VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851

REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

Mr. Jack McCord
Mississippi Department of Natural Resources
Bureau of Pollution Control
Industrial Wastewater Control Section
2350 Highway 80 West
Jackson, MS 39209

February 25, 1986

RECEIVED
FEB 26 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Dear Mr. McCord:

The following are the latest analytical results for the ground-water wells at the Vertac Vicksburg Facility. These samples were collected on February 6, 1986.

Monitoring Well Number	DNBP ppb
1	920
11	< 40
10	< 40
9	< 40
4	< 40

Sincerely,

John G. Hill
Environmental Engineer

JGH/ld

cc - D. Madsen
D. Karkkainen

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851

REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

EPR
9-13-85

September 4, 1985

HAND DELIVERED

Mr. Charles Estes, P.E.
Hazardous Waste Section
Mississippi Department of
Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Enclosed are the results of Appendix VIII analyses of all eight groundwater monitoring wells at the Vicksburg Plant.

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

Sincerely,

John G. Hill
Environmental Engineer

JGH/ld
Enc.

cc - F. Ahlers
D. Karkkainen
(Cover sheets only)

ETC ENVIRONMENTAL TESTING and CERTIFICATION

DATA MANAGEMENT SUMMARY REPORT
(DM-1L) - All Parameters Present, Samples Linked by Order

DATE: 07/28/85
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	VERTAC CHEMICAL CORPORATION	VERTACVICK	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point* *Date*

Parameters	Units	W MW8 850523 H6065	W 0067 850610 H6066	W 0076 850610 H6067	W 005 850610 H6068	W 003 850607 H6069	W MW1 850523 H6070	W MW4 850523 H6071	W MW2 850523 H6072
Sample Points, Sampling Dates, and ETC Sample No.'s									
Miscellaneous Parameters									
2-sec-Butyl-4,6-dinitrophenol	ug/l	< 25	< 10	< 10	< 10	< 10	1130	< 25	< 25
Aluminum	ug/l	< 100	1700	4300	2800	500	< 100	< 100	< 100
Aroclor 1254	ug/l	< 1.0	< 1	< 1	1.1	< 1	< 1.0	< 1.0	< 1.0
Arsenic	ug/l	80	30	15	19	< 10	< 10	< 10	< 10
Barium	ug/l	600	400	915	614	360	302	253	243
Calcium	ug/l	180000	146000	546000	236000	183000	340000	117000	142000
Chloroform	ug/l	< 10	< 1.6	< 1.6	< 1.6	< 1.6	10.6	< 10	< 10
Chromium	ug/l	< 30	< 20	< 20	< 20	< 20	30	< 30	< 30
Copper	ug/l	< 10	< 10	20	< 10	< 10	< 10	< 10	< 10
Cyanide, Total	ug/l	< 25	< 25	120	< 25	< 25	72	< 25	< 25
Iron	ug/l	27300	6700	4700	6000	1000	< 300	< 300	< 300
Mercury	ug/l	< .2	< .2	.2	.2	< .2	< .2	< .2	< .2
Methylene chloride	ug/l	< 10	14.6	11.4	15	8.0	< 10	< 10	< 10
Nickel	ug/l	< 20	< 20	< 20	< 20	< 20	30	< 20	< 20
Osmium	ug/l	< 800	< 800	950	< 800	< 2000	< 800	< 800	< 800
Pentachlorophenol	ug/l	< 25	< 3.6	< 3.6	< 3.6	< 3.6	34	< 25	< 25
Potassium	ug/l	1300	1900	1300	890	610	8900	670	3900
Selenium	ug/l	< 5	< 5	< 5	11	< 5	< 5	< 5	< 5
Sodium	ug/l	45100	18800	43100	28100	14900	115000	16500	29800
Strontium	ug/l	460	380	740	470	430	980	310	470
Trichloroethylene	ug/l	< 10	< 1.9	2.8	< 1.9	< 1.9	19.5	< 10	< 10
Zinc	ug/l	10	40	40	60	< 10	10	< 9	< 9
bis(2-Ethylhexyl)phthalate	ug/l	17	< 10	< 10	< 10	10	12	< 10	< 10

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

Form 1027

MISSISSIPPI STATE UNIVERSITY

MISSISSIPPI STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

February 18, 1985

DR. JAMES P. MINYARD, JR.
State Chemist

Analysis No.	696,165-169		
Analysis of	WATER	Marked:	
Received on	12-14-84	from	MS Bureau of Pollution Control ATTN: Jim Hardage
Address	P.O. Box 10385 Jackson, MS 39209		

RESULTS:

MSCL NO.	BPC Identification
696,165	CHE-1, First Chemical Well #10
696,166	CHE-2, First Chemical Well #12
696,167	CHE-3, First Chemical Well #13
696,168	CHE-4, Vertac Chemical Well #1
696,169	CHE-5, Vertac Chemical Well #8

Attached sheets contain the results of our analysis of above samples for the volatile, acid, and base/neutral priority pollutants. Copies of the computer generated data and of the sample request forms are also enclosed.

James P. Minyard, Jr.
State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

MISSISSIPPI STATE CHEMICAL LABORATORY

MISSISSIPPI STATE UNIVERSITY

MSCL

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: _____ Case No: CHE-4, Vertac Well #1

Lab Sample I.D. No: 696,168 QC Report No: _____

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2- chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2- nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	50
(65A)	108-95-2	phenol	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	140
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	

VOLATILES

(2V)	107-02-8	acrolein	
(3V)	107-13-1	acrylonitrile	
(4V)	71-43-2	benzene	
(6V)	56-23-5	carbon tetrachloride	
(7V)	108-90-7	chlorobenzene	
(10V)	107-06-2	1,2-dichloroethane	
(11V)	71-55-6	1,1,1-trichloroethane	
(13V)	75-34-3	1,1-dichloroethane	
(14V)	79-00-5	1,1,2-trichloroethane	
(15V)	79-34-5	1,1,2,2-tetrachloroethane	
(16V)	75-00-3	chloroethane	
(19V)	110-75-8	2-chloroethylvinyl ether	
(23V)	67-66-3	chloroform	15
(29V)	75-35-4	1,1-dichloroethene	
(30V)	156-60-5	trans-1,2-dichloroethene	
(32V)	78-87-5	1,2-dichloropropane	
(33V)	10061-02-6	trans-1,3-dichloropropene	
	10061-01-05	cis-1,3-dichloropropene	
(38V)	100-41-4	ethylbenzene	
(44V)	75-09-2	methylene chloride	
(45V)	74-87-3	chloromethane	
(46V)	74-83-9	bromomethane	
(47V)	75-25-2	bromoform	
(48V)	75-27-4	bromodichloromethane	
(49V)	75-69-4	fluorotrichloromethane	
(50V)	75-71-8	dichlorodifluoromethane	
(51V)	124-48-1	chlorodibromomethane	
(85V)	127-18-4	tetrachloroethene	
(86V)	108-88-3	toluene	
(87V)	79-01-6	trichloroethene	15
(88V)	75-01-4	vinyl chloride	

MISSISSIPPI
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

MSCL

ORGANICS ANALYSIS DATA SHEET - Page 4

Sample Number

Laboratory Name: 696,168 Case No: CHE-4, Vertac Well #1

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: FIT)	Estimated Concentration (ug/L or ug/kg)
1.		DNBP	ABN	1282	970	1000
2.		2 Bromo-cyclohexanol	ABN	546	957	100
3.						
4.						
5.						
6.						
7.						
8.						
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29.						
30.						

MISSISSIPPI STATE CHEMICAL LABORATORY

MISSISSIPPI STATE UNIVERSITY

MSCL

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:

Case No: CHE-5, Vertac Well #8

Lab Sample I.D. No: 696.169

QC Report No:

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2- chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2- nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	

None Detected

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

None Detected

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	

None Detected

VOLATILES

(2V)	107-02-8	acrolein	
(3V)	107-13-1	acrylonitrile	
(4V)	71-43-2	benzene	
(6V)	56-23-5	carbon tetrachloride	
(7V)	108-90-7	chlorobenzene	
(10V)	107-06-2	1,2-dichloroethane	
(11V)	71-55-6	1,1,1-trichloroethane	
(13V)	75-34-3	1,1-dichloroethane	
(14V)	79-00-5	1,1,2-trichloroethane	
(15V)	79-34-5	1,1,2,2-tetrachloroethane	
(16V)	75-00-3	chloroethane	
(19V)	110-75-8	2-chloroethylvinyl ether	
(23V)	67-66-3	chloroform	
(29V)	75-35-4	1,1-dichloroethene	
(30V)	156-60-5	trans-1,2-dichloroethene	
(32V)	78-87-5	1,2-dichloropropane	
(33V)	10061-02-6	trans-1,3-dichloropropene	
	10061-01-05	cis-1,3-dichloropropene	
(38V)	100-41-4	ethylbenzene	
(44V)	75-09-2	methylene chloride	
(45V)	74-87-3	chloromethane	
(46V)	74-83-9	bromomethane	
(47V)	75-25-2	bromoform	
(48V)	75-27-4	bromodichloromethane	
(49V)	75-69-4	fluorotrichloromethane	
(50V)	75-71-8	dichlorodifluoromethane	
(51V)	124-48-1	chlorodibromomethane	
(83V)	127-18-4	tetrachloroethene	
(86V)	108-88-3	toluene	
(87V)	79-01-6	trichloroethene	
(88V)	75-01-4	vinyl chloride	

None Detected

MISSISSIPPI
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

MSCL

ORGANICS ANALYSIS DATA SHEET - Page 4

Sample Number

Laboratory Name: 696,169 Case No: CHE-5, Vertac Well #8

QC Report No:

B. Tentatively Identified Compounds

	CAS #	Compound Name	Fraction	Scan No. or Retention Time	% Maximum Score Attained Mass Matching Routine: (Specify: FIT)	Estimated Concentration (ug/L or ug/kg)
1.		2,5-diethyltetrahydro Furan	ABN	673	866	200
2.		Atrazine	ABN	1220	986	60
3.						
4.						
5.						
6.						
7.						
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SAMPLE REQUEST FORM

Lab Bench No. CHE-4

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage

Seven-Day Turnaround ( )

Thirty-Day Turnaround (✓)

Alternate Contact

Sample Point Identification Well #1

Requested By Chuck Estes

Data To Jim Hardage

Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. Sample Identification:

Environment Condition partly cloudy, warm

Collected by Chuck Estes

Where Taken monitoring well #1

Type	Parameters	Preservative	Date	Time
1. water	GC/MS volatiles and acid/base neutrals	cool	12/14/84	1:15

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time

COMMENTS:

SAMPLE REQUEST FORM

Lab Bench No. CHE - 5

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage

Alternate Contact

Sample Point Identification well #8

Requested By Chuck Estes

Data To Jim Hardage

Seven-Day Turnaround ( )

Thirty-Day Turnaround (✓)

Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. Sample Identification:

Environment Condition partly cloudy, warm Collected by Chuck Estes

Where Taken monitoring well #8

Type	Parameters	Preservative	Date	Time
1. water	GC/MS volatiles and acid/base neutrals	cool	12/14/84	1:40

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time

COMMENTS:

November 26, 1984

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor, 5100 Poplar
Memphis, Tennessee 38137

SOLID WASTE READING FILE

Dear Mr. Karkkainen:

Re: Groundwater Assessment For Part B
Submittal MSD990714081

We have received the groundwater assessment information. Results from the assessment must be reported to our office by March 4, 1985. We will forward our requirements for an Appendix VIII scan as soon as our policy has been set.

Should you have any questions, please contact our office.

Sincerely,

Charles Estes, P. E.
Division of Solid Waste Management

CE:cm

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

March 9, 1984

RECEIVED
MAR 14 REC'D
BUREAU OF POLLUTION CONTROL

Mr. Chuck Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Attached is a copy of the results of the February, 1984 groundwater sampling data for our Vicksburg facility. The data were received on March 8, 1984. The February samples were taken and data analyzed to be able to confirm or deny results of data received in January, 1984 on samples taken in November, 1983.

These conclusions can be drawn:

a. There is a statiscally significant increase in specific conductance in wells 5 and 6 when compared to the background well number 4. The cause of the increase is <u>not</u> presence of atrazine, dinitrobutyl phenol, toxaphene, the chloride ion, the sodium or potassium ions or metallic constituents.

b. There is a statistically significant increase in specific conductance and total organic halide in well number 1 when compared to the background well number 4.

Well number 1 is not a compliance point well. Refer to attached fegure 2, "Groundwater Contours and Flow Lines". Well number 1 is upgradient of both the surface impoundment and closed out disposal site. Due to the location of well 1, near the railroad track and near the piping to and from the surface impoundment, one can speculate that at some time in the past a spill occurred in the vicinity of well 1 and the results of that spill are now evident in the groundwater.

The analysis of well 1 groundwater may, however, have provided valuable information. Please refer to the comment on the data sheet concerning a large interference peak near atrazine's retention time. Also refere to the attachements on chemical methods for degradation/detoxification of atrazine and simazine. One can reasonably conclude that the interference peak is hydroxyatrazine. The hydroxyatrazine would also be the cause of the high specific conductance of the groundwater.

Rather than sample the groundwater and analyze for the 300 - 400 constituents (all of which are irrelevant to the Vicksburg site) identified in Appendix VIII of Part 261, as the regulations advise, I believe we should continue the present monitoring program and add hydroxyatrazine to the parameters.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: F. L. Ahlers
D. J. Madsen
R. F. Maraman

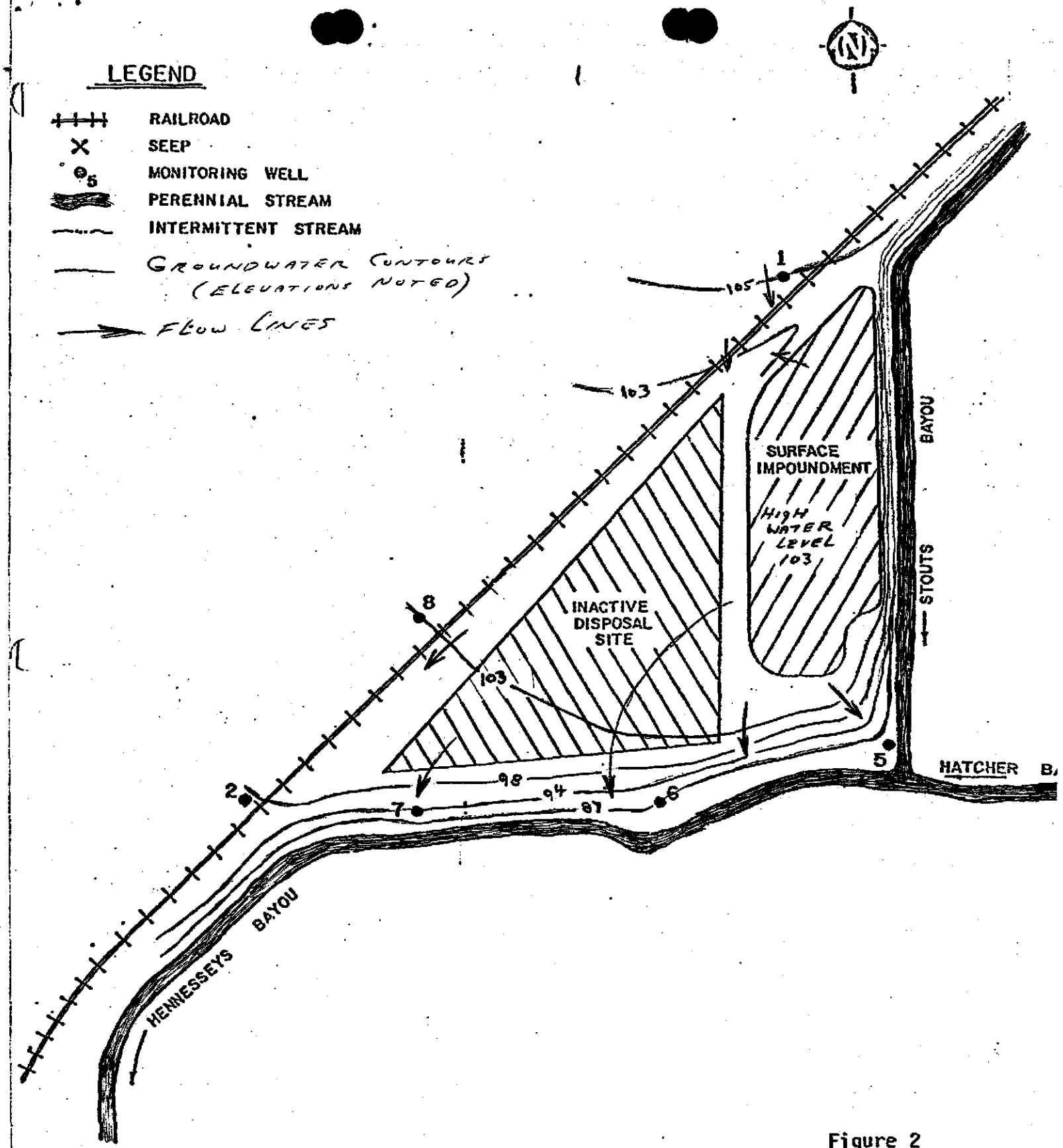
Rec'd 3-8 Dick

TABLE 1 VERTAC MONITORING WELL TESTING RESULTS

Parameter		Concentration (ppm)					
		Sample Identification/EML #					
		47607	47608	47609	47610	47611	47612
		1	2	3 Well 5	4 Well 6	5 Well 7	6 Well 8
INDICATOR PARAMETERS							
Specific Conductance (umhos)	a)	4000	1030	1460	1500	790	1100
	b)	3950	1020	1450	1485	780	1090
	c)	4000	1020	1440	1490	770	1090
	d)	4000	1020	1440	1490	770	1100
pH (Std. Units)	a)	7.2	7.3	7.2	7.2	7.4	6.8
	b)	7.3	7.2	7.3	7.2	7.4	6.9
	c)	7.3	7.4	7.3	7.3	7.5	7.0
	d)	7.3	7.4	7.3	7.4	7.5	7.0
Total Organic Carbon (TOC)	a)	36.0	22.0	48.0	32.0	23.0	27.0
	b)	34.0	21.0	49.0	37.0	17.0	24.0
	c)	35.0	24.0	49.0	36.0	22.0	30.0
	d)	29.0	26.0	46.0	33.0	19.0	24.0
Total Organic Halide (TOX)	a)	0.22	0.12	0.050	0.050	0.045	0.016
	b)	0.23	0.11	0.040	0.060	0.040	0.018
	c)	0.22	0.10	0.045	0.055	0.040	0.014
	d)	0.23	0.12	0.050	0.050	0.050	0.010
ORGANICS							
Toxaphene		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Atrazine		0.080**	0.010	0.010	0.10	<0.010	0.11
Dinitrobutyl phenol (DNBP)		<0.025	<0.025	<0.025	<0.025	<0.025	<0.025

1=EML #47607/Well 1
2=EML #47608/Well 2
3=EML #47609/Well 5
4=EML #47610/Well 6
5=EML #47611/Well 7
6=EML #47612/Well 8

**Sample contained large interference peak near atrazines' retention time; consequently, the value listed is semi-quantitative. GC/MS confirmation would be needed to positively confirm concentration of atrazine in Well #1 sample.



NOTE: ELEVATION DATUM IS MEAN SEA LEVEL

Figure 2

Well Location
Sketch Map
Vertac Chemical Corporation
Vicksburg, MS

82-529

SCALE: No scale	DATE 3-8-84

GROUND WATER CONTOURS & FLOW LINES

Water Table Elevations
11/9/83

Well #	Elevation	Elevation Top of Casing
1	104.1	109.1
4	105.1	111.6
5	83.1	83.1
6	85.6	85.6
7	86.5	86.5
8	101.7	101.7

MISSISSIPPI STATE UNIVERSITY
MISSISSIPPI
STATE CHEMICAL LABORATORY
BOX CR • MISSISSIPPI STATE, MISSISSIPPI 39762

December 16, 1983

DR. JAMES P. MINYARD, JR.
State Chemist

Analysis No. 677,616-621

Analysis of WATERS Marked:

Received on 11-11-83 from MS Bureau of Pollution Control, DNR

Address P.O. Box 10385 Jackson, MS 39208

RESULTS:

Well #	MSCL No.	BPC No.	Micrograms/Liter DNBP	Micrograms/Liter Benzoic Acid	Other Compounds Identified
1	667,616	BP 1504	1200	ND*	2-Bromocyclohexanol (5 μg/l)
4	667,617	BP 1505	ND*	ND	———
5	667,618	BP 1506	ND	ND	———
6	667,619	BP 1507	ND	ND	Atrazine (20 μg/l)
7	667,620	BP 1508	ND	ND	———
8	667,621	BP 1509	ND	ND	Atrazine (150 μg/l) 1-3-Isobenzofurandione (20 μg/l)

*ND - None Detected. Minimum detectable level for both DNBP and benzoic acid was 10 micrograms per liter.

We are enclosing the computer generated data and also copies of the sample request forms.

James P. Minyard, Jr.

State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1504

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact ~~[illegible]~~ Jim Hardage — Seven-Day Turnaround ( )
Alternate Contact Sam Mabry — Thirty-Day Turnaround (✓)
Sample Point Identification Well #1, Beside the RR track, northwest of impoundment
Requested By Chuck Estes — Data To Jim Hardage
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. Sample Identification:

Environment Condition Sunny, mild — Collected by Chuck Estes
Where Taken Ground water monitoring well #1

	Type	Parameters	Preservative	Date	Time
1.	#1 water	DNBP, Benzoic Acid	cool	11/9/83	2:35

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes	L. Keel	11-11-83
L. T. Keel	D.A. Dollar	" 10:AM

COMMENTS:

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1505

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage
Alternate Contact Sam Mabry
Sample Point Identification Well #4, Background well near the office of the north p
Requested By Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

Seven-Day Turnaround ( )
Thirty-Day Turnaround (✓)
Data To Jim Hardage

II. Sample Identification:

Environment Condition Sunny, mild
Collected by Chuck Estes
Where Taken Monitoring well #4

	Type	Parameters	Preservative	Date	Time
1.	#4 water	DNBP, Benzoic Acid	cool	11/9/83	4:15

Transportation of Sample: Bus ( ) BPC Vehicle(✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes		L. Kell
L. Kell	D.A. Dolan	11/11/83 10 AM

COMMENTS:

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1506

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Verbac Chemical

BPC Contact Jim Hardage
Alternate Contact Sam Mabry
Sample Point Identification Well # 5, At southeastern corner of facility near cre
Requested By Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

Seven-Day Turnaround ( )
Thirty-Day Turnaround (✓)
Data To ~~Also~~ Jim Hardage

II. Sample Identification:

Environment Condition Sunny, mild
Collected by Chuck Estes
Where Taken Monitoring Well # 5

Type	Parameters	Preservative	Date	Time
1. #5, water	DNBP, Benzoic Acid	cool	11/9/83	3 PM

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes		L. Kell
L. Kell	D.A. Dollar	11/11/83 10 AM

COMMENTS:

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1507

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage
Alternate Contact Sam Mabry
Sample Point Identification Well # 6, south of inactive landfill near creek
Requested By Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

Seven-Day Turnaround ( )
Thirty-Day Turnaround (✓)
Data To Jim Hardage

II. Sample Identification:

Environment Condition sunny, mild
Collected by Chuck Estes
Where Taken Monitoring well # 6

	Type	Parameters	Preservative	Date	Time
1.	#6 water	DNBP, Benzoic Acid	cool	11/9/83	3:20

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes		L. Keel
L. Keel	DA Dill	11/11/83 10AM

COMMENTS:

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1508

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage
Alternate Contact Sam Mabry
Sample Point Identification Well #7, southwest of inactive landfill near creek
Requested By Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

Seven-Day Turnaround ( )
Thirty-Day Turnaround (✓)
Data To Jim Hardage

II. Sample Identification:

Environment Condition Sunny, mild
Where Taken Monitoring well #7
Collected by Chuck Estes

	Type	Parameters	Preservative	Date	Time
1.	#7 water	DNBP, Benzoic Acid	Cool	11/9/83	3:40

Transportation of Sample: Bus ( ) BPC Vehicle (✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes		L. Keel
L. T. Keel	D.A. Dollar	11/11/83 10 AM

COMMENTS:

BUREAU OF POLLUTION CONTROL (BPC)
SAMPLE REQUEST FORM

BP 1509

Lab Bench No._____

I. GENERAL INFORMATION: Facility Name Vertac Chemical

BPC Contact Jim Hardage
Alternate Contact Sam Mabry
Sample Point Identification Well #8, In between RR tracks west of landfill
Requested By Chuck Estes
Data To Jim Hardage
Seven-Day Turnaround ( )
Thirty-Day Turnaround (✓)
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. Sample Identification:

Environment Condition Sunny, mild
Collected by Chuck Estes
Where Taken Monitoring Well #8

	Type	Parameters	Preservative	Date	Time
1.	#8 water	DNBP, Benzoic Acid	cool	11/9/83	2:10

Transportation of Sample: Bus ( ) BPC Vehicle(✓) Other ( )

Relinquished By	Received By	Date/Time
Chuck Estes		L. Keel
L. Keel	D.A. Dullen	11/11/83 10AM

COMMENTS:

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. 1504

I. GENERAL INFORMATION: Facility Name Vertac Chemical

County Code Warren NPDES Permit No.

Discharge No. Date Requested

Sample Point Identification Well #1, beside the rr track, northwest of impoundment

Requested By Chuck Estes Data To Chuck Estes

Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:

Environment Condition Sunny, mild Collected By Chuck Estes

Where Taken Ground water monitoring well #1, depth to water 5' from top of well

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	235
2.	Water	Atrazine,Toxaphene,TOX	Cool	11-9-83	235
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	7.09	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	19°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 11-10-83 Time 0900

Recorded By Dorothy Lewis Date Sent to State Office 11-29-83

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/1		*
COD	(000340)	( )	mg/1		
TOC	(000680)	(X)	21,200 mg/1	DK	11-10-83
Suspended Solids	(099000)	( )	mg/1		
TKN	(000625)	( )	mg/1		
Ammonia-N	(000610)	( )	mg/1		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/1		
Oil and Grease(1)	(000550)	( )	mg/1		
Oil and Grease(2)	(000550)	( )	mg/1		
Chlorides	(099016)	( )	mg/1		
Phenol	(032730)	(X)	< .10 mg/1	FB,DK	11-10-83
Total Chromium	(001034)	( )	mg/1		
Hex. Chromium	(001032)	( )	mg/1		
Zinc	(001092)	( )	mg/1		
Copper	(001042)	( )	mg/1		
Lead	(017501)	( )	mg/1		
Cyanide	(000722)	( )	mg/1		
Specific Conductance		(X)	3850		
Atrazine		(X)	< 55 ug/1	MB	11-28-83
Toxaphene		(X)	< 7 ug/1	MB	11-28-83
TOX		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

	Type	Parameters	Preservative	Date	Time
1.					
2.					
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/1		*
COD	(000340)	( )	mg/1		
TOC	(000680)	( )	mg/1		
Suspended Solids	(099000)	( )	mg/1		
TKN	(000625)	( )	mg/1		
Ammonia-N	(000610)	( )	mg/1		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/1		
Oil and Grease(1)	(000550)	( )	mg/1		
Oil and Grease(2)	(000550)	( )	mg/1		
Chlorides	(099016)	( )	mg/1		
Phenol	(032730)	( )	mg/1		
Total Chromium	(001034)	( )	mg/1		
Hex. Chromium	(001032)	( )	mg/1		
Zinc	(001092)	( )	mg/1		
Copper	(001042)	( )	mg/1		
Lead	(017501)	( )	mg/1		
Cyanide	(000722)	( )	mg/1		
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks _____

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well #1, Beside the RR track, northwest of impoundment
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #1, Depth to water 5' from top of well

	Type	Parameters	Preservative	Date	Time
1.	water	TOC, Phenol	5ml H_2SO_4	11/9/83	2835
2.	water	Atrazine, Toxaphene, TOX	cool	11/9/83	2835
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	7.09	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	19°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (✓) Truck

V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By [illegible] Date Sent to State Office [illegible]

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	21,200	mg/l	[illegible]	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	<.10	mg/l	[illegible]	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific conductance		(X)	3850			
Atrazine		(X)	<55	ug/l	[illegible]	11-28-83
Toxaphene		(X)	<7	ug/l	[illegible]	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX will follow upon completion

*Date of Test Initiation

1504

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1505

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #4, background well near the office of the north plant
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #4, depth to water was 6.5'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	415
2.	Water	Toxaphene, Atrazine, TOX	Cool	11-9-83	415
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.72	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	21°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 11-10-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 11-29-83

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/1		*
COD	(000340)	( )	mg/1		
TOC	(000680)	(X)	31,000 mg/1	DK	11-10-83
Suspended Solids	(099000)	( )	mg/1		
TKN	(000625)	( )	mg/1		
Ammonia-N	(000610)	( )	mg/1		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/1		
Oil and Grease(1)	(000550)	( )	mg/1		
Oil and Grease(2)	(000550)	( )	mg/1		
Chlorides	(099016)	( )	mg/1		
Phenol	(032730)	(X)	0.13 mg/1	FB, DK	11-10-83
Total Chromium	(001034)	( )	mg/1		
Hex. Chromium	(001032)	( )	mg/1		
Zinc	(001092)	( )	mg/1		
Copper	(001042)	( )	mg/1		
Lead	(017501)	( )	mg/1		
Cyanide	(000722)	( )	mg/1		
Specific Conductance		(X)	820		
Toxaphene		(X)	< 55 ug/1	MB	11-28-83
Atrazine		(X)	< 7 ug/1	MB	11-28-83
TOX		(X)			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1505

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #4, background well near the office of the north plant
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #4, depth to water was 6.5'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	415
2.	Water	Toxaphene,Atrazine,TOX	Cool	11-9-83	415
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.72	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	21°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By E.K. Badelle Date 11-10-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 11-29-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/1		*
COD	(000340)	( )		mg/1		
TOC	(000680)	(X)	31,000	mg/1	DK	11-10-83
Suspended Solids	(099000)	( )		mg/1		
TKN	(000625)	( )		mg/1		
Ammonia-N	(000610)	( )		mg/1		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/1		
Oil and Grease(1)	(000550)	( )		mg/1		
Oil and Grease(2)	(000550)	( )		mg/1		
Chlorides	(099016)	( )		mg/1		
Phenol	(032730)	(X)	0.13	mg/1	FB,DK	11-10-83
Total Chromium	(001034)	( )		mg/1		
Hex. Chromium	(001032)	( )		mg/1		
Zinc	(001092)	( )		mg/1		
Copper	(001042)	( )		mg/1		
Lead	(017501)	( )		mg/1		
Cyanide	(000722)	( )		mg/1		
Specific Conductance		(X)	820			
Toxaphene		(X)	< 55	ug/1	MB	11-28-83
Atrazine		(X)	< 7	ug/1	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will followupon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well # 4, Background well near the office of the north plant
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #4, Depth to water was 6.5'

	Type	Parameters	Preservative	Date	Time
1.	water	TOC, Phenol	5ml H_2SO_4	11/9/83	4:15 PM
2.	water	Toxaphene, Atrazine, TOX	cool	11/9/83	4:15 PM
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	6.72	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	21[illegible]°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (✓) truck

V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By [illegible] Date Sent to State Office 12-28-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	31,000	mg/l	DR	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.13	mg/l	DR, DR	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific conductance		(X)	320			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

1505

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1506

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Watten NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #5, at southeastern corner of facility near crook junction
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, Mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #5, depth to water was 16.5'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	300
2.	Water	Atrazine,Toxaphene,TOX	Cool	11-9-83	300
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.82	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	20°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	17.2	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.12	mg/l	FB,DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	1410			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1506

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Watten NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #5, at southeastern corner of facility near crook junction
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, Mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #5, depth to water was 16.5'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	250
2.	Water	Atrazine, Toxaphene, TOX	Cool	11-9-83	300
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.82	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	20°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	17.2	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.12	mg/l	FB, DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	1410			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well #5, At southeastern corner of facility near creek junction
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #5, Depth to water was 16.5'

	Type	Parameters	Preservative	Date	Time
1.	water	TOC, Phenols	5ml H_2SO_4	11/9/83	3:00 PM
2.	water	Atrazine, Toxaphene, TOX	cool	11/9/83	3:00 PM
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	6.82	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	20°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RC Vehicle ( ) Other (✓) truck

V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 11-29-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	17.2	mg/l	JH	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.12	mg/l	JB, JH	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific conductance		(X)	1410			
Atrazine		(X)	<55	ug/l	JMB	11-28-83
Toxaphene		(X)	<7	ug/l	JMB	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX will follow upon completion

*Date of Test Initiation

1506

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1507

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #6, south of inactive landfill near creek
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #6, depth to water was 13'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	320
2.	Water	Atrazine,Toxaphene,TOX	Cool	11-9-83	320
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.75	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	20°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 110-10-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	38.6	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	.10	mg/l	FB,DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	1410			
Atrazine		(X)	<5 55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. 1507

I. GENERAL INFORMATION: Facility Name Vertac Chemical

County Code Warren NPDES Permit No.

Discharge No. Date Requested

Sample Point Identification Well #6, south of inactive landfill near creek

Requested By Chuck Estes Data To Chuck Estes

Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:

Environment Condition Sunny, mild Collected By Chuck Estes

Where Taken Groundwater monitoring well #6, depth to water was 13'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	320
2.	Water	Atrazine, Toxaphene, TOX	Cool	11-9-83	320
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.75	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	20°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 110-10-83 Time 0900

Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/1		*
COD	(000340)	( )	mg/1		
TOC	(000680)	(X)	38.6 mg/1	DK	11-10-83
Suspended Solids	(099000)	( )	mg/1		
TKN	(000625)	( )	mg/1		
Ammonia-N	(000610)	( )	mg/1		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/1		
Oil and Grease(1)	(000550)	( )	mg/1		
Oil and Grease(2)	(000550)	( )	mg/1		
Chlorides	(099016)	( )	mg/1		
Phenol	(032730)	(X)	.10 mg/1	FB, DK	11-10-83
Total Chromium	(001034)	( )	mg/1		
Hex. Chromium	(001032)	( )	mg/1		
Zinc	(001092)	( )	mg/1		
Copper	(001042)	( )	mg/1		
Lead	(017501)	( )	mg/1		
Cyanide	(000722)	( )	mg/1		
Specific Conductance		(X)	1410		
Atrazine		(X)	<55 ug/1	MB	11-28-83
Toxaphene		(X)	<7 ug/1	MB	11-28-83
TOX		(X)			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well #6, south of inactive landfill near creek
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #6, Depth to water was 13'

	Type	Parameters	Preservative	Date	Time
1.	water	TOC, Phenol	5ml H_2SO_4	11/9/83	3:20
2.	water	Atrazine, Toxaphene, TOX	cool	11/9/83	3:20
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	6.75	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	20°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (✓) truck
V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 11-29-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	38.6	mg/l	SK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	<.10	mg/l	SB, SK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
specific conductance		( )	1410			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX will follow upon completion

*Date of Test Initiation

1507

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1508

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #7 southwest of landfill near stream
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #7, depth to water was 10'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	340
2.	Water	Atrazine, Toxaphene, TOX	Cool	11-9-83	340
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.85	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	19°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K.Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	122.9	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.15	mg/l	FB, DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	720			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1508

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #7 southwest of landfill near stream
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #7, depth to water was 10'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	340
2.	Water	Atrazine, Toxaphene, TOX	Cool	11-9-83	340
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.85	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	19°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K.Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	(X)	122.9 mg/l	DK	11-10-83
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	(X)	0.15 mg/l	FB, DK	11-10-83
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
Specific Conductance		(X)	720		
Atrazine		(X)	<55 ug/l	MB	11-28-83
Toxaphene		(X)	<7 ug/l	MB	11-28-83
TOX		(X)			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well #7, southwest of landfill near stream
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater Monitoring well #7, Depth to water was 10'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5ml H_2SO_4	11/9/83	3840
2.	water	Atrazine, Toxaphene, TOX	cool	11/9/83	3840
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	6.85	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	19°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (✓) truck

V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By Dorothy [illegible] Date Sent to State Office 11-07-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	122.9	mg/l	[illegible]	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.15	mg/l	[illegible]	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific conductance		( )	720			
Atrazine		(X)	<55	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

1508

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1509

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #8 in between rr tracks west of inactive landfill
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny, mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #8 depth to water was 8'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	210
2.	Water	Atrazine,Toxaphene,TOX	Cool	11-9-83	210
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.82	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	19°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K.Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	16.9	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.13	mg/l	FB,DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	1160			
Atrazine		(X)	204	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 1599

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Well #8 in between rr tracks west of inactive landfill
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Sunny mild Collected By Chuck Estes
Where Taken Groundwater monitoring well #8 depth to water was 8'

	Type	Parameters	Preservative	Date	Time
1.	Water	TOC, Phenol	5 ml H_2SO_4	11-9-83	210
2.	Water	Atrazine, Toxaphene, TOX	Cool	11-9-83	210
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	(X)	6.83	CE	11-9-83
D.O.	(000300)	( )			
Temperature	(000010)	(X)	19°C	CE	11-9-83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By F.K. Badelle Date 11-9-83 Time 0900
Recorded By Dorothy Lewis Date Sent to State Office 12-9-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	16.9	mg/l	DK	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.13	mg/l	FB, DK	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Specific Conductance		(X)	1160			
Atrazine		(X)	204	ug/l	MB	11-28-83
Toxaphene		(X)	<7	ug/l	MB	11-28-83
TOX		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX - will follow upon completion

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Well # 8, In between RR tracks, west of inactive landfill
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (✓) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition sunny, mild Collected By Chuck Estes
Where Taken Groundwater Monitoring Well # 8, Depth to water was 8'

	Type	Parameters	Preservative	Date	Time
1.	water	TOC, Phenols	5ml H_2SO_4	11/9/83	2810
2.	water	Atrazine, Toxaphene, TOX	cool	11/9/83	2810
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )	6.82	CE	11/9/83
D.O.	(000300)	( )			
Temperature	(000010)	( )	19°C	CE	11/9/83
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (✓) truck

V. LABORATORY: Received By [illegible] Date 11-10-83 Time 0900
Recorded By Dorothy Jenis Date Sent to State Office 12-09-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	(X)	16.9	mg/l	DSL	11-10-83
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	(X)	0.13	mg/l	DB, DL	11-10-83
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
specific conductance		( )	1160			
Atrazine		(X)	204	ug/l	MB	11-28-83
Toxaphene		(X)	27	ug/l	MB	11-28-83
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks TOX will follow upon completion

*Date of Test Initiation

1509

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # #1

Field Section

Location of Sampling: Beside effluent pond
Shipper's Name: VERTAC Chemical corp.
Shipper's Address: Box 3, Rifle Range Rd.; Vicksburg, Ms. 39180
Collector's Name: David T. Green Telephone # 636-1231
(Signature)

Date Sampled: 10-31-83
Time Sampled: 10:00
Field Information:

Special Handling/Storage
Refrigerated until shipped

Laboratory Section
Received by: M.A. Whitlosey
Date: 11/8/83
Analysis Required: pH, Conductivity, TOC, TOX, T-Phenol - Organics
Comments: Samples received cold and intact.

To: Chuck Ester DNR-PC

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

Received 1/10/84

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #1

PARAMETER					UNITS
pH	7.00	7.05	7.05	7.07	S.U.
Specific Conductance	4,000	4,100	4,000	4,100	µmhos
Total Organic Carbon	54.03	52.87	52.28	59.40	mg/l
Total Organic Halogen	0.112	0.130	0.124	0.113	mg/l
Dinitrobutyl Phenol	117				µg/l
Toxaphene	<0.3				µg/l
Atrazine	62.6				mg/l
Benzoic Acid	<25				µg/l
Total Phenol	0.08				mg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 2

Field Section

Location of Sampling: Past atrazine Plant
Shipper's Name: VERTAC Chemical
Shipper's Address: Box 3 Rifle Range Rd., Vicksburg
Collector's Name: David T. Green Telephone # 636-1231
(Signature)

Date Sampled: 10-31-83
Time Sampled: 10:15
Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section
Received by: M. A. Whittlesby
Date: 11/8/83
Analysis Required: ~~Group III, T-phenol, organics~~
Comments:
Samples received cold and intact.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #2

PARAMETER					UNITS
pH	7.25	7.30	7.30	7.30	S.U.
Specific Conductance	1,000	1,000	1,000	1,000	µmhos
Total Organic Carbon	72.52	71.50	71.13	68.79	mg/l
Total Organic Halogen	0.045	0.058	0.058	0.051	mg/l
Dinitrobutyl Phenol	<25				µg/l
Toxaphene	<0.3				µg/l
Atrazine	22.4				mg/l
Benzoic Acid	<25				µg/l
Total Phenol	0.12				mg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:
Karen H. Brown
KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 6

Field Section

Location of Sampling: Middle of Drill, opposite plant
Shipper's Name: VERTAC Chemical
Shipper's Address: Box 3 Rifle Range Rd, Vicksburg
Collector's Name: David T. Green (Signature) Telephone # 636-1231

Date Sampled: 10-31-83
Time Sampled: 10:30
Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section

Received by: M.A. Whitlockey
Date: 11/8/83
Analysis Required: Group II, III parameters - Organics
Comments:
Samples received cold and intact.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #6

PARAMETER					UNITS
pH	7.00	6.99	7.00	6.99	S.U.
Specific Conductance	1,500	1,450	1,500	1,500	µmhos
Total Organic Carbon	58.53	56.85	55.85	54.40	mg/l
Total Organic Halogen	0.064	0.077	0.057	0.061	mg/l
Dinitrobutyl Phenol	<25				µg/l
Toxaphene	<0.3				µg/l
Atrazine	75.0				mg/l
Benzoic Acid	<25				µg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:
Karen H. Brown
KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #6

PARAMETER		UNITS
Chloride	30.0	mg/l
Iron	<0.05	mg/l
Manganese	0.11	mg/l
Sodium	63	mg/l
Sulfate	69.1	mg/l
Phenols	0.05	mg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 7

Field Section

Location of Sampling: South side of hill
Shipper's Name: VERTAC
Shipper's Address: Box 3 Rifle Range Rd.
Collector's Name: David T Green (Signature) Telephone # 636-1231

Date Sampled: 10-31-83
Time Sampled: 11:00
Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section

Received by: M.A. Whittlesey
Date: 11/8/83
Analysis Required: Group II + III parameters - Organics
Comments:

Samples received cold and intact.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #7

PARAMETER					UNITS
pH	7.15	7.15	7.15	7.15	S.U.
Specific Conductance	760	750	750	750	µmhos
Total Organic Carbon	42.60	42.66	43.33	43.04	mg/l
Total Organic Halogen	0.025	0.021	0.016	0.025	mg/l
Dinitrobutyl Phenol	<25				µg/l
Toxaphene	<0.3				µg/l
Atrazine	4.5				mg/l
Benzoic Acid	<25				µg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #7

PARAMETER		UNITS
Chloride	10.0	mg/l
Iron	<0.05	mg/l
Manganese	1.38	mg/l
Sodium	51	mg/l
Sulfate	7.9	mg/l
Phenols	<0.05	mg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 8

Field Section

Location of Sampling: Beside atrazine Plant
Shipper's Name: VERTAC
Shipper's Address: Box 3 Rifle Range Rd
Collector's Name: David T. Green Telephone # 636-1231
(Signature)

Date Sampled: 10-31-83
Time Sampled: 10:45
Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section
Received by: M. A. Whittlesey
Date: 11/8/83
Analysis Required: Group II and III parameters - Organics
Comments:
Samples received cold and intact.

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #8

PARAMETER					UNITS
pH	6.85	6.83	6.70	6.80	S.U.
Specific Conductance	1,100	1,100	1,100	1,100	µmhos
Total Organic Carbon	69.01	69.50	69.66	69.97	mg/l
Total Organic Halogen	0.173	0.179	0.182	0.226	mg/l
Dinitrobutyl Phenol	<25				µg/l
Toxaphene	<0.3				µg/l
Atrazine	191				mg/l
Benzoic Acid	<25				µg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180

ATTENTION: Bob Maraman

DATE SAMPLE RECEIVED: 11-8-83
MONTH COVERED: November, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 7336
SAMPLED BY: Client
FREQUENCY: Special
DATE: December 30, 1983

IDENTIFICATION: Well #8

PARAMETER		UNITS
Chloride	23.0	mg/l
Iron	<0.05	mg/l
Manganese	4.66	mg/l
Sodium	63	mg/l
Sulfate	18.0	mg/l
Phenols	<0.05	mg/l

ANALYSES HAVE BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 5

Field Section

Location of Sampling: Intersection of creeks beside hill

Shipper's Name: VERTAC Chemicals

Shipper's Address:

Collector's Name: David T. Green (Signature) Telephone #

Date Sampled: 10-31-83

Time Sampled:

Field Information:

well was essentially dry.
No sample taken.

Special Handling/Storage

Laboratory Section

Received by: M.A. Wheelesley

Date: 11/8/83

Analysis Required: NO SAMPLE RECEIVED

Comments:

1/13/84

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Sampling Date 7/23

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. Well 4

SAMPLE NO. 7022
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE August 23, 1983
UPSTREAM [X]
DOWNSTREAM [ ]

GROUP I

Inorganics

Arsenic	<0.0004	mg/l
Barium	0.82	mg/l
Cadmium	0.0012	mg/l
Chromium	0.002	mg/l
Fluoride	0.50	mg/l
Lead	<0.0008	mg/l
Mercury	<0.0008	mg/l
Nitrate	1.5	mg/l
Selenium	0.0068	mg/l
Silver	<0.00004	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	N/A	±		pCi/l
Gross Beta	N/A	±		pCi/l
Total Radium	N/A	±		pCi/l

Others

Turbidity	3	NTU
Total Coliform	N/A	ct/100ml

GROUP 2

Chloride	15	mg/l
Iron	1.04	mg/l
Manganese	0.22	mg/l
Sodium	15.2	mg/l
Sulfate	56.9	mg/l
Phenols	0.8	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 4

UPSTREAM [X]
DOWNSTREAM [ ]

GROUP 3	1	2	3	4	
pH	6.95	9.96	6.95	6.95	S.U.
Specific Conductance	840	850	840	840	umhos/cm
Total Organic Carbon	30.75	33.42	32.83	32.33	mg/l
Total Organic Halogen	0.014	0.015	0.022	0.015	mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. Well 5

SAMPLE NO. 7022
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE August 23, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0014	mg/l
Barium	0.45	mg/l
Cadmium	0.0005	mg/l
Chromium	0.150	mg/l
Fluoride	0.40	mg/l
Lead	0.0218	mg/l
Mercury	0.0009	mg/l
Nitrate	2.6	mg/l
Selenium	0.0192	mg/l
Silver	<0.00004	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	N/A	±	pCi/l
Gross Beta	N/A	±	pCi/l
Total Radium	N/A	±	pCi/l

Others

Turbidity	30	NTU
Total Coliform	N/A	ct/100ml

GROUP 2

Chloride	42	mg/l
Iron	0.94	mg/l
Manganese	0.45	mg/l
Sodium	64.2	mg/l
Sulfate	89.3	mg/l
Phenols	0.7	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 5

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.50				S.U.
Specific Conductance	1,580				umhos/cm
Total Organic Carbon	33.98				mg/l
Total Organic Halogen	0.036				mg/l

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Lab Director
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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. Well 6

SAMPLE NO. 7022
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE August 23, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP 1

Inorganics

Arsenic	0.0030	mg/l
Barium	0.53	mg/l
Cadmium	0.0004	mg/l
Chromium	0.028	mg/l
Fluoride	0.30	mg/l
Lead	0.0209	mg/l
Mercury	<0.0008	mg/l
Nitrate	3.0	mg/l
Selenium	0.0110	mg/l
Silver	0.00049	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	N/A	±	pCi/l
Gross Beta	N/A	±	pCi/l
Total Radium	N/A	±	pCi/l

Others

Turbidity	7	NTU
Total Coliform	N/A	ct/100ml

GROUP 2

Chloride	25	mg/l
Iron	0.98	mg/l
Manganese	<0.02	mg/l
Sodium	68.0	mg/l
Sulfate	60.0	mg/l
Phenols	0.65	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 6

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.98				s.u.
Specific Conductance	1,700				umhos/cm
Total Organic Carbon	70.17				mg/l
Total Organic Halogen	0.090				mg/l

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. Well 7

SAMPLE NO. 7022
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE August 23, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0424	mg/l
Barium	0.19	mg/l
Cadmium	0.0001	mg/l
Chromium	0.031	mg/l
Fluoride	0.25	mg/l
Lead	0.0058	mg/l
Mercury	0.0019	mg/l
Nitrate	0.5	mg/l
Selenium	0.0109	mg/l
Silver	<0.00004	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	N/A	±	pCi/l
Gross Beta	N/A	±	pCi/l
Total Radium	N/A	±	pCi/l

Others

Turbidity	5	NTU
Total Coliform	N/A	ct/100ml

GROUP 2

Chloride	10	mg/l
Iron	29.40	mg/l
Manganese	0.59	mg/l
Sodium	18.5	mg/l
Sulfate	28.0	mg/l
Phenols	0.7	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 7

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.24				S.U.
Specific Conductance	810				umhos/cm
Total Organic Carbon	49.53				mg/l
Total Organic Halogen	0.044				mg/l

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Lab Director
Environmental Division

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. Well 8

SAMPLE NO. 7022
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE August 23, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0606	mg/l
Barium	0.30	mg/l
Cadmium	0.0005	mg/l
Chromium	0.057	mg/l
Fluoride	0.60	mg/l
Lead	0.0043	mg/l
Mercury	0.0133	mg/l
Nitrate	0.4	mg/l
Selenium	0.0018	mg/l
Silver	0.00436	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	N/A	±	pCi/l
Gross Beta	N/A	±	pCi/l
Total Radium	N/A	±	pCi/l

Others

Turbidity	38	NTU
Total Coliform	N/A	ct/100ml

GROUP 2

Chloride	19	mg/l
Iron	0.49	mg/l
Manganese	0.16	mg/l
Sodium	64.9	mg/l
Sulfate	41.0	mg/l
Phenols	0.45	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 8

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.82				s.u.
Specific Conductance	1,200				umhos/cm
Total Organic Carbon	105.3				mg/l
Total Organic Halogen	0.379				mg/l

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Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

To: Chuck Estes

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RECEIVED
AUG 01 REC'D
DEPT. OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL

CHAIN OF CUSTODY RECORD

Field Section

Well # 1

Location of Sampling: Basin Effluent Pond

Shipper's Name: VERTAC Chemical

Shipper's Address: Box 3 Rifle Range Rd. Vicksburg, MS 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 6-3-83

Time Sampled: 1:45 PM

Field Information:

Special Handling/Storage:

Refrigerate until shipped

Laboratory Section

Received by: K Brown ELI

Date: 6/14/83 @ 8:00am

Analysis Required: RCRA II + III

Comments:

Samples intact

ENVIRONMENTAL LABORATORIES, Inc.
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REPORT OF ANALYSIS

CLIENT: Vertac, Inc.
Rifle Range Road
Vicksburg, MS 39180
FACILITY: Vicksburg Plant

DATE SAMPLE RECEIVED: 6-14-83
MONTH COVERED: June, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 6012
SAMPLED BY: Client
FREQUENCY: Special
DATE: July 15, 1983

IDENTIFICATION: Well 1

PARAMETER					UNITS
pH	7.60	7.58	7.60	7.62	S.U.
Specific Conductance	4100	4100	4150	4200	umhos
Total Organic Carbon	47.15	47.68	48.19	47.97	mg/l
Total Organic Halogen	0.148	0.136	0.144	0.152	mg/l
Chloride	98				mg/l
Iron	<0.05				mg/l
Manganese	0.39				mg/l
Phenols	0.12				mg/l
Sodium	89.9				mg/l
Sulfate	86.0				mg/l

ANALYSIS HAS BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:
Karen H. Brown
KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

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CHAIN OF CUSTODY RECORD

Field Section

Well # 7

Location of Sampling: South of Atrazine Plant

Shipper's Name: VERTAC Chemical

Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, MS. 39180

Collector's Name: [illegible] (Signature) Telephone #

Date Sampled: 6-3-83

Time Sampled: 9:45 Am

Field Information:

Special Handling/Storage:

Refrigerated over weekend

Laboratory Section

Received by: K Brown ELI

Date: 6/14/83 @ 8:00 am

Analysis Required: RCRA II and III

Comments:

samples intact

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

REPORT OF ANALYSIS

CLIENT: Vertac, Inc.
Rifle Range Rd.
Vicksburg, MS 39180
FACILITY: vicksburg Plant

DATE SAMPLE RECEIVED: 6-14-83
MONTH COVERED: June, 1983
CLIENT NUMBER: RCRA22-001
SAMPLE NUMBER: 6012
SAMPLED BY: Client
FREQUENCY: Special
DATE: July 15, 1983

IDENTIFICATION: Well 2

PARAMETER					UNITS
pH	7.75	7.76	7.74	7.75	S.U.
Specific Conductance	1100	1100	1050	1100	umhos
Total Organic Carbon	59.35	59.03	60.05	60.42	mg/l
Total Organic Halogen	<0.010	<0.010	<0.010	<0.010	mg/l
Chloride	45				mg/l
Iron	<0.05				mg/l
Manganese	<0.02				mg/l
Phenols	<0.05				mg/l
Sodium	28.6				mg/l
Sulfate	105.9				mg/l

ANALYSIS HAS BEEN MADE BY
E.P.A. APPROVED PROCEDURES,
UNLESS NOTED OTHERWISE.

APPROVED BY:

Karen H. Brown

KAREN H. BROWN, LAB DIRECTOR
ENVIRONMENTAL DIVISION

ENVIRONMENTAL LABORATORIES, Inc.
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CHAIN OF CUSTODY RECORD

Field Section

Well # 1

Location of Sampling: North Administration Building

Shipper's Name: VERTAC Chemical

Shipper's Address: Box 3 Rifle Range Rd. Vicksburg, Ms. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 6-3-83

Time Sampled: 1:30 PM

Field Information:

Upstream well

Special Handling/Storage:

Refrigerated until shipped

Laboratory Section

Received by: K Brown, ELI

Date: 6/14/83 @ 8:00 am

Analysis Required: PARA I, III, II

Comments:

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GROUNDWATER MONITORING

CLIENT: Vertac, Inc.
Vicksburg, Mississippi
FACILITY: Vicksburg Plant
WELL I.D.: Well 4

SAMPLE NO.: 6012
SAMPLE BY: Client
CLIENT NO.: RCRA22-001
DATE: July 15, 1983
UPSTREAM [X]
DOWNSTREAM [ ]

GROUP 1

Inorganics		
Arsenic	<0.0004	mg/l
Barium	0.045	mg/l
Cadmium	0.00068	mg/l
Chromium	<0.001	mg/l
Fluoride	0.55	mg/l
Lead	0.0039	mg/l
Mercury	<0.0008	mg/l
Nitrate	1.8	mg/l
Selenium	0.0079	mg/l
Silver	<0.00004	mg/l
Organics		
Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l
Radiochemistry		
Gross Alpha	<3 ±	pCi/l
Gross Beta	<3 ±	pCi/l
Total Radium	<3 ±	pCi/l
Others		
Turbidity	3	NTU
Total Coliform	11	ct/100ml

GROUP 2

Chloride	15	mg/l
Iron	<0.05	mg/l
Manganese	<0.02	mg/l
Sodium	17.4	mg/l
Sulfate	59.2	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 4

UPSTREAM ☒
DOWNSTREAM ☐

GROUP 3	1	2	3	4	
pH	7.47	7.30	7.36	7.40	S.U.
Specific Conductance	820	825	830	825	umhos/cm
Total Organic Carbon	59.10	57.00	56.44	59.67	mg/l
Total Organic Halogen	0.020	0.023	0.020	0.016	mg/l

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KAREN H. BROWN
Lab Director
Environmental Division

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CHAIN OF CUSTODY RECORD

Well # 5

Field Section

Location of Sampling: at intersection of streams

Shipper's Name: Vertac Chemical Corp.

Shipper's Address: P.O. Box 3, Pibb's Ferry Road, Vicksburg, Ms. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 6-14-83

Time Sampled: 10:00 AM

Field Information:

Special Handling/Storage
Refrigerated until shipped

Laboratory Section

Received by: K. Brown, ELI

Date: 6/15/83 @ 8:00 am

Analysis Required: RCRA- I, II, III

Comments:
Sample intact

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GROUNDWATER MONITORING

CLIENT: Vertac, Inc.
Vicksburg, Mississippi

FACILITY: Vicksburg Plant

WELL I.D.: Well 5

SAMPLE NO.: 6012
SAMPLE BY: Client
CLIENT NO.: RC5A22-001
DATE: July 15, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics		
Arsenic	<0.0004	mg/l
Barium	0.165	mg/l
Cadmium	0.00049	mg/l
Chromium	0.009	mg/l
Fluoride	0.45	mg/l
Lead	<0.0008	mg/l
Mercury	<0.0008	mg/l
Nitrate	2.6	mg/l
Selenium	0.0064	mg/l
Silver	0.00052	mg/l
Organics		
Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l
Radiochemistry		
Gross Alpha	<3 ±	pCi/l
Gross Beta	<3 ±	pCi/l
Total Radium	<3 ±	pCi/l
Others		
Turbidity	16	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	44	mg/l
Iron	<0.05	mg/l
Manganese	0.18	mg/l
Sodium	30.8	mg/l
Sulfate	95.7	mg/l
Phenols	0.06	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 5

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.95				S.U.
Specific Conductance	1500				umhos/cm
Total Organic Carbon	76.42				mg/l
Total Organic Halogen	0.085				mg/l

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KAREN H. BROWN
Lab Director
Environmental Division

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CHAIN OF CUSTODY RECORD

Well # 6

Field Section

Location of Sampling: 100 yds south of well #5

Shipper's Name: Vertac Chemical

Shipper's Address: P.O. Box 7 Rifle Range Rd. Vicksburg Ms 39180

Collector's Name: [illegible] (Signature) Telephone # 601-636-1031

Date Sampled: 6-14-83

Time Sampled: 1010 AM

Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section

Received by: K Brown ELI

Date: 6/15/83 @ 8:00 am

Analysis Required: RCRA I, II, III

Comments: Sample intact

ENVIRONMENTAL LABORATORIES, Inc.

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GROUNDWATER MONITORING

CLIENT: Vertac, Inc.
Vicksburg, Mississippi

FACILITY: Vicksburg Plant

WELL I.D.: Well 6

SAMPLE NO.: 6012
SAMPLE BY: Client
CLIENT NO.: RCRA22-001
DATE: July 15, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP 1

Inorganics

Arsenic	<0.0004	mg/l
Barium	0.042	mg/l
Cadmium	0.00556	mg/l
Chromium	<0.001	mg/l
Fluoride	0.80	mg/l
Lead	<0.0009	mg/l
Mercury	<0.0008	mg/l
Nitrate	3.0	mg/l
Selenium	0.0037	mg/l
Silver	0.00169	mg/l

Organics

Endrin	<0.00006	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	<3	±		pCi/l
Gross Beta	<3	±		pCi/l
Total Radium	<3	±		pCi/l

Others

Turbidity	8	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	24	mg/l
Iron	<0.05	mg/l
Manganese	<0.02	mg/l
Sodium	32.2	mg/l
Sulfate	68.7	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 6

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.10				S.U.
Specific Conductance	1510				umhos/cm
Total Organic Carbon	71.89				mg/l
Total Organic Halogen	0.042				mg/l

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ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Well # 7

Field Section

Location of Sampling: southern edge of hill

Shipper's Name: Vertac Chemical

Shipper's Address: P.O. Box 3 Rifle Range Rd., Vicksburg Ms. 39100

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 6-14-83

Time Sampled: 10:30 AM

Field Information:

Special Handling/Storage

Refrigerated until shipped

Laboratory Section

Received by: K Brown ELI

Date: 6/15/83 @ 8:00 am

Analysis Required: RCRA I, II, III

Comments:

Sample intact

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT: Vertac, Inc.
Vicksburg, Mississippi

FACILITY: Vicksburg Plant

WELL I.D.: Well 7

SAMPLE NO.: 6012
SAMPLE BY: Client
CLIENT NO.: RCRA22-001
DATE: July 15, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP 1

Inorganics		
Arsenic	0.0111	mg/l
Barium	0.2	mg/l
Cadmium	0.01412	mg/l
Chromium	0.004	mg/l
Fluoride	0.60	mg/l
Lead	<0.0008	mg/l
Mercury	<0.0008	mg/l
Nitrate	1.3	mg/l
Selenium	0.0026	mg/l
Silver	<0.00004	mg/l
Organics		
Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l
Radiochemistry		
Gross Alpha	<3 ±	pCi/l
Gross Beta	<3 ±	pCi/l
Total Radium	<3 ±	pCi/l
Others		
Turbidity	9	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	11	mg/l
Iron	<0.05	mg/l
Manganese	0.05	mg/l
Sodium	18.9	mg/l
Sulfate	6.6	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 7

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.33				S.U.
Specific Conductance	760				umhos/cm
Total Organic Carbon	64.86				mg/l
Total Organic Halogen	0.024				mg/l

Copies:

ENVIRONMENTAL LABORATORIES, INC.

Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Field Section

Well # 8

Location of Sampling: Between tanks at Atrazine Plant

Shipper's Name: UERTAC Chemical

Shipper's Address: Box 3 RIDGE Range Rd, Vicksburg, MS. 39180

Collector's Name: David Green (Signature) Telephone # _____

Date Sampled: 6-3-93

Time Sampled: 0030 AM

Field Information:

upstream well for 5, 6, + 7.

Special Handling/Storage:

Refrigerated over weekend

Laboratory Section

Received by: K Brown, EL

Date: 6/4/93 @ 8.00 am

Analysis Required: Class I, II, III

Comments:

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT: Vertac, Inc.
Vicksburg, Mississippi

FACILITY: Vicksburg Plant

WELL I.D.: Well 8

SAMPLE NO.: 6012
SAMPLE BY: Client
CLIENT NO.: RCRA22-001
DATE: July 15, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP 1

Inorganics		
Arsenic	<0.0004	mg/l
Barium	0.8	mg/l
Cadmium	0.00056	mg/l
Chromium	<0.001	mg/l
Fluoride	0.50	mg/l
Lead	<0.0006	mg/l
Mercury	<0.0008	mg/l
Nitrate	2.2	mg/l
Selenium	0.0055	mg/l
Silver	<0.00004	mg/l
Organics		
Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l
Radiochemistry		
Gross Alpha	<3 ±	pCi/l
Gross Beta	<3 ±	pCi/l
Total Radium	<3 ±	pCi/l
Others		
Turbidity	64	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	20	mg/l
Iron	<0.05	mg/l
Manganese	5.74	mg/l
Sodium	31.4	mg/l
Sulfate	11.8	mg/l
Phenols	0.05	mg/l

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING PAGE 2

WELL I.D. Well 8

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.95				S.U.
Specific Conductance	1200				umhos/cm
Total Organic Carbon	103.6				mg/l
Total Organic Halogen	0.364				mg/l

Copies:

ENVIRONMENTAL LABORATORIES, INC.

Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

Groundwater Monitoring
Sampling Schedule to Date (8-10-83)

Well Number:	Analysis Parameters:	Sampling Date:
4 (upstream)	1,2,3(quadruplicate)	12-81, 4-82, 10-82, 1-83, 6-83, 7-83
1,2 and 3	1, 2, 3	12-81, 4-82, 10-82, 1-83
1 and 2	2, 3 (quadruplicate)	6-83
5,6,7 and 8	1,2,3	6-83, 7-83

Results Attached

Notes:

1= drinking water parameters
2= groundwater quality parameters
3= indicator parameters

8/26/83

Groundwater Monitoring Sampling
Schedule Proposed to Complete
Two Year Plan

Well Number:	Proposed Sampling Parameters:	
4	Sampling Complete	
3	Abandoned as possibly irrelevant	
1 and 2	3 (quadruplicate)	10-83
5,6,7 and 8	2, 3 (quadruplicate)	10-83, 12-83

Notes:

1= drinking water parameters
2= groundwater quality parameters
3= indicator parameters

Groundwater Monitoring Statistical Status
At End of 1983 Program

Parameter:	Status:
1= drinking water parameter	Complete. All wells meet drinking water standards for parameters. Already established
2= groundwater quality parameters	Wells, 1, 2, 3, 5, 6, 7 and 8 will have a minimum of four quarterly analyses. For each well the minimum of 4 analyses can then pooled to calculate a background concentration peculiar to that well.
3= indicator parameter	Six quadruplicate samples of the upstream well (4) have been taken to determine the initial background mean and variances. Two quadruplicate samples of the downstream wells (1, 2, 5, 6, 7 and 8) will have been taken. Results from each sampling event will then be compared with the initial background mean. The Cochran's Approximation to the Behrens-Fisher Students' t-Test at the 0.05 level of significance will be used to determine statistically significant differences.

WELL I.D. 1

GROUP 1 INORGANICS	December 1981	April 1982	October 1982	January 1983	June 1983
Arsenic	0.015	0.003	--	--	
Barium	0.364	0.103	0.170	0.926	
Cadmium	0.003	--	0.006	0.023	
Chromium	0.019	0.61	0.044	0.059	
Flouride	0.680	0.42	0.650	0.690	
Lead	0.007	0.024	0.048	0.063	
Mercury	--	--	0.014	0.003	
Nitrate	0.250	0.18	0.15	0.280	
Selenium	--	0.006	--	0.017	
Silver	0.001	0.006	0.021	0.001	
Organics					
Endrin	--	--	--	--	
Lindane	--	0.001	--	--	
Methoxychlor	--	--	--	--	
Toxaphene	--	--	--	--	
2,4-D	0.00006	--	--	--	
2,4,5-TP Silvex	--		--	--	
Radiochemistry					
Gross Alpha	6.3±1.0	--	3.3±1.2	6.0±2	
Gross Beta	12.7±3.1	6.2±3.0	16.0±3.6	46.5±3	
Total Radium	--	--	--	--	
Others					
Turbidity	7.4	5.0	1.9	1.1	
Total Coliform	--	2	2	2	
GROUP 2					
Chloride	65.9	76.0	80.9	88	98
Iron	0.14	0.30	--	0.24	--
Manganese	0.57	0.73	0.33	0.48	0.39
Sodium	87.6	92.3	82.3	123	89.9
Sulfate	89.8	82.4	82.7	100	86.0
Phenols	--	0.05	1.28	0.28	0.12
GROUP 3					
pH	7.5	7.14	7.12	6.98	7.6, 7.58, 7.6, 7.62
Specific Conductance	3600	3350	4100	3900	4100, 4100, 4150, 4200
Total Organic Carbon	41.37	63.49	64.59	59.85	47.15,47.68,48.19,47.97
Total Organic Halogen	0.12	0.20	0.11	0.11	0.148,0.136,0.144,0.152

WELL I.D. 2

GROUP 1 INORGANICS	December 1981	April 1982	October 1982	January 1983	June 1983
Arsenic	—	0.003	—	0.002	
Barium	0.560	0.090	—	0.688	
Cadmium	0.002	—	0.003	0.005	
Chromium	—	0.004	—	—	
Flouride	0.40	0.36	0.50	0.50	
Lead	—	—	0.05	—	
Mercury	—	—	0.01	0.0047	
Nitrate	1.50	0.86	0.36	1.0	
Selenium	0.033	—	—	0.015	
Silver	0.0003	0.005	0.0079	0.0008	
Organics					
Endrin	—	—	—	—	
Lindane	—	—	—	—	
Methoxychlor	—	—	—	—	
Toxaphene	—	—	—	—	
2,4-D	0.0002	—	—	—	
2,4,5-TP Silvex	—	—	—	—	
Radiochemistry					
Gross Alpha	1.85±1.00	—	—	—	
Gross Beta	9.71±3.05	2.5±3.0	23.8±3.7	33.6±3.6	
Total Radium	—	—	—	—	
[illegible]rs					
Turbidity	5.2	2.5	3.1	1.8	
Total Coliform	—	1	1	3	
GROUP 2					
Chloride	42.0	48.0	54.9	54	45
Iron	0.2	0.15	0.03	0.47	—
Manganese	1.18	0.32	0.04	0.79	—
Sodium	33.8	36.8	31.3	34	28.6
Sulfate	112.9	32.4	181.6	112	105.9
Phenols	—	—	1.15	0.08	—
GROUP 3					
pH	7.51	7.17	7.12	7.02	7.75, 7.76, 7.74, 7.75
Specific Conductance	990	880	1,300	990	1100, 1100, 1050, 1100
Total Organic Carbon	39.56	86.77	85.23	67.65	59.35, 59.03, 60.05, 60.
Total Organic Halogen	0.062	1.076	0.022	0.021	—, —, —, —

WELL I.D. 3

GROUP 1 ORGANICS	December 1981	April 1982	October 1982	January 1983
Arsenic	0.003	0.0048	--	0.018
Barium	0.704	0.144	0.049	0.647
Cadmium	0.0005	--	0.0009	--
Chromium	--	--	--	--
Flouride	0.44	0.42	0.35	0.4
Lead	0.0027	--	0.0479	--
Mercury	--	--	--	0.0025
Nitrate	0.22	0.24	0.13	0.95
Selenium	0.0295	0.0012	--	--
Silver	0.00045	0.0053	0.0147	0.00057
Organics				
Endrin	--	--	--	--
Lindane	--	--	--	--
Methoxychlor	--	--	--	--
Toxaphene	--	--	--	--
2,4-D	--	--	--	--
2,4,5-TP Silvex	--	--	--	--
Radiochemistry				
Gross Alpha	0.93±0.94	--	1.9±1.1	--
Gross Beta	5.18±3.02	1.0±2.8	14.2±3.6	28.4±4.3
Total Radium	--	--	--	--
Others				
Turbidity	450	5.0	2.3	1.8
Total Coliform	--	2	3	1
GROUP 2				
Chloride	5.0	10.0	13.9	24.0
Iron	1.92	0.37	--	1.20
Manganese	8.65	9.21	1.64	8.40
Sodium	22.1	23.1	16.6	31.0
Sulfate	18.1	51.2	147.9	178.0
Phenols	--	--	1.25	--
GROUP 3				
pH	7.2	6.6	7.09	6.77
Specific Conductance	920	980	860	1300
Total Organic Carbon	43.89	120.7	91.46	76.22
Total Organic Halogen	0.034	0.033	0.006	0.024

Turbidity Readings for Wells 3, 4 in Dec. 81 are not consistent. Last out in statistical analysis. [illegible] 8/2/83

WELL I.D. 4 Upstream

	December, 1981	April, 1982	October, 1982	January, 1983	June, 1983	July, 1983
GROUP 1						
Inorganics						
Arsenic	--	0.0039	--	0.0089	--	--
Barium	0.292	0.103	0.142	0.366	0.048	0.82
Cadmium	0.0002	--	0.0015	--	0.0007	0.0012
Chromium	--	0.009	--	--	--	0.002
Fluoride	0.40	0.30	0.50	0.60	0.55	0.50
Lead	0.0017	--	0.041	--	0.0039	--
Mercury	--	0.099	0.007	0.0024	--	--
Nitrate	0.15	0.11	1.1	0.57	1.8	1.5
Selenium	0.0351	--	--	0.0026	0.0079	0.0068
Silver	--	--	0.006	0.00095	--	--
Organics						
Endrin	--	--	--	--	--	--
Lindane	--	--	--	--	--	--
Methoxychlor	--	--	--	--	--	--
Toxaphene	--	--	--	--	--	--
2,4-D	--	--	--	--	--	--
2,4,5-TP Silvex	--	--	--	--	--	--
Radiochemistry						
Gross Alpha	1.34±.97	--	3.3±1.2	--	--	NA
Gross Beta	3.28±2.98	1.0±2.8	14.6±3.6	34.6±4.4	--	NA
Total Radium	0.14	--	--	--	--	NA
Others						
Turbidity	325	8.5	1.9	1.2	3	3
Total Coliform	--	--	1	5	11	NA
Group 2						
Chloride	14.0	22.0	21.9	23	15	15
Iron	0.66	0.26	--	0.27	--	1.04
Manganese	0.80	0.23	1.37	0.27	--	0.22
Sodium	24.3	25.2	20.8	33	17.4	15.2
Sulfate	54.4	71.2	92.4	132	59.2	56.9
Phenols	0.05	--	1.11	--	--	0.8
Group 3						
pH	7.26, 7.31, 7.24, 7.21	6.72, 6.70, 6.69, 6.69	6.92, 6.94, 6.94, 6.96	6.89, 6.86, 6.93, 6.97	7.47, 7.30, 7.36, 7.40	6.95, 9.96, 6.95, 6.95
Specific Conductance	750, 800, 760, 760	770, 770, 770, 770	1100, 1150, 1200, 1100	830, 850, 830, 840	820, 825, 830, 825	840, 850, 840, 840
Total Organic Carbon	50.21, 50.28, 50.15, 50.96	71.40, 72.42, 68.60, 71.71	65.85, 64.48, 58.54, 61.62	44.92, 41.44, 40.79, 41.49	59.10, 57.00, 56.44, 59.67	30.75, 33.42, 32.83, 32.33
Total Organic Halogen	0.030, 0.026, 0.030, 0.028	0.029, 0.028, 0.025, 0.027	0.041, 0.016, 0.039, 0.047	0.012, 0.015, 0.017, 0.020	0.020, 0.023, 0.020, 0.018	0.014, 0.015, 0.022, [illegible]5

Turbidity reading from well #4 in Dec. 81 was not consistent. Cast over in statistical analysis. JRK 5/1/13

GROUP 1 INORGANICS	Well 5 June 1983	Well 5 July 1983	Well 6 June 1983	Well 6 July 1983	Well 7 June 1983	Well 7 July 1983	Well 8 June 1983	Well 8 July 1983
Arsenic	--	0.0014	--	0.003	0.011	0.0424	--	0.0606
Barium	0.165	0.45	0.042	0.53	0.2	0.19	0.8	0.30
Cadmium	0.0005	0.0005	0.0056	0.0004	0.014	0.0001	0.0006	0.0005
Chromium	0.009	0.150	--	0.028	0.004	0.031	--	0.057
Flouride	0.45	0.40	0.80	0.30	0.60	0.25	0.50	0.60
Lead	--	0.0218	--	0.0209	--	0.0058	--	0.0043
Mercury	--	0.0009	--	--	--	0.0019	--	0.0133
Nitrate	2.6	2.6	3.0	3.0	1.3	0.5	2.2	0.4
Selenium	0.0064	0.0192	0.0037	0.0110	0.0028	0.0109	0.0055	0.0018
Silver	0.0005	--	0.0017	0.00049	--	--	--	0.00436
Organics								
Endrin	--		--		--		--	
Lindane	--		--		--		--	
Methoxychlor	--		--		--		--	
Toxaphene	--		--		--		--	
2,4-D	--		--		--		--	
2,4,5-TP Silvex	--		--		--		--	
Radiochemistry								
Gross Alpha	--	NA	--	NA	--	NA	--	NA
Gross Beta	--	NA	--	NA	--	NA	--	NA
Total Radium	--	NA	--	NA	--	NA	--	NA
Others								
Turbidity	16	30	8	7	9	5	64	38
Total Coliform	--	NA	--	NA	--	NA	--	NA
GROUP 2								
Chloride	44	42	24	25	11	10	20	19
Iron	--	0.94	--	0.98	--	29.4	--	0.49
Manganese	0.18	0.45	--	--	0.05	0.59	5.74	0.16
Sodium	30.8	64.2	32.2	68.0	18.9	18.5	31.4	64.9
Sulfate	95.7	89.3	68.7	60.0	6.6	28.0	11.8	41.0
Phenols	0.06	0.7	--	0.65	--	0.7	0.05	0.45
GROUP 3								
pH	6.95	7.50	7.10	6.98	7.33	7.24	6.95	6.82
Specific Conductance	1500	1580	1510	1700	780	810	1200	1200
Total Organic Carbon	76.42	33.98	71.89	70.17	64.86	49.53	103.6	105.3
Total Organic Halogen	0.085	0.036	0.042	0.090	0.024	0.044	0.364	0.379

FORM 1027

MISSISSIPPI STATE UNIVERSITY

MISSISSIPPI
STATE CHEMICAL LABORATORY

BOX CR • MISSISSIPPI STATE, MISSISSIPPI 39762

June 27, 1983

RECEIVED
DR. JAMES P. MINYARD, JR.
State Chemist
JUN 28 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Analysis No. 667,551,550, 549,552,553, & 554

Analysis of SEE ATTACHED SHEET Marked:

Received on 4-26-83 from MS Bureau of Pollution Control
ATTN: Jim Hardage

Address P.O. Box 10385 Jackson, MS 39209

RESULTS:

MSCL No.	BPC Identification
667,551	#268
667,550	#269
667,549	#270
667,552	Spike Control
667,553	Recovery Spike
667,554	Blank (4-20-83) for #268, #269, #270

Attached sheets list the results of our analysis of above samples. Computer printouts are also enclosed.

James P. Minyard, Jr.

State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

MISSISSIPPI STATE UNIVERSITY
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

MSCL

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: _____ Case No: BPC #268

Lab Sample I.D. No: 667,551 QC Report No: _____

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6-trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2-chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2-nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	
	DNBP		66,300

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	
	ATRAZINE		TRACE

VOLATILES

PP #	CAS #		ug/l or ug/kg (circle one)
(2V)	107-02-8	acrolein	
(3V)	107-13-1	acrylonitrile	
(4V)	71-43-2	benzene	
(6V)	56-23-5	carbon tetrachloride	
(7V)	108-90-7	chlorobenzene	
(10V)	107-06-2	1,2-dichloroethane	
(11V)	71-55-6	1,1,1-trichloroethane	
(13V)	75-34-3	1,1-dichloroethane	
(14V)	79-00-5	1,1,2-trichloroethane	
(15V)	79-34-5	1,1,2,2-tetrachloroethane	
(16V)	75-00-3	chloroethane	
(19V)	110-75-8	2-chloroethylvinyl ether	
(23V)	67-66-3	chloroform	
(29V)	75-35-4	1,1-dichloroethene	
(30V)	156-60-5	trans-1,2-dichloroethene	
(32V)	78-87-5	1,2-dichloropropane	
(33V)	10061-02-6	trans-1,3-dichloropropene	
	10061-01-05	cis-1,3-dichloropropene	
(38V)	100-41-4	ethylbenzene	
(44V)	75-09-2	methylene chloride	
(45V)	74-87-3	chloromethane	
(46V)	74-83-9	bromomethane	
(47V)	75-25-2	bromoform	
(48V)	75-27-4	bromodichloromethane	
(49V)	75-69-4	fluorotrichloromethane	
(50V)	75-71-8	dichlorodifluoromethane	
(51V)	124-48-1	chlorodibromomethane	
(85V)	127-18-4	tetrachloroethene	
(86V)	108-88-3	toluene	
(87V)	79-01-6	trichloroethene	
(88V)	75-01-4	vinyl chloride	

MISSISSIPPI STATE UNIVERSITY
STATE CHEMICAL LABORATORY

MSCL

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:

Case No: BPC #269

Lab Sample I.D. No: 667,550

QC Report No:

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2- chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2- nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	Trace (<10)
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	
		DNBP	2170

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	
		ATRAZINE	TRACE

VOLATILES

(2V)	107-02-8	acrolein
(3V)	107-13-1	acrylonitrile
(4V)	71-43-2	benzene
(6V)	56-23-5	carbon tetrachloride
(7V)	108-90-7	chlorobenzene
(10V)	107-06-2	1,2-dichloroethane
(11V)	71-55-6	1,1,1-trichloroethane
(13V)	75-34-3	1,1-dichloroethane
(14V)	79-00-5	1,1,2-trichloroethane
(15V)	79-34-5	1,1,2,2-tetrachloroethane
(16V)	75-00-3	chloroethane
(19V)	110-75-8	2-chloroethylvinyl ether
(23V)	67-66-3	chloroform
(29V)	75-35-4	1,1-dichloroethene
(30V)	156-60-5	trans-1,2-dichloroethene
(32V)	78-87-5	1,2-dichloropropane
(33V)	10061-02-6	trans-1,3-dichloropropene
	10061-01-05	cis-1,3-dichloropropene
(38V)	100-41-4	ethylbenzene
(44V)	75-09-2	methylene chloride
(45V)	74-87-3	chloromethane
(46V)	74-83-9	bromomethane
(47V)	75-25-2	bromoform
(48V)	75-27-4	bromodichloromethane
(49V)	75-69-4	fluorotrichloromethane
(50V)	75-71-8	dichlorodifluoromethane
(51V)	124-48-1	chlorodibromomethane
(85V)	127-18-4	tetrachloroethene
(86V)	108-88-3	toluene
(87V)	79-01-6	trichloroethene
(88V)	75-01-4	vinyl chloride

MISSISSIPPI STATE CHEMICAL LABORATORY

MISSISSIPPI STATE UNIVERSITY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

MSCL

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:

Lab Sample I.D. No: 667,549

Case No: BPC #270

QC Report No:

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2- chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2- nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	
		DNBP	28,800

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	
		ATRAZINE	Trace

VOLATILES

(2V)	107-02-8	acrolein
(3V)	107-13-1	acrylonitrile
(4V)	71-43-2	benzene
(6V)	56-23-5	carbon tetrachloride
(7V)	108-90-7	chlorobenzene
(10V)	107-06-2	1,2-dichloroethane
(11V)	71-55-6	1,1,1-trichloroethane
(13V)	75-34-3	1,1-dichloroethane
(14V)	79-00-5	1,1,2-trichloroethane
(15V)	79-34-5	1,1,2,2-tetrachloroethane
(16V)	75-00-3	chloroethane
(19V)	110-75-8	2-chloroethylvinyl ether
(23V)	67-66-3	chloroform
(29V)	75-35-4	1,1-dichloroethene
(30V)	156-60-5	trans-1,2-dichloroethene
(32V)	78-87-5	1,2-dichloropropane
(33V)	10061-02-6	trans-1,3-dichloropropene
	10061-01-05	cis-1,3-dichloropropene
(38V)	100-41-4	ethylbenzene
(44V)	75-09-2	methylene chloride
(45V)	74-87-3	chloromethane
(46V)	74-83-9	bromomethane
(47V)	75-25-2	bromoform
(48V)	75-27-4	bromodichloromethane
(49V)	75-69-4	fluorotrichloromethane
(50V)	75-71-8	dichlorodifluoromethane
(51V)	124-48-1	chlorodibromomethane
(85V)	127-18-4	tetrachloroethene
(86V)	108-88-3	toluene
(87V)	79-01-6	trichloroethene
(88V)	75-01-4	vinyl chloride

MISSISSIPPI STATE UNIVERSITY
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: _____ Case No: DNBP Spike Control

Lab Sample I.D. No: 667,552 QC Report No: _____

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6- trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2- chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2- nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	
		DNBP	43,100

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	

VOLATILES

(2V)	107-02-8	acrolein	
(3V)	107-13-1	acrylonitrile	
(4V)	71-43-2	benzene	
(6V)	56-23-5	carbon tetrachloride	
(7V)	108-90-7	chlorobenzene	
(10V)	107-06-2	1,2-dichloroethane	
(11V)	71-55-6	1,1,1-trichloroethane	
(13V)	75-34-3	1,1-dichloroethane	
(14V)	79-00-5	1,1,2-trichloroethane	
(15V)	79-34-5	1,1,2,2-tetrachloroethane	
(16V)	75-00-3	chloroethane	
(19V)	110-75-8	2-chloroethylvinyl ether	
(23V)	67-66-3	chloroform	
(29V)	75-35-4	1,1-dichloroethene	
(30V)	156-60-5	trans-1,2-dichloroethene	
(32V)	78-87-5	1,2-dichloropropane	
(33V)	10061-02-6	trans-1,3-dichloropropene	
	10061-01-05	cis-1,3-dichloropropene	
(38V)	100-41-4	ethylbenzene	
(44V)	75-09-2	methylene chloride	
(45V)	74-87-3	chloromethane	
(46V)	74-83-9	bromomethane	
(47V)	75-25-2	bromoform	
(48V)	75-27-4	bromodichloromethane	
(49V)	75-69-4	fluorotrichloromethane	
(50V)	75-71-8	dichlorodifluoromethane	
(51V)	124-48-1	chlorodibromomethane	
(85V)	127-18-4	tetrachloroethene	
(86V)	108-88-3	toluene	
(87V)	79-01-6	trichloroethene	
(88V)	75-01-4	vinyl chloride	

MISSISSIPPI STATE UNIVERSITY
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: _____ Case No: DNBP Recovery Spike

Lab Sample I.D. No: 667,553 QC Report No: _____

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6-trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2-chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2-nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	
	DNBP		48300

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(13B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	

VOLATILES

(2V)	107-02-8	acrolein
(3V)	107-13-1	acrylonitrile
(4V)	71-43-2	benzene
(6V)	56-23-5	carbon tetrachloride
(7V)	108-90-7	chlorobenzene
(10V)	107-06-2	1,2-dichloroethane
(11V)	71-55-6	1,1,1-trichloroethane
(13V)	75-34-3	1,1-dichloroethane
(14V)	79-00-5	1,1,2-trichloroethane
(15V)	79-34-5	1,1,2,2-tetrachloroethane
(16V)	75-00-3	chloroethane
(19V)	110-75-8	2-chloroethylvinyl ether
(23V)	67-66-3	chloroform
(29V)	75-35-4	1,1-dichloroethene
(30V)	156-60-5	trans-1,2-dichloroethene
(32V)	78-87-5	1,2-dichloropropane
(33V)	10061-02-6	trans-1,3-dichloropropene
	10061-01-05	cis-1,3-dichloropropene
(38V)	100-41-4	ethylbenzene
(44V)	75-09-2	methylene chloride
(45V)	74-87-3	chloromethane
(46V)	74-83-9	bromomethane
(47V)	75-25-2	bromoform
(48V)	75-27-4	bromodichloromethane
(49V)	75-69-4	fluorotrichloromethane
(50V)	75-71-8	dichlorodifluoromethane
(51V)	124-48-1	chlorodibromomethane
(85V)	127-18-4	tetrachloroethene
(86V)	108-88-3	toluene
(87V)	79-01-6	trichloroethene
(88V)	75-01-4	vinyl chloride

MISSISSIPPI STATE UNIVERSITY
STATE CHEMICAL LABORATORY

BOX CR - MISSISSIPPI STATE, MISSISSIPPI 39762

Sample Number

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:

Lab Sample I.D. No: 667,554

Case No: Blank for BPC #268, #269, #270

QC Report No:

Multiply Detection Limits by 1 ☐ or 10 ☐ (Check Box for Appropriate Factor)

NONE DETECTED

ACID COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(21A)	88-06-2	2,4,6-trichlorophenol	
(22A)	59-50-7	p-chloro-m-cresol	
(24A)	95-57-8	2-chlorophenol	
(31A)	120-83-2	2,4-dichlorophenol	
(34A)	105-67-9	2,4-dimethylphenol	
(57A)	88-75-5	2-nitrophenol	
(58A)	100-02-7	4-nitrophenol	
(59A)	51-28-5	2,4-dinitrophenol	
(60A)	534-52-1	4,6-dinitro-2-methylphenol	
(64A)	87-86-5	pentachlorophenol	
(65A)	108-95-2	phenol	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(1B)	83-32-9	acenaphthene	
(5B)	92-87-5	benzidine	
(8B)	120-82-1	1,2,4-trichlorobenzene	
(9B)	118-74-1	hexachlorobenzene	
(12B)	67-72-1	hexachloroethane	
(18B)	111-44-4	bis(2-chloroethyl)ether	
(20B)	91-58-7	2-chloronaphthalene	
(25B)	95-50-1	1,2-dichlorobenzene	
(26B)	541-73-1	1,3-dichlorobenzene	
(27B)	106-46-7	1,4-dichlorobenzene	
(28B)	91-94-1	3,3'-dichlorobenzidine	
(35B)	121-14-2	2,4-dinitrotoluene	
(36B)	606-20-2	2,6-dinitrotoluene	
(37B)	122-66-7	1,2-diphenylhydrazine	
(39B)	206-44-0	fluoranthene	
(40B)	7005-72-3	4-chlorophenyl phenyl ether	
(41B)	101-55-3	4-bromophenyl phenyl ether	
(42B)	39638-32-9	bis (2-chloroisopropyl) ether	
(43B)	111-91-1	bis (2-chloroethoxy) methane	
(52B)	87-68-3	hexachlorobutadiene	
(53B)	77-47-4	hexachlorocyclopentadiene	
(54B)	78-59-1	isophorone	
(55B)	91-20-3	naphthalene	
(56B)	98-95-3	nitrobenzene	
(62B)	86-30-6	N-nitrosodiphenylamine	
(63B)	621-64-7	N-nitrosodipropylamine	
(66B)	117-81-7	bis (2-ethylhexyl) phthalate	TRACE
(67B)	85-68-7	benzyl butyl phthalate	
(68B)	84-74-2	di-n-butyl phthalate	
(69B)	117-84-0	di-n-octyl phthalate	
(70B)	84-66-2	diethyl phthalate	
(71B)	131-11-3	dimethyl phthalate	
(72B)	56-55-3	benzo(a)anthracene	

BASE/NEUTRAL COMPOUNDS

PP #	CAS #		ug/l or ug/kg (circle one)
(73B)	50-32-8	benzo(a)pyrene	
(74B)	205-99-2	benzo(b)fluoranthene	
(75B)	207-08-9	benzo(k)fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	
(79B)	191-24-2	benzo(ghi)perylene	
(80B)	86-73-7	fluorene	
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo(a,h)anthracene	
(83B)	193-39-5	indeno(1,2,3-cd)pyrene	
(84B)	129-00-0	pyrene	

VOLATILES

(2V)	107-02-8	acrolein
(3V)	107-13-1	acrylonitrile
(4V)	71-43-2	benzene
(6V)	56-23-5	carbon tetrachloride
(7V)	108-90-7	chlorobenzene
(10V)	107-06-2	1,2-dichloroethane
(11V)	71-55-6	1,1,1-trichloroethane
(13V)	75-34-3	1,1-dichloroethane
(14V)	79-00-5	1,1,2-trichloroethane
(15V)	79-34-5	1,1,2,2-tetrachloroethane
(16V)	75-00-3	chloroethane
(19V)	110-75-8	2-chloroethylvinyl ether
(23V)	67-66-3	chloroform
(29V)	75-35-4	1,1-dichloroethene
(30V)	156-60-5	trans-1,2-dichloroethene
(32V)	78-87-5	1,2-dichloropropane
(33V)	10061-02-6	trans-1,3-dichloropropene
	10061-01-05	cis-1,3-dichloropropene
(38V)	100-41-4	ethylbenzene
(44V)	75-09-2	methylene chloride
(45V)	74-87-3	chloromethane
(46V)	74-83-9	bromomethane
(47V)	75-25-2	bromoform
(48V)	75-27-4	bromodichloromethane
(49V)	75-69-4	fluorotrichloromethane
(50V)	75-71-8	dichlorodifluoromethane
(51V)	124-48-1	chlorodibromomethane
(85V)	127-18-4	tetrachloroethene
(86V)	108-88-3	toluene
(87V)	79-01-6	trichloroethene
(88V)	75-01-4	vinyl chloride

TABLE 1
GROUND WATER ELEVATIONS
March 4, 1983

MONITORING WELL	WATER ELEVATION *
1	106.0'
2	100.5'
3	95.3'
5	89.6'
6	90.6'
7	94.5'
8	102.7'

* Above mean sea level

WELL WATER DATA

WELL NO	TOP OF CASING MSL	WATER LEVEL MSL 5-13-82	3-4-83	3-15-83	2-7-84	2-9-84
1	109.1	104.4	106.0	105.1	105.1	-
2	105.0	96.6	100.5	97.8	101.0	-
3	97.5	88	95.3	-	-	-
4	111.6	106.1	-	-	-	106.4
5	99.6	-	89.6	89.1	85.1	-
6	98.6	-	90.6	89.9	87.0	-
7	97.5	-	94.5	94.3	94.2	-
8	109.7	-	102.7	103.7	102.9	-

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Seepage Area ≈ 6' Above the creek directly below the East Drainage
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (X) Composite (Flow) (Time) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition warm, clear (1 day after AN ≈ 3/4" rain) Collected By Chuck Estes
Where Taken A Seepage Area Southeast of the landfill on the creek bank

	Type	Parameters	Preservative	Date	Time
1.	Water	Atrazine, Cyanazine,	— cool	3/1/83	2:00 PM
2.		Toxaphene, DNBP	— cool		
3.		→ run at lab			
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (X) truck
V. LABORATORY: Received By [illegible] Date 3-2-83 Time 8:55
Recorded By [illegible] Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
Atrazine		(X)	1479 ug/l	MB	3-23-83
Toxaphene		(X)	None detected	MB	3-23-83
Cyanazine		(X)	154 ug/l	MB	3-23-83
DNBP		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks DNBP Results will follow

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 268

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Pool of rainwater on top of landfill
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Clear,war.(1 day after 3/4" rain) Collected By Chuck Estes
Where Taken On top of inactive landfill in a depression holding runoff

	Type	Parameters	Preservative	Date	Time
1.	Water	Atrazine,Cyanazine	Cool	3-1-83	230
2.		Toxaphene, DNBP			
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Meredith Bell Date 3-2-83 Time 0855
Recorded By Dorothy Lewis Date Sent to State Office 4-14-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	( )		mg/l		
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	( )		mg/l		
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Atrazine		(X)	10900	ug/l	MB	3-23-83
Cyanazine		(X)	1510	ug/l	MB	3-23-83
Toxaphene		(X)	NONE DETECTED			
DNBP		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks DNBP preserved at lab. DNBP results will follow

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____
County Code _____ NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification _____
Requested By _____ Data To _____
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By _____
Where Taken _____

	Type	Parameters	Preservative	Date	Time
1.					
2.					
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____
Recorded By _____ Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks _____

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Pool of rainwater on top of landfill
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (X) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition clear, warm (1 day after 3/4" rain) Collected By Chuck Estes
Where Taken On top of inactive landfill in a depression holding runoff

	Type	Parameters	Preservative	Date	Time
1.	water	Atrazine, cyanazine,	cool	3/1/83	2:30 PM
2.		toxaphene, DNBP	preserved @ lab		
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (X) truck

V. LABORATORY: Received By [illegible] Date 3-2-83 Time 0855
Recorded By [illegible] Date Sent to State Office 4-14-83

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
Atrazine		(X)	10900 ug/l	MB	3-23-83
Toxaphene		(X)	NONE DETECTED	MB	3-23-83
Cyanazine		(X)	1510 ug/l	MB	3-23-83
DNBP		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks DNBP Results will follow

*Date of Test Initiation

268

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 269

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Discharge point of railroad ditch into creek
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Clar,warm (1 day after 3/4" rain) Collected By Chuck Estes
Where Taken At extreme southwest corner of facility where the ditch to the east of rr

	Type	Parameters	Preservative	Date	Time
1.	Water	Atrazine,Cyanazine	Cool	3-1-83	300
2.		Toxaphene, DNBP			
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Meredith Bell Date 3-2-83 Time 0855
Recorded By Dorothy Lewis Date Sent to State Office 4-14-83

Analysis	Computer Code	Request	Result		Analyst	Date Measured
BOD_5	(000310)	( )		mg/l		*
COD	(000340)	( )		mg/l		
TOC	(000680)	( )		mg/l		
Suspended Solids	(099000)	( )		mg/l		
TKN	(000625)	( )		mg/l		
Ammonia-N	(000610)	( )		mg/l		
Fecal Coliform(1)	(074055)	( )		colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )		colonies/100 ml		*
Total Phosphorus	(000665)	( )		mg/l		
Oil and Grease(1)	(000550)	( )		mg/l		
Oil and Grease(2)	(000550)	( )		mg/l		
Chlorides	(099016)	( )		mg/l		
Phenol	(032730)	( )		mg/l		
Total Chromium	(001034)	( )		mg/l		
Hex. Chromium	(001032)	( )		mg/l		
Zinc	(001092)	( )		mg/l		
Copper	(001042)	( )		mg/l		
Lead	(017501)	( )		mg/l		
Cyanide	(000722)	( )		mg/l		
Atrazine		(X)	402	ug/1	MB	3-23-83
Cyanazine		(X)	24	ug/1	MB	3-23-83
Toxaphene		(X)	25.7	ug/1	MB	3-23-83
DNBP		(X)				
		( )				
		( )				
		( )				
		( )				
		( )				
		( )				

Remarks DNBP preserved at lab DNBP results will follow

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL

SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____

County Code _____ NPDES Permit No. _____

Discharge No. _____ Date Requested _____

Sample Point Identification _____

Requested By _____ Data To _____

Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( ) _____

II. SAMPLE IDENTIFICATION:

Environment Condition _____ Collected By _____

Where Taken _____

	Type	Parameters	Preservative	Date	Time
1.					
2.					
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____

Recorded By _____ Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks _____

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification Discharge point of Railroad Ditch into Creek
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab (X) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition clear, warm (1 day after 2 3/4" rain) Collected By Chuck Estes
Where Taken At extreme southwest corner of facility where the ditch to the east of RR. joins the creek

	Type	Parameters	Preservative	Date	Time
1.	water	Atrazine, cyanazine, toxaphene, DNBP	cool	3/1/83	3:00 PM
2.					
3.		preserved at lab			
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other (X) Truck

V. LABORATORY: Received By [illegible] Date 3-2-83 Time 0855
Recorded By [illegible] Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
Atrazine		(X)	402 ug/l	MB	3-23-83
Toxaphene		(X)	257 ug/l	MB	3-23-83
Cyanazine		(X)	24 ug/l	MB	3-23-83
DNBP		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks DNBP Results will follow

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. 270

I. GENERAL INFORMATION: Facility Name Vertac Chemical
County Code Warren NPDES Permit No.
Discharge No. Date Requested
Sample Point Identification Seepage area 6' above the creek directly below the east drainage
Requested By Chuck Estes Data To Chuck Estes
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( )

II. SAMPLE IDENTIFICATION:
Environment Condition Warm, Clear(1 day after an 3/4" rain) Collected By Chuck Estes
Where Taken A seepage area southeat of the landfill on the creek bank

	Type	Parameters	Preservative	Date	Time
1.	Water	Atrazine, Cyanazine	Cool	3-1-83	200
2.		Toxaphene, DNBP			
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( )

V. LABORATORY: Received By Meredith Bell Date 3-2-82 Time 0855
Recorded By Dorothy Lewis Date Sent to State Office

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
Atrazine		(X)	1479 ug/l	MB	3-23-83
Cyanazine		(X)	154 ug/l	MB	3-23-83
Toxaphene		(X)	NONE DETECTED		
DNBP		(X)			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks DNBP preserved at lab. DNBP results will follow

*Date of Test Initiation

BUREAU OF POLLUTION CONTROL
SAMPLE REQUEST FORM

Lab Bench No. _____

I. GENERAL INFORMATION: Facility Name _____
County Code _____ NPDES Permit No. _____
Discharge No. _____ Date Requested _____
Sample Point Identification _____
Requested By _____ Data To _____
Type of Sample: Grab ( ) Composite (Flow) (Time) Other ( ) _____

II. SAMPLE IDENTIFICATION:
Environment Condition _____ Collected By _____
Where Taken _____

	Type	Parameters	Preservative	Date	Time
1.					
2.					
3.					
4.					
5.					

III. FIELD:

Analysis	Computer Code	Request	Results	Analyst	Date
pH	(000400)	( )			
D.O.	(000300)	( )			
Temperature	(000010)	( )			
Residual Chlorine	(050060)	( )			
Flow	(074060)	( )			

IV. TRANSPORTATION OF SAMPLE: Bus ( ) RO Vehicle ( ) Other ( ) _____

V. LABORATORY: Received By _____ Date _____ Time _____
Recorded By _____ Date Sent to State Office _____

Analysis	Computer Code	Request	Result	Analyst	Date Measured
BOD_5	(000310)	( )	mg/l		*
COD	(000340)	( )	mg/l		
TOC	(000680)	( )	mg/l		
Suspended Solids	(099000)	( )	mg/l		
TKN	(000625)	( )	mg/l		
Ammonia-N	(000610)	( )	mg/l		
Fecal Coliform(1)	(074055)	( )	colonies/100 ml		*
Fecal Coliform(2)	(074055)	( )	colonies/100 ml		*
Total Phosphorus	(000665)	( )	mg/l		
Oil and Grease(1)	(000550)	( )	mg/l		
Oil and Grease(2)	(000550)	( )	mg/l		
Chlorides	(099016)	( )	mg/l		
Phenol	(032730)	( )	mg/l		
Total Chromium	(001034)	( )	mg/l		
Hex. Chromium	(001032)	( )	mg/l		
Zinc	(001092)	( )	mg/l		
Copper	(001042)	( )	mg/l		
Lead	(017501)	( )	mg/l		
Cyanide	(000722)	( )	mg/l		
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			
		( )			

Remarks _____

*Date of Test Initiation

ENVIRONMENTAL LABORATORIES, Inc.

P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. 1

SAMPLE NO. 5615
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE January 31, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	<0.0008	mg/l
Barium	0.926	mg/l
Cadmium	0.02320	mg/l
Chromium	0.059	mg/l
Fluoride	0.69	mg/l
Lead	0.0630	mg/l
Mercury	0.0029	mg/l
Nitrate	0.28	mg/l
Selenium	0.0173	mg/l
Silver	0.00100	mg/l

Organics

Endrin	<0.00012	mg/l
Lindane	<0.0007	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	6.0	± 2.4	pCi/l
Gross Beta	46.5	± 3.7	pCi/l
Total Radium	1.8	± 2.1	pCi/l

Others

Turbidity	1.1	NTU
Total Coliform	2	ct/100ml

GROUP 2

Chloride	88	mg/l
Iron	0.24	mg/l
Manganese	0.48	mg/l
Sodium	123	mg/l
Sulfate	100	mg/l
Phenols	0.28	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. 1

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.98				s.u.
Specific Conductance	3,900				umhos/cm
Total Organic Carbon	59.85				mg/l
Total Organic Halogen	0.113				mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.

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CHAIN OF CUSTODY RECORD

Field Section

Well # 1

Location of Sampling: Beside Effluent Pond

Shipper's Name: VERTAC Chem. Corp

Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, MS. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 12-23-82

Time Sampled: 1:45 PM

Field Information:

Special Handling/Storage:

Refrigerated over weekend

Laboratory Section

Received by: K Brown, ELI

Date: 12/28/82 @ 9:00 am

Analysis Required: RCRA

Comments:

ENVIRONMENTAL LABORATORIES, Inc.

P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. 2

SAMPLE NO. 5615
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE January 31, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0024	mg/l
Barium	0.688	mg/l
Cadmium	0.00541	mg/l
Chromium	<0.001	mg/l
Fluoride	0.50	mg/l
Lead	<0.0008	mg/l
Mercury	0.0047	mg/l
Nitrate	1.0	mg/l
Selenium	0.0154	mg/l
Silver	0.00084	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	<2	±		pCi/l
Gross Beta	33.6	±	3.6	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	1.8	NTU
Total Coliform	3	ct/100ml

GROUP 2

Chloride	54	mg/l
Iron	0.47	mg/l
Manganese	0.79	mg/l
Sodium	34	mg/l
Sulfate	112	mg/l
Phenols	0.08	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. 2

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.02				s.u.
Specific Conductance	990				umhos/cm
Total Organic Carbon	67.65				mg/l
Total Organic Halogen	0.021				mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.
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CHAIN OF CUSTODY RECORD

Field Section

Well # 2

Location of Sampling: South of Atrazine Plant
Shipper's Name: VERTAC Chemical Corp
Shipper's Address: Box 3 Rifle Range Rd. ; Vicksburg, MS. 39180
Collector's Name: David Green (Signature) Telephone # 601-636-1231
Date Sampled: 12-23-82
Time Sampled: 1:15 PM
Field Information:

Special Handling/Storage:

Refrigerated over holiday weekend

Laboratory Section
Received by: K Brown, ECL
Date: 12/28/82 @ 9:00 am
Analysis Required: RCRA

Comments:

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. 3

SAMPLE NO. 5615
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE January 31, 1983
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0018	mg/l
Barium	0.647	mg/l
Cadmium	<0.00003	mg/l
Chromium	<0.001	mg/l
Fluoride	0.40	mg/l
Lead	<0.0008	mg/l
Mercury	0.0025	mg/l
Nitrate	0.95	mg/l
Selenium	<0.0012	mg/l
Silver	0.00057	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	<2	±		pCi/l
Gross Beta	28.4	±	4.3	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	1.8	NTU
Total Coliform	1	ct/100ml

GROUP 2

Chloride	24	mg/l
Iron	1.20	mg/l
Manganese	8.40	mg/l
Sodium	31	mg/l
Sulfate	178	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. 3

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.77				S.U.
Specific Conductance	1300				umhos/cm
Total Organic Carbon	76.22				mg/l
Total Organic Halogen	0.024				mg/l

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Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.

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CHAIN OF CUSTODY RECORD

Field Section

Well # 3

Location of Sampling: across from Hatchie Bayou

Shipper's Name: VERTAC chemical corp

Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, MS. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 12-27-1982

Time Sampled: 9:30 AM

Field Information:

Special Handling/Storage:

none

Laboratory Section

Received by: K Brown, ELI

Date: 12/28/82 @ 9:00 am

Analysis Required: RCRA

Comments:

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Vicksburg, Mississippi

FACILITY Vicksburg Plant

WELL I.D. 4

SAMPLE NO. 5615
SAMPLE BY Client
CLIENT NO. RCRA22-00L
DATE January 31, 1983
UPSTREAM ☒
DOWNSTREAM ☐

GROUP I

Inorganics

Arsenic	0.0089	mg/l
Barium	0.360	mg/l
Cadmium	<0.00003	mg/l
Chromium	<0.001	mg/l
Fluoride	0.60	mg/l
Lead	<0.0008	mg/l
Mercury	0.0024	mg/l
Nitrate	0.57	mg/l
Selenium	0.0026	mg/l
Silver	0.00095	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	<2	±		pCi/l
Gross Beta	34.6	±	4.6	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	1.2	NTU
Total Coliform	5	ct/100ml

GROUP 2

Chloride	23	mg/l
Iron	0.27	mg/l
Manganese	0.27	mg/l
Sodium	33	mg/l
Sulfate	132	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. 4

UPSTREAM [x]
DOWNSTREAM [ ]

GROUP 3	1	2	3	4	
pH	6.89	6.86	6.93	6.97	S.U.
Specific Conductance	830	850	830	840	umhos/cm
Total Organic Carbon	44.92	41.44	40.79	41.49	mg/l
Total Organic Halogen	0.012	0.015	0.017	0.020	mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.

P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

CHAIN OF CUSTODY RECORD

Field Section

Well # 4

Location of Sampling: By Administration Bldg.

Shipper's Name: VERTAC Chemical Corp

Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, Ms. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 12-27-1982

Time Sampled: 9:00 AM

Field Information:

Upstream sample

Special Handling/Storage:

None

Laboratory Section

Received by: K Brown, ELI

Date: 12/28/82 @ 9:00 am

Analysis Required: RCRA

Comments:

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

November 23, 1982

RECEIVED
NOV 29 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes
Mississippi Department of Natural Resources
Bureau of Pollution Control
Division of Solid Waste Management
P. O. Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

Attached are results of the third set of analyses of samples from our four RCRA monitoring wells.

On the issue of the Commission Order No. 599-82, I have attached our reply to Mr. Blalock to emphasize our intent to continue to be cooperative.

I can further report that a purchase order has been issued to MCI Consulting Engineers from Knoxville and Nashville, Tennessee by our Vicksburg facility. Vertac construction coordination will be provided by Mr. Bob James, and environmental coordination will be provided by Mr. Bob Maraman, both located at the Vicksburg facility. As you may or may not know, at Corporate we do not have detailed purchasing, engineering or scientific functions but we do provide oversight and planning and regulatory liason.

We have since 1981 or earlier continually confused environmental liabilities of this area with potential end use planning. End use is a function of market and business conditions that may never happen; therefore, we need to deal with the environmental issue at hand. Should some end use develop in the future we would submit those plans for approval as needed.

Within the context of the Commission Order I see this as a program:

1. Sampling is complete. Vertac analysis of samples is nearly complete; therefore, meeting the January 1, 1983 compliance date is not a problem.

2. MCI has been hired to prepare a grading and capping plan. That plan will call for Vertac to use sufficient "high hill" dirt (which is less contaminated than the erosional samples taken by the EPA) to form

base of cover over erosional areas (severe trenches and drum exposure have now developed in the erosional areas) and gradual slopes to inhibit erosional movement. The final cap would not necessarily be "high hill" dirt particularly in those areas that do not slope towards the treatment pond. Those areas that do not slope toward the treatment pond will finally be covered with soil with sufficient nutrients to support life, and greenery will be established. There should be no problem completing the detailed plan by February 1, 1983.

3. MCI has also been hired as hydrogeologic consultants; therefore, they will present a well location plan by February 1, 1983 and will select a well driller. If the well location and plan of access are approved, MCI will be present as wells are drilled for field supervision, well development and report preparation.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

Attch.

cc: B. James
B. Maraman
George Mayo (MCI)
Felon Wilson (MCI)

DICK KARKKAINEN, MEMPHIS

ENVIRONMENTAL LABORATORIES, Inc.

P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.

FACILITY Vicksburg Plant

WELL I.D. #1

SAMPLE NO. 5321
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE October 30, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	<0.0004	mg/l
Barium	0.170	mg/l
Cadmium	0.00621	mg/l
Chromium	0.044	mg/l
Fluoride	0.65	mg/l
Lead	0.0481	mg/l
Mercury	0.0136	mg/l
Nitrate	0.15	mg/l
Selenium	<0.0012	mg/l
Silver	0.02069	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	3.3	±	1.2	pCi/l
Gross Beta	16.0	±	3.6	pCi/l
Total Radium	≤2	±		pCi/l

Others

Turbidity	1.9	NTU
Total Coliform	2	ct/100ml

GROUP 2

Chloride	80.9	mg/l
Iron	<0.006	mg/l
Manganese	0.33	mg/l
Sodium	82.3	mg/l
Sulfate	82.7	mg/l
Phenols	1.28	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #1

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.12				S.U.
Specific Conductance	4,100				umhos/cm
Total Organic Carbon	64.59				mg/l
Total Organic Halogen	0.111				mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

ENVIRONMENTAL LABORATORIES, Inc.

P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.

FACILITY Vicksburg Plant

WELL I.D. #2

SAMPLE NO. 5321
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE October 30, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	<0.0004	mg/l
Barium	<0.003	mg/l
Cadmium	0.00307	mg/l
Chromium	<0.001	mg/l
Fluoride	0.50	mg/l
Lead	0.0503	mg/l
Mercury	0.0102	mg/l
Nitrate	0.36	mg/l
Selenium	<0.0012	mg/l
Silver	0.00792	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

		±		
Gross Alpha	<2	±		pCi/l
Gross Beta	23.8	±	3.7	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	3.1	NTU
Total Coliform	1	ct/100ml

GROUP 2

Chloride	54.9	mg/l
Iron	0.03	mg/l
Manganese	0.04	mg/l
Sodium	31.3	mg/l
Sulfate	181.6	mg/l
Phenols	1.15	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #2

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.12				S.U.
Specific Conductance	1,300				umhos/cm
Total Organic Carbon	85.23				mg/l
Total Organic Halogen	0.022				mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.

FACILITY Vicksburg Plant

WELL I.D. #3

SAMPLE NO. 5321
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE October 30, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	<0.0004	mg/l
Barium	0.049	mg/l
Cadmium	0.00086	mg/l
Chromium	<0.001	mg/l
Fluoride	0.35	mg/l
Lead	0.0479	mg/l
Mercury	<0.0008	mg/l
Nitrate	0.13	mg/l
Selenium	<0.0012	mg/l
Silver	0.01466	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

		±		
Gross Alpha	1.9	±	1.1	pCi/l
Gross Beta	14.2	±	3.6	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	2.3	NTU
Total Coliform	3	ct/100ml

GROUP 2

Chloride	13.9	mg/l
Iron	<0.006	mg/l
Manganese	1.64	mg/l
Sodium	16.6	mg/l
Sulfate	147.9	mg/l
Phenols	1.25	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #3

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.09				S.U.
Specific Conductance	860				umhos/cm
Total Organic Carbon	91.46				mg/l
Total Organic Halogen	0.006				mg/l

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Karen H Brown

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Lab Director
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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.

FACILITY Vicksburg Plant

WELL I.D. #4

SAMPLE NO. 5321
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE October 30, 1982
UPSTREAM ☒
DOWNSTREAM ☐

GROUP I

Inorganics

Arsenic	<0.0004	mg/l
Barium	0.142	mg/l
Cadmium	0.00147	mg/l
Chromium	<0.001	mg/l
Fluoride	0.50	mg/l
Lead	0.0410	mg/l
Mercury	0.0069	mg/l
Nitrate	1.1	mg/l
Selenium	<0.0012	mg/l
Silver	0.00556	mg/l

Organics

Endrin	<0.00008	mg/l
Lindane	<0.0005	mg/l
Methoxychlor	<0.001	mg/l
Toxaphene	<0.002	mg/l
2, 4-D	<0.002	mg/l
2, 4, 5-TP Silvex	<0.002	mg/l

Radiochemistry

Gross Alpha	3.3	±	1.2	pCi/l
Gross Beta	14.6	±	3.6	pCi/l
Total Radium	<2	±		pCi/l

Others

Turbidity	1.9	NTU
Total Coliform	1	ct/100ml

GROUP 2

Chloride	21.9	mg/l
Iron	<0.006	mg/l
Manganese	1.37	mg/l
Sodium	20.8	mg/l
Sulfate	92.4	mg/l
Phenols	1.11	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #4

UPSTREAM ☒
DOWNSTREAM ☐

GROUP 3	1	2	3	4	
pH	6.92	6.94	6.94	6.96	s.u.
Specific Conductance	1,100	1,150	1,200	1,100	umhos/cm
Total Organic Carbon	65.85	64.48	58.54	61.62	mg/l
Total Organic Halogen	0.041	0.016	0.039	0.047	mg/l

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Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

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CHAIN OF CUSTODY RECORD

Field Section Well # 1

Location of Sampling: Near Effluent Pond
Shipper's Name: VERTAC Chemical Corp
Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, Ms. 39180
Collector's Name: David Green (Signature) Telephone # 601-636-1231
Date Sampled: 9-30-82
Time Sampled: 1:50 PM
Field Information:

Special Handling/Storage:

Samples refrigerated from 9/30 to 10/4 when shipped.

Laboratory Section
Received by: Karen Brown, ELI
Date: 10/5/82 @ 9:00 am
Analysis Required: RCRA

Comments: Sample cold and intact

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CHAIN OF CUSTODY RECORD

Field Section Well # 2

Location of Sampling: South of Atrazine Plant

Shipper's Name: VERTAC Chemical Corp.

Shipper's Address: Box 3 Rifle Range Rd., Vicksburg, Ms. 39180

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 9-30-82

Time Sampled: 1:40 PM

Field Information:

Special Handling/Storage:

Samples refrigerated from 9/30 to 10/4 when shipped

Laboratory Section

Received by: Karen Brown, ECI

Date: 10/5/82 @ 9:00

Analysis Required: RCRA

Comments: Sample cold and intact

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CHAIN OF CUSTODY RECORD

Field Section Well # 3

Location of Sampling: across Hatchee Bayou
Shipper's Name: VERTAC Chemical Corp.
Shipper's Address: Box 3 Rifle Range Rd, Vicksburg, Ms. 39180
Collector's Name: David Green (Signature) Telephone # 601-636-1231
Date Sampled: 9-30-82
Time Sampled: 3:00 PM
Field Information:

Special Handling/Storage:
Samples refrigerated from 9/30 to 10/4 when shipped.

Laboratory Section
Received by: Karen Brown ELI
Date: 10/5/82 @ 9:00
Analysis Required: RCRA

Comments: sample cold and intact

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CHAIN OF CUSTODY RECORD

Field Section Well # 4

Location of Sampling: By Administration Bldg.
Shipper's Name: VERTAC Chemical Corp
Shipper's Address: Box 3 Rifle Range Rd. Vicksburg, MS. 39180
Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 9-30-82
Time Sampled: 2:20 PM
Field Information:

Upstream Sample

Special Handling/Storage:

Sample refrigerated from 9/30 to 10/4 when shipped.

Laboratory Section

Received by: Karen Brown ELI
Date: 10/5/82 @ 9:00
Analysis Required: RCRA

Comments: Sample cool and intact

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

November 17, 1982

Mr. Charlie L. Blalock
Executive Director
Mississippi Department of Natural Resources
P. O. Box 20305
Jackson, Mississippi 39209

Dear Mr. Blalock:

We have your letter of November 11, 1982 and the enclosed Commission Order No. 599-82.

This matter has been reviewed by the Vertac Chemical Corporation management. We wish to inform the Department that the soil sampling program was completed on October 28, 1982 in cooperation with the Division of Solid Waste. These samples are currently being analyzed in the Vertac laboratories, these results will be forwarded in compliance with the date set forth in your Order. Split samples of those taken, currently being analyzed, have been delivered to your laboratories. Our personnel as well as consultants are confident that they can meet the required dates in your items 2,3 and 4. If there are any changes or any interruptions, we will be advising you.

Mr. Dick Karkkainen, Vertac's Director of Environment and Safety Affairs is responsible for this corporate function and will keep you posted on developments.

Very truly yours,

R. A. Guidi
Vice President Operations

RAG/bh

CC: C. P. Bomar, Jr.
R. D. Karkkainen

WELL WATER DATA

WELL NO	TOP OF CASING MSL	WATER LEVEL MSL 5-13-82	3-4-83	3-15-83	2-7-84	2-9-84
1	109.1	104.4	106.0	105.1	105.1	-
2	105.0	96.6	100.5	97.8	101.0	-
3	97.5	88	95.3	-	-	-
4	111.6	106.1	-	-	-	106.4
5	99.6	-	89.6	89.1	85.1	-
6	98.6	-	90.6	89.9	87.0	-
7	97.5	-	94.5	94.3	94.2	-
8	109.7	-	102.7	103.7	102.9	-

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.
FACILITY Vicksburg Plant
WELL I.D. #1

SAMPLE NO. 4746-A
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE April 15, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP 1

Inorganics

Arsenic	0.0028	mg/l
Barium	0.103	mg/l
Cadmium	< 0.0001	mg/l
Chromium	0.61	mg/l
Flouride	0.42	mg/l
Lead	0.0241	mg/l
Mercury	< 0.0008	mg/l
Nitrate	0.18	mg/l
Selenium	0.0064	mg/l
Silver	0.00576	mg/l

Organics

Endrin	< 0.00016	mg/l
Lindane	0.001	mg/l
Methoxychlor	< 0.001	mg/l
Toxaphene	< 0.002	mg/l
2, 4-D	< 0.002	mg/l
2, 4, 5-TP Silvex	< 0.002	mg/l

Radiochemistry

Gross Alpha	< 2	±		pCi/l
Gross Beta	6.2	±	3.0	pCi/l
Total Radium	< 2	±		pCi/l

Others

Turbidity	5.0	NTU
Total Coliform	2	ct/100ml

GROUP 2

Chloride	76.0	mg/l
Iron	0.30	mg/l
Manganese	0.73	mg/l
Sodium	92.3	mg/l
Sulfate	82.4	mg/l
Phenols	0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #1

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.14				s.u.
Specific Conductance	3350				umhos/cm
Total Organic Carbon	63.49				mg/l
Total Organic Halogen	0.195				mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.
FACILITY Vicksburg Plant
WELL I.D. #2

SAMPLE NO. 4746-A
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE April 15, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0032	mg/l
Barium	0.090	mg/l
Cadmium	< 0.0001	mg/l
Chromium	0.004	mg/l
Flouride	0.36	mg/l
Lead	< 0.0008	mg/l
Mercury	< 0.0008	mg/l
Nitrate	0.86	mg/l
Selenium	< 0.0012	mg/l
Silver	0.00529	mg/l

Organics

Endrin	< 0.00016	mg/l
Lindane	< 0.001	mg/l
Methoxychlor	< 0.001	mg/l
Toxaphene	< 0.002	mg/l
2, 4-D	< 0.002	mg/l
2, 4, 5-TP Silvex	< 0.002	mg/l

Radiochemistry

		±		
Gross Alpha	< 2	±		pCi/l
Gross Beta	2.5	±	3.0	pCi/l
Total Radium	< 2	±		pCi/l

Others

Turbidity	2.5	NTU
Total Coliform	1	ct/100ml

GROUP 2

Chloride	48.0	mg/l
Iron	0.15	mg/l
Manganese	0.32	mg/l
Sodium	36.8	mg/l
Sulfate	32.4	mg/l
Phenols	< 0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #2

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.17				S.U.
Specific Conductance	880				umhos/cm
Total Organic Carbon	86.77				mg/l
Total Organic Halogen	0.076				mg/l

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Karen H. Brown

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn.
FACILITY Vicksburg Plant
WELL I.D. #3

SAMPLE NO. 4746-A
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE April 15, 1982
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.0048	mg/l
Barium	0.144	mg/l
Cadmium	< 0.0001	mg/l
Chromium	< 0.001	mg/l
Flouride	0.42	mg/l
Lead	< 0.0008	mg/l
Mercury	< 0.0008	mg/l
Nitrate	0.24	mg/l
Selenium	0.0012	mg/l
Silver	0.00529	mg/l

Organics

Endrin	< 0.00008	mg/l
Lindane	< 0.0005	mg/l
Methoxychlor	< 0.001	mg/l
Toxaphene	< 0.002	mg/l
2, 4-D	< 0.002	mg/l
2, 4, 5-TP Silvex	< 0.002	mg/l

Radiochemistry

Gross Alpha	< 2	±		pCi/l
Gross Beta	1.0	±	2.8	pCi/l
Total Radium	< 2	±		pCi/l

Others

Turbidity	5.0	NTU
Total Coliform	2	ct/100ml

GROUP 2

Chloride	10.0	mg/l
Iron	0.37	mg/l
Manganese	9.21	mg/l
Sodium	23.1	mg/l
Sulfate	51.2	mg/l
Phenols	< 0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #3

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	6.64				S.U.
Specific Conductance	980				umhos/cm
Total Organic Carbon	120.7				mg/l
Total Organic Halogen	0.033				mg/l

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tenn
FACILITY Vicksburg Plant

WELL I.D. #4

SAMPLE NO. 4746-A
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE April 15, 1928
UPSTREAM [X]
DOWNSTREAM [ ]

GROUP I

Inorganics

Arsenic	0.0039	mg/l
Barium	0.103	mg/l
Cadmium	< 0.0001	mg/l
Chromium	0.0092	mg/l
Flouride	0.30	mg/l
Lead	< 0.0008	mg/l
Mercury	0.0991	mg/l
Nitrate	0.11	mg/l
Selenium	< 0.0012	mg/l
Silver	< 0.00004	mg/l

Organics

Endrin	< 0.00008	mg/l
Lindane	< 0.0005	mg/l
Methoxychlor	< 0.001	mg/l
Toxaphene	< 0.002	mg/l
2, 4-D	< 0.002	mg/l
2, 4, 5-TP Silvex	< 0.002	mg/l

Radiochemistry

Gross Alpha	< 2	±		pCi/l
Gross Beta	1.0	±	2.8	pCi/l
Total Radium	< 2	±		pCi/l

Others

Turbidity	8.5	NTU
Total Coliform	< 1	ct/100ml

GROUP 2

Chloride	22.0	mg/l
Iron	0.26	mg/l
Manganese	0.23	mg/l
Sodium	25.2	mg/l
Sulfate	71.2	mg/l
Phenols	< 0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. #4

UPSTREAM ☒
DOWNSTREAM ☐

GROUP 3	1	2	3	4	
pH	6.72	6.70	6.69	6.69	S.U.
Specific Conductance	770	770	770	770	umhos/cm
Total Organic Carbon	71.40	72.42	68.60	71.71	mg/l
Total Organic Halogen	0.029	0.028	0.025	0.027	mg/l

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Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

CHAIN OF CUSTODY RECORD

Field Section

Well # 1

Location of Sampling: Beside the waste pond

Shipper's Name: VERTAC Chemical

Shipper's Address: Rifle Range Rd. Vicksburg, MS, 39090

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 4-13-82

Time Sampled: 3:00 PM

Field Information:

Special Handling/Storage:

Sample stored in refrigerator overnight

Laboratory Section

Received by: K Brown

Date: 4/15/82 @ 9:00 am

Analysis Required: RCRA

Comments: All samples cold - None broken

CHAIN OF CUSTODY RECORD

Field Section

Well # 2

Location of Sampling: South of Atrazine Plant

Shipper's Name: VERTAC Chemical

Shipper's Address: Rifle Range Rd, Vicksburg, Ms. 39090

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 4-13-82

Time Sampled: 2:30 PM

Field Information:

Special Handling/Storage:

Samples stored in refrigerator overnight

Laboratory Section

Received by: Karen Brown

Date: 4/15/82 @ 9:00 am

Analysis Required: RCRA

Comments:

All samples cold. None broken

CHAIN OF CUSTODY RECORD

Field Section

Well # 3

Location of Sampling: Across Hatchy Creek from Plant

Shipper's Name: VERTAC Chemical

Shipper's Address: Rifle Range Rd. Vicksburg, Ms. 39090

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 4-13-82

Time Sampled: 3:45 PM

Field Information:

Special Handling/Storage:

Sample stored in refrigerator overnight

Laboratory Section

Received by: Karen H Brown

Date: 4/15/82 @ 9:00 am

Analysis Required: RCRA

Comments:

All samples cold - None broken

CHAIN OF CUSTODY RECORD

Field Section

Well # 4

Location of Sampling: Just below North Adm. Building

Shipper's Name: VERTAC Chemical

Shipper's Address: Rifle Range Rd., Vicksburg, MS. 39090

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 4-13-82

Time Sampled: 2:00 PM

Field Information:

This is the upstream sample

Special Handling/Storage:

Samples stored in refrigerator overnight.

Laboratory Section

Received by: Karen H Brown

Date: 4/15/82 @ 9:00 am

Analysis Required: RCRA

Comments:

All samples cold - None broken

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tennessee
FACILITY Vicksburg Plant

WELL I.D. 1

SAMPLE NO. 4529
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE 12-17-81
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	.015	mg/l
Barium	.364	mg/l
Cadmium	.00320	mg/l
Chromium	.019	mg/l
Flouride	0.68	mg/l
Lead	.0074	mg/l
Mercury	<0.0008	mg/l
Nitrate	0.25	mg/l
Selenium	<0.0012	mg/l
Silver	.00099	mg/l

Organics

Endrin	<0.0002	mg/l
Lindane	<0.00004	mg/l
Methoxychlor	<0.002	mg/l
Toxaphene	<0.004	mg/l
2, 4-D	0.00006	mg/l
2, 4, 5-TP Silvex	<0.00001	mg/l

Radiochemistry

Gross Alpha	6.30	±	1.00	pCi/l
Gross Beta	12.7	±	3.14	pCi/l
Total Radium	<0.03	±		pCi/l

Others

Turbidity	7.4	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	65.9	mg/l
Iron	0.14	mg/l
Manganese	0.57	mg/l
Sodium	87.6	mg/l
Sulfate	89.8	mg/l
Phenols	<0.05	mg/l

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GROUNDWATER MONITORING PAGE 2

WELL I.D. 1

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.46				s.u.
Specific Conductance	3600				umhos/cm
Total Organic Carbon	41.37				mg/l
Total Organic Halogen	0.115				mg/l

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Karen N Brown

KAREN H. BROWN
Lab Director
Environmental Division

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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tennessee
FACILITY Vicksburg Plant

WELL I.D. 2

SAMPLE NO. 4530
SAMPLE BY Client
CLIENT NO. RCRA 22-001
DATE 12-17-81
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	<0.003	mg/l
Barium	0.560	mg/l
Cadmium	0.0019	mg/l
Chromium	<0.001	mg/l
Flouride	0.40	mg/l
Lead	<0.0008	mg/l
Mercury	<0.0008	mg/l
Nitrate	1.50	mg/l
Selenium	0.0327	mg/l
Silver	0.00033	mg/l

Organics

Endrin	<0.00001	mg/l
Lindane	<0.000002	mg/l
Methoxychlor	<0.0001	mg/l
Toxaphene	<0.0002	mg/l
2, 4-D	0.0002	mg/l
2, 4, 5-TP Silvex	<0.00001	mg/l

Radiochemistry

Gross Alpha	1.85	±	1.00	pCi/l
Gross Beta	9.71	±	3.05	pCi/l
Total Radium	<0.03	±		pCi/l

Others

Turbidity	5.2	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	42.0	mg/l
Iron	0.20	mg/l
Manganese	1.18	mg/l
Sodium	33.8	mg/l
Sulfate	112.9	mg/l
Phenols	< 0.05	mg/l

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING PAGE 2

WELL I.D. 2

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.51				s.u.
Specific Conductance	990				umhos/cm
Total Organic Carbon	39.56				mg/l
Total Organic Halogen	.062				mg/l

Copies:

ENVIRONMENTAL LABORATORIES, INC.

Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

CHAIN OF CUSTODY RECORD

Well # 2

Field Section

Location of Sampling: Beside Scale House; South Plant

Shipper's Name: VERTAC Chemical Corp

Shipper's Address: Rifle Range Road; Vicksburg, Ms.

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 12-16-81

Time Sampled: 10:00 AM

Field Information:

Special Handling/Storage:

Laboratory Section

Received by: K Brown

Date: 12/17/81 @ 6:00 P

Analysis Required: RCRA

Comments: Same as #1

CHAIN OF CUSTODY RECORD

Field Section

Well # 1

Location of Sampling: Beside Railroad down from Acid Plant

Shipper's Name: VERTAC Chemical Corp

Shipper's Address: Rifle Range Road, Vicksburg, MS

Collector's Name: [signature] Telephone #601-636-1231
(Signature)

Date Sampled: 12-16-81

Time Sampled: 10:30 AM

Field Information:

Special Handling/Storage:

Laboratory Section

Received by: K Brown

Date: 12/17 - @ 6:00

Analysis Required: RCRA

Comments: All samples cold - No broken bottles.

ENVIRONMENTAL LABORATORIES, Inc.
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GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tennessee

FACILITY Vicksburg Plant

WELL I.D. 3

SAMPLE NO. 4531
SAMPLE BY Client
CLIENT NO. RCRA22-001
DATE 12-17-81
UPSTREAM ☐
DOWNSTREAM ☒

GROUP I

Inorganics

Arsenic	0.003	mg/l
Barium	0.704	mg/l
Cadmium	0.00053	mg/l
Chromium	<0.001	mg/l
Flouride	0.44	mg/l
Lead	0.0027	mg/l
Mercury	< 0.0008	mg/l
Nitrate	0.22	mg/l
Selenium	0.0295	mg/l
Silver	0.00045	mg/l

Organics

Endrin	<0.00001	mg/l
Lindane	<0.000002	mg/l
Methoxychlor	< 0.0001	mg/l
Toxaphene	<0.0002	mg/l
2, 4-D	<0.00001	mg/l
2, 4, 5-TP Silvex	<0.00001	mg/l

Radiochemistry

Gross Alpha	0.93	±	0.94	pCi/l
Gross Beta	5.18	±	3.02	pCi/l
Total Radium	<0.03	±		pCi/l

Others

Turbidity	450	NTU
Total Coliform	< 1	ct/100ml

GROUP 2

Chloride	5.0	mg/l
Iron	1.92	mg/l
Manganese	8.65	mg/l
Sodium	22.1	mg/l
Sulfate	18.1	mg/l
Phenols	<0.05	mg/l

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING PAGE 2

WELL I.D. 3

UPSTREAM ☐
DOWNSTREAM ☒

GROUP 3	1	2	3	4	
pH	7.20				s.u.
Specific Conductance	920				umhos/cm
Total Organic Carbon	43.89				mg/l
Total Organic Halogen	0.034				mg/l

Copies:

ENVIRONMENTAL LABORATORIES, INC.

Karen H Brown

KAREN H. BROWN
Lab Director
Environmental Division

CHAIN OF CUSTODY RECORD

Well # 3

Field Section

Location of Sampling: Intersection on Hatcher and Stout's Bayous

Shipper's Name: VERTAC Chemical Corp

Shipper's Address: Rifle Range Rd. Vicksburg, MS

Collector's Name: David Green (Signature) Telephone #601-636-1231

Date Sampled: 12-14-81

Time Sampled: 2:00 PM

Field Information:

Special Handling/Storage:

Laboratory Section

Received by: K Brown

Date: 12/17/81 @ 6:00p

Analysis Required: RCRA

Comments:

Same as #1

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING

CLIENT Vertac, Inc.
Memphis, Tennessee

FACILITY Vicksburg Plant

WELL I.D. 4

SAMPLE NO. 4532
SAMPLE BY Client
CLIENT NO. RCRA 22-001
DATE 12-17-81
UPSTREAM ☒
DOWNSTREAM ☐

GROUP I

Inorganics

Arsenic	<0.003	mg/l
Barium	0.292	mg/l
Cadmium	0.00020	mg/l
Chromium	<0.001	mg/l
Flouride	0.40	mg/l
Lead	0.0017	mg/l
Mercury	<0.0008	mg/l
Nitrate	0.15	mg/l
Selenium	0.0351	mg/l
Silver	<0.0004	mg/l

Organics

Endrin	<0.00001	mg/l
Lindane	<0.000002	mg/l
Methoxychlor	<0.0001	mg/l
Toxaphene	<0.0002	mg/l
2, 4-D	<0.00001	mg/l
2, 4, 5-TP Silvex	<0.00001	mg/l

Radiochemistry

Gross Alpha	1.34	±	.97	pCi/l
Gross Beta	3.28	±	2.98	pCi/l
Total Radium	0.14	±		pCi/l

Others

Turbidity	325	NTU
Total Coliform	<1	ct/100ml

GROUP 2

Chloride	14.0	mg/l
Iron	0.66	mg/l
Manganese	0.80	mg/l
Sodium	24.3	mg/l
Sulfate	54.4	mg/l
Phenols	0.05	mg/l

ENVIRONMENTAL LABORATORIES, Inc.
P.O. Drawer 2309 / Gulfport, Mississippi 39503 / (601) 863-3036

GROUNDWATER MONITORING PAGE 2

WELL I.D. 4

UPSTREAM ☒
DOWNSTREAM ☐

GROUP 3	1	2	3	4	
pH	7.26	7.31	7.24	7.21	S.U.
Specific Conductance	750	800	760	760	umhos/cm
Total Organic Carbon	50.21	50.28	50.15	50.96	mg/l
Total Organic Halogen	0.030	.026	.030	.028	mg/l

Copies:

ENVIRONMENTAL LABORATORIES, INC.

Karen H. Brown

KAREN H. BROWN
Lab Director
Environmental Division

CHAIN OF CUSTODY RECORD

Field Section

Well # 4

Location of Sampling: By North Administration Building

Shipper's Name: VERTAC Chemical

Shipper's Address: Box 3 Rifle Range Road; Vicksburg, MS.

Collector's Name: David Green (Signature) Telephone # 601-636-1231

Date Sampled: 12-16-81

Time Sampled: 9:30 AM

Field Information:

Special Handling/Storage:

Laboratory Section

Received by: K Brown

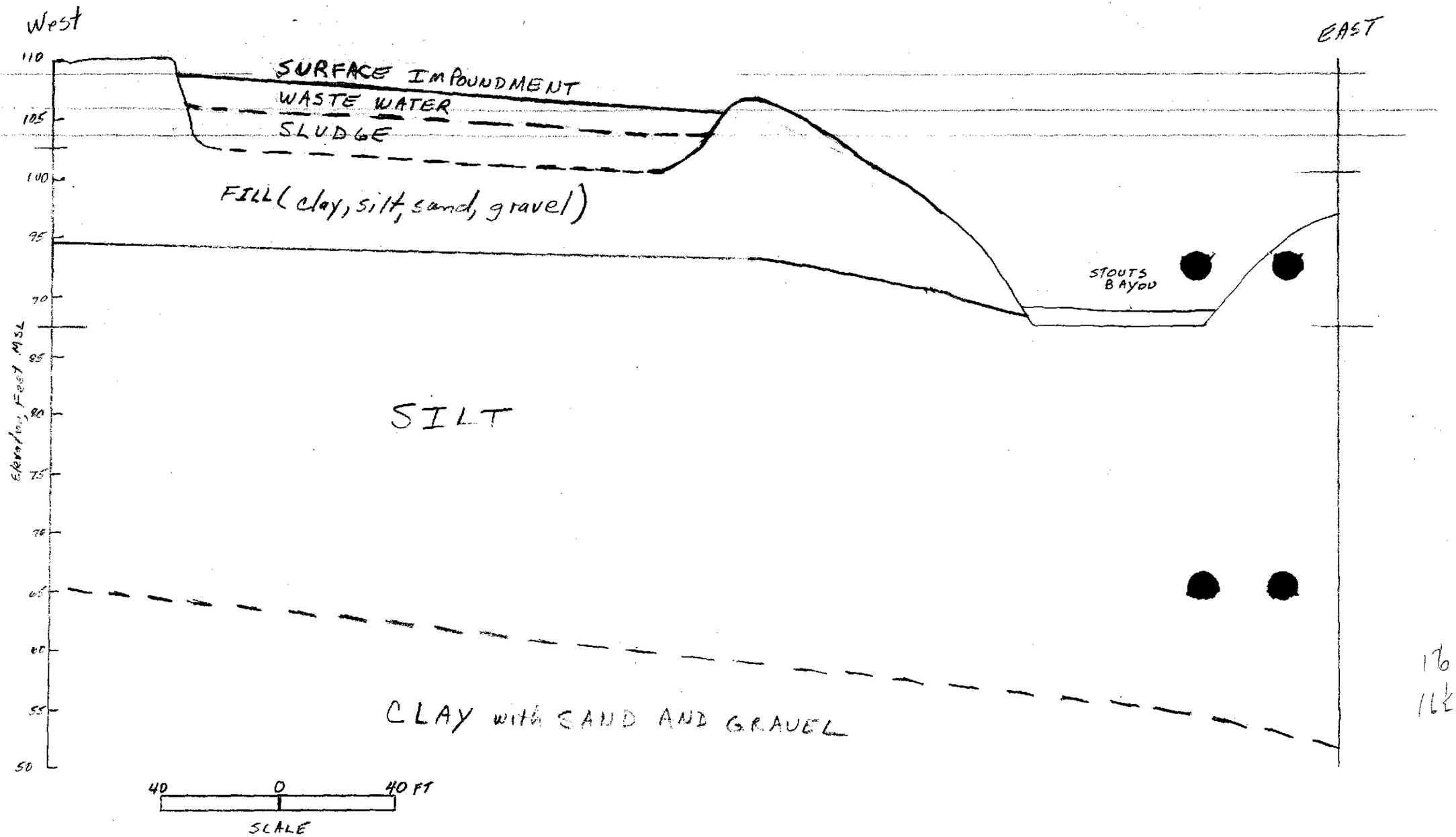
Date: 12/17/81 @ 6:00

Analysis Required: RCRA

Comments: Same #1

12/16/82

LITHOLOGIC CROSS-SECTION



16
16

Boring B-1 TD 30' - silty clay ✓

Boring B-2 TD 40' - gray silt ✓

Boring B-3 TD 30' silty clay ✓

Boring B-3A TD 20' silty clay

Boring B-4 TD 20' gray silt

Monitoring well 5 TD 35' Gray Marl

M-W-6 TD 40' gray Marl

M-W-7 TD 35' gray Marl

M-W-8 TD 49' 10' into Marl ?

PZ-1 TD 54' clay w/ sand and Gravel

PZ-2 TD 56' Marl - Top of ?

PZ-3 TD 52 Marl - Chemical odor 4-8' Top of

PZ-4 TD 49' Marl - Top of ?

MW 9 TD 58' Marl 52' - 6' of Marl

MW 10 TD 52' Marl below 48.5' - described as clayey sand 48.5 to 49.5' and gravel from 49 to 52 feet - never hit a clay

MW 11 TD 56' Marl @ 51 → Top of ?

MW 12 TD 48.5' Clayey sand w/ sand pockets and gravel 44-46' Beginning of Marl @ 46'

B-1A/MW-1A TD 30' No marl - silt

Jena Townsend 404-347-3402

SUPPORTING DOCUMENTS For Vertac Hearing

1. Drilling data from Bureau of Geology, Landon Water
2. Well data from U.S. Geologic Survey data base.
3. Bureau of Geology Warren County Bulletin
4. EPA RCRA Groundwater Monitoring Technical Enforcement Guidance Document
5. RCRA Groundwater Monitoring Enforcement (Document on the use of the EPA RCRA Groundwater Monitoring Technical Enforcement Guidance Document.)
6. Pesticide Manufacturing and Toxic Materials Control Encyclopedia 1980
7. Drinking water and Health, National Academy of Sciences, 1977
8. Characterizations of Aquifers Designated as Potential DRINKING water sources in Mississippi, Water Resource Investigation, 1982
9. Transmittal Response to Agency Comments dated 8-1-86.
10. Interim Report Groundwater Assessment Program dated 3-15-85
11. Vertac Chemical Corp. Vicksburg Facility Part B Permit Application.

NATIONAL 42-182 100 SHEETS Made in U.S.A.

K025	SENWS31T16NR05E	VICKSBURG PORT	1962	82.	1208.	3.00	124CCKF	18.00	1962	8.00	U	28.000	322302090530103
K001	S01T16NR04E	R K FOLEY	1961	?	141.0	2.00	?	101.0	1961	?	H	5.000	322310090462001
K002	S12T16NR04E	TROY L GOSS	1962	?	1135.	2.00	?	220.0	1962	?	H	15.000	322240090470001
K003	S03T16NR04E	V V EVERETT	1971	?	195.0	2.00	?	150.0	1971	3.00	H	5.000	322310090480501
K004	S06T06NR04E	ABBIE JACKSON	1971	?	85.00	2.00	?	65.00	1971	5.00	H	5.000	322315090505501
K013	NE S06T16NR04E	J P BOLER	1961	340	1128.	2.00	124CCKF	253.0	1962	?	H	15.000	322342090501501
K018	SWNWS19T16NR05E	BEULOW	1969	280	?	?	?	?		?	H	?	322105090505501
K019	SESWS01T06NR04E	P SOUTHHALL	1969	?	140.0	6.00	?	85.00	1969	15.00	H	20.000	322300090455501
K020	NESWS23T06NR04E	ROBERT SMITH	1970	?	450.0	2.00	?	205.0		2.00	?	20.000	322040090490001
K021	SESES02T06NR04E	ALBERT GOSS	1970	?	178.0	?	?	123.0	1970	6.00	H	10.000	322300090464001
K022	NWNWS25T16NR04E	MISS HWY DEPT	1971	?	254.0	4.00	?	114.0	1971	10.00	D	10.000	322109090472201
K023	S06T06NR04E	SUZIE JONES	1971	?	85.00	2.00	?	60.00	1971	5.00	H	5.000	322320090503501
K024	NENES12T16NR04E	J D COLE	1969	300	?	?	?	?		?	?	?	322250090463501
K026	S09T16NR04E	EMILY WILSON	1979	225	182.0	4.00	123MSPG	120.0	1979	10.00	H	20.000	322241090511701
K027	SENWS36T16NR04E	HILLDALE W A	1979	260	365.0	10.0	123FRHL	140.0	1980	300.0	P	60.000	321911090480701

149 WARREN

WELL NO.	LOCATION	OWNER	DATE DRL.	ALT (FT)	DEPTH (FT)	DIAM (IN)	GEOLOGIC UNIT	WATER LEVEL DEPTH (FT)	WATER LEVEL YEAR	PUMP (GPM)	USE	SCREEN LENGTH	SITE IDENTIFICATION
K028	NWSWS36T16NR04E	HILLSDALE W A	1980	260	?	?	?	?		?	?	?	321858090482601
K029	SWNES25T16NR04E	MILLER CONST CO	1980	270	1220.	6.00	124CCKF	151.0	1980	350.0	N	80.000	322022090464701
K030	NWSWS36T16NR04E	HILLDALE W A	1980	260	?	?	?	?		?	?	?	321903090482101
K032	NENWS04T16NR04E	W J RUNYON	1983	218	310.0	8.00	123FRHL	90.00	1983	120.0	N	60.000	322348090490001
L008	NENES30T16NR05E	BEULOW	1969	290	575.0	4.00	?	192.0	1969	23.00	H	-462.0	322030090443501
L009	S17T16NR04E	RAY PIERCE	1962	?	173.0	2.00	?	21.00	1962	?	H	5.000	322150090380501
L010	S21T16NR05E	L V WEBER	1964	?	201.0	2.00	?	140.0	1964	?	H	181.00	322055090425001
L011	NWNES21T16NR05E	KING MERRITT	1969	240	222.0	4.00	123FRHL	35.00	1969	8.00	S	10.000	322120090425501
L012	NWNES18T06NR04W	HARRY STUART	1973	150	163.0	4.00	123FRHL	110.0	1973	10.00	S	15.000	322215090385501
L013	NWSWS20T16NR05E	BOVINA WATER CLUB	1971	260	187.0	4.00	122CTHL	117.0	1971	46.00	U	25.000	322101090442601
L014	NWNES19T16NR05E	MISS HWY DEPT	1971	270	220.0	4.00	?	104.0	1971	10.00	H	10.000	322119090450301
L015	S17T16NR05E	M FARRAR	1961	?	57.00	2.00	?	32.00	1961	?	H	5.000	322205090442001
[illegible]	[illegible]T16NR05E	E L PLATT	[illegible]	?	110.0	[illegible]	?	56.00	[illegible]	?	[illegible]	6.000	[illegible]

K032	NENWS04T16NR04E	W J RUNYON	1983	218	310.0	8.00	123FRHL	90.00	1983	120.0	N	60.000	322348090490001
L008	NENES3CT16NR05E	BEULOW	1969	290	575.0	4.00	?	192.0	1969	23.00	H	-462.0	322C3009C443501
L009	S17T16NR04E	RAY PIERCE	1962	?	173.0	2.00	?	21.00	1962	?	H	5.000	322150090330501
L010	S21T16NR05E	L V WEBER	1964	?	201.0	2.00	?	140.0	1964	?	H	181.00	322055090425001
L011	NWNES21T16NR05E	KING MERRITT	1969	240	222.0	4.00	123FRHL	35.00	1969	8.00	S	10.000	322120090425501
L012	NWNES18T06NR04W	HARRY STUART	1973	150	163.0	4.00	123FRHL	110.0	1973	10.00	S	15.000	322215090385501
L013	NWSWS2CT16NR05E	BOVINA WATER CLUB	1971	260	187.0	4.00	122CTHL	117.0	1971	46.00	U	25.000	322101090442601
L014	NWNES19T16NR05E	MISS HWY DEPT	1971	270	220.0	4.00	?	104.0	1971	10.00	H	10.000	322119090450301
L015	S17T16NR05E	M FARRAR	1961	?	57.00	2.00	?	32.00	1961	?	H	5.000	322205090442001
L016	S06T16NR05E	E J PLATT	1962	?	110.0	2.00	?	54.00	1962	?	H	5.000	322310090452001
L017	S29T16NR05E	MABEL NEAL	1962	?	153.0	2.00	?	100.0	1962	?	H	5.000	322005090435001
L019	S02T06NR05W	WILLIE SIMS	1972	270	175.0	2.00	121GRMF	80.00	1972	4.00	H	10.000	322344090405101
L020	NENES3CT16NR05E	E H BEULOW	1973	300	211.0	4.00	122CTHL	90.00	1973	60.00	H	20.000	322024090443701
L021	SENWS01T16NR05E	E L PENNEBAKER	1974	223	?	?	?	?		?	?	?	322334090393501
L022	SWNES13T16NR05E	GRAY FLOWERS	1974	143	136.0	4.00	123MSPG	53.00	1974	10.00	H	10.000	322154090395701
L023	NESWS01T16NR05E	LYLA BIRDSONG	1974	230	92.00	4.00	122CTHL	76.00		10.00	H	10.000	322344090393901
L024	S08T06NR04W	DR J A OVERBY	1975	?	47.00	2.00	110ORNR	35.00	1975	5.00	H	5.000	322300090381001
L025	NESWS03T16NR05E	HARRY STEWART	1979	282	258.0	9.00	123MSPG	100.0	1979	35.00	?	30.000	322326090415901
L026	SENWS16T16NR05E	LOUIS MILLER CONST	1979	188	100.0	6.00	112MPVA	20.00	1979	100.0	I	30.000	322202090425701
L027	SESWS03T16NR05E	HARRY STEWART NO.2	1979	282	228.0	8.00	123MSPG	142.0	1980	100.0	P	20.000	322321090420301
L028	NES09T16NR05E	BOVINA	1980	260	310.0	6.00	123FRHL	121.0	1980	57.00	?	20.000	322306090422501
L029	NWNES07T16NR05E	PLACID OIL CORP	1981	245	1118.	3.00	124CCKF	150.0	1981	80.00	Z	42.000	322306090445701
L030	NENWS08T16NR05E	PLACID OIL CORP	1981	220	1232.	3.00	124CCKF	150.0	1981	80.00	Z	42.000	322302090440901
L031	NWSES06T16NR05E	PLACID OIL CORP	1981	220	1113.	3.00	124CCKF	90.00	1981	80.00	Z	42.000	322326090444901
L033	NESWS05T16NR05E	PLACID OIL	1982	280	1211.	3.00	124CCKF	200.0	1982	70.00	Z	126.00	322332090440801
L035	SWNES29T17NR05E	MARION DRLG	1984	325	1218.	3.00	124CCKF	140.0	1984	80.00	Z	84.000	322535090434601
L036	S24T06NR05E	RIVERSIDE FARMS	1985	120	45.00	8.00	111ALVM	28.00	1985	100.0	I	10.000	322104090394801
L037	NWNWS17T06NR04W	LEWIS MILLER	1985	122	?	?	?	?		?	?	?	322210090381301
M002	NWNES37T15NR03E	MUNICIPAL AIRPT	1950	110	960.0	4.00	124CCKF	4.00	1963	?	H	?	321415090553901
[redacted]	[redacted]	USGS 2 mile	1972	130	[redacted]	?	?	?		?	?	?	321742090521101
[redacted]	[redacted]	USGS WGS 2 mile	1972	127	[redacted]	?	?	?		?	U	?	321743090521201
M008	NWSWS40T15NR03E	JAMES BARNES	1972	170	?	?	123FRHL	?		?	H	?	321500090543001
M015	S35T15NR03E	ALBERT PAXTON	1968	?	48.00	2.00	?	17.00	1968	10.00	S	5.000	321330090555001
M016	S37T15NR03E	ALBERT PAXTON	1968	?	200.0	4.00	?	58.00	1968	20.00	S	15.000	321340090553001
M017	SESWS42T15NR03E	FISHER FERRY W D	1974	200	425.0	10.0	123FRHL	125.0	1975	250.0	P	60.000	321328090520901
[redacted]	[redacted]	JACK B [redacted] mile [redacted]	1974	?	[redacted]	[redacted]	[redacted]	28.00	1974	7.00	H	6.000	321715090530001
M019	NENES42T15NR03E	FISHER FERRY WTR ASN	1975	200	?	?	?	?		?	?	?	321341090514801

screened

149 WARREN

WELL NO.	LOCATION	OWNER	DATE DRL.	ALT (FT)	DEPTH (FT)	DIAM (IN)	GEOLOGIC UNIT	WATER LEVEL DEPTH (FT)	WATER LEVEL YEAR	PUMP (GPM)	USE	SCREEN LENGTH	SITE IDENTIFICATION
M020	SWSWS42T15NR03E	FISHER FERRY WTR ASN	1979	190	?	?	?	?		?	?	?	321326090521901
M021	S42T15NR03E	FISHER FERRY WTR DST	1979	170	?	?	?	?		?	?	?	321407090514201
M022	SWSWS1[redacted]	[redacted]	1981	180	[redacted]	4.00	12[redacted]	50.00	1981	8.00	H	20.000	321711090532401
M023	NENES1[redacted]	[redacted] RES	1982	165	[redacted]	4.00	123[redacted]	109.0	1982	10.00	H	77.000	321742090513901
N008	S09T15NR04E	H HESTER	1960	?	264.0	2.00	?	98.00	1960	?	H	11.000	321725090490501
N009	S11T15NR04E	W R THORNTON	1960	?	265.0	2.00	?	103.0	1960	?	H	12.000	321720090465501
N011	NENES10T15NR04E	HILLDALE W D	1966	228	434.0	8.00	123FRHL	172.0	1966	158.0	P	46.000	321730090471502
N013	S25T15NR04E	MISS HUDSON CO	1966	260	1243.	4.00	?	150.0	1966	40.00	H	40.000	321500090455001
N015	S29T15NR04E	KIRBY DAILY	1968	?	133.0	2.00	?	100.0	1968	3.00	H	5.000	321425090502001
N016	SWSES03T15NR04E	HILLDALE W D	1966	300	460.0	8.00	123FRHL	176.0	1966	151.0	P	64.000	321756090474801
N017	S04T15NR04E	H W REAUBE	1961	?	68.00	2.00	?	38.00	1961	?	H	5.000	321800090493001
N018	S31T15NR04E	H T COPES	1962	?	105.0	2.00	?	68.00	1962	?	H	5.000	321345090504501
N019	S02T15NR04E	DAVE ELLISON	1962	?	317.0	2.00	?	130.0	1962	?	H	7.000	321820090470501
N020	S06T15NR04E	H H WILKS	1960	?	128.0	2.00	?	32.00	1960	?	S	6.000	321810090511001
N021	S07T15NR04E	R M TOMPKINS at least 3 mile	1972	?	110.0	2.00	122CTHL	40.00	1972	12.00	H	5.000	321729090510301
N022	SWNWS11T15NR04E	HILLDALE W D	1974	227	380.0	8.00	123FRHL	107.0	1974	150.0	P	30.000	321727090470801
N023	S22T15NR04E	JACK COOK	1975	210	?	?	?	?		?	?	?	321543090475301
N026	SENWS24T15NR04E	A H BROWN	1976	210	400.0	4.00	123FRHL	124.0	1976	10.00	H	20.000	321544090454901
N027	NENES26T15NR04E	RUNYON CONST CO	1978	170	320.0	8.00	123FRHL	40.00	1978	500.0	N	90.000	321511090461201
N028	NENWS29T15NR04E	FISHER-FERRY WTR D	1979	285	?	?	?	?		?	?	?	321524090500001
N029	SESES31T15NR04E	FISHER FERRY WTR DST	1979	240	?	?	?	?		?	?	?	321325090503401
N031	S03T15NR04E	HILLDALE W A	1980	?	351.0	10.0	123FRHL	152.0	1980	300.0	P	60.000	321817090480808
N032	NESWS35T15NR04E	RUNYON CONST CO	1983	260	1190.	8.00	124CCKF	147.0	1983	200.0	N	120.00	321338090465601
N033	SWNWS35T15NR04E	HERBERT DOWNING	1983	260	360.0	2.00	123MSPG	133.0	1983	20.00	H	30.000	321348090471201
0001	NWNWS30T15NR05E	J KNOX	1976	160	275.0	4.00	123FRHL	60.00	1976	20.00	H	15.000	321504090452001
0003	SWNES19T15NR05W	JOHN BOBB	1958	123	910.0	2.00	124CCKF	12.00	1958	12.00	H	15.000	321559090444401
0005	NWNWS17T15NR05E	BUBBA SELBY	1981	140	244.0	4.00	123FRHL	60.00	1981	15.00	H	30.000	321703090442701
0007	SWSWS29T15NR05E	LEWIS	1975	?	264.0	4.00	?	10.00	1975	10.00	H	10.000	321430090441801
0008	SENES07T15NR05E	EMMA ERVES	1974	160	250.0	4.00	123FRHL	44.00	1974	10.00	H	10.000	321728090443401
0009	SESES07T15NR05W	PHEOLIA ERVES	1974	150	230.0	4.00	123FRHL	28.00	1974	10.00	H	10.000	321713090442901
0010	NESES07T15NR05E	G W LEE JR	1969	?	936.0	4.00	?	47.00	1969	60.00	H	10.000	321735090443501

016	SWSES03T15NR04E	HILLDALE W D	1958	500.	400.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
017	S04T15NR04E	H W REAUBE	1961	?	68.00	2.00	?	36.00	1961	?	H	5.000	321800090493001
018	S31T15NR04E	H T COPES	1962	?	105.0	2.00	?	68.00	1962	?	H	5.000	321345090504501
019	S02T15NR04E	DAVE ELLISON	1962	?	317.0	2.00	?	130.0	1962	?	H	7.000	321820090470501
020	S06T15NR04E	H H WILKS	1960	?	128.0	2.00	?	32.00	1960	?	S	6.000	321810090511001
021	S07T15NR04E	R M TOMPKINS	1972	?	110.0	2.00	122CTHL	40.00	1972	12.00	H	5.000	321729090510301
022	SWNWS11T15NR04E	HILLDALE W D	1974	227	380.0	8.00	123FRHL	107.0	1974	150.0	P	30.000	321727090470801
023	S22T15NR04E	JACK COOK	1975	210	?	?	?	?		?	?	?	321543090475301
026	SENWS24T15NR04E	A H BROWN	1976	210	400.0	4.00	123FRHL	124.0	1976	10.00	H	20.000	321544090454901
027	NENES26T15NR04E	RUNYON CONST CO	1978	170	320.0	8.00	123FRHL	40.00	1978	500.0	N	90.000	321511090461201
028	NENWS29T15NR04E	FISHER-FERRY WTR D	1979	285	?	?	?	?		?	?	?	321524090500001
029	SESES31T15NR04E	FISHER FERRY WTR DST	1979	240	?	?	?	?		?	?	?	321325090503401
031	S03T15NR04E	HILLDALE W A	1980	?	351.0	10.0	123FRHL	152.0	1980	300.0	P	60.000	321817090480808
032	NESWS35T15NR04E	RUNYON CONST CO	1983	260	1190.	8.00	124CCKF	147.0	1983	200.0	N	120.00	321338090465601
033	SWNWS35T15NR04E	HERBERT DOWNING	1983	260	360.0	2.00	123MSPG	133.0	1983	20.00	H	30.000	321348090471201
001	NWNWS30T15NR05E	J KNOX	1976	160	275.0	4.00	123FRHL	60.00	1976	20.00	H	15.000	321504090452001
003	SWNES19T15NR05W	JOHN BOBB	1958	123	910.0	2.00	124CCKF	12.00	1958	12.00	H	15.000	321559090444401
005	NWNWS17T15NR05E	BUBBA SELBY	1981	140	244.0	4.00	123FRHL	60.00	1981	15.00	H	30.000	321703090442701
007	SWSWS29T15NR05E	LEWIS	1975	?	264.0	4.00	?	10.00	1975	10.00	H	10.000	321430090441801
008	SENES07T15NR05E	EMMA ERVES	1974	160	250.0	4.00	123FRHL	44.00	1974	10.00	H	10.000	321728090443401
009	SESES07T15NR05W	PHEOLIA ERVES	1974	150	230.0	4.00	123FRHL	28.00	1974	10.00	H	10.000	321713090442901
010	NESES07T15NR05E	G W LEE JR	1969	?	936.0	4.00	?	47.00	1969	60.00	H	10.000	321735090443501
011	NESWS05T15NR05E	ERIC BEIDENHARN	1971	?	117.0	?	?	50.00	1971	8.00	H	15.000	321815090435001
001	NWSES11T14NR02E	LE TOURNEAU	1946	90.	1100.	6.00	124CCKF	?		?	U	?	321129090591001
002	NWSES11T14NR02E	R G LE TOURNEAU	1950	90.	150.0	3.00	112MRVA	?		?	U	?	321129090591002
003	S11T14NR02E	W R LOMINICK	1968	?	78.00	2.00	?	8.00	1968	16.00	S	5.000	321140090585001
00[illegible]	NWSES09T14NR02E	JIMMIE NEVELLS	1971	?	73.00	4.00	?	10.00	1971	3.00	H	5.000	321210090581001
R001	SWNES49T14NR03E	LE TOURNEAU	1953	95.	130.0	6.00	112MRVA	80.00	1961	130.0	N	20.000	321247090570101
R002	S10T14NR03E	KIRKLAND	1963	?	1300.	4.00	?	30.00	1963	?	H	?	321155090562501
R003	SW S42T14NR03E	BECHTEL CORP	1972	140	?	?	?	?		?	?	?	320819090551701
[illegible]	S16T14NR03E	RUNYON CONST CO	1975	290	124.0	4.00	122CTHL	40.00	1975	75.00	N	20.000	321136090524301

WATER LEVEL

WARREN
M 18
2-28-74

MISSISSIPPI
BOARD OF WATER COMMISSIONERS
416 North State Street
Jackson, Mississippi 39201

1 mile from site

CODED

WATER WELL DRILLERS LOG

Feb. 28 19 74 — date well completed
Grenn W W Cont — firm name
Warren — county well located

LANDOWNER: Jack B. Smith
Rt 2 Box 128
Vicksburg Miss.
(mailing address)

WELL LOCATION:
sec. 12 T. 15 N R. 3 E
17 (distance) miles 8 (direction) of Vicksburg (nearest town)

WELL PURPOSE: home
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:
(1) diameter (inches) 6"
(2) total depth (feet) 165'
(3) static water level (feet) 28 below ~~above~~ top of ground.
(4) casing PVC (material), 159' (depth), 4" (size) if telescope see back.
(5) screen 6' (length), 159' (depth to top), .010 (size), PVC (material)
(6) pump 1/2 sub (HP) 7 (yield gpm) electric (type power)
(7) electric log no (yes or no)
(organization running log)
(8) how well bottom plugged Wood

DRILLERS REMARKS:

description of formations encountered	from	to
Loess	0	30
Gray Clay	30	49
Sand + Clay	49	50
Blue Clay	50	140
Dark Gray Clay	140	150
Fine Sand	150	165

CODED

Elevation 180'
Screened in Catahoula Sand.

WARREN
M22
3-17-81
E Log# 168

MISSISSIPPI
BOARD OF WATER COMMISSIONERS
416 North State Street
Jackson, Mississippi 39201

1 mile from site

CODED

WATER WELL DRILLERS LOG

3-17 1981 Guinn Well Sec Warren
date well completed — firm name — county well located

LANDOWNER: George Lee
(mailing address)

WELL LOCATION:
sec. 12 T 15 N R 3 E
(distance) miles (direction) of (nearest town)

WELL PURPOSE:
(home, ~~irrigation, municipal, industrial~~)

WELL COMPLETION DATA:
(1) diameter (inches) 4"
(2) total depth (feet) 120
(3) static water level (feet) 50 below ~~above~~ top of ground.
(4) casing PVC (material), 50 (depth), 4" (size) If telescope see back.
(5) screen 20 (length), 50 (depth to top), 4" (size), PVC (material)
(6) pump 5 (HP) 4 (yield gpm)
(type power)
(7) electric log ~~(yes or no)~~
MGS
(organization running log)
(8) how well bottom plugged BWV

DRILLERS REMARKS:

description of formations encountered	from	to
Sand & gravel	0	120

CODED

JUN 1981
RECEIVED

WARREN
M23
8-13-82
Elev #176

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Bureau of Land and Water Resources
Southport Mall
P.O. Box 10631
Jackson, Mississippi 39209

WATER WELL DRILLERS LOG

2 miles from site

13 Aug 1982 19 — date well completed
J.L. Gatz Explorations, Inc — firm name
Warren — county well located

LANDOWNER: USAE WES
P.O. Box 631
Vicksburg Ms 39180
(mailing address)

WELL LOCATION:
sec. 13 T 15 N R 3 E
WES Reservation, Vicksburg Ms
(distance) miles (direction) of (nearest town)

WELL PURPOSE: Industrial
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:

(1) diameter (inches) 8"/6"
(2) total depth (feet) 284
(3) static water level (feet) 109 below ~~above~~ top of ground.
(4) casing PVC (material), 207 (depth), 4" (size) If telescope see back.
(5) screen 20 ft (length), 207 (depth to top), 2" (size), Stainless Steel (material)
(6) pump 1 1/2 (HP) 10 (yield gpm) 220 V 1φ (type power)
(7) electric log yes (yes or no)
Bureau of Geology (organization running log)
(8) how well bottom plugged PVC Backwash valve

DRILLERS REMARKS:

description of formations encountered	from	to
Clayey Silt	0	19
Sandy Silt	19	23
Sand, gravel, clay	23	90
Sand, clay, shell	90	111
Sleator Limestone	111	150
Sand clay shells	150	160
Clayey Silt	160	169
Clay	169	205
Silty V Fine sand	205	235
Clay	235	250
V Fine Silty sand	250	260
Clay	260	284

DEPT. OF NATURAL RESOURCES
~~BUREAU OF LAND & WATER RESOURCES~~
AUG 18 1982
RECEIVED

4 miles from site

Warren
M15
1-29-68

CODED

CODED

MISSISSIPPI
BOARD OF WATER COMMISSIONERS
416 North State Street
Jackson, Mississippi 39201

WATER WELL DRILLERS LOG

1-29 1968 BIG BLACK DRILLING Co. WARREN
date well completed firm name county well located

LANDOWNER: ALBERT PAXTON
HWY 61 - SOUTH
VICKSBURG, MISS.
(mailing address)

WELL LOCATION:
sec. 35 T 15 N R 3 E W
near airport
miles (distance) (direction) of (nearest town)

WELL PURPOSE: CATTLE
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:

(1) diameter (inches) 2"
(2) total depth (feet) 48'
(3) static water level (feet) 17 below top of ground.
(4) casing GALV (material), 43 (depth),
2" (size) If telescope see back.
(5) screen 5 (length), 43 (depth to top)
2" (size), STAINLESS STEEL (material)
(6) pump 1 (HP) 10 GAL (yield gpm)
ELECTRIC (type power)
(7) electric log NO (yes or no)
(organization running log)
(8) how well bottom plugged BACK WASH VALVE

DRILLERS REMARKS:

description of formations encountered	from	to
Top SOIL	0'	7'
GUMBO	7'	42'
SAND & GRAVEL	42'	48'

CODED

WARREN MISSISSIPPI BOARD OF WATER COMMISSIONERS M

M

4-16-64

WATER WELL DRILLERS LOG

Warren

Date: 4/16/, 1964, Driller: Forest Drilling (Name) County ~~Scott~~

(1) Owner of Land: W A Jones (Name)

Rt 2 Box 206 Vicksburg Miss (Address)

(2) Location: ____ ¼, ____ ¼, Sec. ____ T ____ R ____

____ miles (distance) Near airport (direction), of ____ (Nearest Town)

(3) Topography: ____ (Hilly) ____ (Flat) ✓ (Level)

(4) Purpose of Well: Home (Domestic Irrigation Municipal, Industrial, Other)

Information upon completion of well:

(1) Diameter 2 inches.

(2) Total Depth 382 feet.

(3) Water Level 60 feet below top of ground.

(4) Cased to 372, Size 2"

(5) Screen: Size 2", Length 10 ft

(6) Were any formations sealed against pollution?

____ yes, X no.

If YES depth of formation ____

Why ____

Drillers Remarks: ____

Description & Color of Materials Sand, Clay, Red Clay, Shell, etc.	Thickness Feet	Depth Feet
Brown Silt	0	21
Chalky Clay		52
Blue Clay		95
Shale + Sth Lime Rock		120
Rock + Sth Shale		182
Blue Gumbo		262
Shale + Sth Lime		294
Shale + Sth Silt		307
Shale		329
Sand + Sth Shale		339
Shale		349
Fine Sand + Sth Shale		357
Shale		365
Fine Sand		382

RECEIVED APR 20 1964 MISS. BOARD OF WATER COMM.

(Use Back Side)

Well No.

Mail this copy to Board of Water Commissioners 429 Miss. St. Jack...

Warren
M
1-68

MISSISSIPPI
BOARD OF WATER COMMISSIONERS
416 North State Street
Jackson, Mississippi 39201

WATER WELL DRILLERS LOG

JAN 3, 1968 (date well completed) Big Black Drilling Co (firm name) WARREN (county well located)

LANDOWNER: Henry Board
Rt. 2 Vicksburg, Miss
(mailing address)

WELL LOCATION:
sec. 35 T 15 (N) S R 3 (E) W
5 (distance) miles South (direction) of Vicksburg (nearest town)

WELL PURPOSE: Home
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:

(1) diameter (inches) 2"
(2) total depth (feet) 184'
(3) static water level (feet) 54 (below) (above) top of ground
(4) casing Galv. (material), 184 (depth),
(size) if telescope see back.
(5) screen 10' (length), 174' (depth to top)
2" (size), Stainless Steel (material)
(6) pump 1 (HP) 8 (yield gpm)
Elec (type power)
(7) electric log NO (yes or no)
(organization running log)
(8) how well bottom plugged Back Wash Valve

DRILLERS REMARKS:

description of formations encountered	from	to
Red Clay	0	30
Blue clay	30	54
Rock wine	54	56
Hard Blue clay	56	70
Rock with Blue Clay	70	110'
Blue Shale	110	174
Fine Sand	174	179
Clean Sand about mat	179	194
Back To Shale	194	

Warren
M 16
2-13-68

MISSISSIPPI
BOARD OF WATER COMMISSIONERS CODED
416 North State Street
Jackson, Mississippi 39201

WATER WELL DRILLERS LOG CODED

FEB 13 1968 BIG BLACK DRILLING CO WARREN
date well completed — firm name — county well located

LANDOWNER: ALBERT PAXTON
HWY 61 SOUTH
VICKSBURG, MISS
(mailing address)

WELL LOCATION:
sec 37 T 15 N R 3 E
near airport
(distance) miles (direction) of (nearest town)

WELL PURPOSE: DAIRY BARN
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:

(1) diameter (inches) 4"

(2) total depth (feet) 200'

(3) static water level (feet) 58' below top of ground.

(4) casing GALV (material), 185 (depth), 4" (size) if telescope see back.

(5) screen 15 (length), 185 (depth to top), 2" (size), STAINLESS STEEL (material)

(6) pump 1 SUB. (HP) 20 GAL. (yield gpm)
ELECTRIC (type power)

(7) electric log NO (yes or no)
(organization running log)

(8) how well bottom plugged CAL. STEEL PIPE PLUG

DRILLERS REMARKS:

description of formations encountered	from	to
[redacted]	[redacted]	
	[redacted]	
RED CLAY	0	52'
BLUE CLAY	52'	74'
HARD ROCK	74'	118'
FINE SAND	118'	124'
BLUE SHALE CODED	124'	130'
FINE SAND	130'	134'
BLUE SHALE	134'	138'
MEDIUM SAND	138'	147'
BLUE SHALE	147'	185'
SAND WITH SHALLOW STREAKS OF CLAY	185'	200'

WARREN

~~M17~~

M17

3-13-75

Elog #125

MISSISSIPPI
BOARD OF WATER COMMISSIONERS
416 North State Street
Jackson, Mississippi 39201

WATER WELL DRILLERS LOG

3-13 1975 Singer Layne Central Div Warren
date well completed — firm name — county well located

LANDOWNER:
Fisher Ferry Water District
Vicksburg Miss
(mailing address)

WELL LOCATION:
sec. 42 T 15 N R 3 E

_____ miles _____ of _____
(distance) (direction) (nearest town)

WELL PURPOSE: Domestic
(home, irrigation, municipal, industrial)

WELL COMPLETION DATA:

(1) diameter (inches) 10"

(2) total depth (feet) 438'

(3) static water level (feet) 125' below above top of ground.

(4) casing Steel (material), 365' (depth),
10" (size) + 62' of 6" If telescope see back.

(5) screen 60' (length), 365' (depth to top)
6" (size), Stainless Steel WW (material)

(6) pump 25 (HP) 250 (yield gpm)
Electric (type power)

(7) electric log yes (yes or no)
Miss Geo Survey (organization running log)

(8) how well bottom plugged Valve

DRILLERS REMARKS:

description of formations encountered	from	to
Brown Clay	0	34
Blue Clay	34	160
Lime Rock	160	161
Clay	161	167
Lime Rock + Stks of Clay	167	210
Sand	210	215
Clay + Sandy Stks	215	273
Sand	273	281
Clay	281	335
Hard Shale	335	355
Sand & Clay	355	450
Shale	450	475

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

RECEIVED
AUG 06 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

August 4, 1986

Mr. Jack McCord
Mississippi Department of Natural
Resources
Bureau of Pollution Control
Industrial Wastewater Control Section
2380 Highway 80 West
Jackson, MS 39204

Dear Mr. McCord:

Enclosed is an expanded summary of our discussions of July 17th. We believe the meeting resulted in very good progress in addressing Gary's concerns and hope this narrative, with references, will clarify essentially all of the points presented in the Bureau's July 2, 1986 letter. We wish to use this summary as basis for discussion at our next meeting during the morning of August 11.

I also wish to report the analytical results obtained during most recent sampling. DNBP analyses for Well #1A on July 28th and 29th were 265 ppb and 380 ppb, respectively. Arsenic analyses (as reported verbally by the contract lab) for Well #8 on July 22nd and 29th were 20 ppb and 150 ppb, respectively. Additional sampling is planned to determine the cause of this second anomolous value

If anything develops between now and the 11th, please feel free to give me a call.

Sincerely,

John G. Hill
Environmental Engineer

DIVISION OF SOLID WASTE
REVIEWED BY _____
DATE _____
COMMENTS _____

JGH/ld

Enc.

cc - F. Ahlers

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

July 31, 1986

CERTIFIED MAIL NO. P 283 765 886

Mr. Fred Ahlers
Plant Manager
Vicksburg Chemical Corporation
P. O. Box 3
Vicksburg, Mississippi 39180

Dear Mr. Ahlers:

Re: Part B Application Denial and
Closure Plan Comments
MSD990714081

This is to notify you that the Mississippi Natural Resources Permit Board's decision to deny issuance of a hazardous waste storage permit to Vicksburg Chemical is final as of this date. Therefore, Vicksburg Chemical has 15 days from the receipt of this letter to either submit an interim status closure/post closure plan in accordance with the Mississippi Hazardous Waste Management Regulations Part 265 or to notify the Bureau, in writing, that you wish the closure and post closure plans submitted with your Part B application to be considered as your interim status closure plan.

We have completed our review of your Part B closure and post closure plans and our comments are attached. Should you choose to use these plans as stated above, they must be modified to address the attached comments and resubmitted to our office by September 1, 1986.

If you have any questions or comments, please contact Mr. Jack McCord, of my staff, at 961-5171.

Very truly yours,

Bill Barnettline

Charles H. Chisolm
Bureau Director

CHC:JBM:cm
Attachment
cc: Mr. John G. Hill, Vicksburg Chemical Corporation
Mr. Jim Scarbrough, EPA

THIS COPY FOR

FILE COPY

July 28, 1986

CERTIFIED MAIL - No. P 283 765 821

Honorable Allen T. Malone
Attorney at Law
Suite 2610, 100 North Main
Memphis, Tennessee 38103

Dear Mr. Malone:

Re: Cedar Chemical, Inc.
Warren County, Mississippi

The hearing scheduled before the Mississippi Commission on Natural Resources for Cedar Chemical, Inc., which was postponed at your request, has now been scheduled to begin at 3:00 p.m., Tuesday, August 26, 1986.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

Charles H. Chisolm
Bureau Director

CHC:JWH:cl
cc: Mr. Fred Ahlers, Cedar Chemical, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUL 22 1986

4WD-WC

RECEIVED
JUL 24 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles H. Estes, Acting Director
Division of Solid/Hazardous
Waste Management
Mississippi Department of
Natural Resources
P.O. Box 10385
2380 Highway 80 West
Jackson, Mississippi 39209

Dear Mr. Estes:

We recently received Charles Chisolm's July 9, 1986, letter regarding enforcement actions. We are in the final stages of issuing a civil referral against Vertac for LOIS violations. We will not take any additional enforcement actions until we have an opportunity to review the appropriateness of actions taken by the Commission on July 23, 1986. If we find they are appropriate (with penalties so that non-compliance costs more than compliance), we will not overfile. Please send us copies of all Commission Orders as soon as the Commission acts on them. Your cooperation in developing a RCRA enforcement program in Mississippi that takes timely and appropriate action will be appreciated.

Please let us know if we can be of assistance.

Sincerely yours,

James H Scarbrough

James H. Scarbrough, P.E., Chief
Residuals Management Branch
Waste Management Division

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

M E M O R A N D U M

TO: File

FROM: Chuck Estes

SUBJECT: Show Cause Meeting with Cedar Chemical Corporation (Formerly Vertac Chemical) July 8, 1986

DATE: July 10, 1986

Charles Chisolm, George Williamson (A.G.), John McNeal (A.G.), Gary Payne and I met with Dave Madsen, Fred Ahlers, John Hill and Alan Gradet (consultant) of Cedar Chemical Corporation.

We briefly summarized the RCRA history of the facility and cited current violations occurring at the facility. These include: inadequate closure plan and groundwater assessment and corrective action plans which are in violation of a Commission order and failure to obtain coverage for sudden and non-sudden liability insurance.

We indicated to the facility that a hearing would be held, possibly as soon as July 23, 1986, before the Commission. At the hearing, the staff will recommend a penalty for the violations and ask that the facility be placed under a compliance schedule to correct the violations.

The representatives of Cedar Chemical Corporation indicated that they needed some time to study the situation and would contact us in the near future for further discussion. Also, further discussions would be needed on the technical deficiencies of the closure plan and groundwater issue between the respective staffs.

CE:hdb

FILE COPY

July 2, 1986

Mr. John Hill
Vertac Chemical Company
P. O. Box 3
Vicksburg, Mississippi 39180

Dear Mr. Hill:

Re: Review of Groundwater Assessment

We have completed our review of your groundwater assessment submitted on January 11, 1986. Please find enclosed our comments regarding the adequacy of your assessment. Any enforcement actions or penalty may be discussed at our meeting on July 8, 1986.

If you have questions or comment, please contact us at 961-5171.

Sincerely,

Charles Estes for

Jack B. McCord
Hazardous Waste Section

JMc:cl

I. COMMENTS ON THE VERTAC GROUNDWATER ASSESSMENT REPORT

A. MONITORING WELL SYSTEM

1. The installation details and drilling logs for the following monitoring wells were not included in the assessment report:

   a. MW-1
   b. MW-2
   c. MW-3
   d. MW-4

2. The depth of screen installation of Vertac's monitoring well system is inadequate for contaminant detection relative to the aquifer's large vertical extent.

3. Vertac has not installed a sufficient number of wells to adequately define the extent of subsurface contamination.

   a. The DNBP contaminant plume associated with MW-1 and MW-9 has not been adequately defined.

   b. The arsenic contamination associated with MW-8 has not been adequately defined

   c. The pentachlorophenol contamination associated with MW-1 has not been adequately defined.

B. ASSESSMENT OF GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS

1. The areas of recharge and discharge for the shallow, confined, saturated silt and the deeper saturated sand have not been adequately defined.

2. The vertical groundwater flow direction and velocity in the shallow aquifer has not been evaluated.

3. Vertac has not characterized the sand unit in terms of the following parameters:

   a. Permeability.

   b. Hydraulic conductivity

   c. Groundwater flow direction and velocity.

4. The permeability of the Byram Member Marl has not been determined.

5. The aquifer beneath the Byram Member Marl has not been indentified.

6. The absence or presence of hydraulic interconnectivity between the shallow aquifer and the unidentified aquifer beneath the Byram Member Marl has not been demonstrated.

7. The permeability of the clay fill unit overlying the site has not been determined.

C. EVALUATION OF EXTENT OF CONTAMINATION

1. Chemical scans contained in Vertac's Groundwater Assessment Report indicate the presence of moderate concentrations of 2-sec-butyl-4, 6-dinitrophenol (DNBP), as well as significant concentrations of arsenic and pentachlorophenol.

2. As noted earlier, inherent inadequacies in the design and installation of Vertac's monitoring system preclude rigorous contaminant detection and plume delineation.

3. Vertac has made an inadequate assessment of the areal and vertical extent of DNBP, arsenic and pentachlorophenol contamination.

4. The physical and chemical properties of the contaminants have not been discussed.

5. The aqueous and non-aqueous mobility of the contaminants has not been discussed.

6. The contaminant migration pathways have not been discussed.

7. Despite the low solubility constants of DNBP and pentachlorophenol, Vertac has failed to implement a sampling program capable of detecting variable density non-aqueous phase liquids on contaminated wells.

8. The quality of groundwater discharging into Stout's Bayou and Hennessey's Bayou has not been determined.

D. GEOLOGY

1. Vertac has not submitted an adquate description of the depositional environment of the following horizons:

   a. The loess unit (account for the presence of shells and wood chips reported on the drilling logs).

   b. The sand subunit located between the loess and the Bryam Member Marl.

2. Vertac has not characterized the Byram Member Marl in terms of the following parameters:

   a. Structural competency.

   b. Dissolution Features.

   c. Mineralogy.

3. Vertac has not submitted a detailed site topography map of the clay fill material overlying the loess unit.

4. Vertac has not characterized the inactive disposal site or the interim status impoundment in terms of the following parameters:

   a. The vertical extent of these sites. (Based on geologic correlations and plant records, does either the inactive disposal site or the interim status impoundment extend into the saturated zone?)

   b. Seepage analysis and site water balance for the interim status impoundment.

   c. A description of possible residue contained in of metal drums buried in the inactive disposal site.

5. The geologic cross sections contained in Vertac's groundwater assessment report are inadequate in design, insufficient in number and should contain the following data:

   a. Contact zones between all geologic units and subunits.
   b. Lithology.
   c. Geologic correlations between wells.
   d. Depth to saturated zone.
   e. Piezometric surface.
   f. Screened interval.
   g. Topographic features.

II. RECOMMENDATIONS

A. MONITORING WELL SYSTEM

1. Submit the installation details and drillings logs for all monitoring wells.

2. Design and install a monitoring well and boring system capable of delineating the areal and vertical extent of contamination in the saturated zone.

3. Design and install a clustered piezometer system capable of determining vertical groundwater flow direction beneath the facility.

B. GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS

1. Define the recharge/discharge areas for the loess and sand units.

2. Submit cross sections depicting the vertical groundwater flow direction in the loess unit.

3. Determine the vertical groundwater velocity in the loess unit.

4. Determine the horizontal groundwater flow direction and velocity in the sand unit.

5. Identify the aquifer beneath the Byram Member Marl and demonstrate a lack of hydraulic interconnectivity between the upper and lower aquifers.

6. Determine the permeability of the clay fill unit.

C. EXTENT OF CONTAMINATION

1. Delineate the areal and vertical extent of contamination in the saturated zone. Determine migration rates for the contaminants.

2. Submit a table that lists the physical and chemical properties of the contaminants.

3. Submit a narrative that relates the physical and chemical properties of the contaminants to their aqueous and non-aqueous mobility and possible migration pathways.

4. Design and implement a sample and analysis plan capable of detecting variable density non-aqueous phase liquids in wells that show contamination.

5. Evaluate the impact of groundwater discharge on the quality of surface water in Stout and Hennessey Bayou.

6. Sample existing piezometers for contaminants.

D. GEOLOGY

1. Submit an environment of deposition analysis for the loess and sand units.

2. Characterize the Byram Member Marl in terms of structural competency, dissolution and mineralogy.

3. Submit a detailed topographic map of the site.

4. Implement and submit the results of a seepage analysis and site water balance study for the interim status impoundment.

5. Resubmit geologic cross sections A-A' and B-B'; include all pertinent geologic and hydrologic data.

6. Construct and submit two additional geologic cross sections. The first section should cut across the inactive disposal site and the second should cut across the interim status surface impoundment. Both cross sections should be normal to crosssection A-A' and depict all pertinent geologic and hydrologic data.

E. ADDITIONAL INFORMATION

1. Submit a narrative that discusses the site history. How long has the plant been in operation? How long has the interim status impoundment been in existence? What has been disposed of in the inactive disposal site?

2. Submit a list of references used in writing the groundwater assessment. Incorporate reference citations into the report.

Vertac Environmental coordinator → John Hill
Consultant → Alan Gradet

I. COMMENTS ON THE VERTAC GROUNDWATER ASSESSMENT REPORT

A. MONITORING WELL SYSTEM

1. The installation details and drilling logs for the following monitoring wells were not included in the assessment report: [redacted]

   a. MW-1
   b. MW-2
   c. MW-3
   d. MW-4

   Found logs but still no installation details or screening interval

2. The depth of screen installation of Vertac's monitoring well system is inadequate for contaminant detection relative to the aquifer's large vertical extent. 2-15 TEGD 6-15

   Pg 4-14 → 10. a. 10. b.

   The EPA Technical Enforcement Guidance Document states the O/O should have more than 1 well/location of facilities with impermissible contaminants

3. Vertac has not installed a sufficient number of wells to adequately define the extent of subsurface contamination. [redacted] 6-15

   Pg 4-11 → 5. b. 5. e.
   Pg 4-14 → 10. a. 10. b.

   a. The DNBP contaminant plume associated with MW-1 and MW-9 has not been adequately defined. 7/85 → 1130 3/86 → 940 10/85 → 370 12/85 → 600 ppb 12/85 → 125

   b. The arsenic contamination associated with MW-8 has not been adequately defined 80 → 7/85 74 → 10/85

   c. The pentachlorophenol contamination associated with MW-1 has not been adequately defined. 100 → 10/85 34 → 7/85

B. ASSESSMENT OF GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS TEGD Pg A1-2 → K-1

1. The areas of recharge and discharge for the shallow, confined, saturated silt and the deeper saturated sand have not been adequately defined. ~~Interested in evaluation of seasonal variations of groundwater flow as well as vertical [illegible] relative to discharge.~~

   Pg 4-9 → 2. c.

2. The vertical groundwater flow direction and velocity in the [redacted] shallow aquifer has not been evaluated. ~~TEGD~~

   Pg 4-9 → 2. c.

3. Vertac has not characterized the sand unit in terms of the following parameters:

   Pg 4-11 → 5. e.

   a. Permeability. - 1-30
   b. Hydraulic conductivity → TEGD 1-30
   c. Groundwater flow direction and velocity.

4. The permeability of the Byram Member Marl has not been determined. → TEGD 1-8

   Pg 4-9 → 1. a.

5. The aquifer beneath the Byram Member Marl has not been [redacted] indentified.

   Pg 4-11 → 5. f.

6. The absence or presence of hydraulic interconnectivity between the shallow aquifer and the unidentified aquifer beneath the Byram Member Marl has not been demonstrated. [redacted]

[redacted]

7. The permeability of the clay fill unit overlying the site has not been determined.

C. EVALUATION OF EXTENT OF CONTAMINATION [redacted]

1. Chemical scans contained in Vertac's Groundwater Assessment Report indicate the presence of moderate concentrations of 2-sec-butyl-4, 6-dinitrophenol (DNBP), as well as significant concentrations of arsenic and pentachlorophenol.

Pg. 4-11 → 5-b
Pg. 4-14 → 10.-a. 10.-b.

2. As noted earlier, inherent inadequacies in the design and installation of Vertac's monitoring system preclude rigorous contaminant detection and plume delineation.

3. Vertac has made an inadequate assessment of the areal and vertical extent of DNBP, arsenic and pentachlorophenol contamination.

6-15 and on to 6-17
2-15 TEGD

Pg 4-11 → 5.b.
Pg 4-13 → 7. J.

4. The physical and chemical properties of the contaminants have not been discussed. Rate [illegible] TEGD 6-14

5. The aqueous and non-aqueous mobility of the contaminants has not been discussed. Rate of migration TEGD 6-14

4-11 → 5.e.

6. The contaminant migration pathways have not been discussed. [redacted]

7. Despite the low solubility constants of DNBP (→ 78,000 ppb) and pentachlorophenol, Vertac has failed to implement a sampling program capable of detecting variable density non-aqueous phase liquids on contaminated wells. [redacted]

14,000 ppb
1.982 SG

IN Part 265 ASSESSMENT MONITORING and in defining the Appendix VIII make up of a plume the O/O must use appropriate sampling methodologies 265.93(d)(4)

8. The quality of groundwater discharging into Stout's Bayou and Hennessey's Bayou has not been determined. ~~TEGD~~
→ 265.90(a) → O/O must implement a program capable of determining the facilities impact on the quality of groundwater in the uppermost aquifer underlying the facility.

D. GEOLOGY

1. Vertac has not submitted an adquate description of the depositional environment of the following horizons: [redacted]

a. The loess unit (account for the presence of shell and wood chips reported on the drilling logs).

b. The sand subunit located between the loess and the Bryam Member Marl.

Pg 4-9 → 1.a.
Pg 4-11 → 5.f.

2. Vertac has not characterized the Byram Member Marl in terms of the following parameters:

a. Structural competen[redacted]

b. Dissolution Featu[redacted]

c. Minera[redacted]

Bottom Pg 1-17
Top Pg 1-20 TEGD

3. Vertac has not submitted a detailed site topography map of the clay fill material overlying the loess unit.

4. Vertac has not characterized the inactive disposal site or the interim status impoundment in terms of the following parameters:

265.90(a)
the O/O must implement a ground-water monitoring program capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility

a. The vertical extent of these sites. (Based on geologic correlations and plant records, does either the inactive disposal site or the interim status impoundment extend into the saturated zone?)

b. Seepage analysis and site water balance for the interim status impoundment.

c. A description of possible residue contained in of metal drums buried in the inactive disposal site.

[redacted]
A minimum of 4 geologic cross sections should be presented by the O/O.

5. The geologic cross sections contained in Vertac's groundwater assessment report are inadequate in design, insufficient in number and should contain the following data:

a. Contact zones between all geologic units and subunits.
b. Lithology.
c. Geologic correlations between wells.
d. Depth to saturated zone.
e. Piezometric surface.
f. Screened interval.
g. Topographic features.

II. RECOMMENDATIONS

A. MONITORING WELL SYSTEM

[redacted]bmit the installation details and drillings logs for all monitoring wells.
Pg 1 — A.1.

[redacted] Design and install a monitoring well and boring system capable of delineating the areal and vertical extent of contamination in the saturated zone.
Pg 1 → A.2.
Pg 2 → A.3. → especially

[redacted] Design and install a clustered piezometer system capable of determining vertical groundwater flow direction beneath the facility.
Pg 3 → B.2.

B. GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS

Pg 3 → B.1.
TEGD Pg A1-2

1. Define the recharge/discharge areas for the loess and sand units.

[redacted] Submit cross sections depicting the ~~vertical groundwater~~ flow direction in the loess unit.
Pg 3 → B.2.

[redacted] Determine the vertical groundwater velocity in the loess unit.
Pg 3 → B.2.

Pg 4 → B.3.

[redacted] etermine the horizontal groundwater flow direction and velocity in the sand unit.

Pg 4 B.5 + B.6 TEGD Pg 1-33

5. Identify the aquifer beneath the Byram Member Marl and demonstrate a lack of hydraulic interconnectivity between the upper and lower aquifers.

Pg 5 B.7 TEGD Pg 1-9

6. Determine the permeability of the clay fill unit.

Pg 5 C.1, C.2, C.3 TEGD Pg 6-1, Pg 6-15 + 6-17

C. EXTENT OF CONTAMINATION

1. Delineate the areal and vertical extent of contamination in the saturated zone. Determine migration rates for the contaminants.

Pg 6 C.4, C.5 + C.6 TEGD Pg 6-14

2. Submit a table that lists the physical and chemical properties of the contaminants.

Pg 6 C.4, C.5, C.6 TEGD Pg 6-14, Pg 6-2

3. Submit a narrative that relates the physical and chemical properties of the contaminants to their aqueous and non-aqueous mobility and possible migration pathways.

Pg 6 C.7. TEGD Pg 4-3

4. Design and implement a sample and analysis plan capable of detecting variable density non-aqueous phase liquids in wells that show contamination.

Pg 7 C.8. The o/o must implement a Program capable

5. Evaluate the impact of groundwater discharge on the quality of surface water in Stout and Hennessey Bayou.

Pg 5 C.1. ~~TEGD~~ 6-14

6. Sample existing piezometers for contaminants. 6-14 TEGD

D. GEOLOGY

Pg 7 D.1. TEGD 1-8

1. Submit an environment of deposition analysis for the loess and sand units.

Pg 7 D.2. TEGD 1-8, 1-9

2. Characterize the Byram Member Marl in terms of structural competency, dissolution and mineralogy.

Pg 8 D.3. TEGD Pg 1-17, 1-20

3. Submit a detailed topographic map of the site.

Pg 8 D.4. The o/o must implement a Program capable of ...

4. Implement and submit the results of a seepage analysis and site water balance study for the interim status impoundment.

Pg 8 TEGD Pg 1-17 D.5.

5. Resubmit geologic cross sections A-A' and B-B'; include all pertinent geologic and hydrologic data.

6. Construct and submit two additional geologic cross sections. The first section should cut across the inactive disposal site and the second should cut across the interim status surface impoundment. Both cross sections should be normal to crosssection A-A' and depict all pertinent geologic and hydrologic data.

E. ADDITIONAL INFORMATION

TEGD
Pg 6-14
Topo/Geo

1. Submit a narrative that discusses the site history. How long has the plant been in operation? How long has the interim status impoundment been in existence? What has been disposed of in the inactive disposal site?

2. Submit a list of references used in writing the groundwater assessment. Incorporate reference citations into the report.

Pg 6
C.4. only
(Read 1st sentence)

I. COMMENTS ON THE VERTAC GROUNDWATER ASSESSMENT REPORT

A. MONITORING WELL SYSTEM → will make copy

agreed

1. The installation details and drilling logs for the following monitoring wells were not included in the assessment report:

   a. MW-1
   b. MW-2
   c. MW-3
   d. MW-4

2. The depth of screen installation of Vertac's monitoring well system is inadequate for contaminant detection relative to the aquifer's large vertical extent.

3. Vertac has not installed a sufficient number of wells to adequately define the extent of subsurface contamination.

   immediately being addressed.

   a. The DNBP contaminant plume associated with MW-1 and MW-9 has not been adequately defined.

   b. The arsenic contamination associated with MW-8 has not been adequately defined

   Resolved

   c. The pentachlorophenol contamination associated with MW-1 has not been adequately defined.

Call Joe Nugent → Trivalent, organics, non organics,

B. ASSESSMENT OF GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS

appears resolved

1. The areas of recharge and discharge for the shallow, confined, saturated silt and the deeper saturated sand have not been adequately defined.

literature

2. The vertical groundwater flow direction and velocity in the shallow aquifer has not been evaluated.

3. Vertac has not characterized the sand unit in terms of the following parameters:

   a. Permeability.

   b. Hydraulic conductivity

   c. Groundwater flow direction and velocity.

literature

4. The permeability of the Byram Member Marl has not been determined.

5. The aquifer beneath the Byram Member Marl has not been indentified.

6. The absence or presence of hydraulic interconnectivity between the shallow aquifer and the unidentified aquifer beneath the Byram Member Marl has not been demonstrated.

additional meeting

7. ~~The permeability of the clay fill unit overlying the site has not been determined.~~

C. EVALUATION OF EXTENT OF CONTAMINATION

1. Chemical scans contained in Vertac's Groundwater Assessment Report indicate the presence of moderate concentrations of 2-sec-butyl-4, 6-dinitrophenol (DNBP), as well as significant concentrations of arsenic and pentachlorophenol.

2. As noted earlier, inherent inadequacies in the design and installation of Vertac's monitoring system preclude rigorous contaminant detection and plume delineation.

3. Vertac has made an inadequate assessment of the areal and vertical extent of DNBP, arsenic and pentachlorophenol contamination.

4. The physical and chemical properties of the contaminants have not been discussed.

5. The aqueous and non-aqueous mobility of the contaminants has not been discussed.

6. The contaminant migration pathways have not been discussed.

7. Despite the low solubility constants of DNBP and pentachlorophenol, Vertac has failed to implement a sampling program capable of detecting variable density non-aqueous phase liquids on contaminated wells.

8. The quality of groundwater discharging into Stout's Bayou and Hennessey's Bayou has not been determined.

D. GEOLOGY

1. Vertac has not submitted an adquate description of the depositional environment of the following horizons:

   a. The loess unit (account for the presence of shells and wood chips reported on the drilling logs).

   b. The sand subunit located between the loess and the Bryam Member Marl.

2. Vertac has not characterized the Byram Member Marl in terms of the following parameters:

   a. Structural competency.

   b. Dissolution Features.

   c. Mineralogy.

3. Vertac has not submitted a detailed site topography map of the clay fill material overlying the loess unit.

4. Vertac has not characterized the inactive disposal site or the interim status impoundment in terms of the following parameters:

will look

a. The vertical extent of these sites. (Based on geologic correlations and plant records, does either the inactive disposal site or the interim status impoundment extend into the saturated zone?)

Can't do.

check

b. ~~Seepage analysis and site water balance for the interim status impoundment.~~

Part B

c. A description of possible residue contained in of metal drums buried in the inactive disposal site.

5. The geologic cross sections contained in Vertac's groundwater assessment report are inadequate in design, insufficient in number and should contain the following data:

a. Contact zones between all geologic units and subunits.
b. Lithology.
c. Geologic correlations between wells.
d. Depth to saturated zone.
e. Piezometric surface.
f. Screened interval.
g. Topographic features.

II. RECOMMENDATIONS

A. MONITORING WELL SYSTEM

1. Submit the installation details and drillings logs for all monitoring wells.

2. Design and install a monitoring well and boring system capable of delineating the areal and vertical extent of contamination in the saturated zone.

3. Design and install a clustered piezometer system capable of determining vertical groundwater flow direction beneath the facility.

B. GROUNDWATER FLOW AND AQUIFER CHARACTERISTICS

1. Define the recharge/discharge areas for the loess and sand units.

2. Submit cross sections depicting the vertical groundwater flow direction in the loess unit.

3. Determine the vertical groundwater velocity in the loess unit.

4. Determine the horizontal groundwater flow direction and velocity in the sand unit.

5. Identify the aquifer beneath the Byram Member Marl and demonstrate a lack of hydraulic interconnectivity between the upper and lower aquifers.

6. Determine the permeability of the clay fill unit.

C. EXTENT OF CONTAMINATION

1. Delineate the areal and vertical extent of contamination in the saturated zone. Determine migration rates for the contaminants.

2. Submit a table that lists the physical and chemical properties of the contaminants.

3. Submit a narrative that relates the physical and chemical properties of the contaminants to their aqueous and non-aqueous mobility and possible migration pathways.

4. Design and implement a sample and analysis plan capable of detecting variable density non-aqueous phase liquids in wells that show contamination.

5. Evaluate the impact of groundwater discharge on the quality of surface water in Stout and Hennessey Bayou.

6. Sample existing piezometers for contaminants.

D. GEOLOGY

1. Submit an environment of deposition analysis for the loess and sand units.

2. Characterize the Byram Member Marl in terms of structural competency, dissolution and mineralogy.

3. Submit a detailed topographic map of the site.

4. Implement and submit the results of a seepage analysis and site water balance study for the interim status impoundment.

5. Resubmit geologic cross sections A-A' and B-B'; include all pertinent geologic and hydrologic data.

6. Construct and submit two additional geologic cross sections. The first section should cut across the inactive disposal site and the second should cut across the interim status surface impoundment. Both cross sections should be normal to crosssection A-A' and depict all pertinent geologic and hydrologic data.

E. ADDITIONAL INFORMATION

1. Submit a narrative that discusses the site history. How long has the plant been in operation? How long has the interim status impoundment been in existence? What has been disposed of in the inactive disposal site?

2. Submit a list of references used in writing the groundwater assessment. Incorporate reference citations into the report.

$V = \frac{K}{n}\frac{dh}{dl}$ $T = Kb$ or $K = \frac{[illegible]}{[illegible]}$

Darcy Law $Q = KA\frac{dh}{dl}$

Problems

① Rate and extent of [illegible]ntaminant migration.
② evaluation of possible migratory pathways.
③ evaluation of aquifer interconnectivity.

Pg 1

I. COMMENTS

A. Monitoring Well System

A.1. TEGD pg. 6-2.

a. The O/O should include all information on well design and construction in the assessment report.

A.2. EPA guidance on depth of screen installation states:

Pg 6-17 1) Sampling depths should be sufficient to profile the vertical distribution of hazardous waste constituents at the site.

Pg 6-17 2) Vertical sampling should identify the full extent of vertical constituent migration.

Vertac has not identified the full extent of vertical contamination.

Pg 2-15 3) The O/O should screen monitoring wells in the stratigraphic horizons that represent potential contaminant pathways.

4) EPA guidance states that wells should be screened at depths that intersect preferential flow paths.

Pg 2-16 Vertac screened their Monitoring wells in low permeability loess material rather than high permeability sand and gravel but gave no justification for this choice -

A. 3. Concerning the assessment of the rate and extent of contamination, EPA guidance states

1) Once the owner/operator has detected contaminant leakage, he must determine the vertical and horizontal concentration profiles of all contamination escaping from the waste management areas. In addition, the owner/operator must establish the rate and extent of contaminant migration.

Pg 6-1

2. The program of sampling undertaken during the assessment should clearly identify the full extent of hazardous waste constituent migration and establish the concentration of individual constituents throughout the plume.

6-15

3. In the initial phase of the assessment program the owner/operator's well installation/sampling should concentrate on bounding those areas that have been contaminated by the facility. A minimum of seven well clusters should be installed to define the extent of contamination and concentration of contaminants in the horizontal plane.

6-15

I.B.

B.1. The Technical Enforcement Guidance document for RCRA Ground water monitoring and assessment reports states that the owner/operator should obtain a regional hydrogeologic map. It further states that the map should indicate all major areas of recharge and discharge as well as indicating the regional ground water flow direction.

Pg A1-2, J&K

B.2. EPA guidance states:

1) The o/o must implement a program that accurately and directly assesses the vertical components of ground water flow.

1-22

2. In order implement a direct assessment of vertical groundwater flow, the o/o should utilize closely spaced clusters of piezometers.

Pg 1-23

3. Piezometer measurements should be determined along a minimum of two vertical profiles across the site. These profiles should be cross sections roughly parallel to the direction of groundwater flow indicated by the potentiometric surface.

Pg 1-26

B. 3. EPA guidance states: ~~that~~ in addition to defining the direction of ground water flow in the vertical and horizontal direction, the o/o must identify areas of high and low hydraulic conductivity within each formation

(1-30)

B. 4. EPA guidance on the permeability of the confining unit states: "The o/o should prove that the confining unit is of sufficient impermeability to prevent the passage of contaminants to saturated, stratigraphically lower units.

(1-34)

Both B. 5 & B. 6. EPA technical guidance on aquifer interconnectivity states: there should be no interconnection between the uppermost aquifer and lower aquifers. This determination must be based on pumping tests. Furthermore, in all cases, the obligation to assess any hydraulic connections and the proper definition of the uppermost aquifer rests with the owner/operator. Also, EPA guidance states the o/o should drill enough borings to establish the confining layer extends laterally across the entire site, is of sufficient thickness, and is sufficiently impermeable to impede the migration of contaminants to any stratigraphically lower, water bearing units.

(1-33)

(1-34)

(1-8)

EPA Guidance states:

Pg 1-9

B. 7. The O/O should provide laboratory analysis of each geologic unit and soil zone. These analysis should contain the intrinsic permeability and variation of each soil zone and geologic unit in the unsaturated zone.

Pg 6-1

C. 1. Once the O/O has detected contaminant leakage through his detection monitoring efforts, he must determine the vertical and horizontal concentration profiles of all hazardous waste constituents in the plumes escaping from the waste management areas.

Both 2 & 3

6-15

C. 2. In the initial phase of the assessment program the O/O's well installation plan should concentrate on bounding those areas that have been contaminated by the facility. A minimum of seven well clusters should be installed to define the extent of contamination and concentration of contaminants in the horizontal plane. Such a network, with a minimum of seven wells, will thoroughly define the horizontal boundaries of the plume, and will identify and quantify contaminants.

Page 6-14

C. 4. and 5. and 6.

If the hydrogeologic site characterization does not include all the information necessary to characterize the rate of contaminant movement, the o/o should obtain this additional information for the assessment phase. Examples of the additional information needed to determine the rate of contaminant movement include: the mineralogy of the materials in the migration pathway; ion exchange capacity of the materials and organic carbon content. This type of information will help define the transport mechanisms of contaminants at the site. Futhermore, the o/o's assessment report should contain a narrative that discusses and identifies all potential contaminant pathways.

Pg 6-2

G. A. Gerhardt, 1984 Vol. 4 #2 of Groundwater Monitor R.
J. F. Villaume, 1985 Vol. 5 # 2 of " " "
Investigations of sites contaminated with Dense non-aqueous Phase Liquids.

C. 7. If the o/o manages immiscible contaminants at his facility, then his sample and analysis plan should include provision for detecting variable density non aqueous phase liquids. The sample and analysis plan should specify the device to be used for detection as well as the procedures to be used.

Page H-3

265.90(a) C8. The o/o must implement a program capable of determining the facilities impact on the quality of groundwater in the uppermost aquifer underlying the facility.

D. 1. Logs should have been prepared and submitted which detail a gross structural interpretation of each geologic unit and structural features crossing geologic stratum bioturbation. Examples include features such as fractures, solution channels and buried stream channels, including, when applicable, identification of depositional materials.

By 1-8

D. 2. The o/o should provide logs which detail a gross structural interpretation of each geologic unit that includes fractures, solution channels and buried stream channels. The o/o should also have provided laboratory analysis of each geologic unit. This analysis should have included information concerning the mineralogy and mineralogic variation of each geologic unit, as well as a petrologic analysis capable of determining the existence of microstructures that may effect or indicate fluid flow.

Page 1-8 and 1-9

D.3. An O/O should have provided a surface topographic map and aerial photograph of the site. The topographic map should have been constructed by a licensed surveyor and should provide contours at a maximum 2-foot contour

Pg 1-17 and 1-20

D.4. The O/O must implement a ground water monitoring program capable of determining the facilities impact on the quality of ground water in the uppermost aquifer underlying the facility.

265.90(a)

Page 1-17

D.5. A minimum of 4 geologic cross sections should be submitted by the O/O. These cross sections should adequately depict major geologic or structural trends and reflect geologic/structural features in relation to ground water flow. On each cross section, the O/O should have identified the types and characteristics of the geologic materials present, the contact zones between different geologic materials, zones of high permeability or fracture, the location of each borehole, depth of termination, the screen location, and depth to the zone of saturation.

MW1 10'-30'

		elevation
MW1-	83'-93'	111'
MW11-	60'-70'	101'

FILE COPY

November 14, 1985

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor, 5100 Poplar
Memphis, Tennessee 38111

Mr. John G. Hill
Vertac Chemical Corporation
P. O. Box 3
Vicksburg, Mississippi 39180

Gentlemen:

Re: Part B Application

In a recent review of portions of your RCRA Part B Permit Application we found several deficiencies that must be addressed, and have the following comments and requests for additional information:

Closure and Post-Closure Plan

1. The Closure Plan does not state to what levels the equipment used in closure will be decontaminated. It is also necessary to submit the analysis procedures that will be used to demonstrate that the decontamination levels have been reached.

2. The Closure Plan must specify the sampling and analysis techniques for the samples taken from the sediment, base, and sidewalls of the ponds prior to the start of closure activities.

3. Equipment associated with the operation of the impoundment such as discharge and inlet pipes, pumps, and hoses are to be decontaminated or disposed of. If the equipment is to be decontaminated and reused the method of decontamination must be specified along with the method of demonstrating that decontamination is successful.

4. The post-closure plan lacks the required maintenance and inspection procedures and schedules for the groundwater monitoring system. Frequency of inspections should be stated.

5. The system of drain pipes and slide gates used to isolate the site during a 100 year flood must be inspected regularly.

6. The name, address, and phone number of the person responsible for maintaining and updating of the post-closure plan both prior to, and during post-closure must be included.

7. In accordance with MHWR 264.119, the survey plat submitted to local land use authority and the EPA Regional Administrator must be prepared and certified by a professional land surveyor. In addition, the locations and dimensions of the surface impoundment must be with respect to permanent surveyed benchmarks. The plat must also contain a prominently displayed notice stating the owner or operator's obligation to restrict disturbance of the site as specified in MHWR 264.117(c).

8. The notation on the deed must include notice that use of the land is restricted to activities as specified in MHWR 264.117(c). The notation must address the requirements stated in MHWR 264.119 regarding notification of the local land use authority.

9. The post-closure cost estimate must include provisions for administrative costs, inspection costs, and hourly labor costs.

10. The application lacks certificates of liability insurance for both sudden and non-sudden accidental occurrences.

11. The application must include certification as specified in MHWR 270.11 signed by a responsible corporate officer.

Security, Contingency Plan and Personnel Training

1. The following changes of inspection schedules are necessary:

   a. First aid equipment to be inspected weekly.
   b. Emergency horns to be tested monthly.
   c. Protective clothing needs to be inspected monthly.
   d. The dike surrounding the impoundment should be inspected for deterioration after storms.

2. The application must include a statement that incompatible wastes and materials are not stored in the same surface impoundment.

3. The list of emergency equipment, communication and alarm systems, and decontamination equipment must include a brief outline of the capabilities of each piece of equipment.

4. A statement authorizing the designated emergency coordinators to commit the necessary resources to implement the contingency plan must be included.

5. The hazardous waste training program must document that the program is directed by a person trained in hazardous waste management.

The preceding changes should be made and submitted to this office no later than January 10, 1986.

In addition, the following schedule must be adhered to in complying with groundwater corrective action requirements as specified in MHWR Parts 264 and 270.

1. January 10, 1986 - Submit a report to this office that satisfies the following requirements:

   a. Identifies the source of contamination.

   b. Identifies the extent of contamination including location of the plume and contamination levels throughout the plume.

   c. Characterizes the aquifer.

2. May 16, 1986 - Submit a draft Groundwater Corrective Action Plan to this office for approval.

3. June 16, 1986 - Submit the finalized Groundwater Corrective Action Plan and begin its implementation.

On November 20, 1985, the staff of the Bureau of Pollution Control will recommend to the Mississippi Commission on Natural Resources that the compliance dates mentionedi in the preceding letter be incorporated into a Commission Order.

If you have any questions or comments regarding these matters, please contact us at 961-5171.

Sincerely,

Jack McMillan, Director
Division of Solid Waste Management

JBM:els

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

November 7, 1985

RECEIVED
1 3 1985
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. James H. Scarbrough, P.E.
Chief, Residuals Management Branch
Waste Management Division
U. S. EPA
345 Courtland Street, N.E.
Atlanta, GA 30365

Mr. Jack M. McMillan
Director, Division of Solid Hazardous
Waste Management
Mississippi Department of Natural Resources
P. O. Box 10385
Jackson, MS 39209

RE: Certification: EPA I.D. Number MSD0990714081; Surface Impoundment for Storage of Rainwater Prior to Discharge of Rainwater Through Activated Carbon to the Mississippi River Under NPDES Permit Number MS0027995

Gentlemen:

We certify that the referenced surface impoundment is in compliance with:

1. all applicable ground-water monitoring requirements.

2. the closure/post closure trust fund provisions of financial responsibility requirements.

3. requirements for submission of a Part B operating permit application.

Vertac has comprehensive general liability (CGL) insurance coverage, including umbrella coverage, totaling $11,000,000. Each policy includes a so called "Pollution Exclusion" endorsement. We understand that such exclusions are uniformly included in CGL policies currently available to chemical manufacturers. It is not readily apparant to us that the pollution exclusion prevents certification of compliance with RCRA insurance requirements. We are advised by legal counsel that the majority of court cases involving the scope of such exclusions have found coverage for what might appear to be injuries and damages caused by "pollution" incidents.

Your letter of November 1, 1985 requests additional information. The additional information is provided:

1. The referenced surface impoundment or pond is located on attached sketches a(19)I, a(19)II, a(19)III and a(19)IV.

2. The referenced surface impoundment or pond is the unit of interest.

3. A closure plan for the referenced surface impoundment was submitted on June 18, 1985 as part of our RCRA Part B permit application.

4. a. The referenced surface impoundment or pond was denoted a RCRA surface impoundment by virtue of its general use as a secondary spill containment structure. Spills of the commercial pesticide dinitrobutylphenol could flow to the pond. During a typical day there were no spills; therefore, we have no information on the average rate of spills into the pond.

b. As of November 8, 1985 the surface impoundment will not receive hazardous waste.

c. There will be no hazardous waste placed in the unit between November 8, 1985 and December 31, 1985.

d. Any spills of the commercial pesticide are to be localized at the point of spill, placed or pumped into appropriate containers or containment vessels and disposed at an appropriately permitted hazardous waste facility.

5. The spills previously noted will be stored on-site for less then 90 days.

i. the type of storage will for now be drums or vessels

ii there is none presently in storage.

iii the rate of generation is unknown, but expected to be very small.

A. The waste will be shipped to off-site facilities, including:

1. Lamberton Chemical Resources in Oklahoma.

2. Gibraltar Chemical Resources in Texas.

3. Rollins in Louisiana.

or treated on-site in our above ground totally contained activated carbon treatment system.

B. If hazardous waste is placed in the surface impoundment a report will be submitted within 5 days to the EPA. The report will include:

1. date of spillage

2. amount of spillage

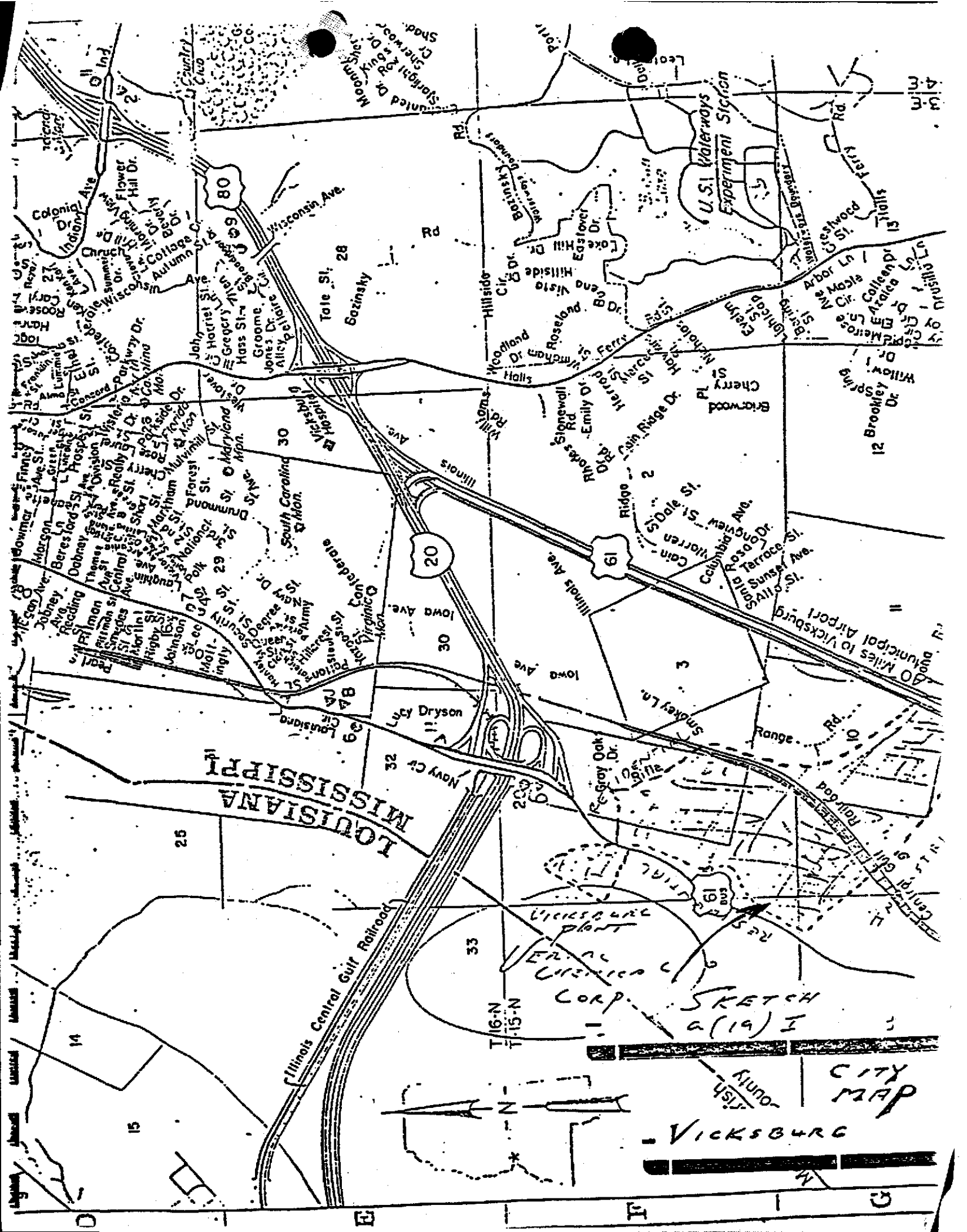
3. circumstances of the event.

Very truly yours,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: F. L. Ahlers
C. P. Bomar
J. C. Bumpers
R. A. Guidi
J. G. Hill
A. T. Malone


U.S. Waterways Experiment Station
Wisconsin Ave.
Colonial Ave
Indiana Ave
Flower Hill Dr.
Chuch
Cottage Ct.
Autumn St.
Wisconsin Ave
Rd
Tale St.
Bazinsky
Hillside Cir.
Lake Hill Dr.
Eastover Dr.
Hillside
Boinsky
Hills Ferry Rd
Crestwood St.
Arbor Ln
Macla Cir.
Colleen Dr.
Arabia Ln
Dr
Hills
Woodland Dr
Roseland Dr
Hollis
Ferry
Evelyn St.
Brooklyn St.
Spring Dr
Willow Dr
Brookley Dr.
Briarwood
Cherry St
Stonewall Rd
Emily Dr
Rhodes Dr
Old Main Ridge Dr.
Ridge
Dale St.
Columbia Ave.
Rosa Dr.
Terrace St.
Sunset Ave.
Alto St.
Illinois Ave
Iowa Ave
Smokey Ln.
Range Rd.
Gray Oak Dr.
Railroad
Central Gulf
Lucy Dryson
Navy Cir
Louisiana
Mississippi
Illinois Central Gulf Railroad
Vicksburg Plant
Corp.
Sketch
a(19) I
City Map
Vicksburg
Warren County
T16N
T15N
Colleen Dr
Arabia Ln
Elm Ln
Meriose Ln
Macla Cir
Arbor Ln
Crestwood St
Hills Ferry Rd
Brookley Dr
Willow Dr
Spring Dr
Brookley Dr
Briarwood
Cherry St
Stonewall Rd
Emily Dr
Rhodes Dr
Old Main Ridge Dr
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Sketch
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Terrace St
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Louisiana
Mississippi
Illinois Central Gulf Railroad
Vicksburg Plant
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Mississippi
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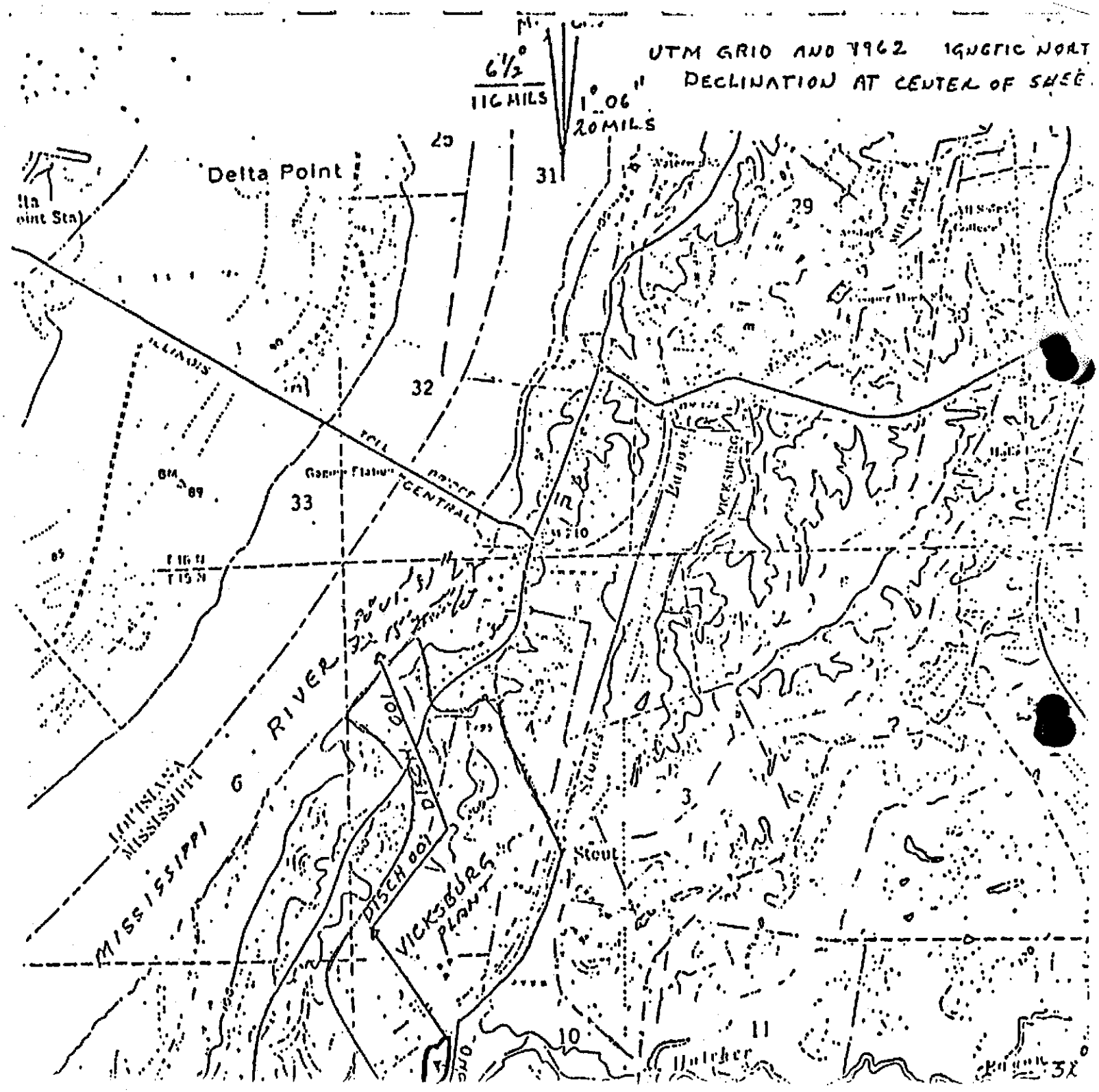
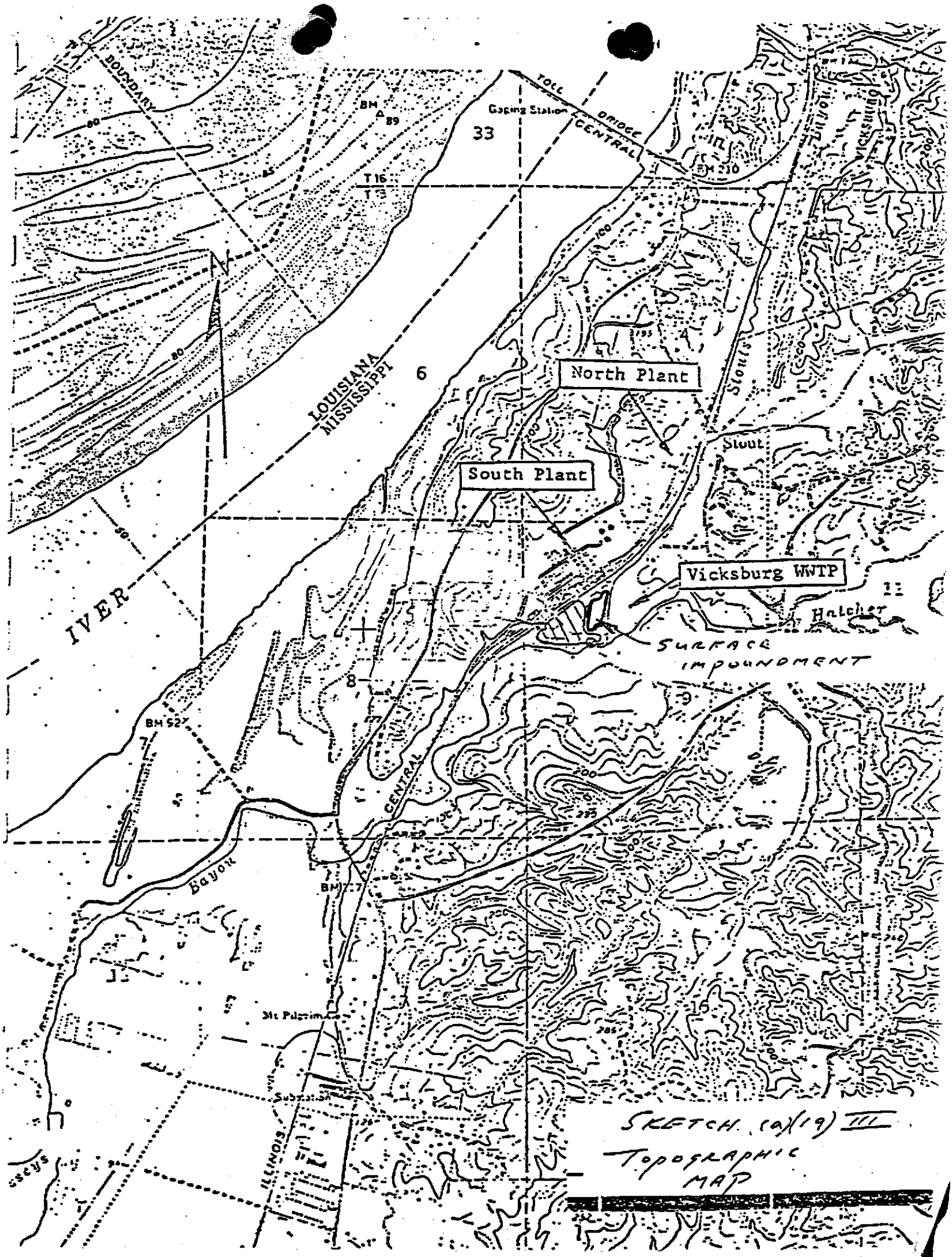
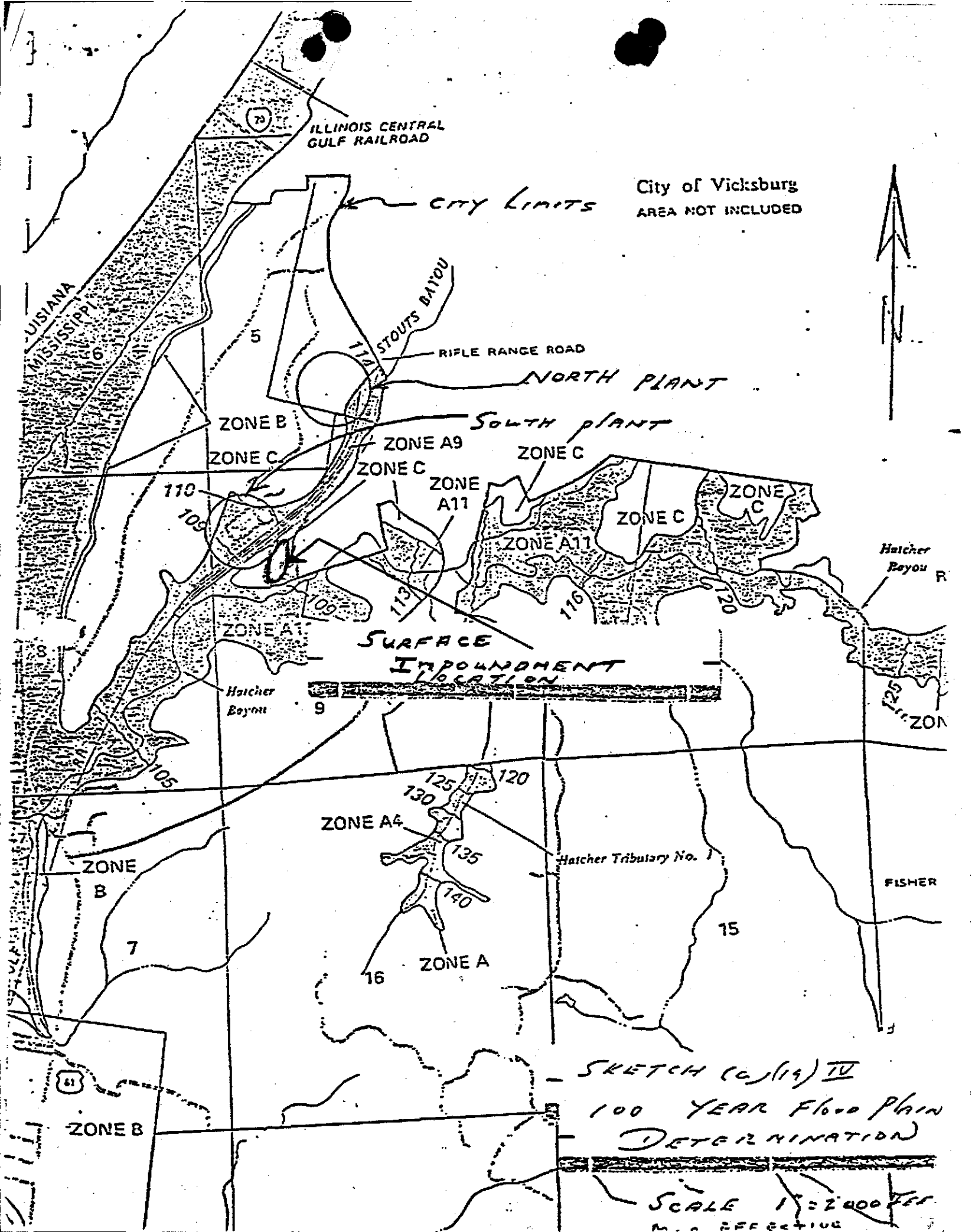
Vicksburg Plant
Corp
Sketch
a(19) I
City Map
Vicksburg
Warren County
T16N
T15N



MAP
TOPOGRAPHIC
SKETCH



BOUNDARY
TOLL
BRIDGE
CENTRAL
Gaging Station
33
T 16
LOUISIANA
MISSISSIPPI
6
North Plant
South Plant
Stouts
Stout
Vicksburg WWTP
Hatcher
SURFACE IMPOUNDMENT
IVER
8
BM 52
CENTRAL
Bayou
Mt Pilgrim
Substation
ILLINOIS
SKETCH (a)(19) III
TOPOGRAPHIC MAP


ILLINOIS CENTRAL GULF RAILROAD
City of Vicksburg
AREA NOT INCLUDED
CITY LIMITS
STOUTS BAYOU
RIFLE RANGE ROAD
NORTH PLANT
SOUTH PLANT
ZONE B
ZONE A9
ZONE C
ZONE C
ZONE C
ZONE A11
ZONE C
ZONE C
ZONE A11
Hatcher Bayou
SURFACE IMPOUNDMENT LOCATION
Hatcher Bayou
ZONE A4
Hatcher Tributary No. 1
ZONE B
ZONE A
FISHER
ZONE B
SKETCH (a)(19) IV
100 YEAR FLOOD PLAIN DETERMINATION
SCALE 1" = 2000 FEET

FILE COPY

September 24, 1985

Mr. John Hill
Vertac Chemical Corporation
P. O. Box 3
Vicksburg, Mississippi 39180

Dear Mr. Hill:

Re: Corrective Action Plan
MSD990714081

We have reviewed your letter of September 16, 1985. The proposed actions appear appropriate to develop the field data for a corrective action program. It would appear that an additional well between MW-1 and the surface impoundment could provide valuable data and help better define any groundwater contamination around MW-1. We believe this should be considered.

We are planning to place Vertac under a compliance schedule to carry-out the corrective action plan. The proposed corrective action schedule in Section E-3 of the latest Part B submittal calls for the design and implementation to be completed by June 15, 1986. This date appears to be too long. We would like to meet with you and your consultants at your convenience to discuss the proposed schedule.

Please contact our office should you have any questions concerning these matters.

Sincerely,

Charles Estes, P. E.
Hazardous Waste Section

CE:els

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851

REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

RECEIVED
SEP 19 1985
DEPT. OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Hazardous Waste Section
Mississippi Department of
Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

September 16, 1985

Dear Mr. Estes:

According to the corrective action plan outlined in Section E-3 of our RCRA Part B Application, the first three action items to be implemented upon the completion of the Appendix VIII analysis of the groundwater well samples are:

1) Identify the source of contamination
2) Identify the extent of contamination.
3) Characterize the aquifer.

In order to implement this action plan, we propose the following:

1) Continue collecting and compiling data on groundwater levels from all existing (and proposed) monitoring wells and piezometers.

2) Install and develop four additional groundwater monitoring wells, located as shown on the attached Figure 1. Undisturbed soil samples will be collected from each well for determination of Atterberg Limits, falling head permeability, void ratio and porosity values.

3) Water level recovery tests will be run on Well Nos. 1, 6, 11, and 12.

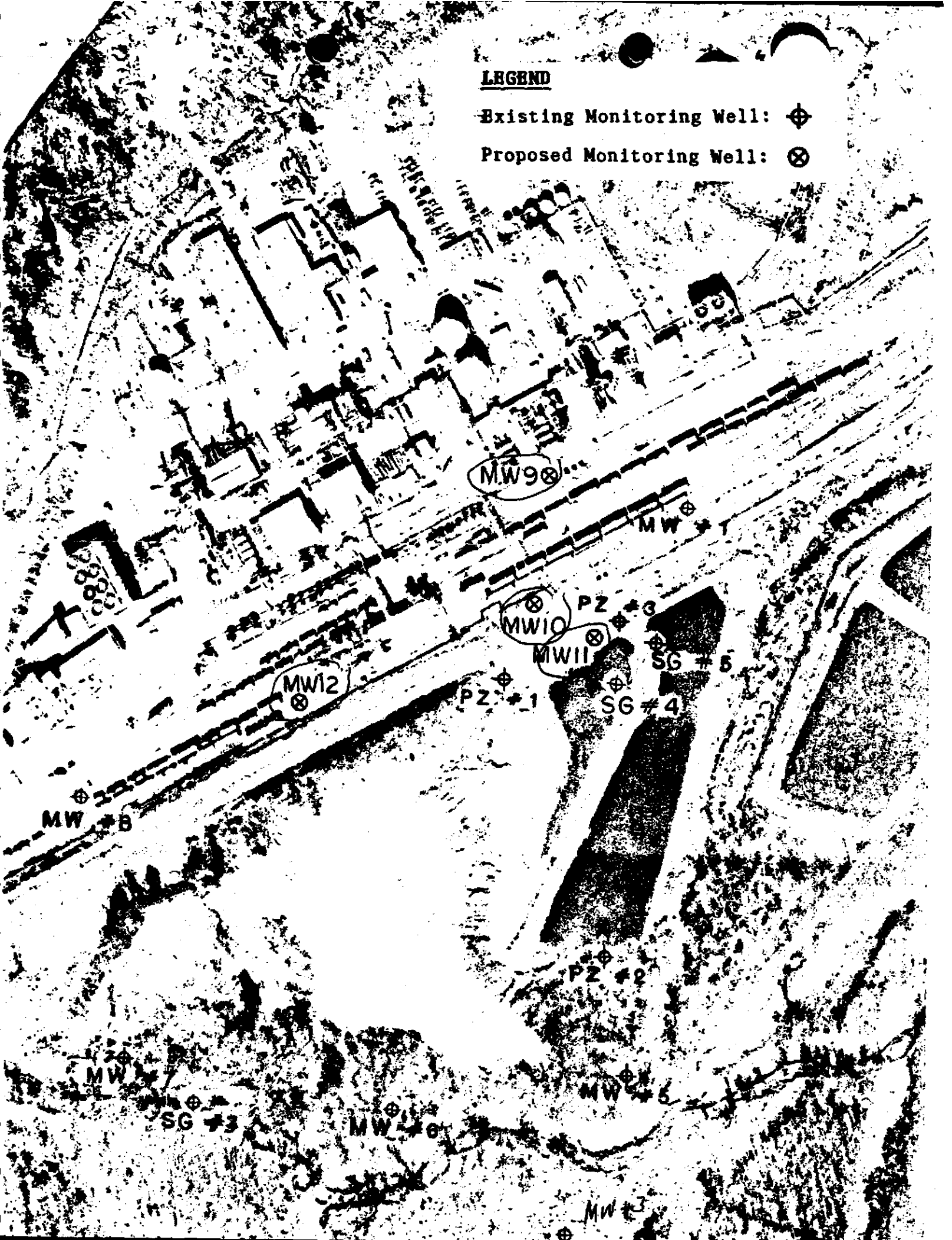
4) Well Nos. 9, 10, 11, and 12 (the new wells) will be analyzed for DNBP.

These proposed measures will simultaneously implement the action items as specified in the Corrective Action Plan. The Bureau's prompt review and comment will be appreciated. If you have any questions, please feel free to give me a call.

Sincerely,

John G. Hill
Environmental Engineer

JGH/ld
Enc.
cc - F. Ahlers, D. Karkkainen


LEGEND
Existing Monitoring Well:
Proposed Monitoring Well:
MW9
MW #1
MW10
PZ #3
MW11
SG #5
MW12
PZ #1
SG #4
MW #8
PZ #2
MW #7
SG #3
MW #6
MW #6
MW #3

FILE COPY

June 5, 1985

Ms. Caron Falconer
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Ms. Falconer:

Please find enclosed the material you requested. The material represents the latest groundwater information for these facilities.

Should you have any further questions, please contact our office.

Sincerely,

Charles Estes

Charles Estes, P.E.
Division of Solid Waste Management

CE:hd
Enclosure

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
TELEX 53927

May 28, 1985

Mr. Charles Estes
Mississippi Department of Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

This is written confirmation of the conversations between you and Mr. Gradet of IT Corporation.

We will miss the deadline for resubmittal of Part B information so that we may submit a draft closure plan. We will then prepare a revised Part B, presumably in an acceptable format, by June 19, 1985.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: A. Gradet
J. Hill

FILE COPY

April 22, 1985

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor
5100 Poplar
Memphis, Tennessee 38137

Dear Mr. Karkkainen:

Re: Appendix VIII Sampling
MSD990714081

We have reviewed the proposal by ETC Corporation to complete the Appendix VIII sampling at the Vicksburg plant. The proposal meets the requirements of our guidance document. We encourage Vertac Corporation to submit as complete an Appendix VIII scan as possible since EPA is giving very little flexibility in meeting their high goals.

We will continue to review the Appendix VIII scans for QA and QC to insure a good-faith effort by facilities. We will also keep you appraised as the issue continues to evolve.

Sincerely,

Charles Estes, P. E.
Division of Solid Waste Management

CE:hdb

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

March 19, 1985

RECEIVED
MAR 21 1985
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Chuck Estes
Mississippi Department of
Natural Resources
Bureau of Pollution Control
2350 Highway 80 West
Jackson, MS 39209

Dear Mr. Estes:

Pursuant to our various conversations, meetings, and exchanges of letters on the subject of analysis of groundwater for EPA Appendix VIII compounds, I have solicited and obtained quotations from Environmental Testing and Certification Corporation. ETC Corporation is the only laboratory that I am reasonably certain has an approach to the analyses that meets Mississippi requirements.

I have attached the communications received from ETC Corporation. Please note that ETC Corporation is reluctant to conduct the analyses without prior indication from Mississippi that their proposed analysis plan is acceptable. Since the Federal regulations have not set the analytical protocol in concrete, I have no independent way of knowing whether ETC Corporation's approval is acceptable to Mississippi or if they perform the analyses that Vertac has made "best efforts" as ordered by the Bureau of Pollution Control. Since you are familiar with ETC Corporation and indeed have met with them, I am reasonably certain that their work will be satisfactory to the Bureau of Pollution Control; however, I would like a representation to that effect in writing.

ETC Corporation has offered to meet with us. Since you have already met with them, I would prefer the meeting to take place after they have completed their work.

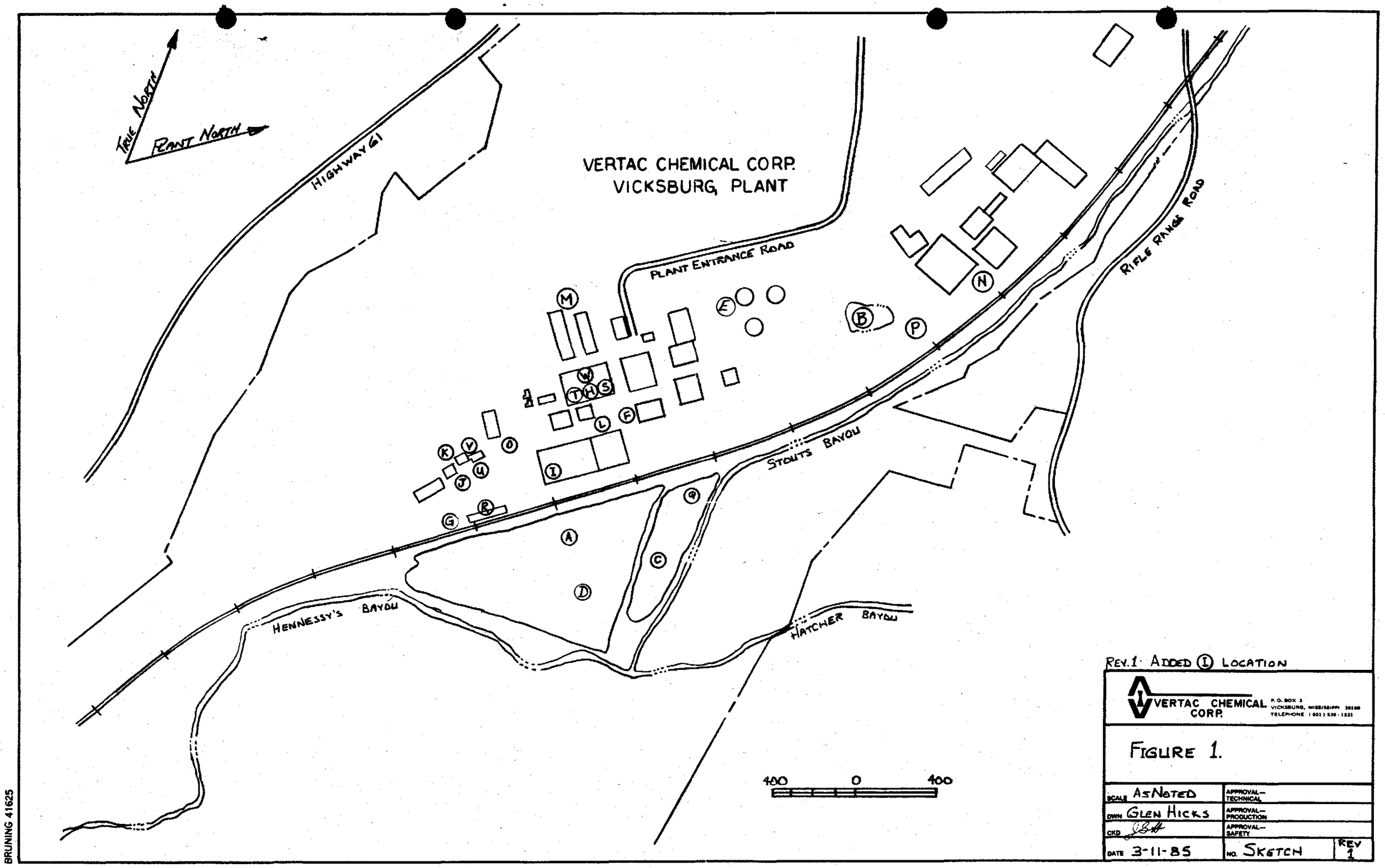
Best regards,

Dick Karkkainen

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: J. G. Hill



BRUNING 41625

FILE COPY

February 28, 1985

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor, 5100 Poplar
Memphis, Tennessee 38137

Dear Mr. Karkkainen:

Attached is the Bureau's recommended guidance for analysis of Appendix VIII constituents, as required by MHWMR 270.14(c). In order for your permit application to be considered complete you are required to submit the complete scan. We recognize that individual facilities may of necessity need to improvise or in some cases substitute certain site-specific constituents into the list. We intend to evaluate the good-faith efforts taken toward providing a complete Appendix VIII scan. You are reminded that failure to supply a complete application is grounds for denial of the permit and/or termination of interim status.

Prior to conducting sampling and analysis, we would welcome the opportunity of discussing these requirements with you, and to discuss any site-specific or waste specific variances (e.g., exotic compounds) from the Appendix VIII list. If you have any questions, please contact the designated project officer or me at 601-961-5062.

Sincerely,

Jack McMillan, Director
Division of Solid Waste Management

JM:JH:cm
Attachment

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
TELEX 53927

February 22, 1985

Mr. Swep Davies
Environmental Testing and
Certification Corporation
284 Raritan Center Parkway
Edison, New Jersey 08837

RECEIVED
1985 FEB 25

Dear Mr. Davies:

The Bureau of Pollution Control in Mississippi has made a determination that we operate a hazardous waste impoundment at our Vicksburg facility. We have been monitoring groundwater in the area since 1981 and presently have 8 monitoring wells installed. The Bureau of Pollution Control has found one hazardous constituent in one of our wells. Based on their findings the Bureau of Pollution Control has made a determination that we must analyze all wells for Appendix VIII constituents.

The Bureau of Pollution Control has made a determination that ETC Corporation can perform the requisite Appendix VIII analyses to their satisfaction and will so represent their determination in writing. They will make their representation in contradiction of "conventional wisdom" in the regulated community that no one is yet prepared to perform Appendix VIII analyses.

Therefore, please quote the price for 8 monitoring wells and include in the quotation the provision that your firm provide all sampling containers, preservatives, labels, and shipping containers. We will initiate a purchase requisition once we have received notification of fair prices and the written representations from the Bureau of Pollution Control previously noted.

I have used your firm on one previous critical situation and am therefore confident of the professionalism of the results.

Very truly yours,

Dick Karkkainen
Director of Environment and Safety

RDK/bh cc: C. Estes
J. Herrmann
J. McMillan
J. Hill

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
TELEX 53927

February 21, 1985

Mr. Chuck Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Pursuant to our discussions on February 19, 1985 at your offices I have reviewed the groundwater monitoring data on concentrations of Dintirobutyl Phenol, Toxaphene, and Atrazine.

On January 13, 1984 I reported that Dinitrobutyl Phenol, an appendix VIII constituant, had been detected in well number 1. No Toxaphene was detected in any wells. I further reported Atrazine to be present in wells 1,2,6,7, and 8. The Atrazine concentrations reported exceeded the solubility of Atrazine in water and were obviously in error. Since Environmental Laboratories, Inc. did not have a g.c. mass spec, they had subcontracted the Atrazine, Toxaphene, and dinitrobutyl phenol analyses to another laboratory. With this information, I discontinued use of Environmental Laboratories, Inc. and took new samples and submitted them to Enviro Med Laboratories, a lab I had been using elsewhere for difficult analyses.

On March 9, 1984 I submitted the results from Enviro Med Laboratories. Dinitrobutyl Pheonl was not detected in any of the wells. Toxaphene was not detected in any of the wells. Atrazine was detected in trace concentrations in wells 1,2, 5,6, and 8. Atrazine is not a hazardous constituant.

The anaytical results submitted on January 13, 1984 for Toxaphene, Atrazine, and dinitrobutyl phenol are in error. Since the results on January 13, 1984 are in error, Vertac has not reported the presence of a hazardous constituant in groundwater.

DIVISION OF SOLID WASTE
REVIEWED BY CM
DATE
COMMENTS Sent to EPA 11-16-87

On June 11, 1984 the Bureau of Pollution Control caused to be delivered a Commission Order with accompanying data from the Mississippi State Chemical Laboratory showing detention of trace amount of Dinitrobutyl Phenol in well Number 1 and Atrazine in well number 8. On this basis the Bureau of Pollution Control has made a determination that one hazardous constituant has been found in one monitoring well. Vertac has not data to challenge the Bureau's finding. Additionally, there is clearly a statistically significant increase in specific conductance in well number 1.

Very truly yours,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: J. McMillan
J. Herrmann
J. Hill

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851
TELEX 53927

February 21, 1985

RECEIVED
1985 FEB 25 AM 10:05
MISSISSIPPI ... BUREAU OF POLLUTION CONTROL

DIVISION OF SOLID WASTE
REVIEWED BY
DATE
COMMENTS Sent to EPA # 11-16-87

Mr. Chuck Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Pursuant to our discussion on February 19, 1985 I have written this letter to attempt to articulate a guestion we have with regard to potential future uses of the surface impoundment at our Vicksburg facility.

Present Description and Status of Surface Impoundment:

1. The surface impoundment has existed for a period of approximately 30 years. Modifications were made to the dikes of the impoundment in 1983 to assure compliance with RCRA standards for structural integrity and overtopping during 100 year flood occurrences. The surface impoundment exists alongside an inactive disposal area which was capped in 1983. Additional cap erosion control measures were taken in 1984. A plan view of the surface impoundment, inactive disposal area, and surrounding wells and piezometers is attached. Groundwater data has been collected since 1981.

2. The purpose of the impoundment is to collect rainwater run off from the south plant and serve as a spill collection system in the south plant (spills will flow through the drainage system to the impoundment or will flow to a sump and be pumped to the impoundment). The exception to this flow pattern is the MSMA plant where rainwater and spills are contained within MSMA plant boundries. No treated or untreated process wastewater is deliberately discharged from the south plant to the impoundment. The impoundment also serves as standby retention basin to receive water diverted from the north plant when that water does not meet pH quidelines for discharge to the Mississippi River. Water in the impoundment is pumped through columns of activated carbon prior to discharge to the Mississippi River.

3. The Bureau of Pollution Control has determined that the impoundment is a hazardous waste management unit.

4. Pursuant to the Bureau of Pollution Control's determination, Vertac has submitted a complete RCRA Part B application and has continually supplemented that application as monitoring data has been collected, as RCRA rules and regulations change and as new questions are asked by the Bureau of Pollution Control. The Part B application contains a closure plan for the surface impoundment.

Present Status of Groundwater Monitoring:

1. An appendix VIII hazardous constituent, dinitro butylphenol, has been found in trace concentration in monitoring well Number 1.

2. Monitoring well number 1 is upgradient of the surface impoundment but downgradient of mounded water underneath the inactive disposal area.

3. The Bureau of Pollution Control has determined that Vertac must analyze the eight RCRA monitoring wells for appendix VIII constituants plus Atrazine. At this time no one in the world is analyzing for appendix VIII constituants to the satisfaction of the EPA. The Bureau of Pollution Control has determined that a New Jersey laboratory, ETC, can make appendix VIII analyses to their satisfaction.

Closure Plan:

1. The closure plan that has been submitted and amplified by Vertac is a simple and conventional plan involving emptying the impoundment by discharging the liquid contents through activated carbon columns and into the Mississippi River, adding dirt to fill the impoundment and then capping the entire impoundment. Any reasonable competent dirt moving firm could execute the plan.

2. Vertac will continue to amplify that simple and complete closure plan as questions are made known. That closure plan will not change for purposes of RCRA Part B permitting, which permitting is necessary because the Bureau of Pollution Control has made a determination that the impoundment is a hazardous waste unit.

Possibilities for the Future:

1. Vertac does not reasonably anticipate retrofit of a double liner system underneath the surface impoundment as envisioned by November, 1984 RCRA ammendments. We believe the present use of the impoundment coupled with geologic, hydrogeologic, and monitoring information gathered since 1981 indicate to date that the impoundment is probably not a RCRA hazardous waste management unit and additionally does not adversely impact the environment; nevertheless, we have deferred to the judgement of the Bureau of Pollution Control that the impoundment is a hazardous waste unit and are proceeding on that basis.

2. We would at some time in the future, but prior to 1988, ammend our closure plan and replace it with a plan the intent of which is declassification of the impoundment, to the satisfaction of the Bureau of Pollution Control, from RCRA hazardous waste management status.

3. The closure plan would involve those steps which I have described in letters of October 17 and December 20, 1984. Specifically, sediment would be removed, to the satisfaction of the Bureau of Pollution Control, from the impoundment. Present analytical information indicate that the sediment is not a hazardous waste. Sewer drains within the plant would be revised such that no spills of product would flow to the surface impoundment. Each process area would be totally contained as is now the MSMA area. The impoundment would be used solely for retention of rainwater prior to treatment and discharge to the Mississippi River.

Question:

Are the regulatory agencies amenable to the closure plan described in "Possibilities For The Future": or must Vertac abandon this surface impoundment, which present data indicate is relatively impervious and has structural integrity, and close it by filling it in with dirt and capping it prior to 1988?

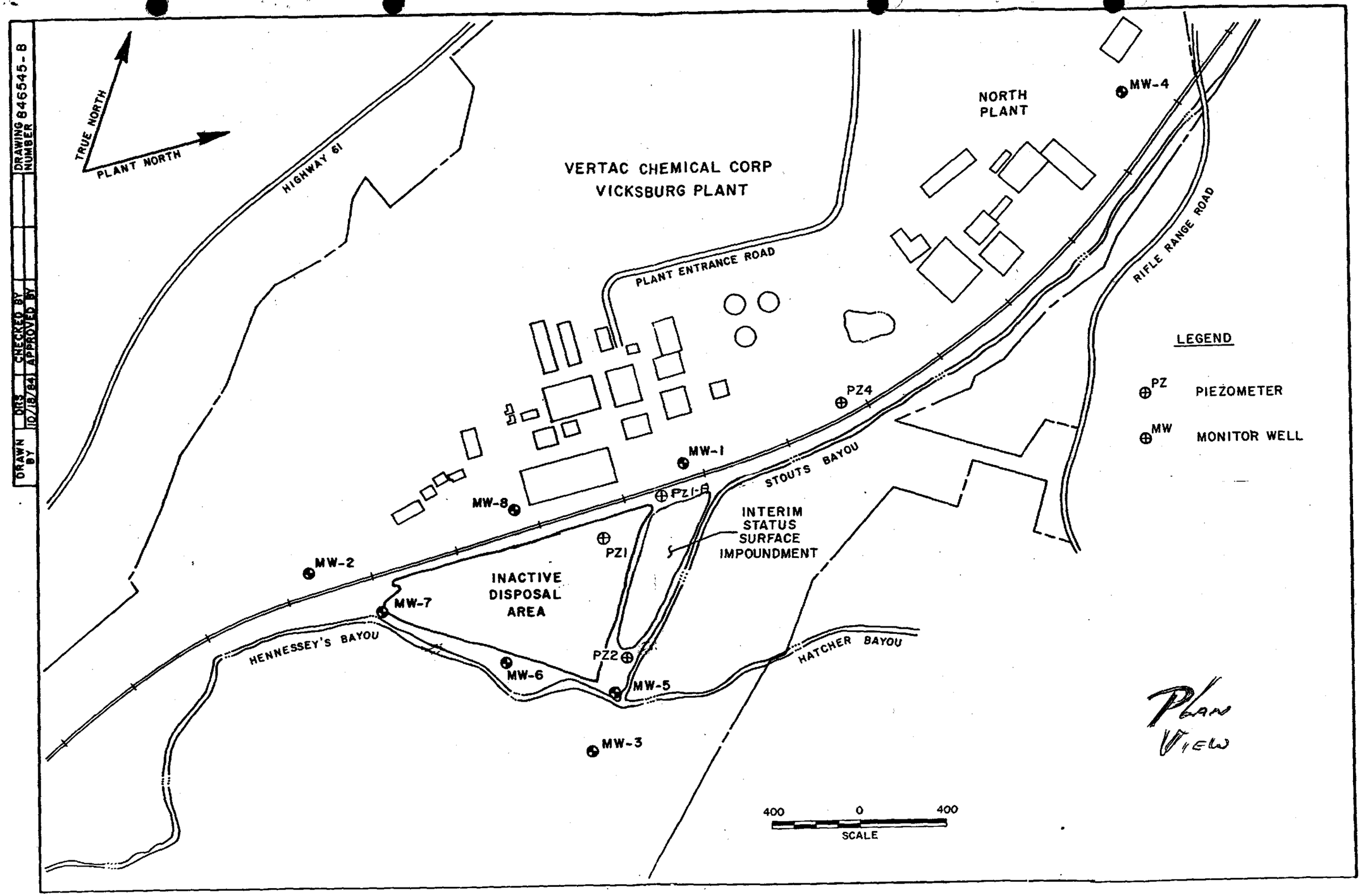
Very truly yours,

Dick Karkkainen

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: J. McMillan
J. Herrmann
J. Hill


DRAWN BY
DRS
10/18/84
CHECKED BY
APPROVED BY
DRAWING NUMBER 846545-B
TRUE NORTH
PLANT NORTH
HIGHWAY 61
VERTAC CHEMICAL CORP
VICKSBURG PLANT
NORTH PLANT
MW-4
PLANT ENTRANCE ROAD
RIFLE RANGE ROAD
LEGEND
PZ PIEZOMETER
MW MONITOR WELL
PZ4
MW-1
STOUTS BAYOU
PZ1-B
MW-8
INTERIM STATUS SURFACE IMPOUNDMENT
PZ1
MW-2
INACTIVE DISPOSAL AREA
MW-7
HENNESSEY'S BAYOU
HATCHER BAYOU
PZ2
MW-6
MW-5
MW-3
400 0 400
SCALE
PLAN VIEW

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

RECEIVED
1984 NOV 13 AM 9 26

November 14, 1984

Mr. Chuck Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Attached is a copy of the Vicksburg Groundwater Assessment received today from Alan Gradet and a copy of my letter on Appendix VIII Constituents.

It is our plan to install the piezometers and stream guages located in Figure "E" during the week of November 26, 1984. We would additionally initiate the level measurements during the same week and take samples for analysis. Analytical parameters would be those specified in my November 1, 1984 letter plus pH, conductance, TOC, TOH, TDS, chlorides, sodium, sulfate, potassium and nitrate.

This is a few days behind the schedule you required in your letter of October 3, 1984.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: A. Gradet
J. Hill

Rec'd 11/13/84 DK

IT CORPORATION

November 12, 1984

Mr. R. D. Karkkainen
Director-Environment & Safety
Vertac Chemical Corporatin
5100 Poplar, 24th Floor
Memphis, TN 38137

Project No. 846545

VICKSBURG GROUNDWATER ASSESSMENT

Dear Dick:

In accordance with your letter of October 5, 1984, we have completed several of the required work tasks as outlined in the Groundwater Assessment Plan. More specifically we have completed the following items:

1. Stratigraphic Cross-Sections (Figures B,C, and D). We have prepared three cross-sections using the existing boring data. The soil boring logs prepared by both previous contractors were used for this task. It should be noted that the change from silty clay to clayey silt is subtle and more detailed information from the new piezometers will better define this interface. The stratigraphic sections attached to this letter also show the well screening interval and the water levels recorded on March 4, 1983. Please note that wells #1-#4 were installed by one contractor while wells #5-#8 were installed by another contractor.

2. Existing Hydrogeologic Data. The compilation of water level measurements (made on March 4, 1983) is included on the attached stratigraphic logs. These data and their presentation also suggest that MW-1 is an upgradient well relative to the impoundment and the inactive disposal area. You might note that there is a significant distance between MW-1 and MW-5 (section B-B). If there is a gradient change in the vicinity of the Interim Status Impoundment, the additional piezometers proposed for that area should detect an elevated in water level.

   We have also reviewed the data contained in the contractors' reports concerning soil permeability. We feel that their calculations are appropriate given the

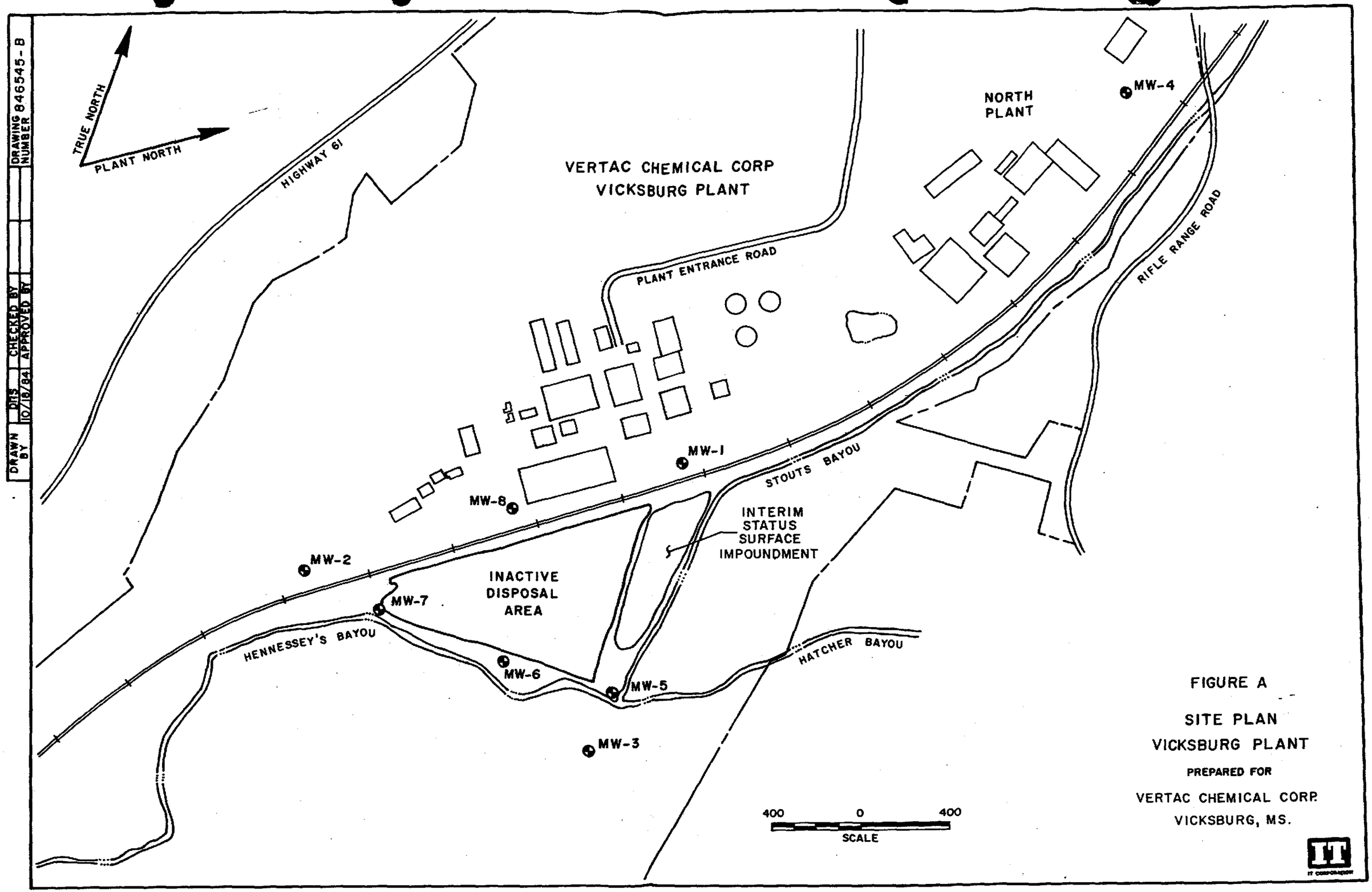


FIGURE A

SITE PLAN
VICKSBURG PLANT

PREPARED FOR

VERTAC CHEMICAL CORP.
VICKSBURG, MS.

19 1253 HERCULENE. A&B SMITH CO., PGH., PA

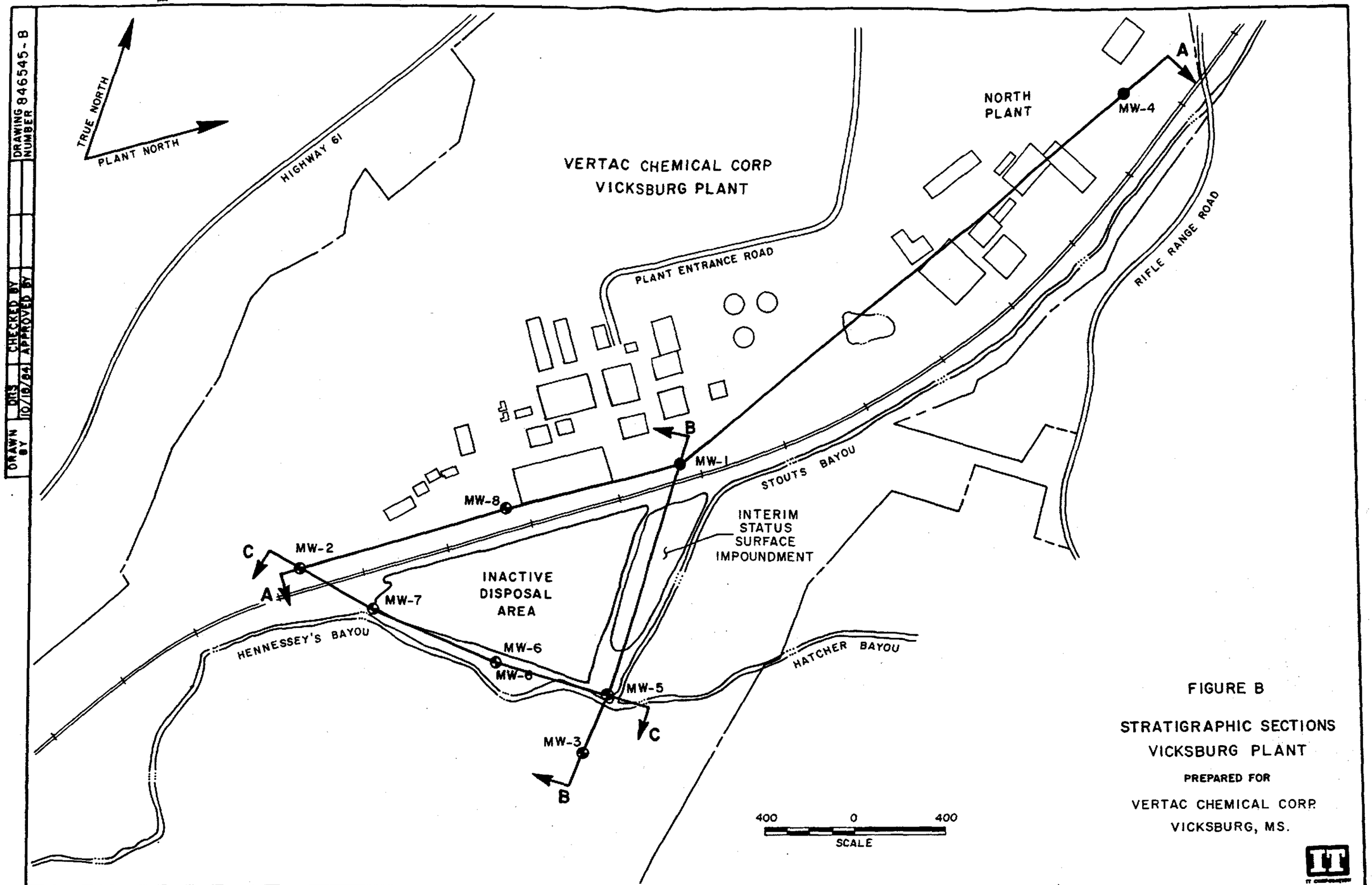


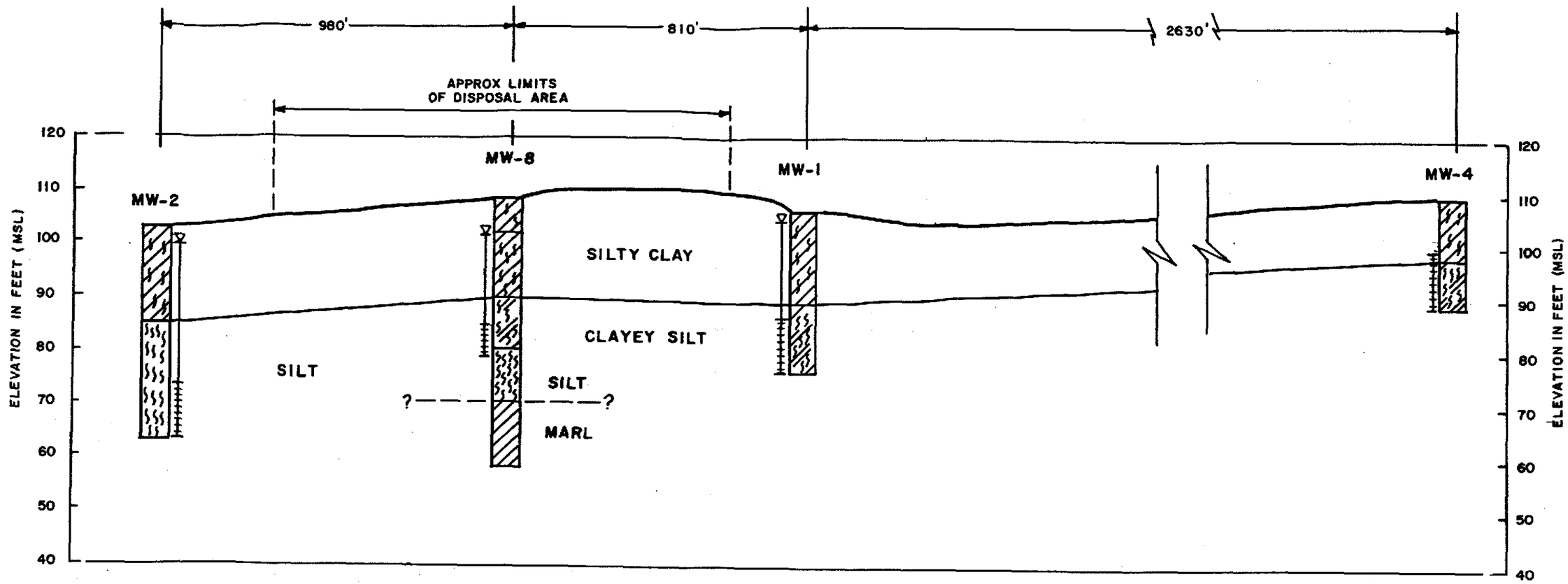
FIGURE B

STRATIGRAPHIC SECTIONS
VICKSBURG PLANT

PREPARED FOR

VERTAC CHEMICAL CORP.
VICKSBURG, MS.

DRAWN BY	DRS 10/19/84	CHECKED BY	APPROVED BY	DRAWING NUMBER 846545-B



SECTION A-A

00 0 00 FT
HORIZONTAL SCALE

20 0 20 FT
VERTICAL SCALE

NOTES: 1. WATER LEVELS ARE THOSE REPORTED FOR MARCH 4, 1983.

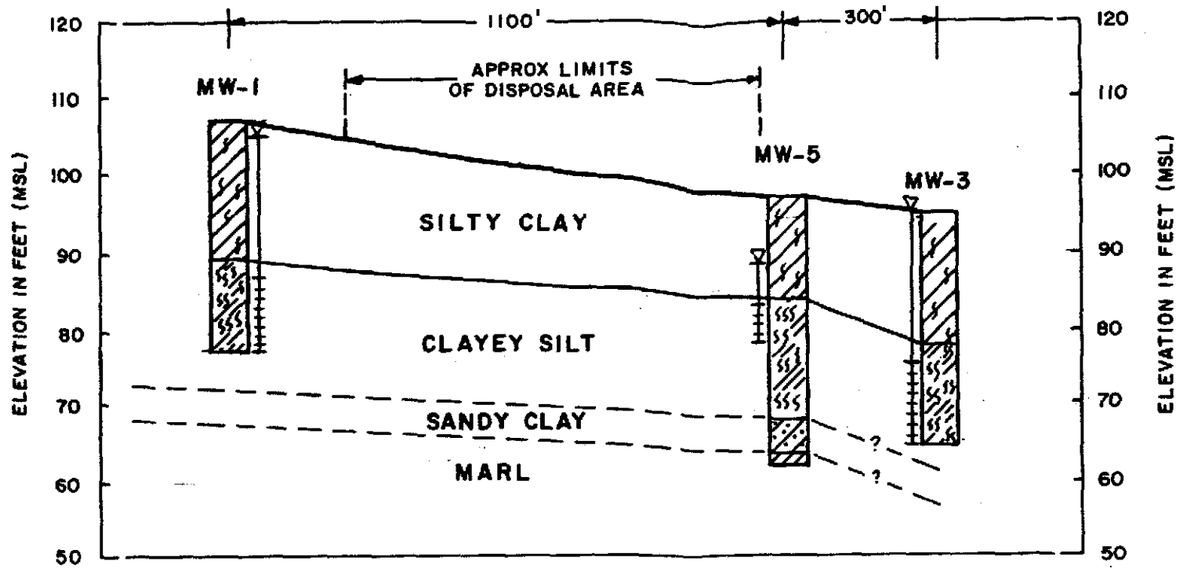
2. STRATIGRAPHY SHOWN IS INTERPRETATION OF EXISTING BORING LOGS. SUBTLE VARIATIONS IN REPORTED SILT CONTENT ARE SHOWN.

FIGURE C

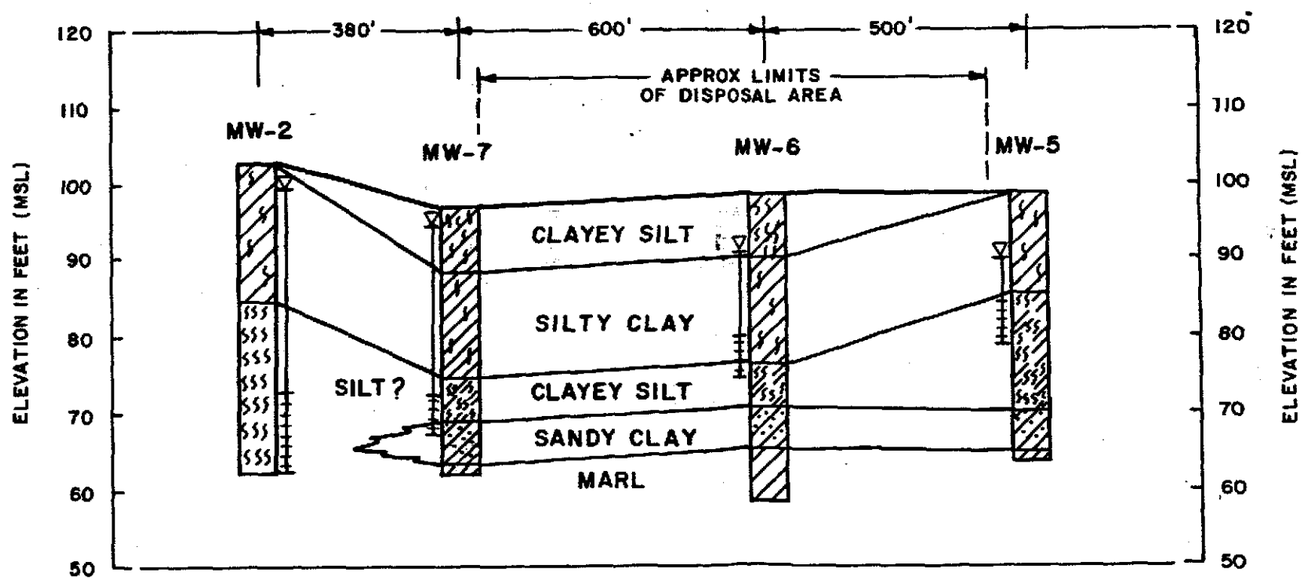
SECTIONS A-A
VICKSBURG PLANT
PREPARED FOR
VERTAC CHEMICAL CORP.
VICKSBURG, MS.

IT CORPORATION

19 1253 HERCULENE. A&B SMITH CO., PGH., PA



SECTION B-B



SECTION C-C

NOTES: 1. WATER LEVELS ARE THOSE REPORTED FOR MARCH 4, 1983.

2. STRATIGRAPHY SHOWN IS INTERPRETATION OF EXISTING BORING LOGS. SUBTLE VARIATIONS IN REPORTED SILT CONTENT ARE SHOWN.

300 0 300 FT
HORIZONTAL SCALE

20 0 20 FT
VERTICAL SCALE

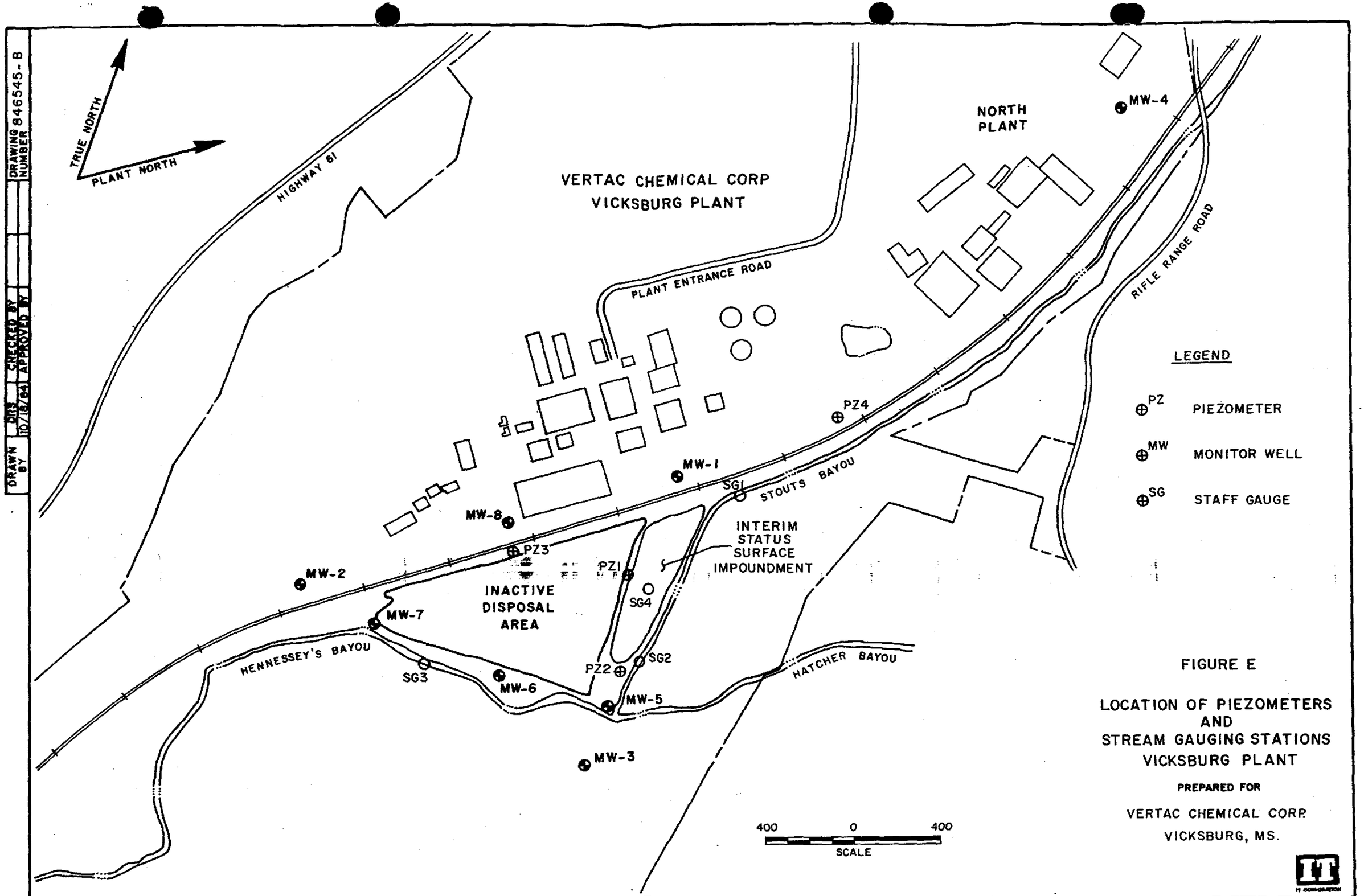
FIGURE D

SECTIONS B-B & C-C
VICKSBURG PLANT
PREPARED FOR

VERTAC CHEMICAL CORP.
VICKSBURG, MS.

DRAWN BY	DRS	CHECKED BY		DRAWING NUMBER 846545-B
	10/22/84	APPROVED BY		

19 1253 HERCULENE. A&B SMITH CO., PGH., PA



IS 1253 HERCULENE. A&B SMITH CO. PGH., PA

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

November 1, 1984

Mr. Alan Gradet
Project Manager
IT Corporation
2925 Briarpark
Suite 405
Houston, TX 77042

RE: Appendix VIII Hazardous Constituents - Vicksburg

Dear Alan:

I have made an extensive and exhaustive investigation of Appendix VIII constituents and conclude that only the following are products, raw materials or known degradation by-products of past or present operations:

Category:	Production Operation Source:
<u>Metals</u>	
Arsenic and compounds, N.O.S.	MSMA (1)
Arsenic Trioxide	MSMA (2)
<u>Cyanides</u>	
Cyanides	Atrazine (4)
Cyanogen Chloride	Atrazine (4)
<u>Volatile Halogenated Organics</u>	
Tetrachloromethane	Toxaphene (2)
<u>Semi-volatile Halogenated Organics</u>	
Toxaphene	Toxaphene (1)

Category:	Production Operation Source:
UV Active, Polar, Semi-volatile Organics	
Cresols	DNOC (2)
4,6-Dinitro-o-cresol and salts	DNOC (1)
Methyl parathion	parathion (1)
Nitrogen or Phosphorus Containing Polar, Semi-volatile Organics	
2-sec-Butyl-2,4-dinitrophenol	DNBP (1)
4,6-Dinitro-o-cresol and salts	DNOC (1)
Methyl parathion	parathion (1)

Notes:

(1) product
(2) raw material
(3) possible degradation of product
(4) possible degradation of raw material

Best regards,

[redacted]
Director of Environment and Safety

RDK/bh

cc: C. Estes
J. Hill

IT CORPORATION

Memorandum

To: R. D. Karkkainen, Vertac Chemical

Date: November 6, 1984

From: A. P. Gradet, IT-Houston

Project No. 846545

Subject: GROUNDWATER TESTING FOR APPENDIX VIII CONSTITUENTS - VICKSBURG PLANT

Several analytical laboratories have been contacted concerning test protocols and projected costs for the analysis of Appendix VIII constituents in groundwater. None of the facilities contacted has implemented the Hierarchial Analysis Protocol (HAP) proposed by EPA on October 1, 1984. Based on the information gathered, three other approaches are potentially feasible at this time.

1. MODIFIED SCREENING ANANYSIS FOR ALL APPENDIX VIII CONSTITUENTS

The protocols used for testing groundwater for all Appendix VIII constituents do include some screening procedures. For example, Appendix VIII includes 51 metals and metal compounds. Under this method only the total metal concentrations will be quantified as an indicator of the possible concentrations of the 51 metal compounds. Similarly, one analysis for total cyanides will be used to indicate concentrations of the fourteen cyanide compounds.

This procedure would not include analyses for the 23 compounds which are unstable in water or for which there are no analyticl methods. Analysis for dioxin (2,3,7,8-TCDD) and formaldehyde is included. The estimated cost is $4060.00 per sample.

2. MODIFIED APPENDIX VIII

This protocol is based on a procedure recently prepared for the petroleum industry. In this case, twenty-four specific Appendix VIII constituents were identified as being of importance in addition to those constituents which are also Priority Pollutants. The significance of the priority pollutants is that most analytical laboratories with GC/MS capability are set up to efficiently analyze water samples for priority pollutants. The cost is normally on the order of $1000.00.

In this case it would be necessary to identify compounds of interest beyond the standard priority pollutant list. An additional fee of $20.00 per parameter would be charged. The anticipated total cost would be on the order of $2000-3000 based on identifying 50 to 100 additional parameters. Costs could be controlled by using classes of compounds (i.e. dichlorobenzenes for all possible isomers) and total methods as indicators of similar compounds; however, the qualitative selection process must still be performed.

3. DIRECT TESTING FOR ALL APPENDIX VIII CONSTITUENTS

No laboratories have been contacted to estimate the cost for direct testing because the above two techniques are available and direct testing would be economically unacceptable (expect costs on the order of $5000-10,000 per sample).

Either of the first two methods will probably be acceptable to the state of Mississiippi and the Region IV, EPA. Once a technique is selected a brief review of the proposed screening procedure with the appropriate state personnel is probably advisable.

geologic conditions at the site; however, there are inconsistencies based on different interpretations of soil stratigraphy. In addition, groundwater flow velocity will be affected if hydraulic gradient changes are present across the site. Data from the new piezometers should resolve these inconsistencies.

3. Monthly water level measurements. We are proposing that four new piezometers be installed at the locations shown in Figure E. We are also proposing that three stream level gauging stations and one pond level station be established as shown in Figure E. When the piezometers are installed, an elevation survey should be performed to establish benchmark elevations for the new piezometers, to check the elevations of the existing wells and establish the levels for the four staff gauges. The first set of water level measurements can then be taken at all stations (eight (8) monitor wells, four (4) piezometers, four (4) staff gauges).

4. Appendix VIII Constituents. Also attached is a memo summerizing my discussions with analytical laboratories capable of testing for Appendix VIII constituents. We can use this as a basis for selecting the appropriate lab and for identifying target parameters.

Prefer my 11/1/84 outline. Dick

5. Well Samples. This task should be completed as soon as a lab is selected. The lab should be required to provide sample kits (bottles, coolers, preservative). The actual sampling could be done by either John Hill or IT. We do recommend that a detailed sampling prcedure be documented and followed.

Following completion of items 3, 4 and 5 we will be in a much better position to evaluate the outcome of the groundwater assessment. If you have any questions, please contact me at (713) 784-2800.

Sincerely,

Alan Gradet

Alan Gradet
Project Manager

APG:gd

Attachment

October 5, 1984

FILE COPY

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor, 5100 Poplar
Memphis, Tennessee 38137

Dear Mr. Karkkainen:

Re: Groundwater Assessment Plan
for Vicksburg Facility MSD

We have reviewed the proposed groundwater assessment plan and consulted a hydrologist at EPA Region IV.

We concur with the general direction of the assessment program. The water level monitoring program must also include Stout's Bayou as well as Hennessey's Bayou. The hydrologic study must identify the impact of the groundwater at the site on the streams. Also the study must identify and describe the groundwater which may be passing under the streams and moving off-site. Therefore, monitoring Well #5 should be use for water level measurements. Consideration should be given to the installation of piezometers on the south side of Hennessey's Bayou to identify groundwater which may pass under the stream. Additional water level piezometers appear necessary around the impoundment to give a better understanding of the impact of the impoundment on the groundwater system.

These piezometers should be installed as soon as possible. Waiting for results from monitoring well levels before installation does not appear to be necessary.

Under B.3 of the assessment plan it is stated that Appendix VIII hazardous constituents which have not been detected in the groundwater will not be analyzed for. The only consituents which may be eliminated from analysis are those which are not raw materials, products or known degradation by-products, have no acceptable analytical procedures or do not exist in water. Past analysis of groundwater cannot be used to drop a constituent from consideration.

In addition to analyzing for hazardous constituents in Wells #4, #1, #5, and #6, monitoring Well #8 should be sampled and analyzed. Quarterly sampling under the assessment mode is not necessary. The time to conduct the first sampling should be reduced to 30 days with subsequent samplings 60 days apart instead of 90 days. Since subsequent samplings will be conducted to verify the initial sampling, only one or two samples after the initial sampling should be required.

FILE COPY

We approve the assessment plan with the above modifications. Should you have any further questions, please contact our office.

Sincerely,

Charles Estes, P. E.
Division of Solid Waste Management

CE:cm
cc: Mr. John Hill

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

August 6, 1984

RECEIVED
1984 AUG -8 AM 9:32
MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

RE: Commission Order No. 717-84

Dear Mr. Estes:

Pursuant to "activity" of the referenced order in which the Commission has required the submission of a groundwater assessment program on or before August 6, 1984, the attached outline describing such a program is attached. The plan and schedule of implementation, which has been prepared by Mr. Alan Gradet of IT Corporation (D'Appolonia) for Vertac, is a program which, when approved by you and then executed by us, will allow continuing compliance with the appropriate Federal regulations found in 40 CFR 265.93 (d)(3) and (4) and the corresponding rules of the State of Mississippi. The groundwater assessment program is based in part on two groundwater assessment studies already provided by Vertac, specifically:

1. "Hydrogeoligical Investigation - Vertac Chemical Corporation Facility - Vicksburg, Mississippi" prepared by Developers, International Services Corporation and dated November 21, 1981.

2. "Final Report - Monitoring Well Installation Program - Vertac Chemical Corporation prepared by MCI/Consulting Engineers, Inc. and dated March 21, 1983.

Once implemented, the groundwater assessment program will provide:

- the number, location and depths of wells;
- sampling and analytical methods for hazardous wastes and hazardous waste constituents;
- evaluation procedures.

Additionally the data collected throughout the term of this plan will be used to determine the rate, extent and concentration of hazardous wastes and hazardous waste constituents in the groundwater.

I trust that regulatory agencies will find this program acceptable.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: Alan Gradet (IT Corp.)
John Hill (Vicksburg)

PROPOSED GROUNDWATER ASSESSMENT PROGRAM

A. HYDROGEOLOGIC CONDITIONS

Purpose: Establish the rate and extent of potential contaminant migration.

A.1 Soil Stratigraphy
Data from existing soil borings will be used to prepare stratigraphic cross-sections of the subject area. These sections will be used to identify the uppermost water bearing zone and to display the relationship between the uppermost water bearing zone and potential sources of contamination.
SCHEDULE: Complete 30 days after receipt of plan approval.

A.2. Existing Hydrogeologic Data
All existing site specific hydrogeologic data will be compiled and reviewed. These data include well drillers reports, soil boring data and water level data.
SCHEDULE: Complete 30 days after receipt of plan approval.

A.3 Description of Existing Hydrogeologic Conditions
The data collected uner sections A.1 and A.2 above will be used to prepare a description of the hydrogeologic conditions underlying the site. This will include a lithologic description of the uppermost water bearing zone, preliminary determination of the direction of groundwater flow and a determination of the rate of groundwater flow.
SCHEDULE: Complete 60 days after receipt of plan approval.

A.4 Water Level Monitoring Program
A monitoring program will be implemented to confirm the conclusions made in Section A.3 above. This program will consist of monthly measurements of water level in:
a) Wells #1, #2, #4, #5, #6, #7, #8;
b) The storage impoundment; and
c) Hennessey's Bayou
These measurements will be made for twelve consecutive months. Also, based on the results of step A-3, additional water level peizometers may be installed to more accurately establish groundwater gradients.
SCHEDULE: This program will commence 30 days after receipt of approval and will be complete 360 days after receipt of plan approval.

B. HAZARDOUS CONSTITUENTS

Purpose: To identify those Appendix VIII Hazardous constituents which might be present in the active or inactive disposal site.

B. (cont'd)

B.1 Chemicals Already Found
A summary of the data on the hazardous constituent detected in one well will be prepared.

B.2 Raw materisl and Products
A listing of raw materials used and chemical products manufactured at the Vicksburg plant will be prepared.

B.3 Specifications of Hazardous Constituents
All appendix VIII Hazardous constituents which have not been detected in groundwater under the site are not raw materials, products or known degradation by products, and for which there are no acceptable analytical procedures will be dropped from consideration. All others will be identified as potential hazardous constituents.
SCHEDULE: The potential hazardous constituents will be specified within 90 days after receipt of plan approval.

C. REVEIW OF EXISTING DATA

Purpose: To review the existing groundwater data base for inconsistencies and inaccuracies.

C.1 Well #5 Construction and Well #1 Construction
The construction of wells #5 and #1 will be reviewed in relation to the other monitoring wells. If construction specifications are found to be inconsistent, the wells will be redesigned and replaced.

C.2 Statistical Significance
The significance of the variability of conductivity and TOH data in Wells #4, #5, and #6 will be reviewed for consistency with statistical assumptions.

C.3 Interference with TOH data
The variability in TOH data will also be reviewed in relation to possible chemical interference in the analytical procedure.
SCHEDULE: These review items will be complete within 60 days after receipt of plan approval.

D. SAMPLING & ANALYSIS

Purpose: To determine the concentration of hazardous constituents in the groundwater using existing monitor wells #4, #1, #5, and #6.

D.1 First Quarterly Sampling
The first quarterly sampling will be conducted 90 days after receipt of plan approval. Representative samples will be collected from the above referenced monitor wells using EPA approved procedures. The samples will

D. (cont'd)

be tested for all hazardous constituents identified under Section B and:

pH	Chlorides
Conductance	Sodium
TOC	Sulfate
TOH	Potassium
TDS	Nitrate

All laboratory tests will be performed in accordance with Standard Methods for the Analysis of Water and Wastewater or EPA SW-846.
SCHEDULE: Samples collected 90 days after receipt of plan approval. Test results completed as per laboratory schedule.

D.2 Second Quarterly Sampling
A second set of groundwater samples will be collected 180 days after receipt of plan approval. All parameters and procedures will be the same as D.2 except only those hazardous constituents detected in the first quarterly sampling will be tested for.
SCHEDULE: Samples collected 180 days after receipt of plan approval. Test results completed as per lab schedule.

D.3 Third and Fourth Quarterly Sampling
Sames as D.2 except the third quarterly sampling will be 270 days after receipt of plan approval and the fourth will be 360 days after receipt of plan approval.

FILE COPY

May 24, 1984

Mr. James Scarbrough, P.E., Chief
Residuals Management Branch
U. S. Environmental Protection Agency
Region IV
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Dear Mr. Scarbrough:

Enclosed are copies of the sudden and non-sudden insurance policies required under RCRA for Vertac Chemical Corporation in Vicksburg. These policies were requested by Susan Casnocha of your staff.

We are particularly concerned about the failure of the non-sudden policy to provide coverage for groundwater contamination. While the RCRA regulations do not specifically mention allowable exclusions in policies, this is obviously not one that should be included.

We intend to require a change in the policy to remove this exclusion. We would welcome any comments your staff has on this matter. We plan to make a response to the facility by June 15, 1984. Thank you for your thoughts on this matter.

Sincerely,

Jack M. McMillan, Director
Division of Solid Waste Management

JM:DL:cu
Enclosures

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

March 9, 1984

RECEIVED
MAR 14 REC'D
BUREAU OF POLLUTION CONTROL

Mr. Chuck Estes
Hazardous Waste Section
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Attached is a copy of the results of the February, 1984 groundwater sampling data for our Vicksburg facility. The data were received on March 8, 1984. The February samples were taken and data analyzed to be able to confirm or deny results of data received in January, 1984 on samples taken in November, 1983.

These conclusions can be drawn:

a. There is a statiscally significant increase in specific conductance in wells 5 and 6 when compared to the background well number 4. The cause of the increase is <u>not</u> presence of atrazine, dinitrobutyl phenol, toxaphene, the chloride ion, the sodium or potassium ions or metallic constituents.

b. There is a statistically significant increase in specific conductance and total organic halide in well number 1 when compared to the background well number 4.

Well number 1 is not a compliance point well. Refer to attached fegure 2, "Groundwater Contours and Flow Lines". Well number 1 is upgradient of both the surface impoundment and closed out disposal site. Due to the location of well 1, near the railroad track and near the piping to and from the surface impoundment, one can speculate that at some time in the past a spill occurred in the vicinity of well 1 and the results of that spill are now evident in the groundwater.

The analysis of well 1 groundwater may, however, have provided valuable information. Please refer to the comment on the data sheet concerning a large interference peak near atrazine's retention time. Also refere to the attachements on chemical methods for degradation/detoxification of atrazine and simazine. One can reasonably conclude that the interference peak is hydroxyatrazine. The hydroxyatrazine would also be the cause of the high specific conductance of the groundwater.

Rather than sample the groundwater and analyze for the 300 - 400 constituents (all of which are irrelevant to the Vicksburg site) identified in Appendix VIII of Part 261, as the regulations advise, I believe we should continue the present monitoring program and add hydroxyatrazine to the parameters.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: F. L. Ahlers
D. J. Madsen
R. F. Maraman

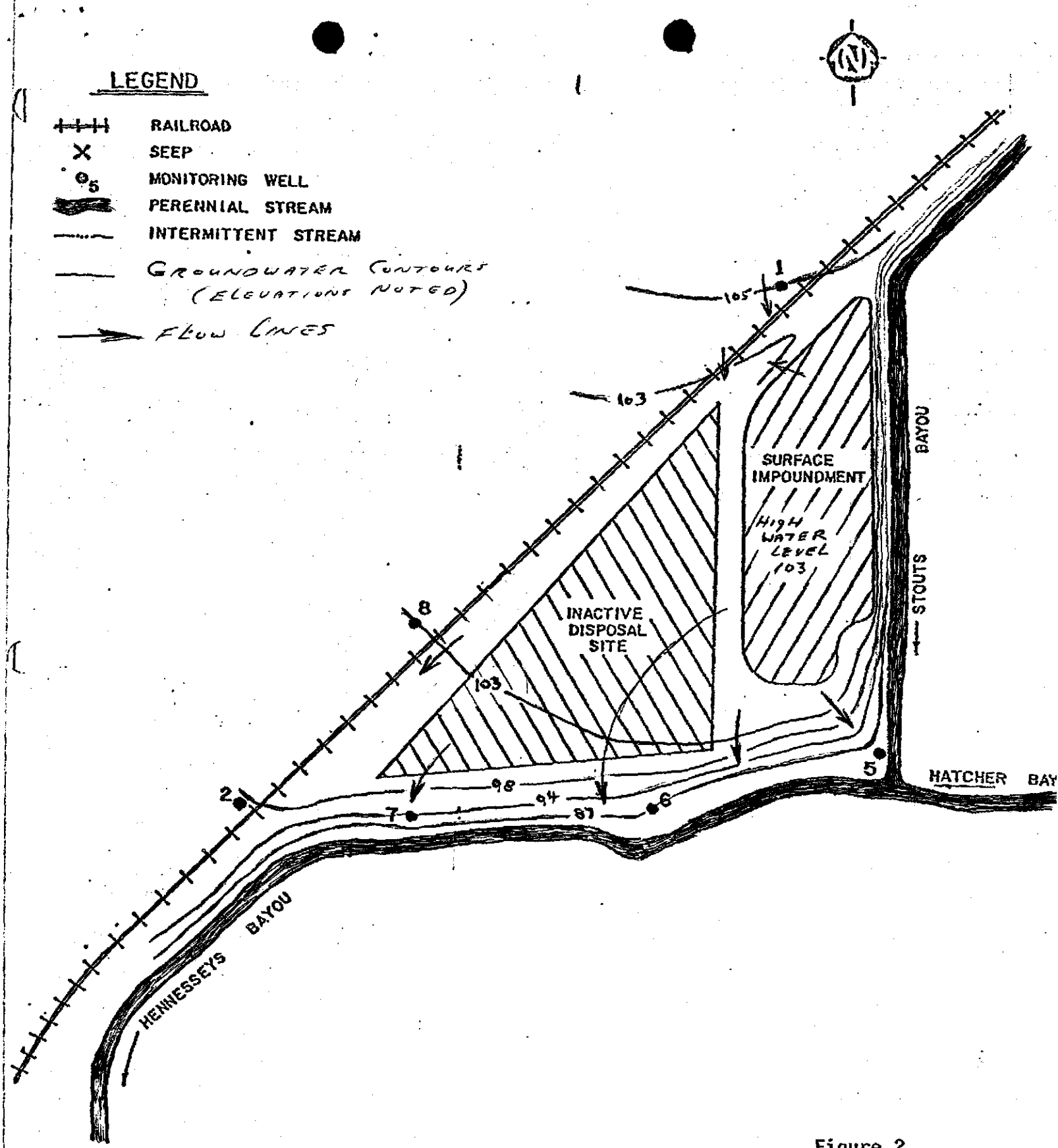
Rec'd 3-8-84 Dick

TABLE 1 VERTAC MONITORING WELL TESTING RESULTS

Parameter		Concentration (ppm)					
		Sample Identification/EML #					
		47607	47608	47609	47610	47611	47612
		1	2	3 Well 5	4 Well 6	5 Well 7	6 Well 8
INDICATOR PARAMETERS							
Specific Conductance (umhos)	a)	4000	1030	1460	1500	790	1100
	b)	3950	1020	1450	1485	780	1090
	c)	4000	1020	1440	1490	770	1090
	d)	4000	1020	1440	1490	770	1100
pH (Std. Units)	a)	7.2	7.3	7.2	7.2	7.4	6.8
	b)	7.3	7.2	7.3	7.2	7.4	6.9
	c)	7.3	7.4	7.3	7.3	7.5	7.0
	d)	7.3	7.4	7.3	7.4	7.5	7.0
Total Organic Carbon (TOC)	a)	36.0	22.0	48.0	32.0	23.0	27.0
	b)	34.0	21.0	49.0	37.0	17.0	24.0
	c)	35.0	24.0	49.0	36.0	22.0	30.0
	d)	29.0	26.0	46.0	33.0	19.0	24.0
Total Organic Halide (TOX)	a)	0.22	0.12	0.050	0.050	0.045	0.016
	b)	0.23	0.11	0.040	0.060	0.040	0.018
	c)	0.22	0.10	0.045	0.055	0.040	0.014
	d)	0.23	0.12	0.050	0.050	0.050	0.010
ORGANICS							
Toxaphene		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Atrazine		0.080**	0.010	0.010	0.10	<0.010	0.11
Dinitrobutyl phenol (DNBP)		<0.025	<0.025	<0.025	<0.025	<0.025	<0.025

1=EML #47607/Well 1
2=EML #47608/Well 2
3=EML #47609/Well 5
4=EML #47610/Well 6
5=EML #47611/Well 7
6=EML #47612/Well 8

**Sample contained large interference peak near atrazines' retention time; consequently, the value listed is semi-quantitative. GC/MS confirmation would be needed to positively confirm concentration of atrazine in Well #1 sample.



NOTE: ELEVATION DATUM IS MEAN SEA LEVEL

Figure 2

Well Location
Sketch Map
Vertac Chemical Corporation
Vicksburg, MS

82-529

SCALE: No scale	DATE 3-8-84

GROUND WATER CONTOURS & FLOW LINES

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851

REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

Bureau of Pollution Control
Hazardous Waste Section
P. O. Box 10385
Jackson, MS 39209

February 15, 1984

Gentlemen: Attention: Mr. Chuck Estes

Subject: Phone Conversation Ground Water Well 2/14/84

The following confirms the data given you during the above conversation:

1. Top of Casing Data

Well #	Elevation	Source of Data
1	109.1 ft. MSL	Dwg. 124-83 dated
2	105.0 " "	1-24-83
3	97.5 " "	" "
4	111.6 " "	" "
5	99.6 " "	Drillers Log 3-2-83
6	98.6 " "	" "
7	97.5 " "	" "
8	109.7 " "	" "

2. Well Water Levels from Top of Casing

Well #	Date	El.	Date	El.	Date	El.
1	3-4-83	3'-1" MSL	3-15-83	3.66' MSL	2-7-84	4'-½" MSL
2		4'-5" "		7.2' "		7'-11¼" "
3		2'2" "				
4						
5		10' "		10.5' "		14'-6½" "
6		8' "		11.29' "		11'-7" "
7		3' "		3.25' "		3'-3¼" "
8		7' "		4' "		6'-9½" "

3. Attached Data Sheets

3-15-83	Well Water Measurements
3-04-83	Ground Water Elevation
3-01-83	Drillers Log - Wells #6, 7
3-02-83	Drillers Log - Wells #5, 8

If additional data is available it will be forwarded.

Sincerely,

R. F. Maraman

R. F. MARAMAN

cc - FLA, WJ, DKarkkainen
DM, RFM, File

RFM/ld

PROPOSED GROUND WATER MONITORING PLAN
VERTAC CHEMICAL CORPORATION

Monitoring Well Location

Surface and ground water elevations were determined at various available points by MCI during December, 1982. Review of this data suggests that the Stout's-Henessey's Bayou surface water system forms a ground water discharge divide downgradient from the site. This would indicate a gradient of the ground water from the higher topographic elevations near the plant, under the site, and to the surface water system. Accordingly, of the three presently assumed downgradient monitoring wells, only well #2 potentially represents downgradient ground water quality. However, the number and configuration of measurement points are not sufficient for an accurate determination of the ground water flow direction(s). Additionally, the influence of ground water mounding from increased recharge to the water table from this site cannot be accurately assessed. Consequently, Well #2 may not represent ground water quality downgradient of the site, either.

To accurately determine the direction of ground water flow and any effects of mounding, additional information is necessary. To gain this additional information, a series of small diameter piezometers could be installed at various points around the site. These piezometers would be strategically located so that, when coupled with the information obtained from the existing series of monitoring wells, an accurate water table map could be drawn. After an accurate water table map is constructed and the ground water flow direction(s) is determined, the necessary monitoring wells would then be installed.

The above project would mean that there would have to be two different phases of field work. The first phase would entail a subsurface exploration program coupled with small diameter piezometer installation. A part of this phase would be the subsequent measurement of the ground water at all available points.

Based on the data obtained from the first phase, the second phase would be to install monitoring wells. Because the subsurface exploration program was included in Phase 1, the installation of the monitoring wells would be very straight forward. Specifically, Phase 2 would be simply to auger the borehole for each monitoring well and install the well. Additionally, the number of wells in Phase 2 could be decreased by Phase 1 information. However, it is imperative to note that with this program there would be additional cost that would approximately double the expenditure of a simple three well installation program.

An alternative to the above two phase program would be to add an additional monitoring well to the three that were originally anticipated. Originally, Vertac anticipated that three new monitoring wells would need to be installed. Two of these wells would be approximately forty feet in depth while the third would be one hundred feet in depth. In this alternative program, four wells of an approximate depth of forty feet each would be installed at various locations so that at least three wells would be downgradient from the site. The four monitoring well locations are shown on Sheet 1. In addition, the subsurface exploration phase would be combined into this phase. MCI feels this alternative program would be the most cost efficient means of assuring the requirements of at least three downgradient monitoring wells.

Monitoring Well Design and Installation

Prior to installing each monitoring well, a sampled test boring will be drilled to determine the subsurface conditions at each location. The

sampling interval in the test borings will be, at least, every five feet of depth. The samples will be visually classified in the field by the MCI hydrogeologist.

Upon completion of the test boring, the monitoring well borehole will be augered adjacent to the test boring location. The exact depth of the monitoring well will be determined by the MCI hydrogeologist based on the subsurface conditions encountered in the adjacent test boring. After the monitoring well auger boring is terminated and cleaned of soil cuttings, the monitoring well will be installed. The design of a typical monitoring well for this project is shown in Figure 1.

Subsurface Subcontractors

MCI has received proposals from three geotechnical companies to provide the necessary subsurface drilling, sampling, and well installation. These companies are Hall, Brazille, and Associates, Inc,(HBA); Test, Inc., (Test) of Memphis, Tennessee; and Geologic Associates, Inc., (GA) of Franklin, Tennessee.

MCI feels all three companies are competent to accomplish the project. Vertac can choose the drilling company and contract directly with that company or, at Vertac's direction, MCI will contract with the drilling company of Vertac's choice.

George D. Mayo, Jr.

George D. Mayo, Jr.
Hydrogeologist

GDM/mb

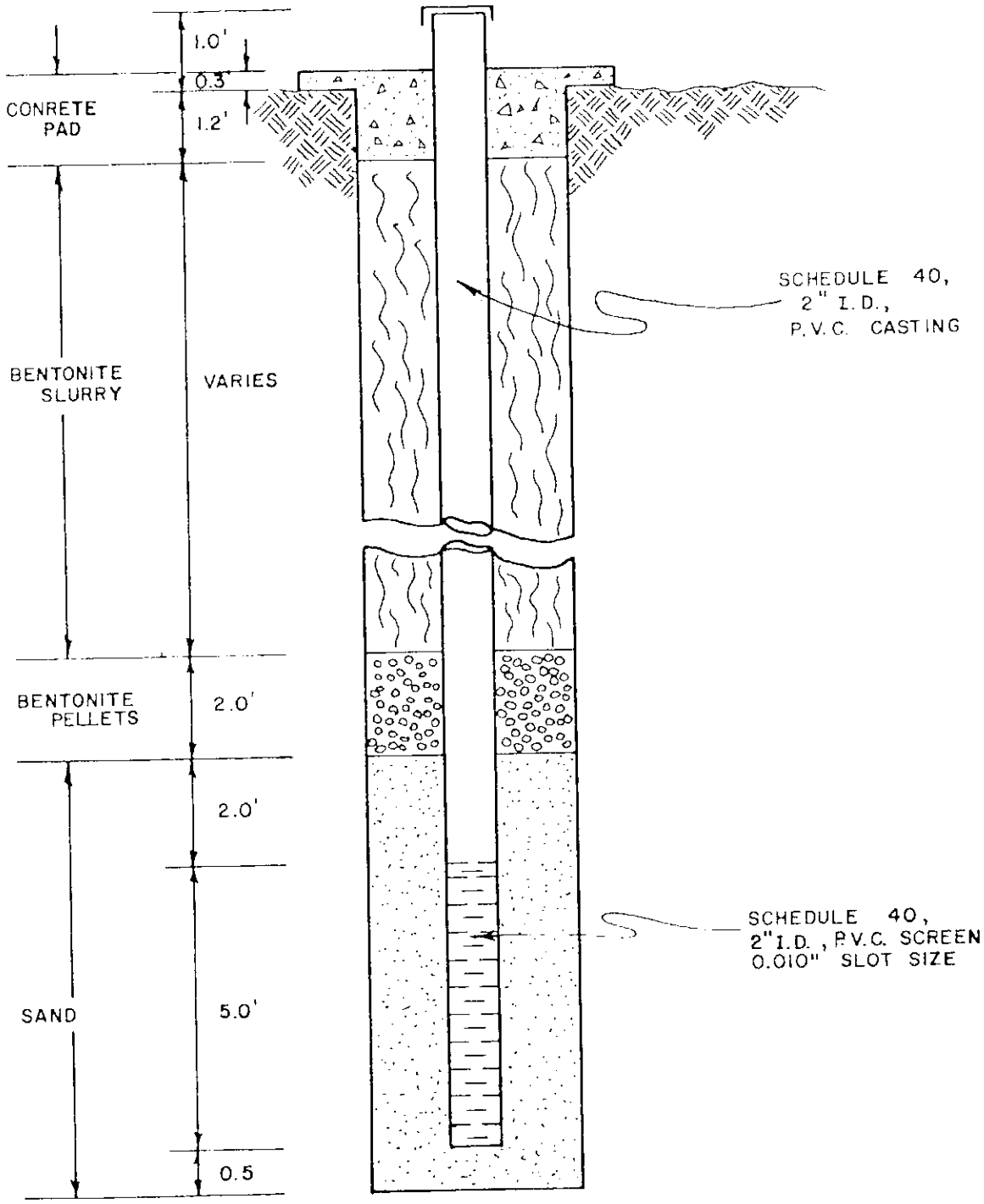


Figure 1
TYPICAL WELL DESIGN SCHEMATIC
VERTAC CHEMICAL CORPORATION
MCI - 82-529

SCALE: None	DATE 1-24-83

MCI / CONSULTING ENGINEERS, INC.
Nashville, & Knoxville, Tennessee

TABLE 1
GROUND WATER ELEVATIONS
March 4, 1983

MONITORING WELL	WATER ELEVATION *
1	106.0'
2	100.5'
3	95.3'
5	89.6'
6	90.6'
7	94.5'
8	102.7'

* Above mean sea level

TABLE 1

GROUND WATER ELEVATIONS

March 4, 1983

MONITORING WELL	WATER ELEVATION *
1	106.0'
2	100.5'
3	95.3'
5	89.6'
6	90.6'
7	94.5'
8	102.7'

* Above mean sea level

MCI/ CONSULTING ENGINEERS, INC.
4301 Hillsboro Road
Suite 224
Nashville, Tennessee 37215
Telephone (615) 383-4807

Corporate Headquarters:
Nashville, Tennessee

Branch Offices
Knoxville, Tennessee
Arvada, Colorado

DRILLER'S LOG

SHIFT REPORT OF DRILLING OPERATIONS AT	Vertac Chemical Corporation (VCC) Vicksburg, MS		SITE
HOLE LOCATION	See Site Sketch Map	SHIFT	DATE 3-2-83
SURFACE ELEVATION	98.6' (msl)	RIG NO	HOLE NO. 5
DEPTH AT BEGINNING OF SHIFT		TOP ROCK	
FOOTAGE FISHTAILED		BOTTOM OF HOLE	
FOOTAGE SAMPLED		DRILLER	C. Nelson - H.B.A.
FOOTAGE CORED		HELPER	
DEPTH AT END OF SHIFT		DRILLED FOR	

SAMPLING RECORD

LOGGED BY: GDM

SPLE NO	FROM	TO	SPLE BLOWS	DESCRIPTION AND REMARKS
	0.0	0.5		Topsoil
1	5.0	6.0		Brown silty CLAY, v. moist
2	10.0	11.0		Brown v. silty CLAY, Moist
3	15.0	16.0		Brown sl. clayey SILT, with gray mottles
				Stratum change at 17.0 feet - by driller
				Saturated returns at 19.0'
4	20.0	21.0		Brown and gray sl. clayey SILT, saturated
5	25.0	26.0		Gray sl. clayey SILT, saturated
				Hard drilling at 29 feet
6	30.0	31.0		Greenish gray clayey SAND
7	34.0	35.0		Greenish gray MARL
				NOTES: (1) Monitoring Well # 5 set in test boring at 19.0'
				(2) Top of casing Elev. = 99.6' (msl)
				Bottom of casing Elev. = 79.6' (msl)

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Knoxville, Tennessee
Arvada, Colorado

DRILLER'S LOG

SHIFT REPORT OF DRILLING OPERATIONS AT	VCC, Vicksburg, MS		SITE
HOLE LOCATION	See Site Sketch Map	SHIFT	DATE 3-1-83
SURFACE ELEVATION	98.0' (msl)	RIG NO.	HOLE NO. 6
DEPTH AT BEGINNING OF SHIFT		TOP ROCK	
FOOTAGE FISHTAILED		BOTTOM OF HOLE	
FOOTAGE SAMPLED		DRILLER	C. Nelson, HBA
FOOTAGE CORED		HELPER	
DEPTH AT END OF SHIFT		DRILLED FOR	

LOGGED BY: GDM

SAMPLING RECORD

SPLE NO.	FROM	TO	SPLE BLOWS	DESCRIPTION AND REMARKS
	0.0	0.5		Topsoil
1	5.0	6.0		Brown clayey SILT, v. moist
2	10.0	11.0		Brown v. silty CLAY, moist
				Saturated returns at 14.5'
3	15.0	16.0		Brown v. silty CLAY, lam. lignite, wet.
4	20.0	21.0		Brown silty, clay with gray mottles
				Stratum change at 22.0' - by driller
5	25.0	26.0		Gray sl. clay SILT, saturated
				Hard drilling at 28.0'
6	30.0	31.0		Greenish gray sandy CLAY
7	35.0	36.0		Greenish gray MARL
8	39.0	40.0		Greenish gray MARL
				NOTES: (1) Monitoring Well #6 in additional borings, 5' southwest of test boring at 24.5'
				(2) Top of casing elev. = 98.6' (msl) Bottom of casing elev. = 73.6' (msl)

MCI/ CONSULTING ENGINEERS, INC.
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Branch Offices
Knoxville, Tennessee
Arvada, Colorado

DRILLER'S LOG

SHIFT REPORT OF DRILLING OPERATIONS AT	VCC, Vicksburg, MS		SITE
HOLE LOCATION	See Site Sketch Map	SHIFT	DATE 3-1-83
SURFACE ELEVATION	96.7' (msl)	RIG NO	HOLE NO. 7
DEPTH AT BEGINNING OF SHIFT		TOP ROCK	
FOOTAGE FISHTAILED		BOTTOM OF HOLE	
FOOTAGE SAMPLED		DRILLER	C. Nelson - HBA
FOOTAGE CORED		HELPER	
DEPTH AT END OF SHIFT		DRILLED FOR	

SAMPLING RECORD

LOGGED BY: GDM

SPLE NO	FROM	TO	SPLE BLOWS	DESCRIPTION AND REMARKS
	0.0	0.5		Topsoil
1	5.0	6.0		Brown Clayey SILT, v. moist
				Saturated returns at 8.2'
2	10.0	11.0		Brown v. silty CLAY, wet
3	15.0	16.0		Brown silty CLAY, with gray mottles, saturated
4	20.0	21.0		Brown v. silty CLAY, saturated
5	25.0	26.0		Brown and gray sl. clay SILT, saturated
				Hard drilling at 28.0'
6	30.0	31.0		Greenish gray sandy CLAY, with small gravel
7	34.0	35.0		Greenish gray MARL
				NOTES: (1) Monitoring Well #7 set in test boring at 29'
				(2) Top of casing Elev. = 97.5' (msl)
				Bottom of casing Elev. = 67.5' (msl)

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Nashville, Tennessee

Branch Offices:
Knoxville, Tennessee
Arvada, Colorado

DRILLER'S LOG

SHIFT REPORT OF DRILLING OPERATIONS AT	VCC, Vicksburg, MS		SITE
HOLE LOCATION	See Site Sketch Map	SHIFT	DATE 3-2-83
SURFACE ELEVATION	108.6 (msl)	RIG NO.	HOLE NO. 8
DEPTH AT BEGINNING OF SHIFT		TOP ROCK	
FOOTAGE FISHTAILED		BOTTOM OF HOLE	
FOOTAGE SAMPLED		DRILLER	C. Nelson - HBA
FOOTAGE CORED		HELPER	
DEPTH AT END OF SHIFT		DRILLED FOR	

SAMPLING RECORD

LOGGED BY: GDM

SPLE NO.	FROM	TO	SPLE BLOWS	DESCRIPTION AND REMARKS
	0.0	0.5		Topsoil
1	5.0	6.0		Brown silty CLAY
2	10.0	11.0		Brown clayey SILT, with lt. brown mottles, moist
3	15.0	16.0		Brown clayey SILT
				Stratum change at 18.0' - by driller
4	20.0	21.0		Gray silty CLAY, with small roots, wet
5	25.0	26.0		Gray silty CLAY, saturated
				Water rising at 29.0'
6	30.0	31.0		Gray SILT, saturated
7	35.0	36.0		Gray SILT, saturated
				Hard drilling at 38.5'
8	39.0	40.0		Brownish orange MARL, hard
	40.0	49.5		Pushed split spoon refused at 49.5'

NOTES: (1) Monitoring Well #8 set in additional borings, 8' east of test boring, at 29' on 3-3-83
(2) Top of casing elev. = 109.7' (msl)
Bottom of casing elev. = 79.7' (msl)

WELL WATER DATA

WELL NO	TOP OF CASING MSL	WATER LEVEL MSL 5-13-82	3-4-83	3-15-83	2-7-84	2-9-84
1	109.1	104.4	106.0	105.1	105.1	-
2	105.0	96.6	100.5	97.8	101.0	-
3	97.5	88	95.3	-	-	-
4	111.6	106.1	-	-	-	106.4
5	99.6	-	89.6	89.1	85.1	-
6	98.6	-	90.6	89.9	87.0	-
7	97.5	-	94.5	94.3	94.2	-
8	109.7	-	102.7	103.7	102.9	-

RECORD OF TELEPHONE CONVERSATION

Name of firm or party: Vertac Chemical

Address: Vicksburg, MS

Contact: Dick Karkkainen

Phone: (901) 767-6851

I spoke to Mr. Karkkainen to inform him that the recent groundwater monitoring analyses that we received on Jan. 17, 1984 appeared to indicate a significant increase over the background well (#4) for many indicator parameters. Well #1 showed ~~a significant~~ an apparent increase in specific conductance, and TOX. Well #2 showed an apparent increase in Specific conductance, TOC and TOX. Well #6 showed an apparent increase in Specific conductance, and TOX. Well #7 shows no apparent increase in any indicator parameters. Well #8 shows an apparent increase in specific conductance, TOC and TOX. They were not able to obtain a sample for Well #5 (dry).

Mr. Karkkainen was told to resample and analyze the wells again. If significant increases are found above background again, they have seven days to notify us. Then he was told that they have 15 days after notifying us to give us a groundwater quality assessment plan for the site.

Mr. Karkkainen said that they would immediately resample and analyze.

Charles Eiter
Signature

1/24/84
Date

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

January 13, 1984

RECEIVED
JAN 17 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Hazardous Waste Section
Mississippi Department of
Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39209

Dear Mr. Estes:

Attached is a copy of the analyses of groundwater from wells 1, 2, 5, 6, 7 and 8 taken in November, 1983.

In the additional and/or clarified information sent 12/22/83 we suggested that we continue with a detection monitoring program with semi-annual analysis of wells 2,5, 6 and 7 for indicator parameters and site specific parameters. We now propose to add well 8 to that sampling scheme. If you approve we would like to proceed soon with the first 1984 sample and use an alternate lab for confirmatory analysis.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: R. Maraman

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OCT 18 1983

4AW-RM

Mr. Jack M. McMillan, Director
Division of Solid/Hazardous Waste Management
Mississippi Department of Natural Resources
Post Office Box 10385
Jackson, Mississippi 39209

Re: Vertac Chemical MSD990714081
First Chemical MSD33417031

Dear Mr. McMillan:

Enclosed are our comments concerning Vertac Chemical, located in Vicksburg, Mississippi, and First Chemical, located in Pascagoula, Mississippi. The review for each facility was done in two parts and is arranged as follows:

Section I	Completeness Review - Vertac Chemical
Section II	Completeness Review - Vertac Chemical Groundwater Monitoring
Section III	Completeness Review - First Chemical
Section IV	Completeness Review - First Chemical Groundwater Monitoring

If there are questions, please call Caron Bell of my staff at 404/881-3067.

Sincerely yours,

James C. McCurry for

James H. Scarbrough, Chief
Residuals Management Branch

Enclosures

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

August 26, 1983

RECEIVED
AUG 29 REC'D

DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Chuck Estes
Mississippi Department of Natural Resources
Bureau of Pollution Control
P. O. Box 13085
Jackson, MS 39209

Dear Mr. Estes:

1. Attached is a copy of the analyses of the groundwater samples taken in July, 1983. I will in time add these to the summary forms submitted with our RCRA Part B application.

2. On the matter of construction of the landfill and surface impoundment dike projects, I report this progress:

   a. Invitation to bid on a combined project will be sent out today.

   b. Bids will be received September 7, 1983.

   c. We would like to begin construction shortly thereafter.

We anxiously await either approval from EPA Region IV or indication that they will not in the future find fault with our plans.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

Enc.

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851

REPLY TO: P. O. BOX 3
VICKSBURG, MS 39180
(601) 636-1231

March 15, 1983

RECEIVED
FEB 21 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

MCI/Consulting Engineers, Inc.
4301 Hillsboro Road
Suite 224
Nashville, TN 37215

Attention: George D. Mayo, Jr.

Subject: Chemical Waste Landfill
Water Level Measurements

In accordance with MCI telephone request this date, Dave Green and Bob James took the following well water measurements at 3:00 p.m.:

Well No.	Top/Casing to Water
#1	5 Ft. Minus 16 In.
#2	5 Ft. Plus 26½ In.
#3	Not Measured
#4	Not Measured
#5	10 Ft. Plus 6½ In.
#6	10 Ft. Minus 15½ In.
#7	5 Ft. Minus 21 In.
#8	5 Ft. Plus 12 In.

Also enclosed are two prints of Spencer Chemical Drawing No. 13-103-11 Issue 7 dated 8-15-65 showing Vicksburg Lake and Earthen Dam details along with the old course of Stouts Bayou.

Sincerely,

R.W. JAMES, JR.
Project Engineer

RWJ/tsd

Enclsoure

cc: D. Green
D. Karkkainen
D. Madsen
R. Maraman
File

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

April 7, 1983

RECEIVED
APR 11 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes
Division of Solid Waste Management
Mississippi Department of Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209

RE: Groundwater Monitoring

Dear Mr. Estes:

Attached is a copy of the MCI "Final Report Monitoring Well Installation Program". In combination with the "DISC Hyrogeological Investigation" of November, 1981 and results of 1 year of quarterly detection monitoring data we are provided substantial knowledge of subsurface conditions.

We propose to continue the detection monitoring program encompassing the new wells. In prior discussion with you I had proposed that we might want to proceed forth with an alternative monitoring program similar to the compliance monitoring program requiring monitoring of site specific parameters. I think the appropriate time to switch to the compliance monitoring program is when we submit our RCRA part B permit application. We would, however, like to drop the monitoring of radio chemicals and total coliform. The results of our monitoring data to date is ample to provide the EPA with background data for its national groundwater quality mapping project.

We would like to proceed to monitor downgradient wells 5, 6 and 7 and upgradient well 4. Additionally we would develop additional groundwater contour data by obtaining elevations at wells 1, 2, 4, 5, 6, 7 and 8. With your approval we will monitor the same parameters as previously excepting radiochemical parameters and total coliform. For consistency of data we will use the same laboratory, Environmental Laboratories, Inc. of Gulfport, Mississippi. We will need four sets of data for our RCRA Part B permit, therefore, we request approval to sample in April, May, June and July.

I have attached sampling instructions for your approval. I have also attached a sketch of possible groundwater contours and a page from EPA publication 600/4-82-029 "Handbook for Sampling and Sample Preservation of Water and Wastewater" as the original model for my sketch of possible contours. All this by way of explanation why I believe well 8 is not a proper upstream model and the preference of well 4 as the upstream well. This is in contradiction of the MCI recommendation. Additionally, an upstream well needs to be upstream of all potential process spills.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

Enc.

cc: F. L. Ahlers
G. D. Madsen
R. F. Maraman

SAMPLING INSTRUCTIONS

1. Obtain the groundwater elevation in the well by measuring the distance between the top of the well and groundwater level.

2. Rinse the baler with tap water, isopropyl alcohol, then tap water.

3. Bale a volume of groundwater equal to 3 times the volume existing within the well or bale until the well is empty, whichever comes first.

4. Obtain groundwater elevations in wells 1, 2, 4, 5, 6, 7 and 8 and bale wells 4,5,6 and 7 in one day.

5. The next day sample wells 4,5,6 and 7. Prior to sampling rinse the baler with tap water, isopropyl alcohol, then tap water.

4/2/83

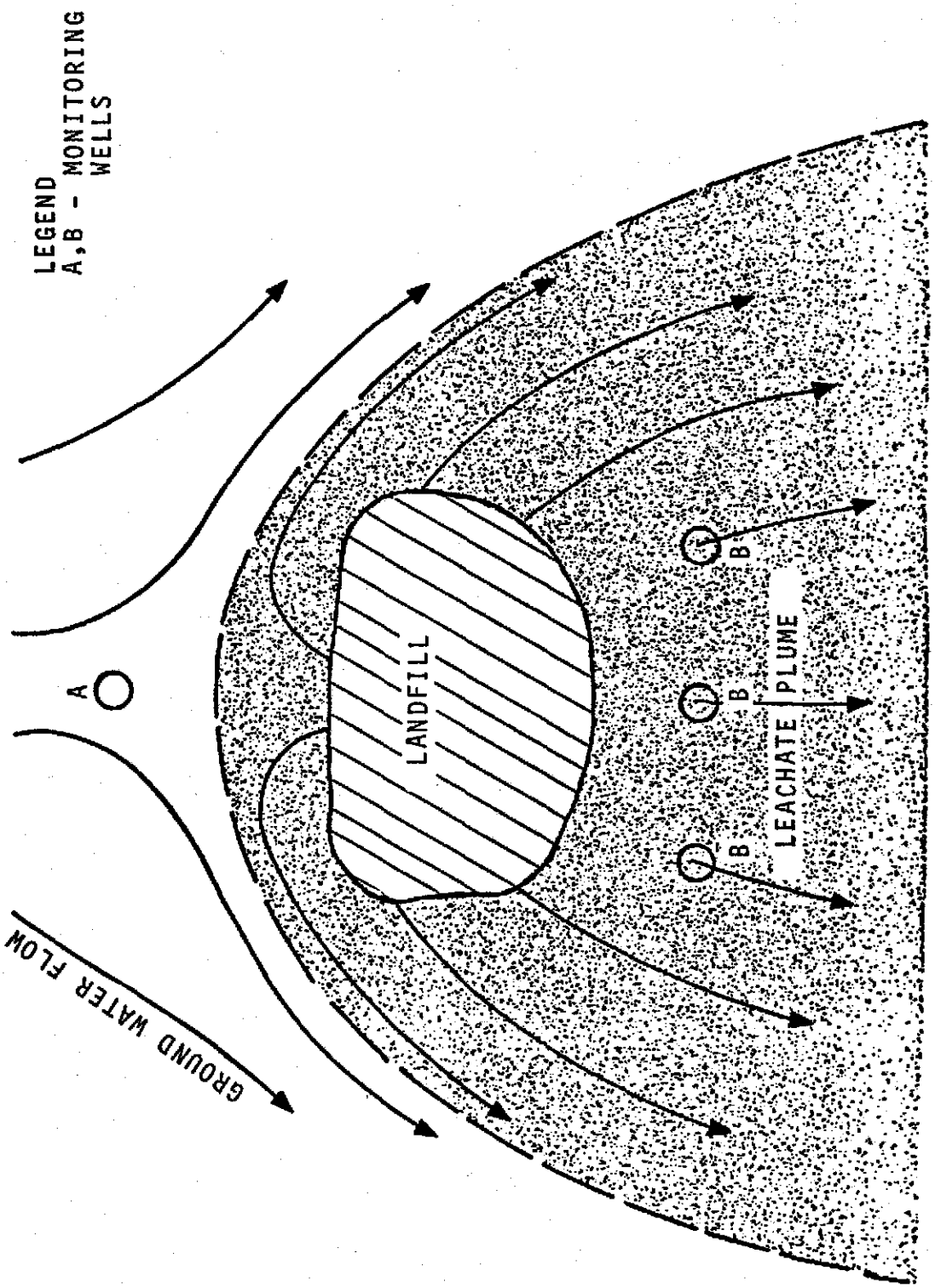
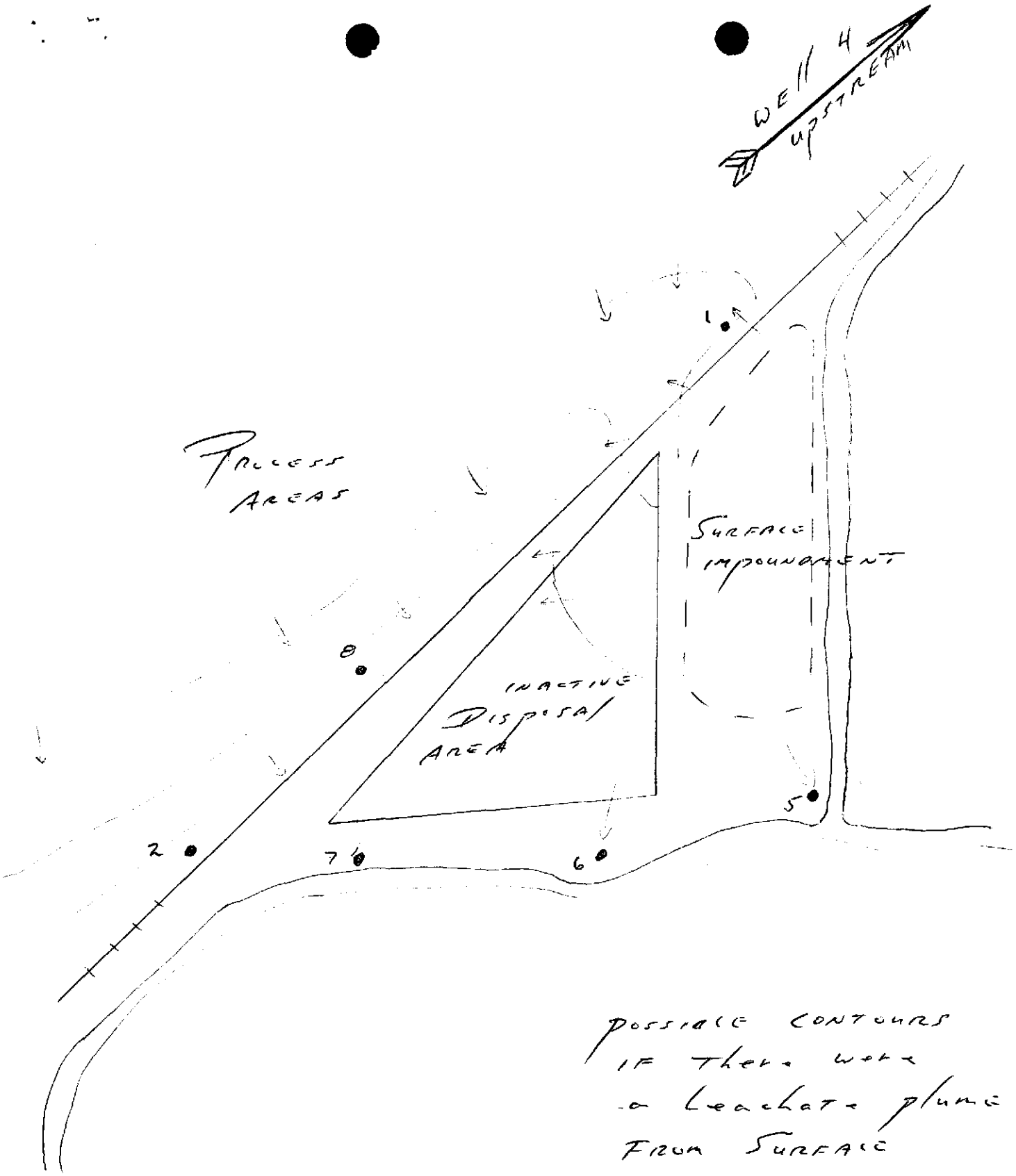
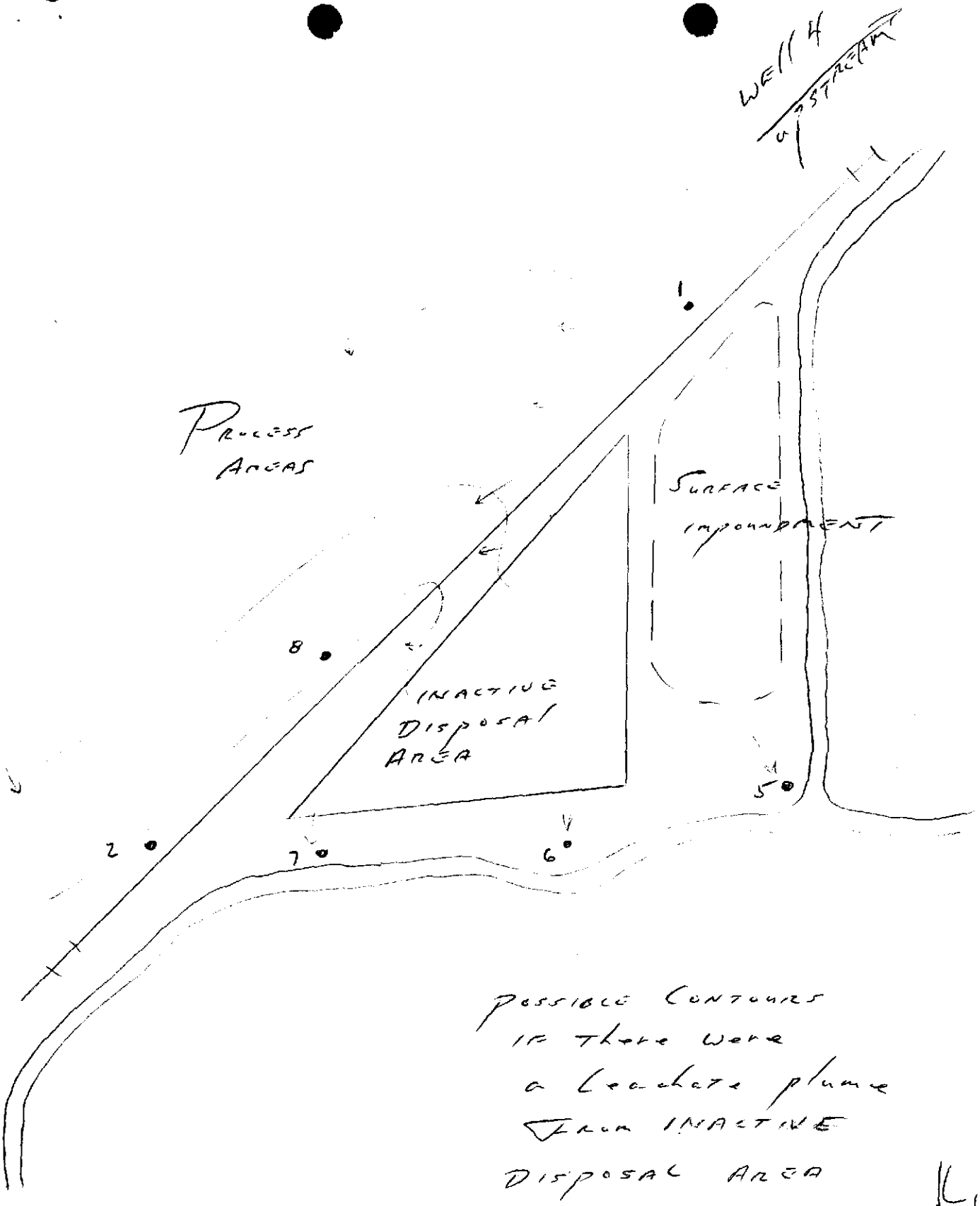


Figure 9.4 Idealized Monitoring Network



POSSIBLE CONTOURS IF THERE WERE A LEACHATE PLUME FROM SURFACE IMPOUNDMENT

RDK 4/7/87



POSSIBLE CONTOURS IF THERE WERE A LEACHATE PLUME FROM INACTIVE DISPOSAL AREA

ok 4/7/83

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

March 9, 1983

RECEIVED
MAR 11 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Chuck Estes
Mississippi Department of Natural Resources
Bureau of Pollution Control
Division of Solid Waste Management
P. O. Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

Attached are results of the fourth quarterly analysis of groundwater at our Vicksburg facility.

Bob Maraman and I hope to visit you next week and discuss the following:

1. Sampling and analysis of our 8 groundwater monitoring wells. As you are aware our 4 new wells are installed so we have met the compliance date set forth in Commission Order 599-82. I assume you will want quarterly analysis of the parameters specified in the RCRA initial program and I do not know if you can allow us any flexibility. If you can grant variances, I think monitoring to date has established we can drop the radio chemistry parameters and total coliform. Additionally, if allowable, I think it would be worthwhile to drop certain of the inorganics and organics and substitute more site specific parameters.

2. State requirements for our Part B permit. I will have reviewed the regulations in greater detail by the time we meet but I have the impression that there is some built in flexibility. We need to begin assessing what items may require outside assistance.

Best regards,

Dick Karkkainen

Dick Karkkainen
Director of Environment and Safety

RDK/bh

cc: F. L. Ahlers
G. D. Madsen
R. F. Maraman

February 14, 1983

Mr. Dick Karkkainen
Vertac Chemical Corp.
24th Floor
5100 Poplar
Memphis, TN 38137

Dear Mr. Karkkainen:

After reviewing the grading and capping plans for the inactive disposal area at the Vicksburg facility, we find that the plans are acceptable as submitted. The capping and grading project may begin whenever the weather conditions become favorable.

The proposed locations and depths for the four groundwater monitoring wells to be installed are also acceptable. Our office will be available to assist in the final location of the wells.

Should you have any further questions, please contact our office.

Sincerely,

Charles Estes, P.E.
Division of Solid Waste Management

CE:cb

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE DEC 23 1982

SUBJECT Status of RCRA Information Gathering Activities

FROM David Friedman, Manager David Friedman
Waste Analysis Program, WH-565

TO See below

The following table summarizes the status of the Agency's RCRA information gathering activities being conducted by or for the Office of Solid Waste as of December 15, 1982. If you have any questions relative to the scope or status of any of these activities, or if you have additional information needs that one or more of these studies can help with, please contact Wanda LeBleu-Biswas at 382-4798.

Study	Status
Lead-Acid Battery Production Residues	Questionnaire on hold.
Coking Production Wastes	Sampling plan under development.
Textile Finishing and Dyeing	Study in initial planning.
Petroleum Refining Waste	Study in initial planning.

Study	Status	
*Methyl Methacrylate Production Residues	*Cyro Ind., LA	Final draft engineering analysis being reviewed.
	*duPont, WV	Final draft engineering analysis being reviewed.
	*duPont, TN	Final draft engineering analysis being reviewed.
	*Rohm & Haas, TX	Final draft engineering analysis being reviewed.
*Toluene Diisocyanate Production Residues	Allied, WV	Engineering analysis reviewed and approved.
	BASF, LA	Presampling visit completed.
	Dow, TX	Engineering analysis reviewed and approved.
	Mobay, TX	Engineering analysis reviewed and approved.
	Mobay, WV	Engineering analysis reviewed and approved.
	Olin, LA	Engineering analysis reviewed and approved.
	Olin, OH	Engineering analysis reviewed and approved.
	*Rubicon, LA	Sampling completed.
*Methylene Diphenyl Diisocyanate Production Residues	BASF, LA	Presampling visit completed.
	*Rubicon, LA	Sampling visit completed.

* Indicates this action has undergone a change since previous update.

RECEIVED
1983 JAN -7 AM 9: 21
AIR & WATER POLLUTION CONTROL COMMISSION
STATE OF MISSISSIPPI

Form 1320-6 (Rev. 3-76)

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

December 20, 1982

CERTIFIED MAIL

RECEIVED
DEC 22 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes
Mississippi Department of Natural Resources
Bureau of Pollution Control
Division of Solid Waste Management
P. O. Box 10385
Jackson, Mississippi 39209

RE: Mississippi Commission on
Natural Resources Order 599-82

Dear Mr. Estes:

Attached are the results of analyses of soil in compliance with activity 1 of the referenced order.

As the project proceeds, particularly as dirt is moved, we will, of course, take further soil samples as controls and report those results to you.

Best regards,

Dick Karkkainen
Director of Environment and Safety

RDK/bh

Attch.

INTERNAL CORRESPONDENCE

DATE: December 3, 1982

TO: Dick Karkkainen

FROM: R.F. Maraman

R.F. Maraman

CC: See Distribution

SUBJECT: Analysis of Top Soil Samples From the Closed Out Landfill Site

Attached is the report from L. Gunnison on the above subject.

As we discussed by phone, atrazine and DNOC have the same elution time on the chromatograph column. The results were listed as DNOC rather than atrazine because it was believed that atrazine was probably a minor item in the area.

I have discussed the "cyazine" situation with Chuck Estes of the State Pollution Bureau and he feels as we do, that the Federal Agency is referring to cyanazines instead.

He is going to find out and get an analytical method for us from the Atlanta office.

RFM/tsd

Attachment

cc: F. Ahlers
R. Guidi
B. James
D. Madsen
G. Pratt
R. Maraman
L. Gunnison
File

INTERNAL CORRESPONDENCE

DATE: December 3, 1982

TO: R.F. Maraman

FROM: L. Gunnison

CC:

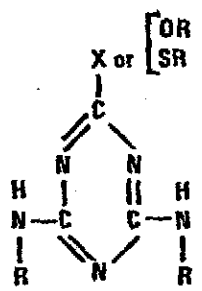
SUBJECT: EPA Dirt Sample

Samples were dried thoroughly at 105°C for four (4) days. 100g of each were extracted c̄ 150 ml $CHCl_3$. The $CHCl_3$ was filtered through paper toweling and evaporated to near dryness. The residue was redissolved in hexane and shot on GC for DNOC and DNBP (230°C, ov 225 FID). It was again evaporated to near dryness, redissolved in pet ether and ethyl ether, passed through a florisil column and evaporated to near dryness. It was redissolved in pet ether and shot on a GC for TOX (EC, 200°C ov -101). The results are as follows:

Site	DNOC	DNBP	Tox	Location	* CYANAZINE
1	0	65	0.75	Top of Hill	< 10
2	22.5	11	0.75	Toward Pond	< 10
3	0	206	0.85	Near Pond	< 10
4	0	0	1.70	Top of Hill	< 10
5	0	0	0.85	Toward Pond	< 10
6	32.5	180	4.00	Erosion Area East Side	< 10
7	30.0	30	5.20	Erosion Area West Side	< 10
8	0	0	4.00	Ditch Near R.R.	< 10

Results expressed as mg/Kilo dry dirt.

*s-TRIAZINE COMPOUNDS



atrazine (Aatrex, Atranex, Gesaprim, Primatol A)
simazine (Princep, Primatol S, Simanex, Gesatop)
propazine (Milogard, Gesamil, Primatol P)
prometone (Pramitol, Gesafram, prometon)
atraton (Atratone)
prometryn (Caparol, Gesagard, Primatol Q, Prometrex)
ametryn (Evik, Ametrex, Gesapax)
desmetryn (Semeron)
terbutryn (Igran, Shortstop E)
cyanazine (Bladex, Scogal)
cyprazine (Outfox)

Verbal Report 12-17-82
RDK

TABLE 1
DATA SUMMARY
VERTAC CHEMICAL COMPANY
VICKSBURG, MISSISSIPPI

	SOIL/SEDIMENT				WATER	
	SBU-001 Stouts Bayou Upstream	HDB-004 Hatcher Bayou Downstream	VL-002 Erosion Channel East Corner	VL-003 Mud Flat West Corner	SBU-001 Stouts Bayou Upstream	HDB-004 Hatcher Bayou Downstream
PURGEABLE ORGANIC COMPOUNDS	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
Chloroform[1]	ND	ND	ND	10	ND	<5
Carbon tetrachloride[1]	ND	ND	ND	<7[c]	ND	<5
Trichloroethylene[1]	ND	ND	ND	<7	ND	ND
Tetrachloroethylene[1]	ND	ND	ND	<7	ND	ND
EXTRACTABLE ORGANIC COMPOUNDS (GC/MS)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
Benzo (B) flouranthene and/or Benzo (K) flouranthene[1]	<36,000	ND	ND	ND	ND	ND
Benzo-A-pyrene[1]	<36,000	ND	ND	ND	ND	ND
Benzo (GHI) perylene[1]	<36,000	ND	ND	ND	ND	ND
Hexadecanoic acid[2]	—	—	—	—	<12	<12
Octadecanoic acid[2]	—	—	—	—	<12	<12
Dinoseb[2]	ND	ND	ND 101	<15,000 1	ND	ND
Cyanazine[2]	—	—	21,000 10.4	<7,600 <2	—	—
Petroleum type product	P	—	—	—	—	—
PESTICIDES, PCB'S, AND OTHER CHLORINATED ORGANIC COMPOUNDS (GC/EC)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
PCB-1254[1]	ND	ND	7,000	ND	ND	ND
Toxaphene[1]	ND	ND	13,000[b] 48.7	65,000[b] 34.3	ND	ND
Atrazine	ND	ND	84,000[b]	18,000[b] 7.95	ND	ND
Alpha chlordane	6.5	ND	ND	ND	ND	ND
Gamma chlordane	7.6	ND	ND	ND	ND	ND
INORGANIC ELEMENTS AND COMPOUNDS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(µg/l)	(µg/l)
Barium	156	195	213	211	64	112
Chromium[1]	12	170	30	22	ND	ND
Copper[1]	8.8	7.8	17	15	ND	17
Nickel[1]	12	14	23	23	ND	ND
Lead[1]	14	21	20	20	ND	ND
Strontium	61	92	42	30	88	122
Titanium	240	213	441	561	21	36
Vanadium	22	22	41	46	ND	ND
Yttrium	12	19	14	14	ND	ND
Zinc[1]	50	50	67	64	ND	17
Mercury[1]	0.12	ND	0.12	ND	ND	ND
Aluminum	7,690	6,378	14,765	15,843	875	1,500
Manganese	3,050	3,150	1,265	1,589	173	228
Calcium	71,200	116,000	38,850	15,453	32,000	34,000
Magnesium	5,680	8,466	10,134	6,340	8,900	14,000
Iron	19,900	26,043	22,988	24,327	1,100	1,800
Sodium	160	400	210	660	6,300	127,000
Cyanide[1]	ND	ND	0.86	0.58	ND	46
CONVENTIONAL PARAMETERS (Units as specified for each parameter)						
Temperature (°C)	NA	NA	NA	NA	6.5	15.9
pH (SU)	NA	NA	NA	NA	7.1	6.9
Total phosphorus (mg/l)	NA	NA	NA	NA	0.40	0.98

All soil/sediment concentrations were calculated on a dry weight basis.
P - Indicates presence.
NA - Not analyzed.
ND - None detected at or above the minimum quantifiable level (MQL). The MQL's vary from sample to sample and from parameter to parameter; see analytical data sheets (appendix A) for exact values.
1 - Compound/element is on the NRDC list of priority pollutants.
2 - Tentative identification, estimated concentration.
3 - The value indicates the highest estimated concentration for a compound in this classification. The number in parentheses indicated the number of compounds detected in this classification.
a - Presumptive evidence of presence of material; not confirmed on GC/MS or second GC column. See footnote b.
b - Confirmed on GC/MS. The lack of a footnote indicates that the compound was confirmed on two different GC columns.
c - The less than symbol indicates that the compound was detected by GC/MS at a concentration less than the minimum quantifiable level (MQL); the number indicates the MQL.

				Grid III	Grid VI
will leach	Atrazine	LD_{50}	1780 mg/kg		
	Cyanazine	LD_{50}	334 mg/kg		
Heavy chlorinated solvents	very toxic will not leach	* Toxaphene	LD_{50} 69 mg/kg		48.7
	will leach	Dinoseb (DNBP)	LD_{50} 40-60 mg/kg	145	101

ATZ

ATRAZINE

Common Synonyms

2-Chloro-4-ethylamino-6-isopropylamino-s-triazine
Aatrex Herbicide

Solid crystals — White

Sinks in water.

AVOID CONTACT WITH SOLID AND DUST. KEEP PEOPLE AWAY.
Wear goggles and self-contained breathing apparatus.
Stay upwind. Use water spray to "knock down" dust.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
POISONOUS GASES MAY BE PRODUCED WHEN HEATED.

Exposure

CALL FOR MEDICAL AID.

DUST
POISONOUS IF INHALED.
Irritating to eyes, nose and throat.
Move victim to fresh air.
If in eyes, hold eyelids open and flush with plenty of water.
If breathing is difficult, give oxygen.

SOLID
POISONOUS IF SWALLOWED.
Irritating to skin and eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG-446-6)

Issue warning—water contaminant
Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** 2-Chloro-4-ethylamino-6-isopropylamino-S-triazine; Aatrex herbicide

3.2 **Coast Guard Compatibility Classification:** To be developed

3.3 **Chemical Formula:** $C_8H_{14}N_5Cl$

3.4 **IMCO/United Nations Numerical Designation:** 6.1/1609

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Solid

4.2 **Color:** White

4.3 **Odor:** Data not available

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** *Dust mask; goggles; rubber gloves.*

5.2 **Symptoms Following Exposure:** Irritates eyes and skin. If ingested, irritates mouth and stomach.

5.3 **Treatment for Exposure:** EYES: flush with copious amounts of water for 15 min. SKIN: wash with large amounts of water. INGESTION: no specific antidote; induce vomiting and give a saline laxative and supportive therapy.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** Data not available

5.5 **Short-Term Inhalation Limits:** Data not available

5.6 **Toxicity by Ingestion:** Grade 2; oral rat LD_{50} = 3080 mg/kg

5.7 **Late Toxicity:** Data not available

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors are nonirritating to eyes and throat.

5.9 **Liquid or Solid Irritant Characteristics:** Causes smarting of the skin and first-degree burns on short exposure and may cause second-degree burns on long exposure.

5.10 **Odor Threshold:** Data not available

6. FIRE HAZARDS

6.1 **Flash Point:** Not flammable

6.2 **Flammable Limits in Air:** Not flammable

6.3 **Fire Extinguishing Agents:** Not pertinent

6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent

6.5 **Special Hazards of Combustion Products:** Irritating hydrogen chloride and toxic oxides of nitrogen may be formed.

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** Not pertinent

6.8 **Electrical Hazard:** Not pertinent

6.9 **Burning Rate:** Not pertinent

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 12.6 mg/l /48 hr/rainbow trout/TL_m/fresh water

8.2 **Waterfowl Toxicity:** > 2000 mg/kg LD_{50}

8.3 **Biological Oxygen Demand (BOD):** Data not available

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

Ciba-Geigy Corporation
Agricultural Division
P. O. Box 11422
Greensboro, N. C. 27409

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Various grades, 70-80%. Mixtures with sodium chlorate and sodium metaborate.

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG-446-5)

II

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Not Listed

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	0
Health	
Vapor Irritant	0
Liquid or Solid Irritant	2
Poisons	0
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	3
Aesthetic Effect	1
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:** Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 ***Physical State at 15°C and 1 atm:*** *Solid*

13.2 **Molecular Weight:** 215.7

13.3 **Boiling Point at 1 atm:** Decomposes

13.4 **Freezing Point:** 347°F = 175°C = 348°K

13.5 **Critical Temperature:** Not pertinent

13.6 **Critical Pressure:** Not pertinent

13.7 **Specific Gravity:** (est.) 1.2 at 20°C (solid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** Not pertinent

13.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent

13.12 **Latent Heat of Vaporization:** Not pertinent

13.13 **Heat of Combustion:** (est.) −9,500 Btu/lb = −5,300 cal/g = −220 × 10^3 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

NOTES

TXP	TOXAPHENE

Common Synonyms Octachlorocamphene	Waxy solid or in solution Amber Solid sinks in water, solution floats on water.

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with solid and solution.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire	Solid not flammable, but usually dissolved in combustible liquid. POISONOUS GASES ARE PRODUCED IN FIRE. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with foam, dry chemical or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.
Exposure	CALL FOR MEDICAL AID. SOLID OR SOLUTION POISONOUS IF SWALLOWED. Irritating to skin and eyes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim quiet and warm.
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Solution is fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—poison, water contaminant
Should be removed
Chemical and physical treatment

2. LABEL

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Octachlorocamphene
3.2 **Coast Guard Compatibility Classification:** Not applicable
3.3 **Chemical Formula:** $C_{10}H_6Cl_8$
3.4 **IMCO/United Nations Numerical Designation:** Not listed

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Waxy solid
4.2 **Color:** Amber
4.3 **Odor:** Mild turpentine odor

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Chemical-type respirator; rubber gloves; chemical goggles or face shield.
5.2 **Symptoms Following Exposure:** May be absorbed through skin, lungs, or intestinal tract. Symptoms include salivation, leg and back muscle spasms, nausea, vomiting, hyperexcitability, tremors, shivering, clonic convulsions, then tetanic contractions of all skeletal muscles. Lethal *doses cause respiratory failure.* Respiration, affected as a result of the exertion from vomiting or convulsions, is first arrested because of tetanic muscular contractions, then increased in both amplitude and rate as the muscles relax.
5.3 **Treatment for Exposure:** If symptoms of poisoning appear, promptly remove the unabsorbed pesticide from the stomach by inducing vomiting with warm salty or soapy water (if the patient is conscious) or from the skin with soap and water. Keep patient warm and quiet. Call a physician.
5.4 **Toxicity by Inhalation (Threshold Limit Value):** Not pertinent
5.5 **Short-Term Inhalation Limits:** Not pertinent
5.6 **Toxicity by Ingestion:** Grade 4; LD_{50} below 50 mg/kg (dog)
5.7 **Late Toxicity:** Data not available
5.8 **Vapor (Gas) Irritant Characteristics:** The solid is non-volatile. For solutions, see meta-xylene.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** Not pertinent

6. FIRE HAZARDS

6.1 **Flash Point:** 84°F C.C. (solution)
6.2 **Flammable Limits in Air:** 1.1% - 6.4% (solvent only)
6.3 **Fire Extinguishing Agents:** Foam, dry chemical or carbon dioxide
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.
6.5 **Special Hazards of Combustion Products:** Toxic vapors are generated when heated.
6.6 **Behavior in Fire:** Solution in xylene may produce corrosive products when heated.
6.7 **Ignition Temperature:** 986°F (solution)
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** 5.8 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:**
0.05 ppm/20 days/goldfish/100% kill/fresh water
0.02 ppm/*/bluegill/100% kill/fresh water
0.0032 ppm/24 hr/spot/100% kill/[illegible]
*Time period not specified
8.2 **Waterfowl Toxicity:** 30.8 mg/kg
8.3 ***Biological Oxygen Demand (BOD):*** Data not available
8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Hercules Inc.
Synthetics Dept.
Brunswick, Ga. 31521
2. Sonford Chemical Co.
Pure-Atlantic Highway
Port Neches, Tex. 77651

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Technical; 40% dust concentrate; 90% solution in xylene
10.2 **Storage Temperature:** Ambient
10.3 **Inert Atmosphere:** No requirement
10.4 **Venting:** Sealed containers in well-ventilated area

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

II-A-T-U

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Poisonous liquid or solid, Class B
12.2 **NAS Hazard Rating for Bulk Water Transportation:** Not listed
12.3 **NFPA Hazard Classifications:** Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Waxy solid
13.2 **Molecular Weight:** 414 (avg.)
13.3 **Boiling Point at 1 atm:** Decomposes
13.4 **Freezing Point:** 149 - 194°F = 65 - 90°C = 338 - 363°K
13.5 **Critical Temperature:** Not pertinent
13.6 **Critical Pressure:** Not pertinent
13.7 **Specific Gravity:** 1.6 at 15°C (solid)
13.8 **Liquid Surface Tension:** Not pertinent
13.9 **Liquid-Water Interfacial Tension:** Not pertinent
13.10 **Vapor (Gas) Specific Gravity:** Not pertinent
13.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
13.12 **Latent Heat of Vaporization:** Not pertinent
13.13 **Heat of Combustion:** Not pertinent
13.14 **Heat of Decomposition:** Not pertinent
13.15 **Heat of Solution:** Not pertinent
13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

References

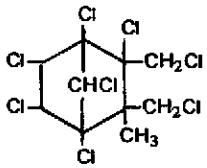
(1) International Agency for Research on Cancer, *IARC Monographs on the Carcinogenic Risks of Chemicals to Humans,* Lyon, France 16, 349 (1978).

(2) National Cancer Institute, *Bioassay of o-Toluidine Hydrochloride for Possible Carcinogenicity,* Technical Report Series No. 153, Bethesda, MD (1979).

TOXAPHENE

- Carcinogen (IARC) (4) (NCI) (5)
- Hazardous substance (EPA)
- Hazardous waste (EPA)
- Priority toxic pollutant (EPA)

Description: $C_{10}H_{10}Cl_8$ with the structural formula shown below is an amber-colored waxy solid with a melting range of 65° to 90°C.



Code Numbers: CAS 8001-35-2 RTECS XW5250000 UN 2761

DOT Designation: ORM-A

Synonyms: Chlorinated camphene, camphechlor (British and international generic name except in Belgium, Canada, France, India and U.S. where toxaphene is used); polychlorcamphene (USSR generic name).

Potential Exposure: Toxaphene is a commercially produced, broad spectrum, chlorinated hydrocarbon pesticide. It was introduced in the United States in 1948 as a contact insecticide under various trade names and is currently the most heavily used insecticide in the United States, having replaced many of the agricultural applications of DDT, for which registration has been cancelled. Annual production of toxaphene exceeds 100 million pounds, with primary usage in agricultural crop application, mainly cotton. Workers in toxaphene production, formulation or application are especially at risk as are those living in areas where toxaphene is produced or used.

Incompatibilities: Strong oxidizers.

Permissible Exposure Limits in Air: The Federal limit is 0.5 mg/m^3. The 1980 tentative STEL value is 2.0 mg/m^3. The notation "skin" is added to indicate the possibility of cutaneous absorption. The IDLH level is 200 mg/m^3.

Determination in Air: Filtration from air, working up with petroleum ether and analysis by gas chromatography. See NIOSH Methods, Set F. See also reference (A-10).

Permissible Concentration in Water: To protect freshwater aquatic life—0.013 μg/ℓ as a 24-hour average, never to exceed 1.6 μg/ℓ. To protect saltwater aquatic life—never to exceed 0.07 μg/ℓ. To protect human health—preferably zero. An additional lifetime cancer risk of 1 in 100,000 is presented by a concentration of 0.0071 μg/ℓ.

Respirator Selection: (1) Engineering controls shall be used when needed to keep concentrations of asphalt fumes below the recommended exposure limit. The only conditions under which compliance with the recommended exposure limit may be achieved by the use of respirators are:

(a) During the time required to install or test the necessary engineering controls.

(b) For operations such as nonroutine maintenance or repair activities causing brief exposure at concentrations above the environmental limit.

(c) During emergencies when concentrations of asphalt fumes may exceed the environmental limit.

(2) When a respirator is permitted by (1) above, it shall be selected from a list of respirators approved by NIOSH.

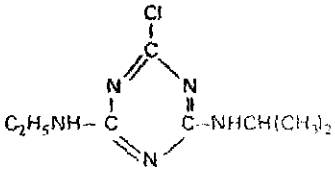
Disposal Method Suggested: Incineration.

References

(1) National Institute for Occupational Safety and Health, *Criteria for a Recommended Standard: Occupational Exposure to Asphalt Fumes,* NIOSH Doc. No. 78-106, Washington, DC (September 1977).

ATRAZINE

Description: Atrazine, $C_8H_{14}ClN_5$, has the structural formula



It is a herbicide which forms colorless crystals melting at 175° to 177°C.

Code Numbers: CAS 1912-24-9 RTECS XY5600000 UN 2763

DOT Designation: –

Synonyms: 6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine, Gesaprim®, Primatol®, 2-chloro-4-ethylamino-6-isopropylamino-s-triazine.

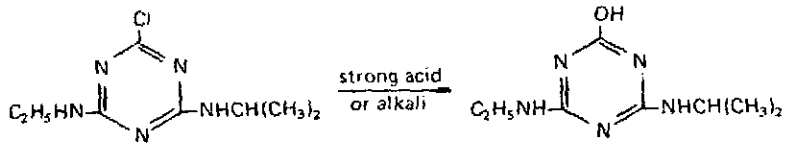
Potential Exposure: Personnel involved in manufacture (A-32), formulation or application of this herbicide.

Permissible Exposure Limits in Air: ACGIH as of 1980 has set a TWA value of 10 mg/m^3 but no STEL value.

Permissible Concentration in Water: A suggested no-adverse effect level in drinking water has been calculated by NAS/NRC (A-2) as 0.15 mg/ℓ. An acceptable daily intake (ADI) of 0.0215 mg/kg/day has been calculated for atrazine (A-2).

Harmful Effects and Symptoms: Dermatitis. The acute oral toxicity to rats is very low.

Disposal Method Suggested: Atrazine is hydrolyzed by either acid or base as shown in the formula on the following page.

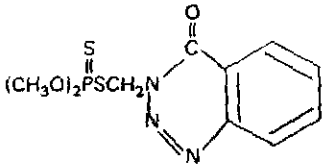


The hydroxy compounds are generally herbicidally inactive, but their complete environmental effects are uncertain. However, the method appears suitable for limited use and quantities of triazine (A-32).

Atrazine underwent >99% decomposition when burned in a polyethylene bag, and combustion with a hydrocarbon fuel would appear to be a generally suitable method for small quantities. Combustion of larger quantities would probably require the use of a caustic wet scrubber to remove nitrogen oxides and HCl from the product gases (A-32).

AZINPHOS-METHYL

Description: Azinphos-methyl, $C_{10}H_{12}N_3O_3PS_2$, has the structural formula



It is a colorless crystalline compound melting at 73° to 74°C. Its technical form is a brown, waxy solid.

Code Numbers: CAS 86-50-0 RTECS TE1925000 UN (NA 2783)

DOT Designation: Poison B.

Synonyms: O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] phosphorodithioate, Guthion®, Gusathion-M®, metiltriazotion (in U.S.S.R.).

Potential Exposure: Personnel engaged in the manufacture (A-32), formulation and application of this insecticide and acaricide.

Incompatibilities: Strong oxidizers.

Permissible Exposure Limits in Air: The TWA value is 0.2 mg/m^3 with the notation "skin" indicating the possibility of cutaneous absorption. The STEL value proposed is 0.6 mg/m^3. The IDLH level is 5 mg/m^3.

Determination in Air: Collection by impinger or fritter bubbler, analysis by gas liquid chromatography (A-1).

Permissible Concentration in Water: For the protection of freshwater and marine aquatic life, a criterion of 0.01 µg/ℓ has been suggested by EPA (A-3). For the protection of human health, a no-adverse effect level in drinking water has been calculated by NAS/NRC (A-2) as 0.088 mg/ℓ. An allowable daily intake of 0.0125 mg/kg/day was calculated.

Dinocap ♦

CHEMICAL COMPOSITION: 2,4-Dinitro-6-octyl-phenyl-crotonate, 2,6-dinitro-4-octyl-phenyl crotonate, and nitrooctyl-phenols (principally dinitro). A mixture of 1-methylheptyl, 1-ethylhexyl, and 1-propylpentyl isomers of the octyl 8-carbon chain.

COMMON NAME: *dinocap* (BSI, CSA, ESA, ISO).

OTHER NAMES: *Crotothane* * (May & Baker), *Karathane* *.

FORMER NAMES: *Arathane* *, *Iscothane* *, *Mildex* *.

ACTION: Foliage fungicide and acaricide.

CHEMICAL PROPERTIES: Dark brown liquid. Practically insoluble in water but soluble in most organic solvents.

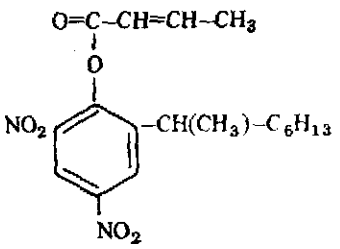
TOXICITY: Acute oral LD_{50} (tech.) (rat), 980 mg/kg.

SIGNAL WORD: CAUTION.

APPLICATIONS: Currently being used on various fruit and vegetable crops and ornamentals for control of powdery mildew diseases and certain species of mites.

FORMULATIONS: Wettable powder, liquid concentrate, dust. *Cekucap* * 25% W.P., *Dinocap* 25% W.P. are continued by Cequisa.

See *Dikar* *.



Dinocap ♦

BP: Rohm and Haas Co. (*Karathane* *)
F: Cequisa (Spain) (*Cekucap* * 25%)

Dinocap 25% — see Dinocap ♦.

Dinocton-4 (Production discontinued by Murphy Chemical Ltd.)

CHEMICAL NAME: Methyl-2,6-dinitro-4-*s*-octylphenyl carbonate.

COMMON NAME: *dinocton-4*.

OTHER NAME: *MC 1947* (Murphy Chemical).

ACTION: Fungicide.

CHEMICAL PROPERTIES: Liquid, sp. gr. 1.17. Soluble in acetone and aromatic solvents. Hydrolyzed by alkali to parent *dinitrooctyl phenol*.

TOXICITY: Acute oral LD_{50} (rat), 1650 mg/kg; acute dermal LD_{50} (rat), 3000 mg/kg.

APPLICATION: Eradicant and protectant control of powdery mildews in integrated control programs.

Dinocton-o (Product discontinued)

CHEMICAL NAME: Isomeric/reaction mixture of methyl-2,4-dinitro-6-(1-ethyl-hexyl) phenylcarbonate and methyl-2,4-dinitro-6-(1-propyl-pentyl) phenylcarbonate.

COMMON NAME: *dinocton-o*.

ACTION: Nonsystemic acaricide and fungicide.

TOXICITY: Acute oral LD_{50} (rat), 1250 mg/kg.

APPLICATIONS: Effective against spider mites and powdery mildew.

Dinofen * — see Dinobuton.

Dinograne * (Product discontinued by SOPRA)

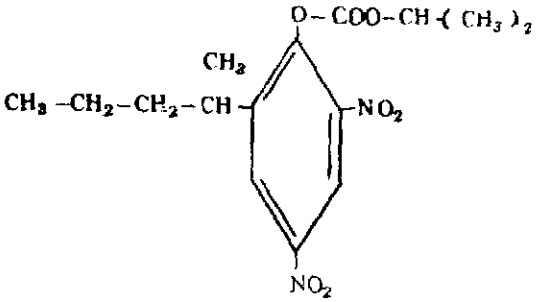
CHEMICAL COMPOSITION: Mixture of *DNBP* and *MCPA* in ratio of 4 to 5.

ACTION: Herbicide (systemic and contact).

Dinopenton

CHEMICAL NAME: Isopropyl 2-(1-methylbutyl)-4,6-dinitrophenyl carbonate.

COMMON NAME: *dinopenton* (ISO).

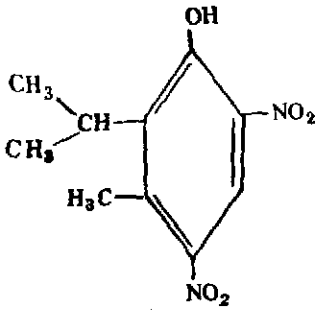


Dinopenton

Dinoprop

CHEMICAL NAMES: 4,6-Dinitro-2-cymen-3-ol, or 2-isopropyl-3-methyl-4,6-dinitrophenol.

COMMON NAME: *dinoprop* (ISO).



Dinoprop

Dinosam — see DNAP.

Dinoseb

CHEMICAL NAME: 2-*sec*-butyl-4,6-dinitrophenol.

COMMON NAMES: *DNBP, dinitro; dinoseb* (BSI, ISO, WSSA), *dinosebe* (France).

OTHER NAMES: *Basanite* * (BASF Wyandotte), *Caldon* *, *Chemox* * *General, Chemox* * *PE, Chemsect* * *DNBP, DN-289* * (product discontinued), *Dinitro* *, *Dinitro-3* *, *Dinitro General* *, *Dow General Weed Killer* *, *Dow Selective Weed Killer* *, *Dynamyte* *, *Elgetol* * *318, Gebutox* *, *Kiloseb* *, *Nitropone* * *C, Premerge* * *3, Sinox* * *General* (FMC Corp.), *Subitex* *, *Unicrop DNBP, Vertac* * *Dinitro Weed Killer 5*.

ACTION: Herbicide, desiccant, dormant fruit spray.

CHEMICAL PROPERTIES: Dark brown solid or viscous liquid, melting at 36-44° C.

TOXICITY: Acute oral LD_{50} (rat), 40-60 mg/kg.

SIGNAL WORD: POISON.

APPLICATIONS: The phenol form *(Dow General Weed Killer* *, *Sinox* * *General, Caldon)* is used as a general contact herbicide in orchards, vineyards, forage legumes, and for killing potato vines and desiccating seed crops to facilitate harvest. The ammonium salt (*Dow Selective* *, *Sinox* * *W)* is used as a selective contact herbicide in alfalfa, clover, birdsfoot trefoil, onions, garlic, peas, and small grains. Alkanolamine salts such as *Premerge* * *3* are applied to kill germinating seeds contained in the upper soil surface layers in preemergence treatments and also in early postemergence and directed sprays in numerous crops.

The triethanolamine salt *(DN-289* * not available commercially, *Elgetol* *, *Gebutox* *) is commonly applied as a dormant fruit spray for control of many insects and certain fungus diseases. SLN: Nevada, Arizona, Virginia, North Carolina, Georgia, Alabama, Indiana, Illinois, and Missouri.

FORMULATIONS: Emulsifiable concentrate, aqueous solution, and oil solution.

COMBINATION: *DNBP* with *Alanap* * (=*Dyanap* *); *Naptro* * with *Dinitro, Klean-Krop* *; *Naptalam/dinoseb (Naptro* *)*.

See *Ancrack* *.

Tordon * 225E — see Tordon *.

Tordon * K — see Tordon *.

Tordon * RTU — see Tordon *.

Tormona * — see 2,4,5-T.

Torque * — see Vendex *.

Tota-Col * — see Paraquat.

Totril * — see Ioxynil.

Toxakil * — see Toxaphene ♦.

Toxaphene ♦

CHEMICAL NAME: Chlorinated camphene (content of combined chlorine, 67-69%).

COMMON NAMES: *toxaphene** (USA only, registered trademark elsewhere); *polychlorocamphene* (USSR); *camphechlor* (So. Africa, FAO).

OTHER NAMES: *Attac * 4-2, Attac * 4-4, Attac * 6, Attac * 6-3, Attac * 8, Camphoclor*, Camphofene Huileux*, Clor Chem T-590*, Cristoxo** and *Cristoxo-90** (discontinued by Crystal Chemical Interamerica), *Hercules Toxaphene** (name discontinued), *Motox*, Phenacide*, Phenatox*, Strobane-T** (discontinued by Tenneco Chemicals), *Toxakil** (FMC), *Toxon * 63* (Riverside), *Vertac Toxaphene 90*.

ACTION: Insecticide.

TOXICITY: Acute oral LD_{50} (rat), 69 mg/kg.

SIGNAL WORD: WARNING.

CAUTION: *Toxaphene* and emulsion concentrates of it must be kept from contact with iron or corrosive metals and lining of melt tanks and use of non-corrosive piping is required in formulating plants.

Packaging materials include those normally used in the industry although containers for emulsifiable concentrates must be lined.

APPLICATION: It acts as both a stomach and a contact poison and does not accumulate in animal tissues so much as *DDT*.

It is very effective when used in dust, liquid or mixed bait forms for the control of grasshoppers, armyworms, and cutworms and is used alone and in combination with other insecticides for control of major cotton insects.

Special livestock formulations are available and recommended for the control of livestock pests, including horn flies, lice, ticks, and sheep ked. *Toxaphene* sprays and dips effectively control scab mites, or mange on livestock. *Toxaphene* sprays and dusts also are used to control a wide variety of insects on crops.

Phytotoxicity is not apparent at recommended levels for crops, except that *toxaphene* should not be used on cucurbits or tobacco. The Federal tolerance level is 7 ppm on certain fruits, vegetables, and in the fat of beef, hogs, goats, horses, and sheep; 5 ppm on grain and cottonseed; and 2 ppm on soybeans.

*Attac * 6* and *Attac * 8* have been registered for sicklepod control in Alabama, Georgia, Mississippi, Arkansas, South Carolina and Tennessee as 24(C) registrations for special local needs.

FORMULATIONS: Emulsion concentrates, wettable powders, and dusts. A 20% dust is the standard formulation; a 10% dust is produced for use against chinch bugs, armyworms, and certain other insects. Emulsifiable concentrates range from 4 to 8 pounds/gallon; oil solutions, 90%; and wettable powders, 40%. It is also formulated in combination with other insecticides.

COMBINATIONS: With *methyl parathion* in the proportion 8 pounds *toxaphene* and 2 pounds *methyl parathion*; and 6 pounds *toxaphene* and 1.5 pounds *methyl parathion* as emulsifiable solutions. It is recommended to be tank mixed with numerous other insecticides — *Azodrin*, Lorsban*, chlordimeform, Lannate*, etc. Signal word for combinations with *methyl parathion* is DANGER. Livestock formulation with *lindane (Duo-Tox *)*.

BP: BFC Chemicals Inc. (*Attac * 4-2, Attac * 4-4, Attac * 6, Attac * 6-3, Attac * 8*)
Hopkins Agricultural Chemical Co. (*Duo-Tox **)
Idacon, Inc. (*Clor Chem T-590**)
Procida (Groupe Roussel Uclaf - France) (*Camphoclor*, Camphofene Huileux**)
Vertac Chemical Corp. (*Vertac Toxaphene 90*)

F: Devidayal (Sales) Private Ltd. (India)
Form-Chem (Pty) Ltd. (Rep. South Africa)

Toxer Total — see Paraquat ♦.

Tox-Hid * — see Cov-R-Tox *; Warfarin ♦.

Toxicant

A poisonous substance such as the active ingredient in pesticide formulations that can injure or kill plants, animals, or microorganisms.

Toxicity

Defined as the "quality, state, or degree of being.....poisonous." See *Hazard*. *Acute toxicity* results from a severe case of poisoning due to a single dose of exposure to a chemical (LD_{50}). *Chronic toxicity* is caused by repeated small doses over a considerable period, resulting in accumulation of the chemical in the body, or its effects are additive, bringing on illness or sometimes death. *Dermal toxicity* is a measure of the amount of a poison that can be absorbed through the skin of an animal to produce toxic symptoms.

Measures of toxicity are usually compared at the fifty (50) per cent level [illegible]

Toxicity (Human)

The AAPCO has adopted these regulatory principles relating to the determination of highly toxic materials:

"*Highly Toxic:* An economic poison which falls within any of the following categories when tested on laboratory animals (mice, rats and rabbits) is highly toxic to man within the meaning of these principles:

"(a) *Oral Toxicity:* Those which produce death in half or more than half the animals of any species at a dosage of 50 milligrams or a single dose, or less, per kilogram of body weight when administered orally to 10 or more such animals of each species.

"(b) *Toxicity on inhalation:* Those which produce death in half or more than half of the animals of any species at a dosage of 200 parts or less by volume of the gas or vapor per million parts by volume of air when administered by continuous inhalation for one hour or less to ten or more animals of each species, provided such concentration is likely to be encountered by man when the economic poison is used in any reasonably foreseeable manner.

"(c) *Toxicity by skin absorption:* Those which produce death in half or more than half of the animals (rabbits only) tested at a dosage of 200 milligrams or less per kilogram of body weight when administered by continuous contact with the bare skin for 24 hours or less to 10 or more animals. Provided, however, that an enforcement official may exempt any economic poison which meets the above standard but which is not in fact highly toxic to man, from these principles with respect to economic poisons highly toxic to man, and may after hearing designate as highly toxic to man any economic poison which experience has shown to be so in fact."

EPA has published regulations for use of human hazard signal words on pesticide labels:

Signal words assigned by levels of toxicity

(A) Toxicity Category I

All pesticide products meeting the criteria of Toxicity Category I shall bear on the front panel the signal word "Danger." In addition, if the product was assigned to Toxicity Category I on the basis of its oral, inhalation, or dermal toxicity (as distinct from skin and eye local effects), the word "Poison" shall appear in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word "Poison."

(B) Toxicity Category II

All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word "Warning."

(C) Toxicity Category III

All pesticide products meeting the criteria of Toxicity Category III shall bear on the front panel the signal word "Caution."

(D) Toxicity Category IV

All pesticide products meeting the criteria of Toxicity Category IV shall bear on the front panel the signal word "Caution."

(E) Use of signal words

Use of any signal word(s) associated with a higher Toxicity Category is not permitted except when the Agency determines that such labeling is necessary to prevent unreasonable adverse effects.

Bitumen

Any natural mixture of heavy hydrocarbons in viscid or solid form, as mineral pitch and asphalt.

Bivert *

CHEMICAL COMPOSITION: Principal function agents [illegible]. Amine salts of vegetable fatty acids, organic aromatic acid, and aromatic and aliphatic petroleum distillate.

TOXICITY: Exempt.

APPLICATIONS: *Bivert* * is specially formulated for use with conventional mixtures of herbicides, insecticides, fungicides, and harvest aid chemicals. *Bivert* * is designed to increase deposition and retention of chemicals on the target area and acts as a buffering and anti-foaming agent. It also is an excellent [illegible] and compatibility agent for chemicals in liquid fertilizer.

Bivert * *TMP* is specially formulated for use with conventional spray mixtures containing *propanil*, or with approved tank mixes with other herbicides. *Bivert* * *TMP* is designed to increase deposition and retention of chemicals on the target area.

[illegible] *Bivert* * *TMP*)

F: Stull Chemical Co.

Bivert * TMP — see Bivert *.

Black Leaf 40 * — see Nicotine.

Bladafum *

CHEMICAL NAME: *O,O,O,O*-Tetraethyl dithiopyrophosphate.

COMMON NAMES: *sulfotepp; sulfotep* (BSI, ISO).

OTHER NAMES: *Dithione *, dithio, thiotepp*

ACTION: Insecticide, acaricide.

CHEMICAL PROPERTIES: Liquid; solubility in water at room temperature is about 1:1500.

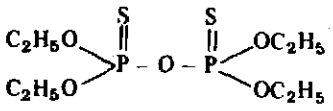
SIGNAL WORD: POISON.

TOXICITY: Acute oral LD_{50} (rat), 7 to 10 mg/kg.

ANTIDOTES: Atropine, PAM, Toxogonin * (Merck).

APPLICATION: Used in greenhouse fumigant formulations for control of aphids, spider mites, whiteflies, and thrips.

FORMULATIONS: Fumigant with 3 and 10% a.i. per generator.



Sulfotepp

BP: Bayer AG (Federal Republic of Germany) (*Bladafum* *)

Bladan * — see Parathion ♦.

Bladex *

CHEMICAL NAME: 2-{[4-Chloro-6-ethylamino)-s-triazin-2-yl]amino}-2-methylpropionitrile.

COMMON NAME: *cyanazine* (BSI, ISO, WSSA).

OTHER NAMES: *SD 15418* (Shell Chemical), *WL 19805*.

ACTION: Selective herbicide, preplant incorporated, preemergence and postemergence.

CHEMICAL PROPERTIES: White crystalline solid melting at 167.5-169° C.

TOXICITY: Acute oral LD_{50} (rat), 334 mg/kg (182-334). Acute dermal LD_{50} (rabbit) for 50% WP is > 2000 mg/kg (a.i.).

SIGNAL WORD: WARNING (wettable powder, liquid); CAUTION (granules).

ANTIDOTE: No specific antidote is known. See product label for practical treatment following ingestion or skin or eye contact.

HANDLING AND STORAGE CAUTIONS: Harmful if swallowed. Use with adequate ventilation and avoid breathing of dust. Avoid contact with the skin or eyes. Avoid contact with water, feed, or food. Keep out of reach of domestic animals, particularly cattle. Consumption of this product, spray solutions, or water contaminated with product can result in serious illness or possible death of bovines.

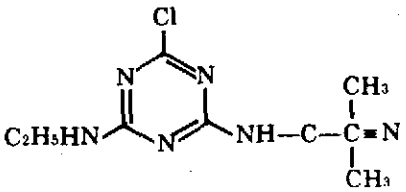
APPLICATION: For preemergence or postemergence use on field corn; on sorghum preemergence as a tank mix combination with *Ramrod* * *(propachlor)* east of Rocky Mountains or with *Milogard* * *(propazine)* in Texas (Upper Gulf Coast Coastal Bend, and Blackland areas), Oklahoma, and Kansas; on cotton preemergence and directed postemergence and layby treatments in the states of Alabama, Arkansas, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas (Upper Gulf Coast, Coastal Bend, and Blackland), on cotton preemergence as a tank mix combination with *Zorial* in Mississippi and Alabama. For weed control on fallow cropland. Applications may be made by ground or aerial equipment on corn and fallow cropland, and ground equipment only on sorghum and cotton. Always read the label for *complete use directions*.

FORMULATION: (U.S.A.) 80% wettable powder, 43% [illegible] 4 pound/gallon liquid, and 15% granules; (SICC) 50% wettable powder, 50% suspension concentrate.

COMBINATIONS: In corn, may be used preemergence in tank mix combination with *Lasso* * *(alachlor)* [illegible] *(metolachlor)*, *Eradicane* *, *Paraquat* [illegible] *6.7E)*. Refer to appropriate state 24(c) [illegible] various 3-way tank mix combinations. In sorghum, may be used in preemergence tank mix combinations with *Ramrod* * *(propachlor)* or *Milogard* * *(propazine)*. In cotton, may be used postemergence in tank mix combination with *MSMA* [illegible] combination with [illegible] in certain states. Consult state [illegible] concerning *Bladex* * as an early preplant application to land intended for grain sorghum (Nebraska, Kansas) and winter wheat (Nebraska, Kansas, Oklahoma).

In Europe *Bladex* * *S.C.* mixtures such as *Bladex* * *MCPA* (4 liters/ha) *Bladex* */*CMPP* (4 liters/ha) and *Bladex* * *2,4-DP* (WP)-(3-4 kg/ha) have been successfully used as a postemergent application in cereals. In forestry (*Bladex* */*atrazine (S.C.)* may be used from 10 liters/ha to control most grasses and broadleaf weeds. For potato, *Bladex* */*linuron (W.P.)* is used at 1.5-5.0 kg/ha as a preemergence treatment to control grasses and broadleaf weeds. For maize *Bladex* */*atrazine S.C.* is used [illegible] kg/ha [illegible] preemergent application and gives [illegible] broadleaf weeds.

See *Blagal* *, *Cleaval, Fortrol, Holtox, Stay-Kleen* *.



Cyanazine

BP: Shell Chemical Co.
Shell International Chemical Co. (Great Britain)

Blagal *

CHEMICAL COMPOSITION: A suspension concentrate based on a mixture of *cyanazine, MCPA* and a glycol.

TOXICITY: Nontoxic.

SIGNAL WORD: SAFE.

ACTION: Herbicide.

APPLICATION: For the control of a wide range of problem weeds in cereals. Oats can be sprayed from the 2-leaf stage and barley or wheat from the 4-leaf stage onwards.

FORMULATION: Suspension concentrate.

COMBINATION: May be mixed with a number of cereal fungicides and growth regulators.

F: Shell Chemicals U.K. Ltd. (Great Britain)

Blancol * Dispersant

CHEMICAL NAME: Sodium salt of sulfonated naphthalene-formaldehyde condensate.

ACTION: Dispersant for wettable powders.

CHEMICAL PROPERTIES: Free-flowing tan granular powder.

TOXICITY: Acute oral LD_{50} (white rat), 3800 mg/kg.

APPLICATION: *Blancol* * *N* is an anionic, low-foaming dispersant.

BP: GAF Corp., Chemical Products

Blancol * N — see Blancol * Dispersant.

Bla-S *

CHEMICAL NAME: 1-(1′-cytosinyl)-4-{L-3′-amino-5′-(3″-N-methyl-guanidino)-valerylamino}-1, 2, 3, 4-tetradeoxy-β-D-*erythro*-hex-2-ene uronic acid.

COMMON NAME: *blasticidin-S* (JMAFF).

OTHER NAME: *Blasticidin-S-3* (for benzyl p-aminobenzene sulfonate).

COMMON NAMES: *atraton, atratone* (France).
OTHER NAME: *Gesatamin* * (Ciba-Geigy Ltd.).
ACTION: Formerly an experimental herbicide (Ciba-Geigy).
TOXICITY: Acute oral LD_{50} (rat), 1465-2400 mg/kg.

Atrazine

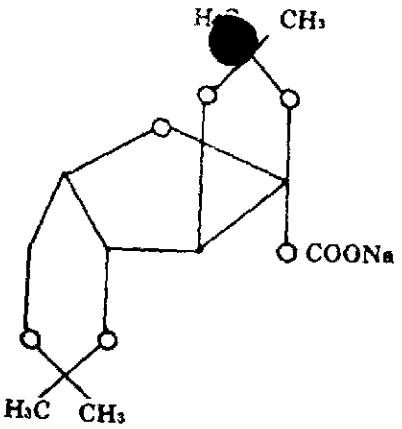
CHEMICAL NAME: 2-chloro-4-ethylamino-6-isopropylamino-1, 3, 5-triazine.
COMMON NAME: *atrazine.*
OTHER NAMES: *AAtrex* * (Ciba-Geigy Corp.), *Atranex* *, *Atred* *, *Crisatrina* *, *Crisazine* *, *Griffex, Shell Atrazine Herbicide, Vectal SC* *.
ACTION: Selective herbicide.
CHEMICAL PROPERTIES: Colorless crystals melting at 173-175° C. Solubility in water, 33 ppm at 25° C; in *n*-pentane, 360 ppm; in diethyl ether, 12,000 ppm; in methanol, 18,000 ppm; in ethyl acetate, 28,000 ppm; in chloroform, 52,000 ppm; in dimethyl sulfoxide, 183,000 ppm.
TOXICITY: Acute oral LD_{50} (*tech. atrazine*) (rat), 1780 mg/kg.
SIGNAL WORD: CAUTION.
HANDLING AND STORAGE CAUTIONS: Harmful if swallowed. Avoid contact with eyes, prolonged contact with skin, inhalation of dust. Use with adequate ventilation. Do not contaminate food, feed, or water supplies.
APPLICATIONS: Used for season-long weed control in corn, sorghum, and certain other crops. At highest rates it is used for nonselective weed control in noncropped areas.
Crisatrina * is a preemergent and early postemergent herbicide for use on corn, sorghum, coffee, African oil palm, sugarcane, pineapples, citrus groves, and bananas.
FORMULATIONS: 50% and 80% wettable powder, 4 lb./gal. flowable, 4L liquid. *Griffex 4L* contains 4 pounds flowable *atrazine; Griffex 90F* contains 90% water dispersible granule.
COMBINATION: *Atranex* * is a mixture of *atrazine* and *ametryne. Drexel Atrazine 4L* can be tank mixed with fertilizer solutions, emulsifiable oil, *Paraquat CL, alachlor 4EC,* or *propachlor 65W.*
See *AAtrex* *.

BP: CIFA, Laboratori Chimici (Italy)
Crewe Chemicals Ltd. (Great Britain)
Farmoplant S.p.A. (Montedison Group) (Italy) (*Atred* *)
FBC Limited (Great Britain) (*Vectal SC* *)
I.P.Ci. S.p.A. (Italy)
Makhteshim-Agan (Israel) (*Atranex* *)
Pecten Chemicals, Inc.
Shell Chemical Co. (*Shell Atrazine Herbicide*)
Vertac Chemical Corp.
[illegible] Chemical Inter-America (*Crisatrina* *, *Crisazine* *)
[illegible]ayal (Sales) Private Ltd. (India)
Drexel Chemical Co. (*Drexel Atrazine 4L*)
Griffin Corp. (*Griffex 4L, Griffex 90F*)

Atred * — see Atrazine.

Atrinal *

CHEMICAL NAME: Sodium salt of 2,3:4,6-bis-O (1-methylethylidene)-O (-L-xylo-2-hexulofuranosonic acid).
[illegible] *Dikegulac sodium.*
[illegible] growth regulator.
CHEMICAL PROPERTIES: *Dikegulac sodium*; white powder melting at >300° C; soluble in water and alcohol; insoluble acetone, hexane, etc.
[illegible] *Dikegulac sodium*: acute oral LD_{50} (male female [illegible] mg/kg; (mouse), 19,500 mg/kg; acute dermal [illegible] mg/kg.
SIGNAL WORD: CAUTION.
ANTIDOTE: None needed.
HANDLING AND STORAGE CAUTIONS: Protect from freezing.
APPLICATIONS: For use as a pinching agent on azaleas and many other ornamentals. As a growth retardant for controlling the growth of shrubs, hedges, and ground covers. Also used as a trunk injection for controlling tree growth.
FORMULATIONS: Formulated as an 18.5% liquid concentrate containing [illegible] pounds of *Dikegulac sodium* per gallon.



Dikegulac Sodium

BP: Dr. R. Maag Limited, Maag Agrochemicals (Switzerland)

Atropine (*Atropine Sulfate*)

An antidote used to treat poisoning by cholinesterase-inhibiting pesticides (organophosphate and carbamate compounds).

Attac * — see Toxaphene ♦.

Attaclay *

CHEMICAL NAME: Attapulgite.
COMMON NAME: Fullers earth.
ACTION: Dust and wettable powder base.
TOXICITY: Inert. Exempted from the requirement of a tolerance.
See *Attapulgite Clay, Attaflow* *, *Clay, Diluent.*

BP: Engelhard Minerals & Chemicals Corp. (*Attapulgus* * *Clay*)

Attaflow *

CHEMICAL NAME: Attapulgite.
COMMON NAME: Fullers earth.
ACTION: Suspension aid.
TOXICITY: Inert. Exempted from the requirement of a tolerance.
See *Attapulgite Clay, Attaclay* *, *Clay, Diluent.*

BP: Engelhard Minerals & Chemicals Corp. (*Attapulgus* * *Clay*)

Attapulgite Clay

CHEMICAL NAME: Attapulgite.
OTHER NAMES: *Attapulgus* * *Clay, Florex* *.
CHEMICAL FORMULA: $(OH_2)_4\ (OH)_2Mg_5\ Si_8O_{20}\ .\ 4H_2O$ is an ideal formula in which there is considerable replacement of magnesium by aluminum.
COMMON NAME: Fullers earth.
ACTION: Granular carrier for insecticides, fungicides, and herbicides.
TOXICITY: Inert. Exempted from the requirement of a tolerance.
See *Attaclay* *, *Attaflow* *, [illegible]

BP: Engelhard Minerals & Chemicals Corp. (*Attapulgus* * *Clay*)
Floridin Co., (*Florex* *)

Attapulgus * **Clay** — see Attapulgite Clay.

Attractant

A substance which lures insects from distances to traps or poison bait stations. The most successful lures, when available, are the specific secretions of particular insect species or their synthetic chemical equivalents (see *Pheromone*). Many attractants are food lures such as sugar syrups or other substances in long use to attract insects.

Atwet *

ACTION: Surfactant [illegible] wettable powders.

BP: ICI America Inc., Specialty Chemicals Div.

PESTICIDES

APPENDIX A

ANALYTICAL DATA SHEETS

AND

CHAIN-OF-CUSTODY RECORDS

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: -2-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME): 12/28/81 1430

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VI-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL SAD NO.: 02C0233

CHEMIST: E.W. Loy, Jr. COMPLETED 11/18/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34421	7U	UG/KG	*			UG/KG
METHYL BROMIDE	34416	7U	UG/KG	*			UG/KG
DICHLORODIFLOUROMETHAGE	34334	7U	UG/KG	*			UG/KG
VINYL CHLORIDE	34495	7U	UG/KG	*			UG/KG
CHLOROETHANE	34314	7U	UG/KG	*			UG/KG
METHYLENE CHLORIDE	34426	7U	UG/KG	*			UG/KG
TRICHLOROFLUOROMETHANE	34491	7U	UG/KG	*			UG/KG
1,1-DICHLOROETHYLENE	34504	7U	UG/KG	*			UG/KG
1,1-DICHLOROETHANE	34499	7U	UG/KG	*			UG/KG
1,2-TRANS-DICHLOROETHYLENE	34549	7U	UG/KG	*			UG/KG
CHLOROFORM	34318	10	UG/KG	*			UG/KG
1,2-DICHLOROETHANE	34534	7U	UG/KG	*			UG/KG
1,1,1-TRICHLOROETHANE	34509	7U	UG/KG	*			UG/KG
CARBON TETRACHLORIDE	34299	7K	UG/KG	*			UG/KG
DICHLOROBROMOMETHANE	34330	7U	UG/KG	*			UG/KG
1,2-DICHLOROPROPANE	34544	7U	UG/KG	*			UG/KG
TRANS-1,3-DICHLOROPROPENE	34677	7U	UG/KG	*			UG/KG
TRICHLOROETHYLENE	34487	7K	UG/KG	*			UG/KG
BENZENE	34237	7U	UG/KG	*			UG/KG
CHLORODIBROMOMETHANE	34309	7U	UG/KG	*			UG/KG
1,1,2-TRICHLOROETHANE	34514	7U	UG/KG	*			UG/KG
CIS-1,3-DICHLOROPROPENE	34702	7U	UG/KG	*			UG/KG
2-CHLOROETHYL VINYL ETHER	34579	7U	UG/KG	*			UG/KG
BROMOFORM	34290	7U	UG/KG	*			UG/KG
1,1,2,2-TETRACHLOROETHANE	34519	7U	UG/KG	*			UG/KG
TETRACHLOROETHYLENE	34478	7K	UG/KG	*			UG/KG
TOLUENE	34483	7U	UG/KG	*			UG/KG
CHLOROBENZENE	34304	7U	UG/KG	*			UG/KG
ETHYLBENZENE	34374	7U	UG/KG	*			UG/KG
ACROLEIN	34213	140U	UG/KG	*			UG/KG
ACRYLONITRILE	34218	140U	UG/KG	*			UG/KG
% MOISTURE	70320	27	%	*			%

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 7 ug/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: A2- 14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1405

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VI-002 DRAINAGE TO BAYOU AT S CORNER OF LANDFILL SAD NO.: 02C0232

CHEMIST: E.W. Loy, Jr. COMPLETED 11/18/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34421	6U	UG/KG	*			UG/KG
METHYL BROMIDE	34416	6U	UG/KG	*			UG/KG
DICHLORODIFLUOROMETHANE	34334	6U	UG/KG	*			UG/KG
VINYL CHLORIDE	34445	6U	UG/KG	*			UG/KG
CHLOROETHANE	34314	6U	UG/KG	*			UG/KG
METHYLENE CHLORIDE	34426	6U	UG/KG	*			UG/KG
TRICHLOROFLUOROMETHANE	34491	6U	UG/KG	*			UG/KG
1,1-DICHLOROETHYLENE	34504	6U	UG/KG	*			UG/KG
1,1-DICHLOROETHANE	34499	6U	UG/KG	*			UG/KG
1,2-TRANS-DICHLOROETHYLENE	34549	6U	UG/KG	*			UG/KG
CHLOROFORM	34318	6U	UG/KG	*			UG/KG
1,2-DICHLOROETHANE	34534	6U	UG/KG	*			UG/KG
1,1,1-TRICHLOROETHANE	34509	6U	UG/KG	*			UG/KG
CARBON TETRACHLORIDE	34299	6U	UG/KG	*			UG/KG
DICHLOROBROMOMETHANE	34330	6U	UG/KG	*			UG/KG
1,2-DICHLOROPROPANE	34544	6U	UG/KG	*			UG/KG
TRANS-1,3-DICHLOROPROPENE	34697	6U	UG/KG	*			UG/KG
TRICHLOROETHYLENE	34487	6U	UG/KG	*			UG/KG
BENZENE	34237	6U	UG/KG	*			UG/KG
CHLORODIBROMOMETHANE	34309	6U	UG/KG	*			UG/KG
1,1,2-TRICHLOROETHANE	34514	6U	UG/KG	*			UG/KG
CIS-1,3-DICHLOROPROPENE	34702	6U	UG/KG	*			UG/KG
2-CHLOROETHYL VINYL ETHER	34579	6U	UG/KG	*			UG/KG
BROMOFORM	34290	6U	UG/KG	*			UG/KG
1,1,2,2-TETRACHLOROETHANE	34519	6U	UG/KG	*			UG/KG
TETRACHLOROETHYLENE	34478	6U	UG/KG	*			UG/KG
TOLUENE	34483	6U	UG/KG	*			UG/KG
CHLOROBENZENE	34304	6U	UG/KG	*			UG/KG
ETHYLBENZENE	34374	6U	UG/KG	*			UG/KG
ACROLEIN	34213	120U	UG/KG	*			UG/KG
ACRYLONITRILE	34218	120U	UG/KG	*			UG/KG
% MOISTURE	70320	27	%	*			%

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 6 µg/kg

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED.
THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) P-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD.RGN.IV.
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1140

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STARTS BAYOU UPSTREAM

SAD NO.: 82C0231

CHEMIST: E.W. Loy, Jr. COMPLETED 11/18/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34421	7U	UG/KG	*			UG/KG
METHYL BROMIDE	34416	7U	UG/KG	*			UG/KG
DICHLORODIFLUOROMETHANE	34334	7U	UG/KG	*			UG/KG
VINYL CHLORIDE	34495	7U	UG/KG	*			UG/KG
CHLOROETHANE	34314	7U	UG/KG	*			UG/KG
METHYLENE CHLORIDE	34426	7U	UG/KG	*			UG/KG
TRICHLOROFLUOROMETHANE	34491	7U	UG/KG	*			UG/KG
1,1-DICHLOROETHYLENE	34504	7U	UG/KG	*			UG/KG
1,1-DICHLOROETHANE	34499	7U	UG/KG	*			UG/KG
1,2-TRANS-DICHLOROETHYLENE	34549	7U	UG/KG	*			UG/KG
CHLOROFORM	34318	7U	UG/KG	*			UG/KG
1,2-DICHLOROETHANE	34534	7U	UG/KG	*			UG/KG
1,1,1-TRICHLOROETHANE	34509	7U	UG/KG	*			UG/KG
CARBON TETRACHLORIDE	34299	7U	UG/KG	*			UG/KG
DICHLOROBROMOMETHANE	34330	7U	UG/KG	*			UG/KG
1,2-DICHLOROPROPANE	34544	7U	UG/KG	*			UG/KG
TRANS-1,3-DICHLOROPROPENE	34697	7U	UG/KG	*			UG/KG
TRICHLOROETHYLENE	34487	7U	UG/KG	*			UG/KG
BENZENE	34237	7U	UG/KG	*			UG/KG
CHLORODIBROMOMETHANE	34309	7U	UG/KG	*			UG/KG
1,1,2-TRICHLOROETHANE	34514	7U	UG/KG	*			UG/KG
CIS-1,3-DICHLOROPROPENE	34702	7U	UG/KG	*			UG/KG
2-CHLOROETHYL VINYL ETHER	34579	7U	UG/KG	*			UG/KG
BROMOFORM	34290	7U	UG/KG	*			UG/KG
1,1,2,2-TETRACHLOROETHANE	34519	7U	UG/KG	*			UG/KG
TETRACHLOROETHYLENE	34478	7U	UG/KG	*			UG/KG
TOLUENE	34483	7U	UG/KG	*			UG/KG
CHLOROBENZENE	34304	7U	UG/KG	*			UG/KG
ETHYLBENZENE	34374	7U	UG/KG	*			UG/KG
ACROLEIN	34213	1400U	UG/KG	*			UG/KG
ACRYLONITRILE	34215	1400U	UG/KG	*			UG/KG
% MOISTURE	70320	24	%	*			%

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 7 µg/kg

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) B-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1135

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0230

CHEMIST: E.W. Loy, Jr. COMPLETED 11/13/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34416	5U	UG/L	*			UG/L
METHYL BROMIDE	34413	5U	UG/L	*			UG/L
DICHLORODIFLUOROMETHANE	34668	5U	UG/L	*			UG/L
VINYL CHLORIDE	39175	5U	UG/L	*			UG/L
CHLOROETHANE	34311	5U	UG/L	*			UG/L
METHYLENE CHLORIDE	34423	5U	UG/L	*			UG/L
TRICHLOROFLUOROMETHANE	34488	5U	UG/L	*			UG/L
1,1-DICHLOROETHYLENE	34501	5U	UG/L	*			UG/L
1,1-DICHLOROETHANE	34496	5U	UG/L	*			UG/L
1,2-TRANS-DICHLOROETHYLENE	34546	5U	UG/L	*			UG/L
CHLOROFORM	32106	5U	UG/L	*			UG/L
1,2-DICHLOROETHANE	32103	5U	UG/L	*			UG/L
1,1,1-TRICHLOROETHANE	34506	5U	UG/L	*			UG/L
CARBON TETRACHLORIDE	32102	5U	UG/L	*			UG/L
DICHLOROBROMOMETHANE	32101	5U	UG/L	*			UG/L
1,2-DICHLOROPROPANE	34541	5U	UG/L	*			UG/L
TRANS-1,3-DICHLOROPROPENE	34699	5U	UG/L	*			UG/L
TRICHLOROETHYLENE	39180	5U	UG/L	*			UG/L
BENZENE	34030	5U	UG/L	*			UG/L
CHLORODIBROMOMETHANE	34306	5U	UG/L	*			UG/L
1,1,2-TRICHLOROETHANE	34511	5U	UG/L	*			UG/L
CIS-1,3-DICHLOROPROPENE	34704	5U	UG/L	*			UG/L
2-CHLOROETHYL VINYL ETHER	34576	5U	UG/L	*			UG/L
BROMOFORM	32104	5U	UG/L	*			UG/L
1,1,2,2-TETRACHLOROETHANE	34516	5U	UG/L	*			UG/L
TETRACHLOROETHYLENE	34475	5U	UG/L	*			UG/L
TOLUENE	34010	5U	UG/L	*			UG/L
CHLOROBENZENE	34301	5U	UG/L	*			UG/L
ETHYLBENZENE	34371	5U	UG/L	*			UG/L
ACROLEIN	34210	100U	UG/L	*			UG/L
ACRYLONITRILE	34215	100U	UG/L	*			UG/L

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 5 ug/L

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) D-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 42-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME): 12/28/81 1605

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 MATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0235

CHEMIST: E.W. Loy, Jr COMPLETED 11/19/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34421	70	UG/KG	*			UG/KG
METHYL BROMIDE	34416	70	UG/KG	*			UG/KG
DICHLORODIFLUOROMETHANE	34334	70	UG/KG	*			UG/KG
VINYL CHLORIDE	34495	70	UG/KG	*			UG/KG
CHLOROETHANE	34314	70	UG/KG	*			UG/KG
METHYLENE CHLORIDE	34426	70	UG/KG	*			UG/KG
TRICHLOROFLUOROMETHANE	34491	70	UG/KG	*			UG/KG
1,1-DICHLOROETHYLENE	34504	70	UG/KG	*			UG/KG
1,1-DICHLOROETHANE	34499	70	UG/KG	*			UG/KG
1,2-TRANS-DICHLOROETHYLENE	34549	70	UG/KG	*			UG/KG
CHLOROFORM	34318	70	UG/KG	*			UG/KG
1,2-DICHLOROETHANE	34534	70	UG/KG	*			UG/KG
1,1,1-TRICHLOROETHANE	34509	70	UG/KG	*			UG/KG
CARBON TETRACHLORIDE	34299	70	UG/KG	*			UG/KG
DICHLOROBROMOMETHANE	34330	70	UG/KG	*			UG/KG
1,2-DICHLOROPROPANE	34544	70	UG/KG	*			UG/KG
TRANS-1,3-DICHLOROPROPENE	34697	70	UG/KG	*			UG/KG
TRICHLOROETHYLENE	34487	70	UG/KG	*			UG/KG
BENZENE	34237	70	UG/KG	*			UG/KG
CHLORODIBROMOMETHANE	34309	70	UG/KG	*			UG/KG
1,1,2-TRICHLOROETHANE	34514	70	UG/KG	*			UG/KG
CIS-1,3-DICHLOROPROPENE	34702	70	UG/KG	*			UG/KG
2-CHLOROETHYL VINYL ETHER	34579	70	UG/KG	*			UG/KG
BROMOFORM	34290	70	UG/KG	*			UG/KG
1,1,2,2-TETRACHLOROETHANE	34519	70	UG/KG	*			UG/KG
TETRACHLOROETHYLENE	34476	70	UG/KG	*			UG/KG
TOLUENE	34483	70	UG/KG	*			UG/KG
CHLOROBENZENE	34304	70	UG/KG	*			UG/KG
ETHYLBENZENE	34374	70	UG/KG	*			UG/KG
ACROLEIN	34213	1400	UG/KG	*			UG/KG
ACRYLONITRILE	34218	1400	UG/KG	*			UG/KG
% MOISTURE	70320	26	%	*			*

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 7 µg/kg

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE: 10/30/81

PURGEABLE ORGANICS ANALYSIS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1600

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HHD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0234

CHEMIST: E.W. Loy, Jr. COMPLETED 11/13/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
METHYL CHLORIDE	34418	5U	UG/L	*			UG/L
METHYL BROMIDE	34413	5U	UG/L	*			UG/L
DICHLORODIFLUOROMETHANE	34668	5U	UG/L	*			UG/L
VINYL CHLORIDE	39175	5U	UG/L	*			UG/L
CHLOROETHANE	34311	5U	UG/L	*			UG/L
METHYLENE CHLORIDE	34423	5U	UG/L	*			UG/L
TRICHLOROFLUOROMETHANE	34488	5U	UG/L	*			UG/L
1,1-DICHLOROETHYLENE	34501	5U	UG/L	*			UG/L
1,1-DICHLOROETHANE	34496	5U	UG/L	*			UG/L
1,2-TRANS-DICHLOROETHYLENE	34546	5U	UG/L	*			UG/L
CHLOROFORM	32106	5K	UG/L	*			UG/L
1,2-DICHLOROETHANE	32103	5U	UG/L	*			UG/L
1,1,1-TRICHLOROETHANE	34506	5U	UG/L	*			UG/L
CARBON TETRACHLORIDE	32102	5K	UG/L	*			UG/L
DICHLOROBROMOMETHANE	32101	5U	UG/L	*			UG/L
1,2-DICHLOROPROPANE	34541	5U	UG/L	*			UG/L
TRANS-1,3-DICHLOROPROPENE	34699	5U	UG/L	*			UG/L
TRICHLOROETHYLENE	39180	5U	UG/L	*			UG/L
BENZENE	34030	5U	UG/L	*			UG/L
CHLORODIBROMOMETHANE	34306	5U	UG/L	*			UG/L
1,1,2-TRICHLOROETHANE	34511	5U	UG/L	*			UG/L
CIS-1,3-DICHLOROPROPENE	34704	5U	UG/L	*			UG/L
2-CHLOROETHYL VINYL ETHER	34576	5U	UG/L	*			UG/L
BROMOFORM	32104	5U	UG/L	*			UG/L
1,1,2,2-TETRACHLOROETHANE	34516	5U	UG/L	*			UG/L
TETRACHLOROETHYLENE	34475	5U	UG/L	*			UG/L
TOLUENE	34010	5U	UG/L	*			UG/L
CHLOROBENZENE	34301	5U	UG/L	*			UG/L
ETHYLBENZENE	34371	5U	UG/L	*			UG/L
ACROLEIN	34210	100U	UG/L	*			UG/L
ACRYLONITRILE	34215	100U	UG/L	*			UG/L

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 5 ug/L

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED.
THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR.

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1140

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0231

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34271	NA	UG/KG	*	BIS(2-ETHYLHEXYL) PHTHALATE	39102	36000U	UG/KG
N-NITROSODIMETHYLAMINE	34441	NA	UG/KG	*	CHRYSENE	34323	36000U	UG/KG
1,2-DICHLOROBENZENE	34539	36000U	UG/KG	*	BENZO(A)ANTHRACENE	34529	36000U	UG/KG
1,3-DICHLOROBENZENE	34569	36000U	UG/KG	*	3,3'-DICHLOROBENZIDINE	34634	36000U	UG/KG
1,4-DICHLOROBENZENE	34574	36000U	UG/KG	*	DI-N-OCTYL PHTHALATE	34599	36000U	UG/KG
BIS(2-CHLOROETHYL) ETHER	34276	36000U	UG/KG	*	BENZO(B)FLUORANTHENE 10/	34233	36000K	UG/KG
HEXACHLOROETHANE	34399	36000U	UG/KG	*	BENZO(K)FLUORANTHENE 10/	34245	36000K	UG/KG
BIS(2-CHLOROISOPROPYL) ETHER	34286	36000U	UG/KG	*	BENZO-A-PYRENE	34250	36000K	UG/KG
N-NITROSODI-N-PROPYLAMINE	34431	36000U	UG/KG	*	INDENO (1,2,3-CD) PYRENE	34406	36000U	UG/KG
NITROBENZENE	34450	36000U	UG/KG	*	1,2,5,6-DIBENZANTHRACENE	34559	36000U	UG/KG
HEXACHLOROBUTADIENE	39705	36000U	UG/KG	*	BENZO(GHI)PERYLENE	34524	36000K	UG/KG
1,2,4-TRICHLOROBENZENE	34554	36000U	UG/KG	*	2-CHLOROPHENOL	34589	36000U	UG/KG
NAPHTHALENE	34445	36000U	UG/KG	*	2-NITROPHENOL	34594	36000U	UG/KG
BIS(2-CHLOROETHOXY) METHANE	34281	36000U	UG/KG	*	PHENOL (GC/MS)	34695	36000U	UG/KG
ISOPHORONE	34411	36000U	UG/KG	*	2,4-DIMETHYLPHENOL	34609	36000U	UG/KG
HEXACHLOROCYCLOPENTADIENE	34389	36000U	UG/KG	*	2,4-DICHLOROPHENOL	34604	36000U	UG/KG
2-CHLORONAPHTHALENE	34584	36000U	UG/KG	*	2,4,6-TRICHLOROPHENOL	34624	36000U	UG/KG
ACENAPHTHYLENE	34203	36000U	UG/KG	*	PARACHLOROMETA CRESOL	34455	36000U	UG/KG
ACENAPHTHENE	34208	36000U	UG/KG	*	2,4-DINITROPHENOL	34619	1100000U	UG/KG
DIMETHYL PHTHALATE	34344	36000U	UG/KG	*	4,6-DINITRO-O-CRESOL	34660	1100000U	UG/KG
2,4-DINITROTOLUENE	34614	36000U	UG/KG	*	PENTACHLOROPHENOL	39061	1100000U	UG/KG
2,6-DINITROTOLUENE	34629	36000U	UG/KG	*	4-NITROPHENOL	34649	72000U	UG/KG
4-CHLOROPHENYL PHENYL ETHER	34644	36000U	UG/KG	*	% MOISTURE	70320	24	%
FLUORENE	34384	36000U	UG/KG	*				UG/KG
DIETHYL PHTHALATE	34339	36000U	UG/KG	*				UG/KG
1,2-DIPHENYLHYDRAZINE 8/	34349	36000U	UG/KG	*				UG/KG
N-NITROSODIPHENYLAMINE 9/	34436	36000U	UG/KG	*	dinoseb		72000U	UG/KG
HEXACHLOROBENZENE	39701	36000U	UG/KG	*				UG/KG
4-BROMOPHENYL PHENYL ETHER	34639	36000U	UG/KG	*				UG/KG
PHENANTHRENE	34464	36000U	UG/KG	*	the chromatogram indicates the presence			UG/KG
ANTHRACENE	34223	36000U	UG/KG	*	of a petroleum type product			UG/KG
DI-N-BUTYL PHTHALATE	39112	36000U	UG/KG	*				UG/KG
FLUORANTHENE	34379	36000U	UG/KG	*				UG/KG
PYRENE	34472	36000U	UG/KG	*				UG/KG
N-BUTYL BENZYL PHTHALATE	34295	36000U	UG/KG	*				UG/KG
BENZIDINE	39121	36000U	UG/KG	*				UG/KG

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 110,000 µg/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1605

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: B2C0235

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34271	NA	UG/KG	*	BIS(2-ETHYLHEXYL) PHTHALATE	39102	8600U	UG/KG
N-NITROSODIMETHYLAMINE	34441	NA	UG/KG	*	CHRYSENE	34323	8600U	UG/KG
1,2-DICHLOROBENZENE	34539	8600U	UG/KG	*	BENZO(A)ANTHRACENE	34529	8600U	UG/KG
1,3-DICHLOROBENZENE	34569	8600U	UG/KG	*	3,3'-DICHLOROBENZIDINE	34634	8600U	UG/KG
1,4-DICHLOROBENZENE	34574	8600U	UG/KG	*	DI-N-OCTYL PHTHALATE	34599	8600U	UG/KG
BIS(2-CHLOROETHYL) ETHER	34276	8600U	UG/KG	*	BENZO(B)FLUORANTHENE 10/	34233	8600U	UG/KG
HEXACHLOROETHANE	34399	8600U	UG/KG	*	BENZO(K)FLUORANTHENE 10/	34245	8600U	UG/KG
BIS(2-CHLOROISOPROPYL) ETHER	34286	8600U	UG/KG	*	BENZO-A-PYRENE	34250	8600U	UG/KG
N-NITROSODI-N-PROPYLAMINE	34431	8600U	UG/KG	*	INDENO (1,2,3-CD) PYRENE	34406	8600U	UG/KG
NITROBENZENE	34450	8600U	UG/KG	*	1,2,5,6-DIBENZANTHRACENE	34559	8600U	UG/KG
HEXACHLOROBUTADIENE	39705	8600U	UG/KG	*	BENZO(GHI)PERYLENE	34524	8600U	UG/KG
1,2,4-TRICHLOROBENZENE	34554	8600U	UG/KG	*	2-CHLOROPHENOL	34589	8600U	UG/KG
NAPHTHALENE	34445	8600U	UG/KG	*	2-NITROPHENOL	34594	8600U	UG/KG
BIS(2-CHLOROETHOXY) METHANE	34281	8600U	UG/KG	*	PHENOL (GC/MS)	34695	8600U	UG/KG
ISOPHORONE	34411	8600U	UG/KG	*	2,4-DIMETHYLPHENOL	34609	8600U	UG/KG
HEXACHLOROCYCLOPENTADIENE	34389	8600U	UG/KG	*	2,4-DICHLOROPHENOL	34604	8600U	UG/KG
2-CHLORONAPHTHALENE	34584	8600U	UG/KG	*	2,4,6-TRICHLOROPHENOL	34624	8600U	UG/KG
ACENAPHTHYLENE	34203	8600U	UG/KG	*	PARACHLOROMETA CRESOL	34455	8600U	UG/KG
ACENAPHTHENE	34208	8600U	UG/KG	*	2,4-DINITROPHENOL	34619	26000U	UG/KG
DIMETHYL PHTHALATE	34344	8600U	UG/KG	*	4,6-DINITRO-O-CRESOL	34660	26000U	UG/KG
2,4-DINITROTOLUENE	34614	8600U	UG/KG	*	PENTACHLOROPHENOL	39061	26000U	UG/KG
2,6-DINITROTOLUENE	34629	8600U	UG/KG	*	4-NITROPHENOL	34649	17000U	UG/KG
4-CHLOROPHENYL PHENYL ETHER	34644	8600U	UG/KG	*	% MOISTURE	70320	26	%
FLUORENE	34384	8600U	UG/KG	*				UG/KG
DIETHYL PHTHALATE	34339	8600U	UG/KG	*				UG/KG
1,2-DIPHENYLHYDRAZINE 8/	34349	8600U	UG/KG	*				UG/KG
N-NITROSODIPHENYLAMINE 9/	34436	8600U	UG/KG	*				UG/KG
HEXACHLOROBENZENE	39701	8600U	UG/KG	*	dinoseb		17000U	UG/KG
4-BROMOPHENYL PHENYL ETHER	34639	8600U	UG/KG	*				UG/KG
PHENANTHRENE	34464	8600U	UG/KG	*				UG/KG
ANTHRACENE	34223	8600U	UG/KG	*				UG/KG
DI-N-BUTYL PHTHALATE	39112	8600U	UG/KG	*				UG/KG
FLUORANTHENE	34379	8600U	UG/KG	*				UG/KG
PYRENE	34472	8600U	UG/KG	*				UG/KG
N-BUTYL BENZYL PHTHALATE	34295	8600U	UG/KG	*				UG/KG
BENZIDINE	39121	8600U	UG/KG	*				UG/KG

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 26,000 µg/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1405

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-002 DRAINAGE TO BAYOU AT S CORNER OF LANDFILL SAD NO.: 82C0232

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34271	NA	UG/KG	*	BIS(2-ETHYLHEXYL) PHTHALATE	39102	8000U	UG/KG
N-NITROSODIMETHYLAMINE	34441	NA	UG/KG	*	CHRYSENE	34323	8000U	UG/KG
1,2-DICHLOROBENZENE	34539	8000U	UG/KG	*	BENZO(A)ANTHRACENE	34529	8000U	UG/KG
1,3-DICHLOROBENZENE	34569	8000U	UG/KG	*	3,3'-DICHLOROBENZIDINE	34634	8000U	UG/KG
1,4-DICHLOROBENZENE	34574	8000U	UG/KG	*	DI-N-OCTYL PHTHALATE	34599	8000U	UG/KG
BIS(2-CHLOROETHYL) ETHER	34276	8000U	UG/KG	*	BENZO(B)FLUORANTHENE 10/	34233	8000U	UG/KG
HEXACHLOROETHANE	34399	8000U	UG/KG	*	BENZO(K)FLUORANTHENE 10/	34245	8000U	UG/KG
BIS(2-CHLOROISOPROPYL) ETHER	34286	8000U	UG/KG	*	BENZO-A-PYRENE	34250	8000U	UG/KG
N-NITROSODI-N-PROPYLAMINE	34431	8000U	UG/KG	*	INDENO (1,2,3-CD) PYRENE	34406	8000U	UG/KG
NITROBENZENE	34450	8000U	UG/KG	*	1,2,5,6-DIBENZANTHRACENE	34559	8000U	UG/KG
HEXACHLOROBUTADIENE	39705	8000U	UG/KG	*	BENZO(GHI)PERYLENE	34524	8000U	UG/KG
1,2,4-TRICHLOROBENZENE	34554	8000U	UG/KG	*	2-CHLOROPHENOL	34589	8000U	UG/KG
NAPHTHALENE	34445	8000U	UG/KG	*	2-NITROPHENOL	34594	8000U	UG/KG
BIS(2-CHLOROETHOXY) METHANE	34281	8000U	UG/KG	*	PHENOL (GC/MS)	34695	8000U	UG/KG
ISOPHORONE	34411	8000U	UG/KG	*	2,4-DIMETHYLPHENOL	34609	8000U	UG/KG
HEXACHLOROCYCLOPENTADIENE	34389	8000U	UG/KG	*	2,4-DICHLOROPHENOL	34604	8000U	UG/KG
2-CHLORONAPHTHALENE	34584	8000U	UG/KG	*	2,4,6-TRICHLOROPHENOL	34624	8000U	UG/KG
ACENAPHTHYLENE	34203	8000U	UG/KG	*	PARACHLOROMETA CRESOL	34455	8000U	UG/KG
ACENAPHTHENE	34208	8000U	UG/KG	*	2,4-DINITROPHENOL	34619	24000U	UG/KG
DIMETHYL PHTHALATE	34344	8000U	UG/KG	*	4,6-DINITRO-O-CRESOL	34660	24000U	UG/KG
2,4-DINITROTOLUENE	34614	8000U	UG/KG	*	PENTACHLOROPHENOL	39061	24000U	UG/KG
2,6-DINITROTOLUENE	34629	8000U	UG/KG	*	4-NITROPHENOL	34649	16000U	UG/KG
4-CHLOROPHENYL PHENYL ETHER	34644	8000U	UG/KG	*	% MOISTURE	70320	27	%
FLUORENE	34384	8000U	UG/KG	*				UG/KG
DIETHYL PHTHALATE	34339	8000U	UG/KG	*				UG/KG
1,2-DIPHENYLHYDRAZINE 8/	34349	8000U	UG/KG	*	atrazine		210000JN	UG/KG
N-NITROSODIPHENYLAMINE 9/	34436	8000U	UG/KG	*	cyanazine		21000JN	UG/KG
HEXACHLOROBENZENE	39701	8000U	UG/KG	*	dinoseb		16000U	UG/KG
4-BROMOPHENYL PHENYL ETHER	34639	8000U	UG/KG	*				UG/KG
PHENANTHRENE	34464	8000U	UG/KG	*				UG/KG
ANTHRACENE	34223	8000U	UG/KG	*				UG/KG
DI-N-BUTYL PHTHALATE	39112	8000U	UG/KG	*				UG/KG
FLUORANTHENE	34379	8000U	UG/KG	*				UG/KG
PYRENE	34472	8000U	UG/KG	*				UG/KG
N-BUTYL BENZYL PHTHALATE	34295	8000U	UG/KG	*				UG/KG
BENZIDINE	39121	8000U	UG/KG	*				UG/KG

* NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 24,000 µg/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1430

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL SAD NO.: 82C0233

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34271	NA	UG/KG	*	BIS(2-ETHYLHEXYL) PHTHALATE	39102	7600U	UG/KG
N-NITROSODIMETHYLAMINE	34441	NA	UG/KG	*	CHRYSENE	34323	7600U	UG/KG
1,2-DICHLOROBENZENE	34539	7600U	UG/KG	*	BENZO(A)ANTHRACENE	34529	7600U	UG/KG
1,3-DICHLOROBENZENE	34569	7600U	UG/KG	*	3,3'-DICHLOROBENZIDINE	34634	7600U	UG/KG
1,4-DICHLOROBENZENE	34574	7600U	UG/KG	*	DI-N-OCTYL PHTHALATE	34599	7600U	UG/KG
BIS(2-CHLOROETHYL) ETHER	34276	7600U	UG/KG	*	BENZO(B)FLUORANTHENE 10/	34233	7600U	UG/KG
HEXACHLOROETHANE	34399	7600U	UG/KG	*	BENZO(K)FLUORANTHENE 10/	34245	7600U	UG/KG
BIS(2-CHLOROISOPROPYL) ETHER	34286	7600U	UG/KG	*	BENZO-A-PYRENE	34250	7600U	UG/KG
N-NITROSODI-N-PROPYLAMINE	34431	7600U	UG/KG	*	INDENO (1,2,3-CD) PYRENE	34406	7600U	UG/KG
NITROBENZENE	34450	7600U	UG/KG	*	1,2,5,6-DIBENZANTHRACENE	34559	7600U	UG/KG
HEXACHLOROBUTADIENE	39705	7600U	UG/KG	*	BENZO(GHI)PERYLENE	34524	7600U	UG/KG
1,2,4-TRICHLOROBENZENE	34554	7600U	UG/KG	*	2-CHLOROPHENOL	34589	7600U	UG/KG
NAPHTHALENE	34445	7600U	UG/KG	*	2-NITROPHENOL	34594	7600U	UG/KG
BIS(2-CHLOROETHOXY) METHANE	34281	7600U	UG/KG	*	PHENOL (GC/MS)	34695	7600U	UG/KG
ISOPHORONE	34411	7600U	UG/KG	*	2,4-DIMETHYLPHENOL	34609	7600U	UG/KG
HEXACHLOROCYCLOPENTADIENE	34389	7600U	UG/KG	*	2,4-DICHLOROPHENOL	34604	7600U	UG/KG
2-CHLORONAPHTHALENE	34584	7600U	UG/KG	*	2,4,6-TRICHLOROPHENOL	34624	7600U	UG/KG
ACENAPHTHYLENE	34203	7600U	UG/KG	*	PARACHLOROMETA CRESOL	34455	7600U	UG/KG
ACENAPHTHENE	34208	7600U	UG/KG	*	2,4-DINITROPHENOL	34619	23000U	UG/KG
DIMETHYL PHTHALATE	34344	7600U	UG/KG	*	4,6-DINITRO-O-CRESOL	34660	23000U	UG/KG
2,4-DINITROTOLUENE	34614	7600U	UG/KG	*	PENTACHLOROPHENOL	39061	23000U	UG/KG
2,6-DINITROTOLUENE	34629	7600U	UG/KG	*	4-NITROPHENOL	34649	15000U	UG/KG
4-CHLOROPHENYL PHENYL ETHER	34644	7600U	UG/KG	*	% MOISTURE	70320	27	%
FLUORENE	34384	7600U	UG/KG	*				UG/KG
DIETHYL PHTHALATE	34339	7600U	UG/KG	*				UG/KG
1,2-DIPHENYLHYDRAZINE 8/	34349	7600U	UG/KG	*				UG/KG
N-NITROSODIPHENYLAMINE 9/	34436	7600U	UG/KG	*	atrazine		7600KN	UG/KG
HEXACHLOROBENZENE	39701	7600U	UG/KG	*	dinoseb		15000KN	UG/KG
4-BROMOPHENYL PHENYL ETHER	34639	7600U	UG/KG	*	cyanazine		7600KN	UG/KG
PHENANTHRENE	34464	7600U	UG/KG	*				UG/KG
ANTHRACENE	34223	7600U	UG/KG	*				UG/KG
DI-N-BUTYL PHTHALATE	39112	7600U	UG/KG	*				UG/KG
FLUORANTHENE	34379	7600U	UG/KG	*				UG/KG
PYRENE	34472	7600U	UG/KG	*				UG/KG
N-BUTYL BENZYL PHTHALATE	34295	7600U	UG/KG	*				UG/KG
BENZIDINE	39121	7600U	UG/KG	*				UG/KG

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 23000 µg/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1430

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL SAD NO.: 82C0233

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34271	NA	UG/KG	*	BIS(2-ETHYLHEXYL) PHTHALATE	39102	7600U	UG/KG
N-NITROSODIMETHYLAMINE	34441	NA	UG/KG	*	CHRYSENE	34323	7600U	UG/KG
1,2-DICHLOROBENZENE	34539	7600U	UG/KG	*	BENZO(A)ANTHRACENE	34529	7600U	UG/KG
1,3-DICHLOROBENZENE	34569	7600U	UG/KG	*	3,3'-DICHLOROBENZIDINE	34634	7600U	UG/KG
1,4-DICHLOROBENZENE	34574	7600U	UG/KG	*	DI-N-OCTYL PHTHALATE	34599	7600U	UG/KG
BIS(2-CHLOROETHYL) ETHER	34276	7600U	UG/KG	*	BENZO(B)FLUORANTHENE 10/	34233	7600U	UG/KG
HEXACHLOROETHANE	34399	7600U	UG/KG	*	BENZO(K)FLUORANTHENE 10/	34245	7600U	UG/KG
BIS(2-CHLOROISOPROPYL) ETHER	34286	7600U	UG/KG	*	BENZO-A-PYRENE	34250	7600U	UG/KG
N-NITROSODI-N-PROPYLAMINE	34431	7600U	UG/KG	*	INDENO (1,2,3-CD) PYRENE	34406	7600U	UG/KG
NITROBENZENE	34450	7600U	UG/KG	*	1,2,5,6-DIBENZANTHRACENE	34559	7600U	UG/KG
HEXACHLOROBUTADIENE	39705	7600U	UG/KG	*	BENZO(GHI)PERYLENE	34524	7600U	UG/KG
1,2,4-TRICHLOROBENZENE	34554	7600U	UG/KG	*	2-CHLOROPHENOL	34589	7600U	UG/KG
NAPHTHALENE	34445	7600U	UG/KG	*	2-NITROPHENOL	34594	7600U	UG/KG
BIS(2-CHLOROETHOXY) METHANE	34281	7600U	UG/KG	*	PHENOL (GC/MS)	34695	7600U	UG/KG
ISOPHORONE	34411	7600U	UG/KG	*	2,4-DIMETHYLPHENOL	34609	7600U	UG/KG
HEXACHLOROCYCLOPENTADIENE	34389	7600U	UG/KG	*	2,4-DICHLOROPHENOL	34604	7600U	UG/KG
2-CHLORONAPHTHALENE	34584	7600U	UG/KG	*	2,4,6-TRICHLOROPHENOL	34624	7600U	UG/KG
ACENAPHTHYLENE	34203	7600U	UG/KG	*	PARACHLOROMETA CRESOL	34455	7600U	UG/KG
ACENAPHTHENE	34208	7600U	UG/KG	*	2,4-DINITROPHENOL	34619	23000U	UG/KG
DIMETHYL PHTHALATE	34344	7600U	UG/KG	*	4,6-DINITRO-O-CRESOL	34660	23000U	UG/KG
2,4-DINITROTOLUENE	34614	7600U	UG/KG	*	PENTACHLOROPHENOL	39061	23000U	UG/KG
2,6-DINITROTOLUENE	34629	7600U	UG/KG	*	4-NITROPHENOL	34649	15000U	UG/KG
4-CHLOROPHENYL PHENYL ETHER	34644	7600U	UG/KG	*	% MOISTURE	70320	27	%
FLUORENE	34384	7600U	UG/KG	*				UG/KG
DIETHYL PHTHALATE	34339	7600U	UG/KG	*				UG/KG
1,2-DIPHENYLHYDRAZINE 8/	34349	7600U	UG/KG	*				UG/KG
N-NITROSODIPHENYLAMINE 9/	34436	7600U	UG/KG	*	atrazine		7600KN	UG/KG
HEXACHLOROBENZENE	39701	7600U	UG/KG	*	dinoseb		15000KN	UG/KG
4-BROMOPHENYL PHENYL ETHER	34639	7600U	UG/KG	*	cyanazine		7600KN	UG/KG
PHENANTHRENE	34464	7600U	UG/KG	*				UG/KG
ANTHRACENE	34223	7600U	UG/KG	*				UG/KG
DI-N-BUTYL PHTHALATE	39112	7600U	UG/KG	*				UG/KG
FLUORANTHENE	34379	7600U	UG/KG	*				UG/KG
PYRENE	34472	7600U	UG/KG	*				UG/KG
N-BUTYL BENZYL PHTHALATE	34296	7600U	UG/KG	*				UG/KG
BENZIDINE	39121	7600U	UG/KG	*				UG/KG

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 23000 µg/kg

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1135

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0230

CHEMIST: E.W. Loy, Jr. COMPLETED 11/4/81

COMPOUND	STORET#		UNITS	
BIS(CHLOROMETHYL) ETHER	34268	NA	UG/L	*
N-NITROSODIMETHYLAMINE	34438	NA	UG/L	*
1,2-DICHLOROBENZENE	34536	12U	UG/L	*
1,3-DICHLOROBENZENE	34566	12U	UG/L	*
1,4-DICHLOROBENZENE	34571	12U	UG/L	*
BIS(2-CHLOROETHYL) ETHER	34273	12U	UG/L	*
HEXACHLOROETHANE	34396	12U	UG/L	*
BIS(2-CHLOROISOPROPYL) ETHER	34283	12U	UG/L	*
N-NITROSODI-N-PROPYLAMINE	34428	12U	UG/L	*
NITROBENZENE	34447	12U	UG/L	*
HEXACHLOROBUTADIENE	39702	12U	UG/L	*
1,2,4-TRICHLOROBENZENE	34551	12U	UG/L	*
NAPHTHALENE	34696	12U	UG/L	*
BIS(2-CHLOROETHOXY) METHANE	34278	12U	UG/L	*
ISOPHORONE	34408	12U	UG/L	*
HEXACHLOROCYCLOPENTADIENE	34386	12U	UG/L	*
2-CHLORONAPHTHALENE	34581	12U	UG/L	*
ACENAPHTHYLENE	34200	12U	UG/L	*
ACENAPHTHENE	34205	12U	UG/L	*
DIMETHYL PHTHALATE	34341	12U	UG/L	*
2,4-DINITROTOLUENE	34611	12U	UG/L	*
2,6-DINITROTOLUENE	34626	12U	UG/L	*
4-CHLOROPHENYL PHENYL ETHER	34641	12U	UG/L	*
FLUORENE	34381	12U	UG/L	*
DIETHYL PHTHALATE	34336	12U	UG/L	*
1,2-DIPHENYLHYDRAZINE 8/	34346	12U	UG/L	*
N-NITROSODIPHENYLAMINE 9/	34433	12U	UG/L	*
HEXACHLOROBENZENE	39700	12U	UG/L	*
4-BROMOPHENYL PHENYL ETHER	34636	12U	UG/L	*
PHENANTHRENE	34461	12U	UG/L	*
ANTHRACENE	34220	12U	UG/L	*
DI-N-BUTYL PHTHALATE	39110	12U	UG/L	*
FLUORANTHENE	34376	12U	UG/L	*
PYRENE	34469	12U	UG/L	*
N-BUTYL BENZYL PHTHALATE	34292	12U	UG/L	*
BENZIDINE	39120	12U	UG/L	*

COMPOUND	STORET#		UNITS
BIS(2-ETHYLHEXYL) PHTHALATE	39100	12U	UG/L
CHRYSENE	34320	12U	UG/L
BENZO(A)ANTHRACENE	34526	12U	UG/L
3,3'-DICHLOROBENZIDINE	34631	12U	UG/L
DI-N-OCTYL PHTHALATE	34596	12U	UG/L
BENZO(B)FLUORANTHENE 10/	34230	12U	UG/L
BENZO(K)FLUORANTHENE 10/	34242	12U	UG/L
BENZO-A-PYRENE	34247	12U	UG/L
INDENO (1,2,3-CD) PYRENE	34403	12U	UG/L
1,2,5,6-DIBENZANTHRACENE	34556	12U	UG/L
BENZO(GHI)PERYLENE	34521	12U	UG/L
2-CHLOROPHENOL	34586	12U	UG/L
2-NITROPHENOL	34591	12U	UG/L
PHENOL (GC/MS)	34694	12U	UG/L
2,4-DIMETHYLPHENOL	34606	12U	UG/L
2,4-DICHLOROPHENOL	34601	12U	UG/L
2,4,6-TRICHLOROPHENOL	34621	12U	UG/L
PARACHLOROMETA CRESOL	34452	12U	UG/L
2,4-DINITROPHENOL	34616	38U	UG/L
4,6-DINITRO-O-CRESOL	34657	38U	UG/L
PENTACHLOROPHENOL	39032	38U	UG/L
4-NITROPHENOL	34646	25U	UG/L
			%
			UG/L
hexadecanoic acid		12KN	UG/L
octadecanoic acid		12KN	UG/L
dinoseb		25U	UG/L
			UG/L
			UG/L
			UG/L
			UG/L
			UG/L
			UG/L
			UG/L
			UG/L
			UG/L

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 38 µg/L

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE: 11/12/81

EXTRACTABLE ORGANIC ANALYSIS
DATA REPORTING SHEET
WATER

EPA-SAD, RGN. IV
ATHENS, GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED (DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START (DATE & TIME): 12/28/81 1600

CITY: VICKSBURG STATE: MS

SAMPLE STOP (DATE & TIME): 00/00/00 0

STATION: HRD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0234

CHEMIST: E.W. Loy, Jr. COMPLETED 11/10/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
BIS(CHLOROMETHYL) ETHER	34268	NA	UG/L	*	BIS(2-ETHYLHEXYL) PHTHALATE	39100	12U	UG/L
N-NITROSODIMETHYLAMINE	34438	NA	UG/L	*	CHRYSENE	34320	12U	UG/L
1,2-DICHLOROBENZENE	34536	12U	UG/L	*	BENZO(A)ANTHRACENE	34526	12U	UG/L
1,3-DICHLOROBENZENE	34566	12U	UG/L	*	3,3'-DICHLOROBENZIDINE	34631	12U	UG/L
1,4-DICHLOROBENZENE	34571	12U	UG/L	*	DI-N-OCTYL PHTHALATE	34596	12U	UG/L
BIS(2-CHLOROETHYL) ETHER	34273	12U	UG/L	*	BENZO(B)FLUORANTHENE 10/	34230	12U	UG/L
HEXACHLOROETHANE	34396	12U	UG/L	*	BENZO(K)FLUORANTHENE 10/	34242	12U	UG/L
BIS(2-CHLOROISOPROPYL) ETHER	34283	12U	UG/L	*	BENZO-A-PYRENE	34247	12U	UG/L
N-NITROSODI-N-PROPYLAMINE	34428	12U	UG/L	*	INDENO (1,2,3-CD) PYRENE	34403	12U	UG/L
NITROBENZENE	34447	12U	UG/L	*	1,2,5,6-DIBENZANTHRACENE	34556	12U	UG/L
HEXACHLOROBUTADIENE	39702	12U	UG/L	*	BENZO(GHI)PERYLENE	34521	12U	UG/L
1,2,4-TRICHLOROBENZENE	34551	12U	UG/L	*	2-CHLOROPHENOL	34586	12U	UG/L
NAPHTHALENE	34696	12U	UG/L	*	2-NITROPHENOL	34591	12U	UG/L
BIS(2-CHLOROETHOXY) METHANE	34278	12U	UG/L	*	PHENOL (GC/MS)	34694	12U	UG/L
ISOPHORONE	34408	12U	UG/L	*	2,4-DIMETHYLPHENOL	34606	12U	UG/L
HEXACHLOROCYCLOPENTADIENE	34386	12U	UG/L	*	2,4-DICHLOROPHENOL	34601	12U	UG/L
2-CHLORONAPHTHALENE	34581	12U	UG/L	*	2,4,6-TRICHLOROPHENOL	34621	12U	UG/L
ACENAPHTHYLENE	34200	12U	UG/L	*	PARACHLOROMETA CRESOL	34452	12U	UG/L
ACENAPHTHENE	34205	12U	UG/L	*	2,4-DINITROPHENOL	34616	38U	UG/L
DIMETHYL PHTHALATE	34341	12U	UG/L	*	4,6-DINITRO-O-CRESOL	34657	38U	UG/L
2,4-DINITROTOLUENE	34611	12U	UG/L	*	PENTACHLOROPHENOL	39032	38U	UG/L
2,6-DINITROTOLUENE	34626	12U	UG/L	*	4-NITROPHENOL	34646	25U	UG/L
4-CHLOROPHENYL PHENYL ETHER	34641	12U	UG/L	*				%
FLUORENE	34381	12U	UG/L	*				UG/L
DIETHYL PHTHALATE	34336	12U	UG/L	*	hexadecanoic acid		12KN	UG/L
1,2-DIPHENYLHYDRAZINE 8/	34346	12U	UG/L	*	octadecanoic acid		12KN	UG/L
N-NITROSODIPHENYLAMINE 9/	34433	12U	UG/L	*	dinoseb		25U	UG/L
HEXACHLOROBENZENE	39700	12U	UG/L	*				UG/L
4-BROMOPHENYL PHENYL ETHER	34636	12U	UG/L	*				UG/L
PHENANTHRENE	34461	12U	UG/L	*				UG/L
ANTHRACENE	34220	12U	UG/L	*				UG/L
DI-N-BUTYL PHTHALATE	39110	12U	UG/L	*				UG/L
FLUORANTHENE	34376	12U	UG/L	*				UG/L
PYRENE	34469	12U	UG/L	*				UG/L
N-BUTYL BENZYL PHTHALATE	34292	12U	UG/L	*				UG/L
BENZIDINE	39120	12U	UG/L	*				UG/L

NO OTHER ORGANIC COMPOUND DETECTED WITH AN ESTIMATED MINIMUM DETECTION LIMIT OF 38 µg/L

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) NA-COMPOUND NOT ANALYZED FOR.
6) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
7) A-AVERAGE VALUE
8) AND/OR AZOBENZENE
9) AND/OR DIPHENYLAMINE
10) BENZO(B)FLUORANTHENE AND/OR BENZO(K)FLUORANTHENE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1140

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0231

CHEMIST: E.W. Loy, Jr. COMPLETED 11-23-81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
ALDRIN	39333	6U	UG/KG	*	Atrazine	1000U	UG/KG
DIELDRIN	(10)39383	6U	UG/KG	*	Methyl Parathion	9U	UG/KG
CHLORDANE (TECH. MIXTURE & METABOLITES)	39351	--	UG/KG	*	Diuron	1000U	UG/KG
P,P'-DDT	39301	10U	UG/KG	*	alpha-chlordane (11)(8)	6.5	UG/KG
P,P'-DDE	39321	10U	UG/KG	*	gamma-chlordane (11)(8)	7.6	UG/KG
P,P'-DDD	39311	10U	UG/KG	*			UG/KG
ENDOSULFAN,ALPHA	34364	6U	UG/KG	*			UG/KG
ENDOSULFAN,BETA	34359	10U	UG/KG	*			UG/KG
ENDOSULFAN SULFATE	34354	90U	UG/KG	*			UG/KG
ENDRIN	39393	10U	UG/KG	*			UG/KG
ENDRIN ALDEHYDE	34369	NA	UG/KG	*			UG/KG
HEPTACHLOR	39413	20U	UG/KG	*			UG/KG
HEPTACHLOR EPOXIDE	39423	100U	UG/KG	*			UG/KG
ALPHA-BHC	39076	20U	UG/KG	*			UG/KG
BETA-BHC	34257	20U	UG/KG	*			UG/KG
GAMMA-BHC (LINDANE)	39343	20U	UG/KG	*			UG/KG
DELTA-BHC	34262	20U	UG/KG	*			UG/KG
PCB-1242 (AROCLOR 1242)	39499	300U	UG/KG	*			UG/KG
PCB-1254 (AROCLOR 1254)	39507	80U	UG/KG	*			UG/KG
PCB-1221 (AROCLOR 1221)	39491	300U	UG/KG	*			UG/KG
PCB-1232 (AROCLOR 1232)	39495	300U	UG/KG	*			UG/KG
PCB-1248 (AROCLOR 1248)	39503	300U	UG/KG	*			UG/KG
PCB-1260 (AROCLOR 1260)	39511	80U	UG/KG	*			UG/KG
PCB-1016 (AROCLOR 1016)	39514	300U	UG/KG	*			UG/KG
TOXAPHENE	39403	200U	UG/KG	*			UG/KG
TCDD (DIOXIN)	34678	NA	UG/KG	*			UG/KG
% MOISTURE	70320	23.97	%	*			%

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1605

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0235

CHEMIST: E.W. Loy, Jr. COMPLETED 11/23/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
ALDRIN	39333	30U	UG/KG	*	Atrazine	2000U	UG/KG
DIELDRIN	39383	30U	UG/KG	*	Methyl Parathion	60U	UG/KG
CHLORDANE (TECH. MIXTURE & METABOLITES) (10)	39351	---	UG/KG	*	Diuron	300U	UG/KG
P,P'-DDT	39301	80U	UG/KG	*	alpha-chlordane (11)	20U	UG/KG
P,P'-DDE	39321	80U	UG/KG	*	gamma-chlordane (11)	20U	UG/KG
P,P'-DDD	39311	80U	UG/KG	*			UG/KG
ENDOSULFAN,ALPHA	34364	30U	UG/KG	*			UG/KG
ENDOSULFAN,BETA	34359	80U	UG/KG	*			UG/KG
ENDOSULFAN SULFATE	34354	100U	UG/KG	*			UG/KG
ENDRIN	39393	80U	UG/KG	*			UG/KG
ENDRIN ALDEHYDE	34369	NA	UG/KG	*			UG/KG
HEPTACHLOR	39413	30U	UG/KG	*			UG/KG
HEPTACHLOR EPOXIDE	39423	70U	UG/KG	*			UG/KG
ALPHA-BHC	39076	30U	UG/KG	*			UG/KG
BETA-BHC	34257	30U	UG/KG	*			UG/KG
GAMMA-BHC (LINDANE)	39343	30U	UG/KG	*			UG/KG
DELTA-BHC	34262	30U	UG/KG	*			UG/KG
PCB-1242 (AROCLOR 1242)	39499	300U	UG/KG	*			UG/KG
PCB-1254 (AROCLOR 1254)	39507	500U	UG/KG	*			UG/KG
PCB-1221 (AROCLOR 1221)	39491	300U	UG/KG	*			UG/KG
PCB-1232 (AROCLOR 1232)	39495	300U	UG/KG	*			UG/KG
PCB-1248 (AROCLOR 1248)	39503	300U	UG/KG	*			UG/KG
PCB-1260 (AROCLOR 1260)	39511	500U	UG/KG	*			UG/KG
PCB-1016 (AROCLOR 1016)	39514	300U	UG/KG	*			UG/KG
TOXAPHENE	39403	2000U	UG/KG	*			UG/KG
TCDD (DIOXIN)	34678	NA	UG/KG	*			UG/KG
% MOISTURE	70320	25.53	%	*			%

NOTES: 1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED
THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1405

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-002 DRAINAGE TO BAYOU AT S CORNER OF LANDFILL SAD NO.: 82C0232

CHEMIST: E.W. Loy, Jr. COMPLETED 11/23/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
ALDRIN	39333	100U	UG/KG	*	Atrazine (8)(9)	84,000	UG/KG
DIELDRIN	39383	600U	UG/KG	*	Methyl Parathion	6000U	UG/KG
CHLORDANE (TECH. MIXTURE & METABOLITES) (10)	39351	----	UG/KG	*	Diuron	50000U	UG/KG
P,P'-DDT	39301	1000U	UG/KG	*	alpha-chlordane (11)	3000U	UG/KG
P,P'-DDE	39321	1000U	UG/KG	*	gamma-chlordane (11)	2000U	UG/KG
P,P'-DDD	39311	1000U	UG/KG	*			UG/KG
ENDOSULFAN,ALPHA	34364	200U	UG/KG	*			UG/KG
ENDOSULFAN,BETA	34359	700U	UG/KG	*			UG/KG
ENDOSULFAN SULFATE	34354	1000U	UG/KG	*			UG/KG
ENDRIN	39393	600U	UG/KG	*			UG/KG
ENDRIN ALDEHYDE	34369	NA	UG/KG	*			UG/KG
HEPTACHLOR	39413	100U	UG/KG	*			UG/KG
HEPTACHLOR EPOXIDE	39423	400U	UG/KG	*			UG/KG
ALPHA-BHC	39076	100U	UG/KG	*			UG/KG
BETA-BHC	34257	100U	UG/KG	*			UG/KG
GAMMA-BHC (LINDANE)	39343	100U	UG/KG	*			UG/KG
DELTA-BHC	34262	100U	UG/KG	*			UG/KG
PCB-1242 (AROCLOR 1242)	39499	2000U	UG/KG	*			UG/KG
PCB-1254 (AROCLOR 1254) (8)	39507	7000	UG/KG	*			UG/KG
PCB-1221 (AROCLOR 1221)	39491	2000U	UG/KG	*			UG/KG
PCB-1232 (AROCLOR 1232)	39495	2000U	UG/KG	*			UG/KG
PCB-1248 (AROCLOR 1248)	39503	2000U	UG/KG	*			UG/KG
PCB-1260 (AROCLOR 1260)	39511	2000U	UG/KG	*			UG/KG
PCB-1016 (AROCLOR 1016)	39514	2000U	UG/KG	*			UG/KG
TOXAPHENE (8)	39403	11,000	UG/KG	*			UG/KG
TCDD (DIOXIN)	34678	NA	UG/KG	*			UG/KG
% MOISTURE	70320	26.70	%	*			%

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1430

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL SAD NO.: 82C0233

CHEMIST: E.W. Loy, Jr. COMPLETED 11/23/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
ALDRIN	39333	300U	UG/KG	*	Atrazine (8)(9)		18,000	UG/KG
DIELDRIN	39383	2000U	UG/KG	*	Methyl Parathion		10000	UG/KG
CHLORDANE (TECH. MIXTURE & METABOLITES) (10)	39351	---	UG/KG	*	Diuron		10,000U	UG/KG
P,P'-DDT	39301	3000U	UG/KG	*	alpha-chlordane (11)		7000	UG/KG
P,P'-DDE	39321	3000U	UG/KG	*	gamma-chlordane (11)		5000	UG/KG
P,P'-DDD	39311	3000U	UG/KG	*				UG/KG
ENDOSULFAN,ALPHA	34364	300U	UG/KG	*				UG/KG
ENDOSULFAN,BETA	34359	2000U	UG/KG	*				UG/KG
ENDOSULFAN SULFATE	34354	4000U	UG/KG	*				UG/KG
ENDRIN	39393	3000U	UG/KG	*				UG/KG
ENDRIN ALDEHYDE	34369	NA	UG/KG	*				UG/KG
HEPTACHLOR	39413	300U	UG/KG	*				UG/KG
HEPTACHLOR EPOXIDE	39423	800U	UG/KG	*				UG/KG
ALPHA-BHC	39076	300U	UG/KG	*				UG/KG
BETA-BHC	34257	300U	UG/KG	*				UG/KG
GAMMA-BHC (LINDANE)	39343	300U	UG/KG	*				UG/KG
DELTA-BHC	34262	300U	UG/KG	*				UG/KG
PCB-1242 (AROCLOR 1242)	39499	4000U	UG/KG	*				UG/KG
PCB-1254 (AROCLOR 1254)	39507	10,000U	UG/KG	*				UG/KG
PCB-1221 (AROCLOR 1221)	39491	4000U	UG/KG	*				UG/KG
PCB-1232 (AROCLOR 1232)	39495	4000U	UG/KG	*				UG/KG
PCB-1248 (AROCLOR 1248)	39503	4000U	UG/KG	*				UG/KG
PCB-1260 (AROCLOR 1260)	39511	10,000U	UG/KG	*				UG/KG
PCB-1016 (AROCLOR 1016)	39514	4000U	UG/KG	*				UG/KG
TOXAPHENE (8)	39403	65,000	UG/KG	*				UG/KG
TCDD (DIOXIN)	34678	NA	UG/KG	*				UG/KG
% MOISTURE	70320	27.48	%	*				%

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
WATER

EPA-SAU,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1135

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0230

CHEMIST: E.W. Loy, Jr. COMPLETED 11/23/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#	UNITS
ALDRIN	39330	0.01U	UG/L	*	Atrazine	1U	UG/L
DIELDRIN	(10)39380	0.01U	UG/L	*	Methyl Parathion	0.05U	UG/L
CHLORDANE (TECH. MIXTURE & METABOLITES)	39350	---	UG/L	*	Diuron	4U	UG/L
P,P'-DDT	39300	0.01U	UG/L	*	alpha-chlordane (11)	0.1U	UG/L
P,P'-DDE	39320	0.01U	UG/L	*	gamma-chlordane (11)	0.1U	UG/L
P,P'-DDD	39310	0.01U	UG/L	*			UG/L
ENDOSULFAN,ALPHA	34361	0.01U	UG/L	*			UG/L
ENDOSULFAN,BETA	34356	0.01U	UG/L	*			UG/L
ENDOSULFAN SULFATE	34351	0.04U	UG/L	*			UG/L
ENDRIN	39390	0.01U	UG/L	*			UG/L
ENDRIN ALDEHYDE	34366	NA	UG/L	*			UG/L
HEPTACHLOR	39410	0.01U	UG/L	*			UG/L
HEPTACHLOR EPOXIDE	39420	0.01U	UG/L	*			UG/L
ALPHA-BHC	39337	0.03U	UG/L	*			UG/L
BETA-BHC	39338	0.03U	UG/L	*			UG/L
GAMMA-BHC (LINDANE)	39340	0.03U	UG/L	*			UG/L
DELTA-BHC	34259	0.03U	UG/L	*			UG/L
PCB-1242 (AROCLOR 1242)	39496	0.2U	UG/L	*			UG/L
PCB-1254 (AROCLOR 1254)	39504	0.05U	UG/L	*			UG/L
PCB-1221 (AROCLOR 1221)	39488	0.2U	UG/L	*			UG/L
PCB-1232 (AROCLOR 1232)	39492	0.2U	UG/L	*			UG/L
PCB-1248 (AROCLOR 1248)	39500	0.2U	UG/L	*			UG/L
PCB-1260 (AROCLOR 1260)	39508	0.05U	UG/L	*			UG/L
PCB-1016 (AROCLOR 1016)	34671	0.2U	UG/L	*			UG/L
TOXAPHENE	39400	0.2U	UG/L	*			UG/L
TCDD (DIOXIN)	34675	NA	UG/L	*			UG/L

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

PESTICIDES/PCB'S AND OTHER CHLORINATED COUMPOUNDS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1600

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0234

CHEMIST: E.W. Loy, Jr. COMPLETED 11/23/81

COMPOUND	STORET#		UNITS		COMPOUND	STORET#		UNITS
ALDRIN	39330	0.01U	UG/L	*	Atrazine		2U	UG/L
DIELDRIN	39380	0.02U	UG/L	*	Methyl Parathion		0.03U	UG/L
CHLORDANE (TECH. MIXTURE & METABOLITES) (10)	39350	---	UG/L	*	Diuron		1U	UG/L
P,P'-DDT	39300	0.01U	UG/L	*	alpha-chlordane (11)		0.02U	UG/L
P,P'-DDE	39320	0.01U	UG/L	*	gamma-chlordane (11)		0.02U	UG/L
P,P'-DDD	39310	0.01U	UG/L	*				UG/L
ENDOSULFAN,ALPHA	34361	0.02U	UG/L	*				UG/L
ENDOSULFAN,BETA	34356	0.01U	UG/L	*				UG/L
ENDOSULFAN SULFATE	34351	0.04U	UG/L	*				UG/L
ENDRIN	39390	0.02U	UG/L	*				UG/L
ENDRIN ALDEHYDE	34366	NA	UG/L	*				UG/L
HEPTACHLOR	39410	0.01U	UG/L	*				UG/L
HEPTACHLOR EPOXIDE	39420	0.01U	UG/L	*				UG/L
ALPHA-BHC	39337	0.01U	UG/L	*				UG/L
BETA-BHC	39338	0.01U	UG/L	*				UG/L
GAMMA-BHC (LINDANE)	39340	0.01U	UG/L	*				UG/L
DELTA-BHC	34259	0.01U	UG/L	*				UG/L
PCB-1242 (AROCLOR 1242)	39496	0.2U	UG/L	*				UG/L
PCB-1254 (AROCLOR 1254)	39504	0.05U	UG/L	*				UG/L
PCB-1221 (AROCLOR 1221)	39488	0.2U	UG/L	*				UG/L
PCB-1232 (AROCLOR 1232)	39492	0.2U	UG/L	*				UG/L
PCB-1248 (AROCLOR 1248)	39500	0.2U	UG/L	*				UG/L
PCB-1260 (AROCLOR 1260)	39508	0.05U	UG/L	*				UG/L
PCB-1016 (AROCLOR 1016)	34671	0.2U	UG/L	*				UG/L
TOXAPHENE	39400	0.2U	UG/L	*				UG/L
TCDD (DIOXIN)	34675	NA	UG/L	*				UG/L

NOTES:
1) J-ESTIMATED VALUE
2) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
3) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
4) U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM DETECTION LIMIT.
5) N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
6) A-AVERAGE VALUE
7) NA-COMPOUND NOT ANALYZED FOR
8) CONFIRMED ON TWO DIFFERENT GC COLUMNS
9) CONFIRMED BY GC/MS
10) REPORTED AS INDIVIDUAL COMPOUNDS
11) CONSTITUENTS OF TECHNICAL CHLORDANE

DATE:11/12/81

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1140

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0231

CHEMIST: McDaniel COMPLETED 11/12/81

ELEMENT		STORET#		UNITS
SILVER	AG	01078	1U	MG/KG
ARSENIC	AS	01003	16U	MG/KG
BORON	B	01023	NA	MG/KG
BARIUM	BA	01008	156	MG/KG
BERYLLIUM	BE	01013	4U	MG/KG
CADMIUM	CD	01028	4U	MG/KG
COBALT	CO	01038	NA	MG/KG
CHROMIUM	CR	01029	12	MG/KG
COPPER	CU	01043	8.8	MG/KG
MOLYBDENUM	MO	01063	8K	MG/KG
NICKEL	NI	01068	12	MG/KG
LEAD	PB	01052	14	MG/KG
ANTIMONY	SB	01098	16U	MG/KG
SELENIUM	SE	01148	16U	MG/KG
TIN	SN	01103	NA	MG/KG
STRONTIUM	SR	01083	61	MG/KG
TELLURIUM	TE	45513	NA	MG/KG
TITANIUM	TI	01153	240	MG/KG
THALLIUM	TL	34480	40U	MG/KG
VANADIUM	V	01088	22	MG/KG
YTTRIUM	Y	45514	12	MG/KG
ZINC	ZN	01093	50	MG/KG
ZIRCONIUM	ZR	01163	NA	MG/KG
MERCURY	HG	71921	0.12	MG/KG
ALUMINUM	AL	01108	7690	MG/KG
MANGANESE	MN	01053	3050	MG/KG
CALCIUM	CA	00917	71200	MG/KG
MAGNESIUM	MG	00924	5680	MG/KG
IRON	FE	01170	19900	MG/KG
SODIUM	NA	00934	160	MG/KG
CYANIDE	CN	00721	--	MG/KG
ASBESTOS	ASSB	34228	--	MG/KG
CHROMIUM,HEXAVALENT	CR(6)		--	
% MOISTURE	M	70320	26	%

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE:11/12/81

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1605

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0235

CHEMIST: McDaniel COMPLETED 11/12/81

ELEMENT		STORET#		UNITS
SILVER	AG	01078	1K	MG/KG
ARSENIC	AS	01003	NA	MG/KG
BORON	B	01023	NA	MG/KG
BARIUM	BA	01008	195	MG/KG
BERYLLIUM	BE	01013	3K	MG/KG
CADMIUM	CD	01028	3K	MG/KG
COBALT	CO	01038	NA	MG/KG
CHROMIUM	CR	01029	170	MG/KG
COPPER	CU	01043	7.8	MG/KG
MOLYBDENUM	MO	01063	6K	MG/KG
NICKEL	NI	01068	14	MG/KG
LEAD	PB	01052	21	MG/KG
ANTIMONY	SB	01098	NA	MG/KG
SELENIUM	SE	01148	12K	MG/KG
TIN	SN	01103	NA	MG/KG
STRONTIUM	SR	01083	92	MG/KG
TELLURIUM	TE	45513	NA	MG/KG
TITANIUM	TI	01153	213	MG/KG
THALLIUM	TL	34480	30K	MG/KG
VANADIUM	V	01088	22	MG/KG
YTTRIUM	Y	45514	19	MG/KG
ZINC	ZN	01093	50	MG/KG
ZIRCONIUM	ZR	01163	NA	MG/KG
MERCURY	HG	71921	0.10U	MG/KG
ALUMINUM	AL	01108	6378	MG/KG
MANGANESE	MN	01053	3150	MG/KG
CALCIUM	CA	00917	116000	MG/KG
MAGNESIUM	MG	00924	8466	MG/KG
IRON	FE	01170	26043	MG/KG
SODIUM	NA	00934	400	MG/KG
CYANIDE	CN	00721	--	MG/KG
ASBESTOS	ASSB	34228	--	MG/KG
CHROMIUM,HEXAVALENT	CR(6)		--	
% MOISTURE	M	70320	23	%

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE:11/12/81

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1405

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-002 DRAINAGE TO BAYOU AT S CORNER OF LANDFILL SAD NO.: 82C0232

CHEMIST: McDaniel COMPLETED 11/12/81

ELEMENT		STORET#		UNITS
SILVER	AG	01078	1U	MG/KG
ARSENIC	AS	01003	16U	MG/KG
BORON	B	01023	NA	MG/KG
BARIUM	BA	01008	213	MG/KG
BERYLLIUM	BE	01013	4U	MG/KG
CADMIUM	CD	01028	4U	MG/KG
COBALT	CO	01038	NA	MG/KG
CHROMIUM	CR	01029	30	MG/KG
COPPER	CU	01043	17	MG/KG
MOLYBDENUM	MO	01063	8U	MG/KG
NICKEL	NI	01068	23	MG/KG
LEAD	PB	01052	20	MG/KG
ANTIMONY	SB	01098	16U	MG/KG
SELENIUM	SE	01148	16U	MG/KG
TIN	SN	01103	NA	MG/KG
STRONTIUM	SR	01083	42	MG/KG
TELLURIUM	TE	45513	NA	MG/KG
TITANIUM	TI	01153	441	MG/KG
THALLIUM	TL	34480	40U	MG/KG
VANADIUM	V	01088	41	MG/KG
YTTRIUM	Y	45514	14	MG/KG
ZINC	ZN	01093	67	MG/KG
ZIRCONIUM	ZR	01163	NA	MG/KG
MERCURY	HG	71921	0.12	MG/KG
ALUMINUM	AL	01108	14765	MG/KG
MANGANESE	MN	01053	1265	MG/KG
CALCIUM	CA	00917	38850	MG/KG
MAGNESIUM	MG	00924	10134	MG/KG
IRON	FE	01170	22988	MG/KG
SODIUM	NA	00934	210	MG/KG
CYANIDE	CN	00721	--	MG/KG
ASBESTOS	ASSB	34228	--	MG/KG
CHROMIUM,HEXAVALENT	CR(6)		--	
% MOISTURE	M	70320	25	%

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE:11/12/81

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/03/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: SEDIM

SAMPLE START(DATE & TIME):12/28/81 1430

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: VL-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL SAD NO.: 82C0233

CHEMIST: McDaniel COMPLETED 11/12/81

ELEMENT		STORET#		UNITS
SILVER	AG	01078	1U	MG/KG
ARSENIC	AS	01003	NA	MG/KG
BORON	B	01023	NA	MG/KG
BARIUM	BA	01008	211	MG/KG
BERYLLIUM	BE	01013	3U	MG/KG
CADMIUM	CD	01028	3U	MG/KG
COBALT	CO	01038	NA	MG/KG
CHROMIUM	CR	01029	22	MG/KG
COPPER	CU	01043	15	MG/KG
MOLYBDENUM	MO	01063	6U	MG/KG
NICKEL	NI	01068	23	MG/KG
LEAD	PB	01052	20	MG/KG
ANTIMONY	SB	01098	NA	MG/KG
SELENIUM	SE	01148	12U	MG/KG
TIN	SN	01103	NA	MG/KG
STRONTIUM	SR	01083	30	MG/KG
TELLURIUM	TE	45513	NA	MG/KG
TITANIUM	TI	01153	561	MG/KG
THALLIUM	TL	34480	NA	MG/KG
VANADIUM	V	01088	46	MG/KG
YTTRIUM	Y	45514	14	MG/KG
ZINC	ZN	01093	64	MG/KG
ZIRCONIUM	ZR	01163	NA	MG/KG
MERCURY	HG	71921	0.10U	MG/KG
ALUMINUM	AL	01108	15843	MG/KG
MANGANESE	MN	01053	1589	MG/KG
CALCIUM	CA	00917	15453	MG/KG
MAGNESIUM	MG	00924	6340	MG/KG
IRON	FE	01170	24327	MG/KG
SODIUM	NA	00934	660	MG/KG
CYANIDE	CN	00721	--	MG/KG
ASBESTOS	ASSB	34228	--	MG/KG
CHROMIUM,HEXAVALENT	CR(6)		--	
% MOISTURE	M	70320	23	%

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE:11/12/81

METALS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1135

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: SBU-001 STANTS BAYOU UPSTREAM

SAD NO.: 82C0230

CHEMIST: McDaniel COMPLETED 11/4/81

ELEMENT		STORET#		UNITS
SILVER	AG	01077	10U	UG/L
ARSENIC	AS	01002	50U	UG/L
BORON	B	01022	NA	UG/L
BARIUM	BA	01007	64	UG/L
BERYLLIUM	BE	01012	10U	UG/L
CADMIUM	CD	01027	10U	UG/L
COBALT	CO	01037	20U	UG/L
CHROMIUM	CR	01034	10U	UG/L
COPPER	CU	01042	10U	UG/L
MOLYBDENUM	MO	01062	20U	UG/L
NICKEL	NI	01067	30U	UG/L
LEAD	PB	01051	40U	UG/L
ANTIMONY	SB	01097	40U	UG/L
SELENIUM	SE	01147	50U	UG/L
TIN	SN	01102	100U	UG/L
STRONTIUM	SR	01082	88	UG/L
TELLURIUM	TE	01064	40U	UG/L
TITANIUM	TI	01152	21	UG/L
THALLIUM	TL	01059	100U	UG/L
VANADIUM	V	01087	10U	UG/L
YTTRIUM	Y	01203	10U	UG/L
ZINC	ZN	01092	10U	UG/L
ZIRCONIUM	ZR	01162	NA	UG/L
MERCURY	HG	71900	0.2U	UG/L
ALUMINUM	AL	01105	875	UG/L
MANGANESE	MN	01055	173	UG/L
CALCIUM	CA	00916	32	MG/L
MAGNESIUM	MG	00927	8.9	MG/L
IRON	FE	74010	1.1	MG/L
SODIUM	NA	00929	6.3	MG/L
CYANIDE	CN	00720	NA	MG/L
ASBESTOS	ASSB	34225	NA	F/L
CHROMIUM,HEXAVALENT	CR(6)	01032	NA	UG/L

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE:11/12/81

METALS
DATA REPORTING SHEET
WATER

EPA-SAD,RGN.IV
ATHENS,GA

PROJECT #: 82-14 PROG ELEMENT #: HWSR

SAMPLE RECEIVED(DATE & TIME): 10/30/81 800

SOURCE: VERTAC CHEMICAL CO

SAMPLE TYPE: AMBWA

SAMPLE START(DATE & TIME):12/28/81 1600

CITY: VICKSBURG STATE: MS

SAMPLE STOP(DATE & TIME): 00/00/00 0

STATION: HBD-004 HATCHER BAYOU DOWNSTREAM

SAD NO.: 82C0234

CHEMIST: McDaniel COMPLETED 11/4/81

ELEMENT		STORET#		UNITS
SILVER	AG	01077	10U	UG/L
ARSENIC	AS	01002	50U	UG/L
BORON	B	01022	NA	UG/L
BARIUM	BA	01007	112	UG/L
BERYLLIUM	BE	01012	10U	UG/L
CADMIUM	CD	01027	10U	UG/L
COBALT	CO	01037	20U	UG/L
CHROMIUM	CR	01034	10U	UG/L
COPPER	CU	01042	17	UG/L
MOLYBDENUM	MO	01062	20U	UG/L
NICKEL	NI	01067	30U	UG/L
LEAD	PB	01051	40U	UG/L
ANTIMONY	SB	01097	40U	UG/L
SELENIUM	SE	01147	50U	UG/L
TIN	SN	01102	100U	UG/L
STRONTIUM	SR	01082	122	UG/L
TELLURIUM	TE	01064	40U	UG/L
TITANIUM	TI	01152	36	UG/L
THALLIUM	TL	01059	100U	UG/L
VANADIUM	V	01087	10U	UG/L
YTTRIUM	Y	01203	10U	UG/L
ZINC	ZN	01092	17	UG/L
ZIRCONIUM	ZR	01162	NA	UG/L
MERCURY	HG	71900	0.2U	UG/L
ALUMINUM	AL	01105	1500	UG/L
MANGANESE	MN	01055	228	UG/L
CALCIUM	CA	00916	34	MG/L
MAGNESIUM	MG	00927	14	MG/L
IRON	FE	74010	1.8	MG/L
SODIUM	NA	00929	127	MG/L
CYANIDE	CN	00720	NA	MG/L
ASBESTOS	ASSB	34225	NA	F/L
CHROMIUM,HEXAVALENT	CR(6)	01032	NA	UG/L

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.
3) A-AVERAGE VALUE
4) NA-ELEMENT NOT ANALYZED FOR
5) U - None Detected; Number is Detection Limit.

DATE: 11/12/81

US EPA REGION IV S&A DIVISION
LABORATORY SERVICES BRANCH
DATA REPORTING SHEET
82C0230 - 82C0235
PROJECT # 82-14 ***PROG ELEMENT # HWSR

SOURCE: VERTAC CHEMICAL CO

SAMPLE RECEIVED DATE & TIME: 10/30/81 800

CITY : VICKSBURG STATE: MS

CHEMIST:

COMPLETED: 11-25-81

SAD NO.	STATION	DATE & TIME SAMPLED	SAMPLE TYPE	ANALYSES TO BE RUN					
82C0230	SBU-001 STANTS BAYOU UPSTREAM	12/28/81- 1135- 00/00/00 0	AMBWA	:ORGS	:PEST	:VOA	:METSCUG/L	:CN MG/L	:HG UG/L
				:	:	:	:	: .002K	:
				:T-PHOMG/L	: Temp(°C)	: pH(SU)	:	:	:
				: .40	: 6.5	: 7.1	:	:	:
82C0231	SBU-001 STANTS BAYOU UPSTREAM	12/28/81- 1140- 00/00/00 0	SEDIM	:ORGS	:PEST	:VOA	:METSCMG/KG	:CN MG/KG	:HG MG/KG
				:	:	:	:	: 0.2K	:
				:	:	:	:	:	:
				:	:	:	:	:	:
82C0232	VL-002 DRAINAGE TO BAYOU AT S CORNER OF LANDFILL	12/28/81- 1405- 00/00/00 0	SEDIM	:ORGS	:PEST	:VOA	:METSCMG/KG	:CN MG/KG	:HG MG/KG
				:	:	:	:	: 0.86	:
				:	:	:	:	:	:
				:	:	:	:	:	:
82C0233	VL-003 DRAINAGE TO DITCH AT W CORNER OF LANDFILL	12/28/81- 1430- 00/00/00 0	SEDIM	:ORGS	:PEST	:VOA	:METSCMG/KG	:CN MG/KG	:HG MG/KG
				:	:	:	:	: 0.58	:
				:	:	:	:	:	:
				:	:	:	:	:	:
82C0234	HBD-004 HATCHER BAYOU DOWNSTREAM	12/28/81- 1600- 00/00/00 0	AMBWA	:ORGS	:PEST	:VOA	:METSCUG/L	:CN MG/L	:HG UG/L
				:	:	:	:	: .046	:
				:T-PHOMG/L	: Temp(°C)	: pH(SU)	:	:	:
				: .98	: 15.9	: 6.9	:	:	:

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.

DATE: 11/12/81

US EPA REGION IV S&A DIVISION
LABORATORY SERVICES BRANCH
DATA REPORTING SHEET
82C0230 - 82C0235
PROJECT # 82-14 ***PROG ELEMENT # HWSR

SOURCE: VERTAC CHEMICAL CO

SAMPLE RECEIVED DATE & TIME: 10/30/81 800

CITY : VICKSBURG STATE: MS

CHEMIST:

COMPLETED: 11-25-81

SAD NO.	STATION	DATE & TIME SAMPLED	SAMPLE TYPE	ANALYSES TO BE RUN					
				:ORGS	:PEST	:VOA	:METSCMG/KG	:CN MG/KG	:HG MG/KG:
82C0235	HBD-004 HATCHER BAYOU DOW NSTREAM	12/28/81- 00/00/00 1605- 0	SEDIM	:	:	:	:	: 0.2K :	:
				:	:	:	:	:	:
				:	:	:	:	:	:

NOTES: 1) K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN.
2) L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN.

ENVIRONMENTAL PROTECTION AGENCY
Surveillance and Analysis Division

REGION 4
College Station Road
Athens, Georgia 30613

CHAIN OF CUSTODY RECORD

PROJ. NO.

PROJECT NAME Vertac Chemical
Vicksburg, MS

SAMPLERS: (Signature) [signature]
[signature]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	1 gal ovs	VOA	metals, Hg	CN	Ovg sed	~~Sed~~ metals	Total phos.	REMARKS
SBU-001	10/28/81	1135		X	Stants Bayou upstream		1	1	1	1	I	I	1 I	305, 306, 307, 308, 309, ~~310~~, ~~311~~
"	"	1140		X	" " "						1	1		310, 311
VL-002	10/28/81	1405		X	Drainage to Bayou at south									
~~VL-003~~	~~10/28/81~~	~~1430~~		~~X~~	corner of landfill						1	1		319, 320
VL-003	10/28/81	1430		X	Drainage to ditch at									
					west corner of landfill						1	1		323, 324
HBD-004	10/28/81	1600		X	Hatcher Bayou downstream		1	1	1	1			1	327-331
"	"	1605		X	" " "						1	1		332, 333

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	10/29/81 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Sealed samples left in hall by custody room.	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

0027

ENVIRONMENTAL PROTECTION AGENCY
Surveillance and Analysis Division

REGION 4
College Station Road
Athens, Georgia 30613

CHAIN OF CUSTODY RECORD

PROJ. NO.

PROJECT NAME Vertac Chemical Co. Vicksburg MS

SAMPLERS: (Signature) [signature] Carol Haugh

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	1 gal org	VOA	Metals, Hg	CN	gal org	gal metals	Total phenols	REMARKS
SBU-001	10/28/81	1135		X	Starts Bayou upstream		1	1	1	1			1	312, 313, 314, 315, 316
"	"	1140		X	" " "						1	1		317, 318
VL-002	10/28/81	1405		X	Drainage to Bayou at south									
					corner of landfill						1	1		320, 321
VL-003	10/28/81	1430		X	Drainage to ditch									
~~HBD-004~~	~~10/28/81~~	~~1~~			along railroad						1	1		325, 326
HBD-004	10/28/81	1600		X	Hatchee Bayou downstream		1	1	1	1			1	334 — 338
"	"	1605		X	" " "						1	1		339, 390

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	10/28/81 1655	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Sealed sample given to Vertac lab personnel	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

0028

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

August 24, 1982

RECEIVED
AUG 26 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Mississippi DNR
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS. 39209

Dear Mr. Estes:

Attached is a copy of the analyses of the soil samples. Approximate sample locations are noted in green on the attached sketch. The average soil composition is:

DNBP - None Present
Atrazine - None Present
Toxaphene - Detected at less than 4 parts per billion (note from the results of the EPA field investigation of October 28, 1981 that the minimum detection limit for toxaphene was 200 parts per billion.)

The EPA detected pesticides in sediment in erosional areas:

VL-002 east of the reclaimed pit area:

DNBP - None reported
Atrazine - 84,000 ppb
Toxaphene - 13,000 ppb

VL-003 west of the closed out landfill:

DNBP - Less than 15,000 ppb
Atrazine - 18,000 ppb
Toxaphene - 65,000 ppb

The pesticides have not been detected in Stout's Bayou, Hatcher Bayou or the groundwater.

As you know I wish to use the dirt on the high hill area for remedial work. In my judgement the dirt is sufficiently clean for this purpose. I am unable to get the entire remedial effort I have proposed in the funding plan prior to 1983; therefore, I think there would be wisdom in meeting to decide what would serve as an interim measure. Perhaps as an interim measure we can use some of the "high hill" dirt to simply

cover the erosional areas and slope them gently to minimize sediment transport.

The master plan for the closed out area has included:

1. cutting the high hill area down to the level of the low hill and sloping the top toward the existing basin.

2. use clean high hill dirt to create a 3:1 slope on the east, west, and south edges of the area.

3. make the area suitable for building biological treatment facilities.

4. drill three additional groundwater monitoring wells in areas that are now inaccessible.

The biological treatment facility design which triggered the plan is still pending some better definition of the DNBP market. To ensure effluent compliance, if the market dictates running production at capacity, we now have one million gallons of storage capacity for DNBP process wastewater. Additionally, I am arranging for off-site deep well disposal to have as standby strategy should that be necessary.

I remain convinced the hydrogeological investigation by DISC and the present monitoring wells meet minimum regulatory requirements. The regulated unit boundary is monitored. The definition of aquifier by the EPA remains confused, but they announce on page 32289 of the July 26, 1982 Federal Register the "EPA is working on this issue, and will announce its result when the work is completed". The low yielding saturated zone we are monitoring I think can be considered the uppermost aquifier if that is the formation we wish to protect. If we protect the formation we will surely protect the drinking water formation that is further protected by the Glendon limestone formation and the even more impermeable Jackson formation.

In the improbable event (in these soils) that there were a contaminant plume from the pond that plume would either be evidenced as seeps in the bank of Stouts Bayou or Hatcher Bayou and pollution within the stream or transit underneath the stream where detection by monitoring well 3 would occur. Seeps and stream pollution are not evident, therefore, the well has to monitor potential for transit beneath the stream.

I have investigated the possibility of using 2 different hydrogeologic consultants in the Jackson area in the anticipation that they might have more immediate or complete knowledge of the area geology. I have concluded that my original hydrogeological consultant is more experienced.

Best regards,

Dick Karkkainen
Director of Environment and Safety

EDK/bh

Attch.

INTERNAL CORRESPONDENCE

DATE: August 9, 1982

TO: ~~Dick Karkkainen~~

FROM: R.F. Maraman
R.F. Maraman

CC: See Distribution

SUBJECT: Analysis of Dirt Samples

Well	DNBP	Atrazine	Toxaphene Micrograms Per Kilo, Dry Basis
"Rosea" 35 Ft. Depth	0	0	8.75
"Shannon" 37 Ft. Depth	0	0	4
#1 35 Ft. Depth	0	0	5
Surface Samples At Widely Scattered Points:			
1	0	0	Less Than 1
2	0	0	Less Than 1

RFM/tsd

cc: F. Ahlers
F. Bleyer
D. Madsen
R. Maraman
File

RD Karkkainen
8/24/82

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

July 15, 1982

RECEIVED
JUL 19 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Mississippi Department of Natural Resources
Bureau of Pollution Control
Division of Solid Waste Management
P. O. Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

Attached are results of the second set of analyses of samples from the one upstream and three downstream groundwater monitoring wells.

On another but related subject, I have given wide circulation to your memo of June 28, 1982 on the closed out pond closed out landfill area and will have a timetable for positive action.

We are presently analyzing soil from various depths of the "high" hill area. Our plans presume that this area is not grossly contaminated and the soil can be moved to good purpose. Therefore, before we establish a timetable for our plans, I think it best we complete the soil analysis and submit it to you.

Best regards,

Dick Karkkainen
Director of Environment & Safety

RDK/bh

cc: F. Ahlers
B. Maraman

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

May 13, 1982

RECEIVED
MAY 17 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P. E.
Division of Solid Waste
Mississippi Department of Natural Resources
Bureau of Pollution Control
Post Office Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

On May 5, 1982 we performed some brief tests on the ground-water wells located at our Vicksburg facility. My letter to you of April 20, 1982 is complete misinformation. The rate of recharge of the wells is very slow.

Well number 2 was used as our primary test well. The initial water level was 8.15 feet below the top of casing. The well was manually baled and the water measured. Water was removed at a steady pace of 2 gallons every five minutes for a period of 45 minutes at which time the well was empty at a depth of 38.3 feet below the top of casing. Twenty gallons had been removed which corresponds to volume of casing emptied.

Recharge of the well proceeded as follows:

Time Elapsed (Minutes):	Water Level (Depth in feet below top of casing):	Gallons Recharged:	Recharge Rate (gpm):
0	38.3	0	
45	37.2	0.75	0.017
150	35.7	1.77	0.012
1095	23.6	9.98	0.009
1560	19.8	12.56	0.008
3000	13.4	16.91	0.006

The other wells were not baled to dryness. At well number 1 the initial elevation was 4.65 feet below the top of the casing. After 15 minutes 10 gallons of water was removed and the water level had dropped to 17.8 feet, corresponding to a volume of casing emptied of 8.93 gallons. Recharge was therefore about 0.07 gallons per minute.

The initial elevation at well number 4 was 5.5 feet below the top of the casing. After 12 minutes 6 gallons of water was removed and the water level had dropped to 10.2 feet, corresponding to a volume of casing emptied of 3.19 gallons. Recharge was therefore about 0.23 gallons per minute.

The initial elevation at well number 3 was 9.5 feet below the top of the casing. After 12 minutes 6 gallons of water was removed and the water level had dropped to 18.35 feet, corresponding to a volume of casing emptied of 6 gallons. Recharge is assumed to be comparable to well number 2.

The only rule of thumb I know about in establishing whether an aquifer exists is that a pumping test at constant level would yield water at a rate exceeding 2 gallons per minute. If the rule of thumb is true we are not monitoring an aquifer. We are, I believe monitoring the area of probable plume flow if the hazardous waste area had a leachate problem.

We will have to monitor water levels on a monthly basis to better establish direction of groundwater flow.

We have prepared a topography of the hill area and are soliciting bids to level the hill to an elevation approximately 10 feet above track grade. 85,000 cubic yards of dirt will have to be moved. The level elevation will slope gently to the existing basin. Edges will be sloped 1:3 so as to allow establishment of groundcover. When that work is completed we will, I think, want to drill an exploratory well 100 feet in depth and an additional 40 feet deepwell.

Best regards,

Dick Karkkainen
Director of Environment & Safety

RDK/bh

cc: Mr. J. Walton - DISC
Mr. D. Green
Mr. B. Maraman

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 354-2550

TO: File

FROM: David Lee

SUBJECT: Meeting with Dick Karkkainen, Vertac Chemical Corp

DATE: April 15, 1982

Present at the meeting were Chuck Estes, David Lee, and Dick Karkkainen. The purpose of the meeting was to discuss inadequate aspects of the hydrogeological investigation at the Vicksburg facility. There was some question concerning the data and methods used to derive the data used to construct the groundwater contours at the landfill area. Mr. Karkkainen indicated he would contact his consultant for more information and would check the static water levels as well as conduct pumping tests.

The preliminary groundwater contours indicated that the stream south of the landfill may be intercepting groundwater. If this is the case Well #3 may not receive groundwater moving immediately under the landfill. This would leave only one well which could conceivably be down gradient from the landfill; whereas RCRA requires at least 3 wells down gradient. Mr. Karkkainen indicated that more wells would be installed after the landfill has been reshaped.

We expressed concern about the installation of well screens in firm silt and clay. There may be a problem in yielding sufficient water for sampling. Mr. Karkkainen will run pump test on the wells and contact his consultant. When plans are completed on the dirt work at the landfill we will be contacted to get our comments and recommendations.

ARSENIC AND CERTAIN ARSENIC COMPOUNDS

Information on the carcinogenicity of arsenic compounds in experimental animals was considered inadequate for evaluation.[1]

Skin cancer in humans is causally associated with exposure to inorganic arsenic compounds in drugs, drinking water and the occupational environment. The risk of lung cancer was increased 4 to 12 times in certain smelter workers who inhaled high levels of arsenic trioxide.[1-3] However, the influence of other constituents of the working environment cannot be excluded in these studies. Case reports have suggested an association between exposure to arsenic compounds and blood dyscrasias and liver tumours.[4-8]

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[1] IARC Monographs 2:48-73, 1973.
[2] M. Kuratsune, S. Tokudome, T. Shirakusa, M. Yoshida, Y. Tokumitsu, T. Hayano and M. Seita. Occupational Lung Cancer Among Copper Smelters. Int. J. Cancer 13:552-58, 1974.
[3] S. Tokudome and M. Kuratsune. A Cohort Study on Mortality from Cancer and Other Causes Among Workers at a Metal Refinery. Int. J. Cancer 17:310-17, 1976.
[4] C.R. Kjeldsberg and H.P. Ward. Leukemia in Arsenic Poisoning. Ann. Intern. Med. 77:935-37, 1972.
[5] R.A. Kyle and G.L. Pease. Hematologic Aspects of Arsenic Intoxication. N. Engl. J. Med. 273:18-23, 1965.
[6] J. Brady, F. Liberatore, P. Harper, P. Greenwald, W. Burnett, J.N.P. Davies, M. Bishop, A. Polan and N. Vianna. Angiosarcoma of the Liver: An Epidemiologic Survey. J. Natl. Cancer Inst. 59:1383-85, 1977.
[7] J.J. Lander, R.J. Stanley, H.W. Sumner, D.C. Boswell and R.D. Aach. Angiosarcoma of the Liver Associated with Fowler's Solution (Potassium Arsenite). Gastroenterology 68:1582-85, 1975.
[8] IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, Supplement I. IARC, Lyon, France, pp. 22-23, 1979.

Arsenic is an element that is used as many compounds including arsenic trioxide, arsenic pentoxide, sodium arsenate, and sodium arsenite; all of these forms are soluble in water. Arsenic trioxide is the source for 97 percent of all arsenic products. Pentavalent organic arsenicals are used for animal drugs. It is important to note that the toxicity of arsenicals depends not only on its valence but also on its chemical form.

Elemental arsenic and arsenic compounds are used in pesticides, glass, ceramics, paints, dyes, and the preservation of hides. Arsenic occurs naturally in a number of ores and in food. The chemical form of arsenic in food has not been clearly established. Metabolically it behaves as a pentavalent organic arsenical.

Approximately 70 million lb of arsenic and inorganic arsenic compounds are produced in the United States. About 13.5 million lb of arsenic are imported, primarily as arsenic trioxide.

Industrial workers may be exposed to arsenic and its compounds during manufacturing and processing operations. An estimated 545,000 workers are potentially exposed. Higher than average worker exposure occurs during the smelting of arsenic-containing ores and during pesticide application.

Direct consumer exposure to arsenic and arsenic compounds may occur in the consumption of foods. The FDA estimates that food provides an intake of approximately 0.02 mg/day per person. Trace levels of arsenic have been reported in the tissues of livestock that were administered arsenic drugs and feed additives. Consumer exposure to arsenic may occur through the consumption of contaminated drinking water. EPA has established interim regulations to minimize exposure risks.

The general population may be exposed to arsenic compounds through air emissions from pesticide manufacturing facilities, cotton gins, glass manufacturing operations, and other sources. EPA estimated total environmental emissions to be 9,000 tons.

The Consumer Product Safety Commission reports that a small number of arsenic compounds are used extensively as wood preservatives. In 1978, approximately 63.5 million cubic feet of wood products, which include lumber, timber, playground equipment, and fence posts, were treated with arsenicals. A large portion of the total products treated was lumber used for residential construction, such as decks, patios, greenhouses, and housing foundations.

EPA, FDA, and OSHA regulate the use of arsenic and its compounds. The EPA limits arsenic in drinking water to a maximum level of 0.05 mg/l. The Agency established effluent guidelines controlling the environmental release of such compounds for certain industrial categories. A water quality criteria document for the protection of human health prepared by EPA estimates that a concentration of 2.2 ng/l limits a cancer risk to one in a million. EPA issued a Rebuttable Presumption Against Registration for 11 inorganic arsenic pesticide products and regulates arsenic under the Resource Conservation and Recovery Act. FDA has set tolerances for residues of arsenic-containing pesticides in fruit and vegetables (0.35-7 mg/kg), field crop (cotton 0.7-2.8 mg/kg), and livestock (cattle and horses 0.7-2.7 mg/kg). OSHA promulgated a final standard in 1978 limiting occupational exposure to inorganic arsenic compounds to 10 $\mu g/m^3$. The PEL of 0.5 mg/m^3 for organic arsenic as an 8-hour time-weighted average was adopted by OSHA in 1971. In addition, this standard requires personal protective equipment, training, medical surveillance, signs and labeling, and engineering controls.

REGULATIONS

Regulations and Other Actions	Effect of Regulations and Other Comments	Citation of Regulation
Arsenic: Staff coordinating efforts with EPA TSCA/FIFRA staff to assess need for controls for consumer uses of wood-treated lumber. (CPSC)		
CWA, 301: Effluent guidelines for certain industrial categories address arsenic.	Control established through conditions in NPDES permits. Carcinogenicity was a direct factor in establishing guidelines.	40 CFR 415, 421, 429, 430 (portions)
CWA, 304(a): Water quality criteria document published in final 11/28/80.	A concentration of 2.2 ng/l is estimated to limit cancer risk to one in a million.	45 FR 231, p. 79318
CAA: Under assessment to determine if regulation may be appropriate. Source and exposure assessment anticipated to be completed late 1981. Economic assessments expected to be completed 1981-82.		
RCRA, 3001-3004: Designated as a toxic waste. Requires testing to determine presence of arsenic. Wastes containing arsenic are subject to handling and report/recordkeeping requirements. Promulgated 5/19/80.	Concentration triggering compliance requirements, 5.0 mg/l.	40 CFR 261.24
SDWA, 1412: Primary drinking water regulation. Promulgated 12/24/75.	Establishes maximum contaminant level of 0.05 mg/l. Does not address carcinogenicity. Under review for possible revision. (EPA)	40 CFR 141.11 (EPA)
TSCA: Under continuing assessment to determine if other controls may be needed.		
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
FDA Bureau of Foods and Bureau of Veterinary Medicine, FD&CA: None of the regulated arsenic compounds are those that have been associated with occupational cancer. There are extensive toxicity studies on arsenicals used as vet drugs. None have shown any carcinogenic potential. (FDA)	Withdrawal requirements for meat-producing animals exposed to arsenicals should ensure that the levels are similar to normal background levels for arsenicals. (FDA)	Both organic and inorganic arsenics are regulated under CFR 21 558.60, 588.62, 588.120, 588.530, 180.334, 180.335 (FDA)
PEL: 0.5 mg/m^3 8-hr TWA as arsenic (organic); 10 ug/m^3 8-hr TWA (inorganic). No skin or eye contact with arsenic trichloride or liquid or particulate inorganic arsenic that is likely to cause skin or eye irritation.	Regulatory History: 1952: Walsh-Healy, 0.5 mg/m^3 maximum allowable concentration.	29 CFR 1910.1000 (organic arsenic)
	8/27/71: OSHA Takeover Standard--current limit effective.	
Protective clothing, respirator, hygiene training, and medical surveillance requirements for workers, monitoring requirements, housekeeping requirements, sign requirements for regulated areas, labeling requirements for containers. (OSHA)	6/30/78: Final Standard--current limit effective. (OSHA)	29 CFR 1910.1018 (inorganic arsenic) (OSHA)

(Continued)

REGULATIONS

Regulations and Other Actions	Effect of Regulations and Other Comments	Citation of Regulation
Arsenic Trioxide:		
Economic research studies being conducted by CPSC. (CPSC)		
CWA, 311: Hazardous spill regulation establishing reportable quantity (5,000 lb, 2270 kg) and imposing reporting requirements. Promulgated 8/29/79.	Not based on carcinogenicity. Encourages greater care in handling and shipment of chemicals and should result in reduction of accidental exposures.	40 CFR 117.3,, 117.13
FIFRA: Ban on use of formulations containing more than 1.5 percent arsenic trioxide in households and grazing areas, 8/68.	Some reduction in use.	Written notice to registrants
FIFRA, 6: Voluntary cancellation by producers of three products, 9/13/77.	Minimal reduction in use.	42 FR 177, p. 45944
RPAR: Issued regarding 11 inorganic arsenical pesticides, 10/18/78.	Proposed determination in development will address wood preservative uses. Anticipated publication, early 1981. (EPA)	43 FR 202, p. 48267
RCRA, 3001-3004: Subjects waste products, off-specification batches, and spill residues in excess of 1000 kg to handling and report/recordkeeping requirements. Also, designated as a hazardous constituent of waste. Wastes known to contain arsenic trioxide are subject to the same requirements. Promulgated 5/19/80.		40 CFR 261.11, 261.33 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
See regulations under arsenic. (OSHA)		29 CFR 1910.1018 (OSHA)
Potassium Arsenate:		
CWA, 311: Hazardous spill regulation establishing reportable quantity (1,000 lb, 454 kg) and imposing reporting requirements. Promulgated 3/29/79.	Not based on carcinogenicity. Encourages greater care in handling and shipment of chemicals and should result in reduction of accidental exposures. (EPA)	40 CFR 117.13
RCRA, 3001-3004: Arsenical compounds, N.O.S., are listed as hazardous constituents of waste. Wastes known to contain any of these are subject to handling and report/recordkeeping requirements. Promulgated 5/19/80.		40 CFR 261.11 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
See regulations under arsenic. (OSHA)		29 CFR 1910.1018 (OSHA)

(Continued)

REGULATIONS

Regulations and Other Actions	Effect of Regulations and Other Comments	Citation of Regulation
Sodium Arsenate: CWA, 311: Hazardous spill regulations establishing reportable quantity (1,000 lb, 454 kg) and imposing reporting requirements. Promulgated 8/29/79.	Not based on carcinogenicity. Encourages greater care in handling and shipment of chemicals and should result in reduction of accidental exposures.	40 CFR 117.3, 117.13
FIFRA, 6: RPAR issued regarding 11 inorganic arsenical pesticides, 10/18/78.	Proposed determination in development will address wood preservative uses. Anticipated publication, early 1981. (EPA)	43 FR 202, p. 48267
RCRA, 3001-3004: Arsenical compounds, N.O.S., are listed as hazardous constituents of wastes. Wastes known to contain any of these are subject to handling and report/recordkeeping requirements. Promulgated 5/19/80.		40 CFR 261.11 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
See regulations under arsenic. (OSHA)		29 CFR 1910.1018 (OSHA)
Sodium Arsenite: CWA, 311: Hazardous spill regulations establishing reportable quantity (1,000 lb, 454 kg) and imposing reporting requirements. Promulgated 8/29/79.	Not based on carcinogenicity.	40 CFR 117.3, 117.13
FIFRA: Ban on use of formulations containing more than 2 percent of sodium arsenite in households or on grazing areas, 8/68.	Some reduction in use.	Written notice to all affected registrants
FIFRA, 6: Registrations of two products voluntarily canceled by producers, 3/8/77.	Some reduction in use.	42 FR 48, p. 13579
FIFRA, 6: RPAR issued regarding 11 inorganic arsenical pesticides, 10/18/78.	Proposed determination in development will address wood preservative uses. Anticipated publication, early 1981. (EPA)	43 FR 202, p. 48267
RCRA, 3001-3004: Arsenical compounds, N.O.S., are listed as hazardous constituents of waste. Wastes known to contain any of these are subject to handling, and report/recordkeeping requirements. Promulgated 5/19/80.		40 CFR 261.11
TSCA, 8(a): Reporting rule requiring process and use data. Proposed 2/29/80.		45 FR 42, p. 13646 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
See regulations under arsenic. (OSHA)		29 CFR 1910.1018 (OSHA)

(Continued)

REGULATIONS

Regulations and Other Actions	Effect of Regulations and Other Comments	Citation of Regulation
Arsenic Pentoxide:		
CWA, 311: Hazardous spill regulation establishing reportable quantity (5,000 lb, 2270 kg) and imposing reporting requirements. Promulgated 8/29/79.	Not based on carcinogenicity.	40 CFR 117.3, 117.13
RCRA, 3001-3004: Subjects waste product, off-specification batches, and spill residues in excess of 1000 kg to handling and report/recordkeeping requirements. Also designated as a hazardous constituent of waste. Wastes known to contain arsenic pentoxide are subject to the same requirements. Promulgated 5/19/80.		40 CFR 261.11, 261.33
FIFRA, 6: RPAR issued regarding 11 inorganic arsenical pesticides, 10/18/78.	Proposed determination in development will address wood preservative uses. Anticipated publication, early 1981. (EPA)	43 FR 202, p. 48267 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		
See regulations under arsenic. (OSHA)		29 CFR 1910.1018 (OSHA)
Calcium Arsenate, Calcium Arsenite, Disodiumhydrogen Arsenate, Lead Arsenate, and Potassium Arsenite:		
RCRA, 3001-3004: Arsenic compounds, N.O.S., are listed as hazardous constituents of waste. Wastes known to contain any of these are subject to handling and report/recordkeeping requirements. Promulgated 5/19/80.		40 CFR 261.11 (EPA)
See Carcinogen Assessment Group statement under 2-acetylaminofluorene. (EPA)		

Appendix D

Chemical Methods for the Detoxification of Inorganic and Metallo-Organic Pesticides

GENERAL REVIEW OF APPLICABLE DISPOSAL METHODS

The two pesticides selected, arsenic acid and MSMA (monosodium methane-onate), characterize the inorganic and organometallic arsenicals, respectively. posal problems of the arsenicals reflect problems experienced with other al and metalloid pesticides (2). The element, arsenic, is ubiquitous in the ironment and exists in a wide variety of inorganic and organic compounds 1). Its environmental behavior parallels that of mercury (152).

Although arsenic will remain a toxic metal, its hazard can be mitigated. hly toxic arsenic compounds can be degraded to compounds of lower toxicity. ching problems can be reduced by preparing precipitates which are either xed or slowly release the arsenic. The reactions most important for disposal e oxidation-reduction and ion exchange.

Table 7. Soil Persistence, Soil Mobility and Water Solubility of the Selected Pesticides.

Pesticide	Soil+ Persistence (months)	Mobility+	Water Solubility✚
MSMA			soluble
Arsenic acid			167 g/ℓ
Monocrotophos			miscible
Phosphamidon			miscible
Fensulfothion			1.6 g/ℓ
Ronnel			44 ppm
PennCap-M (Methyl Parathion)			55-60 ppm
Dimethoate			25-39 g/ℓ
Disulfotan			25 ppm
Dyfonate			13 ppm
Phorate	1-3	slightly mobile	50 ppm
Monitor			90 g/ℓ
Def			insoluble
Aldicarb			6 g/ℓ
Carbofuran			700 ppm
Methomyl			58/ℓ
EPTC	1-3	slightly mobile	365 ppm
Molinate			800 ppm
Thiram			30 ppm
Propanil			225 ppm
Captafol			1.4 ppm
Diphenamid			260 ppm
Chloroxuron			3.7 ppm
Cyanazine			171 ppm
Simazine	3-12	slightly mobile	5 ppm
Amitrol			280 g/ℓ
Dinoseb			50 ppm
PCNB			0.44 ppm
Paraquat			soluble
Chloropicrin			2.3 g/ℓ
Chlorobenzilate			insoluble
2,4,5-T	3-12	mobile	278 ppm (free-acid) soluble (amine salts)
Endrin	>12	immobile	insoluble
BHC	>12		0.5-1.0 ppm
D-D			2 g/ℓ
DBCP			1 g/ℓ
Dicamba			4.5 g/ℓ
Creosote			very slightly soluble
Warfarin			40 ppm (free acid) soluble (Warfarin sodium)
Sodium fluoroacetate			very soluble

+ Reference 2
✚ See Appendices A-G for references.

Appendix D

Chemical Methods for the Detoxification of Inorganic and Metallo-Organic Pesticides

GENERAL REVIEW OF APPLICABLE DISPOSAL METHODS

The two pesticides selected, arsenic acid and MSMA (monosodium methane-onate), characterize the inorganic and organometallic arsenicals, respectively. sposal problems of the *arsenicals* reflect problems experienced with other tal and metalloid pesticides (2). The element, arsenic, is ubiquitous in the vironment and exists in a wide variety of inorganic and organic compounds 51). Its environmental behavior parallels that of mercury (152).

Although arsenic will remain a toxic metal, its hazard can be mitigated. ghly toxic arsenic compounds can be degraded to compounds of lower toxicity. aching problems can be reduced by preparing precipitates which are either xed or slowly release the arsenic. The reactions most important for disposal e oxidation-reduction and ion exchange.

D.2 CHEMICAL METHODS FOR DETOXIFICATION OF ARSENIC ACID

Arsenic acid which is applied as a cotton desicant and herbicide is marketed as a 75% (by weight) liquid concentrate (14, 153). Its solubility is 16.7 g/100 ml in cold water and 50 g/100 ml in hot water (154).

Arsenic acid is weakly amphoteric. Heavy metals will react with it to yield insoluble precipitates, some of which are used for quantitative analysis of As(V) oxides. Metals which quantitatively precipitate arsenic acid include magnesium, lead, calcium, and iron (III) (155, 156). Arsenate precipitation with ferric hydroxide has been suggested to reduce its phytoxicity (151). Its precipitation will also reduce its potential for leaching. Arsenate could be suitably precipitated with a slight excess of lime, ferric hydroxide, or magnesia. The best procedure is to stir ferric chloride, or a hydroxide of ferric, calcium, or magnesium into the waste arsenic acid and allow the mixture to stand 24 hours. Then, the supernatant water should be siphoned or decanted (2).

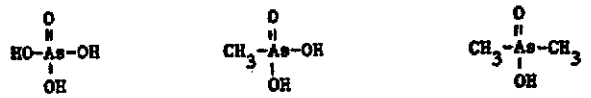
An alternative procedure would be to precipitate arsenic with sulfide. Since the method requires more sophisticated handling, the precipitation with heavy metals is preferred. The sulfide precipitation requires decreasing the solution acidity to less than pH 1 with 6N HCl, then saturating the solution with sodium sulfide or hydrogen sulfide (155). The precipitate and supernatant should be handled just as described for the ferric or other metal arsenate precipitates.

The EPA recommended procedures should be used for disposal of arsenic acid and its containers (7a). Empty containers should be triple-rinsed by the NACA recommended procedures (Section 3). Although the precipitation of arsenic acid could reduce its mobility in the environment and its toxicity, insufficient environmental testing is available to verify this conclusion. The precipitates should be considered hazardous. Any use of precipitation should only be in strict accordance with the EPA recommended procedures (7a).

HEMICAL METHODS FOR DETOXIFICATION OF MSMA (Monosodium Methanearsonate)

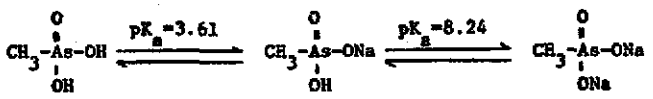
SMA is a selective post-emergence contact herbicide. It is soluble in (570 g/ℓ at 25°C) and in methanol. MSMA is formulated as 6 and 8 lbs/gal s (14, 15).

SMA is a member of a group of methylated arsenic acid analogs. It is the dium salt of methanearsonic acid,



Arsenic Acid | Methanearsonic Acid | Cacodylic Acid

is in equilibrium with the free acid and the disodium salt, DMSA (151).



Arsenic Acid | MSMA | DSMA

The methyl group of methanearsonic acid is stable to hydrolysis. It can dized by heating it at 315°C in sulfuric acid or at lower temperatures in acid-sulfuric acid mixtures (157-159). Methanearsonic acid can also be d to yield derivatives of trivalent arsenic. Its reaction with SO_2 in an s halogen acid (HCl or HBr) yields the corresponding methylarsine dihalide AsX_2). When it is reacted with a sodium sulfite-hypophosphorous acid mix- it forms a polymeric sulfide, $[CH_3AsS]_n$. Methanearsonic acid reacts with yield the pentavalent arsenic disulfide, CH_3AsS_2 (158, 159).

Methanearsonic acid quantititively precipitates with a wide variety of ine earth and transition metals. The metal salts exhibit amphoteric

behavior; precipitation is pH dependent. For example, the quantitative precipitation occurs at pH 3 for Al(III), at pH 4 for Cu(II), pH 5 for Mn(II) or Fe(II), at pH 6 for Zn(II), at pH 7 for Fe(III), and at pH 8 for Mg(II) (158, 159).

The EPA recommended procedures should be used for disposal of MSMA and its containers (7a). Empty containers should be triple-rinsed by the NACA recommended procedures (Section 3). The precipitation of MSMA might reduce hazard if land burial is used for disposal. Since environmental fate of precipitated MSMA is not known, if used, it should be considered potentially hazardous and in accordance with the EPA recommended procedures (7a).

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

April 13, 1982

RECEIVED
APR 15 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Division of Solid Waste
Mississippi Department of
Natural Resources
Bureau of Pollution Control
Post Office Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

I will shortly be in contact with you to make an appointment to discuss the hydrogeological investigation at our Vicksburg facility.

Apart from that but certainly related, I would like at that time to discuss continued remedial effort at the closed-out landfill/pit area. Plans to move ahead with the combined bio-pond remedial effort will not proceed at expedited speed as previously hoped. We will prepare a detailed topography and initially make a dirt moving plan with the intent of tapering the hill in the direction of the existing pond and cut the total hill elevation to perhaps 15 feet above the railroad grade.

Best regards,

Dick Karkkainen
Director of Environment & Safety

DK:ew

CC: Mr. R. Maraman

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

April 8, 1982

Mr. Dick Karkkainen
Vertac Chemical Corporation
24th Floor
5100 Poplar
Memphis, TN 38137

Dear Mr. Karkkainen:

After reviewing the hydrogeological investigation conducted at your facility, our staff has found several RCRA requirements which were not adequately addressed by the report. To help us gain a better understanding of the investigation and the groundwater monitoring program, we would appreciate your meeting with us to discuss the facility at your convenience.

Please contact our office to set a meeting date.

Sincerely,

Charles Estes, P.E.
Division of Solid Waste

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 0 2 1982

4AW-ERRB

R.D. Karkkainen
Vertac Chemical Corporation
5100 Popular Ave., 24th floor
Memphis, Tennessee 38137

Dear Mr. Karkkainen:

Attached is a copy of the sampling report that was generated as a result of the hazardous waste site field investigation conducted at your Vicksburg, Mississippi facility on October 28, 1981.

If you have any questions about this matter, please contact me at 404/881-2234.

Sincerely,

Ron W. Joyner
Mississippi Technical Project Officer

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

April 20, 1982

RECEIVED
APR 22 REC'D
DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

Mr. Charles Estes, P.E.
Division of Solid Waste
Mississippi Department of
Natural Resources
Bureau of Pollution Control
Post Office Box 10385
Jackson, Mississippi 39209

Dear Mr. Estes:

Attached is a copy of the EPA sampling report on the Vicksburg facility.

Our second set of monitoring well samples were taken last week. At each well, three volumes were removed and the wells did not become empty. The wells were allowed to completely recharge and samples were taken the next day. Based on these results and discussion with John Walton of DISC, I am confident we are monitoring the correct groundwater.

During the first week of May, I have made tentative plans to do some level measurements and baling tests on the wells.

Best regards,

Dick Karkkainen
Director of Environment & Safety

DK:ew

Attachment

REPORT
HAZARDOUS WASTE SITE INVESTIGATION
VERTAC CHEMICAL CORPORATION
VICKSBURG, MISSISSIPPI
JANUARY 26, 1982

INTRODUCTION

A hazardous waste site field investigation was conducted at the Vertac Chemical Corporation, Vicksburg, Mississippi, by R. J. Bruner III and Carol Hough, U.S. Environmental Protection Agency (EPA), Region IV, Environmental Services Division (ESD), on October 28, 1981. Jim Hardage and Charles Estes, Mississippi Division of Solid Waste Management, also participated in the investigation. Robert Maraman, Chief Chemist, and R. D. Karkkainen, Director, Environment and Safety, represented the company during the investigation. This investigation was requested by the EPA, Region IV, Air and Waste Management Division.

STUDY AREA

The Vertac Chemical Corporation facility (formerly Vicksburg Chemical Company) is located on Business Route 61 south of Vicksburg, Mississippi. The facility is separated into two plants referred to as the North Plant and the South Plant (see figure 1). The North Plant produces nitrogen tetroxide, chlorine, and potassium nitrate, and the South Plant produces nitric acid, dinitrobutylphenol (DNBP), and toxaphene. The DNBP and toxaphene processes were not in operation at the time of this investigation. Methyl parathion and atrazine have been produced at the South Plant in the past, but are no longer being produced (1).

Process wastewater and rainfall runoff from process areas at the South Plant are collected in a waste holding pond. Wastewater from the pond passes through activated carbon columns then combines with wastewater from the North Plant and is discharged to the Mississippi River (NPDES permit number MS0027995). The pH of the process wastewater from the North Plant is neutralized prior to combining with wastewater from the South Plant. Cooling water from both plants and rainfall runoff from the North Plant go directly to the river without treatment (1). Since the organic chemical processes and the activated carbon units at the South Plant were not operating during this investigation, no attempt was made to collect a sample of the wastewater effluent.

The primary emphasis of this investigation involved a reclaimed pit area southwest of the facility's wastewater pond (see figures 2 and 3). The pit area covered approximately 30 acres and was used for the disposal and storage of various waste materials including cyanuric chloride from the atrazine process, dimethyl urea, isopropyl amine, DNBP, sodium nitrophenol, and spent activated carbon (2). All pits had been covered and an attempt had been made at seeding the site at the time of this investigation. The attempted seeding was partially successful at the western end of the site, but was unsuccessful on the remainder of the site (see figures 3(a) through 3(f)). Yellow ground stains were visible at many locations around the reclaimed pit area. Similar stains were observed in the South Plant process area.

The majority of the surface runoff from the reclaimed pit area drained to the east into the facility's wastewater holding pond; however, two areas were observed where runoff drained from the site without entering the wastewater pond. One of these areas was located at the east corner of the site. Surface runoff from this area drained to the south into Hatcher Bayou. Heavy erosion damage was visible at this site (see figure 3(h) and 3(i)). The other site where surface runoff drained from the reclaimed pit area without entering the wastewater pond was located along the western edge of the pit area in a small valley (see figure 3(j)). This site was also marked by severe erosion. A large area of sediment deposition was oberved between the western edge of the pit area and the Illinois Central Gulf Railroad tracks (see figures 3(k) and 3(l)). A small amount of water was flowing through the area of deposition at the time of this investigation; however, the water soaked into the ground prior to reaching Hatcher Bayou.

The Vertac Chemical Corporation was in the process of installing a groundwater monitoring system around the wastewater pond and the reclaimed pit area at the time of this investigation.

The Vicksburg Wastewater Treatment Plant is located across Stouts Bayou from the Vertac facility; the WWTP discharges to the Mississippi River.

RESULTS AND DISCUSSION

Sediment samples were collected from the two erosion channels observed at the eastern and western corners of the pit area. Water and sediment samples were collected from Stouts Bayou upstream from the Vertac facility and from Hatcher Bayou downstream from the Vertac facility (see figures 1 and 2). All water and sediment samples were analyzed for purgeable and extractable organic compounds including pesticides, metals, and cyanide. Water samples were also analyzed for total phosphorus; pH and temperature were measured in the field on the water samples. A data summary is presented in table 1; complete analytical results are presented in appendix A.

The sediment sample collected from the erosional area east of the reclaimed pit area (VL-002) contained the highest concentrations of organic compounds detected during this investigation. Depositional material collected from the erosion channel contained elevated concentrations of cyanazine (21,000 ug/kg), atrazine (84,000 ug/kg), toxaphene (13,000 ug/kg), and PCB-1254 (7,000 ug/kg). Metal concentrations in this sample were similar to the concentrations detected in the sediment sample from Stouts Bayou upstream from the Vertac facility (SBU-001). Cyanide (0.86 mg/kg) was detected in this sample but was not detected in the Stouts Bayou sediment sample (see table 1).

The sediment sample from the mud flat west of the reclaimed pit area (VL-003) contained elevated concentrations of toxaphene (65,000 ug/kg), atrazine (18,000 ug/kg), dinoseb (<15,000 ug/kg), and cyanazine (<7,600 ug/kg). Four purgeable organic compounds were also detected (maximum concentration 10 ug/kg chloroform). Again, metal concentrations were not significantly higher than the control sediment sample (SBU-001); cyanide (0.58 mg/kg) was detected.

Dinoseb is a generic name for 2,4-dinitro-6-sec-butylphenol, a yellow crystalline substance used as a herbicide (5). Cyanazine is an s-trazine herbicide with a structure very similar to atrazine (6).

The water and sediment sample from Stouts Bayou was collected upstream from the Vertac facility and was considered a control sample. A small bridge had collapsed into Stouts Bayou just upstream from the sampling location, and concrete and asphalt from the bridge and roadway were present in the bayou. Three polynuclear aromatic hydrocarbons, alpha and gamma chlordane, and a petroleum type product were detected in the Stouts Bayou sediment sample. The water sample from Stouts Bayou contained traces (<12 ug/kg) of two fatty acids (see table 1).

The water sample from Hatcher Bayou collected downstream from the Vertac facility (HBD-004) contained the same fatty acids that were detected in the Stouts Bayou water sample, but also contained traces (<5 ug/kg) of two puregable organic compounds (chloroform and carbon tetrachloride). No other organic compounds were detected in either the water or sediment sample from Hatcher Bayou. Sodium (127,000 ug/l) and cyanide (46 ug/l) concentrations were significantly higher in the Hatcher Bayou water sample than in the Stouts Bayou water sample. Chromium (170 mg/kg) and magnesium (116,000 mg/kg) concentrations were higher in the Hatcher Bayou sediment sample than in the Stouts Bayou sediment sample. A large number of old tires and other trash were observed in Hatcher Bayou near the sampling location (see figure 3(g)).

METHODOLOGY

All water and soil/sediment samples collected during this investigation were collected in accordance with standard operationg procedures of the Water Surveillance Branch, ESD/EPA (3). All laboratory analyses were conducted by the Laboratory Services Branch (LSB), ESD/EPA in accordance with standard procedures and protocols of the LSB (4).

TABLE 1
DATA SUMMARY
VERTAC CHEMICAL COMPANY
VICKSBURG, MISSISSIPPI

	SOIL/SEDIMENT				WATER	
	SBU-001 Stouts Bayou Upstream	HDB-004 Hatcher Bayou Downstream	VL-002 Erosion Channel East Corner	VL-003 Mud Flat West Corner	SBU-001 Stouts Bayou Upstream	HDB-004 Hatcher Bayou Downstream
PURGEABLE ORGANIC COMPOUNDS	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
Chloroform[1]	ND	ND	ND	10	ND	<5
Carbon tetrachloride[1]	ND	ND	ND	<7[c]	ND	<5
Trichloroethylene[1]	ND	ND	ND	<7	ND	ND
Tetrachloroethylene[1]	ND	ND	ND	<7	ND	ND
EXTRACTABLE ORGANIC COMPOUNDS (GC/MS)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
Benzo (B) flouranthene and/or Benzo (K) flouranthene[1]	<36,000	ND	ND	ND	ND	ND
Benzo-A-pyrene[1]	<36,000	ND	ND	ND	ND	ND
Benzo (GHI) perylene[1]	<36,000	ND	ND	ND	ND	ND
Hexadecanoic acid[2]	—	—	—	—	<12	<12
Octadecanoic acid[2]	—	—	—	—	<12	<12
Dinosab[2]	ND	ND	ND	<15,000	ND	ND
Cyanazine[2]	—	—	21,000	<7,600	—	—
Petroleum type product	P	—	—	—	—	—
PESTICIDES, PCB'S, AND OTHER CHLORINATED ORGANIC COMPOUNDS (GC/EC)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/l)	(µg/l)
PCB-1254[1]	ND	ND	7,000	ND	ND	ND
Toxaphene[1]	ND	ND	13,000	65,000	ND	ND
Atrazine	ND	ND	84,000[b]	18,000[b]	ND	ND
Alpha chlordane	6.5	ND	ND	ND	ND	ND
Gamma chlordane	7.6	ND	ND	ND	ND	ND
INORGANIC ELEMENTS AND COMPOUNDS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(µg/l)	(µg/l)
Barium	156	195	213	211	64	112
Chromium[1]	12	170	30	22	ND	ND
Copper[1]	8.8	7.8	17	15	ND	17
Nickel[1]	12	14	23	23	ND	ND
Lead[1]	14	21	20	20	ND	ND
Strontium	61	92	42	30	88	122
Titanium	240	213	441	561	21	36
Vanadium	22	22	41	46	ND	ND
Yttrium	12	19	14	14	ND	ND
Zinc[1]	50	50	67	64	ND	17
Mercury[1]	0.12	ND	0.12	ND	ND	ND
Aluminum	7,690	6,378	14,765	15,843	875	1,500
Manganese	3,050	3,150	1,265	1,589	173	228
Calcium	71,200	116,000	38,850	15,453	32,000	34,000
Magnesium	5,680	8,466	10,134	6,340	8,900	14,000
Iron	19,900	26,043	22,988	24,327	1,100	1,800
Sodium	160	400	210	660	6,300	127,000
Cyanide[1]	ND	ND	0.86	0.58	ND	46
CONVENTIONAL PARAMETERS (Units as specified for each parameter)						
Temperature (°C)	NA	NA	NA	NA	6.5	15.9
pH (SU)	NA	NA	NA	NA	7.1	6.9
Total phosphorus (mg/l)	NA	NA	NA	NA	0.40	0.98

All soil/sediment concentrations were calculated on a dry weight basis.
P - Indicates presence.
NA - Not analyzed.
ND - None detected at or above the minimum quantifiable level (MQL). The MQL's vary from sample to sample and from parameter to parameter; see analytical data sheets (appendix A) for exact values.
1 - Compound/element is on the NRDC list of priority pollutants.
2 - Tentative identification, estimated concentration.
3 - The value indicates the highest estimated concentration for a compound in this classification. The number in parentheses indicated the number of compounds detected in this classification.
a - Presumptive evidence of presence of material; not confirmed on GC/MS or second GC column. See footnote b.
b - Confirmed on GC/MS. The lack of a footnote indicates that the compound was confirmed on two different GC columns.
c - The less than symbol indicates that the compound was detected by GC/MS at a concentration less than the minimum quantifiable level (MQL); the number indicates the MQL.

FIGURE 1
MAP
SOUTHEAST VICKSBURG, MS

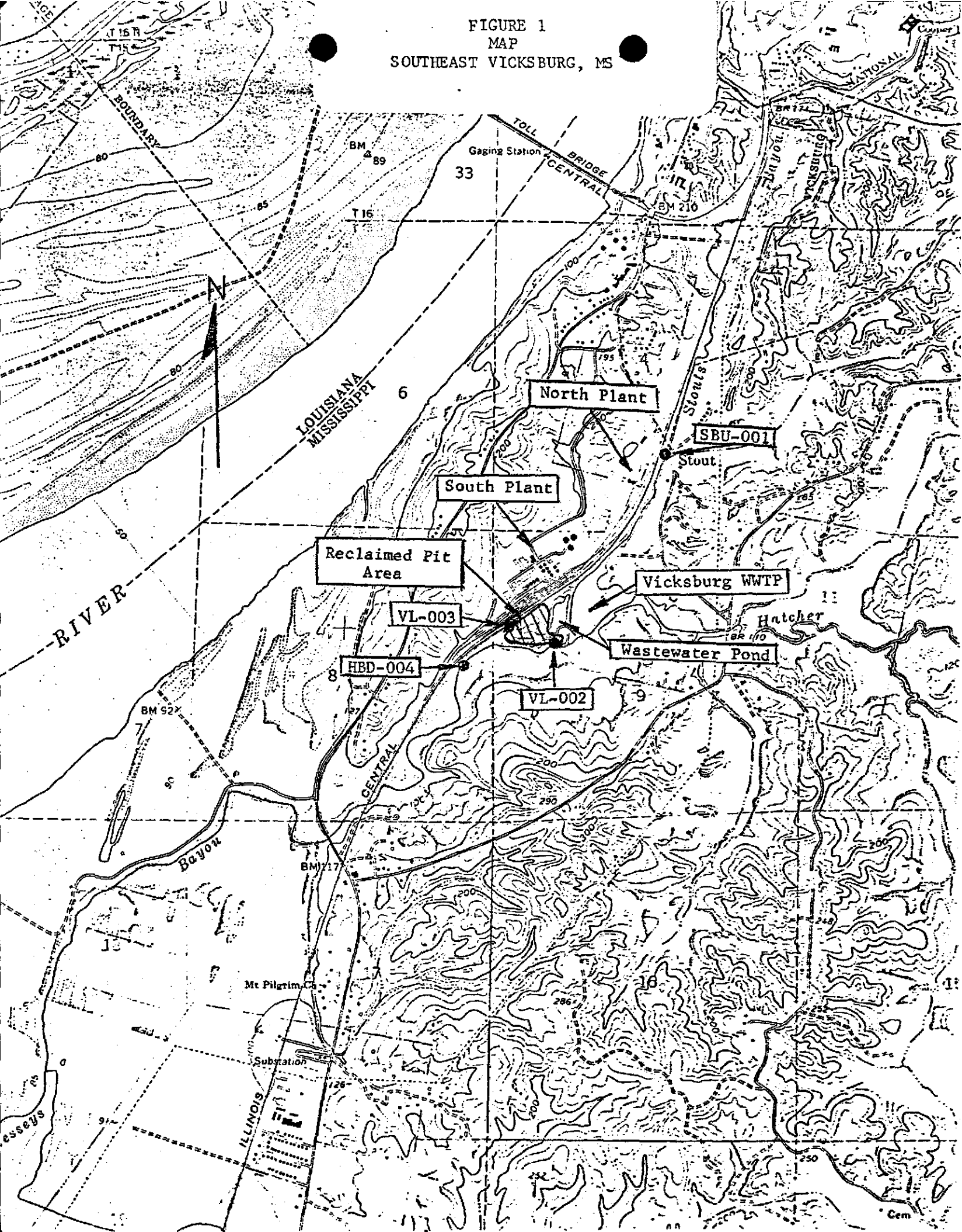
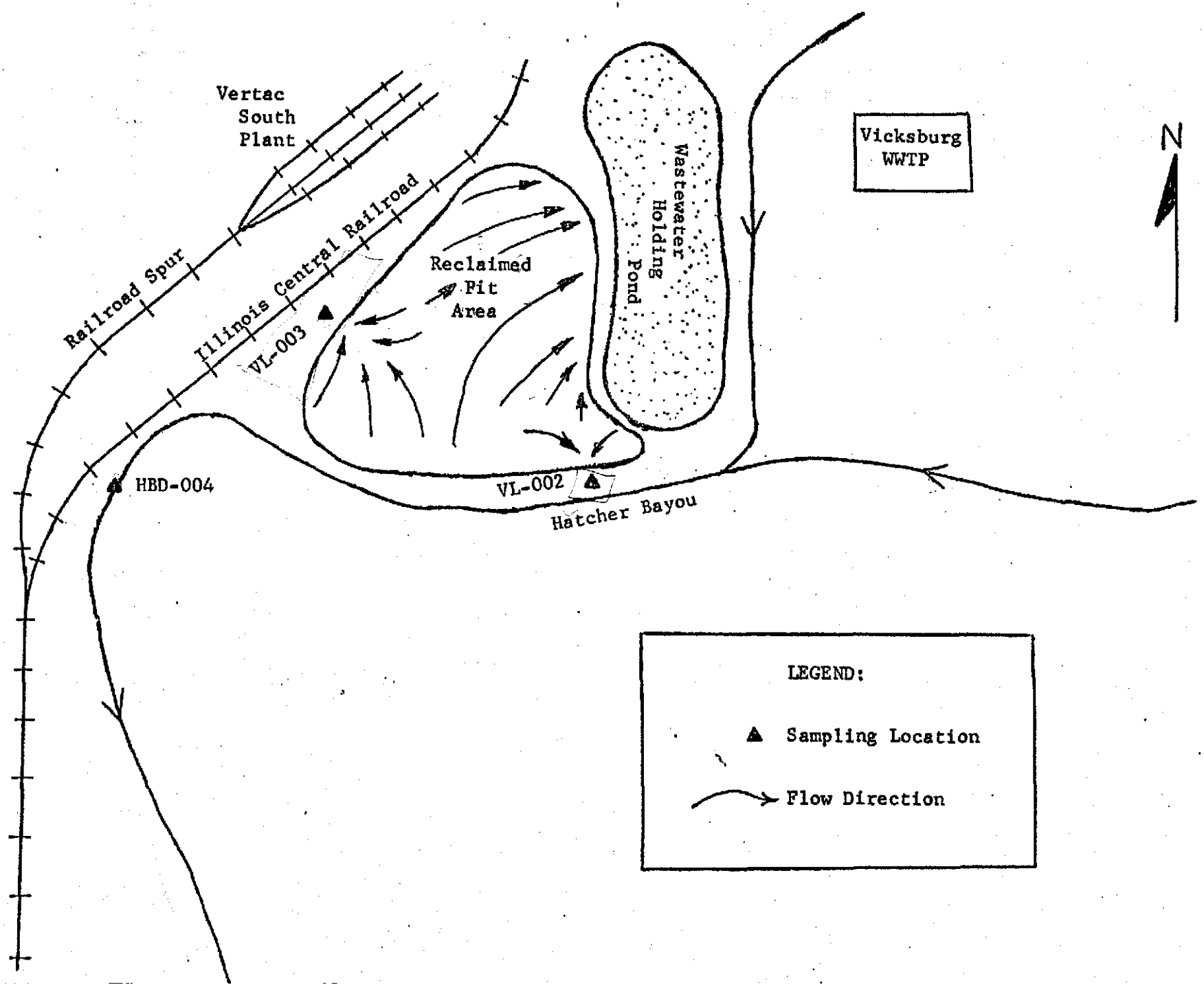


FIGURE 2
SCHEMATIC DIAGRAM
VERTAC CHEMICAL CO.
VICKSBURG, MS



REFERENCES

1. Personal conversation between R. J. Bruner III, U.S. Environmental Protection Agency, Region IV, Environmental Services Division, and Robert Maraman and R. D. Karkkainen, Vertac Chemical Corporation, on October 28, 1981.

2. "Confidential Report - Estimated Sampling Requirements - Vertac Chemical Corporation" (TDD # F4-8012-2), Ecology and Environment, Inc.

3. Water Surveillance Branch Standard Operating Procedures and Quality Assurance Manual (Draft); U.S. Environmental Protection Agency, Region IV, Surveillance and Analysis Division; August 29, 1980.

4. Laboratory Services Branch Operations and Quality Assurance Manual, U.S. Environmental Protection Agency, Region IV, Surveillance and Analysis Division; March, 1980.

5. Melnikov, N. N.; Chemistry of Pesticides; Springer-Verlag, Inc. (New York); 1971.

6. Kearney, P. C. and D. D. Kantman (editors); Herbicides - Chemistry, Degradation, and Mode of Action; Marcel Dekker Inc. (New York); 1975.

FIGURE 3
PHOTOGRAPHS
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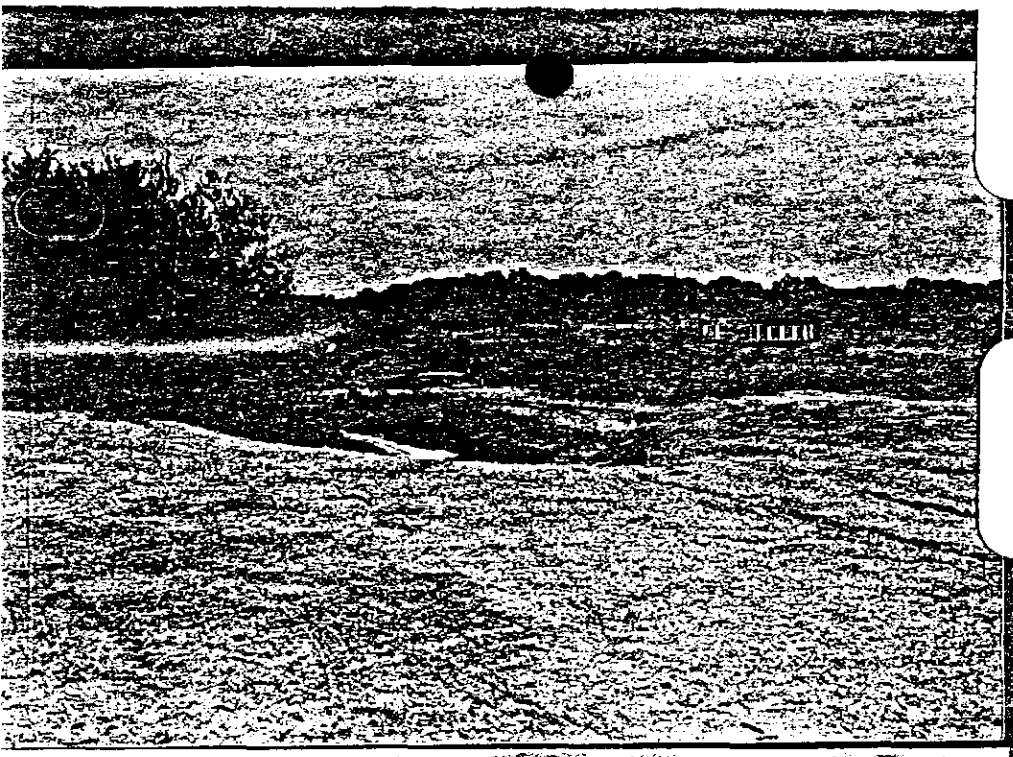
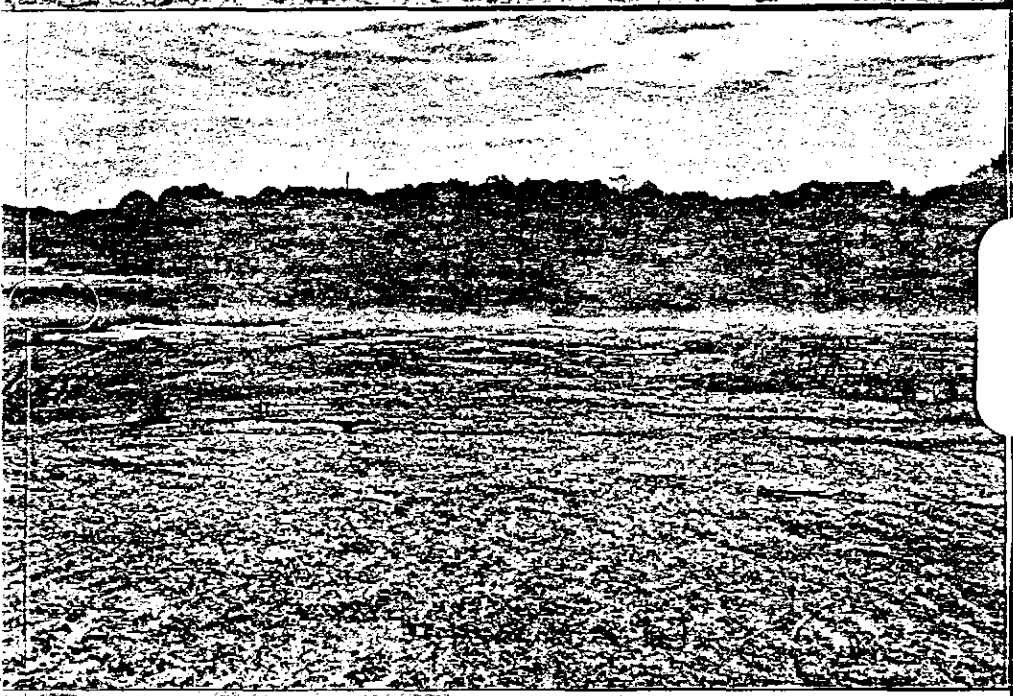
VICKSBURG, MS



a-f) Sequential panoramic view of reclaimed pit area.

a) View northeast.



b) View east.

c) View southeast.

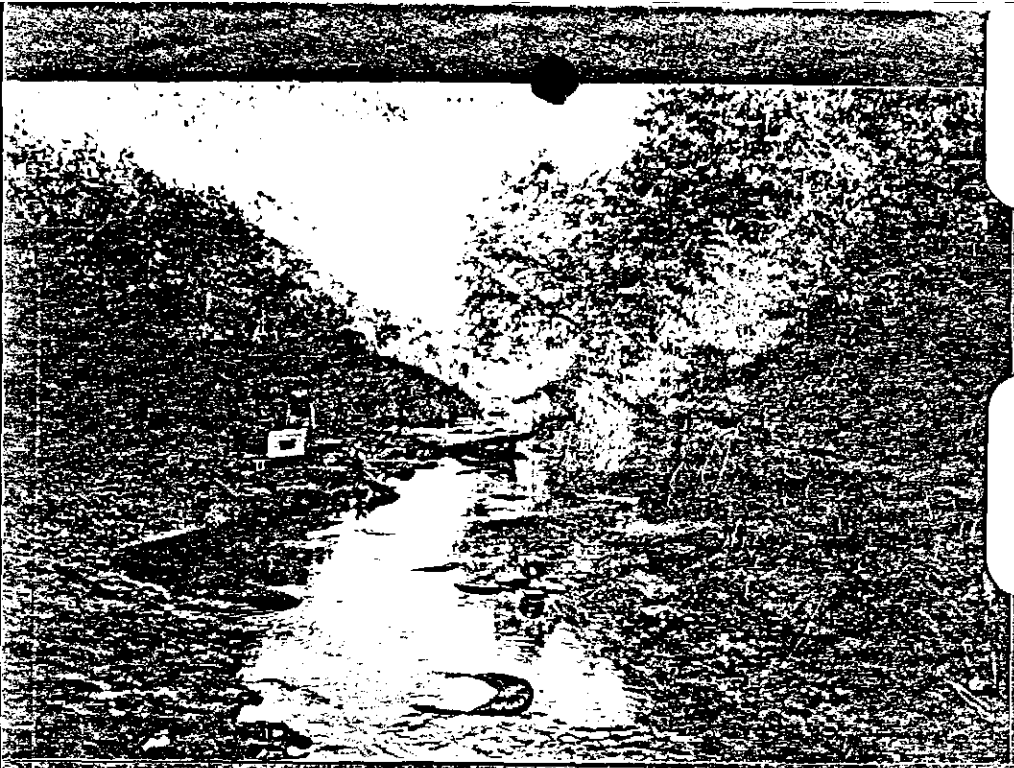
FIGURE 3 (cont.)
PHOTOGRAPHS
VERTAC CHEMICAL CO.
VICKSBURG, MS

d) View south.

e) View southwest.

f) View west.

FIGURE 3 (cont.)
PHOTOGRAPHS
VERTAC CHEMICAL CO.
VICKSBURG, MS

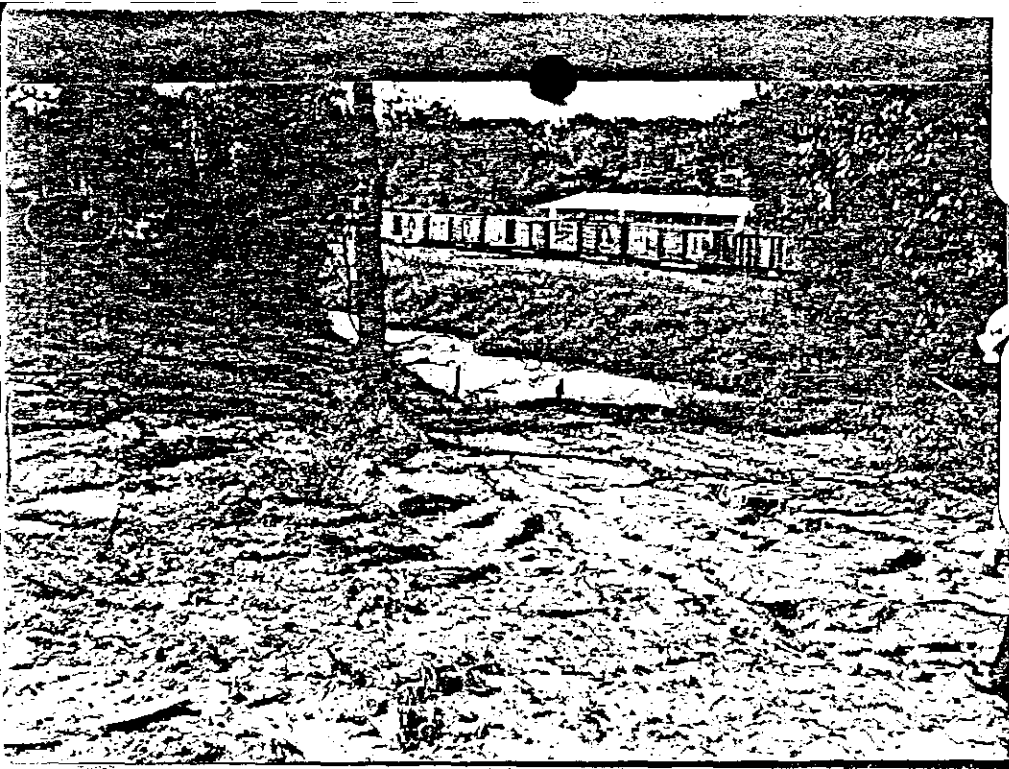


g) Hatcher Bayou downstream from Vertac (HBD-004).

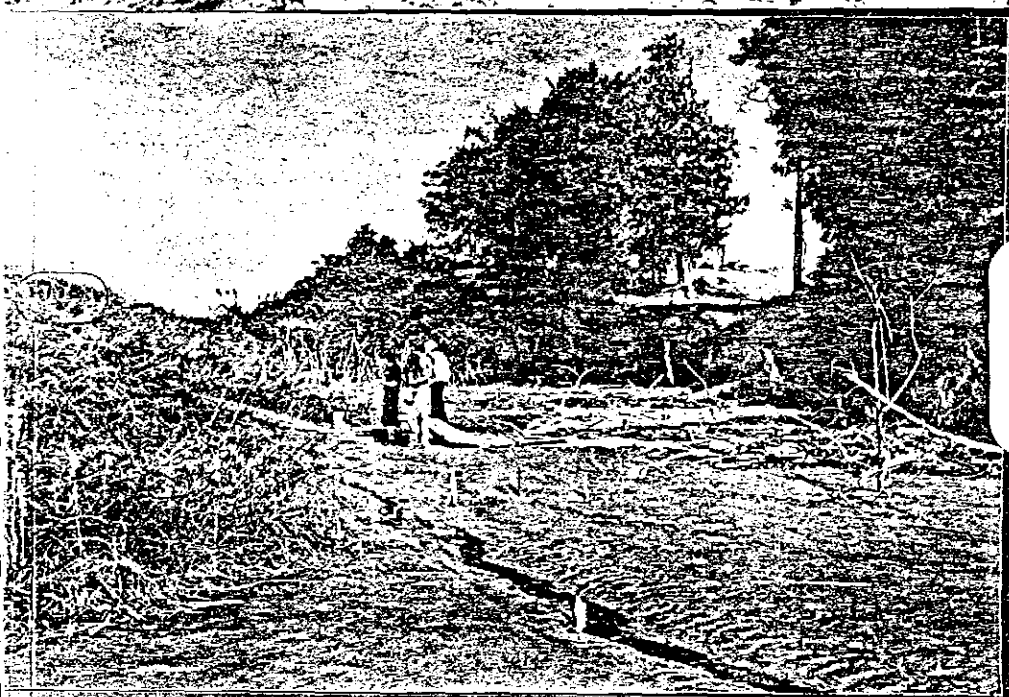
h) Erosion channel near the east corner of the pit area (VL-002).

i) Slope and sampling location near the east corner of the pit area (VL-002).

FIGURE 3 (cont.)
PHOTOGRAPHS
VERTAC CHEMICAL CO.
VICKSBURG, MS



j) Erosion channel along western edge of pit area.



k) Mud flat along the western edge of the pit area (VL-003).

l) Mud flat along the western edge of the pit area, view northeast.

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DEPT OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

February 16, 1982

Mr. David E. Lee, P.E.
Environmental Engineer
Division of Solid Waste Management
Mississippi Department of Natural Resources
Post Office Box 10385
Jackson, Mississippi 39209

Dear Mr. Lee:

Attached are the analytical results of the initial groundwater monitoring effort. My present perception is that there is no evidence of plant-related groundwater pollution. We will continue to sample (March, June, September), then perform the required statistical analysis.

Best regards,

Dick Karkkainen
Director of Environment & Safety

DK:ew

Attachments

CC: Mr. F. Ahlers
Mr. B. Maraman

VERTAC CHEMICAL CORPORATION
24th Floor • 5100 Poplar • Memphis, TN 38137 • 901-767-6851 TELEX 53927

December 15, 1981

Mr. David E. Lee, P.E.
Environmental Engineer
Division of Solid Waste Management
Mississippi Department of Natural Resources
Post Office Box 10385
Jackson, Mississippi 39209

Dear Mr. Lee:

Attached is a copy of our hydrogeological investigation at the Vicksburg facility. We have contracted with Environmental Laboratories, Inc. in Gulfport for quarterly analysis of the 31 water quality parameters.

Best regards,

Dick Karkkainen
Director of Environment & Safety

DK:ew

Attachment

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DEC 18 1981
DEPT. OF NATURAL RESOURCES
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