



UNION CARBIDE CORPORATION P.O. BOX 513, COLUMBIA, TENNESSEE 38402-0513
Carbon Products Division

December 9, 1988

Mr. Robert J. Mitrey, P.E.
Associate Sanitary Engineer
New York State Dept. of Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202-1073

Re: Quarterly Report of Groundwater Analysis Republic SWMF -
Post Closure Monitoring Program

Dear Mr. Mitrey:

As outlined in our Final Landfill Closure Report for the Republic SWMF submitted to you on November 10, 1987, quarterly groundwater samples will be collected and analyzed for the agreed parameters listed on page 27 of this report.

We have attached the third quarter's groundwater analysis. Nothing of any significance is demonstrated in this set of data.

If you have any questions, please give me a call.

Very truly yours,

UNION CARBIDE CORPORATION
Carbon Products Division

R. A. Bolton, Manager
HS & EA

RABolton:gwa
Attachment

cc: Messrs. Jim Devald
Dave O'Tool
A. C. Ogg - Niagara

→ file
Union Carbide
932035
32N...
MMLC MM
date 11/14/88
NO
file 32003
File
Union Carbide
Republic
Groundwater
Monitoring
Data
1988

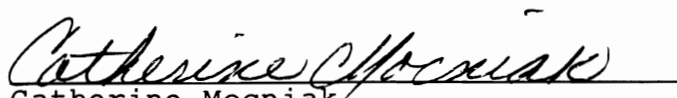


REPUBLIC SOLID WASTE MANAGEMENT FACILITY
POST-CLOSURE MONITORING PROGRAM
QUARTERLY REPORT OF GROUNDWATER ANALYSIS

Report Prepared For

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION


Bonnie J. Simpson
Project Manager


Catherine Mocniak
Technical Evaluation

December 5, 1988
AES Report CTC

COMMITMENT
TO
HONESTY - QUALITY - SERVICE

SCOPE OF WORK

This work was performed at the request of Mr. R. A. Bolton, Environmental Manager of Union Carbide Corporation, Carbon Products Division, in compliance with the Republic Solid Waste Management Facility Post-Closure Monitoring Program.

COMMENT

Please note that there was not sufficient sample available at monitoring well, as it went dry during collection. Therefore, soluble metals and HSL Semi-Volatiles were not analyzed.

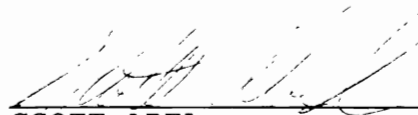
ADVANCED ENVIRONMENTAL SERVICES, INC.

FIELD REPORT

CLIENT: Union Carbide Corporation AES JOB CODE: CTCDATE PURGED: 11/8/88 DATE SAMPLED: 11/10/88

WELL IDENTIFICATION	TOP OF PIPE ELEVATION	ELEVATION BEFORE PURGING	(GAL) AMOUNT PURGED	ELEVATION BEFORE SAMPLING
BW-1	610.72	588.52	10.0	590.87
BW-2	608.43	590.71	10.0	590.98
BW-3	604.72	589.00	6.0	588.87
BW-4	607.08	590.74	10.5	590.88
BW-5	603.33	587.99	11.0	588.32
BW-6	607.04	589.04	7.5	589.11
*MW-1	609.43	593.89	1.5 (dry)	588.42
*MW-2	607.54	583.05	1.0 pint (dry)	582.89
*MW-3	601.61	585.28	0 (dry)	585.28

* After allowing 48 hours for groundwater recharge, wells did not contain sufficient water for sampling.


SCOTT ABEL
SENIOR FIELD TECHNICIAN

Type of Analysis: RESULTS - WET CHEMISTRY

A.E.S. Job Code CTC

* Below quantifiable limits.

Margaret L. Skowron
Margaret L. Skowron
Wet Chemistry Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====

Type of Analysis: RESULTS - WET CHEMISTRY

Client: UNION CARBIDE

A.E.S. Job Code CTC

			AES Lab No. -		
			446 447 448		
			BW-4 BW-5 BW-6		
			GRAB GRAB GRAB		

			Sample ID -		
			11/10/88 11/10/88 11/10/88		

Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-		
Ammonia (As N) (mg/l)	350.1	0.01		5.50	0.20 0.22
Nitrite (As N) (mg/l)	353.2	0.01		0.025	BQL* BQL
Total Kjeldahl Nitrogen(mg/l)	352.1	0.1		6.6	0.2 0.3

* Below quantifiable limits.

Margaret L. Skowron

Margaret L. Skowron
Wet Chemistry Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====

Type of Analysis: RESULTS - WET CHEMISTRY

Client: UNION CARBIDE

A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No. -	Sample ID -	Sample Date-		
			449 MW-1 GRAB	450 BLIND BW2 DUP GRAB	451 TRIP BLANK GRAB		
Ammonia (As N) (mg/l)	350.1	0.01			11/10/88	11/10/88	11/10/88
Nitrite (As N) (mg/l)	353.2	0.01			BQL	BQL	BQL
Total Kjeldahl Nitrogen(mg/l)	352.1	0.1			8.3	1.1	BQL

* Below quantifiable limits.

Margaret L. Skowron

Margaret L. Skowron
Wet Chemistry Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Analysis: Milligrams/Liter or ppm
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Nitrite	448	BQL*	BQL	BQL	None	None
Total Kjeldahl Nitrogen	448	0.3	0.3	0.3	None	None
Ammonia	451	BQL	BQL	BQL	None	None

Relative Percent Difference =

Range/Average X 100

* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.

LABORATORY REPORT

QUALITY CONTROL - ACCURACY

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Type of Analysis: Matrix Spikes and E.P.A. Standards

Client: UNION CARBIDE A.E.S. Job Code: CTC

(Units:mg/l or ppm)

Analytical Parameters	Sample No.	Type	Observed Conc.	Original Conc.	Added Conc.	Percent Recovery*
Ammonia	451	SPK	0.26	BQL**	0.25	104
Ammonia		EPA	2.00	2.00	---	100
Nitrite	448	SPK	0.09	BQL	0.10	90
Total Kjeldahl Nitrogen	448	SPK	3.4	0.3	3.0	103
Total Kjeldahl Nitrogen		STD	4.9	5.0	---	98

* % Recovery=100 x ((Observed Conc. - "background" Original Conc.)/"Spike" Added Conc.)

** Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
WET CHEMISTRY DEPARTMENT

AES JOB CODE CTC

[illegible]

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	443 BW-1 GRAB	444 BW-2 GRAB	445 BW-3 GRAB
			Sample Date-	11/10/88	11/10/88	11/10/88
Chloromethane	8240	10		BQL*	BQL	BQL
Vinyl Chloride	"	10		BQL	BQL	BQL
Chloroethane	"	10		BQL	BQL	BQL
Bromomethane	"	10		BQL	BQL	BQL
2-Chloroethylvinyl Ether	"	10		BQL	BQL	BQL
Ethylbenzene	"	5.0		BQL	BQL	BQL
Methylene Chloride	"	5.0		BQL	BQL	BQL
Chlorobenzene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethylene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethane	"	5.0		BQL	BQL	BQL
trans-1,2-Dichloroethylene	"	5.0		BQL	BQL	BQL
Chloroform	"	5.0		BQL	BQL	BQL
1,2-Dichloroethane	"	5.0		BQL	BQL	BQL
1,1,1-Trichloroethane	"	5.0		BQL	BQL	BQL
Carbon Tetrachloride	"	5.0		BQL	BQL	BQL
Bromodichloromethane	"	5.0		BQL	BQL	BQL
1,2-Dichloropropane	"	5.0		BQL	BQL	BQL
trans-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
Trichloroethylene	"	5.0		BQL	BQL	BQL
Benzene	"	5.0		BQL	BQL	BQL
cis-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
1,1,2-Trichloroethane	"	5.0		BQL	BQL	BQL
Dibromochloromethane	"	5.0		BQL	BQL	BQL
Bromoform	"	5.0		BQL	BQL	BQL

* Below quantifiable limits.

Susan C. Scrocchi

Susan C. Scrocchi
Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE A.E.S. Job Code CTC

			AES Lab No.- Sample ID -	446 BW-4 GRAB	447 BW-5 GRAB	448 BW-6 GRAB
Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-	11/10/88	11/10/88	11/10/88
Chloromethane	8240	10		BQL*	BQL	BQL
Vinyl Chloride	"	10		BQL	BQL	BQL
Chloroethane	"	10		BQL	BQL	BQL
Bromomethane	"	10		BQL	BQL	BQL
2-Chloroethylvinyl Ether	"	10		BQL	BQL	BQL
Ethylbenzene	"	5.0		BQL	BQL	BQL
Methylene Chloride	"	5.0		BQL	BQL	BQL
Chlorobenzene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethylene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethane	"	5.0		BQL	BQL	BQL
trans-1,2-Dichloroethylene	"	5.0		BQL	BQL	BQL
Chloroform	"	5.0		BQL	BQL	BQL
1,2-Dichloroethane	"	5.0		BQL	BQL	BQL
1,1,1-Trichloroethane	"	5.0		BQL	BQL	BQL
Carbon Tetrachloride	"	5.0		BQL	BQL	BQL
Bromodichloromethane	"	5.0		BQL	BQL	BQL
1,2-Dichloropropane	"	5.0		BQL	BQL	BQL
trans-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
Trichloroethylene	"	5.0		330	BQL	BQL
Benzene	"	5.0		BQL	BQL	BQL
cis-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
1,1,2-Trichloroethane	"	5.0		BQL	BQL	BQL
Dibromochloromethane	"	5.0		BQL	BQL	BQL
Bromoform	"	5.0		BQL	BQL	BQL

Susan C. Scrocchi

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Gas Chromatography Supervisor

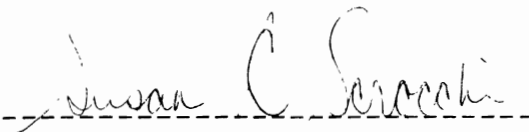
* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	449 MW-1 GRAB	450 BLIND DUP BW-2 GRAB	451 TRIP BLANK GRAB
			Sample Date-	11/10/88	11/10/88	11/10/88
Chloromethane	8240	10		BQL*	BQL	BQL
Vinyl Chloride	"	10		BQL	BQL	BQL
Chloroethane	"	10		BQL	BQL	BQL
Bromomethane	"	10		BQL	BQL	BQL
2-Chloroethylvinyl Ether	"	10		BQL	BQL	BQL
Ethylbenzene	"	5.0		BQL	BQL	BQL
Methylene Chloride	"	5.0		BQL	BQL	BQL
Chlorobenzene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethylene	"	5.0		BQL	BQL	BQL
1,1-Dichloroethane	"	5.0		BQL	BQL	BQL
trans-1,2-Dichloroethylene	"	5.0		BQL	BQL	BQL
Chloroform	"	5.0		BQL	BQL	BQL
1,2-Dichloroethane	"	5.0		BQL	BQL	BQL
1,1,1-Trichloroethane	"	5.0		BQL	BQL	BQL
Carbon Tetrachloride	"	5.0		BQL	BQL	BQL
Bromodichloromethane	"	5.0		BQL	BQL	BQL
1,2-Dichloropropane	"	5.0		BQL	BQL	BQL
trans-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
Trichloroethylene	"	5.0		BQL	BQL	BQL
Benzene	"	5.0		BQL	BQL	BQL
cis-1,3-Dichloropropene	"	5.0		BQL	BQL	BQL
1,1,2-Trichloroethane	"	5.0		BQL	BQL	BQL
Dibromochloromethane	"	5.0		BQL	BQL	BQL
Bromoform	"	5.0		BQL	BQL	BQL



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Gas Chromatography Supervisor

* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.

LABORATORY REPORT

=====

Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

			AES Lab No.-	443	444	445
			Sample ID -	BW-1	BW-2	BW-3
				GRAB	GRAB	GRAB
Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-	11/10/88	11/10/88	11/10/88
1,1,2,2-Tetrachloroethylene	8240	5.0		BQL*	BQL	BQL
1,1,2,2-Tetrachloroethane	"	5.0		BQL	BQL	BQL
Toluene	"	5.0		BQL	BQL	BQL
Acetone	"	50		BQL	BQL	BQL
Carbon Disulfide	"	5.0		BQL	BQL	BQL
2-Butanone	"	50		BQL	BQL	BQL
Vinyl Acetate	"	10		BQL	BQL	BQL
2-Hexanone	"	50		BQL	BQL	BQL
4-Methyl-2-Pentanone	"	50		BQL	BQL	BQL
Styrene	"	5.0		BQL	BQL	BQL
Xylenes (Total)	"	5.0		BQL	BQL	BQL
Trichlorofluoromethane	"	5.0		BQL	BQL	BQL

Susan C. Scrocchi
Gas Chromatography Supervisor

* Below quantifiable limits.

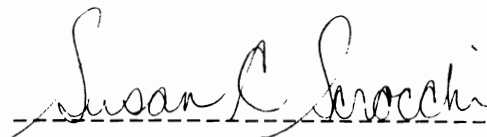
ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code CTC

			AES Lab No.-	446	447	448
			Sample ID -	BW-4	BW-5	BW-6
				GRAB	GRAB	GRAB
Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-	11/10/88	11/10/88	11/10/88
1,1,2,2-Tetrachloroethylene	8240	5.0		1,300	BQL*	BQL
1,1,2,2-Tetrachloroethane	"	5.0		BQL	BQL	BQL
Toluene	"	5.0		BQL	BQL	BQL
Acetone	"	50		BQL	BQL	BQL
Carbon Disulfide	"	5.0		BQL	BQL	BQL
2-Butanone	"	50		BQL	BQL	BQL
Vinyl Acetate	"	10		BQL	BQL	BQL
2-Hexanone	"	50		BQL	BQL	BQL
4-Methyl-2-Pentanone	"	50		BQL	BQL	BQL
Styrene	"	5.0		BQL	BQL	BQL
Xylenes (Total)	"	5.0		BQL	BQL	BQL
Trichlorofluoromethane	"	5.0		BQL	BQL	BQL

* Below quantifiable limits.



Susan C. Scrocchi
Gas Chromatography Supervisor

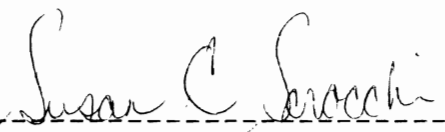
ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL VOLATILES

Units Of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code CTC

			AES Lab No.- Sample ID -	449 MW-1 GRAB	450 BLIND DUP BW-2 GRAB	451 TRIP BLANK GRAB
Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-	11/10/88	11/10/88	11/10/88
1,1,2,2-Tetrachloroethylene	8240	5.0		BQL*	BQL	BQL
1,1,2,2-Tetrachloroethane	"	5.0		BQL	BQL	BQL
Toluene	"	5.0		BQL	BQL	BQL
Acetone	"	50		BQL	BQL	BQL
Carbon Disulfide	"	5.0		BQL	BQL	BQL
2-Butanone	"	50		BQL	BQL	BQL
Vinyl Acetate	"	10		BQL	BQL	BQL
2-Hexanone	"	50		BQL	BQL	BQL
4-Methyl-2-Pentanone	"	50		BQL	BQL	BQL
Styrene	"	5.0		BQL	BQL	BQL
Xylenes (Total)	"	5.0		BQL	BQL	BQL
Trichlorofluoromethane	"	5.0		BQL	BQL	BQL

* Below quantifiable limits.



Susan C. Scrocchi
Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

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Type of Analysis: HSL SEMI-VOLATILES

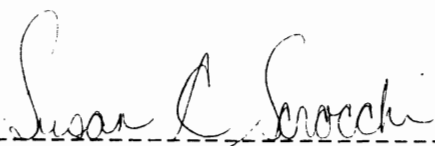
Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	443 BW-1 GRAB	444 BW-2 GRAB	445 BW-2.3 GRAB
			Sample Date-	11/10/88	11/10/88	11/10/88
2-Methylnaphthalene	8270	10		BQL*	BQL	BQL
Bis(2-chloroethyl) Ether	"	10		BQL	BQL	BQL
1,3-Dichlorobenzene	"	10		BQL	BQL	BQL
1,4-Dichlorobenzene	"	10		BQL	BQL	BQL
1,2-Dichlorobenzene	"	10		BQL	BQL	BQL
Bis(2-Chloroisopropyl) Ether	"	10		BQL	BQL	BQL
Hexachloroethane	"	10		BQL	BQL	BQL
N-Nitrosodi-N-Propylamine	"	10		BQL	BQL	BQL
Nitrobenzene	"	10		BQL	BQL	BQL
Isophorone	"	10		BQL	BQL	BQL
Bis(2-Chloroethoxy)Methane	"	10		BQL	BQL	BQL
1,2,4-Trichlorobenzene	"	10		BQL	BQL	BQL
Naphthalene	"	10		BQL	BQL	BQL
Hexachlorobutadiene	"	10		BQL	BQL	BQL
Hexachlorocyclopentadiene	"	10		BQL	BQL	BQL
2-Chloronaphthalene	"	10		BQL	BQL	BQL
Dimethylphthalate	"	10		BQL	BQL	BQL
Acenaphthylene	"	10		BQL	BQL	BQL
2,6-Dinitrotoluene	"	10		BQL	BQL	BQL
Acenaphthene	"	10		BQL	BQL	BQL
2,4-Dinitrotoluene	"	10		BQL	BQL	BQL
Diethylphthalate	"	10		BQL	BQL	BQL

* Below quantifiable limits.



Susan C. Scrocchi
Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.

LABORATORY REPORT

Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	446 BW-4 GRAB	447 BW-5 GRAB	448 BW-6 GRAB
			Sample Date-	11/10/88	11/10/88	11/10/88
2-Methylnaphthalene	8270	10		BQL*	BQL	BQL
Bis(2-chloroethyl)Ether	"	10		BQL	BQL	BQL
1,3-Dichlorobenzene	"	10		BQL	BQL	BQL
1,4-Dichlorobenzene	"	10		BQL	BQL	BQL
1,2-Dichlorobenzene	"	10		BQL	BQL	BQL
Bis(2-Chloroisopropyl) Ether	"	10		BQL	BQL	BQL
Hexachloroethane	"	10		BQL	BQL	BQL
N-Nitrosodi-N-Propylamine	"	10		BQL	BQL	BQL
Nitrobenzene	"	10		BQL	BQL	BQL
Isophorone	"	10		BQL	BQL	BQL
Bis(2-Chloroethoxy)Methane	"	10		BQL	BQL	BQL
1,2,4-Trichlorobenzene	"	10		BQL	BQL	BQL
Naphthalene	"	10		BQL	BQL	BQL
Hexachlorobutadiene	"	10		BQL	BQL	BQL
Hexachlorocyclopentadiene	"	10		BQL	BQL	BQL
2-Chloronaphthalene	"	10		BQL	BQL	BQL
Dimethylphthalate	"	10		BQL	BQL	BQL
Acenaphthylene	"	10		BQL	BQL	BQL
2,6-Dinitrotoluene	"	10		BQL	BQL	BQL
Acenaphthene	"	10		BQL	BQL	BQL
2,4-Dinitrotoluene	"	10		BQL	BQL	BQL
Diethylphthalate	"	10		BQL	BQL	BQL

* Below quantifiable limits.

Susan C. Scrocchi
 Susan C. Scrocchi
 Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	450 BLIND DUP BW-2 GRAB	451 TRIP BLANK GRAB
			Sample Date-	11/10/88	11/10/88
2-Methylnaphthalene	8270	10		BQL*	BQL
Bis(2-chloroethyl) Ether	"	10		BQL	BQL
1,3-Dichlorobenzene	"	10		BQL	BQL
1,4-Dichlorobenzene	"	10		BQL	BQL
1,2-Dichlorobenzene	"	10		BQL	BQL
Bis(2-Chloroisopropyl) Ether	"	10		BQL	BQL
Hexachloroethane	"	10		BQL	BQL
N-Nitrosodi-N-Propylamine	"	10		BQL	BQL
Nitrobenzene	"	10		BQL	BQL
Isophorone	"	10		BQL	BQL
Bis(2-Chloroethoxy)Methane	"	10		BQL	BQL
1,2,4-Trichlorobenzene	"	10		BQL	BQL
Naphthalene	"	10		BQL	BQL
Hexachlorobutadiene	"	10		BQL	BQL
Hexachlorocyclopentadiene	"	10		BQL	BQL
2-Chloronaphthalene	"	10		BQL	BQL
Dimethylphthalate	"	10		BQL	BQL
Acenaphthylene	"	10		BQL	BQL
2,6-Dinitrotoluene	"	10		BQL	BQL
Acenaphthene	"	10		BQL	BQL
2,4-Dinitrotoluene	"	10		BQL	BQL
Diethylphthalate	"	10		BQL	BQL

Susan C. Scrocchi

Susan C. Scrocchi
Gas Chromatography Supervisor

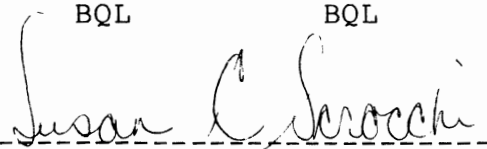
* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	443 BW-1 GRAB	444 BW-2 GRAB	445 BW-3 GRAB
			Sample Date-	11/10/88	11/10/88	11/10/88
Fluorene	8270	10		BQL*	BQL	BQL
4-Chlorophenylphenyl Ether	"	10		BQL	BQL	BQL
Diphenylamine(N-Nitroso)	"	10		BQL	BQL	BQL
Benzyl Alcohol	"	10		BQL	BQL	BQL
4-Chloroaniline	"	10		BQL	BQL	BQL
4-Bromophenylphenyl Ether	"	10		BQL	BQL	BQL
Hexachlorobenzene	"	10		BQL	BQL	BQL
Phenanthrene	"	10		BQL	BQL	BQL
Anthracene	"	10		BQL	BQL	BQL
Di-N-Butylphthalate	"	10		BQL	BQL	BQL
Fluoranthene	"	10		BQL	BQL	BQL
2-Nitroaniline	"	10		BQL	BQL	BQL
Pyrene	"	10		BQL	BQL	BQL
Butylbenzylphthalate	"	10		BQL	BQL	BQL
Benzo(a)Anthracene	"	10		BQL	BQL	BQL
3,3'-Dichlorobenzidine	"	30		BQL	BQL	BQL
Chrysene	"	10		BQL	BQL	BQL
Bis(2-ethylhexyl)Phthalate	"	10		BQL	BQL	BQL
Di-N-Octylphthalate	"	10		BQL	BQL	BQL
Benzo(b)Fluoranthene	"	20		BQL	BQL	BQL
Benzo(k)Fluoranthene	"	20		BQL	BQL	BQL
Benzo(a)Pyrene	"	20		BQL	BQL	BQL
Indeno(1,2,3-c,d)Pyrene	"	20		BQL	BQL	BQL
Dibenzo(a,h)Anthracene	"	20		BQL	BQL	BQL
Benzo(g,h,i)Perylene	"	20		BQL	BQL	BQL



Susan C. Scrocchi
Gas Chromatography Supervisor

* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.

LABORATORY REPORT

=====

Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

			AES Lab No.-	446	447	448
			Sample ID -	BW-4	BW-5	BW-6
				GRAB	GRAB	GRAB
Analytical	Method	Quant.	Sample Date-	11/10/88	11/10/88	11/10/88
Parameter(s)	No.	Limits				
Fluorene	8270	10		BQL*	BQL	BQL
4-Chlorophenylphenyl Ether	"	10		BQL	BQL	BQL
Diphenylamine(N-Nitroso)	"	10		BQL	BQL	BQL
Benzyl Alcohol	"	10		BQL	BQL	BQL
4-Chloroaniline	"	10		BQL	BQL	BQL
4-Bromophenylphenyl Ether	"	10		BQL	BQL	BQL
Hexachlorobenzene	"	10		BQL	BQL	BQL
Phenanthrene	"	10		BQL	BQL	BQL
Anthracene	"	10		BQL	BQL	BQL
Di-N-Butylphthalate	"	10		BQL	BQL	BQL
Fluoranthene	"	10		BQL	BQL	BQL
2-Nitroaniline	"	10		BQL	BQL	BQL
Pyrene	"	10		BQL	BQL	BQL
Butylbenzylphthalate	"	10		BQL	BQL	BQL
Benzo(a)Anthracene	"	10		BQL	BQL	BQL
3,3'-Dichlorobenzidine	"	30		BQL	BQL	BQL
Chrysene	"	10		BQL	BQL	BQL
Bis(2-ethylhexyl)Phthalate	"	10		BQL	BQL	BQL
Di-N-Octylphthalate	"	10		BQL	BQL	BQL
Benzo(b)Fluoranthene	"	20		BQL	BQL	BQL
Benzo(k)Fluoranthene	"	20		BQL	BQL	BQL
Benzo(a)Pyrene	"	20		BQL	BQL	BQL
Indeno(1,2,3-c,d)Pyrene	"	20		BQL	BQL	BQL
Dibenzo(a,h)Anthracene	"	20		BQL	BQL	BQL
Benzo(g,h,i)Perylene	"	20		BQL	BQL	BQL

* Below quantifiable limits.

Susan C. Scrocchi
 Susan C. Scrocchi
 Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====

Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- Sample ID -	450 BLIND DUP BW-2 GRAB	451 TRIP BLANK GRAB
			Sample Date-	11/10/88	11/10/88
Fluorene	8270	10		BQL*	BQL
4-Chlorophenylphenyl Ether	"	10		BQL	BQL
Diphenylamine(N-Nitroso)	"	10		BQL	BQL
Benzyl Alcohol	"	10		BQL	BQL
4-Chloroaniline	"	10		BQL	BQL
4-Bromophenylphenyl Ether	"	10		BQL	BQL
Hexachlorobenzene	"	10		BQL	BQL
Phenanthrene	"	10		BQL	BQL
Anthracene	"	10		BQL	BQL
Di-N-Butylphthalate	"	10		BQL	BQL
Fluoranthene	"	10		BQL	BQL
2-Nitroaniline	"	10		BQL	BQL
Pyrene	"	10		BQL	BQL
Butylbenzylphthalate	"	10		BQL	BQL
Benzo(a)Anthracene	"	10		BQL	BQL
3,3'-Dichlorobenzidine	"	30		BQL	BQL
Chrysene	"	10		BQL	BQL
Bis(2-ethylhexyl)Phthalate	"	10		BQL	BQL
Di-N-Octylphthalate	"	10		BQL	BQL
Benzo(b)Fluoranthene	"	20		BQL	BQL
Benzo(k)Fluoranthene	"	20		BQL	BQL
Benzo(a)Pyrene	"	20		BQL	BQL
Indeno(1,2,3-c,d)Pyrene	"	20		BQL	BQL
Dibenzo(a,h)Anthracene	"	20		BQL	BQL
Benzo(g,h,i)Perylene	"	20		BQL	BQL



Susan C. Scrocchi
Gas Chromatography Supervisor

* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL SEMI-VOLATILES

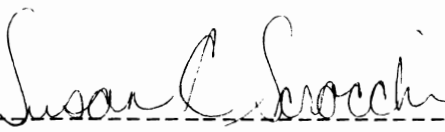
Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

			AES Lab No.-	443	444	445
			Sample ID -	BW-1	BW-2	BW-3
				GRAB	GRAB	GRAB
Analytical	Method	Quant.	Sample Date-	11/10/88	11/10/88	11/10/88
Parameter(s)	No.	Limits				
Phenol	8270	15		BQL*	BQL	BQL
2-Chlorophenol	"	15		BQL	BQL	BQL
2-Nitrophenol	"	15		BQL	BQL	BQL
2,4-Dimethylphenol	"	15		BQL	BQL	BQL
p-Chloro-m-Cresol	"	15		BQL	BQL	BQL
2,4,6-Trichlorophenol	"	15		BQL	BQL	BQL
2,4-Dinitrophenol	"	20		BQL	BQL	BQL
4-Nitrophenol	"	30		BQL	BQL	BQL
4,6-Dinitro-o-Cresol	"	20		BQL	BQL	BQL
Pentachlorophenol	"	20		BQL	BQL	BQL
2,4-Dichlorophenol	"	15		BQL	BQL	BQL
4-Methylphenol	"	15		BQL	BQL	BQL
Benzoic Acid	"	20		BQL	BQL	BQL
2,4,5-Trichlorophenol	"	15		BQL	BQL	BQL
3-Nitroaniline	"	10		BQL	BQL	BQL
Dibenzofuran	"	10		BQL	BQL	BQL
4-Nitroaniline	"	10		BQL	BQL	BQL
2-Methylphenol	"	15		BQL	BQL	BQL
Benzidine	"	50		BQL	BQL	BQL
1,2-Diphenylhydrazine	"	10		BQL	BQL	BQL
Aniline	"	10		BQL	BQL	BQL

* Below quantifiable limits.



Susan C. Scrocchi
Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

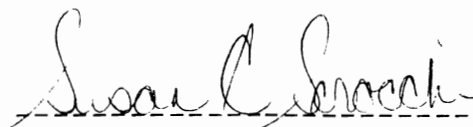
Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE

A.E.S. Job Code CTC

		AES Lab No.-	446	447	448
		Sample ID -	BW-4	BW-5	BW-6
			GRAB	GRAB	GRAB
Analytical	Method	Quant.	Sample Date-		
Parameter(s)	No.	Limits	11/10/88	11/10/88	11/10/88.
Phenol	8270	15	BQL*	BQL	BQL
2-Chlorophenol	"	15	BQL	BQL	BQL
2-Nitrophenol	"	15	BQL	BQL	BQL
2,4-Dimethylphenol	"	15	BQL	BQL	BQL
p-Chloro-m-Cresol	"	15	BQL	BQL	BQL
2,4,6-Trichlorophenol	"	15	BQL	BQL	BQL
2,4-Dinitrophenol	"	20	BQL	BQL	BQL
4-Nitrophenol	"	30	BQL	BQL	BQL
4,6-Dinitro-o-Cresol	"	20	BQL	BQL	BQL
Pentachlorophenol	"	20	BQL	BQL	BQL
2,4-Dichlorophenol	"	15	BQL	BQL	BQL
4-Methylphenol	"	15	BQL	BQL	BQL
Benzoic Acid	"	20	BQL	BQL	BQL
2,4,5-Trichlorophenol	"	15	BQL	BQL	BQL
3-Nitroaniline	"	10	BQL	BQL	BQL
Dibenzofuran	"	10	BQL	BQL	BQL
4-Nitroaniline	"	10	BQL	BQL	BQL
2-Methylphenol	"	15	BQL	BQL	BQL
Benzidine	"	50	BQL	BQL	BQL
1,2-Diphenylhydrazine	"	10	BQL	BQL	BQL
Aniline	"	10	BQL	BQL	BQL



Susan C. Scrocchi
Gas Chromatography Supervisor

* Below quantifiable limits.

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: HSL SEMI-VOLATILES

Units Of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE A.E.S. Job Code CTC

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-		Sample ID -		Sample Date-	
			450	451	BLIND	DUP	TRIP	BLANK
			GRAB		(BW-2)			
			GRAB		11/10/88		11/10/88	
Phenol	8270	15	BQL*		BQL			
2-Chlorophenol	"	15	BQL		BQL			
2-Nitrophenol	"	15	BQL		BQL			
2,4-Dimethylphenol	"	15	BQL		BQL			
p-Chloro-m-Cresol	"	15	BQL		BQL			
2,4,6-Trichlorophenol	"	15	BQL		BQL			
2,4-Dinitrophenol	"	20	BQL		BQL			
4-Nitrophenol	"	30	BQL		BQL			
4,6-Dinitro-o-Cresol	"	20	BQL		BQL			
Pentachlorophenol	"	20	BQL		BQL			
2,4-Dichlorophenol	"	15	BQL		BQL			
4-Methylphenol	"	15	BQL		BQL			
Benzoic Acid	"	20	BQL		BQL			
2,4,5-Trichlorophenol	"	15	BQL		BQL			
3-Nitroaniline	"	10	BQL		BQL			
Dibenzofuran	"	10	BQL		BQL			
4-Nitroaniline	"	10	BQL		BQL			
2-Methylphenol	"	15	BQL		BQL			
Benzidine	"	50	BQL		BQL			
1,2-Diphenylhydrazine	"	10	BQL		BQL			
Aniline	"	10	BQL		BQL			

* Below quantifiable limits.



Susan C. Scrocchi
Gas Chromatography Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample Code	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Chloromethane	443	<10	<10	<10	None	None
Vinyl Chloride	443	<10	<10	<10	None	None
Chloroethane	443	<10	<10	<10	None	None
Bromomethane	443	<10	<10	<10	None	None
2-Chloroethylvinyl ether	443	<10	<10	<10	None	None
Ethylbenzene	443	<5.0	<5.0	<5.0	None	None
Methylene Chloride	443	<5.0	<5.0	<5.0	None	None
Chlorobenzene	443	<5.0	<5.0	<5.0	None	None
1,1-Dichloroethylene	443	<5.0	<5.0	<5.0	None	None
1,1-Dichloroethane	443	<5.0	<5.0	<5.0	None	None
trans-1,2-Dichloroethylene	443	<5.0	<5.0	<5.0	None	None
Chloroform	443	<5.0	<5.0	<5.0	None	None
1,2-Dichloroethane	443	<5.0	<5.0	<5.0	None	None
1,1,1-Trichloroethane	443	<5.0	<5.0	<5.0	None	None
Carbon Tetrachloride	443	<5.0	<5.0	<5.0	None	None
Bromodichloromethane	443	<5.0	<5.0	<5.0	None	None
1,2-Dichloropropane	443	<5.0	<5.0	<5.0	None	None
trans-1,3-Dichloropropene	443	<5.0	<5.0	<5.0	None	None
Trichloroethylene	443	<5.0	<5.0	<5.0	None	None
Benzene	443	<5.0	<5.0	<5.0	None	None
cis-1,3-Dichloropropene	443	<5.0	<5.0	<5.0	None	None
1,1,2-Trichloroethane	443	<5.0	<5.0	<5.0	None	None
Dibromochloromethane	443	<5.0	<5.0	<5.0	None	None
Bromoform	443	<5.0	<5.0	<5.0	None	None
1,1,2,2-Tetrachloroethylene	443	<5.0	<5.0	<5.0	None	None

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample Code	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference

1,1,2,2-Tetrachloroethane	443	<5.0	<5.0	<5.0	None	None
Toluene	443	<5.0	<5.0	<5.0	None	None
Trichlorofluoromethane	443	<5.0	<5.0	<5.0	None	None
Acetone	443	<50	<50	<50	None	None
Carbon Disulfide	443	<5.0	<5.0	<5.0	None	None
2-Butanone	443	<50	<50	<50	None	None
Vinyl Acetate	443	<5.0	<5.0	<5.0	None	None
2-Hexanone	443	<50	<50	<50	None	None
4-Methyl-2-Pentanone	443	<50	<50	<50	None	None
Styrene	443	<5.0	<5.0	<5.0	None	None
Xylenes (Total)	443	<5.0	<5.0	<5.0	None	None
2-Methylnaphthalene	448	<10	<10	<10	None	None
Bis(2-Chloroethyl)Ether	448	<10	<10	<10	None	None
1,3-Dichlorobenzene	448	<10	<10	<10	None	None
1,4-Dichlorobenzene	448	<10	<10	<10	None	None
1,2-Dichlorobenzene	448	<10	<10	<10	None	None
Bis(2-Chloroisopropyl)Ether	448	<10	<10	<10	None	None
Hexachloroethane	448	<10	<10	<10	None	None
N-Nitrosdi-N-Propylamine	448	<10	<10	<10	None	None
Nitrobenzene	448	<10	<10	<10	None	None
Isophorone	448	<10	<10	<10	None	None
Bis(2-Chloroethoxy)Methane	448	<10	<10	<10	None	None
1,2,4-Trichlorobenzene	448	<10	<10	<10	None	None
Naphthalene	448	<10	<10	<10	None	None
Hexachlorobutadiene	448	<10	<10	<10	None	None

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample Code	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Hexachlorocyclopentadiene	448	<10	<10	<10	None	None
2-Chloronaphthalene	448	<10	<10	<10	None	None
Dimethylphthalate	448	<10	<10	<10	None	None
Acenaphthylene	448	<10	<10	<10	None	None
2,6-Ddinitrotoluene	448	<10	<10	<10	None	None
Acenaphthene	448	<10	<10	<10	None	None
2,4-Dinitrotoluene	448	<10	<10	<10	None	None
Diethylphthalate	448	<10	<10	<10	None	None
Fluornene	448	<10	<10	<10	None	None
4-Chlorophenylphenyl Ether	448	<10	<10	<10	None	None
N-Nitrosdiphenylamine	448	<10	<10	<10	None	None
Benzyl Alcohol	448	<10	<10	<10	None	None
4-Chloroaniline	448	<10	<10	<10	None	None
4-Bromophenylphenyl Ether	448	<10	<10	<10	None	None
Hexachlorobenzene	448	<10	<10	<10	None	None
Phenanthrene	448	<10	<10	<10	None	None
Anthracene	448	<10	<10	<10	None	None
Di-N-Butylphthalate	448	<10	<10	<10	None	None
Fluoranthene	448	<10	<10	<10	None	None
2-Nitroaniline	448	<10	<10	<10	None	None
Pyrene	448	<10	<10	<10	None	None
Butylbenzylphthalate	448	<10	<10	<10	None	None
Benzo(a)Anthracene	448	<10	<10	<10	None	None
3,3'-Dichlorobenzidine	448	<30	<30	<30	None	None
Chrysene	448	<10	<10	<10	None	None

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Measure: Micrograms/Liter, or ppb
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample Code	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Bis(2-Ethylhexyl)Phthalate	448	<10	<10	<10	None	None
Di-N-Octylphthalate	448	<10	<10	<10	None	None
Benzo(b)Fluoranthene	448	<10	<10	<10	None	None
Benzo(k)Fluoranthene	448	<10	<10	<10	None	None
Benzo(a)Pyrene	448	<10	<10	<10	None	None
Indeno(1,2,3-c,d)Pyrene	448	<10	<10	<10	None	None
Dibenzo(a,h)Anthracene	448	<10	<10	<10	None	None
Benzo(g,h,i)Perylene	448	<10	<10	<10	None	None
Benzidine	448	<50	<50	<50	None	None
4-Nitroaniline	448	<10	<10	<10	None	None
3-Nitroaniline	448	<10	<10	<10	None	None
Dibenzofuran	448	<10	<10	<10	None	None
Phenol	448	<10	<10	<10	None	None
2-Chlorophenol	448	<10	<10	<10	None	None
2-Nitrophenol	448	<10	<10	<10	None	None
2,4-Dimethylphenol	448	<10	<10	<10	None	None
4-Chloro-3-Methylphenol	448	<10	<10	<10	None	None
2,4,6-Trichlorophenol	448	<10	<10	<10	None	None
2,4-Dinitrophenol	448	<20	<20	<20	None	None
4-Nitrophenol	448	<20	<20	<20	None	None
4,6-Dinitro-2-Methylphenol	448	<20	<20	<20	None	None
Pentachlorophenol	448	<20	<20	<20	None	None
2,4-Dichlorophenol	448	<10	<10	<10	None	None
4-Methylphenol	448	<10	<10	<10	None	None
2,4,5-Trichlorophenol	448	<10	<10	<10	None	None

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis

Units of Measure: Micrograms/Liter, or ppb

Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample Code	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
2-Methylphenol	448	<10	<10	<10	None	None
Benzoic Acid	448	<20	<20	<20	None	None
1,2-Diphenylhydrazine	448	<10	<10	<10	None	None
Aniline	448	<10	<10	<10	None	None

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
 LABORATORY REPORT
 QUALITY CONTROL - ACCURACY
 =====

Type of Analysis: Matrix Spikes and E.P.A. Standards
 Client: UNION CARBIDE A.E.S. Job Code: CTC

 (Units: ug/l, or ppb)

Analytical Parameters	Sample No.	Type	Observed Conc.	Original Conc.	Added Conc.	Percent Recovery*
1,1,1-Trichloroethane	443	SPK	33	<5.0	31	106
Bromodichloromethane	443	SPK	27	<5.0	35	77
1,1,2-Trichloroethane	443	SPK	34	<5.0	35	89
1,2-Dichloroethane	443	SPK	39	<5.0	40	98
1,3-Dichlorobenzene	448	SPK	43	<10	50	86
1,2-Dichlorobenzene	448	SPK	55	<10	50	110
Bis(2-Chlorophenyl)Ether	448	SPK	38	<10	50	76
Hexachloroethane	448	SPK	42	<10	50	84
N-Nitrosodipropylamine	448	SPK	42	<10	50	84

 * % Recovery=100 x ((Observed Conc. - "background" Original Conc.)/"Spike" Added Conc.)

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
GAS CHROMATOGRAPHY DEPARTMENT

AES JOB CODE CTC

<u>ANALYST</u>	<u>ANALYTICAL METHOD</u>	<u>SAMPLE CODE</u>	<u>DATE OF ANALYSIS</u>	<u>TIME OF ANALYSIS</u>
<u>Patricia A. Fama</u>	<u>624</u>	<u>443-448</u>	<u>11/21/88</u>	<u>1600-2400</u>
<u>Jim Yip</u>	<u>624</u>	<u>449-451</u>	<u>11/22/88</u>	<u>800-1100</u>
<u>Patricia A. Fama</u>	<u>625</u>	<u>443-447</u>	<u>11/28/88</u>	<u>1800-2400</u>
<u>Jim Yip</u>	<u>625</u>	<u>448, 450, 451</u>	<u>11/29/88</u>	<u>730-1200</u>

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: METALS

Client: UNION CARBIDE

A.E.S. Job Code CTC

(All results are in mg/l)

			AES Lab No. -	443	444	445	✓ 446
			Sample ID -	BW-1	BW-2	BW-3	BW-4
				GRAB	GRAB	GRAB	GRAB
Analytical Parameter(s)	Method No.	Quant. Limits	Sample Date-	11/10/88	11/10/88	11/10/88	11/10/88
Total Iron (Fe)	236.1	0.30		5.88	16.5	0.81	60.8
Soluble Iron (Fe)	236.1	0.30		2.51	8.00	0.68	2.80
Total Potassium (K)	258.1	1.00		4.16	10.4	4.61	31.0
Soluble Potassium (K)	258.1	1.00		3.90	8.96	4.55	30.5
Total Zinc (Zn)	289.1	0.05		37.6	19.6	0.21	1.18
Soluble Zinc (Zn)	289.1	0.05		8.40	0.35	0.05	0.06

Paul McMahon
Paul McMahon
Atomic Spectroscopy Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: METALS

Client: UNION CARBIDE

A.E.S. Job Code CTC

(All results are in mg/l)

			AES Lab No. -	447	448	449
			Sample ID -	BW-5	BW-6	BW-7
				GRAB	GRAB	GRAB
-----	-----	-----	-----	-----	-----	-----
Analytical	Method	Quant.	Sample Date-	11/10/88	11/10/88	11/10/88
Parameter(s)	No.	Limits				
-----	-----	-----	-----	-----	-----	-----
Total Iron (Fe)	236.1	0.30		1.78	16.0	22.0
Soluble Iron (Fe)	236.1	0.30		0.61	11.6	N/R*
Total Potassium (K)	258.1	1.00		3.55	2.36	42.0
Soluble Potassium (K)	258.1	1.00		3.55	2.34	N/R
Total Zinc (Zn)	289.1	0.05		0.33	BQL**	1.06
Soluble Zinc (Zn)	289.1	0.05		0.08	BQL	N/R

* Not required, insufficient sample.
** Below quantifiable limits.

Paul McMahon

Paul McMahon
Atomic Spectroscopy Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

=====
Type of Analysis: METALS

Client: UNION CARBIDE

A.E.S. Job Code CTC

(All results are in mg/l)

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No. -	
			Sample ID -	
			450	451
			BLIND DUP	TRIP
			GRAB	BLANK
			(BW-2)	GRAB
		Sample Date-	11/10/88	11/10/88
Total Iron (Fe)	236.1	0.30	26.8	BQL*
Soluble Iron (Fe)	236.1	0.30	8.40	N/R**
Total Potassium (K)	258.1	1.00	9.15	BQL
Soluble Potassium (K)	258.1	1.00	7.38	N/R
Total Zinc (Zn)	289.1	0.05	15.0	BQL
Soluble Zinc (Zn)	289.1	0.05	1.35	N/R

* Below quantifiable limits.
** Not required.

Paul McMahon
Paul McMahon
Atomic Spectroscopy Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

=====

Type of Analysis: Duplicate Analysis
Units of Analysis: Milligrams/Liter, or ppm
Client: UNION CARBIDE A.E.S. Job Code:CTC

Analytical Parameters	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference

Total Iron	450	26.4	27.2	26.8	0.8	3
Soluble Iron	450	8.35	8.45	8.40	0.10	1
Total Potassium	450	9.17	9.13	9.15	0.04	1
Soluble Potassium	450	7.26	7.51	7.38	0.25	3
Total Zinc	450	14.8	15.2	15.0	0.4	3
Soluble Zinc	450	1.30	1.40	1.35	0.10	7

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - ACCURACY

=====
Type of Analysis: Matrix Spikes and E.P.A. Standards
Client: UNION CARBIDE A.E.S. Job Code: CTC

(Units:mg/l or ppm)

Analytical Parameters	Sample No.	Type	Observed Conc.	Original Conc.	Added Conc.	Percent Recovery*
Total Iron	450	*SPK	7.60	2.68	5.00	98
Solubel Iron	450	**SPK	6.62	1.68	5.00	99
EPA (Fe) std.	386	EPA	1.08	0.99	---	109
Total Potassium	450	SPK	31.06	9.15	20.00	110
Soluble Potassium	450	SPK	27.92	7.38	20.00	103
Independent (K) std.		STD	9.03	10.00	---	90
Total Zinc	450	***SPK	1.42	0.38	1.00	104
Soluble Zinc	450	*SPK	1.14	0.14	1.00	100
EPA (Zn) std.	386	EPA	0.47	0.50	---	94

* % Recovery=100 x ((Observed Conc. - "background" Original Conc.)/"Spike" Added Conc.)

* Spike on a sample dilution factor of 10.

** Spike on a sample dilution factor of 5.

*** Spike on a sample dilution factor of 40.

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
ATOMIC SPECTROSCOPY DEPARTMENT

AES JOB CODE CTC

<u>ANALYST</u>	<u>ANALYTICAL METHOD</u>	<u>SAMPLE CODE</u>	<u>DATE OF ANALYSIS</u>	<u>TIME OF ANALYSIS</u>
<u>P. McManon</u>	<u>236.1</u>	<u>443-51</u>	<u>11-14-88</u>	<u>1700-1800</u>
<u></u>	<u>258.1</u>	<u>443-51</u>	<u>11-17-88</u>	<u>1115-1145</u>
<u></u>	<u>289.1</u>	<u>443-51</u>	<u>11-16-88</u>	<u>1600-1700</u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>

APPENDIX A
CHAIN OF CUSTODY RECORDS

CHAIN OF CUSTODY
RECORD

JOB CODE

CTC

PROJECT NAME

Union Carbide

SAMPLER'S SIGNATURE <i>[Signature]</i>					GRAB	COMP	SAMPLE TYPE	NO. OF CONTAINERS	REMARKS
SAMPLE NO.	SEQ. NO.	DATE	TIME	SAMPLE LOCATION					
1		11/10/88	2:25 pm	BW-1	X		Groundwater	6	
2			4:00 pm	BW-2	X			6	
3			3:00 pm	BW-3	X			6	
4			3:48 pm	BW-4	X			6	
5			3:15 pm	BW-5	X			6	
6			4:12 pm	BW-6	X			6	
7			4:00 pm	Blind Dup	X			6	
8			10:00 am	Trip Blank	X		D.I. water	4	
9			2:31 pm	MW-1	X		Groundwater	2	4/pt
TOTAL CONTAINERS								48	

RELINQUISHED BY (Sign) 1 <i>[Signature]</i>	DATE 11/11/88	TIME 10:00 A.M.	RECEIVED BY (Sign) 2 <i>[Signature]</i>
RELINQUISHED BY (Sign) 2	DATE	TIME	RECEIVED BY (Sign) 3
RELINQUISHED BY (Sign) 3	DATE	TIME	RECEIVED BY (Sign) 4
RELINQUISHED BY (Sign) 4	DATE	TIME	RECEIVED BY (Sign) 5

REMARKS: