

01951

**GROUNDWATER MONITORING
VALIDATED ANALYTICAL RESULTS FOR THE FIRST QUARTER 1995
ASH LANDFILL, SENECA ARMY DEPOT**

PREPARED FOR:
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Huntsville, Alabama

PREPARED BY:
Parsons Engineering Science, Inc.
Boston, Massachusetts

April 1995
D#12

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 - 2.2 Matrix Spike/Matrix Spike Duplicates
 - 2.3 Method Blanks

SECTION 1.0
Volatile Organic Compounds

- 1.1 Summary of Validated and Headspace Volatile Analysis Results .**
- 1.2 Validated Volatile Analysis Results
(TCL and 524.2)**

1.1 Summary of Validated and Headspace Volatile Analysis Results

ASH LANDFILL FIRST QUARTER 1995 GROUNDWATER MONITORING
SUMMARY OF VALIDATED VOLATILE ANALYSIS RESULTS (TCL AND 524.2)

RING	COMPOUND										TOTAL	
	1,2-DCE (ug/l)	1,1-DCE (ug/l)	TCE (ug/l)	Vinyl Chloride (ug/l)	Chloroform (ug/l)	1,2-DCA (ug/l)	Methylene Chloride (ug/l)	Styrene (ug/l)	Benzene (ug/l)			
L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
40 DUP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	0.5 U	0.5 U	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
5 DUP)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

1,2-DCE = 1,2-Dichloroethene (total)

TCE = Trichloroethene

1,2-DCA = 1,2-Dichloroethane

1,1-DCE = 1,1-Dichloroethene

U = Not detected above the concentration shown

ND = Not Detected

ug/l = micrograms per liter

**ASH LANDFILL FIRST QUARTER 1995 GROUNDWATER MONITORING
SUMMARY OF GROUNDWATER HEADSPACE VOLATILE ANALYSIS RESULTS**

MONITORING WELL	COMPOUND						TOTAL VOCs ug/l
	Vinyl chloride ug/l	1,1-DCE ug/l	Trans-1,2-DCE ug/l	TCE ug/l			
PT-11	100U	1U	1U	1U			ND
PT-19	100U	1U	1U	1U			ND
PT-27	100U	1U	1U	1U			ND
MW-30	100U	1U	1U	1			1
MW-45	100U	1U	1U	1U			ND
MW-48	100U	1U	1U	1U			ND
MW-59	100U	1U	1U	1U			ND
MW-60	100U	1U	1U	1U			ND

NOTES:

Analysis performed on PHOTOVAC 10S50 GC

1,1-DCE = 1,1-Dichloroethene

Trans-1,2-DCE = Trans-1,2-dichloroethene

TCE = Trichloroethene

U = Not detected above concentration shown

ND = Not detected

ug/l = microgram per liter

**1.2 Validated Volatile Analysis Results
(TCL and 524.2)**

Section 2.0
QA/QC Data

- 2.1 Surrogate Spike Recoveries**
- 2.2 Matrix Spike/Matrix Spike Duplicates**
- 2.3 Method Blanks**

2.1 Surrogate Spike Recoveries

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 (DCE) #	OTHER	TOT OUT
01	VBLKP4	97	103	96		0
02	MW36	97	106	99		0
03	MW40R	97	105	99		0
04	MW40	98	105	98		0
05	MW47	101	108	102		0
06	MW56	98	107	100		0
07	MW63	98	107	99		0
08	MW40MS	97	105	98		0
09	MW40MSD	96	106	97		0
10	MSB	97	104	96		0
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QC LIMITS

SMC1 (TOL) = Toluene-d8 (88-110)
 SMC2 (BFB) = Bromofluorobenzene (86-115)
 SMC3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

	EPA SAMPLE NO.	SMC1 (DCE) #	SMC2 (BFB) #	SMC3 (DCB) #	OTHER	TOT OUT
01	MCVFLFB1	92	94	89		0
02	VBLKP9	106	98	101		0
03	BNSR	91	95	92		0
04	BNS	106	99	104		0
05	FHD	107	98	104		0
06	FHS	110	96	102		0
07	MW30	110	97	102		0
08	MW64	113	99	105		0
09	TB316	109	96	100		0
10	TB317	109	97	101		0
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QC LIMITS

SMC1 (DCE) = 1,2-Dichloroethane-d4 (83-143)
 SMC2 (BFB) = Bromofluorobenzene (86-115)
 SMC3 (DCB) = 1,2-Dichlorobenzene-d4 (80-120)

Column to be used to-flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2.2 Matrix Spike/Matrix Spike Duplicates

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Matrix Spike - EPA Sample No.: MW40

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	36	72	61-145
Trichloroethene	50	0	49	98	71-120
Benzene	50	0	50	100	76-127
Toluene	50	0	49	98	76-125
Chlorobenzene	50	0	52	104	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50	37	74	3	14	61-145
Trichloroethene	50	49	98	0	14	71-120
Benzene	50	50	100	0	11	76-127
Toluene	50	49	98	0	13	76-125
Chlorobenzene	50	52	104	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS:

3A
 WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Matrix Spike - EPA Sample No.: MSB

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50		35	70	61-145
Trichloroethene	50		48	96	71-120
Benzene	50		50	100	76-127
Toluene	50		48	96	76-125
Chlorobenzene	50		51	102	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: _____

Report Date: 27-Mar-1995 13:05

Aquatec, Inc.

RECOVERY REPORT

Contract: 93206
 Client Name: ENGSC2
 Sample Matrix: LIQUID
 Lab Smp Id: MCVFLFB1
 Level: LOW

Case No.: 93206
 Client SDG: 49994
 Fraction: VOA
 Client Smp ID: MCVFLFB1
 Operator: CMP

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
1 Dichlorodifluorome	1	0.9	90.55	60-140
2 Chloromethane	1	0.8	81.00	60-140
3 Vinyl Chloride	1	0.8	84.75	60-140
4 Bromomethane	1	1	102.91	60-140
5 Chloroethane	1	1	108.44	60-140
6 Trichlorofluoromet	1	1.0	97.85	60-140
7 1,1-Dichloroethene	1	1	106.38	60-140
8 Acetone	5	4	86.85	60-140
10 Methylene Chloride	1	0.9	94.27	60-140
11 trans-1,2-Dichloro	1	1	101.32	60-140
12 Methyl-t-Butyl Eth	1	0.9	92.36	60-140
13 1,1-Dichloroethane	1	1	103.82	60-140
14 2,2-Dichloropropan	1	1	107.43	60-140
15 cis-1,2-Dichloroet	1	0.9	86.62	60-140
16 2-Butanone	5	4	76.17	60-140
17 Bromochloromethane	1	0.9	90.76	60-140
19 Chloroform	1	1	103.34	60-140
20 1,1,1-Trichloroeth	1	1.0	98.37	60-140
21 Carbon Tetrachlori	1	1.0	97.75	60-140
22 1,1-Dichloropropen	1	1	109.08	60-140
24 Benzene	1	1	104.80	60-140
25 1,2-Dichloroethane	1	0.9	86.10	60-140
27 Trichloroethene	1	1	103.16	60-140
28 1,2-Dichloropropan	1	0.9	94.71	60-140
29 Dibromomethane	1	0.9	91.85	60-140
31 Bromodichlorometha	1	1.0	99.44	60-140
32 cis-1,3-Dichloropr	1	0.9	89.01	60-140
33 4-Methyl-2-Pentano	5	4	81.20	60-140
34 Toluene	1	1.0	99.80	60-140
35 trans-1,3-Dichloro	1	0.8	84.93	60-140
36 1,1,2-Trichloroeth	1	0.9	86.78	60-140
37 Tetrachloroethene	1	1	102.78	60-140
38 1,3-Dichloropropan	1	1.0	95.13	60-140
39 2-Hexanone	5	4	86.75	60-140
40 Dibromochlorometha	1	0.9	86.07	60-140
41 1,2-Dibromoethane	1	0.9	91.46	60-140

Report Date: 27-Mar-1995 13:05

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
43 Chlorobenzene	1	1.0	97.64	60-140
44 1,1,1,2-Tetrachlor	1	1	104.04	60-140
45 Ethylbenzene	1	1	102.79	60-140
46 m- & p-Xylene	2	2	99.69	60-140
47 o-Xylene	1	1	102.26	60-140
M 48 Xylene (total)	3	3	102.53	60-140
49 Styrene	1	0.9	91.95	60-140
50 Bromoform	1	0.8	84.24	60-140
51 Isopropylbenzene	1	1	109.74	60-140
53 Bromobenzene	1	1.0	96.05	60-140
54 1,1,2,2-Tetrachlor	1	0.9	92.87	60-140
55 1,2,3-Trichloropro	1	0.8	75.05	60-140
56 n-Propylbenzene	1	1	104.98	60-140
57 2-Chlorotoluene	1	1.0	95.37	60-140
58 4-Chlorotoluene	1	1.0	97.92	60-140
59 1,3,5-Trimethylben	1	1.0	99.35	60-140
60 tert-Butylbenzene	1	1	107.50	60-140
61 1,2,4-Trimethylben	1	0.9	94.38	60-140
62 sec-Butylbenzene	1	1.0	99.09	60-140
63 1,3-Dichlorobenzen	1	0.9	91.75	60-140
65 p-Isopropyltoluene	1	1	105.92	60-140
66 1,4-Dichlorobenzen	1	1	103.11	60-140
68 1,2-Dichlorobenzen	1	0.9	92.51	60-140
69 n-Butylbenzene	1	1	107.68	60-140
70 1,2-Dibromo-3-Chlo	1	0.9	91.97	60-140
71 1,2,4-Trichloroben	1	0.9	92.34	60-140
72 Hexachlorobutadien	1	1	101.22	60-140
73 Naphthalene	1	0.8	84.81	60-140
74 1,2,3-Trichloroben	1	0.9	89.44	60-140

2.3 Method Blanks

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKP4

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Lab File ID: MCLB001LV.D

Lab Sample ID: VBLKP4

Date Analyzed: 03/21/95

Time Analyzed: 1708

GC Column: CAP

ID: 0.53 (mm)

Heated Purge: (Y/N) N

Instrument ID: M

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	MW36	251176	M251176V.D	2004
02	MW40R	251177	M251177V.D	2032
03	MW40	251178	M251178V.D	2101
04	MW47	251180	M251180V.D	2144
05	MW56	251181	M251181V.D	2206
06	MW63	251182	M251182V.D	2234
07	MW40MS	251178MS	M251178MSV.D	2303
08	MW40MSD	251178MD	M251178MDV.D	2331
09	MSB	251179	M251179V.D	0001
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COMMENTS:

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKP4

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Matrix: (soil/water) WATER

Lab Sample ID: VBLKP4

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: MCLB001LV.D

Level: (low/med) LOW

Date Received: / /

% Moisture: not dec. _____

Date Analyzed: 03/21/95

GC Column: CAP ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKP9

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Lab File ID: MCVB001FV.D

Lab Sample ID: VBLKP9

Date Analyzed: 03/23/95

Time Analyzed: 0904

GC Column: CAP

ID: 0.53 (mm)

Heated Purge: (Y/N) N

Instrument ID: M

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	MCVFLFB1	MCVFLFB1	MCVFLFB1V.D	0825
02	BNSR	251171	M251171V.D	0956
03	BNS	251172	M251172V.D	1025
04	FHD	251173	M251173V.D	1101
05	FHS	251174	M251174V.D	1137
06	MW30	251175	M251175V.D	1212
07	MW64	251183	M251183V.D	1247
08	TB316	251184	M251184V.D	1322
09	TB317	251185	M251185V.D	1358
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COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKP9

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Matrix: (soil/water) WATER

Lab Sample ID: VBLKP9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: MCVB001FV.D

Level: (low/med) LOW

Date Received: / /

% Moisture: not dec. _____

Data Analyzed: 03/23/95

GC Column: CAP ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0.5	U
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
75-69-4	Trichlorofluoromethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-09-2	Methylene Chloride	0.5	U
1634-04-4	Methyl-t-Butyl Ether	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
590-20-7	2,2-Dichloropropane	0.5	U
67-66-3	Chloroform	0.5	U
74-97-5	Bromochloromethane	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
563-58-6	1,1-Dichloropropene	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
74-95-3	Dibromomethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
142-28-9	1,3-Dichloropropane	0.5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKP9

Lab Name: AQUATEC, INC.

Contract: 93206

Lab Code: AQUAI

Case No.: 93206

SAS No.:

SDG No.: 49994

Matrix: (soil/water) WATER

Lab Sample ID: VBLKP9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: MCVB001FV.D

Level: (low/med) LOW

Date Received: / /

% Moisture: not dec. _____

Data Analyzed: 03/23/95

GC Column: CAP ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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