2-12-92	2-18-92				X	X	X	G-38C
SC G11-B ↓	H92-02.23-008	↓	2-12-92	2-18-92				X	X	X	↓
SC G11-C ↓	H92-02.23-009	↓	2-12-92	2-18-92				X	X	X	↓
SC G12-A 2-5	H92-02.18-010	1-25-92	2-5-92	2-17-92				X	X	X	G-9A
SC G12-B ↓	H92-02.18-011	↓	2-5-92	2-18-92			TPH 24%	X	X	X	↓
SC G12-C ↓	H92-02.18-012	↓	2-5-92	2-18-92			TPH 25%	X	X	X	↓
SC G13-A 2-6	H92-02.26-002	1-28-92	2-12-92	2-19-92				X	X	X	G-52C
SC G13-B ↓	H92-02.26-003	↓	↓	↓			FBP 34%	X	X	X	↓
SC G13-C ↓	H92-02.26-004	↓	↓	↓			TBP 129%	X	X	X	↓
SC G14-A 2-5	H92-02.18-020	1-25-92	2-5-92	2-18-92				X	X	X	G-9A
SC G14-B 2-4	H92-02.18-021	↓	↓	↓				X	X	X	↓
SC G14-C 2-4	H92-02.18-022	↓	↓	↓				X	X	X	↓
SC G15-A 2-5	H92-02.18-016	↓	↓	↓				X	X	X	↓
SC G15-B ↓	H92-02.18-017	↓	↓	↓				X	X	X	↓
SC G15-B(D)											
SC G15-C 2-5	H92-02.18-019	1-25-92	2-5-92	2-17-92				X	X	X	G-9A
SC G16-A ↓	H92-02.18-013	↓	↓	↓				X	X	X	↓
SC G16-B ↓	H92-02.18-014	↓	↓	↓				X	X	X	↓
SC G16-C ↓	H92-02.18-015	↓	↓	↓				X	X	X	↓
SC G17-A 2/21	H92-02-128-014	2-8-92	2-26-92	3-11-92				X	X	X	G86C
SC G17-B ↓	H92-02-128-015	↓	↓	↓				X	X	X	↓
SC G17-C ↓	H92-02-128-016	↓	↓	3-12-92				X	X	X	↓
SC G18-A	H92-01.275-012	1-23-92	1-31-92	2-10-92				X	X	X	G-18C
SC G18-B	H92-01.275-013	1-23-92	1-31-92	2-10-92				X	X	X	
SC G18-C	H92-01.275-014	1-23-92	1-31-92	2-10-92	2,4 Dinitrotoluene 92%			X	X	X	↓
SC G18-C(D)											

2,4-Dinitrotoluene → Range 24-96% GRC 97% OK

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TAL -6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP EXT	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G19-A	H92-01.275-005	1-22-92	1-29-92	2-11-92				X	X	X	G-18C
SC G19-B	H92-01.275-006	↓	1-29-92	2-11-92				X	X	X	↓
SC G19-C	H92-01.275-007	↓	1-31-92	2-11-92				X	X	X	↓
SC G1-A	H92-01.70-014	1-7-92	1-13-92	1-20-92				X	X	X	G37C
SC G1-B	H92-01.70-015	↓	↓	↓			FBP 117%	X	X	X	↓
SC G1-C	H92-01.70-016	1-7-92	1-13-92	1-20-92				X	X	X	G37C
SC G20-A	H92-01.275-002	1-22-92	1-29-92	2-11-92			NBZ 155%	X	X	X	G-18C
SC G20-A(D)											
SC G20-B	H92-01.275-003	1-22-92	1-29-92	2-11-92				X	X	X	G-18C
SC G20-C	H92-01.275-004	1-22-92	1-29-92	2-11-92			NBZ 182%	X	X	X	↓
SC G21-A	H92-02.28-007	1-27-92	2-11-92	2-20-92			TBP 163%	X	X	X	G24C
SC G21-B	H92-02.28-008	↓	2-11-92	2-20-92			TPH 30%	X	X	X	↓
SC G21-C	H92-02.28-009	↓	2-11-92	2-19-92				X	X	X	↓
SC G22-A	H92-02.28-010	↓	2-11-92	2-20-92			TPH 27% TBP 156%	X	X	X	↓
SC G22-B											
SC G22-C	H92-02.28-011	1-27-92	2-11-92	2-20-92			TBP 208%	X	X	X	G24C
SC G23-A											
SC G23-B	H92-02.28-012	1-27-92	2-11-92	2-20-92			TBP 187%	X	X	X	G24C
SC G23-C	H92-02.28-013	1-27-92	2-11-92	2-20-92			TBP 212%	X	X	X	↓
SC G24-A											
SC G24-B	H92-02.28-014	1-27-92	2-11-92	2-20-92			TBP 165%	X	X	X	G-24C
SC G24-C	H92-02.28-015	1-27-92	2-11-92	2-20-92	H	H	TBP 160%	X	X	X	↓
SC G25-A											
SC G25-B	H92-02.28-002	1-25-92	2-11-92	2-20-92				X	X	X	G-24C
SC G25-C	H92-02.28-003	1-25-92	2-11-92	2-19-92				X	X	X	↓
SC G26-A	H92-02.28-004	↓	2-11-92	2-20-92			TBP 131%	X	X	X	↓
SC G26-B	H92-02.28-005	↓	2-11-92	2-20-92			TBP 140%	X	X	X	↓
SC G26-C	H92-02.28-006	↓	2-11-92	2-20-92			TBP 160%	X	X	X	↓
SC G27-A 2-6	H92-02.23-002	1-29-92	2-12-92	2-17-92				X	X	X	G-38C
SC G27-B	H92-02.23-003	↓	2-12-92	2-17-92				X	X	X	↓
SC G27-C	H92-02.23-004	↓	2-12-92	2-18-92				X	X	X	↓
SC G28-A 2-9	H92-02.26-013	1-28-92	2-12-92	2-20-92				X	X	X	[illegible]

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South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No./ TCLP Ext	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G28-B 2-7	H92-02.26-014	1-28-92	2-12-92	2-21-92				X	X	X	G-52C
SC G28-C 2-6	H92-02.26-015	1-28-92	2-12-92	2-21-92				X	X	X	↓
SC G29-A	H92-01.174-005	1-14-92	1-21-92	1-29-92				X	X	X	G31-C
SC G29-A(D)	H92-01.174-008	1-14-92	1-21-92	1-23-92				X	X	X	
SC G29-B	H92-01.174-006			1-23-92			TBP 141%	X	X	X	
SC G29-B(D)	H92-01.174-009			1-31-92				X	X	X	
SC G29-C	H92-01.174-007	↓	↓	1-23-92				X	X	X	↓
SC G29-C(D)	H92-01.174-010	1-14-92	1-21-92	1-31-92				X	X	X	G31-C
SC G2-A	H92-01.70-017	1-7-92	1-13-92	1-20-92				X	X	X	G37C
SC G2-B	H92-01.70-018	↓	↓	1-21-92				X	X	X	↓
SC G2-C	H92-01.70-019	1-7-92	1-13-92	1-21-92				X	X	X	G37-C
SC G30-A	H92-01.150-002	1-13-92	1-20-92	1-31-92				X	X	X	G44C
SC G30-B	H92-01.150-003		1-20-92	1-31-92				X	X	X	↓
SC G30-C	H92-01.150-004	↓	1-20-92	1-23-92			NBz 123%	X	X	X	G44C
SC G31-A	H92-01.174-020	1-13-92	1-13-92	2-1-92			TBP 133%	X	X	X	G31C
SC G31-B(re)	H92-01.178-002	1-15-92	1-23-92	2-1-92				X	X	X	G-44C
SC G31-C	H92-01.174-022	1-13-92	1-21-92	2-1-92	A	A	TBP 131%	X	X	X	G31C
SC G32-A	H92-01.174-002	1-14-92		1-23-92				X	X	X	
SC G32-B	H92-01.174-003	↓	↓	1-31-92			TBP 139%	X	X	X	↓
SC G32-C	H92-01.174-004	1-14-92	1-21-92	1-31-92			TBP 147%	X	X	X	G-31C
SC G33-A	H92-01.150-005	1-13-92	1-20-92	1-23-92				X	X	X	G 44-C
SC G33-A(D)	H92-01.150-008		1-20-92	1-23-92			FBP 157%	X	X	X	
SC G33-B	H92-01.150-006		1-20-92	1-31-92				X	X	X	
SC G33-C	H92-01.150-007	↓	1-20-92	1-31-92				X	X	X	↓
SC G33-C(D)	H92-01.150-009	1-13-92	1-20-92	1-24-92				X	X	X	G44-C
SC G34-A	H92-01.70-002	1-7-92	1-13-92	1-20-92				X	X	X	G 37-C
SC G34-B	H92-01.70-003							X	X	X	
SC G34-C	H92-01.70-004							X	X	X	
SC G35-A	H92-01.70-005	↓	↓	↓				X	X	X	↓
SC G35-B	H92-01.70-006	1-7-92	1-13-92	1-20-92				X	X	X	G 37-C
SC G35-C(ML)											
SC G36-A	H92-01.70-007	1-7-92	1-13-92	1-20-92				X	X	X	G 37-C

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TABLE E-6 (Continued)

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G36-B	H92-01.70-008	1-7-92	1-13-92	1-21-92				X	X	X	G 37-C
SC G36-C(ML)											
SC G37-A	H92-01.70-009	1-7-92	1-13-92	1-20-92				X	X	X	G 37-C
SC G37-B	H92-01.70-010	↓	↓	↓			FBP 118%	X	X	X	↓
SC G37-C	H92-01.70-011	1-7-92	1-13-92	1-20-92	C	C	NBZ 117%	X	X	X	G 37-C
SC G38-A 2-6	H92-02.23-013	1-29-92	2-12/80-92	2-18-92				X	X	X	G 38-C
SC G38-B 2-6	H92-02.23-014	↓	2-12-92	2-19-92			NBZ, FBP, TPH, 2CP < 3%	X	X	X	↓
SC G38-C 2-5	H92-02.23-015	↓	2-12-92	2-19-92			NBZ 124%	X	X	X	↓
SC G39-A 2-11	H92-2.94-015	2-4-92	2-13-92	2-25-92				X	X	X	G 39C
SC G39-B 2-11	H92-2.94-016	↓	2-13-92	2-26-92				X	X	X	↓
SC G39-C 2-11-92	H92-02-94.002	2-4-92	2-13-92	2-26-92	I	I		X	X	X	G 39C
SC G39-C DUP	H92-2.94-017	↓	2-13-92	2-25-92				X	X	X	↓
SC G3-A	H92-01.178-003	1-15-92	1-23-92	2-1-92				X	X	X	G42C
SC G3-B	H92-01.178-004	1-15-92	1-23-92	2-1-92			NBZ 124%	X	X	X	G 42 C
SC G3-C	H92-01.178-005	1-15-92	1-23-92	2-1-92				X	X	X	↓
SC G40-A 2-12	H92-02-94.005	2-4-92	2-13-92	2-24-92			TPH 28%	X	X	X	↓
SC G40-B 2-12	H92-02-94.006	↓	↓	↓				X	X	X	G39C
SC G40-C 2-12	H92-02-94.007	↓	2-13-92	2-26-92				X	X	X	↓
SC G41-A 2-12	H92-02-94.008	↓	↓	↓			TPH 27%	X	X	X	↓
SC G41-B 2-12	H92-02-94.009	↓	2-13-92	2-25-92				X	X	X	↓
SC G41-C 2-12	H92-02-94.010	↓	↓	↓				X	X	X	↓
SC G42-A	H92-01.178-019	1-15-92	1-22-92	2-1-92			TBP 141%	X	X	X	G-42C
SC G42-B	H92-01.178-020	1-15-92	1-22-92	2-1-92			TBP 132%	X	X	X	↓
SC G42-C	H92-01.178-021	1-15-92	1-23-92	2-1-92	E	E	TBP 133%	X	X	X	↓
SC G43-A	H92-01.273-005	1-22-92	1-29-92	2-10-92			TPH 30%	X	X	X	G46C
SC G43-B	H92-01.273-006	↓	1-29-92	2-10-92				X	X	X	↓
SC G43-C	H92-01.273-007	↓	1-29-92	2-10-92				X	X	X	↓
SC G44-A	H92-01.150-010	1-13-92	1-20-92	1-31-92				X	X	X	G44-C
SC G44-B	H92-01.150-011	↓	1-20-92	1-23-92				X	X	X	↓
SC G44-C	H92-01.150-012	1-13-92	1-20-92	1-31-92	D	D		X	X	X	G 44-C
SC G45-A	H92-01.178-016	1-15-92	1-22-92	2-1-92				X	X	X	G42C
SC G45-B	H92-01.178-017	1-15-92	1-22-92	2-1-92				X	X	X	↓

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TABL. ..-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G45-C	H92-01.178-018	1-15-92	1-22-92	2-1-92				X	X	X	G42C
SC G46-A	H92-01.273-008	1-22-92	1-29-92	2-11-92			TPH 126%	X	X	X	G46C
SC G46-B	H92-01.273-009	↓	1-29-92	2-10-92				X	X	X	↓
SC G46-C	H92-01.273-010	↓	1-29-92	2-10-92	F	F	FBP 120%	X	X	X	↓
SC G47-A	H92-01.174-011	1-14-92	1-21-92	1-31-92				X	X	X	G31-C
SC G47-B	H92-01.174-012	↓	↓	↓				X	X	X	↓
SC G47-C	H92-01.174-013	1-14-92	1-21-92	1-31-92				X	X	X	G31-C
SC G48-A	H92-01.178-013	1-15-92	1-22-92	2-3-92				X	X	X	G42C
SC G48-B	H92-01.178-014	1-15-92	1-22-92	2-3-92				X	X	X	↓
SC G48-C	H92-01.178-015	1-15-92	1-22-92	2-3-92				X	X	X	↓
SC G49-A	H92-01.174-017	1-14-92	1-21-92	2-1-92				X	X	X	G31-C
SC G49-B	H92-01.174-018	↓	↓	↓				X	X	X	↓
SC G49-C	H92-01.174-019	1-14-92	1-21-92	2-1-92				X	X	X	G31-C
SC G4-A	H92-01.178-006	1-15-92	1-23-92	2-1-92				X	X	X	G42C
SC G4-B	H92-01.178-007	1-15-92	1-22-92	2-1-92				X	X	X	↓
SC G4-C	H92-01.178-008	1-15-92	1-22-92	2-1-92				X	X	X	↓
SC G50-A	H92-01.174-014	1-14-92	1-21-92	1-31-92				X	X	X	G31-C
SC G50-B	H92-01.174-015	↓	↓	↓				X	X	X	↓
SC G50-C	H92-01.174-016	1-14-92	1-21-92	1-31-92			TBP 157%	X	X	X	G31-C
SC G51-A 2-6	H92-02.26-005	1-28-92	2-12-92	2-19-92			TPH 31%	X	X	X	G-52C
SC G51-B	H92-02.26-006	↓	↓	↓			TBP 127%	X	X	X	↓
SC G51-C	H92-02.26-007	↓	↓	2-20-92				X	X	X	↓
SC G52-A	H92-02.26-008	↓	↓	↓			TBP 125%	X	X	X	↓
SC G52-B	H92-02.26-009	↓	↓	↓				X	X	X	↓
SC G52-C	H92-02.26-010	↓	↓	↓	G	G		X	X	X	↓
SC G53-A 2-6	H92-02.23-010	1-29-92	2-12-92	2-18-92				X	X	X	G38C
SC G53-B	H92-02.23-011	↓	2-12-92	2-18-92				X	X	X	↓
SC G53-C	H92-02.23-012	↓	2-12/20-92	2-18-92			All are ≤ 9%	X	X	X	↓
SC G54-A 2-12	H92-02.94-011	2-4-92	2-13-92	2-25-92				X	X	X	G39C
SC G54-B	H92-02.94-012	↓	↓	↓				X	X	X	↓
SC G54-C	H92-02.94-013	↓	↓	↓				X	X	X	↓
SC G55-C	H92-02.94-014	↓	↓	↓				X	X	X	

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G56-A 2/20	H92-02.131-009	2-6-92	2-24-92	3-19-92				X	X	X	G-77C
SC G56-B	H92-02.131-010							X	X	X	
SC G56-C	H92-02.131-011							X	X	X	
SC G57-A 2/20	H92-02.131-012			3-20-92				X	X	X	
SC G57-B 2/20	H92-02.131-013							X	X	X	
SC G57-C	H92-02.131-014							X	X	X	
SC G58-A 2/20	H92-02.131-015							X	X	X	
SC G58-B	H92-02.131-016							X	X	X	
SC G58-C	H92-02.131-017							X	X	X	
SC G59-A 2/21	H92-02.128-017	2-8-92	2-26-92	3-12-92				X	X	X	G86C
SC G59-B	H92-02.128-018		2-26-92	3-12-92				X	X	X	
SC G59-C	H92-02.128-019		2-26-92	3-12-92				X	X	X	
SC G5-A	H92-01.178-009	1-15-92	1-22-92	2-3-92			NBZ 140%	X	X	X	G-42C
SC G5-A(D)	H92-01.178-012	1-15-92	1-22-92	2-3-92			NBZ 123%	X	X	X	
SC G5-B	H92-01.178-010	1-15-92	1-22-92	2-3-92				X	X	X	
SC G5-C	H92-01.178-011	1-15-92	1-22-92	2-3-92			NBZ 120%	X	X	X	
SC G60-A 2/18	H92-02.130-022	2-5-92	2-20-92	3-18-92				X	X	X	G74C
SC G60-B	H92-02.130-023	2-5-92	2-20-92	3-18-92				X	X	X	
SC G60-C 2/19	H92-02.129-002	2-6-92	2-21-92	3-19-92				X	X	X	G62C
SC G61-A 2/20	H92-01.131-018	2-6-92	2-24-92	3-22-92				X	X	X	G-77C
SC G61-B	H92-01.131-019		2-24-92	3-20-92			TPH 32%	X	X	X	
SC G61-C	H92-01.131-020							X	X	X	
SC G62-A 2/19	H92-02.129-003	2-6-92	2-21-92	3-18-92				X	X	X	G62C
SC G62-B	H92-02.129-004		2-21-92	3-18-92				X	X	X	
SC G62-C	H92-02.129-005				J	J	21% NBZ	X	X	X	
SC G63-A 2/20	H92-02.131-021	2-6-92	2-24-92	3-20-92				X	X	X	G77C
SC G63-B	H92-02.131-022							X	X	X	
SC G63-C	H92-02.131-023							X	X	X	
SC G64-A 2/17	H92-02.134-002	2-05-92	2-19-92	3-15-92	B	B		X	X	X	G64A
SC G64-B	H92-02.134-005							X	X	X	
SC G64-C	H92-02.134-006	2-05-92	2-19-92	3-15-92				X	X	X	G64A
SC G64-C (D)	H92-02.134-007	2-05-92	2-19-92	3-15-92				X	X	X	G64A

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TABL. 2-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G65-A 2/18	H92-02.130-014	2-5-92	2-20-92	3-17-92				X	X	X	G74B
SC G65-B	H92-02.130-015		2-20-92	3-18-92				X	X	X	
SC G65-C	H92-02.130-016							X	X	X	
SC G66-A 2/18	H92-02.130-017						FBP 32% 2CP 30%	X	X	X	
SC G66-B	H92-02.130-018							X	X	X	
SC G66-C											
SC G67-A 2/18	H92-02.130-019	2-5-92	2-20-92	3-18-92		2CP-20% DCB-21%	FBP-38% 2CP-16%	X	X	X	G-74B
SC G67-B	H92-02.130-020							X	X	X	
SC G67-C	H92-02.130-021							X	X	X	
SC G68-A 2/19	H92-02.129-017	2-6-92	2-21-92	3-18-92			143% TBP	X	X	X	G62C
SC G68-B	H92-02.129-018						TBP 136%	X	X	X	G-62C
SC G68-C	H92-02.129-019						TBP 137%	X	X	X	
SC G69-A 2/21	H92-02.128-020	2-8-92	2-26-92	3-12-92				X	X	X	G86C
SC G69-B	H92-02.128-021		2-26-92	3-12-92				X	X	X	
SC G69-C	H92-02.128-022		2-26-92	3-12-92				X	X	X	
SC G6-A	H92-01.273-002	1-22-92	1-29-92	2-10-92				X	X	X	G-46A
SC G6-B	H92-01.273-003		1-29-92	2-10-92				X	X	X	
SC G6-C	H92-01.273-004		1-29-92	2-10-92				X	X	X	
SC G70-A 2/19	H92-02.129-020	2-6-92	2-21-92	3-19-92			TBP 130%	X	X	X	G62C
SC G70-B	H92-02.129-021							X	X	X	
SC G70-C	H92-02.129-022							X	X	X	
SC G71-A 2/19	H92-02.129-008	2-6-92		3-18-92				X	X	X	G62C
SC G71-B	H92-02.129-009							X	X	X	
SC G71-C	H92-02.129-010							X	X	X	
SC G72-A 2/19	H92-02.129-011			3-20-92				X	X	X	
SC G72-B	H92-02.129-012			3-18-92			TBP 133%	X	X	X	
SC G72-C 2/19	H92-02.129-013							X	X	X	
SC G73-A 2/19	H92-02.129-014			3-19-92				X	X	X	
SC G73-B	H92-02.129-015			3-19/20-92				X	X	X	
SC G73-C	H92-02.129-016			3-18-92				X	X	X	
SC G74-B 2/18	H92-02.130-002	2-8-92	2-20-92	3-17-92	94% RPD			X	X	X	G74B
SC G74-C	H92-02.130-005							X	X	X	

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TABL 6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G75-A 2/18	H92-02.130-006	2-8-92	2-20-92	3-17-92				X	X	X	G74B
SC G75-B	H92-02.130-007		2-20-92	3-18-92				X	X	X	
SC G75-C	H92-02.130-008							X	X	X	
SC G76-A 2/19	H92-02.129-023	2-6-92	2-21-92	3-4-92				X	X	X	G-64C
SC G76-B 2/20	H92-02.131-002	2-6-92	2-24-92	3-19-92				X	X	X	G77C
SC G76-C	H92-02.131-003							X	X	X	
SC G77-A	H92-02.131-004			3-20-92				X	X	X	
2/21 SC ~~G77-A~~ G74A	H92-02.128-023	2-8-92	2-26-92	3-12-92				X	X	X	G-86C
SC G77-B 2/20	H92-02.131-005	2-6-92	2-24-92	3-19-92				X	X	X	G-77C
SC G77-C	H92-02.131-006		2-24-92	3-19-92	K	K		X	X	X	
SC G78-A 2/18	H92-02.130-009	2-8-92	2-20-92	3-17-92			FBP 42%	X	X	X	G74B
SC G78-B	H92-02.130-010			3-17-92				X	X	X	
SC G78-C	H92-02.130-011			3-18-92				X	X	X	
SC G79-A 2/18	H92-02.130-012			3-17-92				X	X	X	
SC G79-B 2/18	H92-02.130-013			3-18-92			2aP 35% FBP 40%	X	X	X	
SC G79-C	H92-02.106-002	2-8-92	2-14-92	3-8-92			DL	X	X	X	G79C
SC G7-A	H92-01.275-008	1-22-92	2-10-92	2-10-92				X	X	X	G18C
SC G7-B	H92-01.275-009	1-22-92	1-31-92	2-11-92				X	X	X	
SC G7-C	H92-01.275-010	1-22-92	1-31-92	2-10-92				X	X	X	
SC G80-A	H92-02.106-005	2-7-92	2-14-92	3-7-92			5 acid	X	X	X	G79C/86C
SC G80-B	H92-02.106-006		2-14-92	3-8-92				X	X	X	
SC G80-C	H92-02.106-007		2-14-92	3-8-92			DL	X	X	X	
SC G81-A	H92-02.106-008		2-14-92	3-7-92				X	X	X	
SC G81-B	H92-02.106-009		2-14-92	3-8-92			DL	X	X	X	
SC G81-C	H92-02.106-010		2-14-92	3-8-92			DL	X	X	X	
SC G82-A	H92-02.106-011	2-8-92	2-14-92	3-7-92				X	X	X	
SC G82-B	H92-02.106-012		2-14-92	3-8-92			DL	X	X	X	
SC G82-C	H92-02.106-013		2-14-92	3-8-92			DL	X	X	X	
SC G83-A	H92-02.106-014		2-14-92	3-7-92				X	X	X	
SC G83-B	H92-02.106-015		2-14-92	3-7-92				X	X	X	
SC G83-C	H92-02.106-016		2-14-92	3-7-92				X	X	X	
SC G84-A	H92-02.106-017		2-14-92	3-7-92				X	X	X	

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TABLE E-6 (Continued)

South Cavalcade Site

QA/QC CHECKLIST

TCLP Analyses

Sample No. / TCLP Ext Date	WORK ORDER	DATE COLLECTED	EXTRACTION DATE	DATE ANALYZED	MS/MSD % R	MS/MSD RPD	SURROGATE % R	PROPER FREQUENCY CALIBRATION	METHOD BLANK	LAB BLANK	TCLP MS/MSD
SC G84-B	H92-02.106-018	2-8-92	2-14-92	3-7-92				X	X	X	G79C
SC G84-C	H92-02.106-019	↓	2-14-92	3-7-92				X	X	X	↓
SC G84-C (D)	H92-02.106-023		2-14-92	3-7-92				X	X	X	
SC G85-A	H92-02.106-020		2-14-92	3-7-92			TBP 0%	X	X	X	
SC G85-B	H92-02.106-021		2-14-92	3-7-92			5 and	X	X	X	
SC G85-C	H92-02.106-022	↓	2-14-92	3-7-92			2FP 23%	X	X	X	↓
SC G86-A 2/21	H92-02.128-002	2-5-92	2-26-92	3-10-92				X	X	X	G86C
SC G86-B	H92-02.128-003	↓	2-26-92	3-10-92			TPH 11%	X	X	X	↓
SC G86-C	H92-02.128-004		2-26-92	3-10-92			TPH 12%	X	X	X	
SC G87-A 2/21	H92-02.128-007		2-26-92	3-12-92				X	X	X	
SC G87-B	H92-02.128-008		2-26-92	3-11-92				X	X	X	
SC G87-C	H92-02.128-009		2-26-92	3-11-92				X	X	X	
SC G88-A	H92-02.128-010		2-26-92	3-11-92				X	X	X	
SC G88-B	H92-02.128-011		2-26-92	3-11-92				X	X	X	
SC G88-C	H92-02.128-012		2-26-92	3-11-92				X	X	X	
SC G89-C 2/21	H92-02.128-013	↓	2-26-92	3-11-92				X	X	X	↓
SC G8-A 2-6	H92-02.23-005	1-29-92	2-12-92	2-18-92				X	X	X	G-38C
SC G8-B 2-6	H92-02.23-006	↓	2-12-92	2-18-92				X	X	X	↓
SC G8-C											
SC G9-A 2-5	H92-02.18-002	1-25-92	2-5-92	2-17-92	GOOD			X	X	X	G9A
SC G9-B	H92-02.18-005	↓	↓	↓				X	X	X	↓
SC G9-C	H92-02.18-006	↓	↓	↓			FBP 41%	X	X	X	↓
LCSW01 110-112'	H92-02.111-002	2-11-92	2-17-92	2-25-92				X	X	X	152-154
LCSW01 112-114'	H92-02.111-003	↓	↓	↓				X	X	X	↓
LCSW01 152-154'	H92-02.111-004	2-11-92	2-17-92	2-26-92	KK	KK		X	X	X	152-154
LCSW01 188-190'	H92-02.174-002	2-17-92	2-21-92	3-17-92			all Bus lo Ind	X	X	X	↓
LCSW01 208-212'	H92-02.174-003	↓	2-21-92	3-17-92	LL	LL	5 and	X	X	X	208-212
LCSW01 RINSATE	H92-02.174-006	2-11-92	2-13-92					X	X	X	↓
SC G74-A	H92-02.128-013	2-8-92	2-26-92	3-12-92				X	X	X	G86C

* MS % R for PCP 110% Limits (9-103).

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TABLE E-7

SUMMARY OF POTENTIALLY cPAH
(TCLP) SAMPLES SENT TO
CHESTER LABNET-MONROEVILLE

CLIENT'S SAMPLE NAME	SAMPLE ID	DATE COLLECTED	SAMPLE MATRIX
SC-G64-A	M92-02-101-002	5-FEB-1992	SOIL
SC-G64-A MS	M92-02-101-003	5-FEB-1992	SOIL
SC-G64-A MSD	M92-02-101-004	5-FEB-1992	SOIL
SC-G64-B	M92-02-101-005	5-FEB-1992	SOIL
SC-G64-C	M92-02-101-006	5-FEB-1992	SOIL
SC-G64-C DUP	M92-02-101-007	5-FEB-1992	SOIL
SC-G74-B	M92-02-102-002	8-FEB-1992	SOIL
SC-G74-B MS	M92-02-102-003	8-FEB-1992	SOIL
SC-G74-B MSD	M92-02-102-004	8-FEB-1992	SOIL
SC-G74-C	M92-02-102-005	8-FEB-1992	SOIL
SC-G75-A	M92-02-102-006	8-BEF-1992	SOIL
SC-G75-B	M92-02-102-007	8-FEB-1992	SOIL
SC-G75-C	M92-02-102-008	8-FEB-1992	SOIL
SC-G78-A	M92-02-102-009	8-FEB-1992	SOIL
SC-G78-B	M92-02-102-010	8-FEB-1992	SOIL
SC-G78-C	M92-02-102-011	8-FEB-1992	SOIL
SC-G79-A	M92-02-102-012	8-FEB-1992	SOIL
SC-G79-B	M92-02-102-013	8-FEB-1992	SOIL
SC-G65-A	M92-02-102-014	5-FEB-1992	SOIL
SC-G65-B	M92-02-102-015	5-FEB-1992	SOIL
SC-G65-C	M92-02-102-016	5-FEB-1992	SOIL
SC-G66-A	M92-02-102-017	5-FEB-1992	SOIL
SC-G66-B	M92-02-102-018	5-FEB-1992	SOIL
SC-G67-A	M92-02-102-019	5-FEB-1992	SOIL
SC-G67-B	M92-02-102-020	5-FEB-1992	SOIL
SC-G67-C	M92-02-102-021	5-FEB-1992	SOIL
SC-G60-A	M92-02-102-022	5-FEB-1992	SOIL
SC-G60-B	M92-02-102-023	5-FEB-1992	SOIL
SC-G60-C	M92-02-103-002	6-FEB-1992	SOIL
SC-G62-A	M92-02-103-003	6-FEB-1992	SOIL
SC-G62-B	M92-02-103-004	6-FEB-1992	SOIL
SC-G62-C	M92-02-103-005	6-FEB-1992	SOIL
SC-G62-C MS	M92-02-103-006	6-FEB-1992	SOIL
SC-G62-C MSD	M92-02-103-007	6-FEB-1992	SOIL
SC-G71-A	M92-02-103-008	6-FEB-1992	SOIL
SC-G71-B	M92-02-103-009	6-FEB-1992	SOIL
SC-G71-C	M92-02-103-010	6-FEB-1992	SOIL
SC-G72-A	M92-02-103-011	6-FEB-1992	SOIL
SC-G72-B	M92-02-103-012	6-FEB-1992	SOIL
SC-G72-C	M92-02-103-013	6-FEB-1992	SOIL
SC-G73-A	M92-02-103-014	6-FEB-1992	SOIL
SC-G73-B	M92-02-103-015	6-FEB-1992	SOIL
SC-G73-C	M92-02-103-016	6-FEB-1992	SOIL

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TABLE E-7 (Continued)

SUMMARY OF POTENTIALLY cPAH
(TCLP) SAMPLES SENT TO
CHESTER LABNET-MONROEVILLE

CLIENT'S SAMPLE NAME	SAMPLE ID	DATE COLLECTED	SAMPLE MATRIX
SC-C68-A	M92-02-103-017	6-FEB-1992	SOIL
SC-G68-B	M92-02-103-018	6-FEB-1992	SOIL
SC-G68-C	M92-02-103-019	6-FEB-1992	SOIL
SC-G70-A	M92-02-103-020	6-FEB-1992	SOIL
SC-G70-B	M92-02-103-021	6-FEB-1992	SOIL
SC-G70-C	M92-02-103-022	6-FEB-1992	SOIL
SC-G76-A	M92-02-103-023	6-FEB-1992	SOIL
SC-G76-B	M92-02-104-002	6-FEB-1992	SOIL
SC-G76-C	M92-02-104-003	6-FEB-1992	SOIL
SC-G77-A	M92-02-104-004	6-FEB-1992	SOIL
SC-G77-B	M92-02-104-005	6-FEB-1992	SOIL
SC-G77-C	M92-02-104-006	6-FEB-1992	SOIL
SC-G77-C MS	M92-02-104-007	6-FEB-1992	SOIL
SC-G77-C MSD	M92-02-104-008	6-FEB-1992	SOIL
SC-G56-A	M92-02-104-009	6-FEB-1992	SOIL
SC-G56-B	M92-02-104-010	6-FEB-1992	SOIL
SC-G56-C	M92-02-104-001	6-FEB-1992	SOIL
SC-G57-A	M92-02-04-012	6-FEB-1992	SOIL
SC-G57-B	M92-02-104-013	6-FEB-1992	SOIL
SC-G57-C	M92-02-104-014	6-FEB-1992	SOIL
SC-G58-A	M92-02-104-015	6-FEB-1992	SOIL
SC-G58-B	M92-02-104-016	6-FEB-1992	SOIL
SC-G58-C	M92-02-104-017	6-FEB-1992	SOIL
SC-G61-A	M92-02-104-018	6-FEB-1992	SOIL
SC-G61-B	M92-02-104-019	6-FEB-1992	SOIL
SC-G61-C	M92-02-104-020	6-FEB-1992	SOIL
SC-G63-A	M92-02-104-021	6-FEB-1992	SOIL
SC-G63-B	M92-02-104-022	6-FEB-1992	SOIL
SC-G63-C	M92-02-104-023	6-FEB-1992	SOIL
SC-G86-A	M92-02-105-002	9-FEB-1992	SOIL
SC-G86-B	M92-02-105-003	9-FEB-1992	SOIL
SC-G86-C	M92-02-105-004	9-FEB-1992	SOIL
SC-G86-C MS	M92-02-105-005	9-FEB-1992	SOIL
SC-G86-C MSD	M92-02-105-006	9-FEB-1992	SOIL
SC-G87-A	M92-02-105-007	9-FEB-1992	SOIL
SC-G87-B	M92-02-105-008	9-FEB-1992	SOIL
SC-G87-C	M92-02-105-009	9-FEB-1992	SOIL
SC-G88-A	M92-02-105-010	9-FEB-1992	SOIL
SC-G88-B	M92-02-105-011	9-FEB-1992	SOIL
SC-G88-C	M92-02-105-012	9-FEB-1992	SOIL
SC-G89-C	M92-02-105-013	9-FEB-1992	SOIL
SC-G17-A	M92-02-105-014	8-FEB-1992	SOIL
SC-G17-B	M92-02-105-015	8-FEB-1992	SOIL

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TABLE E-7 (Continued)

SUMMARY OF POTENTIALLY cPAH
(TCLP) SAMPLES SENT TO
CHESTER LABNET-MONROEVILLE

CLIENT'S SAMPLE NAME	SAMPLE ID	DATE COLLECTED	SAMPLE MATRIX
SC-G17-C	M92-02-105-016	8-FEB-1992	SOIL
SC-G59-A	M92-02-105-017	8-FEB-1992	SOIL
SC-G59-B	M92-02-105-018	8-FEB-1992	SOIL
SC-G59-C	M92-02-105-019	8-FEB-1992	SOIL
SC-G69-A	M92-02-105-020	8-FEB-1992	SOIL
SC-G69-B	M92-02-105-021	8-FEB-1992	SOIL
SC-G69-C	M92-02-105-022	8-FEB-1992	SOIL
SC-G74-A	M92-02-105-023	8-FEB-1992	SOIL

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Table E-6 of this Appendix summarizes the sample collection date, extraction date, and analysis date. The TCLP extraction date is given for those samples which have an extraction date greater than two weeks.

5.2 Sample Storage

Samples collected from the test wells were properly preserved at the South Cavalcade site prior to shipment. All samples, including extracts, were stored at 4°C prior to preparation or analysis. A cooler containing the potentially cPAH TCLP extracts of samples SC-G64-A, SC-G64-B, SC-G64-C, and SC-G64-C duplicate arrived at the Houston laboratory with an internal temperature of 20°C; however, the sample volumes were not reduced by the increased temperature. The representative surrogates of these samples were all within the QC limits. The MS/MSD percent recoveries of sample SC-G64-A for acenaphthene were extremely high (792 %R and 860 %R, respectively). Additionally, the MS/MSD percent recoveries for pyrene for the same sample were outside the QC limits (156 %R and 152 %R, respectively).

5.3 Methods Used for Aliquoting

All glassware used for aliquoting was Class A glassware, which was pre-cleaned according to the appropriate EPA Method. Representative soil samples were weighed on balances calibrated daily with Class A weights.

5.4 Initial and Continuing Calibration and Tuning

The initial and continuing calibration and tuning data for TCLP analyses adhered to the criteria presented in the QAPP. The instruments were properly calibrated during the TCLP potentially cPAH analyses.

Submittal of calibration and tuning data was not a requirement for other parameters including soil potentially cPAH analyses; however, seven of the 19 soil potentially cPAH data packages contained calibration and tuning data. Review of this

information indicates that the instruments were properly calibrated and tuned prior to and during the analyses.

5.5 Surrogates

Of the eight surrogates required by EPA Method 8270, only two of the surrogates represent the potentially cPAH, terphenyl-d14 and 2-fluorobiphenyl.

The surrogates associated with the potentially cPAHs from the TCLP extract, were generally within the control limits. Eighteen (18) samples had surrogates outside the QC limits. Table E-2 summarizes all samples having surrogates outside the QC limits. All surrogate criteria were met by the laboratory.

A summary of the surrogate recoveries was not required for soil cPAHs. The laboratory did submit surrogate recoveries for 49% of the soil cPAHs. Of the 49%, 9% of the surrogates were diluted out and 5% of the samples had surrogates outside the QC limits. Table E-3 summarizes all soil surrogates outside the QC limits and those not submitted.

Overall review of the potentially cPAH data indicates that sample matrix (i.e., chemical interferences and high concentrations) was the main factor associated with dilutions and poor recoveries of surrogates; therefore, surrogate recoveries should not be considered when qualifying the South Cavalcade site data.

The potentially cPAH and BTEX surrogates for the test well samples were within the required QC limits. All QC criteria for these analyses were meet.

5.6 Matrix Spike/Matrix Spike Duplicates

Acenaphthene and pyrene are the representative CLP PAH spikes analyzed by the laboratory. Tables E-8 and E-9 summarize the TCLP and soil potentially cPAH MS/MSD analytical results.

TABLE E-8
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
TCLP ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	G9-A	G9-A	G9-A	G18-C	G18-C	G18-C	G24-C	G24-C	G24-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L
WORK ORDER	H920218	H920218	H920218	H9201275	H9201273	H9201273	H920228	H920228	H920228
PARAMETER									
Acenaphthene	10 U	46.1	39.3	10 U	44.4	46.1	10 U	54.8	57.2
Pyrene	10 U	32.4	28.4	10 U	45.4	46.6	10 U	44.1	43.2

SAMPLE	G37-C	G37-C	G37-C	G38-C	G38-C	G38-C	G39-C	G39-C	G39-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L
WORK ORDER	H9202130	H9202130	H9202130	H920223	H920223	H920223	H920294	H920294	H920294
PARAMETER									
Acenaphthene	132	275	206	10 U	340	362	10 U	23.7	24.8
Pyrene	7.47	66.9	69.6	10 U	59.8	62	10 U	28.3	29.8

DM-4.WK1

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TABLE E-8 (CONTINUED)
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
TCLP ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE UNITS WORK ORDER	G46-C SAMPLE CONCENTRATION H9201273	G46-C MS UG/L H9201273	G46-C MSD UG/L H9201273	G52-C SAMPLE CONCENTRATION H920226	G52-C MS UG/L H920226	G52-C MSD UG/L H920226	G62-C SAMPLE CONCENTRATION H9202129	G62-C MS UG/L H9202129	G62-C MSD UG/L H9202129
PARAMETER									
Acenaphthene	10 U	43	46.9	10 U	45.9	46	10 U	147.8	139.8
Pyrene	10 U	39	43.7	10 U	35	36.2	10 U	84.8	73

SAMPLE UNITS WORK ORDER	G64-A SAMPLE CONCENTRATION H9202134	G64-A MS UG/L H9202134	G64-A MSD UG/L H9202134	G74-B SAMPLE CONCENTRATION H9202130	G74-B MS UG/L H9202130	G74-B MSD UG/L H9202130	G77-C SAMPLE CONCENTRATION H9202131	G77-C MS UG/L H9202131	G77-C MSD UG/L H9202131
PARAMETER									
Acenaphthene	10 U	396	430	10 U	41.9	37.6	10 U	34.8	39.5
Pyrene	10 U	78	76.2	10 U	44.9	38.5	10 U	36.3	47.9

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TABLE E-8 (CONTINUED)
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
TCLP ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	G77-C	G77-C	G77-C	G79-C	G79-C	G79-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L
WORK ORDER	H9202131	H9202131	H9202131	H9202106	H9202106	H9202106
PARAMETER						
Acenaphthene	10 U	42	42.6	10 U	668	548
Pyrene	10 U	64.7	57.7	10 U	51.6	48.6

SAMPLE	G86-C	G86-C	G86-C	G86-C	G86-C	G86-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/L	UG/L	CONCENTRATION	UG/L	UG/L
WORK ORDER	H9202128	H9202106	H9202106	H9202128	H9202128	H9202128
PARAMETER						
Acenaphthene	10 U	38.7	35.8	10 U	38.7	35.8
Pyrene	10 U	36.7	41.1	10 U	36.7	41.1

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TABLE E-9
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	G17-A	G17-A	G17-A	G24-C	G24-C	G24-C	G26-B	G26-B	G26-B
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG
WORK ORDER	H920298	H920298	H920298	H9201277	H9201277	H9201277	H9201261	H9201261	H9201261
PARAMETER									
Acenaphthene	10 U	1300	1500	10 U	1100	1500	47000	NA	NA
Pyrene	10 U	2900	3300	10 U	1200	1600	19000	10 U	10 U

SAMPLE	G31-C	G31-C	G31-C	G36-A	G36-A	G36-A	G36-C	G36-C	G36-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	MG/KG	MG/KG
WORK ORDER	H9201113	H9201113	H9201113	H910147	H910147	H910147	H920147	H920147	H920147
PARAMETER									
Acenaphthene	86000	14000	14000	10 U	1000	880	1900	1600	1500
Pyrene	43000	10 U	10 U	10 U	2100	2600	1900	2400	2300

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TABLE E-9 (CONTINUED)
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	G39-C	G39-C	G39-C	G42-C	G42-C	G42-C	G46-C	G46-C	G46-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG
WORK ORDER	H920232	H920232	H920232	H9201133	H9201133	H9201133	H9201208	H9201208	H9201208
PARAMETER									
Acenaphthene	10 U	1300	1500	10 U	2200	2600	10 U	1700	1600
Pyrene	10 U	1500	1700	800	2400	3600	10 U	2200	2200

SAMPLE	G47-A	G47-A	G47-A	G52-C	G52-C	G52-C	G62-C	G62-C	G62-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG
WORK ORDER	H9201226	H9201226	H9201226	H9201297	H9201297	H9201297	H920282	H920282	H920282
PARAMETER									
Acenaphthene	10 U	1500	1600	10 U	1400	1200	36000	20000	29000
Pyrene	180	7100	5800	10 U	1600	1400	21000	11000	16000

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TABLE E-9 (CONTINUED)
MATRIX SPIKE/MATRIX SPIKE DUPLICATES
SOIL ANALYSES
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	G77-C	G77-C	G77-C	G86-C	G86-C	G86-C
	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG
WORK ORDER	H9202182	H9202182	H9202182	H9202100	H9202100	H9202100
PARAMETER						
Acenaphthene	10 U	2000	1700	10 U	1500	1600
Pyrene	160	1800	2200	10 U	1400	1400

SAMPLE	LCSW-01	LCSW-01	LCSW-01	LCSW-01	LCSW-01	LCSW-01
	SAMPLE	MS	MSD	SAMPLE	MS	MSD
UNITS	CONCENTRATION	UG/KG	UG/KG	CONCENTRATION	UG/KG	UG/KG
WORK ORDER	H9202111	H9202111	H9202111	H9202174	H9202174	H9202174
PARAMETER						
Acenaphthene	10 U	1600	1300	10 U	0	0
Pyrene	10 U	1900	1600	10 U	0	0

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The MS/MSD TCLP samples for data packages H92-01.101 and H92-01.257 were inadvertently spiked with the TCLP matrix spike solution instead of the CLP matrix spike solution. (Note: the potentially cPAH parameters are not included in the TCLP list of compounds.) Analyzing a TCLP leachate for potentially cPAH requires that the laboratory introduce a method change.

The MS/MSD were diluted out for soil samples in data packages H92-01.174 and H92-01.150. To show that the extraction process was performed properly, the laboratory analyzed a blank spike. This information is presented in Table E-10.

The proper frequency of MS/MSD was maintained for both soil and TCLP analyses. Tables E-4 and E-5 summarize all MS/MSD samples associated with the soil and TCLP potentially cPAH analyses.

The MS/MSD for test well sample SC-STW02, sampled on March 4, 1992, were outside the QC limits. The following identifies the QC parameters and the corresponding QC limits:

	Actual Recoveries			Stipulated Limits	
Parameter	**MS %R**	**MSD %R**	**RPD**	**QC RPD**	**%R**
Acenaphthene	220 *	160 *	32 *	31	46-118
Pyrene	140 *	158 *	12	31	26-127

*Outside QC control limits.

The following BTEX MS/MSD for test well sample SC-STW-02 had the following items outside the QC limits:

		Actual Recoveries		Stipulated Limits	
Parameter	**Date Collected**	**MS %R**	**RPD**	**QC RPD**	**%R**
Benzene	03/04/92	----	14 *	11	----
Toluene	03/04/92	75 *	----	----	76-125
Toluene	03/22/92	----	14 *	13	----

*Outside QC control limits.

TABLE E-10
BLANK SPIKE RECOVERY SUMMARY
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

SAMPLE	AMOUNT SPIKED	CONCENTRATION RECOVERED	AMOUNT SPIKED	CONCENTRATION RECOVERED	BLANK SPIKE 1 AMOUNT SPIKED	BLANK SPIKE 1 CONCENTRATION RECOVERED	BLANK SPIKE 2 AMOUNT SPIKED	BLANK SPIKE 2 CONCENTRATION RECOVERED	AMOUNT SPIKED	CONCENTRATION RECOVERED
UNITS	MG/KG	MG/KG	UG	UG	UG/L	UG/L	UG/L	UG/L	UG	UG
WORK ORDER	H9201101	H9201101	H9101257	H9101257	H9202100	H9202100	H9202100	H9202100	H920232	H920232
PARAMETER										
Acenaphthene	1700	1500	1650	1300	1650	1100	1650	1100	1700	1300
Pyrene	1700	1400	1650	1300	1650	1100	1650	1200	1700	1300

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5.7 Field Duplicates

The field duplicate RPD for samples SC-G33-A, SC-G33-C, and SC-G5-A were outside the QC limits. A review of South Cavalcade data indicates sample heterogeneity and sample matrix (chemical interference and high concentrations) are possible reasons for poor RPDs. All field duplicates for the TCLP potentially cPAH samples were below the PQL. Tables E-11 and E-12 summarize the field duplicate data for the South Cavalcade site.

5.8 Performance Evaluation Samples

Two blind duplicates were submitted to the laboratory for analysis. The two duplicates were sample SC-G55-C, the blind duplicate of SC-G40-C, and SC G89-C, the blind duplicate of SC-G75-C. All results were below the detection limits. Tables E-13 and E-14 summarize the performance evaluation samples submitted for analysis and their corresponding RPDs.

5.9 Blanks

Constituents of concern were not detected in any of the 14 soil rinsate blanks, 18 soil method blanks, or 17 TCLP method blanks. Tables E-15 through E-20 summarize the analytical results associated with the field and laboratory blanks.

TABLE E-11

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST INC.

PARAMETER	SC G15-B (ug/Kg)		SC G15-B DUPLICATE (ug/Kg)		RPD (percent)	SC G29-A (ug/Kg)		SC G29-A DUPLICATE (ug/Kg)		RPD (percent)	SC G29-B (ug/Kg)		SC G29-B DUPLICATE (ug/Kg)		RPD (percent)
BENZO(A)ANTHRACENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
CHRYSENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
BENZO(B)FLUORANTHENE	390	U	410	U	NA	890		800		10.6	380	U	390	U	NA
BENZO(K)FLUORANTHENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
BENZO(A)PYRENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
INDENDO(1,2,3-CD)PYRENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
DIBENZO(A,H)ANTHRACENE	390	U	410	U	NA	770	U	770	U	NA	380	U	390	U	NA
PERCENT SOLIDS (%)	84		82		1.2	0.87		0.87		0.0	87		85		2.3

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-11 (CONTINUED)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST INC.

PARAMETER	SC G29-C (ug/Kg)		SC G29-C DUPLICATE (ug/Kg)		RPD (percent)	SC G33-A (ug/Kg)		SC G33-A DUPLICATE (ug/Kg)		RPD (percent)	SC G33-C (ug/Kg)		SC G33-C DUPLICATE (ug/Kg)		RPD (percent)
BENZO(A)ANTHRACENE	390	U	380	U	NA	13000		5100		87.3	40000		95000		81.5
CHRYSENE	390	U	380	U	NA	12000		5300		77.4	41000		89000		73.8
BENZO(B)FLUORANTHENE	390	U	380	U	NA	11000		5400		68.2	24000	J	60000		85.7
BENZO(K)FLUORANTHENE	390	U	380	U	NA	7900	U	3900	U	NA	37000	U	19000	U	NA
BENZO(A)PYRENE	390	U	380	U	NA	5200	J	3900	J	28.6	9700	J	25000		88.2
INDENDO(1,2,3-CD)PYRENE	390	U	380	U	NA	7900	U	3900	J	NA	1500	J	9100	J	143.4
DIBENZO(A,H)ANTHRACENE	390	U	380	U	NA	7900	U	3900	U	NA	37000	U	19000	U	NA
PERCENT SOLIDS (%)	86		87		1.1	84		85		1.2	89		88		1.1

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-11 (CONTINUED)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST INC.

PARAMETER	SC G39-C		SC G39-C DUPLICATE		RPD	SC G5-A		SC G5-A DUPLICATE		RPD	SC G64-C		SC G64-C DUPLICATE		RPD	SC G84-C		SC G84-C DUPLICATE		RPD
	(ug/Kg)		(ug/Kg)		(percent)	(ug/Kg)		(ug/Kg)		(percent)	(ug/Kg)		(ug/Kg)		(percent)	(ug/Kg)		(ug/Kg)		(percent)
BENZO(A)ANTHRACENE	390	U	390	U	NA	110000		260000		81.1	4600		4000		14.0	390	U	390		NA
CHRYSENE	390	U	390	U	NA	120000		240000		66.7	3100		3000		3.27	390	U	390		NA
BENZO(B)FLUORANTHENE	390	U	390	U	NA	190000		380000		66.7	3600		2700		28.6	390	U	390		NA
BENZO(K)FLUORANTHENE	390	U	390	U	NA	98000	U	50000	U	NA	790	U	790	U	NA	390	U	390		NA
BENZO(A)PYRENE	390	U	390	U	NA	95000	J	180000		61.8	2200		1600		31.6	390	U	390		NA
INDENDO(1,2,3-CD)PYRENE	390	U	390	U	NA	72000	J	130000		57.4	1200		940		24.3	390	U	390		NA
DIBENZO(A,H)ANTHRACENE	390	U	390	U	NA	13000	J	37000	J	96.0	790	U	790	U	NA	390	U	390		NA
PERCENT SOLIDS (%)	86		86		0.0	84		83		1.2	84		84		0.0	85		85		0.0

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-12

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G29-A (ug/L)		SC G29-A DUPLICATE (ug/L)		RPD	SC G29-B (ug/L)		SC G29-B DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

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TABLE E-12 (Continued)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G29-C (ug/L)		SC G29-C DUPLICATE (ug/L)		RPD	SC G33-A (ug/L)		SC G33-A DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

KEYSTONE ENVIRONMENTAL RESOURCES, INC

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TABLE E-12 (Continued)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G33-C (ug/L)		SC G33-C DUPLICATE (ug/L)		RPD	SC G39-C (ug/L)		SC G39-C DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

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TABLE E-12 (Continued)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G5-A (ug/L)		SC G5-A DUPLICATE (ug/L)		RPD	SC G64-C (ug/L)		SC G64-C DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-12 (Continued)

SUMMARY OF FIELD DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G84-C (ug/L)		SC G84-C DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

KEYSTONE ENVIRONMENTAL RESOURCES, INC

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TABLE E-13

SUMMARY OF BLIND DUPLICATE RESULTS
POTENTIALLY cPAH (TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G75-C (ug/L)		SC G89-C DUPLICATE (ug/L)		RPD	SC G40-C (ug/L)		SC G55 DUPLICATE (ug/L)		RPD
BENZO(A)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA
CHRYSENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(B)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(K)FLUORANTHENE	10	U	10	U	NA	10	U	10	U	NA
BENZO(A)PYRENE	10	U	10	U	NA	10	U	10	U	NA
INDENDO(1,2,3-CD)PYRENE	10	U	10	U	NA	10	U	10	U	NA
DIBENZO(A,H)ANTHRACENE	10	U	10	U	NA	10	U	10	U	NA

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-14

SUMMARY OF BLIND DUPLICATE RESULTS
POTENTIALLY cPAH SOILS
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	SC G75-C (ug/Kg)		SC G89-C DUPLICATE (ug/Kg)		RPD	SC G40-C (ug/Kg)		SC G55-C DUPLICATE (ug/Kg)		RPD
BENZO(A)ANTHRACENE	830	U	850	U	NA	390	U	400	U	NA
CHRYSENE	830	U	850	U	NA	390	U	400	U	NA
BENZO(B)FLUORANTHENE	830	U	850	U	NA	390	U	400	U	NA
BENZO(K)FLUORANTHENE	830	U	850	U	NA	390	U	400	U	NA
BENZO(A)PYRENE	830	U	850	U	NA	390	U	400	U	NA
INDENDO(1,2,3-CD)PYRENE	830	U	850	U	NA	390	U	400	U	NA
DIBENZO(A,H)ANTHRACENE	830	U	850	U	NA	390	U	400	U	NA
PERCENT SOLIDS (%)	81		78		3.8	85		84		1.2

NOTES:

U = Undetected at the listed detection limit
J = Compound is present, but below the listed detection limit
NA = Not applicable

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TABLE E-15

SUMMARY OF RINSATE BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-01.113	01/14/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.133	01/15/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.226	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.257	01/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.277	01/27/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.313	01/28/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/29/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.45	02/14/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/15/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.74	02/17/92 (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/17/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.82	02/06/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.100	02/08/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/09/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.111	02/10/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

NOTE:
(1) Hydrant water sample.

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TABLE E-16

SUMMARY OF SOIL BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/kg)	Chrysene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(a)Pyrene (ug/kg)	Indeno(1,2,3-cd)pyrene (ug/kg)	Dibenzo(a,h)anthracene (ug/kg)
H92-01.47	01/07/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/07/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.56	01/08/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/08/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.101	01/14/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/14/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.113	01/15/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/15/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.133	01/16/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/16/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.208	01/22/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/22/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.226	01/24/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/24/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.257	01/26/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/26/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.261	01/26/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/26/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U

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TABLE E-16 (CON'T.)

SUMMARY OF SOIL BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/kg)	Chrysene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(a)Pyrene (ug/kg)	Indeno(1,2,3-cd)pyrene (ug/kg)	Dibenzo(a,h)anthracene (ug/kg)
H92-01.277	01/28/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/28/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.297	01/29/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/29/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-01.313	01/30/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	01/30/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.32	02/05/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	02/05/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.45	02/08/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.74	02/21/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.82	02/10/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	02/11/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.98	02/14/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.100	02/12/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
	02/14/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U
H92-02.111	02/17/92	330 U	330 U	330 U	330 U	330 U	330 U	330 U

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TABLE E-17

SUMMARY OF WATER BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-02.82	02/10/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

012601

TABLE E-18

SUMMARY OF TCLP BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-01.50	01/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.70	01/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.174	01/21/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.178	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.273	01/29/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.275	01/29/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/31/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.18	02/05/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.23	02/12/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.26	02/12/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.28	02/11/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

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TABLE E-18 (CON'T.)

SUMMARY OF TCLP BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-02.94	02/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.106	02/14/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.128	02/26/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.129	02/21/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.130	02/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.131	02/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.134	02/19/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/19/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

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TABLE E-19

SUMMARY OF METHOD BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-01.50	01/20/92 (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.70	01/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.113	01/15/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.133	01/16/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.174	01/21/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.178	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/22/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.226	01/23/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.257	01/26/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.273	01/29/92 (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.275	01/29/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	01/31/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-01.277	01/28/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

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TABLE E-19 (CON'T.)

POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-01.313	01/30/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.18	02/05/92 (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.23	02/12/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	02/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.26	02/12/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.28	02/11/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.45	02/10/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.74	02/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.94	02/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.100	02/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.106	02/14/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.111	02/13/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.128	02/26/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.129	02/21/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

KEYSTONE ENVIRONMENTAL RESOURCES, INC

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TABLE E-19 (CON'T.)

SUMMARY OF METHOD BLANKS
POTENTIALLY CARCINOGENIC PAHs
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order	Collection Date	Benzo(a)anthracene (ug/L)	Chrysene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)Pyrene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Dibenzo(a,h)anthracene (ug/L)
H92-02.130	02/20/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.131	02/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-02.134	02/19/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.46	03/09/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.64	03/09/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.148	03/17/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.210	03/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.210	03/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U
H92-03.222	03/24/92	10 U	10 U	10 U	10 U	10 U	10 U	10 U

NOTE:

(1) Millipore filter method blank.

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TABLE E-20

SUMMARY OF METHOD BLANKS (1)
VOLATILE ORGANIC COMPOUNDS, METALS AND CONVENTIONAL CHEMISTRY
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

Work Order: Collection Date: Parameter	H92-03.64 03/16/92	H92-03.210 03/24/92
Volatile Aromatic Organic Compounds, ug/L (1)		
Benzene	2.0 U	2.0 U
Toluene	3.0 U	3.0 U
Ethylbenzene	3.0 U	3.0 U
Total Xylenes	3.0 U	3.0 U
Metals, ug/L		
Arsenic	2.0 U	2.0 U
Chromium	3.0 U	3.0 U
Copper	3.0 U	3.0 U
Iron	6.0 U	6.0 U
Lead	1.0 U	1.0 U
Manganese	2.0 U	2.0 U
Zinc	2.0 U	2.0 U
Conventional Chemistry, mg/L		
Chemical Oxygen Demand (COD)	20 U	20 U
Total Organic Carbon (TOC)	1.0 U	1.0 U
Oil and Grease	1.0 U	1.0 U
Total Dissolved Solids	10 U	10 U
Hardness	2.0 U	2.0 U

NOTE:

(1) Analyzed using EPA method 8020.

6.0 COMPLETENESS

The QAPP did not recommend following the EPA Functional Guidelines, dated February 1, 1988, during the evaluation process; therefore, samples were not qualified as reliable or unreliable. Percent completeness achieved is based on the total number of samples collected and analyzed, and not the number of reliable or unreliable results. Table E-21 summarizes the percent completeness achieved (total number of collected results divided by the total number of analyzed, multiplied by 100) for the potentially cPAH for each medium analyzed.

Three field duplicate TCLP samples were inadvertently not analyzed for the potentially cPAHs. These samples are SC-G10-A(D), SC-G15-B(D), and SC-G18-C(D). Percent completeness for the TCLP potentially cPAH is 99%. The percent completeness achieved for the analytical data met the goals set forth in the Work Plan and the QAPP for all analyses.

TABLE E-21

SUMMARY OF PERCENT COMPLETENESS OF ANALYTICAL DATA FOR
POTENTIALLY cPAH (SOIL AND TCLP)
SOUTH CAVALCADE SITE
BEAZER EAST, INC.

PARAMETER	REFERENCE (EPA METHOD) (1)	DATA QUALITY LEVEL	TOTAL NUMBER OF SAMPLES COLLECTED (2)	TOTAL NUMBER OF ANALYSES COMPLETED	PERCENT COMPLETENESS ACHIEVED (3)	PERCENT COMPLETENESS GOAL (4)
Potentially cPAH Soil	EPA 8270	III	263	263	100%	90%
Potentially cPAH TCLP	EPA 8270	III	,258	255	99%	90%

NOTES:

(1) CLP - Contract Laboratory Protocol followed during analytical procedures.
(2) Total number of analyses does not include QA/QC samples or blanks.
(3) Percent Completeness = (Number of samples collected/Number of samples analyzed)
(4) Percent Completeness Goals for all analytical parameters set forth in the Quality Assurance Project Plan (QAPP) (March 1992).

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

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7.0 ADDITIONAL QC INFORMATION

Laboratory case narratives are presented in Appendix F of the Soil Delineation Report as supplemental information to document comments described in the QA/QC report.

012611

APPENDIX F

ANALYTICAL CASE NARRATIVES

012611

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G1-A

LAB NO. : H92-01.70 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 7 ,1992

B. NO. OF SAMPLES: Sixteen (16)

C. CLIENT ID NUMBERS: SC-G1-A, SC-G1-B, SC-G1-C, SC-G2-A, SC-G2-B, SC-G2-C, SC-35-A, SC-G35-B, SC-G35-C, SC-G36-A, SC-G36-B, SC-G37-A, SC-G37-B, SC-G37-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G37-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: Samples SC-G1-A, SC-G1-B and SC-G34-C had twice the correct amount of surrogate added. The surrogate recoveries are corrected on the corresponding quantitation reports. TCLP tumbling started on 1-10-92 and ceased on 1-11-92.

III. ANALYSIS

A. ANALYSIS PROBLEMS: The matrix spike/duplicate sample displayed spike recoveries and relative percent difference outside QC limits. The internal standard (#6) on sample SC-G35-A was less than 50% on both the original run and at a 1:100 dilution.

B. SURROGATE PROBLEMS: Surrogates were diluted out on sample SC-G35-A (1:100 dilution). On sample SC-G37-A: surrogate recoveries for 2-Fluorobiphenyl were outside QC limits; on sample SC-G37-B: surrogate recoveries for Nitrobenzene were outside QC limits. Surrogate values were adjusted due to computer error on samples SC-G35-B and S BLANK 1. The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 11, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G30-A

LAB NO. : H92-01.150 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 13 ,1992

B. NO. OF SAMPLES: Sixteen (11)

C. CLIENT ID NUMBERS: SC-G30-A, SC-G30-B, SC-G30-C, SC-G33-A, SC-33-A(D), SC-G33-B, SC-G33-C, SC-G33-C(D), SC-G44-A, SC-G44-B, SC-G44-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G44-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: Samples SC-G33-C(D), SC-G44-B, SC-G44-B RE, SC-G44-C MS and SC-G44-C MSD had twice the correct amount of surrogate added. The surrogate recoveries are corrected on the corresponding quantitation reports.

III. ANALYSIS

A. ANALYSIS PROBLEMS: On samples SC-G33-A, SC-G33-B, SC-GC33-C, SC-G33-C(D), SC-G44-B, SC-G44-B RE and SC-G44-C, internal standard #2(NAPHTHALENE-D8) retention times shifted, and displayed low area counts due to high concentrations of NAPHTHALENE in the samples. Sample SC-G44-C was run twice due to scan shift of IS #2 and IS #1 area count was greater than 200 %. The MS/MSD samples were spiked with TCLP matrix spike instead of CLP matrix spike at a higher concentration than that required under the 3/90 SOW.

B. SURROGATE PROBLEMS: The following samles had surrogate recoveries outside QC windows: SC-G30-C (Nitrobenzene), SC-G33-A(D) (2-Fluorobiphenyl).
The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 16, 1992
Date

CASE NARRATIVE

012616

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G32-C

LAB NO. : H92-01.174 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 19 ,1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G32-A, SC-G32-B, SC-G32-C, SC-G29-A, SC-G29-B, SC-G29-C, SC-G29-A(D), SC-G29-B(D), SC-G29-C(D), SC-G47-A, SC-G47-B, SC-G47-C, SC-G50-A, SC-G50-B, SC-G50-C, SC-G49-A, SC-G49-B, SC-G49-C, SC-G31-A, SC-G31-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G31-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: Samples SC-G29-A, SC-G29-B, SC-G29-C, SC-G49-A and SC-G49-B, SBLK2 and SBLK TCLP 2 had twice the correct amount of surrogate added. The surrogate recoveries were corrected on the corresponding quantitation reports by the analyst(s).

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III. ANALYSIS

A. ANALYSIS PROBLEMS: On samples SC-G32-A and SC-G32-A(RE) internal standard 6 AREA was outside QC limits. On sample SC-G29-C(D), internal standard 1 RETENTION TIME was outside QC limits. On sample SC-G31-C, internal standard 2 RETENTON TIME was outside QC limits.

The MS/MSD samples were spiked with TCLP matrix spike instead of CLP matrix spike at a higher concentration than that required under the 3/90 SOW. Spike recovery was outside QC limits for HEXACHLOROETHANE on the matrix spike. RPD's were outside QC limits for HEXACHLOROETHANE, 2,4,6-TRICHLOROPHENOL, 2,4,5-TRICHLOROPHENOL and 2,4-DINITROTOLUENE.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G29-B(D), SC-G31-A, SC-G31-C, SC-G32-B, SC-G32-C, SC-G50-C, SC-G31-C MS, (2,4,6-TRIBROMOPHENOL); instrument malfunction prohibited the recovery of surrogate 2-FLUOROPHENOL on sample SC-G31-C MS.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group. Pentachlorophenol was found in sample SC-G31-C.

Ron Jansen, Project Manager

February 24, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G3-A

LAB NO. : H92-01.178 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 15 ,1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G31-B, SC-G3-A, SC-G3-B, SC-G3-C, SC-G4-A, SC-G4-B, SC-G4-C, SC-G5-A, SC-G5-B, SC-G5-C, SC-G5-A(D), SC-G48-A SC-G48-B, SC-G48-C, SC-G45-A, SC-G45-B, SC-G45-C, SC-G42-A, SC-G42-B, SC-G42-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G42-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: Samples SC-G3-C, SC-G4-A, SC-G4-B, SC-G4-C, SC-G5-A, SC-G5-B, SC-G5-C, SC-G5-A(D), SC-G48-A, SC-G48-B, SC-G48-C, SC-G45-A, SC-G45-B, SC-G45-C, SC-G42-A, SC-G42-B and SC-G42-C had twice the correct amount of surrogate added. The surrogate recoveries were corrected on the corresponding quantitation reports by the analyst(s).

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard 6 was outside QC limits on sample SC-G5-A, but within QC limits on SC-G5-A(D). On samples SC-G3-C, SC-G4-B and SC-G4-C, internal standard 2 (NAPHTHALENE-D8) RETENTION TIMES shifted due to hich concentrations of NAPHTHALENE in the samples. Internal standard 6 (PERYLENE-D12) RETENTION TIMES shifted outside QC limits on sample SC-G48-B.

Spike recoveries for Pentachlorophenol and Pyrene were outside QC limits on SC-G42-C MS. Spike recoveries for 4-Nitrophenol were outside QC limts on both the MS and the MSD analaysis. All RPD's were within QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G3-B, SC-G5-A, SC-G5-A(D), SC-G5-C (NITROBENZENE); SC-G42-B, SC-G42-C, SC-G45-A, SC-G42-C MS and SC-G42-C MSD (2,4,6-TRIBROMOPHENOL).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 24, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G6-A

LAB NO. : H92-01.273 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 27 ,1992

B. NO. OF SAMPLES: Nine (9)

C. CLIENT ID NUMBERS: SC-G43-A, SC-G43-B, SC-G43-C, SC-G46-A, SC-G46-B, SC-G46-C, SC-G6-A, SC-G6-B, SC-G6-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G46-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard IS-1 (1,4-Dichlorobenzene-d4) and IS-6 (Perylene-d12) AREA COUNT was outside QC limits on sample SC-G46-A. This sample was re-analzed at a 10 dilution (SC-G46-A DL). Internal standards were within QC limits at this dilution, but the surrogates were diluted out. The matrix spike duplicate recovery and relative percent difference for 4-Nitrophenol was outside QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G43-A (Terphenyl-d14), SC-G46-A (Terphenyl-d14), SC-G46-C (2-Fluorobiphenyl), SC-G46-A DL (ALL).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 28, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G7-A

LAB NO. : H92-01.275 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 27 ,1992

B. NO. OF SAMPLES: Twelve (12)

C. CLIENT ID NUMBERS: SC-G18-A, SC-G18-B, SC-G18-C, SC-G19-A, SC-G19-B, SC-G19-C, SC-G20-A, SC-G20-B, SC-G20-C, SC-G7-A, SC-G7-B, SC-G7-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G18-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard IS-2 (Naphthalene-d8) RETENTION TIME shifted outside QC limits on samples SC-G20-B and SC-G20-C.
The matrix spike duplicate recovery for 2,4-Dinitrotoluene was outside QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G20-A (Nitrobenzene) and SC-G20-C (Nitrobenzene).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 28, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G9-A

LAB NO. : H92-02.18 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 26 ,1992

B. NO. OF SAMPLES: Eighteen (18)

C. CLIENT ID NUMBERS: SC-G10-A, SC-G10-B, SC-G10-C, SC-G12-A, SC-G12-B, SC-G12-C, SC-G14-A, SC-G14-B, SC-G14-C, SC-G15-A, SC-G15-B, SC-G15-C, SC-G16-A, SC-G16-B, SC-G16-C, SC-G9-A, SC-G9-B, SC-G9-C,

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G9-A

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard IS-6 (Perylene-d12) RETENTION TIME shifted outside QC limits on sample SC-G12-C.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G12-B (Terphenyl-d14), SC-G12-C (Terphenyl-d14), SC-G9-C (2-Fluorobiphenyl).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

February 28, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G8-A

LAB NO. : H92-02.23 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 29 ,1992

B. NO. OF SAMPLES: Fourteen (14)

C. CLIENT ID NUMBERS: SC-G11-A, SC-G11-B, SC-G11-C, SC-G27-A, SC-G27-B, SC-G27-C, SC-G38-A, SC-G38-B, SC-G38-C, SC-G53-A, SC-G53-B, SC-G53-C SC-G8-A, SC-G8-B

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G38-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: Sample SC-G27-A, had twice the correct amount of surrogate added. The surrogate recoveries are corrected on the corresponding quantitation report.

III. ANALYSIS

A. ANALYSIS PROBLEMS: Various internal standards displayed both AREA counts and RETENTION TIMES outside QC limits on sample SC-G38-C, SC-G38-C MS and SC-G38-C MSD. Since these occured on the QA/QC samples no reanalysis is needed (per 3/90 SOW).

The matrix spike and duplicate recoveries for 1,2,4-Trichlorobenzene and Acenaphthene were outside QC limits. The RPD's on 1,2,4-Trichlorobenzene, 4-Nitrophenol and Pentachlorophenol were outside QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G11-B, SC-G38-A, SC-G38-C, SC-G38-C MS & MSD and SC-G53-C. Samples SC-G38-A and SC-G53-C were re-extracted/re-analyzed and the surrogate recoveries were within QC limits. Sample SC-G11-B was not re-extracted/re-analyzed due to the high concentration of hydrocarbons being the probable cause for the surrogates elevated recoveries.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Janzen, Project Manager

March 6, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G13-A

LAB NO. : H92-02.26 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 28 ,1992

B. NO. OF SAMPLES: Twelve (12)

C. CLIENT ID NUMBERS: SC-G13-A, SC-G13-B, SC-G13-C, SC-G28-A, SC-G28-B, SC-G28-C, SC-G51-A, SC-G51-B, SC-G51-C, SC-G52-A, SC-G52-B, SC-G52-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G52-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard IS-6 (Perylene-d12) AREA was outside QC limits on samples SC-G28-A and SC-G28-A RE. The original run AREA count was high; the re-analysis AREA count was low.

The matrix spike and duplicate recovery for 4-Nitrophenol was outside QC limits. The matrix spike recovery for 2,4-Dinitrotoluene was outside QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC windows: SC-G13-C, SC-G51-B and SC-G52-A (2,4,6-Tribromophenol); SC-G13-B (2-Fluorobiphenyl); SC-G51-A (Terphenyl-d14). All recoveries were above ten percent, so no re-extraction was needed (per 3/90 SOW).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 3, 1992
Date

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CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G21-A

LAB NO. : HFI-02.28 LOCATION : HOUSTON

I. RECEIPT

A. DATE: January 27 ,1992

B. NO. OF SAMPLES: Fourteen (14)

C. CLIENT ID NUMBERS: SC-G21-A, SC-G21-B, SC-G21-C, SC-G22-A, SC-G22-C, SC-G23-B, SC-G23-C, SC-G24-B, SC-G24-C, SC-G25-B, SC-G25-C, SC-G26-A SC-G26-B, SC-G26-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G24-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

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III. ANALYSIS

A. ANALYSIS PROBLEMS:

The matrix spike and duplicate recoveries for 4-Nitrophenol were outside QC limits. The matrix spike duplicate recoveries for 2,4-Dinitrotoluene were outside QC limits.

B. SURROGATE PROBLEMS: Surrogate 2,4,6-Tribromophenol recoveries were elevated in most samples due to matrix effect. Sample SC-SS2-A had two surrogates outside QC limits. These samples were extracted in the Monroeville Lab which makes re-extraction difficult.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 6, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G39-A

LAB NO. : H92-02.94 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 9 ,1992

B. NO. OF SAMPLES: Fourteen (14)

C. CLIENT ID NUMBERS: SC-G39-A, SC-G39-B, SC-G39-C, SC-G39-C(D), SC-G40-A, SC-G40-B, SC-G40-C, SC-G41-A, SC-G41-B, SC-G41-C, SC-G54-A, SC-G54-B, SC-G54-C, SC-G55-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G39-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: See matrix spike/duplicate summary for recoveries and RPD's outside QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC limits: SC-G40-A and SC-G41-A (Terphenyl-d14).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 10, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G79-C

LAB NO. : H92-02.106 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 11 ,1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G79-C, SC-G80-A, SC-G80-B, SC-G80-C, SC-G81-A, SC-G81-B, SC-G81-C, SC-G82-A, SC-G82-B, SC-G82-C, SC-G83-A, SC-G83-B, SC-G83-C, SC-G84-A, SC-G84-B, SC-G84-C, SC-G84-C(D), SC-G85-A, SC-G85-B, SC-G85-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G79-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: Internal standard 2 (Naphthalene-d8) AREA was outside QC limits on samples SC-G82-C and SC-G79-C MS due to naphhalene interference. On sample SC-G79-C, internal standard 6 (Perylene-d12) AREA was was outside QC limits.

Matrix spike and duplicate recoveries for Phenol, 4-Chloro-3-methylphenol, Acenaphthene, 4-Nitrophenol and Pentachlorophenol were outside QC limits. The RPD's for all compounds were within QC limits.

B. SURROGATE PROBLEMS: The following samples had surrogate recoveries outside QC limits: SC-82-C (2,4,6-Tribromophenol).

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 20, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G17-A

LAB NO. : H92-02.128 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 10,1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G17-A, SC-G17-B, SC-G17-C, SC-G59-A, SC-G59-B, SC-G59-C, SC-G69-A, SC-G69-B, SC-G69-C, SC-G86-A, SC-G86-B, SC-G86-C, SC-G74-A, SC-G87-A, SC-G87-B, SC-G87-C, SC-G88-A, SC-G88-B, SC-G88-C, SC-G89-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G86-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS: The matrix spike recovery for Pentachlorophenol was outside QC limits.

B. SURROGATE PROBLEMS: None

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Janssen, Project Manager

March 21, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G60-C

LAB NO. : H92-02.129 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 7 , 1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G60-C, SC-G62-A, SC-G62-B, SC-G62-C, SC-G71-A, SC-G71-B, SC-G71-C, SC-G72-A, SC-G72-B, SC-G72-C, SC-G73-A, SC-G73-B, SC-G73-C, SC-G68-A, SC-G68-B, SC-G68-C, SC-G70-A, SC-G70-B, SC-G70-C, SC-G76-A

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G62-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS:

The matrix spike and duplicate recoveries for Acenaphthene and Pyrene were outside QC limits.

Internal standards were outside QC limits on samples SC-G68-A, SC-G70-A and SC-G73-B due to interfering compounds. SC-G73-B was reanalyzed at a 1:20 dilution, and the internal were within QC limits.

B. SURROGATE PROBLEMS: Surrogate 2,4,6-Tribromophenol recoveries were elevated in samples SC-G68-A, SC-G68-B, SC-G68-C, SC-G70-A and SC-G72-B due to matrix effect. Sample SC-G62-C Nitrobenzene surrogate was outside QC limits, no re-extraction was neccesary per CLP 2/90 SOW.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 26, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G60-A

LAB NO. : H92-02.130 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 8 , 1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G60-A, SC-G60-B, SC-G65-A, SC-G65-B, SC-G65-C, SC-G66-A, SC-G66-B, SC-G67-A, SC-G67-B, SC-G67-C, SC-G74-B, SC-G74-C, SC-G75-A, SC-G75-B, SC-G75-C, SC-G78-A, SC-G78-B, SC-G78-C, SC-G79-A, SC-G79-B

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G74-B

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS:

The matrix spike recovery for 4-Nitrophenol were outside QC limits.

Internal standards were outside QC limits on sample SC-G67-B, SC-G67-C and SC-G70-B due to interfering compounds. Reanalysis was not performed on these samples.

B. SURROGATE PROBLEMS: Sample SC-G67-A had 2 surrogates outside QC limits; it is being re-extracted. Other samples had multiple surrogates outside QC limits, but they were advisory limits, so no re-extraction was done.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 26, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G56-A

LAB NO. : H92-02.131 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 7 , 1992

B. NO. OF SAMPLES: Twenty (20)

C. CLIENT ID NUMBERS: SC-G56-A, SC-G56-B, SC-G56-C, SC-G57-A, SC-G57-B, SC-G57-C, SC-G58-A, SC-G58-B, SC-G58-C, SC-G61-A, SC-G61-B, SC-G61-C, SC-G63-A, SC-G63-B, SC-G63-C, SC-G76-B, SC-G76-C, SC-G77-A, SC-G77-B, SC-G77-C

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G77-C

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

III. ANALYSIS

A. ANALYSIS PROBLEMS:

The matrix spike and duplicate recoveries for 4-Nitrophenol Pentachlorophenol were outside QC limits.

Internal standard (2) was outside QC limits on sample SC-G57-B due to interfering compounds.
Reanalysis was not performed on this sample.

B. SURROGATE PROBLEMS: On sample SC-G61-B, Terphenyl-d14 surrogate was outside QC limits.

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 26, 1992
Date

CASE NARRATIVE

SECTION I

LABORATORY : KEYSTONE HOUSTON DOC. CONT NO: NA

PROJECT ID.: SOUTH CAVALCADE SDG NUMBER : SC-G64-A

LAB NO. : H92-02.134 LOCATION : HOUSTON

I. RECEIPT

A. DATE: February 13, 1992

B. NO. OF SAMPLES: Four (4)

C. CLIENT ID NUMBERS: SC-G64-A, SC-G64-B, SC-G64-C, SC-G64-C(D)

D. SAMPLE TYPE: SOIL

E. ANALYSIS REQUESTED: SEMIVOLATILE ORGANICS-7 PAH'S (3/90 SOW)

F. SHIPPING PROBLEMS:None.

G. DOCUMENTATION PROBLEMS:None.

H. QC DISTRIBUTION (MATRIX SPIKE & MATRIX SPIKE DUPLICATE)

LEVEL	MATRIX	SEMIVOLATILE
LOW	SOIL	SC-G64-A

II. PREPARATION

A. ANALYTICAL LEVELS: Low

B. EXTRACTION PROBLEMS: None

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III. ANALYSIS

A. ANALYSIS PROBLEMS: See matrix spike and duplicate summary for recoveries outside QC limits.

B. SURROGATE PROBLEMS: None

The apparent difference in surrogate values between the surrogate summary forms and the data sheet quantitation reports are due to rounding methods on the FORMASTER software and the GC/MS instrument software respectively.

IV. COMMENTS: No T.I.C.'s were reported on this sample group.

Ron Jansen, Project Manager

March 21, 1992
Date

012646

APPENDIX G

LABORATORY AUDIT

cc: S. Craig
S. Radel

012647

FLUOR DANIEL ARCS TEAM

Members: Fluor Daniel, Inc.
I.T. Corporation
PEI Associates, Inc.
Life Systems, Inc.

Program Office
12790 Merit Drive
Suite 200, LB 169
Dallas, TX 75251
Tel (214) 450-4100
Fax (214) 450-4101

February 11, 1992

FDI/ARCS #1139

U.S. Environmental Protection Agency
Attn: Mark Fite
Remedial Project Manager
Region VI
1445 Ross Avenue
Suite 1000
Dallas, Texas 75202

CONTRACT NO. 68-W9-0013
REPORT OF LABORATORY AUDIT
SOUTH CAVALCADE SITE
WA #11-6B56

Dear Mark:

Transmitted with this letter is the above referenced report. Additional audit work will be performed on the laboratory generated data for validation and useability, at your request, when the field work as been completed.

If you have any questions, please feel free to contact me at (214) 450-4100.

Sincerely,

Mark A. McDonnell

Mark A. McDonnell
ARCS Project Manager

MAM/blh

pc: Mark deLorimier - FDI, Dallas
Steve Dickson - FDI, Dallas

012648

REPORT OF LABORATORY AUDIT
SOUTH CAVALCADE SUPERFUND SITE
WA # 11-6B56

AUDITOR: Mr. Barry Haynie
Fluor Daniel, Inc.
(214) 450-4100

DATE OF AUDIT: Wednesday, January 22,1992

LABORATORY: Keystone Laboratories
Houston, Texas
(713) 975-2754

INTRODUCTION

The purpose of the audit was to determine the performance of the laboratory for analysis of samples collected at the South Cavalcade Superfund Site. As of this date, the laboratory has only performed organic and TCLP organic analysis.

The scope of the audit included review of laboratory operations including sample receipt and long-in procedures, sample tracking and storage, documentation, analytical methodology and sample preparation.

An audit form was filled out. The form was taken from the EPA's "Quality Assurance Guidance Document - PQARS, Attachment E" and a copy is attached to this report. An organizational chart of the lab management and personnel is also attached.

AUDIT

The audit began with the pre-audit meeting with Mr. Thomas Osterman, Keystone Laboratory Manager. During this meeting the purpose of the audit was clearly stated and his cooperation was solicited. He provided assurance that this practice was common at the laboratory and that whatever areas of interest were upon for inspection.

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The audit began in sample receiving. Here he introduced Della Massoudi, the laboratory sample custodian. She summarized the sample receipt and log-in procedures. She also reviewed the sample receipt Standard Operating Procedure (SOP), which is currently being revised by Keystone.

In the sample receipt and log-in area, the cooler is checked for temperature and pH is tested for in aqueous samples. The cooler and samples are also inspected to ensure that samples are iced and properly packaged. A special log-in form is used for EPA/CLP projects. An internal chain-of-custody program is in place and enforced.

The only problem area in sample receipt and tracking was that not all samples are handled alike. Evidently samples are handled under a separate SOP. However, this is in revision and all samples will eventually be treated the same. This does not affect South Cavalcade site sample analysis.

In the extraction lab areas an extraction log is maintained. It is a bound notebook will sequentially numbered pages. Reagents are purchased from Burdick and Jackson and are HPLC grade. The reagents are tested for chlorine and acidity, as well as phthalate contamination. Chemicals are inventoried and checked for proper labeling. These procedures are standard and acceptable.

Hoods have bearing protection available and velocity checks are done each quarter. Balances are calibrated every 6 months and checked daily with "S" weights. A balance log book is maintained for each scale.

The TCLP extraction lab has four extractor boxes holding six samples each. Each box has an automatic timer. The lab also has eleven headspace extractors.

The GC/MS lad is divided into two section, one for volatile analysis and one for semivolatile analysis. Volatile samples are stored in a separate room in large commercial refrigerators vented to the outside air.

The GC/MS lab uses Finnegan 5100 and 4300 instruments. These are also vented to the outside air. The instruments use Formaster software with revision 6.5. A tape library of data is maintained for 5 years and a tape log book is kept. This means that the South Cavalcade data is currently archived for five years.

The GC/MS las has analytical SOP's within easy access of the analysts. Instrument calibration log books are kept next to each instrument.

Extracts and samples are treated as hazardous wastes, regardless of analytical results. Disposition is noted on chain-of-custody forms. EPA samples are stored in-house for one year.

CONCLUSION

It is concluded that Keystone Laboratories in Houston, Texas follows good laboratory practices and enforces these practices. The data generated from the lab can be utilized with a high degree of confidence. Therefore, the data generated by the lab for the South Cavalcade samples should be reliable.

012651

TECHNICAL SYSTEMS CHECKLIST - LABORATORY ASPECTS

1. Program Name/Element: _____

2. Organizational Unit: Keystone Lab - Houston of Chester LabNet.

3. Date of Review: 01/22/92

4. Participants:

	Name	Title
a. Reviewed Organization:	Thomas T. Osterman	Lab Director
	Ying-Ping Hsieh	QA Manager
	Charles E Baron	Organic Manager
	Della Massoudi	Sample Custodian
b. Review Team:	Barry Haynie	Fluor Daniel ARCS Team

5. Laboratory Operations Overview:

a. General Organization and Responsibilities

(1) Current organizational structure (Obtain or draw organizational chart)

Attached

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(2) Training/qualifications of personnel

Explain: Reviewed in QA Manual.

(3) Relationship with sampling organization(s)/client(s)

Explain: Both are owned by Chester Environmental but are treated as separate entities.

(4) Utilization of contract laboratories? X Yes ___ No

If yes, explain: Only if allowed under project contract terms.

(5) Lab EPA certified for drinking water? X Yes ___ No

		Date of Certification		
(a)	Metals		X Yes	___ No
(b)	Microbiology		___ Yes	X No
(c)	Radionuclides		___ Yes	X No
(d)	Pesticides		X Yes	___ No
(e)	Other Parameters	N/A	___ Yes	___ No

(6) Involved in EPA Contract Lab Program? X Yes ___ No

(a)	Organics	pending	X Yes	___ No
(b)	Inorganics	preaward 7/91	X Yes	___ No
(c)	Other Parameters		___ Yes	___ No

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(7) Formal lab certification program for local labs? X Yes ___ No

(a) Drinking Water X Yes ___ No

(b) Wastewater X Yes ___ No

(c) Other Programs ___ Yes ___ No

c. Documentation

(1) Does the lab have a formal written QA Program? X Yes ___ No

Explain: Lab has a QA manual. A copy was provided to the auditor

(2) Does the QA Program contain a commitment to QA consistent with EPA policies? X Yes ___ No

(3) Does the lab have written SOPs for routine procedures? X Yes ___ No

(4) Does the lab prepare, review and/or approve QA Project Plans for data collection activities? Reviewed by Monroeville Lab. Depends on contract. X Yes ___ No

(5) Does the lab provide QA/QC reports to management? X Yes ___ No

d. Performance Evaluation (PE) Study Results

(1) Frequency of participation

(a) Drinking Water bi annual

(b) Water Pollution bi annual

(c) DMR-QA N/A

(d) Air past participant in PA

(e) Pesticides COE, QBI & EMSL prog.

(f) Hazardous (RCRA/Superfund) ___

(g) EPA CLP Quarterly Dec 91

012654

(2) Summary of Results

Study/Parameters	Date	Results
CLP Pre Award	pending	
Water & Drinking water		
Final Score water	10/17/91	1832
Final Score soil	10/17/91	1935
WS Metals		not acceptable
WS organics		acceptable

(3) Where results were unsatisfactory, what was done to correct the problem?

Metals problem was tracked to sample preparation. Corrective actions were documented and notices were given to appropriate supervisors

e. On-Site Evaluations/Audits

(1) Date(s) of most recent audit(s): Nov. 1, 1991 by OSWER

(2) Significant Findings Identified: None. Only minor recommendations. Report not yet received

(3) Corrective Actions Taken:

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6. Sample Handling Procedures. The following items should be evaluated to determine that (1) they are addressed in an appropriate SOP and (2) there is evidence to show that they are being accomplished.

a. Sample Receipt

(1) Are there designated sample custodians for receipt of samples? Della Massoudi — X Yes ___ No

(2) Are the duties and responsibilities of sample custodians established and documented? — X Yes ___ No

(3) Are documents used to record sample receipt? — X Yes ___ No

Explain: _____

(4) Is condition of sample shipping containers and samples inspected and documented upon receipt? — X Yes ___ No

(5) Is chain-of-custody verified; i.e., custody seals in tact, chain-of-custody record accompany samples? — X Yes ___ No

(6) Are there provisions for sample delivery after duty hours? til 7 p.m. not after — ___ Yes X No

(7) Are sample numbers and containers compared and verified with chain-of-custody records? — X Yes ___ No

(8) Are discrepancies documented? — X Yes ___ No

(9) Are there written procedures (SOPs) in place for each of the above? in revision — X Yes ___ No

b. Sample Storage

(1) Are samples stored in a secured area prior to analysis? — X Yes ___ No

Explain: Temp. monitored daily with calibrated thermometer and recorded in log book.

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(2) How is lab security maintained? Coded entry on all exterior doors. Lab also has burglar, fire and smoke alarms.

(3) Are the environmental conditions of sample storage adequate (e.g., temperature)? X Yes ___ No

c. Sample Tracking

(1) Are samples tracked through analytical process? X Yes ___ No

Explain: By internal chain-of-custody procedures.

(2) Are holding times tracked and documented? by department X Yes ___ No

(3) Are extracts of samples adequately identified? by WO# X Yes ___ No

(4) Are all samples handled alike; e.g., enforcement sensitive versus routine? Separate SOPs ___ Yes X No

(5) Are there written procedures (SOPs) in place for each of the above? X Yes ___ No

(6) Is there an established policy on the disposition of samples following analyses? but being revised X Yes ___ No

X. Analytical Procedures not evaluated

a. Type samples analyzed and average number (if known)

(1) Drinking Water ___

(2) UIC ___

(3) Water Quality Monitoring ___

(4) Water Enforcement ___

(5) Air Quality Monitoring ___

(6) Air Source Enforcement ___

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(7) RCRA _____

(8) Superfund (CERCLA) _____

(9) Pesticides (FIFRA) _____

(10) Toxics/PCBs (TSCA) _____

b. Analytical Methods

(1) Are analytical methods used consistent with EPA regulations? X Yes ___ No

(2) Does the lab have EPA approval for any alternate test procedures utilized? X Yes ___ No

(3) Are analytical methods used documented? X Yes ___ No

(4) Are adequate references on hand? X Yes ___ No

8. QA/QC Procedures

a. Are internal/external checks utilized routinely? X Yes ___ No

					Frequency
(1)	Field blanks	X Yes	___ No		Project dependent
(2)	Field duplicates	X Yes	___ No		1 in 10 inorganic 1 in 20 organic
(3)	Field spikes	___ Yes	X No		not routinely
(4)	Method blanks	X Yes	___ No		1 in 20
(5)	Laboratory dups.	X Yes	___ No		1 in 20
(6)	Laboratory spikes	X Yes	___ No		1 in 20 organic 1 in 10 inorganic
(7)	QC/PE samples	X Yes	___ No		quarterly
(8)	Internal audits	X Yes	___ No		quarterly or as needed
(9)	External audits	X Yes	___ No		Biannual

b. Are QC checks documented and tracked to determine out-of-control conditions? X Yes ___ No

c. Is corrective action taken when appropriate? X Yes ___ No

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d. Are corrective actions documented? X Yes ___ No

e. Are control limits of analytical methods determined? X Yes ___ No

Explain: Ongoing and in progress

f. Are precision and accuracy of analytical data determined and tracked? X Yes ___ No

Explain: as per QA Manual

g. Calibration/maintenance of instrumentation

(1) Are calibration/maintenance procedures established? X Yes ___ No

(2) Are the procedures/frequencies documented? X Yes ___ No

(3) Are the frequencies adequate? X Yes ___ No

(4) Is accomplishment of calibration/maintenance adequately documented? X Yes ___ No

Explain: Service contract with Finnegan. Calibration log books by each instrument.

(5) Are there written procedures (SOPs) in place for the above items? X Yes ___ No

h. Standards

(1) Are sources/purity (grade) adequate? X Yes ___ No

(2) Are standards prepared properly? X Yes ___ No

(3) Are standards traceable to a primary standard? X Yes ___ No

i. Glassware

(1) Are supplies adequate for analyses performed? X Yes ___ No

(2) Are preparation/cleaning procedures adequate? X Yes ___ No

SOP in prep area.

9. Data Reduction, Validation and Reporting

a. Are there written procedures (SOPs) to outline this process? X Yes ___ No

b. Does the process include an assessment of the quality of the data? X Yes ___ No

c. Are the data validation procedures adequate? X Yes ___ No

d. Is the data reported in a timely manner? X Yes ___ No

Comments: Project specific. Requires different times

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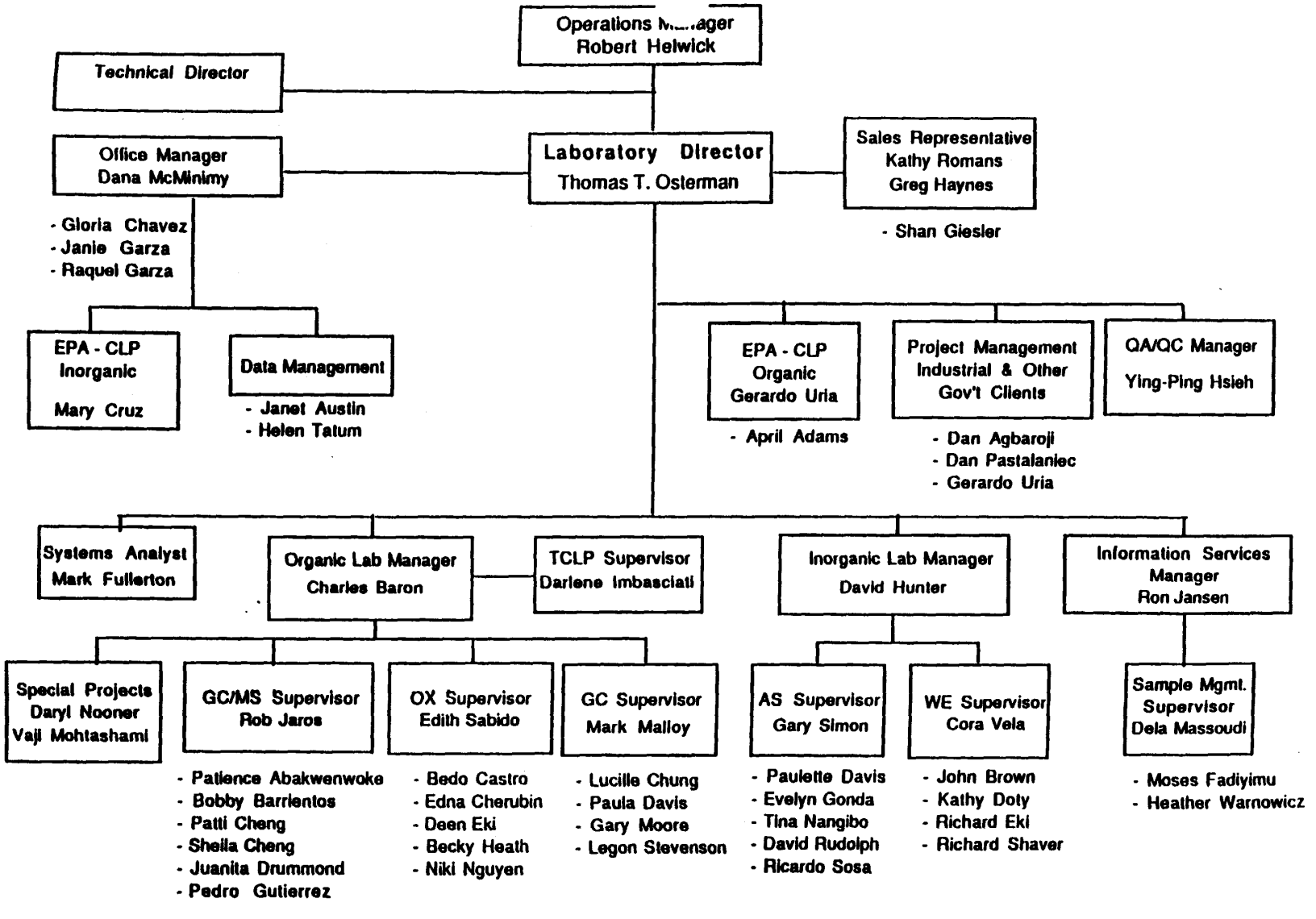
10. Data Storage

a. Are all documents to support the analytical data archived? X Yes ___ No

b. Are there written procedures regarding the establishment and maintenance of analytical data support files? X Yes ___ No

c. Is there a centralized filing system? X Yes ___ No

Comments: Records are maintained for 5 years. Documents are shredded and tapes erased.



KEYSTONE LAB-HOUSTON **FIGURE 2-2** (REV. 1'92)

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APPENDIX H

STATISTICAL SAMPLING

012662

SOUTH CAVALCADE
SOIL DELINEATION REPORT
RESPONSE TO EPA COMMENT #11

Beazer continues to disagree with EPA's position requiring remediation of previously delineated clean soil intervals that lie above intervals delineated for remediation. Beazer has collected and analyzed over 250 soil samples, at the direction of EPA, to delineate specific depth intervals requiring remediation (boundaries include vertical and horizontal). Beazer would not have performed such an extensive delineation program with knowledge that EPA would require remediation of previously delineated clean zones. Beazer has even greater concerns associated with implementing this position.

Beazer is concerned with the potential issues that may arise in the field, after this clean soil is excavated. Primarily, if this clean soil contains oversize material and/or debris not conducive to soil washing, Beazer may be forced to dispose of this material. The disposition of this material, previously characterized as clean, could be very costly, especially if the material would have to be incinerated.

The previously delineated clean soil in question is located in the Palletized Trucking (southeastern) area of the site. Beazer estimates that approximately 620 yards of this soil lies above intervals delineated for remediation. This soil is found in three zones within the southeastern area, with an approximate volume of 200 yards each.

Beazer intends to excavate the clean soils in each of these areas to within one-half foot (0.5 feet) of the depth interval requiring remediation. The soil from each of the three areas will be segregated into three distinct piles within the soil washing area. The material will be staged separately, or sequentially, to reduce the potential heterogeneity which may exist across the site. This will also result in a manageable volume which will be resampled to verify the previous delineation results.

The soils within each area will be further segregated, if necessary, to remove oversize particles (debris and concrete rubble; for example) and discolored material. Stained soil will be segregated and sampled, or processed through the soil washing system and evaluated. The oversize material will be stockpiled and evaluated. At this time, it is premature to outline a program for handling these materials, since there may be a variety of oversize material. However, if oversize hard rubble material such as concrete debris and oversize rock particles are encountered, one effective cleaning procedure would involve pressure washing and wipe testing delineated lot sizes. Samples would be analyzed for total potentially carcinogenic Polynuclear Aromatic Hydrocarbons (cPAHs). The actual plan for dealing with debris will be finalized during the development of a Remedial Action Plan.

Beazer proposes the following handling and sampling procedures of the clean stockpiled soil. All sample collection, sample handling, chain-of-custody and analytical procedures will be performed in accordance with the EPA approved project specific Quality Assurance Project Plan (March 1992). Beazer will implement a simple random sampling program of the segregated clean soils to satisfy EPA concerns that the program be statistically based and representative of the material being sampled (reference EPA SW-846 3rd Edition, see excerpt in Appendices). The segregated clean soil will be sampled and analyzed for total potentially cPAHs. Material characterized as less than 700 ppm total potentially cPAHs will be redistributed as fill in on-site excavations. Material characterized in excess of the cleanup criteria will be processed through the soil washing system and evaluated.

Background

U.S. EPA's Office of Solid Waste publication "Test Methods for Evaluating Solid Waste (SW-846), Volume II: Field Manual, Physical/Chemical Methods" was used as a reference during the development of this plan. According to information provided by the U.S. EPA office with jurisdiction over the subject site (Region VI), no specific PAH soil sampling methodology exists, and sampling and analysis plans

are reviewed and approved on a site specific basis. Beazer has prepared this sampling approach at the EPA's request, and in accordance with available EPA guidance documents.

Essentially, there are four options for sampling; simple random, stratified random, systematic random, or authoritative sampling. Authoritative sampling is not a statistical approach, and is based purely on a complete knowledge of the population being sampled. This is not applicable or appropriate in this case. From a statistical point of view, simple random sampling is the option of choice, as it presents less chance for the introduction of bias during sampling. Stratified random or systematic random sampling approaches are appropriate if there is a known or suspected tendency or cycle that can be recognized in the population. Therefore, a simple random sampling approach has been chosen for this application.

Statistical Analysis

Analytical data was provided for three soil samples previously collected from the clean soil areas. The total potentially cPAH values for these samples (2.6 ppm, 137 ppm, and 574 ppm) were used to estimate the mean and variability of the clean soil population to determine the appropriate number of samples to be collected. Because the actual variability of total potentially cPAH in the soil piles may overlap the 700 ppm regulatory threshold somewhat (field segregation may realistically include some impacted material), an additional estimated sample value of 1000 ppm was included to extend the range to a conservative level before calculating the number of required samples. These four values (three actual constituent levels and one estimated level) were used to determine the appropriate sampling intensity for this effort. In an effort to reduce the between-sample variability, clean soil from the three excavation areas will be separately staged and sampled. Therefore, three independent sample populations will be characterized. The estimated variability is assumed to apply to each population (pile) for the purpose of determining the appropriate number of samples.

In accordance with basic statistical methodology, the appropriate number of samples to collect to characterize each clean soil pile was calculated using the following equation. An assumption has been made that the clean soil population will follow a normal distribution.

$n = t_{.20}^2(s^2)/(RT-x')^2$; where:

- n = appropriate number of samples,
- t = tabulated student's t value for a two-tailed confidence interval and a probability of 0.20 (df = n-1),
- df = degrees of freedom,
- s = standard deviation of sample,
- RT = regulatory threshold, and
- x' = sample mean.

It was determined that seven (7) composite soil samples, composed of 10 individual grab samples, should adequately cover the expected variability within the sample populations. The 10 grab samples will be collected at depth intervals in the area of the random composite sample location. The ability to effectively segregate the clean soil from impacted soil in the field will determine the actual variability encountered. In other words, the range of actual total potentially cPAH soil levels in the clean soil piles will not only depend on the reliability of the initial soil boring data, but also on the field determination of total potentially cPAH impacts during the excavation and segregation of soil. Although seven composite samples are anticipated to adequately explain the variability in the three sample populations, it is possible that additional samples may be required if actual sample variability exceeds that which has been estimated.

Following the collection and return of the total potentially cPAH analytical results for the seven composite soil samples per pile (21 samples total), the sample mean and variation

will be calculated for each pile using the equations for simple random sampling listed below.

$x' - SUM\ x_i/n$; where:

x' = sample mean,
SUM = the sum from i = 1 to i = n,
x = variable sampled and analyzed,
x_i = individual measurement of variable, and
n = number of samples collected.

$s^2 = (SUM\ (x_i)^2 = (SUM\ x_i)^2/n)/n-1$; where:

s^2 = variance of sample,
SUM = the sum from i = 1 to i - n,
x = variable sampled and analyzed,
x_i = individual measurement of variable, and
n = number of samples collected.

Using this information, 80% confidence intervals will be constructed for each pile's mean using the following equation.

$CI = x' + /-t_{.20}\ (s_{x'})$; where:

CI = confidence interval for population mean,
x' = sample mean,
t = tabulated student's t value for a two-tailed confidence interval and a probability of 0.20 (df = n-1),
df = degrees of freedom,
n = number of samples collected,
$s_{x'}$ = standard error.

The upper limit of the confidence interval will then be compared to the regulatory threshold of 700 ppm total potentially cPAHs to classify each pile as clean or impacted. The student's t value used in the construction of the confidence limits has a probability of .20 for a two-tailed test. In application to this project, the level of interest (regulatory threshold of 700 ppm total potentially cPAHs) is the point of concern. It is only necessary that the upper limit of the confidence interval be below 700 ppm total potentially cPAHs to correctly classify the sample population as clean. Therefore, a one-tailed test with a probability of 0.10 (90 percent confidence limit) is actually being applied.

Field Application

Approximately 200 cubic yards of clean soil will be generated at each of the three excavation locations. The clean soil will be staged in a separate pile at each location, and each pile will be separately characterized according to the simple random sampling approach.

Following excavation and staging of the clean soil, a three dimensional grid system will be utilized to locate sampling locations within the pile. Based on an estimate of the expected mean and variation, seven (7) composite samples per pile are scheduled to be collected.

The on-site equipment (excavator) will be used to access sampling locations within the pile. A 2'x2'x2' grid will be established to select sampling locations. Each of the points within the pile represented by the intersection of the three grid lines will be given an equal chance for selection through the use of a random number generator or random number table.. The intersecting points will be numbered prior to selection of the sampling locations to avoid any bias. In the event that a particular length, width, and depth point does not exist, another random number will be selected. The selection process will continue until all seven (7) sample locations have been identified. The 10 individual grab samples for each composite will be collected in the area of each delineated random location.

Following the identification of the sample locations, corresponding measurements (i.e. length, width and depth) will be made on the pile, and those locations accessed for sampling with the equipment on-site. As a starting point for the grid system, the most northerly corner of the pile has been arbitrarily selected. Prior to initiation of sampling activities on the clean piles, the equipment bucket or shovel will be decontaminated. Once accessed, a convenient soil sampling tool can be used to remove surface material and collect the sample.

The procedures described above are set forth to provide Beazer with some flexibility when the remedial action phase is implemented. The remedial action plan will describe the above procedures in detail. Actual field conditions may warrant a revision in this protocol.

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APPENDIX I

ADDITIONAL SOIL DELINEATION REPORT
SOUTH CAVALCADE SITE
HOUSTON, TEXAS
BEAZER EAST, INC.

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McLaren Hart sm

ENVIRONMENTAL ENGINEERING CORPORATION

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April 30, 1994

Mr. Glenn Celerier, P.E.
EPA Project Coordinator (6H-SC)
Superfund Programs Branch
U.S. Environmental Protection Agency, Region VI
Allied Bank Tower @ Fountain Place
1445 Ross Avenue
Dallas, TX 75202

SUBJECT: Additional Soil Delineation Report
South Cavalcade Superfund Site
Houston, Texas

Dear Mr. Celerier:

On behalf of Beazer East, Inc. (Beazer), McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) is pleased to submit three (3) copies of the Additional Soil Delineation Report for the South Cavalcade Superfund Site, located in Houston, Texas. This report is submitted as Appendix I of the Soil Delineation Report prepared by Keystone Environmental Resources, Inc. and dated August 1992.

If you have any questions or comments regarding this report, please contact Mr. Steve Radel, Beazer Associate Program Manager, at (412) 227-2004.

Sincerely,

McLAREN/HART

N. J. Misquitta

Neale J. Misquitta
Project Hydrogeologist

James Zubrow

James Zubrow
Project Manager

cc: S. Radel - Beazer
M. Slenska - Beazer
M. Brourman - Beazer
S. Craig - Beazer
B. Lucas - Beazer (w/o Attachment)
M. White - Baker & Botts
Office of Regional Counsel, EPA - Region VI
L. Wright, Chief - Texas Construction Section, EPA - Region VI
T. Collins - South Cavalcade Superfund Site Coordinator (TNRCC)

(\BEAZER\0801327\R001.JSZ)

Penn Center West III, Suite 106, Pittsburgh, PA 15276 (412) 787-7144 FAX (412) 787-7218

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012672

ADDITIONAL SOIL DELINEATION REPORT
SOUTH CAVALCADE SITE
HOUSTON, TEXAS
BEAZER EAST, INC.

This report presents the findings of the additional soil delineation conducted in the treatment plant area at the South Cavalcade Site in Houston, Texas. The additional soil delineation sampling program was implemented pursuant to the "Additional Soil Delineation Work Plan" dated October 22, 1993[1]. Additional soil delineation activities were completed by McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) on behalf of Beazer East, Inc. (Beazer). The following paragraphs outline the additional soil delineation objectives, scope of work, methodologies, results, and conclusions.

The **objective** of the additional soil delineation task was to further delineate subsurface conditions in a portion of the central area of the site treatment plant area.

The **scope of work** completed to achieve project objectives included the following activities:

- Extension of 100 foot grid covering the southeastern portion of the site (developed during the implementation of the Remedial Design Work Plan[2] [RDWP]) onto the area occupied by the treatment plant; Figure 1 presents the locations of respective grid nodes;
- Completion of a utilities search by the electric, gas, sewer, water, and oil companies in the treatment plant area;
- Review of treatment plant process engineering as-built drawings to further locate subsurface utilities related to the treatment plant;
- Mobilization of Layne Environmental Services (Layne) to perform necessary drilling and sampling activities;
- Drilling six boreholes to approximate depths of six feet below grade or six feet below the base of fill, at the respective grid nodes; and,

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[1] Beazer East, Inc., October 22, 1993, Additional Soil Delineation Work Plan, South Cavalcade Superfund Site, Letter to Mr. Glenn Celerier of U.S. EPA Region VI.

[2] Bechtel Environmental, Inc., March, 1992, Remedial Design Work Plan for South Cavalcade Site, Houston, Texas, Prepared for Beazer East, Inc.

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- Sampling of subsurface soils (18 samples) and shipping to Chester Labnet (Chester), Houston Laboratory for analysis for total potentially carcinogenic polynuclear aromatic hydrocarbons (cPAHs) by EPA Method 8270. Samples were also extracted using the Toxicity Characteristic Leaching Procedure (TCLP) and the extracts analyzed for CPAHS by EPA Method 8270.

Field activities were initiated on November 2, 1993. Due to a communication error, the samples collected on this date were not analyzed for total cPAHS. Holding times for sample extraction, as specified for EPA Method 8270, had expired before this omission was discovered. As agreed upon by U.S. EPA and Beazer during their meeting of December 15,1993, and documented in the Monthly Progress Report for December 1993, resampling was postponed until the frac tank could be removed from the treatment plant area. The frac tank was located in the immediate vicinity of the security light pole along the eastern property boundary, where "sludge-type material", as described by the EPA oversight contractor, was observed during construction of the pilot treatment plant. The frac tank prevented the drill rig from accessing a location immediately adjacent to the light pole (Boring G-92). The frac tank was removed from the treatment plant area during February 1994. Resampling was conducted on March 8, 1994. The G-92 sample location was relocated approximately seven feet to the southeast (indicated on Figure 1 as G-92A) to a location as near to the light pole as practicable. Remaining sample locations were the same as those for the November 1993 sampling event.

Field **methodologies** followed (including subsurface soil sample collection, sample handling, equipment decontamination, and sample shipping) were consistent with those employed during the previous Soil Delineation Study completed by Keystone Environmental Resources, Inc. These procedures are described in the "Soil Delineation Report" dated April 1992[3]. Health and safety protocol was consistent with those stipulated in the RDWP. Sample analytical methods and quality assurance/quality control (QA/QC) requirements were as specified in the site sampling and analysis plan (SAP), and Quality Assurance Project Plan (QAPP). These procedures were followed for both sampling events (*i.e.* November 2, 1993 and March 8, 1994).

McLaren/Hart provided supervision of the soil sampling activities on behalf of Beazer. Representatives of Fluor Daniel, Inc., were on site throughout the sampling activities to provide oversight on behalf of the EPA. Health and safety meetings were held with Layne and Fluor Daniel personnel prior to each sampling event. Equipment was prepared for drilling, and activities initiated at the G-89 boring location. The last borehole to be sampled was the G-92 boring location. In accordance with the EPA letter dated October 20, 1993, wherever surficial fill materials were encountered, soil sampling was initiated below the bottom of the fill material at the geotextile interface and continued for six feet below the interface.

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[3] Keystone Environmental Resources, Inc., April 1992, Soil Delineation Report, South Cavalcade Site, Houston, Texas.

Borehole drilling and sampling were completed 4-1/4-inch diameter hollow stem augers (HSA) with split-spoon sampling for the November 1993 sampling event and a combination of HSA and Shelby tube soil sampling for the March 1994 sampling event. These methodologies were discussed with the site U.S. EPA oversight contractors. During both sampling events, samples were placed on ice in coolers immediately following collection and hand delivered to Chester at the end of the day. Drilling equipment was decontaminated prior to drilling at each boring location, and following completion of all borings. Sampling equipment was decontaminated following each use.

Soil cuttings were containerized in labelled 55-gallon Department of Transportation (DOT) drums and staged onsite in the treatment plant area pending analytical results of the soil samples. These soils were ultimately managed off-site at a permitted facility in accordance with state and federal regulations. Equipment decontamination fluids were transferred to a storage tank on site for subsequent management in the water treatment plant.

The **results** of the subsurface sampling indicated that site geology was consistent with previous interpretations. Attachment I presents the six boring logs. Surficial fill materials (up to two feet thick) were encountered at borings G-91, G-92, G-93, and G-94 and are comprised of mostly limestone ballast. Underlying the surficial fill, a gray to brown silty clay unit was encountered. Generally this unit was soft, and ranged from dry (at the surface) to moist and wet (at increasing depths). Shells were observed to be imbedded in the silty clay matrix.

During the March 1994 sampling event, approximately 1.2 feet of black stained soil was encountered at a depth of 2.5 feet below ground surface (ft-bgs) at the location immediately adjacent to the light pole (Boring G-92A). This observation is indicated on the G-92A boring log. Since stained soils were not observed at the G-92 location (approximately 7 feet to the northwest), or any other borings in the treatment plant area, the occurrence of this material appears localized, both in depth and in lateral extent.

Samples that were analyzed by Chester during both events were extracted and analyzed within their respective holding times. Data validation performed by McLaren/Hart indicated that data are valid and usable. Attachment 2 presents the data validation report.

TCLP analytical results indicate no detectable cPAH constituents were present in the soil extracts. Thus, cPAH concentrations in the TCLP extracts are less than the remedial goals specified in the Record of Decision (ROD)[4].

Total cPAH soil concentrations were less than the remedial goal specified in the ROD (700,000 μg/Kg) in all samples analyzed. The results of the total cPAH analyses are presented graphically on Figure 2. Exclusive of the location immediately adjacent to the light pole (Boring G-92A),

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[4] U.S. Environmental Protection Agency, Region VI, September 1988, Record of Decision for the South Cavalcade Site, Houston, Texas.

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analytical results indicate total cPAH concentrations in treatment plant area soils ranging from below detection limits at location G-94 to approximately 22,000 *u*g/Kg at location G-91. At the location immediately adjacent to the light pole (Boring G-92A), total cPAH concentrations of 170,000 *u*g/Kg and 490,000 *u*g/Kg were measured in the samples collected from two to four feet and four to six feet, respectively. Table 1 presents a summary of the cPAH analytical data. Attachment 3 presents the analytical laboratory reports.

Based on the above discussions, the **conclusions** of the additional soil delineation are summarized below:

- Total cPAH concentrations above remedial goals for the site (*i.e.* 700,000 *u*g/Kg) were not encountered at any of the soil sampling locations, including the one sampling location (Boring G-92A) proximal to the light pole;

- TCLP analytical results indicate that no detectable cPAH's were measured in the soil extracts; and,

The soils in the treatment plant area have been characterized in sufficient detail according to procedures specified in the RDWP. Constituent concentrations were less than the remedial goals specified in the ROD in all samples analyzed. Therefore, no remedial actions or additional characterization activities are required for soils in the treatment plant area.

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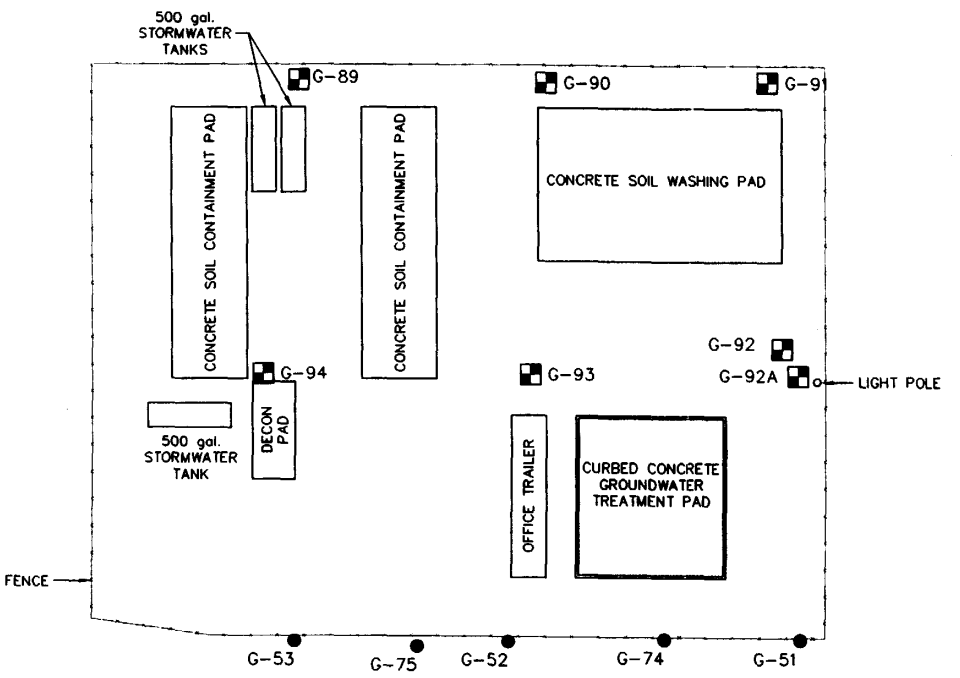
TABLE - 1
CPAH - SOIL CONCENTRATIONS
SOUTH CAVALCADE SUPERFUND SITE
HOUSTON TEXAS

SAMPLE ID	COMPOUND							
	Benzo(a)pyrene (ug/kg)	Benzo(a)anthracene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(k)fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenzo(a,h)anthracene (ug/kg)	Indeno(1,2,3-cd)pyrene (ug/kg)	Total cPAH (ug/kg)
SC-G89-0/2	2600	1400	5200	1500	1800	360J	2200	15060
SC-G89-2/4	<390	<390	<390	<390	<390	<390	<390	ND
SC-G89-4/6	<380	<380	<380	<380	<380	<380	<380	ND
SC-G90-0/2	2800	3600	4500	1100	1900	240J	820	14960
SC-G90-2/4	<380	<380	28J	<380	<380	<380	<380	28
SC-G90-4/6	<400	<400	<400	<400	<400	<400	<400	ND
SC-G91-1/3	540	820	1200	<390	440	84J	460	3544
SC-G91-3/5	3700	2900	9400	<760	270J	1400	4400	22070
SC-G91-5/7	<380	19J	43J	18J	48J	<380	20J	148
SC-G92-0/2	2600J	2400J	6700J	<9800	2300J	<9800	1300J	15300
SC-G92-2/4	34000J	25000J	43000	26000J	19000J	3600J	20000J	170600
SC-G92-4/6	81000J	110000J	100000J	47000J	98000J	7000J	47000J	490000
SC-G93-2/4	2500	3300	5600	<1700	2400	910J	2100	16810
SC-G93-4/6	<390	<390	37J	<390	<390	<390	<390	37
SC-G93-6/8	280J	230J	440J	210J	270J	44J	310J	1784
SC-G94-1/3	<390	<390	<390	<390	<390	<390	<390	ND
SC-G94-3/5	<410	<410	<410	<410	<410	<410	<410	ND
SC-G94-5/7	<400	<400	<400	<400	<400	<400	<400	ND
REPLICATE	<380	<380	<380	<380	<380	<380	<380	ND
DUPLICATE	92000	120000	140000	<80000	94000	14000J	57000J	517000

NOTE: ug/kg denotes micro grams per kilogram.
J- indicates an estimated concentration.
ND- indicates "None Detected".
The Duplicate sample is identified as SC-G92-2/4.
The Replicate sample is identified as SC-G93-4/6.
Samples identified as SC-G92 were obtained from the location designated as G-92A on Figure 1.



LEGEND:

FENCE

G-74 ● PREVIOUS SOIL DELINEATION BORING

G-92 SOIL BORING LOCATION

NOTE:

1. ALL SOIL BORING LOCATIONS ARE APPROXIMATE.

SCALE

0 40 80 FEET

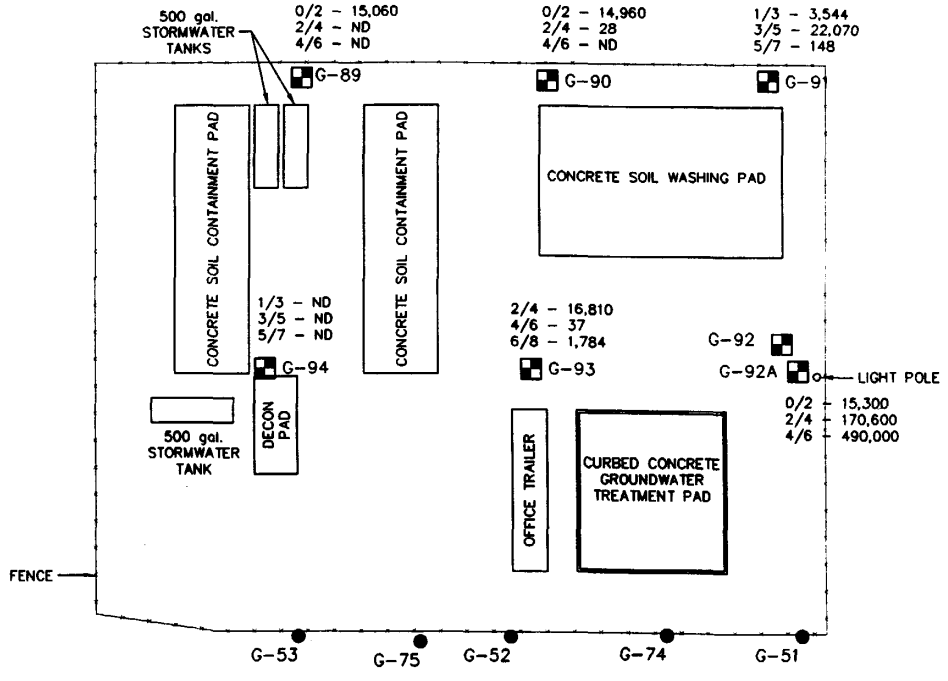
BEAZER EAST, INC.
HOUSTON, TEXAS

ADDITIONAL SOIL DELINEATION PROGRAM
SOUTH CAVALCADE SITE

McLaren Hart ENVIRONMENTAL ENGINEERING CORPORATION	DRWN MJH	DATE 5-2-94
	CHKD	DATE
	APPD	DATE
FILE 1228B001.DWG	SCALE AS SHOWN	
DRAWING TITLE SOIL BORING		DRAWING NUMBER 09-080122R

012677

012677



LEGEND:

———	FENCE
G-74 ●	PREVIOUS SOIL DELINEATION BORING
G-92 ■	SOIL BORING LOCATION
0/2 - 15,060	TOTAL cPAH CONCENTRATION (ug/kg) AT 0 TO 2 FOOT INTERVAL
ND	NON DETECT

NOTES:

1. ALL SOIL BORING LOCATIONS ARE APPROXIMATE.
2. CONCENTRATION LEVELS IN MICROGRAMS PER KILOGRAM (ug/kg)

SCALE

0 40 80 FEET

BEAZER EAST, INC.
HOUSTON, TEXAS

ADDITIONAL SOIL DELINEATION PROGRAM
SOUTH CAVALCADE SITE

McLaren Hart ENVIRONMENTAL ENGINEERING CORPORATION	DRWN MJH	DATE 5-2-94	
	CHKD	DATE	
	APPD	DATE	
FILE 1228B002.DWG	SCALE AS SHOWN		
DRAWING TITLE TOTAL cPAH ANALYTICAL RESULTS		DRAWING NUMBER 09-0801228 FIGURE 2	

012678

012678

012679

ATTACHMENT I

BORING LOGS

LOG OF BORING: G-89

012680

CLIENT NAME: BEAZER EAST, INC. LOCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 6	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
SS-1	5, 5, 4, 7	1.5	<0.1	Soft, dry, yellow-brown [10YR 5/4] **FINE SAND.**	dry-damp	SM
				Soft, dry very dark brown [10YR 2/2] **CLAYEY SILT**, small calcarous shells present.		ML
SS-2	4, 3, 2, 1	1.4	<0.1	Soft, moist, black [10YR 2/1] **CLAYEY SILT**; increasing silt fraction, numerous shells present.	moist	
SS-3	2, 2, 2, 6	2.0	<0.1	Soft, moist, yellow-brown [10YR 5/4] **SILTY CLAY**, increasing clay content, and some small brown iron staining observed.	moist	

LITHOLOGY

BOREHOLE: Bentonite Grout

FT-BGS

BOTTOM OF BORING=6 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in - Indicates inches
NR - Indicates data not recorded
ppm - Indicates parts per million
ft-bgs - Indicates feet below ground surface
ft - Indicates depth in feet

LOG OF BORING: G-90

012681

CLIENT NAME: BEAZER EAST, INC. LOCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 6	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
SS-1	6, 5, 6, 13	1.5	<0.1	Soft, dry, black [7.5YR 5/1] fine to medium **SAND**, some white shells.	dry		SM	Bentonite Grout
SS-2	4, 6, 5, 7	1.4	<0.1	Soft, moist to dry, brown [10YR 2/2] **CLAYEY SILT**.	moist to dry		ML	
SS-3	2, 5, 5, 7	1.4	<0.1	Soft, moist, grayish brown [10YR 5/2] **SILTY CLAY**.	moist			

FT-BGS

BOTTOM OF BORING=6 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-91

012682

CLIENT NAME: BEAZER EAST, INC. LOCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 7	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
				Sandy gravelly **FILL.**			FILL	
SS-1	2, 3, 4, 11	1.4	<0.1	Soft, dry to damp, brown [10YR 5/4] **SILTY CLAY**, mostly silt, fine sand (tace).	dry			
SS-2	2, 1, 2, 4	1.5	<0.1	**SAME AS ABOVE**, damp.	damp to moist		ML	
	1, 1, 1, 2	1.5	<0.1	**SAME AS ABOVE**, moist to wet.	moist to wet			

Bentonite Grout

FT-BGS

BOTTOM OF BORING=7 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-92

012683

CLIENT NAME: BEAZER EAST, INC.	DRILLING METHOD: 4-1/4" Hollow Stem Auger
LOCATION: Houston, Texas	SAMPLING METHOD: Split-Spoon
PROJECT NO.: 09.0801327.001	DRILLING COMPANY: Layne Drilling
DATE STARTED: 11/02/93	BOREHOLE/WELL DIAMETER: 7-1/2-inch
DATE COMPLETED: 11/02/93	DRILLING BIT: 4-1/4-inch HSA
TOTAL BORING DEPTH: 7.5	GEOLOGIST: Neale Misquitta

PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
				Sandy gravelly **FILL**, dry.		FILL
SS-1	3, 4, 6, 12	1.8	<0.1	Soft, damp to dry, yellow brown [10YR 5/4] to very dark brown [10YR 2/2] sandy silt to **SILTY CLAY**; black moist sand fine to medium gravel seam at base of spoon.	dry-moist	ML
SS-2	3, 1, 3, 6	1.2	1.5	**SAME AS ABOVE**, damp to moist.	dry to damp	ML
SS-3	1, 3, 3, 8	1.8	NR	**SAME AS ABOVE**, moist to wet.	moist to wet	ML

BOTTOM OF BORING=7.5 FEET-BGS

BOREHOLE: Bentonite Grout

FT-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-93

012684

CLIENT NAME: BEAZER EAST, INC. LOCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 8	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
				Sandy gravelly **FILL**, dry limestone gravel.		FILL
SS-1	14, 13, 9, 13	1.2	<0.1	Soft, dry, dark gray [7.5YR 3/4] **SILTY CLAY**, mostly silt, fine sand and little clay.	dry	ML
SS-2	1, 2, 2, 7	1.5	<0.1	**SAME AS ABOVE**, moist.	moist	
SS-3	2, 2, 3, 4	NR	<0.1	**SAME AS ABOVE**, moist.	moist	

LITHOLOGY

BOREHOLE: Bentonite Grout

FT-BGS

BOTTOM OF BORING=8 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in - Indicates inches
NR - Indicates data not recorded
ppm - Indicates parts per million
ft-bgs - Indicates feet below ground surface
ft - Indicates depth in feet

LOG OF BORING: G-94

012685

CLIENT NAME: BEAZER EAST, INC. LOCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 7	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
				Sandy gravelly **FILL**, limestone gravel.		FILL
SS-1	3, 6, 11, 22	1.9	<0.1	Soft, moist to damp, brown [10YR 5/2] **SILTY CLAY**.	damp to moist	
SS-2	4, 2, 1, 6	1.9	<0.1	**SAME AS ABOVE**, damp.	damp to moist	ML
	2, 3, 3, 7	1.9	NR	**SAME AS ABOVE**, moist to wet.	moist to wet	

LITHOLOGY

BOREHOLE: Bentonite Grout

FT-BGS

BOTTOM OF BORING=7 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in - Indicates inches
NR - Indicates data not recorded
ppm - Indicates parts per million
ft-bgs - Indicates feet below ground surface
ft - Indicates depth in feet

012686

ATTACHMENT II

DATA VALIDATION REPORT

QA/QC Review of TCLP Semi-Volatiles
Data for Chester LabNet WO:H93-11.35

Holding Times: Samples were extracted and analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All target compounds had RRF50s above 0.050 as required. Benzo(k)fluoranthene (32.449%) had a %D above the allowable maximum (25%) on 11-10-93 (FS1113C03). Benzo(k)fluoranthene (33.757%) had a %D above the allowable maximum (25%) on 11-10-93 (FS1115C02A). Results benzo(k)fluoranthene for should be considered estimates (J) in associated samples.

Blanks: Method and field blanks reported all target compounds as not detected.

Surrogate Recovery: Samples SC-G91-1/3, SC-G91-3/5, SC-G92-3.5/5.5, SC-G93-2/4, and SC-G93-6/8 had 1 of 4 acid extractable surrogate recoveries outside control limits. Samples SC-G91-3/5, SC-G91-5/7, SC-G92-3.5-5.5, SC-G93-2/4, SC-G93-4/6, and SC-G94-1/3 had 1 of 4 base/neutral surrogate recoveries outside control limits. No action is taken on only one surrogate recovery per fraction outside control limits. Sample SC-G93-4/6 had 2 of 4 acid extractable surrogate recoveries outside control limits. Samples SC-G89-4/6, SC-G90-4/6, SC-G91-5/7, and SC-G100 had 3 of 4 acid extractable surrogate recoveries outside control limits. Results for the acid extractable fractions of samples SC-G93-4/6, SC-G89-4/6, SC-G90-4/6, SC-G91-5/7, and SC-G100 should be considered estimates (J).

Compound ID: There were no hits in any of the samples in this laboratory group.

QA/QC Review of Volatiles Data
for Chester LabNet WO: H93-11.35

Holding Times: Samples were analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Continuing Calibration: All compounds had RRF50s above 0.050 as required. Chloromethene (25.674%), acetone (30.782%), and vinyl acetate (29.150%) had %Ds above the allowable maximum (25%) on 11-11-94 (ES1115V02). Results for chloromethane, acetone, and vinyl acetate should be considered estimates in associated samples.

Blanks: The method blank ES1115V01 contained a trace of tetrachloroethene (5 ug/L). Results for tetrachloroethene less than five times the associated blank level should be reported as not detected (U) in samples.

Surrogate Recovery: All surrogate recoveries were within control limits.

Compound ID: There were no hits in any of the samples in this laboratory group.

QA/QC Review of Semi-Volatiles
Data for Chester LabNet WO:H94-03.73

Holding Times: Samples were extracted and analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Continuing Calibration: All target compounds had RRF50s above 0.050 as required. Benzo(b)fluoranthene (29.326%) and benzo(g,h,i)perylene (29.108%) had %Ds above the allowable maximum (25%) on 03-21-94 (IS0321C02). Nitrobenzene (35.141%) had a %D above the allowable maximum (25%) on 03-23-94 (FS0323C02). Nitrobenzene (29.782%) had a %D above the allowable maximum (25%) on 03-24-94 (FS0324C02). Results for nitrobenzene, benzo(b)fluoranthene, and benzo(g,h,i)perylene should be considered estimates (J) in associated samples.

Blanks: Method and field blanks reported all target compounds as not detected.

Surrogate Recovery: Samples SC-G93-2/4 TCLP, REPLICATE TCLP, and FIELD BLANK had 1 of 4 acid extractable surrogate recoveries outside control limits. No action is taken on only one surrogate recovery per fraction outside control limits. Samples SC-G92-0/2, SC-G92-2/4, SC-G92-4/6, SC-G92-4/6 TCLP, SC-G93-2/4, SC-G91-3/5DL, DUPLICATE, and DUPLICATE DL had all surrogate recoveries diluted beyond detection limits. Results for samples SC-G92-0/2, SC-G92-2/4, SC-G92-4/6, SC-G92-4/6 TCLP, SC-G93-2/4, SC-G91-3/5DL, DUPLICATE, and DUPLICATE DL should be considered estimates (J). Samples SC-G90-4/6 and REPLICATE had 3 of 4 acid extractable and 3 of 4 base/neutral surrogate recoveries outside control limits and 1 or more surrogate recovery at 0%. Positive results for samples SC-G90-4/6 and REPLICATE should be considered estimates (J) and negative results unusable (R).

TCLP Spike Recovery: All TCLP compounds had exceptable spike recoveries which ranged from 73-190%.

Matrix Spike/Matrix Spike Duplicate: The MS/MSD samples had 1 of 11 relative percent differences and 5 of 22 percent recoveries outside control limits. No action is taken on MS/MSD data alone to qualify or reject an entire set of samples.

QA/QC Review of Volatiles Data
for Chester LabNet WO: H94-03.73

Holding Times: Samples were analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Continuing Calibration: All compounds had RRF50s above 0.050 as required. Acetone (33.282%) and trichlorofluoromethane (34.829%) had %Ds above the allowable maximum (25%) on 11-11-94 (ES0616V02). Results for acetone and trichlorofluoromethane should be considered estimates (J) in associated samples.

Blanks: Method and trip blanks reported all target compounds as not detected.

Surrogate Recovery: All surrogate recoveries were within control limits.

Compound ID: There were no hits in any of the samples in this laboratory group.

012691

ATTACHMENT III

LABORATORY REPORTS

012692

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-089-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103502
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C02
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012693

INST ID: I300 FINN

SAMPLE NUMBER: SC-G89-0/2

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307302
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW
DATAFILE: IU03073C02
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	730	80 J
C540	ACENAPHTHYLENE	730	390 J
C550	ACENAPHTHENE	730	57 J
C590	FLUORENE	730	39 J
C640	PHENANTHRENE	730	300 J
C645	ANTHRACENE	730	560 J
C655	FLUORANTHENE	730	1600
C715	PYRENE	730	1400
C730	BENZO(A)ANTHRACENE	730	1400
C740	CHRYSENE	730	1800
C765	BENZO(B)FLUORANTHENE	730	5200 J
C770	BENZO(K)FLUORANTHENE	730	1500
C775	BENZO(A)PYRENE	730	2600
C780	INDENO(1,2,3-CD)PYRENE	730	2200
C785	DIBENZO(A,H)ANTHRACENE	730	360 J
C790	BENZO(GHI)PERYLENE	730	1900 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012693

012694

CHESTER LABNET DC # ---- 8

NST ID: 4510

SAMPLE NUMBER: SC-G89-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103503
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C03
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012695

INST ID: I500 FINN

SAMPLE NUMBER: SC-089-2/4

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307306
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: .....

DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW

DATAFILE: IU03073C06

DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390 U	
C715	PYRENE	390 U	
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390 U	
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012695

012696

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-G89-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103504
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C04A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/18/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012697

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-G90-0/Z

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103505
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C05
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012698

INST ID: I500 FINN

SAMPLE NUMBER: SC-G89-4/6

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307307
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

DATAFILE: IU03073C07

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380 U	
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012699

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G90-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103506
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C06A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/18/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G90-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307308
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C08S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	770	370 J
C540	ACENAPHTHYLENE	770	190 J
C550	ACENAPHTHENE	770	400 J
C590	FLUORENE	770	290 J
C640	PHENANTHRENE	770	2700
C645	ANTHRACENE	770	660 J
C655	FLUORANTHENE	770	3400
C715	PYRENE	770	3400
C730	BENZO(A)ANTHRACENE	770	3600
C740	CHRYSENE	770	1900
C765	BENZO(B)FLUORANTHENE	770	4500 J
C770	BENZO(K)FLUORANTHENE	770	1100
C775	BENZO(A)PYRENE	770	2800
C780	INDENO(1,2,3-CD)PYRENE	770	820
C785	DIBENZO(A,H)ANTHRACENE	770	240 J
C790	BENZO(GHI)PERYLENE	770	570 J J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INST ID: I500 FINN

SAMPLE NUMBER: SC-G90-2/4

012701

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307309
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: IU03073C09
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380	28 J
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012702

CHESTER DC # --- - 6

INST ID: 4510 SAMPLE NUMBER: SC-G90-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307310
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C10S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	400 U	
C540	ACENAPHTHYLENE	400 U	
C550	ACENAPHTHENE	400 U	
C590	FLUORENE	400 U	
C640	PHENANTHRENE	400 U	
C645	ANTHRACENE	400 U	
C655	FLUORANTHENE	400 U	
C715	PYRENE	400 U	
C730	BENZO(A)ANTHRACENE	400 U	
C740	CHRYSENE	400 U	
C765	BENZO(B)FLUORANTHENE	400 U	
C770	BENZO(K)FLUORANTHENE	400 U	
C775	BENZO(A)PYRENE	400 U	
C780	INDENO(1,2,3-CD)PYRENE	400 U	
C785	DIBENZO(A,H)ANTHRACENE	400 U	
C790	BENZO(GHI)PERYLENE	400 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012703

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307311
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C11S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390	62 J
C540	ACENAPHTHYLENE	390	28 J
C550	ACENAPHTHENE	390	76 J
C590	FLUORENE	390	84 J
C640	PHENANTHRENE	390	660
C645	ANTHRACENE	390	270 J
C655	FLUORANTHENE	390	980
C715	PYRENE	390	770
C730	BENZO(A)ANTHRACENE	390	820
C740	CHRYSENE	390	440
C765	BENZO(B)FLUORANTHENE	390	1200
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390	540
C780	INDENO(1,2,3-CD)PYRENE	390	460
C785	DIBENZO(A,H)ANTHRACENE	390	84 J
C790	BENZO(GHI)PERYLENE	390	430

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012704

'NST ID: 4510 SAMPLE NUMBER: SC-G91-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307312
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C12S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	760	220 J
C540	ACENAPHTHYLENE	760	520 J
C550	ACENAPHTHENE	760	550 J
C590	FLUORENE	760	570 J
C640	PHENANTHRENE	760	5500
C645	ANTHRACENE	760	1300
C655	FLUORANTHENE	760	9600
C715	PYRENE	760	5300
C730	BENZO(A)ANTHRACENE	760	2900
C740	CHRYSENE	760	270 J
C765	BENZO(B)FLUORANTHENE	760	9400 *J
C770	BENZO(K)FLUORANTHENE	760 U	
C775	BENZO(A)PYRENE	760	3700
C780	INDENO(1,2,3-CD)PYRENE	760	4400
C785	DIBENZO(A,H)ANTHRACENE	760	1400
C790	BENZO(GHI)PERYLENE	760	4300

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT
* : COMPOUND AMOUNT TAKEN FROM A 1:10 DILUTION

012705

INST ID: I500 FINN

SAMPLE NUMBER: SC-G91-5/7

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307313
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW
DATAFILE: IU03073C13
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380	15 J
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380	97 J
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380	66 J
C715	PYRENE	380	69 J
C730	BENZO(A)ANTHRACENE	380	19 J
C740	CHRYSENE	380	48 J
C765	BENZO(B)FLUORANTHENE	380	43 J
C770	BENZO(K)FLUORANTHENE	380	18 J
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380	20 J
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012705

012706

CHESTER DC # --- - 8

INST ID: 4510

SAMPLE NUMBER: SC-G92-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307314
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C14S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	9800	330 J
C540	ACENAPHTHYLENE	9800 U	
C550	ACENAPHTHENE	9800 U	
C590	FLUORENE	9800 U	
C640	PHENANTHRENE	9800	1800 J
C645	ANTHRACENE	9800	630 J
C655	FLUORANTHENE	9800	4300 J
C715	PYRENE	9800	4200 J
C730	BENZO(A)ANTHRACENE	9800	2400 J
C740	CHRYSENE	9800	2300 J
C765	BENZO(B)FLUORANTHENE	9800	6700 J
C770	BENZO(K)FLUORANTHENE	9800 U	
C775	BENZO(A)PYRENE	9800	2600 J
C780	INDENO(1,2,3-CD)PYRENE	9800	1300 J
C785	DIBENZO(A,H)ANTHRACENE	9800 U	
C790	BENZO(GHI)PERYLENE	9800	1200 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012707

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G92-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307315
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C15S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND	
C450	NAPHTHALENE	41000	42000	J
C540	ACENAPHTHYLENE	41000	2100	J
C550	ACENAPHTHENE	41000	5800	J
C590	FLUORENE	41000	17000	J
C640	PHENANTHRENE	41000	58000	
C645	ANTHRACENE	41000	56000	
C655	FLUORANTHENE	41000	51000	
C715	PYRENE	41000	48000	
C730	BENZO(A)ANTHRACENE	41000	25000	J
C740	CHRYSENE	41000	19000	J
C765	BENZO(B)FLUORANTHENE	41000	43000	
C770	BENZO(K)FLUORANTHENE	41000	26000	J
C775	BENZO(A)PYRENE	41000	34000	J
C780	INDENO(1,2,3-CD)PYRENE	41000	20000	J
C785	DIBENZO(A,H)ANTHRACENE	41000	3600	J
C790	BENZO(GHI)PERYLENE	41000	18000	J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

NSI ID: 4510 SAMPLE NUMBER: SC-G92-4/6

012708

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307316
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9S03073CC16
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MILLIGRAMS / KG)	AMOUNT FOUND	
C450	NAPHTHALENE	200	1200	
C540	ACENAPHTHYLENE	200	28	J
C550	ACENAPHTHENE	200	110	J
C590	FLUORENE	200	250	
C640	PHENANTHRENE	200	700	
C645	ANTHRACENE	200	490	
C655	FLUORANTHENE	200	470	
C715	PYRENE	200	220	
C730	BENZO(A)ANTHRACENE	200	110	J
C740	CHRYSENE	200	98	J
C765	BENZO(B)FLUORANTHENE	200	100	J
C770	BENZO(K)FLUORANTHENE	200	47	J
C775	BENZO(A)PYRENE	200	81	J
C780	INDENO(1,2,3-CD)PYRENE	200	47	J
C785	DIBENZO(A,H)ANTHRACENE	200	7	J
C790	BENZO(GHI)PERYLENE	200	44	J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012709

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307317
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9S03073C17
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND (MICROGRAMS / KG)
C450	NAPHTHALENE	1700 U	
C540	ACENAPHTHYLENE	1700	140 J
C550	ACENAPHTHENE	1700 U	
C590	FLUORENE	1700 U	
C640	PHENANTHRENE	1700	1600 J
C645	ANTHRACENE	1700	980 J
C655	FLUORANTHENE	1700	4700
C715	PYRENE	1700	2900
C730	BENZO(A)ANTHRACENE	1700	3300
C740	CHRYSENE	1700	2400
C765	BENZO(B)FLUORANTHENE	1700	5600
C770	BENZO(K)FLUORANTHENE	1700 U	
C775	BENZO(A)PYRENE	1700	2500
C780	INDENO(1,2,3-CD)PYRENE	1700	2100
C785	DIBENZO(A,H)ANTHRACENE	1700	910 J
C790	BENZO(GHI)PERYLENE	1700	1900

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

000101

INST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: SC-G93-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307318
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C18S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390	27 J
C715	PYRENE	390	21 J
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390	37 J
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012711

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-6/8

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307319
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C19S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	750 U	
C540	ACENAPHTHYLENE	750 U	
C550	ACENAPHTHENE	750 U	
C590	FLUORENE	750 U	
C640	PHENANTHRENE	750	96 J
C645	ANTHRACENE	750	41 J
C655	FLUORANTHENE	750	320 J
C715	PYRENE	750	240 J
C730	BENZO(A)ANTHRACENE	750	230 J
C740	CHRYSENE	750	270 J
C765	BENZO(B)FLUORANTHENE	750	440 J
C770	BENZO(K)FLUORANTHENE	750	210 J
C775	BENZO(A)PYRENE	750	280 J
C780	INDENO(1,2,3-CD)PYRENE	750	310 J
C785	DIBENZO(A,H)ANTHRACENE	750	44 J
C790	BENZO(GHI)PERYLENE	750	300 J

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

000117

CHESTER DC # --- - 8

INST ID: 4510

SAMPLE NUMBER: SC-G94-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307320
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C20S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390 U	
C715	PYRENE	390 U	
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390 U	
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-094-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307321
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C21S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	410 U	
C540	ACENAPHTHYLENE	410 U	
C550	ACENAPHTHENE	[illegible] U	
C590	FLUORENE	410 U	
C640	PHENANTHRENE	410 U	
C645	ANTHRACENE	410 U	
C655	FLUORANTHENE	410 U	
C715	PYRENE	410 U	
C730	BENZO(A)ANTHRACENE	410 U	
C740	CHRYSENE	410 U	
C765	BENZO(B)FLUORANTHENE	410 U	
C770	BENZO(K)FLUORANTHENE	410 U	
C775	BENZO(A)PYRENE	410 U	
C780	INDENO(1,2,3-CD)PYRENE	410 U	
C785	DIBENZO(A,H)ANTHRACENE	410 U	
C790	BENZO(GHI)PERYLENE	410 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G94-5/7

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307322
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C22S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	400 U	
C540	ACENAPHTHYLENE	400 U	
C550	ACENAPHTHENE	[illegible] U	
C590	FLUORENE	400 U	
C640	PHENANTHRENE	400 U	
C645	ANTHRACENE	400 U	
C655	FLUORANTHENE	400 U	
C715	PYRENE	400 U	
C730	BENZO(A)ANTHRACENE	400 U	
C740	CHRYSENE	400 U	
C765	BENZO(B)FLUORANTHENE	400 U	
C770	BENZO(K)FLUORANTHENE	400 U	
C775	BENZO(A)PYRENE	400 U	
C780	INDENO(1,2,3-CD)PYRENE	400 U	
C785	DIBENZO(A,H)ANTHRACENE	400 U	
C790	BENZO(GHI)PERYLENE	400 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INST ID: 4310

CHESTER DC # --- - 8
SAMPLE NUMBER: REPLICATE

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307323
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C23S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380 U	
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012716

NSI ID: 4510 SAMPLE NUMBER: DUPLICATE

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307324
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C24S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MILLIGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	80	2000 *
C540	ACENAPHTHYLENE	80	30 J
C550	ACENAPHTHENE	80	93
C590	FLUORENE	[illegible]	230
C640	PHENANTHRENE	[illegible]	640
C645	ANTHRACENE	80	120
C655	FLUORANTHENE	80	430
C715	PYRENE	80	260
C730	BENZO(A)ANTHRACENE	80	120
C740	CHRYSENE	80	94
C765	BENZO(B)FLUORANTHENE	80	140
C770	BENZO(K)FLUORANTHENE	80 U	
C775	BENZO(A)PYRENE	80	92
C780	INDENO(1,2,3-CD)PYRENE	80	57 J
C785	DIBENZO(A,H)ANTHRACENE	80	14 J
C790	BENZO(GHI)PERYLENE	80	48 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT
* = COMPOUND AMOUNT TAKEN FROM A 1:1000 DILUTION

012717

INST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: FIELD BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307325
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C25
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C450	NAPHTHALENE	50 U	
C540	ACENAPHTHYLENE	50 U	
C550	ACENAPHTHENE	50 U	
C590	FLUORENE	50 U	
C640	PHENANTHRENE	50 U	
C645	ANTHRACENE	50 U	
C655	FLUORANTHENE	50 U	
C715	PYRENE	50 U	
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	
C790	BENZO(GHI)PERYLENE	50 U	

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012718

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G90-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103507
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C07A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-1/3

012719

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103508
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C08A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012720

CHESTER LABNET DC # ---- B

INST ID: 4510

SAMPLE NUMBER: SC-G91-3/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103509
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C09A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-5/7

012721

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103510
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C10A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INHT ID: 4510 SAMPLE NUMBER: SC-092-0/2

012722

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307314
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C14
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C745	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INMT ID: 4510 SAMPLE NUMBER: SC-092-2/4

012723

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307315
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C15
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

J = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INST ID: 4510 SAMPLE NUMBER: SC-092-4/6

012724

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307316
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C16A
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/23/94 DILUTION FACTOR: 50.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	500 U	
C740	CHRYSENE	500 U	
C765	BENZO(B)FLUORANTHENE	500 U	
C770	BENZO(K)FLUORANTHENE	500 U	
C775	BENZO(A)PYRENE	500 U	
C780	INDENO(1,2,3-CD)PYRENE	500 U	
C785	DIBENZO(A,H)ANTHRACENE	500 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-2/4

012725

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103514
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C14
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012726

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103515
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C15
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/29/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012727

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-6/8

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103516
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C16
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012728

CHESTER LABNET DC # ---- 5

INST ID: 4510 SAMPLE NUMBER: SC-G94-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103517
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C17
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012729

CHESTER LABNET DC # ---- B

INST ID: 4510 SAMPLE NUMBER: SC-G94-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103518
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C18
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012730

CHESTER LABNET DC # ---- B

INST ID: 4510

SAMPLE NUMBER: SC-G94-5/7

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103519
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C19
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/21/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012731

CHESTER LABNET DC # ---- B

INST ID: 4510

SAMPLE NUMBER: FIELD BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103521
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C21
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/29/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012732

KEYSTONE DC # ----- 8

INST ID: 4000 SAMPLE NUMBER: TRIP BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103522
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

VOLATILES

CONCENTRATION: LOW DATAFILE: 4U11035V22R
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 1.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C010	CHLOROMETHANE	10 U	
C015	BROMOMETHANE	10 U	
C020	VINYL CHLORIDE	10 U	
C025	CHLOROETHANE	10 U	
C030	METHYLENE CHLORIDE	5 U	
C035	ACETONE	10 U	
C040	CARBON DISULFIDE	5 U	
C045	1,1-DICHLOROETHENE	5 U	
C050	1,1-DICHLOROETHANE	5 U	
C053	1,2-DICHLOROETHENE (TOTAL)	5 U	
C060	CHLOROFORM	5 U	
C065	1,2-DICHLOROETHANE	5 U	
C110	2-BUTANONE	10 U	
C115	1,1,1-TRICHLOROETHANE	5 U	
C120	CARBON TETRACHLORIDE	5 U	
C125	VINYL ACETATE	10 U	
C130	BROMODICHLOROMETHANE	5 U	
C140	1,2-DICHLOROPROPANE	5 U	
C143	CIS-1,3-DICHLOROPROPENE	5 U	
C150	TRICHLOROETHENE	5 U	
C155	DIBROMOCHLOROMETHANE	5 U	
C160	1,1,2-TRICHLOROETHANE	5 U	
C165	BENZENE	5 U	
C172	TRANS-1,3-DICHLOROPROPENE	5 U	
C180	BROMOFORM	5 U	
C205	4-METHYL-2-PENTANONE	10 U	
C210	2-HEXANONE	10 U	
C220	TETRACHLOROETHENE	5 U	
C225	1,1,2,2-TETRACHLOROETHANE	5 U	
C230	TOLUENE	5 U	
C235	CHLOROBENZENE	5 U	
C240	ETHYLBENZENE	5 U	
C245	STYRENE	5 U	
C250	XYLENES (TOTAL)	5 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

KEYSTONE DC # ----- B

INST ID: 4000 SAMPLE NUMBER: TRIP BLANK - 2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103523
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

VOLATILES

CONCENTRATION: LOW DATAFILE: 4U11035V23R
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 1.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C010	CHLOROMETHANE	10 U	
C015	BROMOMETHANE	10 U	
C020	VINYL CHLORIDE	10 U	
C025	CHLOROETHANE	10 U	
C030	METHYLENE CHLORIDE	5 U	
C035	ACETONE	10 U	
C040	CARBON DISULFIDE	5 U	
C045	1,1-DICHLOROETHENE	5 U	
C050	1,1-DICHLOROETHANE	5 U	
C053	1,2-DICHLOROETHENE (TOTAL)	5 U	
C060	CHLOROFORM	5 U	
C065	1,2-DICHLOROETHANE	5 U	
C110	2-BUTANONE	10 U	
C115	1,1,1-TRICHLOROETHANE	5 U	
C120	CARBON TETRACHLORIDE	5 U	
C125	VINYL ACETATE	10 U	
C130	BROMODICHLOROMETHANE	5 U	
C140	1,2-DICHLOROPROPANE	5 U	
C143	CIS-1,3-DICHLOROPROPENE	5 U	
C150	TRICHLOROETHENE	5 U	
C155	DIBROMOCHLOROMETHANE	5 U	
C160	1,1,2-TRICHLOROETHANE	5 U	
C165	BENZENE	5 U	
C172	TRANS-1,3-DICHLOROPROPENE	5 U	
C180	BROMOFORM	5 U	
C205	4-METHYL-2-PENTANONE	10 U	
C210	2-HEXANONE	10 U	
C220	TETRACHLOROETHENE	5 U	
C225	1,1,2,2-TETRACHLOROETHANE	5 U	
C230	TOLUENE	5 U	
C235	CHLOROBENZENE	5 U	
C240	ETHYLBENZENE	5 U	
C245	STYRENE	5 U	
C250	XYLENES (TOTAL)	5 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012734

APPENDIX I

ADDITIONAL SOIL DELINEATION REPORT
SOUTH CAVALCADE SITE
HOUSTON, TEXAS
BEAZER EAST, INC.

012735

ADDITIONAL SOIL DELINEATION REPORT
SOUTH CAVALCADE SITE
HOUSTON, TEXAS
BEAZER EAST, INC.

This report presents the findings of the additional soil delineation conducted in the treatment plant area at the South Cavalcade Site in Houston, Texas. The additional soil delineation sampling program was implemented pursuant to the "Additional Soil Delineation Work Plan" dated October 22, 1993[1]. Additional soil delineation activities were completed by McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) on behalf of Beazer East, Inc. (Beazer). The following paragraphs outline the additional soil delineation objectives, scope of work, methodologies, results, and conclusions.

The **objective** of the additional soil delineation task was to further delineate subsurface conditions in a portion of the central area of the site treatment plant area.

The **scope of work** completed to achieve project objectives included the following activities:

- Extension of 100 foot grid covering the southeastern portion of the site (developed during the implementation of the Remedial Design Work Plan[2] [RDWP]) onto the area occupied by the treatment plant; Figure 1 presents the locations of respective grid nodes;
- Completion of a utilities search by the electric, gas, sewer, water, and oil companies in the treatment plant area;
- Review of treatment plant process engineering as-built drawings to further locate subsurface utilities related to the treatment plant;
- Mobilization of Layne Environmental Services (Layne) to perform necessary drilling and sampling activities;
- Drilling six boreholes to approximate depths of six feet below grade or six feet below the base of fill, at the respective grid nodes; and,

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[1] Beazer East, Inc., October 22, 1993, Additional Soil Delineation Work Plan, South Cavalcade Superfund Site, Letter to Mr. Glenn Celerier of U.S. EPA Region VI.

[2] Bechtel Environmental, Inc., March, 1992, Remedial Design Work Plan for South Cavalcade Site, Houston, Texas, Prepared for Beazer East, Inc.

012735

- Sampling of subsurface soils (18 samples) and shipping to Chester Labnet (Chester), Houston Laboratory for analysis for total potentially carcinogenic polynuclear aromatic hydrocarbons (cPAHs) by EPA Method 8270. Samples were also extracted using the Toxicity Characteristic Leaching Procedure (TCLP) and the extracts analyzed for CPAHS by EPA Method 8270.

Field activities were initiated on November 2, 1993. Due to a communication error, the samples collected on this date were not analyzed for total cPAHS. Holding times for sample extraction, as specified for EPA Method 8270, had expired before this omission was discovered. As agreed upon by U.S. EPA and Beazer during their meeting of December 15,1993, and documented in the Monthly Progress Report for December 1993, resampling was postponed until the frac tank could be removed from the treatment plant area. The frac tank was located in the immediate vicinity of the security light pole along the eastern property boundary, where "sludge-type material", as described by the EPA oversight contractor, was observed during construction of the pilot treatment plant. The frac tank prevented the drill rig from accessing a location immediately adjacent to the light pole (Boring G-92). The frac tank was removed from the treatment plant area during February 1994. Resampling was conducted on March 8, 1994. The G-92 sample location was relocated approximately seven feet to the southeast (indicated on Figure 1 as G-92A) to a location as near to the light pole as practicable. Remaining sample locations were the same as those for the November 1993 sampling event.

Field **methodologies** followed (including subsurface soil sample collection, sample handling, equipment decontamination, and sample shipping) were consistent with those employed during the previous Soil Delineation Study completed by Keystone Environmental Resources, Inc. These procedures are described in the "Soil Delineation Report" dated April 1992[3]. Health and safety protocol was consistent with those stipulated in the RDWP. Sample analytical methods and quality assurance/quality control (QA/QC) requirements were as specified in the site sampling and analysis plan (SAP), and Quality Assurance Project Plan (QAPP). These procedures were followed for both sampling events (*i.e.* November 2, 1993 and March 8, 1994).

McLaren/Hart provided supervision of the soil sampling activities on behalf of Beazer. Representatives of Fluor Daniel, Inc., were on site throughout the sampling activities to provide oversight on behalf of the EPA. Health and safety meetings were held with Layne and Fluor Daniel personnel prior to each sampling event. Equipment was prepared for drilling, and activities initiated at the G-89 boring location. The last borehole to be sampled was the G-92 boring location. In accordance with the EPA letter dated October 20, 1993, wherever surficial fill materials were encountered, soil sampling was initiated below the bottom of the fill material at the geotextile interface and continued for six feet below the interface.

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[3] Keystone Environmental Resources, Inc., April 1992, Soil Delineation Report, South Cavalcade Site, Houston, Texas.

Borehole drilling and sampling were completed 4-1/4-inch diameter hollow stem augers (HSA) with split-spoon sampling for the November 1993 sampling event and a combination of HSA and Shelby tube soil sampling for the March 1994 sampling event. These methodologies were discussed with the site U.S. EPA oversight contractors. During both sampling events, samples were placed on ice in coolers immediately following collection and hand delivered to Chester at the end of the day. Drilling equipment was decontaminated prior to drilling at each boring location, and following completion of all borings. Sampling equipment was decontaminated following each use.

Soil cuttings were containerized in labelled 55-gallon Department of Transportation (DOT) drums and staged onsite in the treatment plant area pending analytical results of the soil samples. These soils were ultimately managed off-site at a permitted facility in accordance with state and federal regulations. Equipment decontamination fluids were transferred to a storage tank on site for subsequent management in the water treatment plant.

The **results** of the subsurface sampling indicated that site geology was consistent with previous interpretations. Attachment I presents the six boring logs. Surficial fill materials (up to two feet thick) were encountered at borings G-91, G-92, G-93, and G-94 and are comprised of mostly limestone ballast. Underlying the surficial fill, a gray to brown silty clay unit was encountered. Generally this unit was soft, and ranged from dry (at the surface) to moist and wet (at increasing depths). Shells were observed to be imbedded in the silty clay matrix.

During the March 1994 sampling event, approximately 1.2 feet of black stained soil was encountered at a depth of 2.5 feet below ground surface (ft-bgs) at the location immediately adjacent to the light pole (Boring G-92A). This observation is indicated on the G-92A boring log. Since stained soils were not observed at the G-92 location (approximately 7 feet to the northwest), or any other borings in the treatment plant area, the occurrence of this material appears localized, both in depth and in lateral extent.

Samples that were analyzed by Chester during both events were extracted and analyzed within their respective holding times. Data validation performed by McLaren/Hart indicated that data are valid and usable. Attachment 2 presents the data validation report.

TCLP analytical results indicate no detectable cPAH constituents were present in the soil extracts. Thus, cPAH concentrations in the TCLP extracts are less than the remedial goals specified in the Record of Decision (ROD)[4].

Total cPAH soil concentrations were less than the remedial goal specified in the ROD (700,000 μg/Kg) in all samples analyzed. The results of the total cPAH analyses are presented graphically on Figure 2. Exclusive of the location immediately adjacent to the light pole (Boring G-92A),

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[4] U.S. Environmental Protection Agency, Region VI, September 1988, Record of Decision for the South Cavalcade Site, Houston, Texas.

analytical results indicate total cPAH concentrations in treatment plant area soils ranging from below detection limits at location G-94 to approximately 22,000 *u*g/Kg at location G-91. At the location immediately adjacent to the light pole (Boring G-92A), total cPAH concentrations of 170,000 *u*g/Kg and 490,000 *u*g/Kg were measured in the samples collected from two to four feet and four to six feet, respectively. Table 1 presents a summary of the cPAH analytical data. Attachment 3 presents the analytical laboratory reports.

Based on the above discussions, the **conclusions** of the additional soil delineation are summarized below:

- Total cPAH concentrations above remedial goals for the site (*i.e.* 700,000 *u*g/Kg) were not encountered at any of the soil sampling locations, including the one sampling location (Boring G-92A) proximal to the light pole;

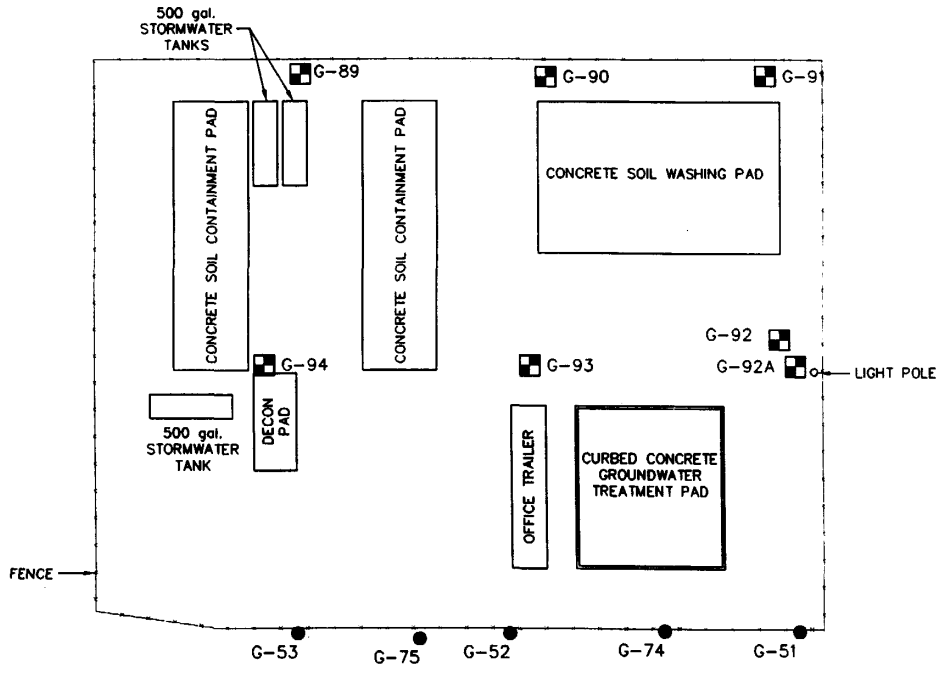
- TCLP analytical results indicate that no detectable cPAH's were measured in the soil extracts; and,

The soils in the treatment plant area have been characterized in sufficient detail according to procedures specified in the RDWP. Constituent concentrations were less than the remedial goals specified in the ROD in all samples analyzed. Therefore, no remedial actions or additional characterization activities are required for soils in the treatment plant area.

TABLE - 1
CPAH - SOIL CONCENTRATIONS
SOUTH CAVALCADE SUPERFUND SITE
HOUSTON TEXAS

SAMPLE ID	COMPOUND							
	Benzo(a)pyrene (ug/kg)	Benzo(a)anthracene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(k)fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenzo(a,h)anthracene (ug/kg)	Indeno(1,2,3-cd)pyrene (ug/kg)	Total cPAH (ug/kg)
SC-G89-0/2	2600	1400	5200	1500	1800	360J	2200	15060
SC-G89-2/4	<390	<390	<390	<390	<390	<390	<390	ND
SC-G89-4/6	<380	<380	<380	<380	<380	<380	<380	ND
SC-G90-0/2	2800	3600	4500	1100	1900	240J	820	14960
SC-G90-2/4	<380	<380	28J	<380	<380	<380	<380	28
SC-G90-4/6	<400	<400	<400	<400	<400	<400	<400	ND
SC-G91-1/3	540	820	1200	<390	440	84J	460	3544
SC-G91-3/5	3700	2900	9400	<760	270J	1400	4400	22070
SC-G91-5/7	<380	19J	43J	18J	48J	<380	20J	148
SC-G92-0/2	2600J	2400J	6700J	<9800	2300J	<9800	1300J	15300
SC-G92-2/4	34000J	25000J	43000	26000J	19000J	3600J	20000J	170600
SC-G92-4/6	81000J	110000J	100000J	47000J	98000J	7000J	47000J	490000
SC-G93-2/4	2500	3300	5600	<1700	2400	910J	2100	16810
SC-G93-4/6	<390	<390	37J	<390	<390	<390	<390	37
SC-G93-6/8	280J	230J	440J	210J	270J	44J	310J	1784
SC-G94-1/3	<390	<390	<390	<390	<390	<390	<390	ND
SC-G94-3/5	<410	<410	<410	<410	<410	<410	<410	ND
SC-G94-5/7	<400	<400	<400	<400	<400	<400	<400	ND
REPLICATE	<380	<380	<380	<380	<380	<380	<380	ND
DUPLICATE	92000	120000	140000	<80000	94000	14000J	57000J	517000

NOTE: ug/kg denotes micro grams per kilogram.
J- indicates an estimated concentration.
ND- indicates "None Detected".
The Duplicate sample is identified as SC-G92-2/4.
The Replicate sample is identified as SC-G93-4/6.
Samples identified as SC-G92 were obtained from the location designated as G-92A on Figure 1.



LEGEND:

FENCE

G-74 ● PREVIOUS SOIL DELINEATION BORING

G-92 SOIL BORING LOCATION

NOTE:

1. ALL SOIL BORING LOCATIONS ARE APPROXIMATE.

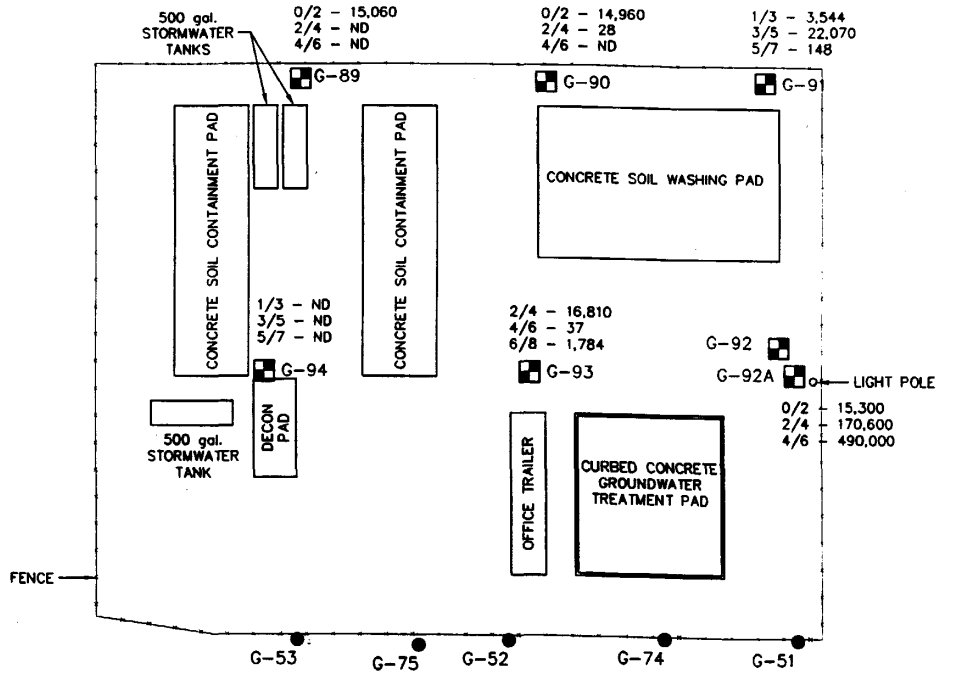
SCALE

0 40 80 FEET

BEAZER EAST, INC. **HOUSTON, TEXAS**		
ADDITIONAL SOIL DELINEATION PROGRAM SOUTH CAVALCADE SITE		
McLaren Hart ENVIRONMENTAL ENGINEERING CORPORATION	DRWN MJH	DATE 5-2-94
	CHKD	DATE
	APPD	DATE
FILE 1228B001.DWG	SCALE AS SHOWN	
DRAWING TITLE SOIL BORING LOCATIONS		DRAWING NUMBER 09-0801228 **FIGURE 1**

012740

012740



LEGEND:

———	FENCE
G-74 ●	PREVIOUS SOIL DELINEATION BORING
G-92 ■	SOIL BORING LOCATION
0/2 - 15,060	TOTAL cPAH CONCENTRATION (ug/kg) AT 0 TO 2 FOOT INTERVAL
ND	NON DETECT

NOTES:

1. ALL SOIL BORING LOCATIONS ARE APPROXIMATE.
2. CONCENTRATION LEVELS IN MICROGRAMS PER KILOGRAM (ug/kg)

SCALE

0 40 80 FEET

BEAZER EAST, INC.
HOUSTON, TEXAS

ADDITIONAL SOIL DELINEATION PROGRAM
SOUTH CAVALCADE SITE

McLaren Hart ENVIRONMENTAL ENGINEERING CORPORATION

DRWN MJH	DATE 5-2-94	
CHKD	DATE	
APPD	DATE	
FILE 12288002.DWG	SCALE AS SHOWN	

DRAWING TITLE: TOTAL cPAH ANALYTICAL RESULTS

DRAWING NUMBER 08-0801228

FIGURE 2

012741

012742

ATTACHMENT I

BORING LOGS

LOG OF BORING: G-89

012743

CLIENT NAME: BEAZER EAST, INC. LOCATION: Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 6	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
SS-1	5, 5, 4, 7	1.5	<0.1	Soft, dry, yellow-brown [10YR 5/4] **FINE SAND.**	dry-damp	SM
				Soft, dry very dark brown [10YR 2/2] **CLAYEY SILT**, small calcarous shells present.		ML
SS-2	4, 3, 2, 1	1.4	<0.1	Soft, moist, black [10YR 2/1] **CLAYEY SILT**; increasing silt fraction, numerous shells present.	moist	
SS-3	2, 2, 2, 6	2.0	<0.1	Soft, moist, yellow-brown [10YR 5/4] **SILTY CLAY**, increasing clay content, and some small brown iron staining observed.	moist	

LITHOLOGY

BOREHOLE: Bentonite Grout

FT-BGS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

BOTTOM OF BORING=6 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-90

012744

CLIENT NAME: BEAZER EAST, INC. OCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 6	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
SS-1	6, 5, 6, 13	1.5	<0.1	Soft, dry, black [7.5YR 5/1] fine to medium **SAND**, some white shells.	dry		SM	Bentonite Grout
SS-2	4, 6, 5, 7	1.4	<0.1	Soft, moist to dry, brown [10YR 2/2] **CLAYEY SILT**.	moist to dry		ML	
SS-3	2, 5, 5, 7	1.4	<0.1	Soft, moist, grayish brown [10YR 5/2] **SILTY CLAY**.	moist			

FT-BGS: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

BOTTOM OF BORING=6 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-91

012745

CLIENT NAME: BEAZER EAST, INC. OCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 7	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
				Sandy gravelly **FILL.**			FILL	
SS-1	2, 3, 4, 11	1.4	<0.1	Soft, dry to damp, brown [10YR 5/4] **SILTY CLAY**, mostly silt, fine sand (tace).	dry			
SS-2	2, 1, 2, 4	1.5	<0.1	**SAME AS ABOVE**, damp.	damp to moist		ML	Bentonite Grout
	1, 1, 1, 2	1.5	<0.1	**SAME AS ABOVE**, moist to wet.	moist to wet			

BOTTOM OF BORING=7 FEET-BGS

FT-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

LOG OF BORING: G-92

012746

CLIENT NAME: BEAZER EAST, INC. OCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 7.5	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
				Sandy gravelly **FILL**, dry.			FILL	Bentonite Grout
SS-1	3, 4, 6, 12	1.8	<0.1	Soft, damp to dry, yellow brown [10YR 5/4] to very dark brown [10YR 2/2] sandy silt to **SILTY CLAY**; black moist sand fine to medium gravel seam at base of spoon.	dry-moist		ML	
SS-2	3, 1, 3, 6	1.2	1.5	**SAME AS ABOVE**, damp to moist.	dry to damp			
SS-3	1, 3, 3, 8	1.8	NR	**SAME AS ABOVE**, moist to wet.	moist to wet			

BOTTOM OF BORING=7.5 FEET-BGS

FT-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in - Indicates inches
NR - Indicates data not recorded
ppm - Indicates parts per million
ft-bgs - Indicates feet below ground surface
ft - Indicates depth in feet

LOG OF BORING: G-93

012747

CLIENT NAME: BEAZER EAST, INC. LOCATION: Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 8	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	LITHOLOGY	USCS TYPE	BOREHOLE
				Sandy gravelly **FILL**, dry limestone gravel.			FILL	
SS-1	14, 13, 9, 13	1.2	<0.1	Soft, dry, dark gray [7.5YR 3/4] **SILTY CLAY**, mostly silt, fine sand and little clay.	dry		ML	Bentonite Grout
SS-2	1, 2, 2, 7	1.5	<0.1	**SAME AS ABOVE**, moist.	moist			
SS-3	2, 2, 3, 4	NR	<0.1	**SAME AS ABOVE**, moist.	moist			

BOTTOM OF BORING=8 FEET-BGS

FT-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in - Indicates inches
NR - Indicates data not recorded
ppm - Indicates parts per million
ft-bgs - Indicates feet below ground surface
ft - Indicates depth in feet

LOG OF BORING: G-94

012748

CLIENT NAME: BEAZER EAST, INC. OCATION:Houston, Texas PROJECT NO.: 09.0801327.001 DATE STARTED: 11/02/93 DATE COMPLETED: 11/02/93 TOTAL BORING DEPTH: 7	DRILLING METHOD: 4-1/4" Hollow Stem Auger SAMPLING METHOD: Split-Spoon DRILLING COMPANY: Layne Drilling BOREHOLE/WELL DIAMETER: 7-1/2-inch DRILLING BIT: 4-1/4-inch HSA GEOLOGIST: Neale Misquitta	PROJ. NO.: 09.0801327.001

SAMPLE NUMBER	BLOWS/6-IN	RECOVERY (FT)	HNu SCREEN (ppm)	DESCRIPTION	REMARKS	USCS TYPE
				Sandy gravelly **FILL**, limestone gravel.		FILL
SS-1	3, 6, 11, 22	1.9	<0.1	Soft, moist to damp, brown [10YR 5/2] **SILTY CLAY**.	damp to moist	ML
SS-2	4, 2, 1, 6	1.9	<0.1	**SAME AS ABOVE**, damp.	damp to moist	
	2, 3, 3, 7	1.9	NR	**SAME AS ABOVE**, moist to wet.	moist to wet	

LITHOLOGY

BOREHOLE: Bentonite Grout

FT-BGS

BOTTOM OF BORING=7 FEET-BGS

Silt
Clay
Sand
Bentonite Grout
Fill
Sand and Gravel

NOTES:

in – Indicates inches
NR – Indicates data not recorded
ppm – Indicates parts per million
ft-bgs – Indicates feet below ground surface
ft – Indicates depth in feet

012749

ATTACHMENT II

DATA VALIDATION REPORT

012749

QA/QC Review of TCLP Semi-Volatiles
Data for Chester LabNet WO:H93-11.35

Holding Times: Samples were extracted and analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All target compounds had RRF50s above 0.050 as required. Benzo(k)fluoranthene (32.449%) had a %D above the allowable maximum (25%) on 11-10-93 (FS1113C03). Benzo(k)fluoranthene (33.757%) had a %D above the allowable maximum (25%) on 11-10-93 (FS1115C02A). Results benzo(k)fluoranthene for should be considered estimates (J) in associated samples.

Blanks: Method and field blanks reported all target compounds as not detected.

Surrogate Recovery: Samples SC-G91-1/3, SC-G91-3/5, SC-G92-3.5/5.5, SC-G93-2/4, and SC-G93-6/8 had 1 of 4 acid extractable surrogate recoveries outside control limits. Samples SC-G91-3/5, SC-G91-5/7, SC-G92-3.5-5.5, SC-G93-2/4, SC-G93-4/6, and SC-G94-1/3 had 1 of 4 base/neutral surrogate recoveries outside control limits. No action is taken on only one surrogate recovery per fraction outside control limits. Sample SC-G93-4/6 had 2 of 4 acid extractable surrogate recoveries outside control limits. Samples SC-G89-4/6, SC-G90-4/6, SC-G91-5/7, and SC-G100 had 3 of 4 acid extractable surrogate recoveries outside control limits. Results for the acid extractable fractions of samples SC-G93-4/6, SC-G89-4/6, SC-G90-4/6, SC-G91-5/7, and SC-G100 should be considered estimates (J).

Compound ID: There were no hits in any of the samples in this laboratory group.

QA/QC Review of Volatiles Data
for Chester LabNet WO: H93-11.35

Holding Times: Samples were analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Continuing Calibration: All compounds had RRF50s above 0.050 as required. Chloromethene (25.674%), acetone (30.782%), and vinyl acetate (29.150%) had %Ds above the allowable maximum (25%) on 11-11-94 (ES1115V02). Results for chloromethane, acetone, and vinyl acetate should be considered estimates in associated samples.

Blanks: The method blank ES1115V01 contained a trace of tetrachloroethene (5 ug/L). Results for tetrachloroethene less than five times the associated blank level should be reported as not detected (U) in samples.

Surrogate Recovery: All surrogate recoveries were within control limits.

Compound ID: There were no hits in any of the samples in this laboratory group.

QA/QC Review of Semi-Volatiles
Data for Chester LabNet WO:H94-03.73

Holding Times: Samples were extracted and analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Continuing Calibration: All target compounds had RRF50s above 0.050 as required. Benzo(b)fluoranthene (29.326%) and benzo(g,h,i)perylene (29.108%) had %Ds above the allowable maximum (25%) on 03-21-94 (IS0321C02). Nitrobenzene (35.141%) had a %D above the allowable maximum (25%) on 03-23-94 (FS0323C02). Nitrobenzene (29.782%) had a %D above the allowable maximum (25%) on 03-24-94 (FS0324C02). Results for nitrobenzene, benzo(b)fluoranthene, and benzo(g,h,i)perylene should be considered estimates (J) in associated samples.

Blanks: Method and field blanks reported all target compounds as not detected.

Surrogate Recovery: Samples SC-G93-2/4 TCLP, REPLICATE TCLP, and FIELD BLANK had 1 of 4 acid extractable surrogate recoveries outside control limits. No action is taken on only one surrogate recovery per fraction outside control limits. Samples SC-G92-0/2, SC-G92-2/4, SC-G92-4/6, SC-G92-4/6 TCLP, SC-G93-2/4, SC-G91-3/5DL, DUPLICATE, and DUPLICATE DL had all surrogate recoveries diluted beyond detection limits. Results for samples SC-G92-0/2, SC-G92-2/4, SC-G92-4/6, SC-G92-4/6 TCLP, SC-G93-2/4, SC-G91-3/5DL, DUPLICATE, and DUPLICATE DL should be considered estimates (J). Samples SC-G90-4/6 and REPLICATE had 3 of 4 acid extractable and 3 of 4 base/neutral surrogate recoveries outside control limits and 1 or more surrogate recovery at 0%. Positive results for samples SC-G90-4/6 and REPLICATE should be considered estimates (J) and negative results unusable (R).

TCLP Spike Recovery: All TCLP compounds had exceptable spike recoveries which ranged from 73-190%.

Matrix Spike/Matrix Spike Duplicate: The MS/MSD samples had 1 of 11 relative percent differences and 5 of 22 percent recoveries outside control limits. No action is taken on MS/MSD data alone to qualify or reject an entire set of samples.

QA/QC Review of Volatiles Data
for Chester LabNet WO: H94-03.73

Holding Times: Samples were analyzed within SW-846 holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Continuing Calibration: All compounds had RRF50s above 0.050 as required. Acetone (33.282%) and trichlorofluoromethane (34.829%) had %Ds above the allowable maximum (25%) on 11-11-94 (ES0616V02). Results for acetone and trichlorofluoromethane should be considered estimates (J) in associated samples.

Blanks: Method and trip blanks reported all target compounds as not detected.

Surrogate Recovery: All surrogate recoveries were within control limits.

Compound ID: There were no hits in any of the samples in this laboratory group.

012754

ATTACHMENT III

LABORATORY REPORTS

012755

INST ID: I500 FINN SAMPLE NUMBER: SC-G89-0/2

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307302
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: IU03073C02
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	730	80 J
C540	ACENAPHTHYLENE	730	390 J
C550	ACENAPHTHENE	730	57 J
C590	FLUORENE	730	39 J
C640	PHENANTHRENE	730	300 J
C645	ANTHRACENE	730	560 J
C655	FLUORANTHENE	730	1600
C715	PYRENE	730	1400
C730	BENZO(A)ANTHRACENE	730	1400
C740	CHRYSENE	730	1800
C765	BENZO(B)FLUORANTHENE	730	5200 J
C770	BENZO(K)FLUORANTHENE	730	1500
C775	BENZO(A)PYRENE	730	2600
C780	INDENO(1,2,3-CD)PYRENE	730	2200
C785	DIBENZO(A,H)ANTHRACENE	730	360 J
C790	BENZO(GHI)PERYLENE	730	1900 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012756

INST ID: I500 FINN

SAMPLE NUMBER: SC-089-2/4

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307306
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: IU03073C06
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390 U	
C715	PYRENE	390 U	
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390 U	
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012757

N3T ID: I500 FINN SAMPLE NUMBER: SC-GB9-4/6

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307307
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: IU03073C07
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380 U	
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012757

012758

NST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: SC-G90-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307308
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C08S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	770	370 J
C540	ACENAPHTHYLENE	770	190 J
C550	ACENAPHTHENE	770	400 J
C590	FLUORENE	770	290 J
C640	PHENANTHRENE	770	2700
C645	ANTHRACENE	770	660 J
C655	FLUORANTHENE	770	3400
C715	PYRENE	770	3400
C730	BENZO(A)ANTHRACENE	770	3600
C740	CHRYSENE	770	1900
C765	BENZO(B)FLUORANTHENE	770	4500 J
C770	BENZO(K)FLUORANTHENE	770	1100
C775	BENZO(A)PYRENE	770	2800
C780	INDENO(1,2,3-CD)PYRENE	770	820
C785	DIBENZO(A,H)ANTHRACENE	770	240 J
C790	BENZO(GHI)PERYLENE	770	570 J J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012759

NST ID: I500 FINN

SAMPLE NUMBER: SC-G90-2/4

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307309
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: IU03073C09
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380	28 J
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012760

CHESTER DC # --- - 8

LNST ID: 4510 SAMPLE NUMBER: SC-G90-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307310
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C10S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	400 U	
C540	ACENAPHTHYLENE	400 U	
C550	ACENAPHTHENE	400 U	
C590	FLUORENE	400 U	
C640	PHENANTHRENE	400 U	
C645	ANTHRACENE	400 U	
C655	FLUORANTHENE	400 U	
C715	PYRENE	400 U	
C730	BENZO(A)ANTHRACENE	400 U	
C740	CHRYSENE	400 U	
C765	BENZO(B)FLUORANTHENE	400 U	
C770	BENZO(K)FLUORANTHENE	400 U	
C775	BENZO(A)PYRENE	400 U	
C780	INDENO(1,2,3-CD)PYRENE	400 U	
C785	DIBENZO(A,H)ANTHRACENE	400 U	
C790	BENZO(GHI)PERYLENE	400 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307311
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C11S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390	62 J
C540	ACENAPHTHYLENE	390	28 J
C550	ACENAPHTHENE	390	76 J
C590	FLUORENE	390	84 J
C640	PHENANTHRENE	390	660
C645	ANTHRACENE	390	270 J
C655	FLUORANTHENE	390	980
C715	PYRENE	390	770
C730	BENZO(A)ANTHRACENE	390	820
C740	CHRYSENE	390	440
C765	BENZO(B)FLUORANTHENE	390	1200
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390	540
C780	INDENO(1,2,3-CD)PYRENE	390	460
C785	DIBENZO(A,H)ANTHRACENE	390	84 J
C790	BENZO(GHI)PERYLENE	390	430

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012762

'NST ID: 4510 SAMPLE NUMBER: SC-091-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307312
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C12S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	760	220 J
C540	ACENAPHTHYLENE	760	520 J
C550	ACENAPHTHENE	760	550 J
C590	FLUORENE	760	570 J
C640	PHENANTHRENE	760	5500
C645	ANTHRACENE	760	1300
C655	FLUORANTHENE	760	9600
C715	PYRENE	760	5300
C730	BENZO(A)ANTHRACENE	760	2900
C740	CHRYSENE	760	270 J
C765	BENZO(B)FLUORANTHENE	760	9400 *J
C770	BENZO(K)FLUORANTHENE	760 U	
C775	BENZO(A)PYRENE	760	3700
C780	INDENO(1,2,3-CD)PYRENE	760	4400
C785	DIBENZO(A,H)ANTHRACENE	760	1400
C790	BENZO(GHI)PERYLENE	760	4300

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT
* : COMPOUND AMOUNT TAKEN FROM A 1:10 DILUTION

INST ID: I500 FINN

SAMPLE NUMBER: SC-G91-5/7

012763

ORGANICS ANALYSIS DATA SHEET -

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307313
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/21/94

DATAFILE: IU03073C13

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380	15 J
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380	97 J
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380	66 J
C715	PYRENE	380	69 J
C730	BENZO(A)ANTHRACENE	380	19 J
C740	CHRYSENE	380	48 J
C765	BENZO(B)FLUORANTHENE	380	43 J
C770	BENZO(K)FLUORANTHENE	380	18 J
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380	20 J
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012764

CHESTER DC # --- - 8

INST ID: 4510 SAMPLE NUMBER: SC-G92-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307314
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C14S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND (MICROGRAMS / KG)
C450	NAPHTHALENE	9800	330 J
C540	ACENAPHTHYLENE	9800 U	
C550	ACENAPHTHENE	9800 U	
C590	FLUORENE	9800 U	
C640	PHENANTHRENE	9800	1800 J
C645	ANTHRACENE	9800	630 J
C655	FLUORANTHENE	9800	4300 J
C715	PYRENE	9800	4200 J
C730	BENZO(A)ANTHRACENE	9800	2400 J
C740	CHRYSENE	9800	2300 J
C765	BENZO(B)FLUORANTHENE	9800	6700 J
C770	BENZO(K)FLUORANTHENE	9800 U	
C775	BENZO(A)PYRENE	9800	2600 J
C780	INDENO(1,2,3-CD)PYRENE	9800	1300 J
C785	DIBENZO(A,H)ANTHRACENE	9800 U	
C790	BENZO(GHI)PERYLENE	9800	1200 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012765

CHESTER DC # --- - 8

INST ID: 4510

SAMPLE NUMBER: SC-G92-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307315
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C15S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND	
C450	NAPHTHALENE	41000	42000	J
C540	ACENAPHTHYLENE	41000	2100	J
C550	ACENAPHTHENE	41000	5800	J
C590	FLUORENE	41000	17000	J
C640	PHENANTHRENE	41000	58000	
C645	ANTHRACENE	41000	56000	
C655	FLUORANTHENE	41000	51000	
C715	PYRENE	41000	48000	
C730	BENZO(A)ANTHRACENE	41000	25000	J
C740	CHRYSENE	41000	19000	J
C765	BENZO(B)FLUORANTHENE	41000	43000	
C770	BENZO(K)FLUORANTHENE	41000	26000	J
C775	BENZO(A)PYRENE	41000	34000	J
C780	INDENO(1,2,3-CD)PYRENE	41000	20000	J
C785	DIBENZO(A,H)ANTHRACENE	41000	3600	J
C790	BENZO(GHI)PERYLENE	41000	18000	J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

NST ID: 4510 SAMPLE NUMBER: SC-G92-4/6

012766

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307316
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9S03073CC16
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MILLIGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	200	1200
C540	ACENAPHTHYLENE	200	28 J
C550	ACENAPHTHENE	200	110 J
C590	FLUORENE	200	250
C640	PHENANTHRENE	200	700
C645	ANTHRACENE	200	490
C655	FLUORANTHENE	200	470
C715	PYRENE	200	220
C730	BENZO(A)ANTHRACENE	200	110 J
C740	CHRYSENE	200	98 J
C765	BENZO(B)FLUORANTHENE	200	100 J
C770	BENZO(K)FLUORANTHENE	200	47 J
C775	BENZO(A)PYRENE	200	81 J
C780	INDENO(1,2,3-CD)PYRENE	200	47 J
C785	DIBENZO(A,H)ANTHRACENE	200	7 J
C790	BENZO(GHI)PERYLENE	200	44 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012767

NST ID: 4510

CHESTER DC # --- - 6
SAMPLE NUMBER: SC-G93-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307317
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9S03073C17
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	1700 U	
C540	ACENAPHTHYLENE	1700	140 J
C550	ACENAPHTHENE	1700 U	
C590	FLUORENE	1700 U	
C640	PHENANTHRENE	1700	1600 J
C645	ANTHRACENE	1700	980 J
C655	FLUORANTHENE	1700	4700
C715	PYRENE	1700	2900
C730	BENZO(A)ANTHRACENE	1700	3300
C740	CHRYSENE	1700	2400
C765	BENZO(B)FLUORANTHENE	1700	5600
C770	BENZO(K)FLUORANTHENE	1700 U	
C775	BENZO(A)PYRENE	1700	2500
C780	INDENO(1,2,3-CD)PYRENE	1700	2100
C785	DIBENZO(A,H)ANTHRACENE	1700	910 J
C790	BENZO(GHI)PERYLENE	1700	1900

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

000101

NST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: SC-G93-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307318
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C18S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390	27 J
C715	PYRENE	390	21 J
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390	37 J
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

.NST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: SC-G93-6/8

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307319
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C19S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	750 U	
C540	ACENAPHTHYLENE	750 U	
C550	ACENAPHTHENE	750 U	
C590	FLUORENE	750 U	
C640	PHENANTHRENE	750	96 J
C645	ANTHRACENE	750	41 J
C655	FLUORANTHENE	750	320 J
C715	PYRENE	750	240 J
C730	BENZO(A)ANTHRACENE	750	230 J
C740	CHRYSENE	750	270 J
C765	BENZO(B)FLUORANTHENE	750	440 J
C770	BENZO(K)FLUORANTHENE	750	210 J
C775	BENZO(A)PYRENE	750	280 J
C780	INDENO(1,2,3-CD)PYRENE	750	310 J
C785	DIBENZO(A,H)ANTHRACENE	750	44 J
C790	BENZO(GHI)PERYLENE	750	300 J

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

CHESTER DC # --- - 6

INST ID: 4510 SAMPLE NUMBER: SC-G94-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307320
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C20S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	390 U	
C540	ACENAPHTHYLENE	390 U	
C550	ACENAPHTHENE	390 U	
C590	FLUORENE	390 U	
C640	PHENANTHRENE	390 U	
C645	ANTHRACENE	390 U	
C655	FLUORANTHENE	390 U	
C715	PYRENE	390 U	
C730	BENZO(A)ANTHRACENE	390 U	
C740	CHRYSENE	390 U	
C765	BENZO(B)FLUORANTHENE	390 U	
C770	BENZO(K)FLUORANTHENE	390 U	
C775	BENZO(A)PYRENE	390 U	
C780	INDENO(1,2,3-CD)PYRENE	390 U	
C785	DIBENZO(A,H)ANTHRACENE	390 U	
C790	BENZO(GHI)PERYLENE	390 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INST ID: 4510

CHESTER DC # --- - 8

SAMPLE NUMBER: SC-G94-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307321
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C21S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	410 U	
C540	ACENAPHTHYLENE	410 U	
C550	ACENAPHTHENE	[illegible] U	
C590	FLUORENE	410 U	
C640	PHENANTHRENE	410 U	
C645	ANTHRACENE	410 U	
C655	FLUORANTHENE	410 U	
C715	PYRENE	410 U	
C730	BENZO(A)ANTHRACENE	410 U	
C740	CHRYSENE	410 U	
C765	BENZO(B)FLUORANTHENE	410 U	
C770	BENZO(K)FLUORANTHENE	410 U	
C775	BENZO(A)PYRENE	410 U	
C780	INDENO(1,2,3-CD)PYRENE	410 U	
C785	DIBENZO(A,H)ANTHRACENE	410 U	
C790	BENZO(GHI)PERYLENE	410 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012772

NST ID: 4510

CHESTER DC # --- - 8
SAMPLE NUMBER: SC-G94-5/7

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307322
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C22S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	400 U	
C540	ACENAPHTHYLENE	400 U	
C550	ACENAPHTHENE	[illegible] U	
C590	FLUORENE	400 U	
C640	PHENANTHRENE	400 U	
C645	ANTHRACENE	400 U	
C655	FLUORANTHENE	400 U	
C715	PYRENE	400 U	
C730	BENZO(A)ANTHRACENE	400 U	
C740	CHRYSENE	400 U	
C765	BENZO(B)FLUORANTHENE	400 U	
C770	BENZO(K)FLUORANTHENE	400 U	
C775	BENZO(A)PYRENE	400 U	
C780	INDENO(1,2,3-CD)PYRENE	400 U	
C785	DIBENZO(A,H)ANTHRACENE	400 U	
C790	BENZO(GHI)PERYLENE	400 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

000141

012773

CHESTER DC # --- - 8

INST ID: 4310 SAMPLE NUMBER: REPLICATE

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307323
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C23S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/23/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	380 U	
C540	ACENAPHTHYLENE	380 U	
C550	ACENAPHTHENE	380 U	
C590	FLUORENE	380 U	
C640	PHENANTHRENE	380 U	
C645	ANTHRACENE	380 U	
C655	FLUORANTHENE	380 U	
C715	PYRENE	380 U	
C730	BENZO(A)ANTHRACENE	380 U	
C740	CHRYSENE	380 U	
C765	BENZO(B)FLUORANTHENE	380 U	
C770	BENZO(K)FLUORANTHENE	380 U	
C775	BENZO(A)PYRENE	380 U	
C780	INDENO(1,2,3-CD)PYRENE	380 U	
C785	DIBENZO(A,H)ANTHRACENE	380 U	
C790	BENZO(GHI)PERYLENE	380 U	

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

GC/MS ID: 4510 SAMPLE NUMBER: DUPLICATE

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307324
SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: ..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C24S
DATE EXTRACTED: 03/10/94
DATE ANALYZED: 03/24/94

	COMPOUND	DETECTION LIMIT (MICROGRAMS / KG)	AMOUNT FOUND
C450	NAPHTHALENE	80	2000 *
C540	ACENAPHTHYLENE	80	30 J
C550	ACENAPHTHENE	80	93
C590	FLUORENE	[illegible]	230
C640	PHENANTHRENE	[illegible]	640
C645	ANTHRACENE	80	120
C655	FLUORANTHENE	80	430
C715	PYRENE	80	260
C730	BENZO(A)ANTHRACENE	80	120
C740	CHRYSENE	80	94
C765	BENZO(B)FLUORANTHENE	80	140
C770	BENZO(K)FLUORANTHENE	80 U	
C775	BENZO(A)PYRENE	80	92
C780	INDENO(1,2,3-CD)PYRENE	80	57 J
C785	DIBENZO(A,H)ANTHRACENE	80	14 J
C790	BENZO(GHI)PERYLENE	80	48 J

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT
* = COMPOUND AMOUNT TAKEN FROM A 1:1000 DILUTION

012775

INST ID: 4510

CHESTER DC # ---- - 8
SAMPLE NUMBER: FIELD BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307325
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C25
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C450	NAPHTHALENE	50 U	
C540	ACENAPHTHYLENE	50 U	
C550	ACENAPHTHENE	50 U	
C590	FLUORENE	50 U	
C640	PHENANTHRENE	50 U	
C645	ANTHRACENE	50 U	
C655	FLUORANTHENE	50 U	
C715	PYRENE	50 U	
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	
C790	BENZO(GHI)PERYLENE	50 U	

U : UNDETECTED AT THE LISTED DETECTION LIMIT
J : COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012776

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-089-0/2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103502
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C02
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012777

CHESTER LABNET DC # ---- 8

NST ID: 4510

SAMPLE NUMBER: SC-G89-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103503
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C03
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012778

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-Q89-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103504
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C04A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/18/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012779

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-G90-0/Z

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103505
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C05
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/13/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012780

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G90-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103506
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C06A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/18/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012781

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G90-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103507
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C07A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012782

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103508
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C08A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012783

CHESTER LABNET DC # ---- 8

.NST ID: 4510 SAMPLE NUMBER: SC-G91-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103509
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C09A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012784

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G91-5/7

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103510
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C10A
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INHT ID: 4510 SAMPLE NUMBER: SC-092-0/2

012785

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307314
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C14
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

INST ID: 4510 SAMPLE NUMBER: SC-692-2/4

012786

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307315
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C15
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/21/94 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012787

INST ID: 4510 SAMPLE NUMBER: SC-092-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 940307316
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 03/09/94

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U03073C16A
DATE EXTRACTED: 03/11/94
DATE ANALYZED: 03/23/94 DILUTION FACTOR: 50.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	500 U	
C740	CHRYSENE	500 U	
C765	BENZO(B)FLUORANTHENE	500 U	
C770	BENZO(K)FLUORANTHENE	500 U	
C775	BENZO(A)PYRENE	500 U	
C780	INDENO(1,2,3-CD)PYRENE	500 U	
C785	DIBENZO(A,H)ANTHRACENE	500 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012788

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-G93-2/4

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103514
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C14
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012789

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-4/6

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103515
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C15
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/29/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012790

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-G93-6/8

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103516
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C16
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012791

CHESTER LABNET DC # ---- 6

INST ID: 4510 SAMPLE NUMBER: SC-G94-1/3

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103517
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C17
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012792

CHESTER LABNET DC # ---- 8

INST ID: 4510 SAMPLE NUMBER: SC-094-3/5

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103518
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C18
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/20/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012793

CHESTER LABNET DC # ---- 8

INST ID: 4510

SAMPLE NUMBER: SC-G94-5/7

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103519
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C19
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/21/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012794

INST ID: 4510

CHESTER LABNET DC # ---- B
SAMPLE NUMBER: FIELD BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103521
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

SEMIVOLATILES

CONCENTRATION: LOW DATAFILE: 9U11035C21
DATE EXTRACTED: 11/08/93
DATE ANALYZED: 11/29/93 DILUTION FACTOR: 5.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C730	BENZO(A)ANTHRACENE	50 U	
C740	CHRYSENE	50 U	
C765	BENZO(B)FLUORANTHENE	50 U	
C770	BENZO(K)FLUORANTHENE	50 U	
C775	BENZO(A)PYRENE	50 U	
C780	INDENO(1,2,3-CD)PYRENE	50 U	
C785	DIBENZO(A,H)ANTHRACENE	50 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

KEYSTONE DC # ----- 8

INST ID: 4000 SAMPLE NUMBER: TRIP BLANK

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103522
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

VOLATILES

CONCENTRATION: LOW DATAFILE: 4U11035V22R
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 1.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C010	CHLOROMETHANE	10 U	
C015	BROMOMETHANE	10 U	
C020	VINYL CHLORIDE	10 U	
C025	CHLOROETHANE	10 U	
C030	METHYLENE CHLORIDE	5 U	
C035	ACETONE	10 U	
C040	CARBON DISULFIDE	5 U	
C045	1,1-DICHLOROETHENE	5 U	
C050	1,1-DICHLOROETHANE	5 U	
C053	1,2-DICHLOROETHENE (TOTAL)	5 U	
C060	CHLOROFORM	5 U	
C065	1,2-DICHLOROETHANE	5 U	
C110	2-BUTANONE	10 U	
C115	1,1,1-TRICHLOROETHANE	5 U	
C120	CARBON TETRACHLORIDE	5 U	
C125	VINYL ACETATE	10 U	
C130	BROMODICHLOROMETHANE	5 U	
C140	1,2-DICHLOROPROPANE	5 U	
C143	CIS-1,3-DICHLOROPROPENE	5 U	
C150	TRICHLOROETHENE	5 U	
C155	DIBROMOCHLOROMETHANE	5 U	
C160	1,1,2-TRICHLOROETHANE	5 U	
C165	BENZENE	5 U	
C172	TRANS-1,3-DICHLOROPROPENE	5 U	
C180	BROMOFORM	5 U	
C205	4-METHYL-2-PENTANONE	10 U	
C210	2-HEXANONE	10 U	
C220	TETRACHLOROETHENE	5 U	
C225	1,1,2,2-TETRACHLOROETHANE	5 U	
C230	TOLUENE	5 U	
C235	CHLOROBENZENE	5 U	
C240	ETHYLBENZENE	5 U	
C245	STYRENE	5 U	
C250	XYLENES (TOTAL)	5 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

012796

KEYSTONE DC # ------ 8

INST ID: 4000 SAMPLE NUMBER: TRIP BLANK - 2

ORGANICS ANALYSIS DATA SHEET

LABORATORY NAME: CHESTER LABNET
LAB SAMPLE ID NO.: 931103523
SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY:..... DATE SAMPLE RECEIVED: 11/04/93

VOLATILES

CONCENTRATION: LOW DATAFILE: 4U11035V23R
DATE ANALYZED: 11/15/93 DILUTION FACTOR: 1.00

	COMPOUND	DETECTION LIMIT (MICROGRAMS / LITER)	AMOUNT FOUND
C010	CHLOROMETHANE	10 U	
C015	BROMOMETHANE	10 U	
C020	VINYL CHLORIDE	10 U	
C025	CHLOROETHANE	10 U	
C030	METHYLENE CHLORIDE	5 U	
C035	ACETONE	10 U	
C040	CARBON DISULFIDE	5 U	
C045	1,1-DICHLOROETHENE	5 U	
C050	1,1-DICHLOROETHANE	5 U	
C053	1,2-DICHLOROETHENE (TOTAL)	5 U	
C060	CHLOROFORM	5 U	
C065	1,2-DICHLOROETHANE	5 U	
C110	2-BUTANONE	10 U	
C115	1,1,1-TRICHLOROETHANE	5 U	
C120	CARBON TETRACHLORIDE	5 U	
C125	VINYL ACETATE	10 U	
C130	BROMODICHLOROMETHANE	5 U	
C140	1,2-DICHLOROPROPANE	5 U	
C143	CIS-1,3-DICHLOROPROPENE	5 U	
C150	TRICHLOROETHENE	5 U	
C155	DIBROMOCHLOROMETHANE	5 U	
C160	1,1,2-TRICHLOROETHANE	5 U	
C165	BENZENE	5 U	
C172	TRANS-1,3-DICHLOROPROPENE	5 U	
C180	BROMOFORM	5 U	
C205	4-METHYL-2-PENTANONE	10 U	
C210	2-HEXANONE	10 U	
C220	TETRACHLOROETHENE	5 U	
C225	1,1,2,2-TETRACHLOROETHANE	5 U	
C230	TOLUENE	5 U	
C235	CHLOROBENZENE	5 U	
C240	ETHYLBENZENE	5 U	
C245	STYRENE	5 U	
C250	XYLENES (TOTAL)	5 U	

U = UNDETECTED AT THE LISTED DETECTION LIMIT
J = COMPOUND IS PRESENT, BUT BELOW THE LISTED DETECTION LIMIT

000221