

File on eDOCs Yes No
Site Name Sencclair Refinery
Site No. 902003
County Allegheny
Town Wellsville
Foitable Yes No
File Name Documents / Reports
Scanned & eDOC

report. H0902003. 1991-03. Remedial
Investigation - Vol. 2 - of - 4.

REMEDIAL INVESTIGATION REPORT

FOR THE

SINCLAIR REFINERY SITE
Wellsville, New York

VOLUME II OF IV
APPENDICES A - E

PREPARED FOR

ARCO

BY

EBASCO

An ENSERCH® Engineering and Construction Company

MARCH 1991

Appendix A

Phase IIB Analytical Data

- **INORGANICS (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**
- **INORGANICS (SOLID SAMPLES: RIVER SEDIMENTS, DRAINAGE SWALE SEDIMENTS, SUBSURFACE SOILS, SURFACE SOILS, TEST PITS)**
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- **VOLATILES (SOLID SAMPLES: RIVER SEDIMENTS, DRAINAGE SWALE SEDIMENTS, SUBSURFACE SOILS, TEST PITS)**
- **BNAs (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**
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Appendix A

Phase IIB Analytical Data

- **INORGANICS (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 GROUNDWATER SAMPLES
 INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
 PAGE 1

SAMPLE ID	SR-GW01-02	SR-GW01-02F	SR-GW03-02	SR-GW03-02F	SR-GW07-02	SR-GW07-02F	SR-GW09-02
DEPTH INTERVAL (FT.): 1	7.0	7.0	3.0	3.0	8.0	8.0	5.0
DEPTH 2	22.0	22.0	18.0	18.0	23.0	23.0	20.0
DATE SAMPLED	11/29/88	11/29/89	11/30/88	11/30/88	11/16/88	11/16/88	11/29/88
ALUMINUM	23200.000	200.000 U	7810.000	36.000 M	39300.000	200.000 U	14000.000
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	10.000 U	10.000 U	10.000	10.000 U	155.000	32.000	30.000
BARIUM	580.000	233.000	165.000 M	75.000 M	895.000	484.000	623.000
BERYLLIUM	3.400 M	5.000 U	3.300 M	5.000 U	2.000 M	5.000 U	3.700 M
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CALCIUM	105000.000	91400.000	14500.000	15300.000	74400.000	42600.000	53000.000
CHROMIUM	73.000 J	10.000 U	28.000 J	10.000 U	66.000	10.000 U	37.000 J
COBALT	22.000 M	50.000 U	12.000 M	50.000 U	42.000 M	50.000 U	12.000 M
COPPER	143.000	25.000 U	67.000	25.000 U	123.000	25.000 U	98.000
IRON	234000.000	548.000	61500.000	1290.000	153000.000	47900.000	128000.000
LEAD	91.000	5.000 U	31.000	5.000 U	78.000 S	5.000 U	65.000
MAGNESIUM	22200.000	12100.000	7170.000	5990.000	30600.000 J	9160.000	15000.000
MANGANESE	2020.000	558.000	537.000	237.000	9420.000	7730.000	3880.000
MERCURY	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 R	0.200 U
NICKEL	104.000 J	40.000 U	36.000 MJ	40.000 U	104.000	40.000 U	50.000 J
POTASSIUM	8230.000	1710.000 M	4600.000 M	2030.000 M	7980.000	2960.000 M	6360.000
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U	10.000 U	9.700 M	10.000 U	10.000 U
SODIUM	55900.000	60300.000	7370.000	8630.000 J	10000.000 J	10100.000	50600.000
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VANADIUM	45.000 M	50.000 U	14.000 M	50.000 U	48.000 M	50.000 U	27.000 M
ZINC	7440.000	168.000	1400.000	78.000	6860.000 J	59.000 R	2650.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
 - R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL, NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
PAGE 2

SAMPLE ID	SR-GW09-02F	SR-GW10-02	SR-GW10-02F	SR-GW11-02	SR-GW11-02F	SR-GW16-02	SR-GW16-02D
DEPTH INTERVAL (FT.): 1	5.0	10.0	10.0	10.0	10.0	10.0	10.0
DEPTH 2	20.0	25.0	25.0	25.0	25.0	20.0	20.0
DATE SAMPLED	11/29/88	11/28/88	11/22/88	11/30/88	11/30/88	11/17/88	11/17/88
ALUMINUM	200.000 U	753.000	200.000 U	15100.000	200.000 U	18600.000 J	16500.000 J
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	13.000	248.000	115.000	884.000	462.000	23.000 J	32.000 J
BARIUM	458.000	1290.000	1020.000	1260.000	1040.000	316.000 J	328.000 J
BERYLLIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	1.000 MJ	1.000 MJ
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 UJ	6.300 J
CALCIUM	56100.000	52200.000	53200.000	54900.000	55800.000	27500.000 J	29200.000 J
CHROMIUM	10.000 U	74.000 J	10.000 U	162.000 J	10.000 U	46.000 J	50.000 J
COBALT	50.000 U	8.800 M	50.000 U	29.000 M	13.000 M	18.000 MJ	18.000 MJ
COPPER	25.000 U	264.000	25.000 U	473.000	25.000 U	48.000 J	42.000 J
IRON	45700.000	112000.000	52600.000	119000.000	73300.000	49100.000 J	49600.000 J
LEAD	5.000 U	26.000	5.000 U	77.000	5.000 U	50.000 J	50.000 J
MAGNESIUM	12000.000	9770.000	9880.000	16300.000	11400.000	21200.000 J	22600.000 J
MANGANESE	3500.000	4460.000	3380.000	31500.000	27000.000	7670.000 J	8020.000 J
MERCURY	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.210 J	0.200 U
NICKEL	21.000 M	73.000 J	40.000 U	189.000 J	102.000	69.000 J	84.000 J
POTASSIUM	3630.000 M	2850.000 M	1270.000 M	6290.000	1940.000 M	4550.000 M	4890.000 M
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	7.100 MJ	5.300 M
SODIUM	57300.000 J	14000.000	15100.000	12500.000	14500.000 J	9740.000 J	10400.000 J
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 UJ	10.000 U
VANADIUM	50.000 U	8.200 M	50.000 U	27.000 M	50.000 U	24.000 MJ	21.000 M
ZINC	133.000	1880.000	15.000 M	4030.000	77.000	11000.000 J	12900.000 J

EXPLANATION OF CODES:

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 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

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 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
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SAMPLE ID	SR-GW16-02DF	SR-GW16-02F	SR-GW27-02	SR-GW27-02D	SR-GW27-02DF	SR-GW27-02F	SR-GW28-02
DEPTH INTERVAL (FT.): 1	10.0	10.0	16.0	16.0	16.0	16.0	12.0
DEPTH 2	20.0	20.0	26.0	26.0	26.0	26.0	22.0
DATE SAMPLED	11/17/88	11/17/88	11/29/88	11/29/88	11/29/88	11/29/88	11/29/88
ALUMINUM	200.000 U	200.000 U	11600.000	8200.000	41.000 M	200.000 U	24200.000
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	16.000	19.000	544.000	751.000	160.000	130.000	170.000 S
BARIUM	176.000 M	178.000 M	1250.000	1270.000	969.000	991.000	538.000
BERYLLIUM	5.000 U	5.000 U	3.200 M	3.200 M	5.000 U	5.000 U	3.800 M
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CALCIUM	23000.000	23100.000	65200.000	64400.000	64200.000	64300.000	28500.000
CHROMIUM	10.000 U	10.000 U	296.000 J	300.000 J	10.000 U	10.000 U	38.000 J
COBALT	50.000 U	50.000 U	36.000 M	35.000 M	7.000 M	50.000 U	19.000 M
COPPER	25.000 U	25.000 U	872.000	1040.000	9.700 M	5.600 M	56.000
IRON	10900.000	11000.000	68100.000	61400.000	34300.000	36000.000	61200.000
LEAD	5.000 U	5.000 U	40.000	44.000	5.000 U	5.000 U	151.000
MAGNESIUM	16500.000	16600.000	17900.000	16600.000	13200.000	13300.000	10200.000
MANGANESE	7220.000	7230.000	4920.000	4880.000	4470.000	4480.000	1760.000
MERCURY	0.200 R	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
NICKEL	22.000 M	13.000 M	338.000 J	386.000 J	116.000 R	62.000 R	45.000 J
POTASSIUM	2240.000 M	2020.000 M	5180.000	5440.000	2830.000 M	2780.000 M	6310.000
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
SODIUM	10100.000	10100.000	50200.000	50100.000	54400.000	54700.000	4570.000 M
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VANADIUM	50.000 U	50.000 U	19.000 M	17.000 M	50.000 U	50.000 U	32.000 M
ZINC	2010.000	2060.000	1440.000	1540.000	171.000	112.000	9040.000

EXPLANATION OF CODES:

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- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
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- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL, NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 04/04/89

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INORGANIC ANALYSES (UG/L)							
SAMPLE ID	SR-GW28-02F	SR-GW31-02	SR-GW31-02F	SR-GW32-02	SR-GW32-02F	SR-GW33-02	SR-GW33-02F
DEPTH INTERVAL (FT.): 1	12.0	15.0	15.0	19.0	19.0	15.0	15.0
DEPTH 2	22.0	25.0	25.0	29.0	29.0	25.0	25.0
DATE SAMPLED	11/29/88	11/29/88	11/29/88	11/17/88	11/17/88	11/15/88	11/17/88
ALUMINUM	21.000 M	7100.000	200.000 U	34500.000 J	200.000 U	3960.000	200.000 U
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	22.000	217.000 S	141.000	79.000 J	69.000 J	365.000	128.000
BARIUM	278.000	829.000	788.000	1100.000 J	722.000	981.000	757.000
BERYLLIUM	5.000 U	5.000 U	5.000 U	1.600 MJ	5.000 U	5.000 U	5.000 U
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.400	5.000 U
CALCIUM	20400.000	26400.000	30500.000 J	103000.000 J	36500.000	72000.000	71300.000
CHROMIUM	10.000 U	17.000 J	10.000 U	100.000 J	10.000 U	151.000	10.000 U
COBALT	50.000 U	5.200 M	50.000 U	36.000 MJ	50.000 U	18.000 M	5.600 M
COPPER	25.000 U	21.000 M	25.000 U	70.000 J	25.000 U	499.000	25.000 U
IRON	16600.000	46000.000	36500.000	110000.000 J	35700.000	73900.000	56700.000
LEAD	5.000 U	62.000	5.000 U	72.000 J	5.000 U	122.000	5.000 U
MAGNESIUM	3590.000 M	7140.000	7000.000	33800.000 J	5930.000	20400.000 J	19100.000
MANGANESE	902.000	5520.000	5930.000	11000.000 J	8620.000	7350.000	7300.000
MERCURY	0.200 U	0.200 U	0.200	0.200 U	0.200 R	0.200 U	0.200 R
NICKEL	40.000 U	25.000 MJ	40.000 U	106.000 J	40.000 U	201.000	35.000 M
POTASSIUM	801.000 M	3950.000 M	1860.000 M	7550.000 J	2630.000 M	5370.000	4580.000 M
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U	9.100 MJ	10.000 U	5.300 M	10.000 U
SODIUM	4970.000 M	5340.000	6280.000 J	12300.000 J	11800.000	70000.000 J	69200.000
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VANADIUM	50.000 U	50.000 U	50.000 U	44.000 MJ	50.000 U	5.000 M	50.000 U
ZINC	907.000	1310.000	749.000	21500.000 J	1770.000	4680.000 J	983.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT

N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 GROUNDWATER SAMPLES
 INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
 PAGE 5

SAMPLE ID	SR-GW35-02	SR-GW35-02F	SR-GW43-02	SR-GW43-02F	SR-GW50-02	SR-GW53-02	SR-GW53-02F
DEPTH INTERVAL (FT.): 1	5.0	5.0	34.0	34.0	5.0	3.0	3.0
DEPTH 2	15.0	15.0	44.0	44.0	10.0	8.0	8.0
DATE SAMPLED	11/15/88	11/15/88	11/30/88	11/30/88	11/28/88	11/28/88	11/28/89
ALUMINUM	20300.000	200.000 U	32100.000	55.000 M	200.000 U	113000.000	200.000 U
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	89.000	66.000	41.000	10.000 U	53.000	277.000	30.000
BARIUM	911.000	694.000	249.000	14.000 M	472.000	2360.000	417.000
BERYLLIUM	5.000 U	5.000 U	5.000	5.000 U	5.000 U	7.600	5.000 U
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CALCIUM	96300.000	88600.000	13800.000	12500.000	27200.000	28500.000	20600.000
CHROMIUM	33.000	4.000 M	64.000 J	10.000 U	10.000 U	198.000 J	10.000 U
COBALT	15.000 M	50.000 U	40.000 M	50.000 U	50.000 U	89.000	50.000 U
COPPER	44.000	25.000 U	79.000	25.000 U	25.000 U	235.000	25.000 U
IRON	67500.000	16600.000	79900.000	16.000 M	42500.000	280000.000	33100.000
LEAD	47.000	5.000 U	73.000	5.000 U	5.000 U	249.000	5.000 U
MAGNESIUM	20800.000 J	14700.000	10700.000	2580.000 M	6770.000	29100.000	6560.000
MANGANESE	2270.000	1430.000	2400.000	206.000	6170.000	5640.000	3800.000
MERCURY	0.200 U	0.200 R	0.200 U	0.200 U	0.200 U	0.200 U	0.210
NICKEL	41.000	40.000 U	84.000 J	40.000 U	40.000 U	235.000 J	40.000 U
POTASSIUM	6430.000	2460.000 M	10000.000	2100.000 M	3180.000 M	12900.000	2240.000 M
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	4.300 M	10.000 U	10.000 U	4.200 M	10.000 U	10.000 U	10.000 U
SODIUM	30600.000 J	29500.000	2300.000 MR	2320.000 M	6740.000	6010.000	6440.000
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VANADIUM	25.000 M	50.000 U	47.000 M	50.000 U	4.600 M	149.000	50.000 U
ZINC	4080.000 J	581.000	6670.000	2470.000	273.000	21200.000	125.000

EXPLANATION OF CODES:

-
- DETECTED AT CONCENTRATION INDICATED
 - B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
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 - E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 - J - VALUE REPORTED IS ESTIMATED
 - M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
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- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
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SAMPLE ID	SR-GW54-02	SR-GW54-02F	SR-GW55-02	SR-GW55-02F	SR-GW63-02	SR-GW63-02F	SR-GW65-02
DEPTH INTERVAL (FT.): 1	2.5	2.5	5.0	6.0	10.0	10.0	4.5
DEPTH 2	7.5	7.5	10.0	10.0	20.0	20.0	14.5
DATE SAMPLED	12/02/88	12/02/88	11/18/88	11/18/88	11/18/88	11/18/88	11/30/88
ALUMINUM	16600.000	26.000 M	27000.000 J	200.000 U	1910.000 J	200.000 U	43100.000
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	29.000	10.000 U	55.000 J	54.000	22.000 J	10.000 U	62.000 S
BARIUM	1110.000	383.000	934.000 J	524.000	135.000 MJ	93.000 M	802.000
BERYLLIUM	3.200 M	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	4.000 M
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	7.500 J	5.000 U	5.000 U
CALCIUM	16500.000	14900.000	39000.000 J	34400.000	9090.000 J	8540.000	30800.000
CHROMIUM	70.000 J	10.000 U	71.000 J	10.000 U	61.000 J	10.000 U	107.000 J
COBALT	17.000 M	50.000 U	26.000 MJ	50.000 U	6.400 MJ	50.000 U	42.000 M
COPPER	57.000	25.000 U	62.000 J	25.000 U	64.000 J	25.000 U	99.000
IRON	53300.000	29600.000	80600.000 J	25900.000	17700.000 J	5300.000	116000.000
LEAD	73.000	5.000 U	34.000 J	5.000 U	688.000 J	5.000 U	155.000
MAGNESIUM	6050.000	3670.000 M	15800.000 J	9600.000	2860.000 MJ	2540.000 M	27900.000
MANGANESE	12500.000	4260.000	10400.000 J	9780.000	2930.000 J	2760.000	5950.000
MERCURY	0.250	0.200 U	0.200 U	0.200 R	0.200 U	0.200 R	0.200 U
NICKEL	82.000 J	40.000 U	77.000 J	40.000 U	37.000 MJ	40.000 U	138.000 J
POTASSIUM	3800.000 M	1340.000 M	5730.000 J	1720.000 M	1920.000 M	1040.000 M	7590.000
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	9.500 MJ	10.000 U	10.000 U	10.000 U	10.000 U
SODIUM	5850.000	6520.000 J	10100.000 J	9610.000	6920.000 J	6370.000	9180.000
THALLIUM	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 UJ
VANADIUM	25.000 M	3.700 M	31.000 MJ	50.000 U	3.200 MJ	50.000 U	55.000
ZINC	3500.000	462.000	3270.000 J	383.000	86300.000 J	5590.000	598.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

NA - COMPOUND WAS NOT ANALYZED FOR
 R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 GROUNDWATER SAMPLES
 INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
 PAGE 7

SAMPLE ID	SR-GW65-02F
DEPTH INTERVAL (FT.): 1	4.5
DEPTH 2	14.5
DATE SAMPLED	11/30/88

ALUMINUM	200.000 U
ANTIMONY	60.000 U
ARSENIC	35.000
BARIUM	268.000
BERYLLIUM	5.000 U
CADMIUM	5.000 U
CALCIUM	29200.000
CHROMIUM	10.000 U
COBALT	50.000 U
COPPER	25.000 U
IRON	12800.000
LEAD	5.000 U
MAGNESIUM	19500.000
MANGANESE	4890.000
MERCURY	0.200 U
NICKEL	11.000 M
POTASSIUM	1720.000 M
SELENIUM	5.000 U
SILVER	10.000 U
SODIUM	10300.000 J
THALLIUM	10.000 U
VANADIUM	50.000 U
ZINC	177.000

EXPLANATION OF CODES:

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- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

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- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID's WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 GENESEE RIVER SURFACE WATER SAMPLES
 INORGANIC ANALYSES (UG/L)

DATE: 04/04/89
 PAGE 1

SAMPLE ID	SR-SW46-01	SR-SW47-01	SR-SW48-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0
DATE SAMPLED	10/31/88	10/31/88	10/31/88
ALUMINUM	49.000 M	59.000 M	28.000 M
ANTIMONY	60.000 U	60.000 U	60.000 U
ARSENIC	10.000 U	10.000 U	10.000 U
BARIUM	65.000 M	75.000 M	71.000 M
BERYLLIUM	5.000 U	5.000 U	5.000 U
CADMIUM	5.000 U	5.000 U	5.000 U
CALCIUM	18900.000	19700.000	19500.000
CHROMIUM	10.000 U	10.000 U	10.000 U
COBALT	50.000 U	6.000 M	50.000 U
COPPER	25.000 U	25.000 U	25.000 U
IRON	210.000	652.000	438.000
LEAD	5.000 U	5.000 U	5.000 U
MAGNESIUM	5050.000	5190.000	5140.000
MANGANESE	29.000	151.000	127.000
MERCURY	0.310 J	0.360 J	0.200 U
NICKEL	40.000 U	40.000 U	40.000 U
POTASSIUM	2480.000 M	2460.000 M	2520.000 M
SELENIUM	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U
SODIUM	10800.000	10900.000	10700.000
THALLIUM	10.000 U	10.000 U	10.000 U
VANADIUM	50.000 U	50.000 U	50.000 U
ZINC	20.000 U	20.000 U	20.000 U

EXPLANATION OF CODES:

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 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

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 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89

PAGE 1

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS, AND SEWER

INORGANIC ANALYSES (UG/L)

SAMPLE ID	SR-MH01-01	SR-SW49-01	SR-SW50-01	SR-SW50-01D	SR-SW51-01	SR-SW52-01	SR-SW53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DATE SAMPLED	11/29/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88
ALUMINUM	5370.000	200.000 U	29.000 M	200.000 U	442.000	200.000 U	40.000 M
ANTIMONY	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U	60.000 U
ARSENIC	10.000 S	10.000 U	10.000 U	20.000 U	10.000 U	25.000	10.000 U
BARIUM	128.000 M	91.000 M	140.000 M	135.000 M	202.000	268.000	53.000 M
BERYLLIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CADMIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CALCIUM	30800.000	22900.000	28000.000	27500.000	31300.000	33200.000	39200.000
CHROMIUM	51.000 J	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
COBALT	5.600 M	50.000 U	50.000 U	50.000 U	5.200 M	7.900 M	50.000 U
COPPER	33.000	25.000 U	25.000 U	25.000 U	25.000 U	25.000 U	25.000 U
IRON	10500.000	2040.000	3910.000 R	2280.000 R	3040.000	20300.000	235.000
LEAD	61.000	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
MAGNESIUM	4740.000 M	6780.000	11200.000	11000.000	11000.000	17800.000	9550.000
MANGANESE	594.000	1360.000	3300.000	3210.000	3720.000	8970.000	26.000
MERCURY	0.200 U	0.200 UJ	0.200 U	0.200 U	0.200 J	0.200 U	0.200 U
NICKEL	22.000 MJ	40.000 U	40.000 U	40.000 U	40.000 U	40.000 U	40.000 U
POTASSIUM	5430.000	2470.000 M	2500.000 M	2390.000 M	3360.000 M	2600.000 M	2840.000 M
SELENIUM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
SILVER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
SODIUM	40700.000	9330.000	10200.000	10100.000	13200.000	12200.000	17200.000
THALLIUM	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VANADIUM	8.500 M	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ZINC	190.000	6.300 R	20.000 U	2.800 R	16.000 R	20.000 U	20.000 R

EXPLANATION OF CODES:

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- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
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- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
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- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION

DATE: 04/04/89

PAGE 2

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS, AND SEWER
INORGANIC ANALYSES (UG/L)

SAMPLE ID	SR-SW54-01
DEPTH INTERVAL (FT.): 1	0.0
DEPTH 2	0.0
DATE SAMPLED	11/01/88

ALUMINUM	556.000
ANTIMONY	60.000 U
ARSENIC	10.000 U
BARIUM	147.000 M
BERYLLIUM	5.000 U
CADMIUM	5.000 U
CALCIUM	32100.000
CHROMIUM	10.000 U
COBALT	6.300 M
COPPER	25.000 U
IRON	5840.000
LEAD	5.000 U
MAGNESIUM	7340.000
MANGANESE	1040.000
MERCURY	0.200 U
NICKEL	40.000 U
POTASSIUM	3180.000 M
SELENIUM	5.000 U
SILVER	10.000 U
SODIUM	21200.000
THALLIUM	10.000 U
VANADIUM	50.000 U
ZINC	29.000 R

EXPLANATION OF CODES:

-
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 - E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 - J - VALUE REPORTED IS ESTIMATED
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AND THE INSTRUMENT DETECTION LIMIT
 - N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
 - R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

Appendix A

Phase IIB Analytical Data

- **INORGANICS (SOLID SAMPLES: RIVER SEDIMENTS, DRAINAGE SWALE SEDIMENTS, SUBSURFACE SOILS, SURFACE SOILS, TEST PITS)**

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GENESEE RIVER SEDIMENT SAMPLES
INORGANIC ANALYSES (MG/KG)

DATE: 04/04/89
PAGE 1

SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
ALUMINUM	5590.000	4970.000	5550.000	3550.000
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	6.600	6.800	5.000	6.200
BARIUM	73.000	103.000	145.000	45.000 M
BERYLLIUM	0.380 M	0.400 M	0.510 M	1.000 U
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	711.000 M	863.000 M	826.000 M	965.000 M
CHROMIUM	5.300	6.000	5.800	5.000
COBALT	7.600 M	5.400 M	8.000 M	4.800 M
COPPER	8.800	9.200 R	24.000 R	13.000
IRON	15200.000	16100.000	18600.000	9100.000
LEAD	7.100 J	6.200 J	5.100 J	7.100 J
MAGNESIUM	1510.000	1530.000	1660.000	1320.000
MANGANESE	304.000	559.000	634.000	185.000
MERCURY	0.040 U	0.040 U	0.040 U	0.040 U
NICKEL	13.000	12.000	14.000	9.400 M
POTASSIUM	354.000 M	361.000 M	390.000 M	278.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	2.000 U	2.000 U
SODIUM	40.000 R	88.000 R	90.000 R	54.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	6.000 M	8.000 M	7.400 M	4.400 M
ZINC	37.000 E	40.000 E	39.000 E	25.000 E

EXPLANATION OF CODES:

-
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- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS
INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
PAGE 1

SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
ALUMINUM	7480.000	8390.000	5980.000	11500.000	3570.000	4230.000	7980.000
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	2.000 U	2.000 U	3.600	12.000	46.000 J	8.000	7.500
BARIUM	131.000	134.000	63.000	80.000	187.000	50.000	50.000 M
BERYLLIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	1380.000 R	1320.000 R	823.000 R	10800.000 R	1580.000 R	42400.000 R	27300.000 R
CHROMIUM	8.200	8.600	5.500	13.000	3.700	4.400	8.800
COBALT	7.400 M	6.500 M	5.600 M	11.000 M	3.100 M	4.300 M	7.800 M
COPPER	12.000	12.000	8.300	18.000	6.600 M	13.000	18.000
IRON	13400.000	14100.000	15300.000	26400.000	33900.000	11700.000	19500.000
LEAD	22.000	20.000	12.000	11.000	9.200	8.000	12.000
MAGNESIUM	2140.000 R	2260.000 R	1630.000 R	7900.000 R	1170.000 R	7310.000 R	11000.000 R
MANGANESE	810.000 J	778.000 J	208.000 J	514.000 J	2670.000 J	573.000 J	515.000 J
MERCURY	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
NICKEL	14.000 M	14.000 M	11.000	23.000	8.200 M	8.000 M	23.000
POTASSIUM	848.000 M	989.000 M	654.000 M	1790.000	313.000 M	492.000 M	807.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
SODIUM	52.000 R	46.000 R	19.000 R	75.000 R	28.000 R	62.000 R	66.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	8.400 MJ	11.000 MJ	8.100 MJ	16.000 J	6.600 MJ	6.400 MJ	12.000 M
ZINC	62.000	61.000	37.000	64.000	26.000	38.000	48.000

EXPLANATION OF CODES:

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 NOTE: SAMPLE ID's WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS
INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
PAGE 2

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
ALUMINUM	6360.000	6140.000	7470.000
ANTIMONY	12.000 U	12.000 U	5.000 MJ
ARSENIC	45.000 J	7.800 J	14.000 J
BARIUM	174.000	80.000	49.000 M
BERYLLIUM	1.000 U	1.000 U	1.000 U
CADMIUM	1.000 U	1.000 U	1.000 U
CALCIUM	1990.000 M	1080.000 M	9320.000
CHROMIUM	5.800 M	7.300	8.900
COBALT	2.700 M	4.600 M	7.000 M
COPPER	12.000 M	13.000	16.000
IRON	40300.000	17600.000	18900.000
LEAD	19.000 J	25.000 J	9.800 J
MAGNESIUM	1680.000 M	1760.000	5630.000
MANGANESE	1900.000 J	276.000 J	395.000 J
MERCURY	0.040 U	0.040 U	0.040 U
NICKEL	13.000 M	13.000	19.000
POTASSIUM	1000.000 U	428.000 M	772.000 M
SELENIUM	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	2.000 U
SODIUM	76.000 R	41.000 R	67.000 R
THALLIUM	2.000 U	2.000 U	2.000 U
VANADIUM	11.000 MJ	8.600 MJ	11.000 MJ
ZINC	52.000	39.000	41.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 1

SAMPLE ID	SR-AB101-01	SR-AB42-02	SR-AB42-03	SR-AB43-02	SR-AB43-03	SR-AB44-02	SR-AB44-03
DEPTH INTERVAL (FT.): 1	7.0	2.0	8.0	2.0	8.0	2.0	6.0
DEPTH 2	9.0	4.0	10.0	4.0	10.0	4.0	8.0
DATE SAMPLED	11/14/88	08/27/88	08/27/88	08/27/88	08/27/88	08/27/88	08/28/88
ALUMINUM	8130.000	40.000 NA	40.000 NA	40.000 NA	40.000 NA	40.000 R	40.000 NA
ANTIMONY	12.000 U	0.000 NA	12.000 NA	12.000 NA	12.000 NA	12.000 R	12.000 NA
ARSENIC	4.700 J	2.000 NA	2.000 NA	2.000 NA	2.000 NA	2.000 R	2.000 NA
BARIUM	119.000	40.000 NA	40.000 NA	40.000 NA	40.000 NA	40.000 R	40.000 NA
BERYLLIUM	0.450 M	1.000 NA	1.000 NA	1.000 NA	1.000 NA	1.000 R	1.000 NA
CADMIUM	1.000 R	1.000 NA	1.000 NA	1.000 NA	1.000 NA	1.000 R	1.000 NA
CALCIUM	833.000 R	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 R	1000.000 NA
CHROMIUM	7.800 R	2.000 NA	2.000 NA	2.000 NA	2.000 NA	2.000 R	2.000 NA
COBALT	6.400 M	10.000 NA	10.000 NA	10.000 NA	10.000 NA	10.000 R	10.000 NA
COPPER	10.000	5.000 NA	5.000 NA	5.000 NA	5.000 NA	5.000 R	5.000 NA
IRON	14100.000	20.000 NA	20.000 NA	20.000 NA	20.000 NA	20.000 R	20.000 NA
LEAD	29.000	26.500	10.000	143.000	14.200	13.800	402.000
MAGNESIUM	1830.000	10.000 NA	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 R	1000.000 NA
MANGANESE	500.000 J	3.000 NA	3.000 NA	3.000 NA	3.000 NA	3.000 R	3.000 NA
MERCURY	0.040 U	0.040 NA	0.040 NA	0.040 NA	0.040 NA	0.040 R	0.040 NA
NICKEL	16.000	8.000 NA	8.000 NA	8.000 NA	8.000 NA	8.000 R	8.000 NA
POTASSIUM	669.000 M	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 R	1000.000 NA
SELENIUM	1.000 U	1.000 NA	1.000 NA	1.000 NA	1.000 NA	1.000 R	1.000 NA
SILVER	2.000 U	2.000 NA	2.000 NA	2.000 NA	2.000 NA	2.000 R	2.000 NA
SODIUM	40.000 R	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 NA	1000.000 R	1000.000 NA
THALLIUM	2.000 U	2.000 NA	2.000 NA	2.000 NA	2.000 NA	2.000 R	2.000 NA
VANADIUM	7.600 M	10.000 NA	10.000 NA	10.000 NA	10.000 NA	10.000 R	10.000 NA
ZINC	40.000 J	4.000 NA	4.000 NA	4.000 NA	4.000 NA	4.000 R	4.000 NA

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

- NA - COMPOUND WAS NOT ANALYZED FOR
- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 2

SAMPLE ID	SR-AB45-02	SR-AB45-03	SR-AB46-02	SR-AB46-03	SR-AB47-02	SR-AB47-03	SR-AB48-02
DEPTH INTERVAL (FT.): 1	2.0	8.0	2.0	8.0	2.0	8.0	2.0
DEPTH 2	4.0	10.0	4.0	10.0	4.0	10.0	4.0
DATE SAMPLED	10/26/88	10/26/88	11/02/88	11/02/88	10/26/88	10/26/88	10/25/88
ALUMINUM	22700.000	10400.000	18100.000	15000.000	17600.000	8010.000	8240.000
ANTIMONY	12.000 U	2.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	8.000 J	3.200 J	4.800 J	4.100 J	5.800 J	9.300 J	11.000 J
BARIUM	166.000	113.000	236.000	221.000	120.000	124.000	166.000
BERYLLIUM	1.100 M	0.430 M	0.990 M	0.670 M	0.760 M	0.400 M	0.330 M
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.400
CALCIUM	392.000 R	1000.000 R	998.000 M	750.000 M	173.000 R	502.000 R	1360.000 R
CHROMIUM	20.000 J	12.000 J	20.000	19.000	19.000 J	23.000 J	9.500 J
COBALT	12.000 M	13.000 M	12.000 M	13.000	12.000	8.300 M	8.700 M
COPPER	16.000 J	11.000 J	16.000 J	16.000 J	14.000 J	12.000 J	23.000 J
IRON	27800.000	12600.000	23800.000	21900.000	23100.000	21500.000	24000.000
LEAD	18.000	11.000	23.000	18.000	14.000	7.800	77.000
MAGNESIUM	3190.000	2610.000	3390.000	3150.000	3130.000	1870.000	2250.000
MANGANESE	2260.000 J	283.000 J	797.000	886.000	579.000 J	241.000 J	393.000 J
MERCURY	0.040 R	0.040 R	0.040 U	0.040 U	0.040 R	0.040 R	0.120 R
NICKEL	20.000	25.000	23.000	21.000	19.000	17.000	15.000
POTASSIUM	1470.000	1500.000	1400.000 J	1070.000 MJ	1200.000	1370.000	947.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	1.400 M	2.000 U	2.500	1.300 M	2.000 U	2.000 U	2.000 M
SODIUM	92.000 R	71.000 R	44.000 M	42.000 M	43.000 R	47.000 R	44.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	25.000 J	13.000 M	14.000	15.000	20.000 J	8.400 MJ	9.200 MJ
ZINC	97.000 E	55.000	104.000	80.000	73.000 E	47.000	117.000 E

EXPLANATION OF CODES:

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 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

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 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 3

SAMPLE ID	SR-AB48-03	SR-AB49-02	SR-AB49-03	SR-AB50-02	SR-AB50-03	SR-AB51-02	SR-AB51-02D
DEPTH INTERVAL (FT.): 1	8.0	2.0	8.0	2.0	8.0	2.0	2.0
DEPTH 2	10.0	4.0	10.0	4.0	10.0	4.0	4.0
DATE SAMPLED	10/25/88	10/31/88	10/31/88	11/01/88	11/01/88	11/02/88	11/02/88
ALUMINUM	6960.000	13200.000	6500.000	12500.000	7500.000	9370.000	8980.000
ANTIMONY	12.000 U	12.000 U	9.700 MJ	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	7.300 J	6.000 S	5.700	8.100 J	6.300 J	13.000 J	9.600 J
BARIUM	113.000	81.000	145.000	135.000	84.000	128.000	132.000
BERYLLIUM	0.340 M	0.530 M	0.270 M	1.000 U	1.000 U	0.640 M	0.600 M
CADMIUM	1.600	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	824.000 R	1270.000	1750.000	2060.000	1070.000 M	4460.000 R	8200.000 R
CHROMIUM	6.800 J	15.000 R	12.000 R	14.000	7.000	14.000	14.000
COBALT	7.300 M	9.100 M	7.200 M	7.300 M	7.000 M	8.700 M	8.100 M
COPPER	9.700 J	14.000	12.000	17.000	12.000	38.000 J	38.000 J
IRON	17600.000	22200.000	20900.000	19400.000	14400.000	22800.000	19200.000
LEAD	9.200	14.000	13.000	26.000 J	15.000 J	376.000	151.000
MAGNESIUM	1560.000	2800.000	1900.000	2430.000	2130.000	3130.000	4990.000
MANGANESE	2490.000 J	227.000	377.000	358.000 J	217.000 J	494.000	621.000
MERCURY	0.040 R	0.040 U	1.000 U	0.040 U	0.040 U	0.940	0.860
NICKEL	12.000	19.000 R	14.000 R	16.000	18.000	17.000	16.000
POTASSIUM	988.000 M	868.000 M	887.000 M	671.000 M	459.000 M	645.000 MJ	705.000 MJ
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	1.800 M	1.700 M	1.300 M	2.000 U	2.000 U	1.600 M	1.700 M
SODIUM	38.000 R	56.000 M	62.000 M	55.000 R	36.000 R	75.000 M	86.000 M
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	7.500 JM	12.000 J	6.400 M	16.000 J	8.400 MJ	15.000	13.000
ZINC	38.000 E	56.000	38.000	70.000	51.000	77.000	70.000

EXPLANATION OF CODES:

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 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SUBSURFACE SOILS
INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
PAGE 4

SAMPLE ID	SR-AB51-03	SR-AB52-02	SR-AB52-03	SR-AB53-02	SR-AB53-03	SR-AB54-02	SR-AB54-03
DEPTH INTERVAL (FT.): 1	8.0	2.0	8.0	2.0	8.0	2.0	8.0
DEPTH 2	10.0	4.0	10.0	4.0	10.0	4.0	10.0
DATE SAMPLED	11/02/88	11/03/88	11/03/88	11/01/88	11/01/88	11/01/88	11/01/88
ALUMINUM	8330.000	13100.000	8300.000	12200.000	7170.000	8430.000	6630.000
ANTIMONY	12.000 U	12.000 U	12.000 U	15.000 MJ	12.000 U	12.000 U	2.000 U
ARSENIC	7.600 J	6.500 J	2.700 J	14.000	5.400	3.200	5.100
BARIUM	90.000	149.000	83.000	168.000	113.000	132.000	84.000
BERYLLIUM	0.520 M	0.590 M	0.430 M	0.810 M	0.440 M	0.460 M	0.320 M
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	2400.000	68800.000	1420.000	2640.000	1170.000	725.000 M	1460.000
CHROMIUM	11.000	13.000	9.100	18.000 R	14.000 R	12.000 R	10.000 R
COBALT	8.500 M	8.500 M	10.000 M	15.000	6.800 M	7.300 M	7.000 M
COPPER	20.000 J	17.000 J	17.000 J	28.000	14.000	6.800	11.000
IRON	20400.000	19400.000	17200.000	34000.000	18300.000	14000.000	18000.000
LEAD	29.000	15.000	12.000	31.000	11.000	13.000	8.300
MAGNESIUM	2720.000	8590.000	2430.000	3920.000	1980.000	1780.000	1820.000
MANGANESE	394.000	1170.000	247.000	657.000	151.000	388.000	169.000
MERCURY	0.120	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
NICKEL	18.000	16.000	20.000	32.000 R	17.000 R	16.000 R	16.000 R
POTASSIUM	814.000 MJ	1260.000 J	914.000 MJ	1770.000	967.000 R	763.000 R	909.000 R
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 M	1.800 M	1.200 M	2.000 M	0.890 M	2.000 U	2.000 U
SODIUM	61.000 M	358.000 R	57.000 R	95.000 R	67.000 R	54.000 M	49.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	11.000 M	20.000	8.900 M	15.000 J	7.400 MJ	8.000 MJ	7.200 MJ
ZINC	60.000	60.000	54.000	85.000	46.000	41.000	41.000

EXPLANATION OF CODES:

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 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 5

SAMPLE ID	SR-AB55-02	SR-AB55-03	SR-AB56-02	SR-AB56-03	SR-AB57-02	SR-AB57-03	SR-AB58-02
DEPTH INTERVAL (FT.): 1	2.0	8.0	2.0	8.0	2.0	8.0	2.0
DEPTH 2	4.0	10.0	4.0	10.0	4.0	10.0	4.0
DATE SAMPLED	10/26/88	10/26/88	11/01/88	11/01/88	10/27/88	10/27/88	10/27/88
ALUMINUM	18200.000	8460.000	7800.000	7390.000	12000.000	6420.000	10200.000
ANTIMONY	12.000 U	12.000 U	12.000 U	7.500 MJ	12.000 U	12.000 U	12.000 U
ARSENIC	2.000 U	7.500 J	2.700	8.900	3.200	5.200	10.000
BARIUM	163.000	88.000	104.000	88.000	103.000	154.000	151.000
BERYLLIUM	0.580 M	0.350 M	0.470 M	0.460 M	0.460 M	0.440 M	0.650 M
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	2000.000 R	2010.000 R	848.000 M	1400.000	335.000 R	728.000 M	1380.000
CHROMIUM	17.000 J	17.000 J	11.000 R	9.300 R	15.000 R	17.000 R	19.000 R
COBALT	9.000 M	7.800 M	7.500 M	8.400 M	7.800 M	6.600 M	12.000
COPPER	9.400 J	9.700 J	17.000	12.000	8.400	14.000	14.000
IRON	17700.000	15800.000	15700.000	21400.000	16500.000	17000.000	23100.000
LEAD	13.000	18.000	13.000	16.000	17.000 J	11.000 J	15.000 J
MAGNESIUM	2830.000	2110.000	1640.000	1890.000	2060.000	1600.000	3040.000
MANGANESE	181.000 J	219.000 J	272.000	329.000	377.000	3660.000	605.000
MERCURY	0.040 R	0.140 R	0.040 U	0.040 U	0.180 R	0.040 U	0.040 U
NICKEL	17.000	16.000	13.000 R	18.000 R	13.000	16.000	20.000
POTASSIUM	1850.000	1520.000	662.000 R	953.000 R	462.000 M	434.000 M	1360.000
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	2.000 U	1.500 M	2.000 U	1.200 M	1.100 M
SODIUM	107.000 R	93.000 R	38.000 R	64.000 R	20.000 R	74.000 R	48.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	19.000 J	9.300 MJ	8.000 MJ	7.500 MJ	11.000	6.700 M	13.000
ZINC	65.000 E	50.000 E	40.000	42.000	45.000 E	38.000 R	56.000 E

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
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- NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 6

SAMPLE ID	SR-AB58-03	SR-AB59-02	SR-AB59-03	SR-AB60-02	SR-AB60-03	SR-AB61-02	SR-AB61-03
DEPTH INTERVAL (FT.): 1	8.0	2.0	8.0	2.0	8.0	2.0	8.0
DEPTH 2	10.0	4.0	10.0	4.0	10.0	4.0	10.0
DATE SAMPLED	10/27/88	11/15/88	11/15/88	11/01/88	11/01/88	10/25/88	10/25/88
ALUMINUM	5600.000	9180.000	6190.000	8520.000	8380.000	10100.000	10200.000
ANTIMONY	12.000 U	12.000 U	12.000 U	4.600 MJ	12.000 U	12.000 U	12.000 U
ARSENIC	2.000 U	8.200 J	6.600 J	6.800 J	9.600 J	4.600 J	6.100 J
BARIUM	88.000	121.000	107.000	121.000	112.000	102.000	92.000
BERYLLIUM	0.330 M	0.430 M	0.260 M	1.000 U	1.000 U	0.390 M	0.570 M
CADMIUM	1.500	4.500 R	1.000 R	1.000 U	1.000 U	1.100 M	2.800
CALCIUM	996.000 M	5440.000 R	810.000 R	1460.000	1020.000 M	892.000 R	922.000 R
CHROMIUM	6.800 R	14.000	6.700	8.400	8.900	11.000 J	12.000 J
COBALT	4.600 M	7.600 M	5.900 M	6.200 M	8.100 M	7.000 M	9.200 M
COPPER	5.500 M	19.000	8.700	10.000	9.400	11.000 J	14.000 J
IRON	7540.000	15800.000	15100.000	15200.000	24700.000	14100.000	23000.000
LEAD	7.700 J	763.000	47.000	15.000 J	8.300 J	10.000	21.000
MAGNESIUM	1270.000 M	3120.000	1640.000	1870.000	2170.000	1990.000	2730.000
MANGANESE	309.000	333.000 J	159.000 J	604.000 J	284.000 J	169.000 J	214.000 J
MERCURY	0.180 R	0.400 U	0.040 U	0.040 U	0.040 U	0.040 R	0.040 R
NICKEL	9.600 M	16.000	12.000	13.000	17.000	13.000	20.000
POTASSIUM	221.000 M	838.000 M	575.000 M	665.000 M	657.000 M	1060.000 M	1340.000
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	1.100 M	1.300 M	2.000 U	2.000 U	1.300 M	1.200 M
SODIUM	18.000 R	76.000 R	33.000 R	28.000 R	27.000 R	38.000 R	61.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	7.300 M	12.000 M	6.200 M	9.100 MJ	12.000 J	12.000 JM	11.000 JM
ZINC	31.000 R	98.000 E	35.000 R	49.000	48.000	44.000 E	54.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

NA - COMPOUND WAS NOT ANALYZED FOR
 R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
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SAMPLE ID	SR-AB62-02	SR-AB62-03	SR-AB63-02	SR-AB64-02	SR-AB64-03	SR-AB65-02	SR-AB65-03
DEPTH INTERVAL (FT.): 1	2.0	8.0	2.0	2.0	8.0	2.0	8.0
DEPTH 2	4.0	10.0	4.0	4.0	10.0	4.0	10.0
DATE SAMPLED	11/02/88	11/02/88	11/15/88	10/25/88	10/25/88	10/25/88	10/25/88
ALUMINUM	8160.000	5170.000	7700.000	10100.000	9850.000	8950.000	9200.000
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	8.200 J	11.000 J	2.300 J	9.600 J	6.200 J	4.900 J	8.400 J
BARIUM	114.000	68.000	76.000	107.000	145.000	283.000	142.000
BERYLLIUM	1.000 U	1.000 U	0.380 M	0.420 M	0.490 M	0.350 M	0.350 M
CADMIUM	1.000 U	1.000 U	1.000 R	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	1610.000	2340.000	314.000 R	701.000 R	2170.000 R	424.000 R	1390.000 R
CHROMIUM	8.700	7.400	9.200	12.000 J	17.000 J	9.500 J	11.000 J
COBALT	6.400 M	4.700 M	6.500 M	8.900 M	9.500 M	7.800 M	8.400 M
COPPER	21.000	12.000	7.100	9.000 J	16.000 J	10.000 J	8.200 J
IRON	15800.000	12700.000	12400.000	215.000	23400.000	14700.000	25600.000
LEAD	42.000 J	31.000 J	8.500	15.000	11.000	34.000	13.000
MAGNESIUM	1920.000	1310.000 M	1720.000	2160.000	2050.000	1870.000	2350.000
MANGANESE	477.000 J	138.000 J	266.000 J	599.000 J	291.000 J	503.000 J	610.000 J
MERCURY	0.180	0.040 U	0.040 U	0.040 R	0.040 R	0.040 R	0.040 R
NICKEL	15.000	16.000	13.000	15.000	19.000	15.000	20.000
POTASSIUM	421.000 M	313.000 M	587.000 M	1120.000 M	1420.000	990.000 M	1340.000
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	2.000 U	2.000 U	2.100 M	2.000 U	1.300 M
SODIUM	34.000 R	39.000 R	44.000 R	45.000 R	56.000 R	50.000 R	58.000 R
THALLIUM	2.000 U	2.000 U	2.000 J	2.000 U	2.000 U	2.000	2.000 U
VANADIUM	9.200 MJ	5.400 MJ	7.300 M	11.000 R	10.000 MJ	8.100 MJ	8.100 MJ
ZINC	64.000	46.000	40.000 E	51.000	53.000 E	49.000 E	52.000 E

EXPLANATION OF CODES:

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- N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

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- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
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SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 8

SAMPLE ID	SR-AB93-02	SR-AB94-02	SR-AB94-03	SR-AB95-02
DEPTH INTERVAL (FT.): 1	8.0	2.0	8.0	8.0
DEPTH 2	10.0	4.0	10.0	10.0
DATE SAMPLED	11/03/88	11/02/88	11/02/88	11/03/88
ALUMINUM	10900.000	12100.000	7880.000	7060.000
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	11.000 J	7.900 J	11.000 J	2.000 U
BARIUM	119.000	116.000	158.000	62.000
BERYLLIUM	0.560 M	1.000 U	1.000 U	0.260 M
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	1520.000	1470.000	1180.000	632.000 M
CHROMIUM	15.000	13.000	6.900	7.800
COBALT	11.000 M	9.000 M	6.300 M	8.100 M
COPPER	18.000 J	13.000	12.000	15.000 J
IRON	27300.000	20900.000	19100.000	16600.000
LEAD	16.000	33.000 J	69.000	15.000
MAGNESIUM	3480.000	2750.000	1940.000	2070.000
MANGANESE	521.000	288.000 J	1080.000 J	190.000
MERCURY	0.040 U	0.160	0.040 U	0.040 U
NICKEL	21.000 R	19.000	14.000	13.000
POTASSIUM	1210.000 J	1120.000 M	664.000 M	596.000 MJ
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.700	2.000 U	2.000 U	1.400 M
SODIUM	63.000 R	65.000 R	53.000 R	32.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	13.000	16.000 J	9.800 MJ	7.700 M
ZINC	59.000	72.000	47.000	44.000

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SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SURFACE SOILS
INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
PAGE 1

SAMPLE ID	SR-AB42-01	SR-AB42-01D	SR-AB43-01	SR-AB44-01	SR-AB45-01	SR-AB46-01	SR-AB46-01D
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
DATE SAMPLED	08/27/88	08/27/88	08/27/88	08/28/88	10/26/88	11/02/88	11/02/88
ALUMINUM	4540.000 J	6900.000	6990.000	8570.000	7120.000	15800.000	13900.000
ANTIMONY	6.500 J	6.800 U	6.700 U	7.200 U	12.000 U	12.000 U	12.000 U
ARSENIC	2.000 R	2.000 R	2.000 R	2.000 R	13.000 J	11.000 J	13.000 J
BARIUM	53.800	117.000	119.000	137.000	92.000	224.000	209.000
BERYLLIUM	0.220 U	0.240	0.230 U	0.250 U	0.650 M	0.720 M	0.800 M
CADMIUM	1.300	2.200	1.400	1.400	1.000 U	1.000 U	1.000 U
CALCIUM	1000.000 R	1000.000 R	1000.000 R	1000.000 R	10800.000 R	3230.000	3120.000
CHROMIUM	2.000 R	2.000 R	2.000 R	2.000 R	14.000 J	18.000	16.000
COBALT	3.100 R	5.500	7.300	6.700	9.500 M	12.000 M	11.000 M
COPPER	5.000 R	5.000 R	46.400 J	54.900 J	119.000 J	20.000 J	18.000 J
IRON	13200.000	17600.000	19000.000	21200.000	36600.000	25400.000	22500.000
LEAD	458.000	549.000	543.000	654.000	98.000	50.000	51.000
MAGNESIUM	1000.000 R	1000.000 R	1000.000 R	1000.000 R	2920.000	3680.000	3380.000
MANGANESE	384.000 J	300.000 J	392.000 J	374.000 J	473.000 J	1150.000	1050.000
MERCURY	0.040 R	0.040 R	0.300	0.400	0.040 U	0.040 U	0.040 U
NICKEL	5.400	8.900	10.800	13.000	26.000	22.000	21.000
POTASSIUM	397.000 J	365.000	353.000 J	482.000 J	1100.000 M	1480.000 J	1300.000 JM
SELENIUM	0.220 J	0.230 U	0.230 J	0.250 U	1.000 U	1.000 U	1.000 U
SILVER	0.890 U	0.940 U	0.930 U	0.990 U	1.400 M	1.700 M	1.800 M
SODIUM	339.000 U	356.000 U	353.000 U	377.000 U	92.000 R	42.000 M	43.000 M
THALLIUM	0.450 U	0.470 U	0.460 U	0.500 U	2.000 U	2.000 U	2.000 U
VANADIUM	6.000 J	10.900 J	11.500 J	13.400 J	15.000 J	20.000	18.000
ZINC	60.600 R	4.000 R	273.000	338.000	58.000 E	88.000	81.000

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SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SURFACE SOILS
INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
PAGE 2

SAMPLE ID	SR-AB47-01	SR-AB48-01	SR-AB49-01	SR-AB50-01	SR-AB51-01	SR-AB52-01	SR-AB53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
DATE SAMPLED	10/26/88	10/25/88	10/31/88	11/01/88	11/02/88	11/03/88	11/01/88
ALUMINUM	7790.000	7330.000	5550.000	9050.000	8920.000	8240.000	5940.000
ANTIMONY	12.000 U	12.000 U	2.000 U	12.000 U	12.000 U	12.000 U	9.400 M
ARSENIC	39.000 J	7.100 J	6.400 S	11.000 J	7.600 J	8.100 J	19.000
BARIUM	138.000	101.000	76.000	104.000	78.000	57.000	100.000
BERYLLIUM	1.000 M	0.380 M	0.390 M	1.000 U	0.460 M	0.330 M	0.590 M
CADMIUM	1.000 U	1.800	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	6590.000 R	1820.000 R	17800.000	18300.000	23600.000	31300.000	31200.000
CHROMIUM	23.000 J	8.300 J	7.900 R	12.000	12.000	12.000	13.000 R
COBALT	11.000 M	7.400 M	6.400 M	8.000 M	9.100 M	8.100 M	7.900 M
COPPER	92.000 J	16.000 J	22.000	24.000	18.000 J	19.000 J	124.000
IRON	43600.000	15800.000	16900.000	24300.000	19800.000	18500.000	27800.000
LEAD	1020.000	44.000	59.000	29.000 J	64.000	45.000	185.000
MAGNESIUM	3250.000	2010.000	9270.000	6580.000	4390.000	6200.000	11500.000
MANGANESE	598.000 J	414.000 J	332.000	683.000 J	592.000	604.000	372.000
MERCURY	0.040 R	0.040 R	0.040 U	0.040 U	0.040 U	0.260	0.350 R
NICKEL	21.000	18.000	14.000 R	20.000	18.000	16.000	19.000 R
POTASSIUM	893.000 M	1140.000 M	744.000 M	833.000 M	949.000 MJ	904.000 MJ	934.000 R
SELENIUM	1.500 J	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.300 M	2.000 M	2.000 U	1.000 U	1.900 M	1.000 M	2.500 M
SODIUM	112.000 R	32.000 R	88.000 R	65.000 R	314.000 M	274.000 R	150.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	18.000 J	9.500 J	10.000 MJ	15.000 J	11.000	12.000	13.000 J
ZINC	586.000 E	70.000 E	57.000	66.000	60.000	70.000	118.000

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SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SURFACE SOILS

DATE: 05/15/89

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INORGANIC ANALYSES (MG/KG)							
SAMPLE ID	SR-AB53-01D	SR-AB54-01	SR-AB55-01	SR-AB56-01	SR-AB57-01	SR-AB57-01D	SR-AB58-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
DATE SAMPLED	11/01/88	11/01/88	10/26/88	11/01/88	10/27/88	10/27/88	10/27/88
ALUMINUM	6070.000	5920.000	10600.000	4220.000	4010.000	2930.000	6730.000
ANTIMONY	13.000 MJ	12.000 U	12.000 U	12.000 MJ	12.000 U	12.000 U	12.000 U
ARSENIC	24.000	29.000	5.700 J	17.000	12.000	16.000	13.000
BARIUM	129.000	87.000	130.000	73.000	81.000	54.000	79.000
BERYLLIUM	0.690 M	0.590 M	0.490 M	0.590 M	0.680 M	0.400 M	1.100 M
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.100 M
CALCIUM	24200.000	12300.000	3160.000 R	2880.000	1860.000	1590.000	9790.000
CHROMIUM	14.000 R	18.000 R	11.000 J	12.000 R	11.000 R	9.100 R	8.900 R
COBALT	9.800 M	8.000 M	8.000 M	9.600 M	6.000 M	5.000 M	6.100 M
COPPER	126.000	82.000	9.600 J	129.000	83.000	71.000	69.000
IRON	32000.000	29800.000	15900.000	31800.000	23400.000	20800.000	21400.000
LEAD	189.000	121.000	16.000	108.000	49.000 J	68.000 J	54.000 J
MAGNESIUM	11300.000	4590.000	2190.000 U	1030.000 M	514.000 M	459.000 M	1400.000
MANGANESE	392.000	373.000	664.000 J	327.000	212.000	196.000	519.000
MERCURY	0.220 R	0.220 J	0.210 R	0.140 J	0.190 R	0.160 R	0.240 R
NICKEL	19.000 R	15.000 R	16.000	20.000 R	12.000	9.400 M	16.000
POTASSIUM	841.000 R	910.000 R	1360.000	903.000 R	691.000 M	584.000 M	544.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.100 M	1.300 M	2.000 U	2.100 M	1.400 M	2.000 U	2.000 U
SODIUM	110.000 R	92.000 R	94.000 R	60.000 MR	57.000 R	44.000 R	68.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	13.000 MJ	13.000 J	11.000 MJ	12.000 MJ	14.000	12.000 M	10.000 M
ZINC	158.000	85.000	56.000 E	53.000	26.000 R	23.000 R	39.000 R

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SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SURFACE SOILS
 INORGANIC ANALYSES (MG/KG)

DATE: 05/15/89
 PAGE 4

SAMPLE ID	SR-AB59-01	SR-AB60-01	SR-AB61-01	SR-AB62-01	SR-AB63-01	SR-AB64-01	SR-AB65-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
DATE SAMPLED	11/15/88	11/01/88	10/25/88	11/02/88	11/15/88	10/25/88	10/25/88
ALUMINUM	11200.000	7570.000	6460.000	6460.000	5950.000	8190.000	9050.000
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	21.000 J	22.000 J	43.000 J	16.000 J	11.000 J	16.000 J	11.000 J
BARIUM	134.000	100.000	120.000	116.000	79.000	130.000	3130.000
BERYLLIUM	0.490 M	1.000 U	0.630 M	1.000 U	0.360 M	0.540 M	51.000 M
CADMIUM	1.000 R	1.000 U	1.000 U	3.500	1.000 R	3.400	1.000 U
CALCIUM	2190.000 R	3230.000	2490.000	1780.000	2240.000 R	1980.000 R	5890.000 R
CHROMIUM	12.000	9.900	19.000 J	17.000	12.000	15.000 J	22.000 J
COBALT	9.300 M	6.800 M	7.800 M	5.900 M	5.100 M	8.400 M	6.600 M
COPPER	19.000	44.000	101.000 J	272.000	29.000	34.000 J	59.000 J
IRON	24000.000	22900.000	32500.000	17900.000	15000.000	24700.000	27200.000
LEAD	47.000	86.000	126.000	357.000	113.000	78.000	408.000
MAGNESIUM	3130.000	1930.000	1410.000	1780.000	1800.000	1880.000	3700.000
MANGANESE	592.000 J	454.000 J	367.000 J	338.000 J	305.000 J	578.000 J	584.000 J
MERCURY	0.040 U	0.390	0.500 R	9.400	1.000	19.000 R	0.980 R
NICKEL	21.000	16.000	20.000	22.000	16.000	18.000	20.000
POTASSIUM	1440.000	848.000 M	805.000 M	368.000 M	653.000 M	1270.000 M	1460.000
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	1.700 M	2.000 U	1.600 M	2.000 U	1.100 M	1.100 M	1.200 M
SODIUM	33.000 R	43.000 R	55.000 R	53.000 R	52.000 R	53.000 R	76.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	13.000	12.000 MJ	13.000 J	12.000 J	8.100 M	13.000 J	13.000 J
ZINC	96.000 E	90.000	77.000 E	362.000	76.000 J	82.000 E	122.000 E

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - SPIKE SAMPLE RECOVERY WAS NOT WITHIN CONTROL LIMITS

NA - COMPOUND WAS NOT ANALYZED FOR
 R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 NOTE: SAMPLE ID'S WITH 'F' ARE FILTERED; WITH 'D' ARE DUPLICATES

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SURFACE SOILS

DATE: 05/15/89

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INORGANIC ANALYSES (MG/KG)			
SAMPLE ID	SR-AB93-01	SR-AB94-01	SR-AB95-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5
DATE SAMPLED	11/03/88	11/02/88	11/03/88

ALUMINUM	9470.000	9090.000	5200.000
ANTIMONY	12.000 U	5.100 MJ	12.000 U
ARSENIC	8.400 J	11.000 J	6.400 J
BARIUM	162.000	117.000	28.000 M
BERYLLIUM	0.400 M	1.000 U	0.350 M
CADMIUM	1.000 U	1.000 U	1.000 U
CALCIUM	7590.000	6100.000	53800.000
CHROMIUM	11.000	12.000	6.800
COBALT	8.500 M	6.600 M	5.800 M
COPPER	13.000 J	17.000	20.000 J
IRON	20300.000	18400.000	13700.000
LEAD	94.000	65.000	7.500
MAGNESIUM	2130.000	3910.000	12000.000
MANGANESE	953.000	485.000 J	420.000
MERCURY	0.140	0.290	0.040 U
NICKEL	13.000 R	17.000	14.000
POTASSIUM	1240.000 MJ	1090.000 M	635.000 MJ
SELENIUM	1.000 U	1.000 U	1.000 U
SILVER	2.400 M	2.000 U	2.000 U
SODIUM	48.000 R	42.000 R	96.000 R
THALLIUM	2.000 U	2.000 U	2.000 U
VANADIUM	14.000	15.000 J	7.800 M
ZINC	173.000	66.000	57.000

EXPLANATION OF CODES:

-
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NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
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SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 TEST PIT SAMPLES - SURFACE AND SUBSURFACE
 INORGANIC ANALYSES (MG/KG)

DATE: 04/04/89
 PAGE 1

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-04
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
ALUMINUM	11600.000	18400.000	8950.000	9400.000	7960.000	8000.000	11400.000 J
ANTIMONY	12.000 U	12.000 U	12.000 UJ	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	14.000 J	3.000 J	6.700 J	49.000	8.300 J	14.000 J	7.500 J
BARIUM	144.000	147.000	92.000	122.000	100.000	108.000	125.000 J
BERYLLIUM	0.560 M	0.590 M	0.330 M	1.000 M	0.420 M	0.460 M	0.520 MJ
CADMIUM	1.600	1.800	1.000 U	1.000 U	1.000 R	1.000 R	1.000 U
CALCIUM	3000.000 R	1110.000 R	6650.000 R	5380.000	560.000 R	2400.000 R	1810.000 J
CHROMIUM	18.000 J	19.000 J	8.800 J	19.000 R	9.000	13.000	12.000 J
COBALT	9.000 M	9.100 M	8.600 M	9.800 M	6.700 M	7.200 M	8.000 MJ
COPPER	53.000 J	11.000 J	18.000 J	31.000	16.000	28.000	14.000 J
IRON	29300.000	21000.000	17400.000	22900.000	15100.000	18900.000	18100.000 J
LEAD	308.000	13.000	74.000	118.000 J	51.000	100.000	33.000 J
MAGNESIUM	2750.000	2900.000	2500.000	3030.000	1800.000	2090.000	2500.000 J
MANGANESE	588.000 J	528.000 J	432.000 J	154.000	243.000 J	438.000 J	605.000 J
MERCURY	0.810 R	0.180 R	0.300 R	0.210 R	0.040 U	0.640	0.040 U
NICKEL	18.000	17.000	18.000	31.000	14.000	17.000	14.000 J
POTASSIUM	1270.000	959.000 M	1230.000	530.000 M	503.000 M	782.000 M	973.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.800 J	1.000 U	1.000 U	1.000 U
SILVER	2.400	1.500 M	1.000 M	2.000 U	2.000 U	1.800 M	2.000 U
SODIUM	65.000 R	70.000 R	79.000 R	285.000 R	26.000 R	50.000 MR	48.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U	2.000 UNJ	2.000 U
VANADIUM	16.000 J	20.000 J	10.000 R	30.000	8.600 M	9.800 M	12.000 J
ZINC	99.000 E	63.000 E	58.000 E	73.000 E	45.000 J	95.000 EJ	58.000 J

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SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 TEST PIT SAMPLES - SURFACE AND SUBSURFACE
 INORGANIC ANALYSES (MG/KG)

DATE: 04/04/89

PAGE 2

SAMPLE ID	SR-TP35-04D	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
ALUMINUM	9310.000 J	8890.000 J	10000.000 J	7540.000 J	7870.000 J
ANTIMONY	12.000 U	12.000 U	12.000 U	12.000 U	12.000 U
ARSENIC	7.000 J	7.300 J	9.300 J	7.800 J	4.300 J
BARIUM	127.000 J	115.000 J	130.000 J	148.000 J	89.000 J
BERYLLIUM	0.470 MJ	0.410 MJ	0.580 MJ	0.420 MJ	0.520 MJ
CADMIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CALCIUM	1360.000 J	3640.000 J	9740.000 J	4390.000 J	10500.000 J
CHROMIUM	10.000 J	14.000 J	15.000 J	11.000 J	7.200 J
COBALT	7.900 MJ	7.600 MJ	8.300 MJ	7.000 MJ	6.500 MJ
COPPER	12.000 J	23.000 J	41.000 J	24.000 J	12.000 J
IRON	16300.000 J	18200.000 J	19400.000 J	15200.000 J	17100.000 J
LEAD	27.000 J	81.000 J	128.000 J	87.000 J	23.000 J
MAGNESIUM	2140.000 J	2610.000 J	5100.000 J	2470.000 J	6430.000 J
MANGANESE	840.000 J	956.000 J	625.000 J	250.000 J	487.000 J
MERCURY	0.040 U	0.700 J	5.200 J	0.130 J	0.040 U
NICKEL	11.000 J	17.000 J	14.000 J	13.000 J	12.000 J
POTASSIUM	471.000 M	824.000 M	1000.000 M	617.000 M	623.000 M
SELENIUM	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
SILVER	2.000 U	2.000 U	1.000 MJ	1.700 MJ	2.000 U
SODIUM	31.000 R	63.000 R	59.000 R	40.000 R	34.000 R
THALLIUM	2.000 U	2.000 U	2.000 U	2.000 U	2.000 U
VANADIUM	9.700 MJ	11.000 MJ	12.000 MJ	10.000 MJ	8.200 MJ
ZINC	56.000 J	92.000 J	114.000 J	207.000 J	61.000 J

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Appendix A

Phase IIB Analytical Data

- **VOLATILES (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

PAGE 1

VOLATILE ANALYSES (UG/L)

SAMPLE ID	SR-GW01-02	SR-GW03-02	SR-GW07-02	SR-GW07-02SVMS	SR-GW09-02	SR-GW09-02SVMS	SR-GW10-02
DEPTH INTERVAL (FT.): 1	7.0	3.0	8.0	8.0	5.0	5.0	10.0
DEPTH 2	22.0	18.0	23.0	23.0	20.0	20.0	25.0
DATE SAMPLED	11/29/88	11/30/88	11/16/88	11/16/88	11/29/88	11/29/88	11/28/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	94.000
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	2.400 J	10.000 U	10.000 U	10.000 U
ACETONE	80.000 UJ	10.000 R	16.000 T	7.600 J	20.000 UJ	10.000 UJ	10.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	2.000 J	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 R	10.000 R	10.000 U	2.000 R	10.000 R	10.000 R	10.000 U
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	35.000 J
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	7.000 T	0.420 J	100.000	99.000	620.000

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 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 1 (CONT.)

SAMPLE ID	SR-GW01-02	SR-GW03-02	SR-GW07-02	SR-GW07-02SVMS	SR-GW09-02	SR-GW09-02SVMS	SR-GW10-02
DEPTH INTERVAL (FT.): 1	7.0	3.0	8.0	8.0	5.0	5.0	10.0
DEPTH 2	22.0	18.0	23.0	23.0	20.0	20.0	25.0
DATE SAMPLED	11/29/88	11/30/88	11/16/88	11/16/88	11/29/88	11/29/88	11/28/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYL VINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 R	10.000 R	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.200 J	16.000	16.000	84.000
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	9.000 J	8.000	83.000
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	1.000 JT	0.410 J	160.000 J	160.000 J	440.000
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	60.000	0.000 NA	1100.000
TOTAL ALKYL CYCLOHEXANES**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	60.000	0.000 NA	1100.000
NUMBER OF TICS	1	0	0	0	7	11	10
TOTAL TIC CONCENTRATION**	190.000	0.000 ND	0.000 ND	0.000 ND	148.000	0.000 NA	2683.000

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SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

PAGE 2

GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

SAMPLE ID	SR-GW10-02SVMS	SR-GW11-02	SR-GW16-02	SR-GW16-02D	SR-GW25-02	SR-GW27-02	SR-GW27-02D
DEPTH INTERVAL (FT.): 1	10.0	10.0	10.0	10.0	15.0	16.0	16.0
DEPTH 2	25.0	25.0	20.0	20.0	25.0	26.0	26.0
DATE SAMPLED	11/28/88	11/30/88	11/17/88	11/17/88	12/02/88	11/29/88	11/29/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	98.000	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
ACETONE	10.000 U	23.000 UJ	10.000 U	10.000 UJ	230.000 J	10.000 R	180.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	28.000 J	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	10.000 R	10.000 U	2.000 R	10.000 R	10.000 R	10.000 R
1,1,1-TRICHLOROETHANE	38.000 J	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
BENZENE	660.000	51.000	5.000 U	5.000 UJ	250.000	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

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 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 2 (CONT.)

SAMPLE ID	SR-GW10-02SVMS	SR-GW11-02	SR-GW16-02	SR-GW16-02D	SR-GW25-02	SR-GW27-02	SR-GW27-02D
DEPTH INTERVAL (FT.): 1	10.0	10.0	10.0	10.0	15.0	16.0	16.0
DEPTH 2	25.0	25.0	20.0	20.0	25.0	26.0	26.0
DATE SAMPLED	11/28/88	11/30/88	11/17/88	11/17/88	12/02/88	11/29/88	11/29/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 R	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 NJ	5.000 U	5.000 U	5.000 U
TOLUENE	110.000	1.000 U	1.000 U	1.000 UJ	47.000	25.000	18.000
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	1.000 NJ	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	110.000	30.000	5.000 U	5.000 UJ	85.000	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	590.000	58.000	5.000 U	5.000 UJ	510.000	10.000	7.000
CYCLOHEXANE**	0.000 NA	140.000	0.000 ND	0.000 ND	300.000	320.000	370.000
TOTAL ALKYL CYCLOHEXANES**	0.000 NA	193.000	0.000 ND	40.000	300.000	380.000	430.000
NUMBER OF TICS	13	9	0	0	13	18	12
TOTAL TIC CONCENTRATION**	0.000 NA	449.000	0.000 ND	46.000	1241.000	631.000	641.000

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SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 3

SAMPLE ID	SR-GW28-02	SR-GW31-02	SR-GW32-02	SR-GW32-02SVMS	SR-GW33-02	SR-GW34-02	SR-GW35-02
DEPTH INTERVAL (FT.): 1	12.0	15.0	19.0	19.0	15.0	4.0	5.0
DEPTH 2	22.0	25.0	29.0	29.0	25.0	14.0	15.0
DATE SAMPLED	11/29/88	11/29/88	11/17/88	11/17/88	11/15/88	11/15/88	11/15/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	5.000 UJ	10.000 U	0.500 J
ACETONE	10.000 U	31.000 UJ	10.000 U	10.000 U	39.000 UJ	260.000 D	8500.000 D
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 UJ	1.000 J	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 R	10.000 U	2100.000 D
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	5.000 U	5.000 U	81.000 J	11.000	200.000

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SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 3 (CONT.)

SAMPLE ID	SR-GW28-02	SR-GW31-02	SR-GW32-02	SR-GW32-02SVMS	SR-GW33-02	SR-GW34-02	SR-GW35-02
DEPTH INTERVAL (FT.): 1	12.0	15.0	19.0	19.0	15.0	4.0	5.0
DEPTH 2	22.0	25.0	29.0	29.0	25.0	14.0	15.0
DATE SAMPLED	11/29/88	11/29/88	11/17/88	11/17/88	11/15/88	11/15/88	11/15/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.000 U	3.200 J	1.000 JT	49.000
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	46.000	13.000	5.000 U	5.000 U	1.100 J	0.400 J	4.000
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	220.000	42.000	5.000 U	5.000 U	81.000 J	2.000 J	320.000 D
CYCLOHEXANE**	210.000	0.000 ND	89.000	75.000	19.000	45.000	710.000
TOTAL ALKYL CYCLOHEXANES**	380.000	27.000	106.000	84.000	19.000	47.000	766.000
NUMBER OF TICS	9	10	0	14	0	12	16
TOTAL TIC CONCENTRATION**	586.000	426.000	138.000	125.000	54.000	145.000	2869.000

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SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

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SAMPLE ID	SR-GW36-02	SR-GW43-02	SR-GW50-02	SR-GW51-02	SR-GW52-02	SR-GW53-02	SR-GW53-02SVMS
DEPTH INTERVAL (FT.): 1	14.0	34.0	5.0	6.0	4.0	3.0	3.0
DEPTH 2	24.0	44.0	10.0	11.0	9.0	8.0	8.0
DATE SAMPLED	11/17/88	11/30/88	11/28/88	12/02/88	12/02/88	11/28/88	11/28/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACETONE	10.000 U	29.000 UJ	30.000 U	22.000 J	250.000 J	64.000 UJ	340.000 UJ
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	12.000	5.000 U	5.000 U	24.000	31.000 J
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	10.000 R	10.000 R	10.000 R	10.000 R	10.000 R	10.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	19.000 T	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	4.000 J	5.000 U	160.000	95.000	1200.000	96.000 J	5.000 U

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SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 4 (CONT.)

SAMPLE ID	SR-GW36-02	SR-GW43-02	SR-GW50-02	SR-GW51-02	SR-GW52-02	SR-GW53-02	SR-GW53-02SVMS
DEPTH INTERVAL (FT.): 1	14.0	34.0	5.0	6.0	4.0	3.0	3.0
DEPTH 2	24.0	44.0	10.0	11.0	9.0	8.0	8.0
DATE SAMPLED	11/17/88	11/30/88	11/28/88	12/02/88	12/02/88	11/28/88	11/28/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	14.000 T	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 R	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	7.000 T	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	3.000 J	1.000 U	23.000	1.000 U	1.000 U	17.000	1.000 U
CHLOROBENZENE	1.000 J	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	170.000	8.000 J	5.000 U	50.000 J	1100.000
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	120.000	19.000	440.000	74.000 J	1700.000 J
CYCLOHEXANE**	320.000	0.000 NA	670.000	910.000	440.000	0.000 ND	0.000 NA
TOTAL ALKYL CYCLOHEXANES**	348.000	0.000 NA	737.000	919.000	440.000	40.000	0.000 NA
NUMBER OF TICS	0	0	18	11	2	14	11
TOTAL TIC CONCENTRATION**	683.000	0.000 NA	2079.000	1698.000	640.000	3714.000	0.000 NA

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 N - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 5

SAMPLE ID	SR-GW54-02	SR-GW55-02	SR-GW57-02	SR-GW63-02	SR-GW65-02	SR-GW66-01	SR-GW66-01D
DEPTH INTERVAL (FT.): 1	2.5	5.0	5.0	10.0	4.5	82.0	82.0
DEPTH 2	7.5	10.0	25.0	20.0	14.5	92.0	92.0
DATE SAMPLED	12/02/88	11/18/88	11/28/88	11/18/88	11/30/88	01/24/89	01/24/89
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
ACETONE	16.000	10.000 U	10.000 U	5.000 J	40.000 J	7.000 JB	6.000 JB
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	0.900 J	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	690.000	0.110 JT	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	9700.000	5.000 UJ	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 R	10.000 U	10.000 U	2.000 R	10.000 R	10.000 U	10.000 U
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	1800.000	5.000 UJ	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	11.000 T	630.000	5.000 UJ	5.000 U	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES
VOLATILE ANALYSES (UG/L)

PAGE 5 (CONT.)

SAMPLE ID	SR-GW54-02	SR-GW55-02	SR-GW57-02	SR-GW63-02	SR-GW65-02	SR-GW66-01	SR-GW66-010
DEPTH INTERVAL (FT.): 1	2.5	5.0	5.0	10.0	4.5	82.0	82.0
DEPTH 2	7.5	10.0	25.0	20.0	14.5	92.0	92.0
DATE SAMPLED	12/02/88	11/18/88	11/28/88	11/18/88	11/30/88	01/24/89	01/24/89
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 UJ	10.000 R	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	5.000 JT	390.000 J	1.000 UJ	1.000 U	5.000 U	6.000
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	51.000	11.000 T	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	37.000 T	5.000 U	5.000 UJ	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	84.000	5.000 U	1500.000	5.000 UJ	5.000 U	15.000	20.000
CYCLOHEXANE**	53.000	0.000 ND	0.000 ND	0.000 ND	9.000	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	353.000	0.000 ND	0.000 ND	0.000 ND	92.000	0.000 ND	0.000 ND
NUMBER OF TICS	12	0	0	1	11	1	2
TOTAL TIC CONCENTRATION**	169.000	377.000	0.000 ND	61.000	122.000	8.000	12.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT

N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

PAGE 1

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS, AND SEWER

VOLATILE ANALYSES (UG/L)

SAMPLE ID	SR-MH01-01	SR-SW49-01	SR-SW50-01	SR-SW50-01D	SR-SW51-01	SR-SW52-01	SR-SW53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DATE SAMPLED	11/29/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	8.000	10.000 U	1.000 U	10.000 U	10.000 U	10.000 U	2.000 U
ACETONE	10.000 U	33.000 UJ	9.200 UJ	11.000 UJ	9.600 UJ	41.000 J	4.700 UJ
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	15.000	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	2.000 R	2.000 R	2.000 R	2.000 R	10.000 R	2.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	14.000	2.000	1.000 U	1.000 U	1.000 U	5.000 U	0.480 J

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT

N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CROL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89

PAGE 2 (CONT.)

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS, AND SEWER
VOLATILE ANALYSES (UG/L)

SAMPLE ID SR-SW54-01
DEPTH INTERVAL (FT.): 1 0.0
DEPTH 2 0.0
DATE SAMPLED 11/01/88

CIS-1,3-DICHLOROPROPENE 5.000 U
2-CHLOROETHYLVINYLETHER 10.000 U
BROMOFORM 5.000 U
4-METHYL-2-PENTANONE 10.000 U
2-HEXANONE 10.000 U
TETRACHLOROETHENE 5.000 U
1,1,2,2-TETRACHLOROETHANE 5.000 U
TOLUENE 1.000 U
CHLOROBENZENE 5.000 U
ETHYLBENZENE 5.000 U
STYRENE 5.000 U
TOTAL XYLENES 5.000 U
CYCLOHEXANE** 0.000 ND
TOTAL ALKYL CYCLOHEXANES** 0.000 ND

NUMBER OF TICS 2
TOTAL TIC CONCENTRATION** 3.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
J - VALUE REPORTED IS ESTIMATED
M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CDOL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

Appendix A

Phase IIB Analytical Data

- **VOLATILES (SOLID SAMPLES: RIVER SEDIMENTS, DRAINAGE SWALE SEDIMENTS, SUBSURFACE SOILS, TEST PITS)**

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 GENESEE RIVER SEDIMENT SAMPLES
 VOLATILE ANALYSES (MG/KG)

PAGE 1

SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U
ACETONE	10.000 U	10.000 U	10.000 U	10.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	10.000 U	12.000 R	12.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CDRL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GENESEE RIVER SEDIMENT SAMPLES
VOLATILE ANALYSES (MG/KG)

PAGE 1 (CONT.)

SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 U	5.000 U
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	0.000 ND	0.000 ND	0.000 ND	0.000 ND
NUMBER OF TICS	0	0	0	0
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	0.000 ND	0.000 ND

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
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- NA - COMPOUND WAS NOT ANALYZED FOR

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- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
- * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
- ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS
 VOLATILE ANALYSES (UG/KG)

DATE: 05/15/89
 PAGE 1

SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACETONE	10.000 U	10.000 U	10.000 U	13.000 U	18.000 U	10.000 U	10.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	17.000 R	16.000 R	12.000 R	13.000 R	18.000 R	12.000 R	12.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID's WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS
 VOLATILE ANALYSES (UG/KG)

DATE: 05/15/89
 PAGE 1 (CONT.)

SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYL VINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	32.000	0.000 ND	0.000 ND
NUMBER OF TICS	1	0	0	1	8	0	0
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	122.000	0.000 ND	0.000 ND

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS
 VOLATILE ANALYSES (UG/KG)

DATE: 05/15/89
 PAGE 2

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U
ACETONE	71.000 U	10.000 U	18.000
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U
2-BUTANONE	71.000 R	12.000 R	13.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U
BENZENE	36.000	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS
 VOLATILE ANALYSES (UG/KG)

DATE: 05/15/89
 PAGE 2 (CONT.)

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U
2-CHLOROETHYL VINYLETHER	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 U
CYCLOHEXANE**	1100.000	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	1690.000	0.000 ND	0.000 ND
NUMBER OF TICS	14	0	0
TOTAL TIC CONCENTRATION**	3089.000	0.000 ND	0.000 ND

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 VOLATILE ANALYSES (UG/KG)

PAGE 1

SAMPLE ID	SR-AB101-01	SR-AB102-01	SR-AB93-01	SR-AB93-02
DEPTH INTERVAL (FT.): 1	7.0	7.0	0.0	8.0
DEPTH 2	9.0	9.0	0.5	10.0
DATE SAMPLED	11/14/88	11/14/88	11/03/88	11/03/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 UJ	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 UJ	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 UJ	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 UJ	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 UJ	10.000 U
ACETONE	10.000 U	10.000 U	10.000 UJ	17.000
CARBON DISULFIDE	5.000 U	5.000 U	5.000 UJ	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 UJ	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 UJ	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 UJ	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
2-BUTANONE	10.000 U	10.000 U	10.000 R	12.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 UJ	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 UJ	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	10.000 UJ	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 UJ	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 UJ	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
BENZENE	5.000 U	5.000 U	5.000 UJ	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
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 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SUBSURFACE SOILS
VOLATILE ANALYSES (UG/KG)

PAGE 1 (CONT.)

SAMPLE ID	SR-AB101-01	SR-AB102-01	SR-AB93-01	SR-AB93-02
DEPTH INTERVAL (FT.): 1	7.0	7.0	0.0	8.0
DEPTH 2	9.0	9.0	0.5	10.0
DATE SAMPLED	11/14/88	11/14/88	11/03/88	11/03/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 UJ	5.000 U
2-CHLOROETHYL VINYLETHER	10.000 U	10.000 U	10.000 UJ	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 UJ	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 UJ	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 UJ	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 UJ	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 UJ	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 UJ	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 UJ	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 UJ	5.000 U
STYRENE	5.000 U	5.000 U	5.000 UJ	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 UJ	5.000 U
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	2500.000	0.000 ND	0.000 ND	0.000 ND
NUMBER OF TICS	0	0	0	0
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	0.000 ND	0.000 ND

EXPLANATION OF CODES:

D - DETECTED AT CONCENTRATION INDICATED
B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
J - VALUE REPORTED IS ESTIMATED
M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 TEST PIT SAMPLES - SURFACE AND SUBSURFACE
 VOLATILE ANALYSES (UG/KG)

PAGE 1

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-01
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACETONE	40.000 U	120.000	10.000 U	840.000 U	10.000 U	10.000 U	10.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	17.000	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	12.000 R	10.000 U	1100.000 R	1500.000 R	10.000 U	10.000 U	10.000 U
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
TEST PIT SAMPLES - SURFACE AND SUBSURFACE
VOLATILE ANALYSES (UG/KG)

PAGE 1 (CONT.)

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-01
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYLVINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	24000.000	0.000 ND	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	0.000 ND	260.000	10200.000	423600.000	0.000 ND	0.000 ND	0.000 ND
NUMBER OF TICS	0	0	11	13	0	0	0
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	20470.000	67160.000	0.000 ND	0.000 ND	0.000 ND

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
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 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT WITHIN CONTROL LIMITS
 *- DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
TEST PIT SAMPLES - SURFACE AND SUBSURFACE
VOLATILE ANALYSES (UG/KG)

PAGE 2

SAMPLE ID	SR-TP35-04	SR-TP35-04D	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
CHLOROMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOMETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
VINYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
METHYL CHLORIDE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACETONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CARBON DISULFIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,2-DICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CHLOROFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-BUTANONE	10.000 U	10.000 U	11.000 R	11.000 R	11.000 R	11.000 R
1,1,1-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CARBON TETRACHLORIDE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
VINYL ACETATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMODICHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,2-DICHLOROPROPANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRANS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TRICHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
DIBROMOCHLOROMETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2-TRICHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
BENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
TEST PIT SAMPLES - SURFACE AND SUBSURFACE
VOLATILE ANALYSES (UG/KG)

PAGE 2 (CONT.)

SAMPLE ID	SR-TP35-04	SR-TP35-040	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
	-----	-----	-----	-----	-----	-----
CIS-1,3-DICHLOROPROPENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
2-CHLOROETHYL VINYLETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BROMOFORM	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
4-METHYL-2-PENTANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-HEXANONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TETRACHLOROETHENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
1,1,2,2-TETRACHLOROETHANE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOLUENE	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U	1.000 U
CHLOROBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
ETHYLBENZENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
STYRENE	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
TOTAL XYLENES	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U	5.000 U
CYCLOHEXANE**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND
TOTAL ALKYL CYCLOHEXANES**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND
NUMBER OF TICS	0	0	0	0	0	0
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND	0.000 ND

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'SVMS' ARE CENTRIFUGED

Appendix A

Phase IIB Analytical Data

- **BNAs (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 1

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW01-02	SR-GW03-02	SR-GW07-02	SR-GW09-02	SR-GW09-02DC	SR-GW10-02	SR-GW10-02DC
DEPTH INTERVAL (FT.): 1	7.0	3.0	8.0	5.0	5.0	10.0	10.0
DEPTH 2	22.0	18.0	23.0	20.0	20.0	25.0	25.0
DATE SAMPLED	11/29/88	11/30/88	11/16/88	11/29/88	11/29/88	11/28/88	11/28/88
PHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-CHLOROETHYL] ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-CHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,3-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,4-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZYL ALCOHOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,2-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-CHLOROISOPROPYL] ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NITROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ISOPHORONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DIMETHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZOIC ACID	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
BIS[2-CHLOROETHOXY] METHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROANILINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROBUTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

D - DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT

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X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 GROUNDWATER SAMPLES

DATE: 05/15/89
 PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW01-02	SR-GW03-02	SR-GW07-02	SR-GW09-02	SR-GW09-02DC	SR-GW10-02	SR-GW10-02DC
DEPTH INTERVAL (FT.): 1	7.0	3.0	8.0	5.0	5.0	10.0	10.0
DEPTH 2	22.0	18.0	23.0	20.0	20.0	25.0	25.0
DATE SAMPLED	11/29/88	11/30/88	11/16/88	11/29/88	11/29/88	11/28/88	11/28/88
4-CHLORO-3-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHNAPHTHALENE	10.000 U	10.000 U	9.000 J	10.000 U	10.000 U	29.000	24.000
HEXACHLOROCYCLOPENTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
2-CHLORONAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIMETHYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACENAPHTHYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ACENAPHTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4-NITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIBENZOFURAN	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,6-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIETHYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)							
SAMPLE ID	SR-GW01-02	SR-GW03-02	SR-GW07-02	SR-GW09-02	SR-GW09-02DC	SR-GW10-02	SR-GW10-02DC
DEPTH INTERVAL (FT.): 1	7.0	3.0	8.0	5.0	5.0	10.0	10.0
DEPTH 2	22.0	18.0	23.0	20.0	20.0	25.0	25.0
DATE SAMPLED	11/29/88	11/30/88	11/16/88	11/29/88	11/29/88	11/28/88	11/28/88
HEXACHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PENTACHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
PHENANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-BUTYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BUTYL BENZYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U	20.000 U	20.000 R	20.000 R	20.000 U	20.000 R	20.000 U
BENZO[a]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS(2-ETHYLHEXYL)PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	7.000 J	10.000 U	7.000 J
CHRYSENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-OCTYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[b]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[k]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[a]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIBENZO[A,H]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TOTAL ALKANES**	0.000 ND	0.000 ND	443.000	163.000	8.000	308.000	0.000 ND
NUMBER OF TICS	0	0	24	7	11	17	16
TOTAL TIC CONCENTRATION**	0.000 ND	0.000 ND	820.000	266.000	152.000	731.000	609.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL, NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 GROUNDWATER SAMPLES

DATE: 05/15/89
 PAGE 2

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW11-02	SR-GW16-02	SR-GW16-02D	SR-GW27-02	SR-GW27-02D	SR-GW28-02	SR-GW28-02DC
DEPTH INTERVAL (FT.): 1	10.0	10.0	10.0	16.0	16.0	12.0	12.0
DEPTH 2	25.0	20.0	20.0	26.0	26.0	22.0	22.0
DATE SAMPLED	11/30/88	11/17/88	11/17/88	11/29/88	11/29/88	11/29/88	11/29/88
PHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS(2-CHLOROETHYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-CHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,3-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,4-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZYL ALCOHOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,2-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS(2-CHLOROISOPROPYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NITROBENZENE	10.000 U	10.000 U	10.000 U	8100.000 D	8300.000 D	10.000 U	10.000 U
ISOPHORONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DIMETHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZOIC ACID	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
BIS(2-CHLOROETHOXY) METHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROANILINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROBUTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 2 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)							
SAMPLE ID	SR-GW11-02	SR-GW16-02	SR-GW16-02D	SR-GW27-02	SR-GW27-02D	SR-GW28-02	SR-GW28-02DC
DEPTH INTERVAL (FT.): 1	10.0	10.0	10.0	16.0	16.0	12.0	12.0
DEPTH 2	25.0	20.0	20.0	26.0	26.0	22.0	22.0
DATE SAMPLED	11/30/88	11/17/88	11/17/88	11/29/88	11/29/88	11/29/88	11/29/88
4-CHLORO-3-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METNAPHTHALENE	10.000 U	10.000 U	10.000 U	12.000	10.000 U	46.000	100.000
HEXACLCYCLOPENTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
2-CHLORONAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIMETHYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACENAPHTHYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ACENAPHTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4-NITROPHENOL	50.000 U	50.000 U	50.000 U	30.000 J	50.000 U	50.000 U	50.000 U
DIBENZOFURAN	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,6-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIETHYLPHTHALATE	14.000 UB	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

-
- DETECTED AT CONCENTRATION INDICATED
 - B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 - D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
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 - J - VALUE REPORTED IS ESTIMATED
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 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 2 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW11-02	SR-GW16-02	SR-GW16-02D	SR-GW27-02	SR-GW27-02D	SR-GW28-02	SR-GW28-02DC
DEPTH INTERVAL (FT.): 1	10.0	10.0	10.0	16.0	16.0	12.0	12.0
DEPTH 2	25.0	20.0	20.0	26.0	26.0	22.0	22.0
DATE SAMPLED	11/30/88	11/17/88	11/17/88	11/29/88	11/29/88	11/29/88	11/29/88
HEXACHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PENTACHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
PHENANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-BUTYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BUTYL BENZYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U	23.000 R	22.000 R	20.000 U	20.000 U	20.000 U	20.000 U
BENZO[a]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-ETHYLHEXYL]PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
CHRYSENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-OCTYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[b]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[k]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[a]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIBENZO[A,H]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TOTAL ALKANES**	380.000	90.000	64.000	433.000	577.000	613.000	84.000
NUMBER OF TICS	22	11	7	21	20	19	33
TOTAL TIC CONCENTRATION**	331.000	125.000	61.000	1318.000	1073.000	859.000	1250.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 3

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW31-02	SR-GW32-02	SR-GW33-02	SR-GW35-02	SR-GW43-02	SR-GW50-02	SR-GW53-02
DEPTH INTERVAL (FT.): 1	15.0	19.0	15.0	5.0	34.0	5.0	3.0
DEPTH 2	25.0	29.0	25.0	15.0	44.0	10.0	8.0
DATE SAMPLED	11/29/88	11/17/88	11/15/88	11/15/88	11/30/88	11/28/88	11/28/88
PHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-CHLOROETHYL] ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-CHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,3-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,4-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZYL ALCOHOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,2-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-CHLOROISOPROPYL] ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLORETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NITROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ISOPHORONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DIMETHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZOIC ACID	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
BIS[2-CHLOROETHOXY] METHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	230.000
4-CHLOROANILINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROBUTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
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 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 3 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW31-02	SR-GW32-02	SR-GW33-02	SR-GW35-02	SR-GW43-02	SR-GW50-02	SR-GW53-02
DEPTH INTERVAL (FT.): 1	15.0	19.0	15.0	5.0	34.0	5.0	3.0
DEPTH 2	25.0	29.0	25.0	15.0	44.0	10.0	8.0
DATE SAMPLED	11/29/88	11/17/88	11/15/88	11/15/88	11/30/88	11/28/88	11/28/88
4-CHLORO-3-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METNAPHTHALENE	10.000 U	10.000 U	10.000 U	27.000	10.000 U	130.000	270.000
HEXACYCLOPENTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
2-CHLORONAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIMETHYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACENAPHTHYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ACENAPHTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4-NITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIBENZOFURAN	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,6-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIETHYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	21.000
4-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 3 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)							
SAMPLE ID	SR-GW31-02	SR-GW32-02	SR-GW33-02	SR-GW35-02	SR-GW43-02	SR-GW50-02	SR-GW53-02
DEPTH INTERVAL (FT.): 1	15.0	19.0	15.0	5.0	34.0	5.0	3.0
DEPTH 2	25.0	29.0	25.0	15.0	44.0	10.0	8.0
DATE SAMPLED	11/29/88	11/17/88	11/15/88	11/15/88	11/30/88	11/28/88	11/28/88
HEXACHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PENTACHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
PHENANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	18.000	53.000
ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-BUTYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	18.000
BUTYL BENZYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U	19.000 R	20.000 R	20.000 U	20.000 U	20.000 U	20.000 U
BENZO[a]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-ETHYLHEXYL]PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	14.000 U	31.000 U
CHRYSENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-OCTYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[b]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[k]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[a]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIBENZO[A,H]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TOTAL ALKANES**	515.000	119.000	49.000	2434.000	0.000 NA	1734.000	2208.000
NUMBER OF TICS	25	7	23	26	0	20	20
TOTAL TIC CONCENTRATION**	452.000	37.000	1094.000	586.000	0.000 NA	1496.000	3895.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT

N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID's WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 4

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW53-02DC	SR-GW54-02	SR-GW55-02	SR-GW63-02	SR-GW65-02
DEPTH INTERVAL (FT.): 1	3.0	2.5	5.0	10.0	4.5
DEPTH 2	8.0	7.5	10.0	20.0	14.5
DATE SAMPLED	11/28/88	12/02/88	11/18/88	11/18/88	11/30/88
PHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
BIS(2-CHLOROETHYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-CHLOROPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
1,3-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,4-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZYL ALCOHOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,2-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHYLPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
BIS(2-CHLOROISOPROPYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-METHYLPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLORETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NITROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ISOPHORONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
2,4-DIMETHYLPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
BENZOIC ACID	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
BIS(2-CHLOROETHOXY) METHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DICHLOROPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NAPHTHALENE	150.000	32.000 N	10.000 U	10.000 U	10.000 U
4-CHLOROANILINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROBUTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
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 AND THE INSTRUMENT DETECTION LIMIT
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 4 (CONT.)

SAMPLE ID	BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)				
	SR-GW53-02DC	SR-GW54-02	SR-GW55-02	SR-GW63-02	SR-GW65-02
DEPTH INTERVAL (FT.): 1	3.0	2.5	5.0	10.0	4.5
DEPTH 2	8.0	7.5	10.0	20.0	14.5
DATE SAMPLED	11/28/88	12/02/88	11/18/88	11/18/88	11/30/88
4-CHLORO-3-METHYLPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
2-METNAPHTHALENE	110.000	100.000	89.000	10.000 U	10.000 U
HEXACYCLOPENTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U	10.000 U	10.000 R	10.000 U	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
2-CHLORONAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIMETHYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACENAPHTHYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ACENAPHTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROPHENOL	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
4-NITROPHENOL	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
DIBENZOFURAN	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,6-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIETHYLPHTHALATE	8.000 J	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL, NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION
GROUNDWATER SAMPLES

DATE: 05/15/89
PAGE 4 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-GW53-02DC	SR-GW54-02	SR-GW55-02	SR-GW63-02	SR-GW65-02
DEPTH INTERVAL (FT.): 1	3.0	2.5	5.0	10.0	4.5
DEPTH 2	8.0	7.5	10.0	20.0	14.5
DATE SAMPLED	11/28/88	12/02/88	11/18/88	11/18/88	11/30/88
HEXACHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PENTACHLOROPHENOL	50.000 U	50.000 U	48.000 R	50.000 U	50.000 U
PHENANTHRENE	10.000	25.000	10.000 U	10.000 U	10.000 U
ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-BUTYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BUTYL BENZYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U	20.000 U	20.000 U	19.000 R	20.000 U
BENZO[a]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS(2-ETHYLHEXYL)PHTHALATE	12.000	10.000 U	13.000 U	10.000 U	10.000 U
CHRYSENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DI-n-OCTYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[b]FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[k]FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[a]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIBENZO[A,H]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TOTAL ALKANES**	0.000 ND	2618.000	297.000	0.000 ND	389.000
NUMBER OF TICS	26	21	22	3	19
TOTAL TIC CONCENTRATION**	1983.000	4317.000	745.000	8.000	395.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89

PAGE 1

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-MH01-01	SR-SW49-01	SR-SW50-01	SR-SW50-01D	SR-SW51-01	SR-SW52-01	SR-SW53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DATE SAMPLED	11/29/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88
PHENOL	15.000	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
BIS(2-CHLOROETHYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-CHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
1,3-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,4-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZYL ALCOHOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
1,2-DICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-METHYLPHENOL	15.000	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
BIS(2-CHLOROISOPROPYL) ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROETHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NITROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ISOPHORONE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
2,4-DIMETHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
BENZOIC ACID	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
BIS(2-CHLOROETHOXY) METHANE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
NAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROANILINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACHLOROBUTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89

PAGE 1 (CONT.)

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-MH01-01	SR-SW49-01	SR-SW50-01	SR-SW50-01D	SR-SW51-01	SR-SW52-01	SR-SW53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DATE SAMPLED	11/29/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88
4-CHLORO-3-METHYLPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
2-METNAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
HEXACLYCLOPENTADIENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	11.000 R	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
2-CHLORONAPHTHALENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
DIMETHYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ACENAPHTHYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
ACENAPHTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
4-NITROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
DIBENZOFURAN	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,4-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
2,6-DINITROTOLUENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIETHYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-NITROANILINE	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION

DATE: 04/04/89
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SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-MH01-01	SR-SW49-01	SR-SW50-01	SR-SW50-01D	SR-SW51-01	SR-SW52-01	SR-SW53-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPTH 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DATE SAMPLED	11/29/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88	10/31/88
HEXACHLOROBENZENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PENTACHLOROPHENOL	50.000 U	50.000 U	50.000 U	50.000 U	50.000 U	54.000 R	50.000 U
PHENANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
D1-n-BUTYLPHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
FLUORANTHRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BUTYL BENZYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U	20.000 U	20.000 U	20.000 U	20.000 U	20.000 U	20.000 U
BENZO[a]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BIS[2-ETHYLNEXYL]PHTHALATE	10.000 U	10.000 U	10.000 U	6.000 J	10.000 U	10.000 U	10.000 U
CHRYSENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
D1-n-OCTYL PHTHALATE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[b]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[k]FLUORANTHENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[a]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
DIBENZO[A,H]ANTHRACENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U	10.000 U
TOTAL ALKANES**	38.000	68.000	24.000	63.000	41.490	91.000	0.000 ND
NUMBER OF TICS	12	1	1	1	0	4	0
TOTAL TIC CONCENTRATION**	272.000	15.000	11.000	13.000	0.000 NA	58.000	0.000 ND

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IId REMEDIAL INVESTIGATION

DATE: 04/04/89
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SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER
 BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID SR-SW54-01
 DEPTH INTERVAL (FT.): 1 0.0
 DEPTH 2 0.0
 DATE SAMPLED 11/01/88

PHENOL	10.000 U
BIS(2-CHLOROETHYL) ETHER	10.000 U
2-CHLOROPHENOL	10.000 U
1,3-DICHLOROBENZENE	10.000 U
1,4-DICHLOROBENZENE	10.000 U
BENZYL ALCOHOL	10.000 U
1,2-DICHLOROBENZENE	10.000 U
2-METHYLPHENOL	10.000 U
BIS(2-CHLOROISOPROPYL) ETHER	10.000 U
4-METHYLPHENOL	10.000 U
N-NITROSO-DIPROPYLAMINE	10.000 U
HEXACHLORETHANE	10.000 U
NITROBENZENE	10.000 U
ISOPHORONE	10.000 U
2-NITROPHENOL	10.000 U
2,4-DIMETHYLPHENOL	10.000 U
BENZOIC ACID	50.000 U
BIS(2-CHLOROETHOXY) METHANE	10.000 U
2,4-DICHLOROPHENOL	10.000 U
2,2,4-TRICHLOROBENZENE	10.000 U
NAPHTHALENE	10.000 U
4-CHLOROANILINE	10.000 U
HEXACHLOROBUTADIENE	10.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
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 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89
PAGE 2 (CONT.)

SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE ID	SR-SW54-01
DEPTH INTERVAL (FT.): 1	0.0
DEPTH 2	0.0
DATE SAMPLED	11/01/88

4-CHLORO-3-METHYLPHENOL	10.000 U
2-METHNAPHTHALENE	10.000 U
HEXACHLOROCYCLOPENTADIENE	10.000 U
2,4,6-TRICHLOROPHENOL	10.000 U
2,4,5-TRICHLOROPHENOL	50.000 U
2-CHLORONAPHTHALENE	10.000 U
2-NITROANILINE	50.000 U
DIMETHYL PHTHALATE	10.000 U
ACENAPHTHYLENE	10.000 U
3-NITROANILINE	50.000 U
ACENAPHTHENE	10.000 U
2,4-DINITROPHENOL	50.000 U
4-NITROPHENOL	50.000 U
DIBENZOFURAN	10.000 U
2,4-DINITROTOLUENE	10.000 U
2,6-DINITROTOLUENE	10.000 U
DIETHYLPHTHALATE	10.000 U
4-CHLOROPHENYL PHENYL ETHER	10.000 U
FLUORENE	10.000 U
4-NITROANILINE	50.000 U
4,6-DINITRO-2-METHYLPHENOL	50.000 U
N-NITROSODIPHENYLAMINE	10.000 U
4-BROMOPHENYL PHENYL ETHER	10.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
- ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89
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SURFACE WATER SAMPLES FROM REFINERY DRAINAGE SWALE, OUTFALL, SEEPS AND SEWER
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/L)

SAMPLE 10	SR-SW54-01
DEPTH INTERVAL (FT.): 1	0.0
DEPTH 2	0.0
DATE SAMPLED	11/01/88

HEXACHLOROBENZENE	10.000 U
PENTACHLOROPHENOL	50.000 U
PHENANTHRENE	10.000 U
ANTHRACENE	10.000 U
DI-n-BUTYLPHthalate	10.000 U
FLUORANTHRENE	10.000 U
PYRENE	10.000 U
BUTYL BENZYL PHTHALATE	10.000 U
3,3-DICHLOROBENZIDINE	20.000 U
BENZO[a]ANTHRACENE	10.000 U
BIS(2-ETHYLHEXYL)PHTHALATE	10.000 U
CHRYSENE	10.000 U
DI-n-OCTYL PHTHALATE	10.000 U
BENZO[b]FLUORANTHENE	10.000 U
BENZO[k]FLUORANTHENE	10.000 U
BENZO[e]PYRENE	10.000 U
INDENO[1,2,3-CD]PYRENE	10.000 U
DIBENZO[A,N]ANTHRACENE	10.000 U
BENZO[G,H,I]PERYLENE	10.000 U
TOTAL ALKANES**	0.000 ND
NUMBER OF TICS	0
TOTAL TIC CONCENTRATION**	0.000 ND

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CROL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
- ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

Appendix A

Phase IIB Analytical Data

- **BNAs (SOLID SAMPLES: RIVER SEDIMENTS, DRAINAGE SWALE SEDIMENTS, SUBSURFACE SOILS, TEST PITS)**

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 GENESEE RIVER SEDIMENT SAMPLES

DATE: 04/04/89

PAGE 1

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
PHENOL	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROETHYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROISOPROPYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLORETHANE	330.000 U	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U	1600.000 U
BIS(2-CHLOROETHOXY) METHANE	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

D - DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT

N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IIB REMEDIAL INVESTIGATION
 GENESEE RIVER SEDIMENT SAMPLES

DATE: 04/04/89
 PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)				
SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
2-METNAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U
HEXACLYCLOPENTADIENE	330.000 U	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID's WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89

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GENESEE RIVER SEDIMENT SAMPLES

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-RS15-01	SR-RS16-01	SR-RS16-01D	SR-RS17-01
DEPTH INTERVAL (FT.): 1	0.0	0.0	0.0	0.0
DEPTH 2	0.5	0.5	0.5	0.5
DATE SAMPLED	10/28/88	10/28/88	10/28/88	10/28/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	330.000 U	330.000 U	330.000 U	330.000 U
ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-BUTYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
FLUORANTHRENE	330.000 U	330.000 U	330.000 U	330.000 U
PYRENE	330.000 U	330.000 U	330.000 U	330.000 U
BUTYL BENZYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	660.000 U	660.000 U
BENZO[a]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U
BIS[2-ETHYLHEXYL]PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
CHRYSENE	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-OCTYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[b]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[k]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[a]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U
INDENO[1,2,3-CD]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U
DIBENZO[a,h]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[g,h,i]PERYLENE	330.000 U	330.000 U	330.000 U	330.000 U
TOTAL ALKANES**	0.000 ND	0.000 ND	0.000 ND	95180.000
NUMBER OF TICS	12	6	11	20
TOTAL TIC CONCENTRATION**	1180.000	2970.000	1660.000	96980.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
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 AND THE INSTRUMENT DETECTION LIMIT
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
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SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
PAGE 1

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
PHENOL	330.000 U	330.000 U	330.000 U	3.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROETHYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROISOPROPYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLORETHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
BIS(2-CHLOROETHOXY) METHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

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 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)							
SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHNAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACLCYCLOPENTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
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 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
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 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
 PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB66-01	SR-AB66-01D	SR-AB66-02	SR-AB66-03	SR-AB67-01	SR-AB67-02	SR-AB67-03
DEPTH INTERVAL (FT.): 1	0.0	0.0	2.0	8.0	0.0	2.0	8.0
DEPTH 2	0.5	0.5	4.0	10.0	0.5	4.0	10.0
DATE SAMPLED	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-BUTYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
FLUORANTHRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
PYRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BUTYL BENZYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U
BENZO[a]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS[2-ETHYLHEXYL]PHTHALATE	570.000 U	530.000 U	380.000 U	440.000 U	590.000 U	330.000 U	390.000 U
CHRYSENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-OCTYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[b]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[k]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[a]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
INDENO[1,2,3-CD]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DIBENZO[A,H]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[G,H,I]PERYLENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
TOTAL ALKANES**	0.000 ND	17140.000	5830.000	0.000 ND	2469.000	0.000 ND	570.000
NUMBER OF TICS	14	20	20	10	20	8	8
TOTAL TIC CONCENTRATION**	11580.000	25060.000	9070.000	1810.000	16830.000	1630.000	1310.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
PAGE 2

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
PHENOL	330.000 U	330.000 U	330.000 U
BIS[2-CHLOROETHYL] ETHER	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U
BIS[2-CHLOROISOPROPYL] ETHER	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U
HEXACHLOROETHANE	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U
BIS[2-CHLOROETHOXY] METHANE	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
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BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U
2-METHNAPHTHALENE	4600.000	330.000 U	330.000 U
HEXACHLOROCYCLOPENTADIENE	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	330.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION
REFINERY DRAINAGE SWALE SEDIMENTS

DATE: 04/04/89
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BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB68-01	SR-AB68-02	SR-AB68-03
DEPTH INTERVAL (FT.): 1	0.0	2.0	8.0
DEPTH 2	0.5	4.0	10.0
DATE SAMPLED	11/01/88	11/01/88	11/01/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	1800.000 J	330.000 U	330.000 U
ANTHRACENE	330.000 U	330.000 U	330.000 U
DI-n-BUTYLPHTHALATE	330.000 U	330.000 U	330.000 U
FLUORANTHRENE	330.000 U	330.000 U	330.000 U
PYRENE	330.000 U	330.000 U	330.000 U
BUTYL BENZYL PHTHALATE	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	660.000 U
BENZO(a)ANTHRACENE	330.000 U	330.000 U	330.000 U
BIS(2-ETHYLHEXYL)PHTHALATE	330.000 U	670.000	480.000
CHRYSENE	330.000 U	330.000 U	330.000 U
DI-n-OCTYL PHTHALATE	330.000 U	330.000 U	330.000 U
BENZO(b)FLUORANTHENE	330.000 U	330.000 U	330.000 U
BENZO(k)FLUORANTHENE	330.000 U	330.000 U	330.000 U
BENZO(a)PYRENE	330.000 U	330.000 U	330.000 U
INDENO(1,2,3-CD)PYRENE	330.000 U	330.000 U	330.000 U
DIBENZO(A,H)ANTHRACENE	330.000 U	330.000 U	330.000 U
BENZO(G,H,I)PERYLENE	330.000 U	330.000 U	330.000 U
TOTAL ALKANES**	20315.000	0.000 ND	0.000 ND
NUMBER OF TICS	24	19	8
TOTAL TIC CONCENTRATION**	218100.000	14730.000	3860.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE 11b REMEDIAL INVESTIGATION
 REFINERY AUGER BORINGS - SUBSURFACE SOILS
 BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

DATE: 04/04/89
 PAGE 1

SAMPLE ID	SR-AB101-01	SR-AB93-01	SR-AB93-02
DEPTH INTERVAL (FT.): 1	7.0	0.0	8.0
DEPTH 2	9.0	0.5	10.0
DATE SAMPLED	11/14/88	11/03/88	11/03/88
PHENOL	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROETHYL) ETHER	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROISOPROPYL) ETHER	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U
HEXACHLOROETHANE	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U
BIS(2-CHLOROETHOXY) METHANE	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

D - DETECTED AT CONCENTRATION INDICATED

B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK

O - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION

E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION

J - VALUE REPORTED IS ESTIMATED

M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT

N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL

NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)

S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION

U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CROL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.

X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM

* - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS

** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89

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REFINERY AUGER BORINGS - SUBSURFACE SOILS

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB101-01	SR-AB93-01	SR-AB93-02
DEPTH INTERVAL (FT.): 1	7.0	0.0	8.0
DEPTH 2	9.0	0.5	10.0
DATE SAMPLED	11/14/88	11/03/88	11/03/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U
2-METHYLNAPHTHALENE	330.000 U	330.000 U	330.000 U
HEXACHLOROCYCLOPENTADIENE	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	330.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION
REFINERY AUGER BORINGS - SUBSURFACE SOILS

DATE: 04/04/89
PAGE 1 (CONT.)

BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-AB101-01	SR-AB93-01	SR-AB93-02
DEPTH INTERVAL (FT.): 1	7.0	0.0	8.0
DEPTH 2	9.0	0.5	10.0
DATE SAMPLED	11/14/88	11/03/88	11/03/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	330.000 U	3000.000	330.000 U
ANTHRACENE	330.000 U	220.000 J	330.000 U
D1-n-BUTYLPHthalate	330.000 U	330.000 U	330.000 U
FLUORANTHRENE	330.000 U	5700.000	330.000 U
PYRENE	330.000 U	4800.000	330.000 U
BUTYL BENZYL PHthalate	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	660.000 U
BENZO[a]ANTHRACENE	330.000 U	2300.000	330.000 U
BIS[2-ETHYLHEXYL]PHthalate	330.000 U	250.000 J	130.000 J
CHRYSENE	330.000 U	2600.000	330.000 U
D1-n-OCTYL PHthalate	330.000 U	330.000 U	330.000 U
BENZO[b]FLUORANTHENE	330.000 U	4700.000	330.000 U
BENZO[k]FLUORANTHENE	330.000 U	330.000 U	330.000 U
BENZO[a]PYRENE	330.000 U	2300.000	330.000 U
INDENO[1,2,3-CD]PYRENE	330.000 U	1600.000	330.000 U
DIBENZO[A,H]ANTHRACENE	330.000 U	330.000 U	330.000 U
BENZO[G,H,I]PERYLENE	330.000 U	1400.000	330.000 U
TOTAL ALKANES**	13640.000	9700.000	0.000 ND
NUMBER OF TICS	30	12	10
TOTAL TIC CONCENTRATION**	40830.000	28330.000	8210.000

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
- S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CROL, NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
- X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
- * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
- ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED

NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIb REMEDIAL INVESTIGATION

DATE: 04/04/89
PAGE 1

TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-01
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
PHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROETHYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROISOPROPYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLORETHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
BIS(2-CHLOROETHOXY) METHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
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 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89
PAGE 1 (CONT.)

TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-01
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHNAPHTHALENE	330.000 U	330.000 U	13000.000 JX	37000.000	330.000 U	330.000 U	330.000 U
HEXACLCYCLOPENTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	870.000 U	330.000 U	13000.000 U	330.000 U	400.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
AND THE INSTRUMENT DETECTION LIMIT
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
- NA - COMPOUND WAS NOT ANALYZED FOR

- R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 - S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 - U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 - X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE 11b REMEDIAL INVESTIGATION

DATE: 04/04/89
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TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-TP01-01	SR-TP01-04	SR-TP02-01	SR-TP02-04	SR-TP34-02	SR-TP34-04	SR-TP35-01
DEPTH INTERVAL (FT.): 1	0.0	3.0	0.0	3.0	0.5	1.0	0.5
DEPTH 2	2.0	3.0	2.0	3.0	0.5	1.0	0.5
DATE SAMPLED	10/25/88	10/25/88	10/26/88	10/26/88	11/16/88	11/16/88	11/17/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	330.000 U	330.000 U	330.000 U	22000.000 J	330.000 U	370.000 J	330.000 U
ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
D1-n-BUTYLPHTHALATE	130.000 J	330.000 U	330.000 U	330.000 U	330.000 U	880.000	330.000 U
FLUORANTHRENE	330.000 U	330.000 U	330.000 U	33000.000	330.000 U	320.000 J	330.000 U
PYRENE	330.000 U	330.000 U	330.000 U	30000.000	330.000 U	460.000	330.000 U
BUTYL BENZYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U	660.000 U
BENZO[a]ANTHRACENE	330.000 U	330.000 U	330.000 U	17000.000 J	330.000 U	330.000 U	330.000 U
BIS[2-ETHYLHEXYL]PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	570.000 U	1800.000 U	400.000 U
CHRYSENE	330.000 U	330.000 U	330.000 U	25000.000	330.000 U	480.000	330.000 U
D1-n-OCTYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[b]FLUORANTHRENE	330.000 U	330.000 U	330.000 U	16000.000 J	330.000 U	420.000	330.000 U
BENZO[k]FLUORANTHRENE	330.000 U	330.000 U	330.000 U	22000.000	330.000 U	380.000 J	330.000 U
BENZO[a]PYRENE	330.000 U	440.000	330.000 U	19000.000 J	250.000 J	290.000 J	330.000 U
INDENO[1,2,3-CD]PYRENE	330.000 U	330.000 U	330.000 U	13000.000 J	330.000 U	330.000 U	330.000 U
DIBENZO[A,H]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[G,H,I]PERYLENE	330.000 U	330.000 U	330.000 U	12000.000 J	330.000 U	330.000 U	330.000 U
TOTAL ALKANES**	4990.000	8840.000	614600.000	1416260.000	8180.000	27590.000	2440.000
NUMBER OF TICS	24	26	20	20	23	26	20
TOTAL TIC CONCENTRATION**	7240.000	12310.000	694000.000	2434000.000	9820.000	33370.000	5210.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89

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TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-TP35-04	SR-TP35-04D	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
PHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROETHYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-CHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,3-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,4-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZYL ALCOHOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
1,2-DICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BIS(2-CHLOROISOPROPYL) ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
N-NITROSO-DIPROPYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLORETHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NITROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ISOPHORONE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DIMETHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZOIC ACID	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
BIS(2-CHLOROETHOXY) METHANE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,2,4-TRICHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
NAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROANILINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
HEXACHLOROBUTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

- DETECTED AT CONCENTRATION INDICATED
- B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
- D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
- E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
- J - VALUE REPORTED IS ESTIMATED
- M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
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 - * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 - ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
- NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
 PHASE IIb REMEDIAL INVESTIGATION
 TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
 BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

DATE: 04/04/89
 PAGE 2 (CONT.)

SAMPLE ID	SR-TP35-04	SR-TP35-04D	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
4-CHLORO-3-METHYLPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-METHNAPHTHALENE	380.000 J	370.000 J	330.000 U	330.000 U	370.000 U	330.000 U
HEXACLCCYCLOPENTADIENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,6-TRICHLOROPHENOL	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4,5-TRICHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
2-CHLORONAPHTHALENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIMETHYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
ACENAPHTHYLENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
ACENAPHTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4-NITROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
DIBENZOFURAN	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,4-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
2,6-DINITROTOLUENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DIETHYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-CHLOROPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
FLUORENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-NITROANILINE	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
4,6-DINITRO-2-METHYLPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
N-NITROSODIPHENYLAMINE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
4-BROMOPHENYL PHENYL ETHER	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 NA - COMPOUND WAS NOT ANALYZED FOR

R - VALUE IS UNUSABLE (COMPOUND MAY OR MAY NOT BE PRESENT)
 S - VALUE DETERMINED BY METHOD OF STANDARD ADDITION
 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CROL,
 NOT THE ACTUAL DETECTION LIMIT. THE ACTUAL DETECTION LIMIT MAY BE HIGHER OR LOWER.
 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

SINCLAIR REFINERY SITE
PHASE IIB REMEDIAL INVESTIGATION

DATE: 04/04/89
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TEST PIT SAMPLES - SURFACE AND SUBSURFACE SOILS
BASE NEUTRAL / ACID EXTRACTABLE ANALYSES (UG/KG)

SAMPLE ID	SR-TP35-04	SR-TP35-04D	SR-TP36-01	SR-TP36-04	SR-TP37-02	SR-TP37-04
DEPTH INTERVAL (FT.): 1	0.5	0.5	0.5	0.5	0.5	0.5
DEPTH 2	0.5	0.5	0.5	0.5	0.5	1.0
DATE SAMPLED	11/17/88	11/17/88	11/17/88	11/17/88	11/18/88	11/18/88
HEXACHLOROBENZENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
PENTACHLOROPHENOL	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U	1600.000 U
PHENANTHRENE	320.000 J	290.000 J	330.000 U	330.000 U	270.000 J	330.000 U
ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-BUTYLPHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
FLUORANTHRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
PYRENE	360.000 J	330.000 J	330.000 U	330.000 U	440.000	330.000 U
BUTYL BENZYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
3,3-DICHLOROBENZIDINE	660.000 U	660.000 U	740.000 R	760.000 R	660.000 U	730.000 R
BENZO[a]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	740.000 R	330.000 U
BIS(2-ETHYLHEXYL)PHTHALATE	480.000 U	820.000 U	330.000 U	330.000 U	330.000 U	370.000 U
CHRYSENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DI-n-OCTYL PHTHALATE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[b]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[k]FLUORANTHENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[a]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U	720.000	330.000 U
INDENO[1,2,3-CD]PYRENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
DIBENZO[A,H]ANTHRACENE	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U	330.000 U
BENZO[G,H,I]PERYLENE	330.000 U	330.000 U	330.000 U	330.000 U	590.000	330.000 U
TOTAL ALKANES**	1260.000	640.000	5560.000	2810.000	0.000 ND	4980.000
NUMBER OF TICS	25	19	20	27	27	27
TOTAL TIC CONCENTRATION**	5900.000	4570.000	38170.000	41570.000	0.000 NA	33270.000

EXPLANATION OF CODES:

 - DETECTED AT CONCENTRATION INDICATED
 B - ANALYTE WAS DETECTED IN THE LABORATORY BLANK
 D - COMPOUND WAS ANALYZED AFTER SAMPLE DILUTION
 E - VALUE IS ESTIMATED, SAMPLE ANALYZED BY SERIAL DILUTION
 J - VALUE REPORTED IS ESTIMATED
 M - COMPOUND WAS DETECTED BETWEEN THE CONTRACT LIMIT
 AND THE INSTRUMENT DETECTION LIMIT
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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 U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. VALUE REPORTED IS THE CRDL,
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 X,T - COMPOUND PRESENT BUT NOT CONFIRMED BY MASS SPECTRUM
 * - DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS
 ** - TENTATIVELY IDENTIFIED COMPOUND OR GROUP; ALL VALUES ARE ESTIMATED
 NOTE: SAMPLE ID'S WITH 'D' ARE DUPLICATES; WITH 'DC' ARE DECANTED

Appendix A

Phase IIB Analytical Data

- **OIL & GREASE (SOLID SAMPLES)**

OIL AND GREASE ANALYSES

SAMPLE NUMBER	OIL AND GREASE (mg/kg)
AB42-01	385J
AB42-01D	63J
AB42-02	U
AB42-03	227J
AB43-01	U
AB43-02	188J
AB43-03	U
AB44-01	U
AB44-02	641J
AB44-03	122J
AB101-01	641J
TP01-01	2,040
TP01-02	3,120
TP01-03	562R
TP01-04	389R
TP02-01	11,400
TP02-02	9,900
TP02-03	3,580
TP02-04	62,000
TP34-01	3,890J
TP34-02	374J
TP34-03	3,140J
TP34-04	1,080J
TP35-01	537J
TP35-02	8,440J
TP35-03	7,550J
TP35-03D	8,400J
TP35-04	298J
TP35-04D	313J
TP36-01	793J
TP36-02	1,620J
TP36-03	32,400J
TP36-04	1,400J
TP37-01	4,090J
TP37-02	2,770J
TP37-03	2,150J
TP37-04	142J

J - ESTIMATED
U - NOT DETECTED
R - REJECTED

Appendix B

Phase I and IIA Analytical Data

PHASE I

- LIQUID SAMPLES (GROUNDWATER, SURFACE WATER)
- SOLID SAMPLES (SURFACE SOILS, SUBSURFACE SOILS, OTHERS)
- ASBESTOS SAMPLES

PHASE IIA

- LIQUID SAMPLES (GROUNDWATER, SURFACE WATER)
- SOLID SAMPLES (SURFACE SOILS, SUBSURFACE SOILS, OTHERS)
- OFF-SITE TANK FARM (GROUNDWATER)
- OFF-SITE TANK FARM (SURFACE SOILS, SUBSURFACE SOILS)

NOTE: This appendix presents the Phase I and Phase IIA refinery area analytical data obtained from NYSDEC files. Portions of these data have not been validated. The tables presenting Phase I data have been taken directly from the draft Phase I RI report. Phase IIA data tables are dumps of computer disks of the Phase IIA data prepared by SMC Martin prior to termination of their effort and finalization of their Phase II report.

Appendix B

Phase I and IIA Analytical Data

PHASE I

- **LIQUID SAMPLES (GROUNDWATER, SURFACE WATER)**

PHASE I
ANALYTICAL DATA

GEOCHEMICAL ANALYSES
GROUND-WATER SAMPLES FROM MONITORING WELLS

Monitoring Well:	MW-1			MW-2			MW-3			MW-4		
Sampling Round:	GW1	GW2-1	Avg.	GW2	GW2-2	Avg.	GW3	GW2-3	Avg.	GW4	GW2-4	Avg.
VOLATILE ORGANICS (ppb)												
benzene	ND	ND		BDL(4.4)	ND	<2.2	BDL(4.4)	ND	<2.2	ND	ND	
chlorobenzene	ND	ND		ND	ND		ND	ND		ND	ND	
chloroform	ND	ND		ND	ND		ND	ND		ND	ND	
1,1-dichloroethene	ND	ND		ND	ND		ND	ND		ND	ND	
1,2-dichloroethene	ND	ND		ND	ND		ND	ND		ND	ND	
1,1-dichloroethylene	ND	ND		ND	ND		ND	ND		ND	ND	
trans-1,2-dichloroethylene	ND	ND		ND	ND		ND	ND		ND	ND	
1,3-dichloropropene	ND	ND		BDL(5.0)	ND	<2.5	ND	ND		ND	ND	
ethylbenzene	ND	ND		ND	ND		ND	ND		ND	ND	
1,1,2,2-tetrachloroethane	ND	ND		12	ND	6.0	ND	ND		ND	ND	
tetrachloroethylene	ND	ND		ND	ND		ND	ND		ND	ND	
toluene	ND	ND		ND	ND		ND	ND		ND	ND	
1,1,1-trichloroethene	ND	ND		ND	ND		ND	ND		ND	ND	
1,1,2-trichloroethane	ND	ND		ND	ND		ND	ND		ND	ND	
trichloroethylene	ND	ND		ND	ND		ND	ND		ND	ND	
vinyl chloride	ND	ND		ND	ND		ND	ND		ND	ND	
Total Volatile Organics	ND	ND		12	ND	6.0	<4.4	ND	<2.2	ND	ND	ND
BASE/NEUTRAL EXTRACTABLES (ppb)												
fluoranthene	ND	ND		ND	ND		ND	ND		ND	ND	
fluorene	ND	ND		ND	ND		ND	ND		ND	ND	
naphthalene	ND	ND		ND	ND		ND	ND		ND	ND	
phenanthrene	ND	ND		ND	ND		ND	ND		ND	ND	
ACID EXTRACTABLES (ppb)												
2,4-dimethylphenol	ND	ND		ND	ND		BDL(2.7)	ND	1.35	ND	ND	
phenol	ND	ND		ND	ND		ND	ND		ND	ND	
CYANIDE AND PHENOLICS (ppb)												
Total cyanide	<10	<10	<10	<10	<10	<10	<10	<10		BDL(10)	BDL(10)	
Total recoverable phenolics	<10	<10	<10	16	<10	8	10	<10	5	<10	<10	<10
METALS (ppb)												
Total arsenic	<5	<5	<5	7	<5	3.5	7	15	11	<5	<5	<5
Total cadmium	<6	<5	<5.5	<6	<5	<5.5	<5	<5	<5	<5	<5	<5
Total chromium	<6	<5	<5.5	<6	<6	3	<5	<5	<5	<5	<5	<5
Total copper	<9	<5	<7	<9	9	4.5	<5	8	4	5	21	13
Total nickel	18	<5	9	17	6	11.5	7	12	9.5	<5	<5	<5
Total selenium	<5	43	21.5	<5	<5	<5	<5	21	10.5	<5	<5	<5
Total silver	<5	<5	<5	8	<5	4	<5	<5	<5	<5	40	20
Total zinc	10,900	3,800	7,350	3,900	460	2,180	4,990	2,300	3,645	5,510	2,700	4,105

GEOCHEMICAL ANALYSES
GROUND-WATER SAMPLES FROM MONITORING WELLS
(continued)

Monitoring Well:	MW-1			MW-2			MW-3			MW-4		
Sampling Round:	GW1	GW2-1	Avg.	GW2	GW2-2	Avg.	GW3	GW2-3	Avg.	GW4	GW2-4	Avg.
PESTICIDES (ppb)												
α-BHC	ND	ND		ND	ND		ND	ND		ND	ND	
γ-BHC	ND	ND		ND	ND		ND	ND		ND	ND	
chlordane	ND	ND		<2	ND	<1	ND	ND		ND	ND	
heptachlor	ND	ND		ND	ND		ND	ND		ND	ND	
toxaphene	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCBs (ppb)												
PCB-1016	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1221	ND	ND		<4	ND	<2	<2	ND	<1	<2	ND	<1
PCB-1232	ND	ND		<4	ND	<2	<2	ND	<1	<2	ND	<1
PCB-1242	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1248	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1254	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1260	ND	ND		<2	ND	<1	ND	ND		ND	ND	
NONPRIORITY VOLATILE ORGANICS (ppb)												
cyclohexane	ND	ND		ND	ND		ND	ND		ND	ND	
methylcyclohexane	ND	ND		BDL(10)	ND	<5	ND	ND		ND	ND	
4-methyl-1-pentanol	ND	ND		ND	ND		ND	ND		ND	ND	
2-methyl-1-pentene	ND	ND		ND	ND		ND	ND		ND	ND	
3,4,4-trimethyl-4-pentene	ND	ND		ND	ND		ND	ND		ND	ND	
m + p-xylene	ND	ND		ND	ND		ND	ND		ND	ND	
o-xylene	ND	ND		ND	ND		ND	ND		ND	ND	
Total Nonpriority Volatile Organics	ND	ND		<10	ND	<5	ND	ND		ND	ND	
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)												
docosane	ND	ND		ND	ND		ND	ND		BDL(5)	ND	<2.5
eicosane	ND	ND		ND	ND		ND	ND		5	ND	2.5
heptadecane	ND	ND		ND	ND		ND	ND		BDL(5.0)	BDL(5)	<5
hexadecane	ND	ND		ND	ND		ND	ND		BDL(5)	ND	<2.5
octadecane	ND	ND		ND	ND		ND	ND		BDL(5.0)	BDL(5)	<5
pentadecane	ND	ND		ND	ND		ND	ND		BDL(5)	ND	<2.5
1,3,5-trimethylbenzene	ND	ND		ND	ND		35	ND	17.5	ND	ND	

Monitoring Well:

MW-5

Sampling Round:

GW5

GW2-5

Avg.

GW6

VOLATILE ORGANICS (ppb)

benzene	4.5	BDL(4.4)	2.25	ND
chlorobenzene	12	ND	6.0	ND
chloroform	ND	ND		ND
1,1-dichloroethane	ND	ND		ND
1,2-dichloroethane	ND	ND		ND
1,1-dichloroethylene	ND	ND		ND
trans-1,2-dichloroethylene	14	BDL(1.6)	7	ND
1,3-dichloropropene	ND	ND		ND
ethylbenzene	BDL(7.2)	ND	<3.6	ND
1,1,2,2-tetrachloroethane	ND	ND		ND
tetrachloroethylene	ND	ND		ND
toluene	BDL(10)	ND	5.0	ND
1,1,1-trichloroethane	ND	ND		ND
1,1,2-trichloroethane	ND	ND		ND
trichloroethylene	ND	ND		ND
vinyl chloride	BDL(10)	ND	<5.0	ND
Total Volatile Organics	30.5	<6.0	15.25	ND

BASE/NEUTRAL EXTRACTABLES (ppb)

fluoranthene	2.3	2.3	2.3	ND
fluorene	BDL(1.9)	ND	<0.95	ND
naphthalene	ND	ND		ND
phenanthrene	BDL(5.4)	ND	<2.7	ND

ACID EXTRACTABLES (ppb)

2,4-dimethylphenol	ND	ND		ND
phenol	ND	ND		ND

CYANIDE AND PHENOLICS (ppb)

Total cyanide	<10	<10		<10
Total recoverable phenolics	<10	<10		<10

METALS (ppb)

Total arsenic	23	30	26.5	13
Total cadmium	<5	<5	<5	<5
Total chromium	<5	<5	<5	<5
Total copper	<5	<5	<5	10
Total nickel	<5	10	5	11
Total selenium	<5	13	6.5	<5
Total silver	<5	<5	<5	<5
Total zinc	4,160	2,200	3,180	2,320

GEOCHEMICAL ANALYSES OF SAMPLES FROM MONITORING WELLS

MW-6			MW-7			MW-8	
GW2-6	Av. g.	GW7	GW2-7	Av. g.	GW8	GW2-8	Av. g.
ND		100	28	64	34	ND	27.0
ND		BDL (6.0)	ND	<3.0	BDL (6.0)	ND	3.0
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		140	ND	70
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		R	ND	4	11	ND	5.5
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		ND	ND		ND	ND	
ND		108	28	68	205	ND	102.5
ND		ND	ND		ND	ND	
BDL (1.9)	<0.95	BDL (1.9)	ND	<0.95	3.4	ND	1.7
ND		2.2	ND	1.1	150	ND	75
ND		BDL (5.4)	ND	<2.7	BDL (5.4)	ND	<2.7
ND		ND	ND		32	ND	16
ND		ND	ND		ND	ND	
<10		<10	<10		<10	<10	
<10		<10	<10		<10	<10	
18	15.5	7	12	9.5	24	29	26.5
<5	<5	7	<5	3.5	<6	<5	<5.5
<5	<5	<6	10	5	<6	<5	<5.5
<5	5	11	6	R.5	12	8	10
<5	5.5	16	<5	8	12	<5	6
6	3	<5	<5	<5	<5	<5	<5
<6	3	<5	<5	<5	<5	<5	<5
1,100	1,710	7,180	1,500	4,340	1,160	340	750

GEOCHEMICAL ANALYSES
GROUND WATER SAMPLES FROM MONITORING WELLS
(continued)

Monitoring Well:	MW-5			MW-6			MW-7			MW-8		
Sampling Round:	GW5	GW2-5	Avg.	GW6	GW2-6	Avg.	GW7	GW2-7	Avg.	GW8	GW2-8	Avg.
PESTICIDES (ppb)												
α-BHC	ND	ND		ND	ND		ND	ND		ND	ND	
γ-BHC	ND	ND		ND	ND		ND	ND		0.43	ND	0.22
chlordane	ND	ND		<2	ND	<1	ND	ND		ND	ND	
heptachlor	ND	ND		ND	ND		ND	ND		ND	ND	
toxaphene	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCBs (ppb)												
PCB-1016	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1221	<2	ND	<1	<4	ND	<2	ND	ND		ND	ND	
PCB-1232	<2	ND	<1	<4	ND	<2	ND	ND		ND	ND	
PCB-1242	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1248	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1254	ND	ND		<2	ND	<1	ND	ND		ND	ND	
PCB-1260	ND	ND		<2	ND	<1	ND	ND		ND	ND	
NONPRIORITY VOLATILE ORGANICS (ppb)												
cyclohexane	26	12	19	BDL(10)	ND	<5	290	230	260	800	430	615
methylcyclohexane	100	58	79	BDL(10)	ND	<5	290	220	255	770	370	570
4-methyl-1-pentanol	BDL(10)	ND	<5	BDL(10)	ND	<5	31	26	28.5	59	37	48
methyl-1-pentene	17	ND	8.5	BDL(10)	ND	<5	290	290	290	910	410	660
3,4,4-trimethyl-4-pentene	32	35	33.5	BDL(10)	BDL(10)	<10	19	15	17	24	20	22
m + p-xylene	BDL(10)	ND	<5	ND	ND		ND	ND		36	24	30
o-xylene	BDL(10)	ND	<5	ND	ND		15	ND	7.5	2500	62	1281
Total Nonpriority Volatile Organics	175	105	140	<50	<10	<30	935	781	857.5	5308	1353	3330.5
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)												
docosane	BDL(5)	ND	<2.5	ND	ND		ND	ND		ND	ND	
eicosane	BDL(5)	18	9	ND	ND		ND	ND		ND	ND	
heptadecane	5.7	50	27.8	ND	ND		ND	ND		ND	ND	
hexadecane	ND	ND		ND	ND		ND	ND		ND	ND	
octadecane	5.2	25	15.1	ND	ND		ND	ND		ND	ND	
pentadecane	ND	32	16	ND	ND		ND	ND		ND	ND	
1,3,5-trimethylbenzene	5.0	ND	2.5	ND	ND		14	9.7	11.8	ND	ND	

Monitoring Well:	-----	MV-9
Sampling Round:	GW9	GW2-9

VOLATILE ORGANICS (ppb)

benzene	ND	130
chlorobenzene	ND	ND
chloroform	ND	ND
1,1-dichloroethane	ND	ND
1,2-dichloroethane	ND	ND
1,1-dichloroethylene	ND	ND
trans-1,2-dichloroethylene	ND	ND
1,3-dichloropropene	ND	ND
ethylbenzene	ND	BDL (7.2)
1,1,2,2-tetrachloroethane	ND	ND
tetrachloroethylene	ND	ND
toluene	ND	7.4
1,1,1-trichloroethane	ND	ND
1,1,2-trichloroethane	ND	ND
trichloroethylene	ND	ND
vinyl chloride	ND	ND
Total Volatile Organics	ND	137.4

BASE/NEUTRAL EXTRACTABLES (ppb)

fluoranthene	ND	ND
fluorene	ND	ND
naphthalene	ND	ND
phenanthrene	ND	ND

ACID EXTRACTABLES (ppb)

2,4-dimethylphenol	ND	ND
phenol	ND	ND

CYANIDE AND PHENOLICS (ppb)

Total cyanide	<10	<10
Total recoverable phenolics	14	<10

METALS (ppb)

Total arsenic	< 5	8
Total cadmium	< 5	< 5
Total chromium	< 6	< 5
Total copper	25	7
Total nickel	12	6
Total selenium	< 5	< 5
Total silver	5	< 5
Total zinc	2020	11000

GEOCHEMICAL ANALYSES
 ER SAMPLES FROM MONITORING WELLS

Avg.	NW-10		Avg.	NW-11		Avg.
	GW10	GW2-10		GW11	GW2-11	
65	700	760	730	140	51	85.5
	11	11	11	7.2	ND	3.6
	ND	ND		ND	ND	
67	67	20	43.5	BDL(4.7)	ND	(2.35
	BDL(2.8)	ND	(1.4	ND	ND	
	11	BDL(2.8)	5.5	ND	ND	
	2600	260	1430	ND	ND	
	ND	ND		ND	ND	
	44	ND	22	BDL(7.2)	24	12
	21	ND	(10.5	13	ND	6.5
	BDL(4.1)	ND	2.05	ND	ND	
3.7	81	32	56.5	19	19	19
	200	27	113.5	ND	ND	
	BDL(5.0)	BDL(5.0)	5.0	ND	ND	
	310	BDL(1.9)	155.95	ND	ND	
	330	160	245	ND	ND	
68.7	4374	1270	2822	179.2	94	126.6
	ND	ND		ND	ND	
	ND	ND		BDL(1.9)	ND	(0.95
	ND	ND		ND	ND	
	ND	ND		ND	ND	
	ND	ND		ND	ND	
	ND	ND		ND	ND	
	43	23	33	25	ND	12.5
<10	<10	<10	<10	<10	<10	<10
7	17	<10	8.5	<10	<10	<10
4	81	110	95.5	61	110	85.5
<5	<5	<5	<5	<5	10	5
<5.5	<6	<5	<5.5	<6	<5	<5.5
16	<9	<5	<7	10	5	7.5
9	9	<5	4.5	53	<5	26.5
<5	<5	<5	<5	<5	<5	<5
2.5	<5	14	7	<5	<5	<5
6510	3250	540	1895	3460	1600	2530

GEOCHEMICAL ANALYSES
GROUND-WATER SAMPLES FROM MONITORING WELLS
(continued)

Monitoring Well:	MW-9			MW-10			MW-11		
Sampling Round:	GW9	GW2-9	Avg.	GW10	GW2-10	Avg.	GW11	GW2-11	Avg.
PESTICIDES (ppb)									
α-BHC	ND	ND		ND	ND		ND	ND	
γ-BHC	ND	ND		ND	ND		ND	ND	
chlordane	ND	ND		ND	ND		ND	ND	
heptachlor	ND	ND		ND	ND		ND	ND	
toxaphene	ND	ND		ND	ND		ND	ND	
PCBs (ppb)									
PCB-1016	ND	ND		ND	ND		ND	ND	
PCB-1221	ND	ND		ND	ND		ND	ND	
PCB-1232	ND	ND		ND	ND		ND	ND	
PCB-1242	ND	ND		ND	ND		ND	ND	
PCB-1248	ND	ND		ND	ND		ND	ND	
PCB-1254	ND	ND		ND	ND		ND	ND	
PCB-1260	ND	ND		ND	ND		ND	ND	
NONPRIORITY VOLATILE ORGANICS (ppb)									
cyclohexane	BDL(100)	140	70	990	740	865	480	130	305
methylcyclohexane	ND	340	170	660	660	660	390	220	305
4-methyl-1-pentanol	BDL(10)	32	16	120	86	103	72	70	71
2-methyl-1-pentene	ND	130	65	1300	1000	1150	530	140	335
3,4,4,-trimethyl-4-pentene	BDL(10)	34	17	41	36	38.5	33	42	37.5
m + p-xylene	ND	29	14.5	130	100	115	35	14	24.5
o-xylene	ND	170	85	510	140	325	170	76	123
Total Nonpriority Volatile Organics	(120)	875	437.5	3751	2762	3256.5	1710	692	1201
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)									
docosane	ND	ND		ND	ND		ND	ND	
eicosane	ND	ND		ND	ND		ND	ND	
heptadecane	ND	64	32	ND	BDL(5)	<2.5	ND	ND	
hexadecane	ND	ND		ND	ND		ND	ND	
octadecane	ND	34	17	ND	ND		ND	ND	
pentadecane	ND	ND		ND	ND		ND	ND	
1,3,5-trimethylbenzene	ND	ND		14	6.8	10.4	ND	ND	

GEOCHEMICAL ANALYSES
WATER SAMPLES COLLECTED FROM SEEPS, POUNDS AND OUTFALLS IN THE REFINERY AREA

Sample Number:	SP-1	SP-2	SP-3	SP-4*	SP-24	SP-26	SP-28	SP-30
Sampling Location:	Outfall-1	Outfall-2	Outfall-3	Outfall-4	Seep	Seep	Pool	Pool

VOLATILE ORGANICS (ppb)

benzene	ND	BM.(4.4)	ND	ND	120	ND	ND	ND
trans-1,2-dichloroethylene	ND	ND	BM.(1.6)	ND	ND	ND	ND	ND
ethylbenzene	ND	39	ND	ND	200	ND	ND	ND
toluene	ND	BM.(6.0)	ND	ND	34	ND	ND	ND
trichloroethylene	ND	ND	2.2	ND	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppb)

acronaphthene	ND	ND	ND	ND	BM.(1.9)	BM.(1.9)	ND	ND
1,4-dichlorobenzene	ND	29	BM.(4.4)	ND	ND	ND	ND	ND
fluorene	ND	BM.(1.9)	ND	ND	2.6	BM.(1.9)	ND	ND
naphthalene	ND	2.0	ND	ND	8.8	ND	ND	ND
N-nitrosodiphenylamine	ND	4.5	ND	ND	ND	ND	ND	ND
phenanthrene	ND	BDL.(5.4)	ND	ND	BM.(5.4)	ND	ND	ND

ACID EXTRACTABLES (ppb)

2,4-dimethylphenol	ND	10	ND	ND	ND	ND	ND	ND

CYANIDES AND PHENOLICS

All compounds ND for all samples.

METALS (ppb)

Total arsenic	ND	6	13	ND	31	11	ND	12
Total beryllium	ND	4	ND	ND	ND	ND	ND	ND
Total cadmium	ND	ND	8	ND	ND	ND	ND	ND
Total chromium	11	ND	10	ND	ND	ND	ND	6
Total copper	ND	16	6	ND	ND	ND	ND	31
Total lead	ND	41	12	ND	5	ND	28	108
Total nickel	ND	21	ND	6	ND	ND	5	37
Total zinc	ND	20	11	ND	23	24	106	123

PESTICIDES (ppb)

α-BHC	ND	ND	ND	ND	0.1	ND	ND	0.03
δ-BHC	0.02	0.15	ND	0.05	ND	ND	ND	ND
γ-BHC	ND	0.05	ND	ND	0.43	ND	ND	ND
4-4'-DDE	ND	0.19	ND	ND	ND	0.03	ND	ND
4-4'-DDT	0.11	ND	0.05	ND	ND	ND	ND	ND
α-endosulfen	ND	0.14	ND	ND	ND	0.03	0.06	ND
heptachlor	0.05	ND	ND	0.04	ND	ND	ND	ND
heptachlor epoxide	ND	ND	0.03	ND	ND	ND	ND	ND

* SP-4 is located by the City of Wallisville Water Treatment Plant.

GEOCHEMICAL ANALYSES
WATER SAMPLES COLLECTED FROM SEEPS, POOLS AND OUTFALLS IN THE REFINERY AREA
(continued)

Sample Number:	SP-1	SP-2	SP-3	SP-4*	SP-24	SP-26	SP-28	SP-30
Sampling Location:	Outfall-1	Outfall-2	Outfall-3	Outfall-4	Seep	Seep	Pool	Pool

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS (ppb)

cyclohexane	ND	23	ND	ND	630	78	ND	BDL(10)
methylcyclohexane	ND	28	13	ND	460	62	ND	BDL(10)
methyl ethyl ketone	ND	BDL(20)	ND	ND	ND	ND	ND	ND
4-methyl-1-pentanol	ND	BDL(10)	ND	ND	96	16	ND	ND
2-methyl-1-pentene	ND	17	28	ND	810	100	ND	ND
3,4,4-trimethyl-4-pentene	ND	ND	ND	ND	26	14	ND	ND

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)

eicosane	ND	5.4	ND	ND	ND	ND	ND	ND
heptadecane	ND	5.4	ND	ND	ND	ND	ND	ND
hexadecane	ND	BDL(5.0)	ND	ND	ND	ND	ND	ND
octadecane	ND	9.5	ND	ND	ND	ND	ND	ND
pentadecane	ND	7.2	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	ND	18	ND	ND	85	9.6	ND	ND

* SP-4 is located by the City of Welleville Water Treatment Plant.

GEOCHEMICAL ANALYSES
WATER SAMPLES FROM GINNESSIE RIVER DURING HIGH FLOW CONDITIONS
(Storm Event May 3-5, 1984)

Sampling Station:	UPSTREAM (B-1)			MIDSTREAM (B-2)			DOWNSTREAM (B-3)		
Storm Period:	Onset	Peak	End	Onset	Peak	End	Onset	Peak	End
Date and	05/03/84	05/04/84	05/05/84	05/03/84	05/04/84	05/05/84	05/03/84	05/04/85	04/05/84
(Time) Sampled:	(1630)	(1510)	(1100)	(1620)	(1425)	(1015)	(1610)	(1450)	(1035)
Sample Number:	SW-1	SW-4	SW-9	SW-2	SW-5	SW-10	SW-3	SW-6	SW-11

VOLATILE ORGANICS (ppb)

trans-1,2-dichloroethylene	ND	ND	ND	ND	ND	ND	2.4	ND	ND

BASE/NEUTRAL EXTRACTABLES

All compounds ND for all samples.

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppb)

Total recoverable phenolics	ND	13	ND	ND	ND	20	ND	ND	34

METALS (ppb)

Total cadmium	ND	9	ND	ND	ND	8	ND	5	ND
Total copper	ND	ND	7	ND	ND	5	ND	ND	8
Total mercury	ND	2	ND	ND	ND	ND	ND	ND	ND
Total nickel	31	12	ND	ND	ND	ND	ND	ND	ND
Total silver	ND	9	8	ND	ND	ND	ND	ND	ND
Total zinc	17	10	ND	22	13	ND	13	ND	ND

PESTICIDES (ppb)

α-BHC	0.02	ND	ND	ND	ND	ND	ND	ND	ND
β-BHC	ND	0.02	ND	0.02	ND	ND	ND	ND	ND
endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	0.02
heptachlor	ND	ND	0.09	0.02	ND	0.07	ND	ND	0.17

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all samples.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES

All compounds ND for all samples.

GEOCHEMICAL ANALYSES
WATER SAMPLES FROM GENESSEE RIVER DURING LOW FLOW CONDITIONS
(All Samples Collected August 22, 1984)

Sampling Station:	L-4		L-5		L-6		L-7	
Midstream (MS) or								
Near Shore (NS):	NS	MS	NS	MS	NS	MS	NS	MS
Sample Number:	SW-14	SW-15	SW-16	SW-17	SW-18	SW-19	SW-20	SW-21

VOLATILE ORGANICS (ppb)

chlorobenzene	ND	ND	ND	ND	ND	10	ND	ND
trans-1,2-dichloroethylene	ND	ND	2.3	ND	19	ND	ND	ND
toluene	ND	ND	ND	ND	ND	ND	ND	ND
trichloroethylene	ND	ND	ND	ND	BDL(1.9)	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppb)

1,3-dichlorobenzene	ND	ND	ND	ND	ND	ND	BDL(1.9)	ND
nitrobenzene	2.3	3.0	20	8.3	ND	ND	ND	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppb)

Total Cyanide	ND	13	ND	ND	ND	ND	ND	ND

METALS (ppb)

Total arsenic	ND	ND	89	ND	ND	ND	ND	ND
Total mercury	ND	ND	ND	ND	ND	ND	2.2	ND
Total nickel	ND	ND	ND	ND	13	ND	ND	ND
Total silver	ND	ND	ND	ND	ND	ND	ND	ND
Total zinc	ND	ND	ND	ND	ND	ND	ND	ND

PESTICIDES (ppb)

a-BHC	0.01	0.01	0.01	0.02	0.01	ND	0.02	0.02
β-BHC	ND	ND	0.12	ND	0.03	ND	ND	ND
δ-BHC	0.02	ND	ND	ND	ND	ND	ND	0.03
endrin aldehyde	0.05	ND	ND	ND	ND	ND	0.06	0.01
heptachlor	ND	ND	ND	ND	ND	ND	ND	ND
heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all samples.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES

All compounds ND for all samples.

TOTAL RECOVERABLE

GEOCHEMICAL ANALYSES
WATER SAMPLES FROM GENESSEE RIVER DURING LOW FLOW CONDITIONS
(All Samples Collected August 22, 1984)

Sampling Station: _____	L-8	L-9	L-10		
Midstream (MS) or					
Near Shore (NS): _____	NS	NS	NS	NS	NS
Sample Number: _____	SW-23	SW-24	SW-25	SW-26	SW-27

VOLATILE ORGANICS (ppb)

chlorobenzene	ND	ND	ND	ND	ND
trans-1,2-dichloroethylene	ND	ND	ND	ND	ND
toluene	ND	ND	ND	ND	ND
trichloroethylene	ND	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppb)

1,3-dichlorobenzene	ND	ND	ND	ND	ND
nitrobenzene	ND	ND	ND	ND	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppb)

Total cyanide	ND	ND	ND	ND	ND

METALS (ppb)

Total arsenic	ND	ND	ND	ND	ND
Total mercury	ND	ND	ND	ND	ND
Total nickel	5	ND	ND	ND	ND
Total silver	ND	6	ND	ND	ND
Total zinc	26	9	ND	ND	ND

PESTICIDES (ppb)

α-BHC	0.2	0.01	ND	0.01	0.01
β-BHC	ND	ND	ND	ND	ND
δ-BHC	ND	0.02	ND	ND	ND
endrin aldehyde	ND	ND	ND	ND	ND
heptachlor	ND	ND	0.02	ND	ND
heptachlor epoxide	ND	0.03	0.01	0.01	ND

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all samples.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES

All compounds ND for all samples.

**TOTAL RECOVERABLE OIL
AND GREASE (ppm)**

<10	<10	<10	<10	NT

Appendix B

Phase I and IIA Analytical Data

PHASE I

- **SOLID SAMPLES (SURFACE SOILS, SUBSURFACE SOILS, OTHERS)**

PRIORITY POLLUTANT ANALYSES - BACKGROUND SOIL SAMPLES

Results Shown Only for Detected Parameters
All Units in ug/g (ppm) dry

<u>Parameter</u>	<u>Sample Designation</u>		
	<u>SS1</u>	<u>SS2</u>	<u>SS18</u>
<u>Metal</u>			
Total arsenic	7.9	18.0	19.0
Total chromium	7.5	10.0	14.0
Total copper	7.2	12.0	10.0
Total lead	1.3	29.0	20.0
Total nickel	24.0	22.0	33.0
Total thallium	< 0.6	< 0.7	0.41
Total zinc	33.0	59.0	67.0
<u>Miscellaneous</u>			
Total cyanide	< 0.6	1.5	0.61

NOTE: Values reported as < (less than) indicate the working detection limit for the given sample and/or parameter.

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM BORINGS COMPLETED AS MONITORING WELLS

Monitoring Well Number:	MW-1	MW-2	MW-3S	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10D	MW-11
Sample Designation:	BS-22	BS-24	BS-13	BS-1	BS-2	BS-30	BS-29	BS-41	BS-34	BS-17	BS-25
Depth of Compositing											1-3 and
Sample, Ft.	0-4	3-9	0-8	0-6	0-22	7-19	1-19	2-19	1-19	1-23	7-19

VOLATILE ORGANICS (ppb)

chloroform	ND	ND	ND	BDM.(50)	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	ND	ND	ND	ND	ND	ND	ND	BDM.(50)	BDM.(50)	ND	ND
methylene chloride	ND	ND	ND	ND	ND	ND	120	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

benzo(a)anthracene	1.7	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND	ND	ND
fluorethene	1.6	ND	ND	ND	BDM.(1.0)	ND	ND	1.0	ND	ND	ND
fluorene	ND	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND	ND	ND
naphthalene	ND	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND
phenanthrene	1.2	ND	ND	ND	BDM.(1.0)	ND	1.5	BDM.(1.0)	ND	ND	ND
pyrene	2.6	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND	ND	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppm)

Total cyanide	ND	ND	ND	ND	ND	0.67	0.66	ND	ND	ND	ND
Total recoverable phenolics	ND	ND	ND	ND	ND	ND	ND	ND	0.74	1.4	0.74

METALS (ppb)

Total arsenic	9.6	18	16	13	13	9.7	11	5.5	15	2.8	16
Total chromium	5.2	14	9	10	9.1	3.3	6.2	8	9.5	6.6	6.8
Total copper	11	33	1020	12	13	8.2	13	12	15	18	16
Total lead	12	151	26	4.2	4.4	14	15	21	11	44	28
Total mercury	ND	0.19	ND	0.091	0.03	ND	ND	ND	ND	ND	ND
Total nickel	12	23	26	22	25	9.1	14	18	22	18	20
Total silver	0.60	ND	0.93	1.5	0.48	ND	0.71	ND	ND	ND	ND
Total zinc	22	77	39	37	40	34	26	97	46	34	42

PESTICIDES (ppm)

α-BHC	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND
4,4'-DDD	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	0.03	ND	ND	0.03	0.03	0.03	ND	ND	ND
α-endosulfen	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND
endosulfen sulfate	0.15	ND	ND	ND	ND	ND	0.20	ND	ND	ND	ND
endrin aldehyde	0.06	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND
heptachlor epoxide	0.02	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM BORINGS COMPLETED AS MONITORING WELLS
(continued)

Monitoring Well Number:	MW-1	MW-2	MW-3S	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10D	MW-11
Sample Designation:	BS-35	BS-24	BS-13	BS-1	BS-2	BS-30	BS-29	BS-41	BS-34	BS-17	BS-25
Depth of Compositing Sample, Ft.	0-4	5-9	0-8	0-6	0-22	7-19	1-19	2-19	1-19	1-23	1-3 and 7-19

PCBs (ppm)

PCB-1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND

NONPRIORITY VOLATILE ORGANICS (ppb)

cyclohexane	ND	ND	ND	ND	ND	ND	ND	ND	260	ND	ND
methylcyclohexane	ND	ND	ND	ND	ND	ND	ND	BDL(100)	1900	190	ND
4-methyl-1-pentanol	ND	ND	ND	ND	ND	ND	ND	ND	350	BDL(100)	ND
2-methyl-1-pentene	ND	ND	ND	ND	ND	ND	ND	ND	510	ND	ND
3,4,4-trimethyl-4-pentene	ND	ND	ND	ND	ND	ND	ND	ND	520	120	ND
m + xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	BDL(100)	ND
o-xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	BDL(100)	ND

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

docosane	ND	3.7	33	ND	ND	ND	ND	ND	ND	ND	ND
eicosane	ND	BDL(1.0)	1.3	ND	BDL(1.0)	ND	ND	2.4	2.3	ND	ND
heptadecane	ND	ND	1.6	ND	1.0	ND	5.7	2.5	2.6	BDL(20)	ND
hexadecane	ND	ND	BDL(1.0)	ND	ND	ND	ND	ND	1.7	BDL(20)	ND
octadecane	ND	ND	BDL(1.0)	ND	BDL(1.0)	ND	ND	1.7	2.0	BDL(20)	ND
pentadecane	ND	ND	3.8	ND	BDL(1.0)	ND	ND	ND	BDL(1.0)	BDL(20)	ND
1,3,5-trimethylbenzene	ND	ND	BDL(1.0)	ND	BDL(1.0)	ND	BDL(1.0)	BDL(1.0)	ND	BDL(20)	ND

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM AUGER BORINGS - REFINERY AREA

Anchor Boxings Number	AB-13	AB-14	AB-15	AB-16	AB-17	AB-18	AB-19	AB-20	AB-21	AB-22
Sample Designation:	BS-10	BS-11	BS-12	BS-16	BS-15	BS-14	BS-18	BS-19	BS-20	BS-28
Depth of Compositd										
Sample, Ft.	0-12	0-18	0-14	2-20	2-16	0-16	0-18	0-16	0-14	0-22

VOLATILE ORGANICS (ppb)

chloroform	ND	BDL (50)	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	ND	ND	2100	ND	ND	ND	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

fluoranthene	BDL(1.0)	ND	1.6	ND	BDL(1.0)	ND	BDL(1.0)	ND	BDL(1.0)	ND
fluorene	BDL(1.0)	ND	BDL(1.0)	ND	ND	ND	ND	ND	ND	ND
naphthalene	ND	ND	BDL(1.0)	ND	BDL(1.0)	BDL(1.0)	ND	ND	ND	ND
phenanthrene	BDL(1.0)	ND	BDL(1.0)	BDL(1.0)	BDL(1.0)	BDL(1.0)	BDL(1.0)	ND	ND	ND
pyrene	BDL(1.0)	BDL(1.0)	ND	ND	ND	ND	BDL(1.0)	ND	BDL(1.0)	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppm)

Total cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total recoverable phenolics	1.8	0.63	0.6	1.7	1.1	ND	1.5	ND	ND	ND

METALS (ppm)

Total arsenic	17	21	7.6	12	11	8.7	11	17	28	16
Total beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total chromium	9.3	11	12	8.3	9.9	11	10	8.6	14	7.8
Total copper	13	18	12	15	13	13	11	12	14	20
Total lead	15	21	24	21	13	22	20	100	63	29
Total mercury	ND	ND	0.27	ND	0.03	0.055	0.13	ND	0.073	0.043
Total nickel	31	39	28	25	29	24	25	34	24	19
Total thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total zinc	43	54	44	44	46	39	43	44	54	40

PESTICIDES (ppm)

[illegible]

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM AUGER BORINGS - REFINERY AREA
(continued)

Auger Boring Number	AR-13	AR-14	AR-15	AR-16	AR-17	AR-18	AR-19	AR-20	AR-21	AR-22
Sample Designation	BS-10	BS-11	BS-12	BS-16	BS-15	BS-14	BS-18	BS-19	BS-20	BS-28
Depth of Compositd Sample, Ft.	0-12	0-18	0-14	2-20	2-16	0-16	0-18	0-16	0-14	0-22

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS (ppb)

cyclohexane	BDL(100)	ND	120	BDL(100)	ND	BDL(100)	ND	ND	ND	ND
methylcyclohexane	770	1000	5700	530	ND	2500	400	ND	ND	ND
methyl ethyl ketone	ND	ND	BDL(100)	ND	ND	ND	ND	ND	ND	ND
4-methyl-1-pentanol	460	BDL(100)	370	BDL(100)	ND	180	ND	ND	ND	ND
2-methyl-1-pentene	BDL(100)	BDL(100)	200	BDL(100)	ND	200	ND	ND	ND	ND
3,4,4-trimethyl-4-pentene	500	280	1500	140	ND	590	ND	ND	ND	ND
m + p-xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

docosane	14	3.4	12	ND	ND	2.7	ND	ND	ND	ND
eicosane	2.5	1.1	1.1	1.7	1.0	ND	2.0	ND	ND	1.9
heptadecane	4.4	1.3	2.3	2.0	1.5	ND	1.7	ND	ND	BDL(1.0)
hexadecane	BDL(1.0)	ND	ND	ND	BDL(1.0)	ND	BDL(1.0)	ND	ND	ND
octadecane	2.4	BDL(1.0)	2.4	BDL(1.0)	BDL(1.0)	ND	BDL(1.0)	ND	ND	BDL(1.0)
pentadecane	BDL(1.0)	1.0	ND	1.2	BDL(1.0)	ND	BDL(1.0)	ND	ND	ND
1,3,5-trimethylbenzene	BDL(1.0)	ND	BDL(1.0)	ND	BDL(1.0)	ND	ND	ND	ND	BDL(1.0)

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM AUGER BORINGS - REFINERY AREA
(continued)

Auger Boring Number	AB-23	AB-24	AB-25	AB-26	AB-27	AB-28	AB-29	AB-30	AB-31	AB-32
Sample Designation	BS-31	BS-32	BS-33	BS-36	BS-37	BS-38	BS-39	BS-40	BS-42	BS-43
Depth of Composite										
Sample Pt.	0-18	0-18	0-50	1-17	1-19	0-18	0-6	0-18	1-19	1-17

VOLATILE ORGANICS (ppb)

chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
fluorene	ND	ND	ND	ND	ND	ND	ND	ND	BDL(1.0)	ND
naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	BDL(1.0)	ND
phenanthrene	ND	ND	ND	ND	ND	ND	ND	BDL(3.3)	ND	ND
pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppm)

Total cyanide	ND	ND	0.66	ND	ND	ND	ND	ND	ND	ND
Total recoverable phenolics	ND	ND	ND	0.80	0.79	ND	ND	ND	0.85	ND

METALS (ppm)

Total arsenic	29	13	18	18	28	88	10	9.3	5.4	8.3
Total beryllium	0.61	ND	ND	ND	0.65	ND	ND	ND	ND	ND
Total chromium	23	6.2	11	12	20	7.1	12	7.7	8.0	8.1
Total copper	13	25	11	10	11	13	227	14	11	14
Total lead	19	791	11	16	9.3	3.2	21	11	9.6	5.0
Total mercury	ND	ND	ND	ND	ND	ND	1.95	ND	ND	ND
Total nickel	30	10	16	23	27	22	14	23	21	24
Total thallium	ND	ND	ND	ND	0.75	ND	0.95	ND	ND	ND
Total zinc	52	37	42	50	65	40	158	43	40	57

GEOCHEMICAL ANALYSES
COMPOSITE SOIL SAMPLES FROM AUGER BORINGS - REFINERY AREA
(continued)

Auger Boring Number	AR-23	AR-24	AR-25	AR-26	AR-27	AR-28	AR-29	AR-30	AR-31	AR-32
Sample Designation	BS-31	BS-32	BS-33	BS-36	BS-37	BS-38	BS-34	BS-40	BS-42	BS-43
Depth of Compositing Sample, Ft.	0-18	0-18	0-50	1-17	1-19	0-18	0-6	0-18	1-19	1-17

PESTICIDES (ppm)

aldrin	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND
α -BHC	0.09	0.02	ND	ND	ND	ND	ND	ND	ND	ND
β -BHC	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND
4-4'DDE	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-4'DDT	ND	0.01	0.10	ND	ND	ND	ND	ND	ND	ND
endosulfan sulfate	0.04	ND	ND	ND	ND	NT	NT	NT	NT	NT
endrin	0.02	ND	ND	ND	ND	NT	NT	NT	NT	NT
heptachlor epoxide	0.05	ND	ND	ND	ND	NT	NT	NT	NT	NT

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS (ppb)

cyclohexane	ND	ND	BDL(100)	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	ND	BDL(100)	1500	230	BDL(100)	BDL(100)	BDL(100)	BDL(100)	200	BDL(100)
methyl ethyl ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-1-pentanol	ND	ND	BDL(100)	BDL(100)	ND	ND	ND	ND	BDL(100)	ND
2-methyl-1-pentene	ND	ND	ND	BDL(100)	ND	ND	ND	ND	BDL(100)	ND
3,4,4-trimethyl-4-pentene	ND	BDL(100)	1200	120	BDL(100)	130	570	BDL(100)	120	ND
m + p-xylene	ND	ND	ND	ND	ND	ND	ND	ND	BDL(100)	ND
o-xylene	ND	ND	ND	ND	ND	ND	ND	ND	BDL(100)	ND

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

docosane	22	ND	ND	2.7	ND	25	47	ND	ND	ND
eicosane	4.4	4.0	5.2	1.7	ND	5.6	4.9	ND	ND	ND
heptadecane	4.5	12	21	BDL(1.0)	ND	21	6.6	ND	1.0	ND
hexadecane	ND	ND	ND	ND	ND	ND	ND	ND	BDL(1.0)	ND
octadecane	2.5	7.7	9.6	ND	ND	8.7	4.9	ND	ND	ND
pentadecane	ND	1.1	2.4	ND	ND	ND	ND	ND	1.0	ND
1,3,5-trimethylbenzene	ND	BDL(1.0)	3.1	ND	ND	ND	BDL(1.0)	ND	BDL(1.0)	ND

GEOCHEMICAL ANALYSES
SEDIMENT SAMPLES COLLECTED FROM THE GENESSEE RIVER
 All Samples Collected August 20-22, 1984

Sampling Location:	RS-A		RS-B		RS-C		RS-D	
Sample Number:	RS-1	RS-2	RS-3	RS-4	RS-5	RS-6	RS-7	RS-8
Depth of Sample, Ft.:	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2

VOLATILE ORGANICS

All compounds ND for samples.

BASE/NEUTRAL EXTRACTABLES

All compounds ND for samples.

ACID EXTRACTABLES

All compounds ND for samples.

CYANIDES AND PHENOLICS (ppb)

Total cyanide	2.1	0.62	6.1	2.6	1.3	1.8	1.6	<2
Total recoverable phenolics	ND	ND	1.9	ND	ND	1.2	ND	<2

METALS (ppb)

Total antimony	ND	ND	ND	ND	ND	ND	ND	<2
Total arsenic	13	8.9	17	7.3	6.4	6.7	6.6	28
Total beryllium	ND	ND	ND	ND	ND	ND	ND	<2
Total cadmium	ND	ND	1.2	ND	ND	ND	ND	<2
Total chromium	5.4	6.2	17	8.4	5.4	6.7	5.9	22
Total copper	6.0	8.2	17	10	5.9	7.9	6.9	43
Total lead	8.8	12	23	10	8.8	11	8.3	43
Total mercury	ND	ND	0.10	0.059	ND	ND	ND	ND
Total nickel	9.9	12	2.5	1.6	0.90	1.3	1.1	4.7
Total selenium	ND	ND	ND	ND	ND	ND	ND	<2
Total silver	6.4	ND	12	0.76	ND	9.6	1.7	<2
Total thallium	ND	ND	ND	ND	ND	ND	ND	<2
Total zinc	51	166	64	34	25	26	21	116

PESTICIDES (ppb)

heptachlor	ND	ND	ND	ND	ND	ND	ND	1.3

PCBs (ppb)

PCB-1221	ND	ND	ND	ND	ND	ND	ND	<2
PCB-1232	NT	NT	ND	ND	ND	ND	ND	<2

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all samples.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)

docosane	ND	ND	ND	ND	ND	2.8	ND	ND

TOTAL RECOVERABLE

GEOCHEMICAL ANALYSES
COMPOSITE SURFACE SOIL SAMPLES - REFINERY AREA

Sample Area Designation:	3	4	5	6	7	8	9
Composite Sample Number:	SS-3	SS-4	22-5	22-6	SS-7	SS-8	SS-9

VOLATILE ORGANICS (ppb)

	3	4	5	6	7	8	9
methylene chloride	ND	ND	ND	ND	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

acenaphthene	ND	ND	ND	BDL (1.0)	ND	BDL (1.0)	ND
anthracene	ND	ND	ND	BDL (1.0)	ND	ND	ND
benzo(a)anthracene	ND	ND	BDL (1.0)	1.5	BDL (1.0)	1.5	ND
benzo(a)pyrene	ND	ND	BDL (1.0)	BDL (1.0)	ND	ND	ND
benzo(b)fluoranthene	ND	ND	BDL (1.0)	BDL (1.0)	ND	ND	ND
fluoranthene	ND	ND	BDL (1.0)	BDL (1.0)	BDL (1.0)	1.7	ND
fluorene	ND	ND	ND	ND	ND	BDL (1.0)	ND
naphthalene	ND	ND	BDL (1.0)	BDL (1.0)	BDL (1.0)	BDL (1.0)	ND
phenanthrene	ND	ND	ND	BDL (1.0)	BDL (1.0)	1.0	ND
pyrene	ND	ND	BDL (1.0)	1.0	BDL (1.0)	1.3	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppm)

Total cyanide	0.66	1.2	2.1	1.7	1.6	0.96	1.0
Total recoverable phenolics	1.2	1.0	1.0	ND	ND	ND	0.96

METALS (ppm)

Total antimony	ND	ND	ND	ND	ND	ND	ND
Total arsenic	14	21	22	17	13	18	22
Total beryllium	ND	1.2	ND	0.39	ND	ND	ND
Total chromium	9.2	20	23	13	10	21	13
Total copper	14	42	37	14	23	29	26
Total lead	53	63	1190	56	219	157	59
Total mercury	0.07	0.26	1.9	0.09	0.43	1.7	0.75
Total nickel	15	21	27	21	17	33	42
Total thallium	0.47	ND	ND	ND	ND	ND	ND
Total zinc	91	224	154	58	127	166	102

GEOCHEMICAL ANALYSES
COMPOSITE SURFACE SOIL SAMPLES - REFINERY AREA
(continued)

Sample Area Designation:	3	4	5	6	7	8	9
Composite Sample Number:	SS-3	SS-4	22-5	22-6	SS-7	SS-8	SS-9

PESTICIDES (ppm)

aldrin	ND	0.02	ND	ND	ND	ND	ND
α-BHC	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	0.02	ND	ND	ND	ND	ND	ND
4-4'-DDE	ND	ND	ND	ND	ND	ND	ND
4-4'-DDT	0.03	ND	0.1	0.02	0.10	ND	ND
dieldrin	ND	ND	ND	ND	ND	ND	ND
α-endosulfen	ND	ND	0.03	ND	ND	ND	ND
endosulfen sulfate	0.06	ND	ND	ND	ND	ND	ND
heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND

PCBs

All compounds ND for all samples.

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all samples.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

docosane	ND	ND	5.9	ND	ND	ND	ND
tricosane	ND	ND	1.3	ND	ND	1.3	ND
heptadecane	ND	ND	BDL(1.0)	ND	2.6	ND	ND
hexadecane	ND	ND	1.1	ND	ND	ND	ND
octadecane	ND	ND	ND	ND	2.9	ND	ND
pentadecane	ND	ND	BDL(1.0)	ND	ND	ND	ND
1,3,5-trimethylbenzene	ND	ND	BDL(1.0)	BDL(1.0)	ND	BDL(1.0)	ND

GEOCHEMICAL ANALYSES
COMPOSITE SURFACE SOIL SAMPLES - REFINERY AREA
(continued)

Sample Area Designation:	10	11	12	13	14	15	16
Composite Sample Number:	SS-10	SS-11	22-12	22-13	SS-14	SS-15	SS-16

VOLATILE ORGANICS (ppb)

methylene chloride	ND	ND	100	76	ND	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

acenaphthene	ND	ND	ND	ND	ND	ND	ND
anthracene	ND	BDM.(1.0)	ND	ND	ND	ND	ND
benzo(a)anthracene	ND	7.5	ND	ND	ND	1.7	ND
benzo(a)pyrene	ND	3.6	ND	ND	ND	2.0	ND
benzo(b)fluoranthene	ND	5.0	ND	ND	ND	2.0	ND
fluoranthene	ND	2.5	ND	ND	ND	ND	ND
fluorene	ND	ND	BDM.(1.0)	ND	ND	ND	ND
naphthalene	ND	BDM.(1.0)	BDM.(1.0)	ND	BDM.(1.0)	ND	ND
phenanthrene	ND	BDM.(1.0)	BDM.(1.0)	ND	ND	ND	ND
pyrene	ND	2.8	ND	ND	ND	ND	ND

ACID EXTRACTABLES

All compounds ND for all samples.

CYANIDES AND PHENOLICS (ppm)

Total cyanide	3.3	2.1	0.66	6.1	0.66	5.9	1.3
Total recoverable phenolics	0.90	2.8	1.6	1.1	1.2	2.9	ND

METALS (ppm)

Total antimony	ND	ND	ND	ND	ND	0.68	ND
Total arsenic	24	28	31	20	17	21	20
Total beryllium	1.1	ND	ND	ND	ND	0.5	ND
Total chromium	26	20	13	15	15	14	14
Total copper	30	36	28	33	25	47	30
Total lead	133	110	90	109	86	145	74
Total mercury	0.14	0.66	0.63	0.74	1.3	0.76	0.09
Total nickel	16	29	28	33	34	49	32
Total thallium	ND	0.98	0.68	ND	ND	0.58	ND
Total zinc	191	127	95	93	106	72	105

GEOCHEMICAL ANALYSES
COMPOSITE SURFACE SOIL SAMPLES - REFINERY AREA
(continued)

Sample Area Designation:	10	11	12	13	14	15	16
Composite Sample Number:	SS-10	SS-11	22-12	22-13	SS-14	SS-15	SS-16

PESTICIDES (ppm)

aldrin	ND	ND	ND	ND	ND	ND	ND
α-BHC	ND	ND	ND	ND	ND	ND	0.04
4,4'-DDD	ND	0.04	ND	0.01	ND	0.01	ND
4,4'-DDE	ND	ND	0.04	ND	ND	0.01	0.02
4,4'-DDT	ND	0.19	0.08	ND	0.17	0.09	ND
dieldrin	ND	0.08	0.04	0.01	ND	0.02	ND
α-endosulfen	ND	0.1	ND	0.01	0.06	ND	ND
endosulfen sulfate	ND	0.09	0.06	ND	ND	0.17	ND
heptachlor epoxide	ND	ND	0.02	0.01	0.03	ND	0.04

PCBs

All compounds ND for all compounds.

NONPRIORITY VOLATILE ORGANICS

All compounds ND for all compounds.

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

docosane	1.3	ND	1.8	ND	ND	ND	120
eicosane	ND	ND	ND	ND	ND	ND	34
heptadecane	ND	ND	ND	ND	ND	ND	68
hexadecane	ND	ND	ND	ND	ND	ND	32
octadecane	ND	ND	ND	ND	ND	ND	60
pentadecane	ND	ND	ND	ND	ND	ND	23
1,3,5-trimethylbenzene	BDL(1.0)	ND	BDL(1.0)	ND	ND	ND	ND

GEOCHEMICAL ANALYSES
SOIL SAMPLES COLLECTED FROM SEEPS, POOLS AND OUTFALLS IN THE REFINERY AREA

Sample Number:	SP-25	SP-27	SP-29	SP-31	SP-32	SP-33	SP-34	SP-35	SP-36
Sampling Location:	Seep	Seep	Pool	Pool	Outfall-3	Outfall-5	Outfall-2	Outfall-6	Outfall-5

VOLATILE ORGANICS (ppb)

chloroform	ND	ND	ND	ND	ND	ND	ND	ND	BDM.(50)
ethylbenzene	ND	ND	ND	ND	BDM.(75)	ND	BDM.(50)	ND	ND
tetrachloroethylene	ND	ND	ND	ND	ND	BDM.(250)	ND	ND	ND
toluene	ND	ND	ND	ND	ND	ND	960	ND	ND

BASE/NEUTRAL EXTRACTABLES (ppm)

fluoranthene	ND	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND
phenanthrene	ND	ND	ND	ND	ND	ND	BDM.(1.0)	ND	ND
pyrene	ND	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND
1,2-dichlorobenzene	ND	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND
1,3-dichlorobenzene	ND	ND	ND	ND	ND	ND	BDM.(1.0)	ND	ND
1,4-dichlorobenzene	ND	ND	ND	ND	BDM.(1.0)	ND	ND	ND	ND

ACID EXTRACTABLES (ppm)

phenol	ND	ND	ND	ND	ND	7.3	ND	ND	ND

CYANIDES AND PHENOLICS (ppm)

Total cyanide	2.5	2.7	2.0	ND	1.2	2.9	ND	1.5	6.7
Total recoverable phenolics	16	12	8.2	2.5	3.0	10	1.4	1.2	3.3

METALS (ppm)

Total antimony	<5	<3	<2	ND	ND	ND	ND	ND	ND
Total arsenic	572	37	271	8.5	24	52	17	18	32
Total beryllium	<5	<3	<2	ND	ND	<3	ND	ND	ND
Total cadmium	<7	<4	2.5	<2	<2	<4	ND	ND	ND
Total chromium	7.3	33	ND	12	9.4	27	19	14	96
Total copper	12	37	5.7	19	15	71	35	32	59
Total lead	59	116	18	880	37	263	100	160	666
Total mercury	ND	ND	0.24	0.19	0.11	1.6	0.16	ND	0.47
Total nickel	5	74	<2	22	24	46	31	33	38
Total selenium	<5	<3	<2	ND	ND	<3	ND	ND	ND
Total silver	<6	<3	2.1	<2	ND	<3	ND	ND	ND
Total thallium	<5	<3	<2	ND	ND	<3	ND	ND	ND
Total zinc	141	165	119	60	181	745	94	112	714

GEOCHEMICAL ANALYSES
SOIL SAMPLES COLLECTED FROM SEEPS, POOLS AND OUTFALLS IN THE REFINERY AREA
(continued)

Sample Number:	SP-25	SP-27	SP-29	SP-31	SP-32	SP-33	SP-34	SP-35	SP-36
Sampling Location:	Seep	Seep	Pool	Pool	Outfall-3	Outfall-5	Outfall-2	Outfall-6	Outfall-5

PESTICIDES (ppm)

α-BHC	0.02	ND	0.01	ND	ND	ND	ND	ND	ND
γ-BHC	ND	0.01	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	0.02	ND	ND	ND	ND	ND	ND	ND	ND
α-endosulfan	0.12	0.12	0.07	ND	0.07	ND	ND	ND	ND
endosulfan sulfate	ND	ND	0.07	ND	ND	ND	ND	ND	ND

PCBs (ppm)

PCB-1016	ND	ND	ND	ND	ND	<5	ND	ND	ND
PCB-1221	ND	ND	ND	ND	ND	<10	ND	ND	ND
PCB-1232	ND	ND	ND	ND	ND	<10	ND	ND	ND
PCB-1242	ND	ND	ND	ND	ND	<5	ND	ND	ND
PCB-1284	ND	ND	ND	ND	ND	<5	ND	ND	ND
PCB-1254	ND	ND	ND	ND	ND	5	0.29	ND	ND
PCB-1260	ND	ND	ND	ND	ND	<5	ND	ND	ND

NONPRIORITY VOLATILE ORGANICS (ppb)

cyclohexane	BDL(500)	BDL(500)	ND	ND	560	BDL(500)	940	ND	ND
methylcyclohexane	4000	BDL(500)	BDL(500)	ND	790	BDL(500)	11000	ND	ND
methyl ethyl ketone	ND	ND	ND	ND	ND	ND	BDL(100)	ND	ND
4-methyl-1-pentanol	760	ND	ND	ND	190	BDL(500)	510	ND	ND
2-methyl-1-pentene	920	BDL(500)	BDL(500)	ND	630	BDL(500)	1700	ND	ND
3,4,4-trimethyl-4-pentene	1200	BDL(500)	ND	ND	100	ND	8500	ND	ND
m + p-xylene	ND	ND	BDL(500)	ND	ND	ND	ND	ND	ND
o-xylene	ND	ND	BDL(500)	ND	BDL(150)	ND	ND	ND	ND

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppm)

pentadecane	ND	ND	ND	ND	BDL(1.0)	ND	ND	ND	ND
1,3,5-trimethylbenzene	ND	ND	ND	ND	ND	ND	1.0	ND	ND

Appendix B

Phase I and IIA Analytical Data

PHASE I

- **ASBESTOS SAMPLES**

SAMPLE NO.PERCENT CHRYSOTILE

SS-205	ND*
SS-206	<1.0%
SS-207	ND
SS-208	ND
SS-209	<1.0%
SS-210	ND
SS-211	ND
SS-212	30%

*ND = Not Detected

Appendix B

Phase I and IIA Analytical Data

PHASE IIA

- **LIQUID SAMPLES (GROUNDWATER, SURFACE WATER)**

SINCLAIR DRIFTERY
WILLSVILLE, NEW YORK
CHEMICAL ANALYSES - GROUND WATER
UPPER AQUIFER - DEFICIENT AREA

Sample Location Lab. I.D. Numbers Screened Interval (ft.) Date Sampled Sample Matrix	EW-25 EW-6906/P4460 15-25 12/12/86 WATER	EW-27 EW-6910/P4355 15-25 12/3/86 WATER	EW-28 EW-6715/P4391 12-22 12/5/86 WATER	EW-29 EW-6713/P4363 15-25 12/5/86 WATER	EW-30 EW-6714/P4386 13-23 12/5/86 WATER	EW-31 EW-6687/P4344 15-25 12/3/86 WATER	EW-32 EW-6684/P4344 15-25 12/12/86 WATER
VOLATILE ORGANICS (ppb)							
Methylene Chloride	18 C	31 EC	8 C	4 EC	18 C	180 C	40 C
Acetone	230 C	72 C	21 C	29 C	240 C	240 C	160 C
Carbon Disulfide	ND	ND	ND	ND	6	ND	ND
1,1-Dichloroethane	5.3	ND	ND	ND	ND	ND	ND
Chloroform	1.5 E	ND	ND	ND	ND	3.3 E	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	1.3 E	ND
Benzene	106	48	ND	ND	ND	4.8 E	7.9 E
2-Hexanone	ND	ND	ND	ND	ND	20 E	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	02	ND
Toluene	18	ND	ND	ND	ND	ND	ND
Ethylbenzene	37	ND	7	ND	ND	ND	44
Total Xylenes	200	ND	34	ND	ND	ND	170
Total Volatile Concentration	367.8	48	41	ND	6	121.4	221.9
BASE NEUTRALS/ACID EXTRACTABLES (ppb)							
Nitrobenzene	ND	1700	ND	ND	ND	ND	ND
Benzoic Acid	ND	ND	1 E	ND	ND	ND	ND
Naphthalene	2.7 E	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	39	ND	88	7 E	ND	ND	98
Di-n-Butylphthalate	15 C	ND	6 C	18 C	3 EC	ND	ND
bis(2-Ethylhexyl)Phthalate	28 C	ND	ND	19 C	28 C	160 C	ND
Benzo(a)Pyrene	11	ND	ND	12	13	ND	ND
Total Base/Neutral Concentrations	52.7	1700	93	19	13	ND	98
PESTICIDES/PCB's (ppb)							
Delta-BHC	0.01 E	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	0.03 E
Total Pest/PCB Concentration	0.01 E	ND	ND	ND	ND	ND	0.03 E
HEAVY METALS (ppb)							
Aluminum	NA	NA	120	ND	140	NA	NA
Arsenic	34.7	25	6.1	21.7	14.6	27.6	51.1
Barium	NA	NA	338	343	339	NA	NA
Calcium	NA	NA	18500	40200	41200	NA	NA
Copper	ND	ND	133	ND	ND	ND	ND
Iron	NA	NA	15544	10106	21688	NA	NA
Lead	ND	ND	76.6	ND	ND	ND	ND

SINCLAIR REFINERY
WILLSTILLER, NEW YORK
CHEMICAL ANALYSES - GROUND WATER
UPPER AQUIFER - REFINERY AREA

Sample Location	HW-25	HW-27	HW-28	HW-29	HW-30	HW-31	HW-32
Lab. I.D. Numbers	HW-6896/P4469	HW-6910/P4355	HW-6715/P4391	HW-6713/P4363	HW-6714/P4390	HW-6667/P4344	HW-6684/P4344
Screened Interval (ft.)	15-25	15-25	12-22	15-25	13-23	15-25	15-25
Date Sampled	12/12/86	12/3/86	12/5/86	12/5/86	12/5/86	12/3/86	12/12/86
Sample Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Magnesium	NA	NA	2400	5000	8600	NA	NA
Manganese	NA	NA	650	3504	3368	NA	NA
Potassium	NA	NA	1000	1000	1000	NA	NA
Sodium	NA	NA	5700	8300	13100	NA	NA
Zinc	4280	469	3140	2461	9751	2280	573
Total Metal Concentration	4314.7	494	3364.7	2482.7	8765.6	2315.6	624.1

CYANIDES AND PHENOLICS (ppb)

Cyanide	ND	ND	ND	ND	ND	NA	ND
Total Phenols	30.6	33.2	23.4	ND	ND	NA	20.5
Total Cyanide/Phenol Concentration	30.6	33.2	23.4	ND	ND	NA	20.5

NONPRIORITY VOLATILE ORGANICS (ppb)

Cyclohexane	82 E	310 E	237 E	37 E	ND	ND	ND
Isomer of Cyclohexane	ND	ND	19 E	ND	ND	37 E	ND
Unknown	296 E(5)	613 E(4)	66 E(2)	35 E	10 E(2)	171 E(3)	222 E(4)
Unknown Alkane	52 E	ND	ND	20 E	ND	301 E(4)	ND
Unknown Isomer of Methyl Butene	29 E	ND	ND	ND	ND	ND	ND
Unknown Cyclohexane	77 E	ND	ND	ND	ND	54 E	55 E
Unknown Monosubstituted Cycloalkane	54 E	ND	ND	ND	ND	ND	ND
Unknown Cycloalkane	ND	ND	ND	ND	ND	280 E	ND
Unknown Hydrocarbon	ND	ND	300 E	ND	ND	120 E(3)	247
Unknown Alkane	ND	ND	ND	ND	ND	ND	120 E
2-Butene Isomer	ND	ND	ND	ND	ND	ND	31 E
Isomer of Dimethyl Benzene	ND	ND	ND	ND	ND	ND	35 E
Pentane	ND	ND	60 E	ND	ND	ND	ND
2-Methyl Pentane	ND	ND	49 E	ND	ND	ND	ND
3-Methyl Pentane	ND	ND	34 E	ND	ND	ND	ND
Methyl Cyclopentane	ND	ND	77 E	ND	ND	ND	ND
2-Methyl Butane	ND	ND	75 E	ND	ND	ND	ND
1-Propene	ND	ND	ND	30 E	ND	ND	ND
Total Nonpriority Volatile Concentration	590 E	923 E	916 E	130 E	10 E	971 E	710 E

NONPRIORITY BASH/NEUTRAL EXTRACTABLES (ppb)

Unknown Compound	71 E(2)	5600 E(4)	23 E	49 E(3)	163 E(7)	244 E(6)	60 E(2)
Furan, 2,5-Diethyltetrahydro	ND	50 E	ND	ND	ND	ND	ND
Isomer of Hexane	ND	100 E	ND	ND	ND	ND	ND
Unknown Alkane	464 E(12)	ND	65 E	ND	ND	13 E	326 E(2)
Unknown Alkane	77 E(3)	ND	ND	855 E(12)	ND	44 E(2)	20 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES - GROUND WATER
UPPER AQUIFER - REFINERY AREA

Sample Location	WN-25	WN-27	WN-28	WN-29
Lab. I.D. Numbers	WN-6906/P4489	WN-6910/P4355	WN-6715/P4391	WN-6713/P4363
Screened Interval (ft.)	15-25	15-25	12-22	15-25
Date Sampled	12/13/86	12/3/86	12/5/86	12/5/86
Sample Matrix	WATER	WATER	WATER	WATER
Benzene, Ethyl Substituted	289 E(3)	ND	ND	ND
Benzene, Ethyl	ND	ND	ND	ND
Benzene, (1-Methylethyl)	ND	ND	ND	ND
Benzene, Propyl	ND	ND	36 E	ND
Benzene (1-Methyl Propyl)	ND	ND	49 E	ND
Isomer of Benzene, Substituted	ND	ND	1644 E(12)	ND
Tetrachloroethene	ND	ND	290 EC	150 EC
Isomer of Octane	ND	ND	ND	ND
Cyclohexane, 1-Ethyl, 4-Methyl	ND	ND	ND	ND
Cyclohexane, Ethyl	ND	ND	21 E	ND
Naphthalene, 1-Methyl	ND	ND	ND	ND
Isomer of Naphthalene	ND	ND	33 E	ND
Butyl Myristate (Butyl Tetracylate)	ND	ND	ND	ND
1,2-Benzenedicarboxylic Acid, Dimethyl Ester	ND	ND	ND	ND
1H-Indene, 2,3-Dihydro	ND	ND	ND	ND
1H-Indene, 2,3-Dihydro 1-Methyl	ND	ND	34 E	ND
Isomer of 1H-Indene	ND	ND	29 E	ND
1,4-Pentadiene, 2,3,3 Trimethyl	ND	ND	ND	10 E
Total Nonpriority Base/Neutral Concentration	892 E	5750 E	1336 E	914 E

QUALIFIERS

ND - Not Detected

NA - Not Analyzed

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

C - Indicates that contamination is probably the result of laboratory or field contamination.

* - Indicates duplicate analysis is not within control limits.

(2) - Indicates the number of identical compounds in a specific sample.

BN-30
BN-6714/P4390
13-23
12/5/86
WATER

ND
ND
ND
ND
ND
ND
150 EC
ND
ND
ND
ND
ND
ND
ND
ND
ND
ND
ND
ND

163 E

BN-31
BN-6687/P434A
15-25
12/3/86
WATER

ND
ND
ND
ND
ND
106 E(3)
54 EC
22 E
20 E
ND
36 E(2)
ND
40 E
71 E
27 E
ND
ND
ND
ND

623 E

BN-32
BN-6684/P434A
15-25
12/12/86
WATER

ND
61 E
28 E
42 E
ND
431 E(5)
40 EC
ND
ND
ND
ND
161 E(3)
ND
ND
38 E
ND
45 E
ND

1228 E

Sample Location	MW-33	MW-34	
Lab.ID. Number	EW-6773\P4409	EW-6770\P4395	EW-
Screened Interval (ft.)	15-24	4-14	
Date Sampled	12/6/86	12/6/86	
Sample Matrix	WATER	WATER	

VOLATILE ORGANICS (ppb)

Methylene Chloride	202 C	13 C
Acetone	300 C	28 C
Benzene	330	ND
Trans-1,2-Dichloroethene	ND	ND
1,1,1-Trichloroethane	ND	ND
Trichloroethene	ND	ND
4-Methyl-2-Pentanone	ND	9.6 E
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	150	ND
Total Volatile Concentration	480	9.6 E

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Isophorone	ND	8.8 E
Benzoic Acid	ND	1.3 E
Naphthalene	3.4 E	ND
2-Methylnaphthalene	15	25
Di-n-Octyl Phthalate	ND	ND
Di-n-Butylphthalate	3 EC	ND
bis(2-Ethylhexyl)Phthalate	39 C	21 C
Benzo(a)Pyrene	10	ND
Total Base/Neutrals Concentration	28.4	35.1

PESTICIDES/PCB's (ppb)

ND FOR ALL SAMPLES

METALS (ppb)

Aluminum	120	140
Arsenic	30.4	ND
Barium	564	78
Calcium	69100	37700
Chromium	10	18
Cobalt	ND	ND
Copper	ND	28
Iron	42600	6134
Lead	52.5	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
UPPER AQUIFER-REFINERY AREA

MW-35 6769\P4394 5-15 12/6/86 WATER	MW-36 EW-6683\P4343 14-24 12/2/86 WATER	MWP-56 EW-6902\P4459 5-25 12/9/86 WATER	MWP-57 EW-8760\B0634 5-25 2/22/87 WATER	MWP-2 EW-6774\P4410 10-20 12/8/86 WATER	MWD-46 EW-6911\P4345 10-20 12/12/86 WATER
48 C	34.00 C	10.2 C	130 EC	260 C	ND
350 C	6030.00 C	14 C	240 EC	170 C	ND
130	ND	15	530	270	ND
ND	ND	ND	2000	ND	ND
ND	ND	ND	240 E	ND	ND
ND	ND	ND	660	ND	ND
ND	ND	70.1	ND	ND	ND
18	28.00	2.3 E	530	23 E	ND
ND	ND	35	110 E	46	ND
170	ND	23	ND	240	ND
318	28.00	145.4	4070	579	ND
ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	1.9 E	ND
ND	ND	ND	7.7 E	ND	ND
16	ND	41	18	ND	ND
ND	ND	ND	14	ND	ND
ND	ND	2.6 EC	6.9 EC	2.4 EC	ND
ND	ND	16 C	78 C	14 C	ND
ND	ND	12	12	10.2	ND
16	ND	53	51.7	12.1	ND
ND	NA	NA	NA	ND	NA
15.2	21.10	14.9	241	28.5	39.3
600	NA	NA	NA	426	NA
77200	NA	NA	NA	43100	NA
ND	ND	ND	22	31	ND
ND	NA	NA	NA	11	NA
ND	ND	ND	ND	ND	ND
10248	NA	NA	NA	5182	NA
ND	ND	102.3	ND	8.5	ND

Sample Location	MW-33	MW-34
Lab.ID. Number	EW-6773\P4409	EW-6770\P4395
Screened Interval (ft.)	15-24	4-14
Date Sampled	12/6/86	12/6/86
Sample Matrix	WATER	WATER

METALS cont. (ppb)

Magnesium	16300	7800
Manganese	8354	682
Potassium	6900	1700
Silver	26	ND
Sodium	54400	2400
Zinc	1503	1770
Total Metal Concentration	1621.9	1816

CYANIDES AND PHENOLICS (ppb)

Cyanide	ND	ND
Total Phenols	18.6	42.7
Total Cyanide/Phenol Concentration	18.6	42.7

NONPRIORITY VOLATILE ORGANICS (ppb)

Unknown	27 E	48 E(4
Cyclohexane	45 E	ND
Unknown Disubst Benzene	260 E	ND
Hexane	ND	9 E
Unknown Hydrocarbon	ND	9 E
Unknown Cyclohexane	ND	11 E
Butane	ND	ND
2-Methyl Butane	ND	ND
Pentane	ND	ND
2-Methyl Butene	ND	ND
Methyl Cyclopentane	ND	ND
Unknown Subst. Cyclopentene	ND	ND
1,2,4-Trimethyl Benzene	ND	ND
3-Methyl Pentane	ND	ND
2-Methyl Pentane	ND	ND
3-Methyl Cyclohexane	ND	ND
Cyclopentene	ND	ND
Isomer of Butene		
Total Nonpriority Volatile Concentration	332 E	77 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
UPPER AQUIFER-REFINERY AREA

MW-35 EW-6769\P4394 5-15 12/6/86 WATER	MW-36 EW-6683\P4343 14-24 12/2/86 WATER	MWP-56 EW-6902\P4459 5-25 12/9/86 WATER	MWP-57 EW-8760\B0634 5-25 2/22/87 WATER	MWP-2 EW-6774\P4410 10-20 12/8/86 WATER	MWD-46 EW-6911\P4345 10-20 12/12/86 WATER
12200	NA	NA	NA	7900	NA
1378	NA	NA	NA	1892	NA
1000	NA	NA	NA	3700	NA
11	ND	ND	ND	ND	ND
21500	NA	NA	NA	21400	NA
10072	6557.00	1944	59	1928	3927
10098.2	6578.10	2061.2	322	1996	3966.3
ND	NA	ND	ND	ND	NA
11.4	NA	20.5	ND	16.2	NA
11.4	NA	20.5	ND	16.2	NA
ND	ND	304 E(3)	ND	150 E(4)	223
263 E(2)	ND	103 E	ND	190 E	ND
240 E	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	114 E(3)	220
ND	ND	ND	ND	ND	185
220 E	ND	ND	ND	59 E	ND
140 E	ND	35 E	ND	ND	ND
140 E	ND	22 E	ND	ND	ND
210 E	ND	ND	ND	ND	ND
69 E	ND	82 E	ND	61 E	ND
74 E	ND	ND	ND	ND	ND
1500 E	ND	ND	ND	ND	ND
ND	ND	36 E	ND	ND	ND
ND	ND	62 E	ND	ND	ND
ND	ND	39 E	ND	ND	ND
ND	ND	ND	ND	28 E	ND
			ND	ND	26
2856 E	ND	683 E	ND	602 E	654

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
UPPER AQUIFER-REFINERY AREA

Sample Location Lab.ID. Number Screened Interval (ft.) Date Sampled Sample Matrix	MW-33 EW-6773\p4409 15-24 12/6/86 WATER	MW-34 EW-6770\p4395 4-14 12/6/86 WATER	MW-35 EW-6769\p4394 5-15 12/6/86 WATER	MW-36 EW-6683\p4343 14-24 12/2/86 WATER	MWP-56 EW-6902\p4459 5-25 12/9/86 WATER	MWP-57 EW-8760\B0634 5-25 2/22/87 WATER	MWP-2 EW-6774\p4410 10-20 12/8/86 WATER	MWD-46 EW-6911\p4345 10-20 12/12/86 WATER

NONPRIORITY BASE/NEUTRALS EXTRACTABLES(ppb)

Unknown	187 E(4)	87 E(2)	45.9 E(4)	140 E(4)	83 E(4)	178 E(4)	596 E(16)	316
Tetrachloroethene	140 EC	ND	ND	52 EC	ND	15 EC	160 EC	51
Ethylbenzene	165 E(2)	ND	85 E(2)	ND	ND	ND	170 E	ND
Unknown Alkane	143 E(5)	1085 E(10)	ND	ND	19 E	ND	ND	360
Oxirane,2-Ethyl-3-Propyl	27 E	ND	ND	ND	ND	ND	ND	ND
Isomer of Benzene,Substituted	181 E(4)	59 E	90 E(4)	ND	267 E(7)	ND	ND	ND
Unknown Alkene	46 E(2)	81 E	64 E(4)	ND	169 E(6)	23 E	83 E(2)	27
Isomer of Undecane	16 E	ND	ND	ND	ND	ND	ND	ND
Isomer of Cyclohexane	ND	484 E(5)	ND	ND	18 E	ND	ND	ND
Isomer of Octane	ND	60 E	ND	ND	ND	ND	ND	ND
2-Buten-1-ol	ND	ND	19 E	ND	ND	ND	ND	ND
1,3-Propanediamine,N-Methyl	ND	ND	9.9 E	ND	ND	ND	ND	ND
Azetidine	ND	ND	12 E	ND	ND	ND	ND	ND
Unknown Subst. of Benzene	ND	ND	ND	ND	ND	516 E(7)	ND	ND
Benzene, Propyl	ND	ND	ND	ND	ND	42 E	ND	ND
Benzene, (1-Methylethyl)	ND	ND	ND	ND	ND	73 E(2)	ND	ND
1-H-Indene,2,3-Dihydro	ND	ND	ND	ND	ND	31 E	ND	ND
1-H-Indene,2,3-Dihydro-1-Methyl	ND	ND	ND	ND	ND	44 E(2)	ND	ND
2-Pentanone,4-Hdroxy-4-Methyl	ND	ND	ND	ND	ND	33 EC	ND	ND
Benzene, Ethyl Substituted	ND	ND	ND	ND	18 E	ND	ND	ND
Isomer of Naphthelene,Substituted	ND	ND	ND	ND	ND	ND	ND	19
Benzene,1,1-Oxybis	ND	ND	ND	ND	ND	ND	ND	32
Isomer of Hexadecane	ND	ND	ND	ND	ND	ND	ND	27
Butyl Myristate(Butyl Tetradecylate)	ND	ND	ND	ND	ND	ND	ND	57
Total Nonpriority Base/Neutral Concentration	765 E	1856 E	325.8 E	140 E	574 E	907 E	849 E	838

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search,
or has been detected at less than quantifiable limits.

* - Indicates that duplicate analysis for this sample was not within control limits.

C - Indicates that contamination was probably the result of laboratory or field contamination.

(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WILLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
SEWER AND PIPELINE INVESTIGATION-REFINERY AREA

Sample Location	HW-49	HW-50	HW-51	HW-52
Lab. ID. Numbers	HW-6682/P4357	HW-6686/P4362	HW-6712/P4470	HW-6987/P4470
Screened Interval (ft.)	7-12	5-10	4-11	4-9
Date Sampled	12/2/86	12/3/86	12/5/86	12/12/86
Sample Matrix	WATER	WATER	WATER	WATER

VOLATILE ORGANICS (ppb)				
Methylene Chloride	68 C	39 C	19 RC	5.3 C
Acetone	320 C	180 C	110 C	150 C
Benzene	420	180	15 E	140
Cis-1,3-Dichloropropene	ND	ND	ND	6.5
2-Hexanone	860	ND	ND	ND
4-Methyl-2-Pentanone	2700	ND	ND	33
Toluene	ND	ND	ND	6.5
Ethylbenzene	ND	160	ND	5.7
Total Xylenes	ND	270	ND	170
Total Volatile Concentration	3980	610	15 E	361.7

BASE NEUTRALS/ACID EXTRACTABLES (ppb)				
Nitrobenzene	ND	ND	ND	ND
Isophorone	34	41	ND	ND
Benzoic Acid	ND	5.9 E	ND	ND
Naphthalene	ND	ND	ND	13
4-Chloroaniline	ND	ND	ND	ND
2-Methylnaphthalene	67	340	22	33
Acenaphthylene	ND	ND	ND	7.2 E
Fluorene	ND	30	ND	ND
N-Nitrosodiphenylamine	62	100	ND	ND
Phenanthrene	41	90	ND	ND
Di-n-Butylphthalate	ND	ND	3 RC	12 C
Pyrene	ND	24	ND	ND
bis(2-Ethylhexyl)Phthalate	66 C	110 C	42 C	22 C
Di-n-Octyl Phthalate	ND	ND	ND	ND
Benzo(a)Pyrene	ND	ND	13	ND
Total Base/Neutral Concentration	224	630.9	35	53.2

PESTICIDES/PCN's (ppb)				
NA FOR ALL SAMPLES				

METALS (ppb)				
Aluminum	NA	NA	ND	NA
Arsenic	34.5	28.2	5.3	ND
Barium	NA	NA	484	NA
Calcium	NA	NA	35500	NA
Chromium	ND	ND	ND	14

EW-53
EW-6608/P4302
3-8
12/3/86
WATER

EW-54
EW-6716/P4356
2.5 - 7.5
12/5/86
WATER

EW-55
EW-6691/P4356
6-10
12/2/86
WATER

28 EC
96 C
110
ND
290
3300
ND
830
1100

5630

9 C
800 C
ND
ND
ND
28
ND
26
52

106

31 EC
120 C
61
ND
ND
ND
ND
ND
ND

61

ND
24
ND
170
120
250
ND
23
ND
64
ND
18
690 C
41
ND

710

11
5 E
1 E
20
ND
50
ND
7 E
10
15
5 EC
7 E
22 C
6 E
13

ND
ND
ND
ND
ND
53
ND
ND
ND
ND
ND
240 C
ND
ND

53

NA
19.3
NA
NA
ND

120
5.8
335
14200
ND

NA
24.2
NA
NA
ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
SEWER AND PIPELINE INVESTIGATION-REFINERY AREA

Sample Location Lab. ID. Numbers Screened Interval (ft.) Date Sampled Sample Matrix	EW-49 EW-6692/P4357 1-12 12/2/86 WATER	EW-50 EW-6686/P4362 5-10 12/3/86 WATER	EW-51 EW-6712/P4470 6-11 12/5/86 WATER	EW-52 EW-6907/P4470 4-9 12/12/86 WATER	EW
Copper	ND	ND	ND	ND	
Iron	NA	NA	25700	NA	
Lead	ND	ND	ND	6.4 *	
Magnesium	NA	NA	6500	NA	
Manganese	NA	NA	4410	NA	
Potassium	NA	NA	1000	NA	
Sodium	NA	NA	12600	NA	
Zinc	302	1014	622	10050	
Total Metal Concentration	336.5	1442.2	627.3	18070.4	
CYANIDES AND PHENOLICS (ppb)	ND FOR ALL SAMPLES				

NONPRIORITY VOLATILE ORGANICS (ppb)

Unknown	59140 R(5)	2480 R(7)	514 R(7)	65 R(3)
Unknown Alkane	ND	ND	ND	ND
Unknown Cyclohexane	4000 R	ND	ND	150 R
Cyclohexane	ND	ND	ND	150 R
Unknown Isomer of Dimethyl Cyclohexane	ND	ND	ND	40 R(2)
Unknown Isomer of Disubst. Cyclohexane	3700 R	ND	ND	ND
Unknown Trisubst. Cyclohexane	4700 R	ND	ND	ND
Isomer Of Cycloalkane	0100 R	ND	ND	ND
Methyl Cyclopentane	ND	ND	ND	96 R
Pentane	ND	ND	ND	ND
Unknown Subst. Methyl Cyclopentane	ND	ND	ND	ND
Unknown Substitute Phenyl	ND	ND	ND	ND
Hexane	ND	ND	ND	ND
Unknown Hydrocarbon	ND	ND	ND	ND
2-Methyl Butane	ND	ND	ND	ND
Unknown Disubst. Benzene	ND	ND	ND	ND
Unknown Trisubst. Benzene	ND	ND	ND	ND
Isomer of Dimethyl Cyclohexane	ND	ND	ND	ND
Isomer of Disubst. Cyclohexane	4000	160	ND	ND
Unknown Isomer Of Methyl Hexadiene	ND	ND	ND	21 R
Total Nonpriority Volatile Concentration	83720 R	2640 R	514 R	522 R

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)

Unknown	11300 R(5)	ND	63 R(4)	271 R(5)

BW-53	BW-54	BW-55
-6688/P4392	BW-6716/P4356	BW-6691/P4356
3-0	2.5 - 7.5	6-10
12/3/86	12/5/88	12/2/88
WATER	WATER	WATER
ND	133	ND
NA	22163	NA
ND	ND	ND
NA	2800	NA
NA	3469	NA
NA	1000	NA
NA	6800	NA
940	4797	2761
968.3	4845.8	2705.2

1430 E(2)	120 (4)	209 E(3)
1040 E(3)	ND	ND
ND	ND	ND
290 E	68 E	390 E
ND	ND	ND
ND	ND	ND
ND	ND	ND
ND	ND	ND
270 E	ND	ND
210 E	ND	190 E
ND	ND	59 E
570 E	ND	ND
340 E	ND	46 E
ND	87 E(4)	ND
ND	ND	160 E
ND	ND	89 E
ND	ND	2005 E
ND	16 E	ND
ND	ND	ND
ND	ND	ND
4150 E	291 E	3148 E
ND	582 E(5)	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
SEWER AND PIPELINE INVESTIGATION-REFINERY AREA

Sample Location	HN-49	HN-50	HN-51	HN-52
Lab.ID. Numbers	HN-6692/P4357	HN-6696/P4362	HN-6712/P4470	HN-6967/P4470
Screened Interval (ft.)	7-12	5-10	6-11	4-9
Date Sampled	12/2/86	12/3/86	12/5/86	12/12/86
Sample Matrix	WATER	WATER	WATER	WATER
Unknown Alkane	10800 E(7)	4610 E(12)	11 E	487 E(6)
Unknown Alkene	ND	ND	ND	41 E
Isomer of Cyclohexane	6600 E(5)	930 E(2)	103 E(4)	ND
Isomer of Trimethyl Benzene	ND	500 E(2)	ND	ND
Isomer of Methyl Benzene	ND	430 E	ND	ND
Isomer of Dimethyl Benzene	ND	ND	ND	ND
Isomer of Methyllethyl Benzene	ND	ND	ND	ND
Isomer of Benzene, Substituted	ND	ND	84 E(5)	337 E(4)
Benzene, Ethyl Substituted	ND	ND	ND	140 E
Benzene, Ethyl	ND	ND	ND	ND
Isomer of Ethylmethyl Cyclohexane	ND	370 E	ND	ND
Isomer of Methyl Naphthalene	ND	210 E	ND	ND
Isomer of Dimethyl Naphthalene	ND	790 E	ND	ND
Isomer of Ethyl Naphthalene	ND	ND	ND	ND
Isomer of Naphthalene	ND	ND	20 E(2)	ND
Tetrachloroethene	ND	ND	150 EC	ND
Butane	ND	ND	20	ND
Delta,2-Tetraaboroline,1,4,Diethyl	ND	ND	24 E	ND
Isomer of 1H-Indene	ND	ND	19 E	ND
Isomer of Benzoic Acid	ND	ND	ND	59 E
Isomer of Dihydro Indene	ND	ND	ND	ND
Octane, 3-Methyl	ND	ND	ND	ND
Isomer of Dimethyl Undecane	ND	ND	ND	ND
Isomer of Trimethyl Dodecane	ND	ND	ND	ND
Isomer of Methylpropyl Cyclohexane	ND	ND	ND	ND
Isomer of Cyclopentane	ND	ND	ND	ND
Isomer of Octane	ND	ND	ND	ND
Isomer of Methyllethyl Heptane	ND	ND	ND	ND
Total Nonpriority Base/Neutral Concentration	28700 E	7920 E	344 E	1335 E

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

C - Indicates that contamination is probably the result of laboratory and field contamination.

* - Indicates that duplicate analysis is not within control limits.

(2) - Indicates the number of identical compounds in a specific sample.

HW-53 HW-6688/P4392 3-8 12/3/86 WATER	HW-54 HW-6718/P4356 2.5 - 7.5 12/5/86 WATER	HW-55 HW-6691/P4356 6-18 12/2/86 WATER
3840 R(6)	810 R(5)	ND
ND	ND	166 R(3)
1250 R(2)	120 R	ND
3830 R(3)	ND	ND
ND	570 R(2)	ND
1400 R	ND	ND
940 R	99 R	ND
ND	ND	183 R(3)
ND	ND	ND
770 R	ND	150 R
ND	ND	ND
700 R	ND	ND
590 R	ND	ND
500 R	ND	ND
ND	ND	ND
ND	130 RC	46 RC
ND	ND	ND
ND	ND	ND
ND	ND	ND
ND	ND	ND
550 R	ND	ND
610 R	ND	ND
1020 R(2)	ND	ND
ND	120 R	ND
ND	90 R	ND
ND	93 R	ND
ND	140 R	ND
ND	150 R	ND
16020 R	2774 R	499 R

Sample Location
Lab. ID. Number
Screened Interval (ft.)
Date Sampled
Sample Matrix

VOLATILE ORGANICS (ppb)

Methylene Chloride
Acetone
Toluene
Ethylbenzene
Total Xylenes

Total Volatile Concentration

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Naphthalene
4-Chloroaniline
2-Methylnaphthalene
Di-n-Butylphthalate
bis(2-Ethylhexyl)Phthalate

Total Base/Neutral Concentration

PESTICIDES/PCB's (ppb)

METALS (ppb)

Lead
Zinc

Total Metal Concentration

CYANIDES AND PHENOLICS (ppb)

Total Phenols

Total Cyanide\Phenol Concentration

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
LOWER AQUIFER-REFINERY AREA

MWD-47
EW-8904\ P4460
100-110
12/9/86
WATER

MWD-49
EW-8901\ P4458
72-82
12/2/86
WATER

11 C
89 C
50
36
1000

11 C
67 C
ND
ND
ND

1088

ND

28
28
33
2.5 EC
51 C

ND
ND
ND
ND
ND

89

ND

ND FOR ALL SAMPLES

198.1 *
97

35 *
17

295.1

52

ND

22.6

ND

22.6

WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
LOWER AQUIFER-REFINERY AREA

Sample Location	MWD-47	MWD-49
Lab. ID. Number	EW-6904/P4480	EW-6901/P4458
Screened Interval (ft.)	100-110	72-82
Date Sampled	12/9/88	12/2/86
Sample Matrix	WATER	WATER

NONPRIORITY VOLATILE ORGANICS(ppb)

Unknown	490 E(2)	ND
Hexane	110 E	7.6 E
Butane	160 E	ND
2-Methyl Butane	260 E	ND
Pentane	280 E	ND
Cyclohexane	250 E	ND
Cyclohexene	78 E	ND
Methyl Cyclopentane	24 E	ND
Unknown Isomer Of Methyl Cyclopentane	130 E	ND
Total Nonpriority Volatile Concentration	1780 E	7.6 E

NONPRIORITY BASE/NEUTRALS EXTRACTABLES(ppb)

Unknown	145 E(4)	ND
Benzene, Ethyl Substituted	167 E(2)	ND
Isomer Of Benzene Substituted	510 E(9)	ND
Unknown Alkene	11 E	ND
Unknown Alkane	55 E(4)	ND
Total Base/Neutral Concentration	888 E	ND

QUALIFIERS

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UPPER

Sample Location
 Lab. I.D. Numbers
 Screened Interval (ft.)
 Date Sampled
 Sample Matrix

MWB-61
 EW-6565/P4279
 7-17
 11/26/86
 WATER

VOLATILE ORGANICS (ppb)

Methylene Chloride	28 C
Acetone	550 C
Chloroform	ND
1,1,1-Trichloroethane	0.4 E
Benzene	0.3 E
Toluene	3.1 E
Total Xylenes	ND
Total Volatile Concentration	3.8

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

bis(2-Ethylhexyl)Phthalate	ND
Di-n-Octyl Phthalate	ND
Benzo(a)Pyrene	ND
Total Base/Neutral Concentration	ND

PESTICIDES/PCB's (ppb)

4,4'-DDT	0.003 E
Total Pest\PCB Concentration	0.003 E

METALS (ppb)

Lead	ND
Zinc	4665
Total Metal Concentration	4665

CYANIDES AND PHENOLICS (ppb)

Cyanide	ND
Total Phenols	ND
Total Cyanide/Phenols Concentration	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
OFFSITE BACKGROUND CONDITIONS

AQUIFER	CLAY SUBSTRATUM		LOWER AQUIFER
MWB-63 EW-6566\P4272 10-20 11/26/86 WATER	MWCB-42 EW-6564\P4278 40-50 11/25/86 WATER	MWCB-62 EW-6563\P4268 40-50 11/25/86 WATER	MWDB-43 EW-6905\P4472 34-44 12/9/86 WATER
6.6 C	10 C	18 C	4.7 EC
40 C	44 C	210 C	17 C
ND	ND	ND	0.6 E
ND	ND	0.4 E	ND
ND	2.2 E	0.8 E	ND
ND	6.3	ND	ND
ND	13	ND	ND
ND	21.5	1.2	0.6 E
ND	ND	ND	82 C
ND	ND	ND	10 C
ND	ND	ND	12
ND	ND	ND	12
0.006 E	0.004 E	ND	ND
0.006 E	0.004 E	ND	ND
ND	ND	ND	49.7 *
1559	70	182	245
1559	70	182	294.7
ND	ND	ND	ND
ND	17.3	ND	24.7
ND	17.3	ND	24.7

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
OFFSITE BACKGROUND CONDITIONS

	UPPER AQUIFER		CLAY SUBSTRATUM		LOWER AQUIFER
Sample Location	MWB-61	MWB-63	MWCB-42	MWCB-62	MWDB-43
Lab. I.D. Numbers	EW-6565\P4279	EW-6566\P4272	EW-6564\P4278	EW-6563\P4268	EW-6905\P4472
Screened Interval (ft.)	7-17	10-20	40-50	40-50	34-44
Date Sampled	11/26/86	11/26/86	11/25/86	11/25/86	12/9/86
Sample Matrix	WATER	WATER	WATER	WATER	WATER
NONPRIORITY VOLATILE ORGANICS (ppb)					
Unknown	21.7 E(2)	3030 E(2)	ND	28 E	ND
Silanol, Trimethyl-(8C19C1)	21 E	ND	ND	ND	ND
Unknown Isomer of Trimethylbenzene	ND	ND	ND	ND	12
Total Nonpriority Volatile Concentration	42.7 E	3030 E	ND	28 E	12 E
NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)					
Unknown	492 E(5)	23 E	100 E(7)	295 E(10)	247 E(6)
Unknown Ester	ND	15 E	ND	ND	ND
Tetrachloroethene	62 EC	74 EC	64 EC	75 EC	ND
1-Hexanol, 2-Ethyl	ND	ND	16 E	ND	ND
Butyl Myristate (Butyl Tetradecylate)	ND	ND	ND	120 E	ND
1,6,2,3-Dianhydro, 4-Deoxy-B-D-- B-D-Ribo-Hexopyranose	12 E	ND	ND	ND	ND
2-Propanol (1-Methylethylidene)	ND	14 E	ND	ND	ND
Nonane, 3,7-Dimethyl	ND	ND	ND	ND	15 E
Unknown Alkane	ND	ND	ND	ND	31 E
2-Propanol	ND	ND	ND	ND	52 E
Total Nonpriority Base\Neutral Concentration	504 E	52 E	116 E	415 E	345 E

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(2) - Indicates the number of identical compounds in a specific sample.

Sample Location
 Lab. I.D. Numbers
 Screened Interval (ft.)
 Date Sampled
 Sample Matrix

MWC-37
 EW-6693\P4360
 25-35
 12/2/86
 WATER

MWC-38
 EW-6717\P4393
 28-38
 12/4/86
 WATER

VOLATILE ORGANICS (ppb)

Methylene Chloride	31 C	18 C
Acetone	120 C	190 C
1,1-Dichloroethene	30	ND
1,1-Dichloroethane	74	ND
Trans-1,2-Dichloroethene	6400	ND
1,1,1-Trichloroethane	280	ND
Vinyl Chloride	460	ND
Chloroform	ND	ND
Benzene	650	18
Toluene	240	8
Chlorobenzene	ND	5
Ethylbenzene	140	ND
Total Xylenes	ND	90
Total Volatile Concentration	8274	121

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Naphthalene	ND	ND
2-Methylnaphthalene	21	ND
Di-n-Butylphthalate	ND	35 C
bis(2-Ethylhexyl)Phthalate	ND	200 C
Di-n-Octyl Phthalate	ND	ND
Benzo(a)Pyrene	ND	ND
Total Base/Neutral Concentration	21	ND

PESTICIDES/PCB's (ppb)

NA

NA

METALS (ppb)

Aluminum	NA	120
Arsenic	24	ND
Barium	NA	257
Calcium	NA	26000
Chromium	ND	13

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
CLAY SUBSTRATUM-REFINERY AREA

MWC-39 EW-6711\P4361 25-35 12/5/86 WATER	MWC-40 EW-6903\P4461 25-35 12/10/86 WATER	MWC-41 EW-6682\P4342 23-33 12/2/86 WATER	MWD-48 EW-6775\P4471 92-102 12/8/86 WATER
5 C	12 C	5.2 C	7.4 C
48 C	410 C	2200 C	107 C
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	1.5 E
ND	ND	ND	ND
ND	ND	ND	ND
ND	0.4 E	ND	0.7 E
ND	4.4 E	12	5.9 E
ND	2.4 E	ND	ND
ND	ND	ND	ND
ND	9 E	ND	ND
28	81	6.6	ND
28	97.2	18.6	8.1
ND	9 E	ND	2.7 E
ND	25	ND	11
3 EC	5.9 EC	ND	ND
57 C	59 C	14 C	71 C
5 E	7.8 E	ND	3.1 E
13	12	ND	10
18	53.8	ND	26.8
NA	ND	NA	ND
ND	NA	NA	ND
ND	ND	ND	ND
300	NA	NA	ND
37700	NA	NA	30400
ND	ND	ND	ND

Sample Location
 Lab. I.D. Numbers
 Screened Interval (ft.)
 Date Sampled
 Sample Matrix

MWC-37
 EW-6693\P4360
 25-35
 12/2/86
 WATER

MWC-38
 EW-6717\P4393
 28-38
 12/4/86
 WATER

METALS cont. (ppb)

Iron	NA	319
Lead	ND	ND
Magnesium	NA	5400
Manganese	NA	315
Potassium	NA	1000
Sodium	NA	34000
Zinc	2406	357
Total Metal Concentration	2430	370

CYANIDES AND PHENOLICS (ppb)

Cyanide	NA	NA
Total Phenols	NA	NA
Total Cyanide\Phenol Concentration	NA	NA

NONPRIORITY VOLATILE ORGANICS (ppb)

Unknown	244 E	23 E(2)
Unknown Alkane	ND	13 E
Unknown Cycloalkane	305 E	ND
Unknown Hydrocarbon	ND	13 E
Cyclohexane	ND	62 E
Hexane	ND	14 E
1-Methylethyl Benzene	ND	10 E
Unknown Isomer of Ethylmethyl Benzene	ND	ND
Pentane	ND	ND
Methylcyclopentane	ND	ND
Unknown Isomer of Trimethyl Benzene	ND	ND
Total Nonpriority Volatile Concentration	549 E	135 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
CLAY SUBSTRATUM-REFINERY AREA

MWC-39	MWC-40	MWC-41	MWD-48
EW-6711\P4361	EW-6903\P4461	EW-6682\P4342	EW-6775\P4471
25-35	25-35	23-33	92-102
12/5/86	12/10/86	12/2/86	12/8/86
WATER	WATER	WATER	WATER
11109	NA	NA	121
ND	54	7.2	ND
8500	NA	NA	11100
2079	NA	NA	250
1000	NA	NA	ND
2000	NA	NA	52500
20080	226	4236	1769
20080	280	4243.2	1769
NA	ND	NA	ND
NA	14.1	NA	ND
NA	14.1	NA	ND
38 E	16 E(2)	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	ND	ND	ND
ND	41 E	ND	ND
ND	8 E	ND	ND
ND	ND	ND	ND
ND	ND	ND	14 E
ND	6 E	ND	ND
ND	10 E	ND	ND
ND	74 E(2)	ND	ND
38 E	155 E	ND	14 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
CLAY SUBSTRATUM-REFINERY AREA

Sample Location	MWC-37	MWC-38	MWC-39	MWC-40	MWC-41	MWD-48
Lab. I.D. Numbers	EW-6693\P4360	EW-6717\P4393	EW-6711\P4361	EW-6903\P4461	EW-6682\P4342	EW-6775\P4471
Screened Interval (ft.)	25-35	28-38	25-35	25-35	23-33	92-102
Date Sampled	12/2/86	12/4/86	12/5/86	12/10/86	12/2/86	12/8/86
Sample Matrix	WATER	WATER	WATER	WATER	WATER	WATER

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Unknown	84 E(3)	559 E(3)	141 E(8)	78 E(4)	114 E(3)	79 E(4)
Unknown Alkane	ND	1255 E(11)	ND	48 E(2)	ND	12 E
Unknown Alkene	ND	ND	ND	158 E(6)	ND	230 E(9)
Ethylbenzene	63 E	150 E	14 E	ND	ND	158 E(3)
Ethyl Benzene Substituted	ND	ND	ND	20 E	ND	ND
Tetrachloroethene	48 EC	210 EC	160 EC	ND	72 EC	120 EC
Carbamic Acid, Acetyldithio-Methyl Ester	ND	ND	ND	ND	ND	11 E
Dodecanoic Acid, Ethylenyl Ester	ND	ND	ND	ND	ND	90 E
2-Pentanone,4-Hydroxy-4-Methyl	ND	ND	ND	ND	9 EC	ND
Isomer of Benzene	ND	148 E(2)	67 E(4)	ND	ND	ND
Isomer of Hexane	ND	ND	11 E	ND	ND	ND
Isomer of Cyclohexane	ND	96 E	ND	ND	ND	ND
Isomer of Naphthalene Dehydro	ND	83 E	ND	ND	ND	ND
3-Hexanone 2,2-Dimethyl	ND	ND	ND	9 E	ND	ND
Aziridine,2,2-Dimethyl	ND	ND	ND	12 E	ND	ND
2-Propenal	ND	ND	ND	55 E	ND	ND
1,2 Benzenedicarboxylic,-Dioctyl Ester	ND	ND	ND	99 E	ND	ND
1-H-Tetrazol, 5-Amine	ND	ND	ND	18 E	ND	ND
Isomer of Benzene, Substituted	451 E(7)	ND	ND	ND	ND	ND
Benzene,1-Methyl,4-(1-Methylethyl)	41 E(2)	ND	ND	ND	ND	ND
2H-Azepin-2-One, Hexahydro	160 E	ND	ND	ND	ND	ND
Octadecanoic Acid, Butyl Ester	102 E(2)	ND	ND	ND	ND	ND
Benzene, Propyl	25 E	ND	ND	ND	ND	ND
Benzene (1-Methyl,1-Ethyl)	86 E(2)	ND	ND	ND	ND	ND
Total Nonpriority Base/Neutral Concentration	1012 E	2291 E	233 E	497 E	114 E	580 E

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TABLE:

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER-DRAINAGE SWALES AND OUTFALLS

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	SW-30 SW-3401/P1303 8/9/85 WATER	SW-31 SW-3402/P1300 8/9/85 WATER	SW-32 SW-3403/P1307 8/9/85 WATER
VOLATILE ORGANICS (ppb)			
Ethylene Chloride	ND	ND	12 C
Acetone	9.3 C	15 C	11 C
2-Butanone	6.9 E	7.2 E	6.7 E
1,1,1-Trichloroethane	2.1 E	13	370
Benzene	6.9 E	ND	1.3 E
Total Volatile Concentration	9.9 E	20.2	376
BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
4-Nitrophenol	ND	46 E	ND
Phenol	ND	1.8 E	ND
2-Chlorophenol	ND	92	ND
Nitrobenzene	ND	ND	ND
2-Nitrophenol	ND	6 E	ND
Benzoic Acid	ND	ND	18 E
4-Chloro-3-Methylphenol	ND	67	ND
Acenaphthene	ND	0.6 E	ND
2,6-Dinitrotoluene	ND	30.2	ND
Diethylphthalate	0.7 E	ND	ND
Fluorene	1.1 E	ND	ND
N-Nitrosodiphenylamine	1.5 E	ND	ND
Pentachlorophenol	ND	89	ND
Di-n-Butylphthalate	0.6 EC	1.5 EC	1.1 EC
Butylbenzylphthalate	10.3	47	2.6 E
bis(2-Ethylhexyl)Phthalate	22 C	38 C	63 C
Di-n-Octyl Phthalate	0.3 E	15	11
Benzo(h)Fluoranthene	ND	ND	11
Benzo(a)Pyrene	ND	7.1	ND
Total Base/Neutral Concentration	19.9 E	493.7	42.6
PESTICIDES/PCB's (ppb)			
ND FOR ALL SAMPLES			
HEAVY METALS (ppb)			
Copper	48	ND	26
Lead	155	50.3	115
Nickel	244	1622	1242
Zinc	163	330	121
Total Metal Concentration	610	2010.3	1504

SW-38
SW-3543\PI402
9/10/85
HAYSD

ND
10 C
ND
ND
ND
ND

ND
ND
ND
1.3 K
ND
ND
ND
ND
ND
ND
ND
ND
ND
1.6 KC
1.2 K
1.9 KC
ND
10.2
ND
12.7

59
5.1
630
46
740.1

TABLE:

SINCLAIR REFINERY
WELLSTILL, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER-DRAINAGE SWALES AND OUTFALLS

Sample Location	SW-30	SW-31	SW-32
Lab. I.D. Numbers	SW-3491\P1303	SW-3492\P1396	SW-3493\P1307
Date Sampled	9/9/85	9/9/85	9/9/85
Sample Matrix	WATER	WATER	WATER

NONPRIORITY VOLATILE ORGANICS(ppb)	ND FOR ALL SAMPLES		

NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)			
Unknown	ND	ND	50.9 E(3)
Unknown Hydrocarbon	ND	ND	124.9 E(5)
Benothiazole	ND	ND	13.5 E
Octadecanoic Acid, Butyl Ester	ND	ND	161 E(2)
Docosane	ND	ND	19.3 E
Octacosane	ND	ND	17.2 E
1,2-Benzene Dicarboxylic Acid, Dinonyl Ester	ND	ND	19.4
Hexatriacontane	ND	ND	51.5 E
Pentacosane	ND	ND	23.1 E
Unknown Ester	ND	ND	ND
Ethyl Benzene	25.9 E	28 E	13.9 E
Tetrachloroethene	11.3 EC	12.4 EC	ND
2-Furan Carboxaldehyde	19.4 E	20.7 E	ND
7-Oxabicyclo [4.1.0] Heptane	12.7 E	13.2 E	ND
Butyl Ester Of Hexadecanoic Acid	149.3 E	ND	ND
1-Methyl-5,5' Bitriazole	20.0 E	ND	ND
2,5-Cyclohexadiene-1,4	ND	8.9 E	ND
1,2-Benzenedicarboxylic Acid, Monopentyl Ester	ND	93.6 E	ND
Total Nonpriority Base/Neutrals Concentration	236.1 E	164.4 E	513.7 E

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SW-38
SW-3543\PI482
9/10/85
WATER

20.2 E
110.4 E(7)

ND
44.6 E

ND
ND
ND
ND
ND

46.8 E

ND
ND
ND
ND
ND
ND
ND

222 E

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-BACKGROUND SURFACE WATER (NON-RIVERS)**

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	SW-42 NW-5879/P3778 10/22/86 WATER	SW-43 NW-5880/P3779 10/22/86 WATER	SW-44 NW-5881/P3780 10/22/86 WATER
VOLATILE ORGANICS (ppb)			
Ethylene Chloride	7.5 C	4.1 EC	6.6 C
Acetone	41 C	4.2 EC	8.8 EC
Benzene	ND	ND	ND
Total Volatile Concentration	ND	ND	ND
BASE/NEUTRAL ACID EXTRACTABLES (ppb)			
Phenol	38	19	33
bis(2-Ethylhexyl)Phthalate	63 C	ND	54 C
Di-n-Octyl Phthalate	ND	ND	8.6 E
Benzo(a)Pyrene	ND	ND	16
Total Base/Neutral Concentration	38	19	57.6
PESTICIDES/PCB's (ppb)			
	ND FOR ALL SAMPLES		
METALS (ppb)			
Chromium	ND	11	ND
Lead	ND	ND	ND
Silver	ND	83	ND
Zinc	73	87	35
Total Metal Concentration	73	181	35
CYANIDES AND PHENOLICS (ppb)			
	ND FOR ALL SAMPLES		
NONPRIORITY VOLATILE ORGANIC (ppb)			
Ethane,1,1-Oxybis	7.8 E	ND	9 E
Hexane	5.6 E	ND	7.6 E
Total Nonpriority Volatile Concentration	13.4 E	ND	12.6 E
NONPRIORITY BASE/NEUTRALS EXTRACTABLES (ppb)			
Unknown	ND	9 E	ND
Tetrachloroethene	128 EC	109 EC	11 EC
Unknown Alkane	45 E(2)	57 E(3)	86 E(4)
Unknown Prob.Phthalate	66 E	ND	ND
Unknown Butyl Ester	ND	11 E	14 E
1,2-Benzenedicar.Acididinonylester	ND	ND	ND
Unknown Phthalate Ester	ND	ND	ND

SW-45
HW-5932/P3012
10/24/86
WATER

6.5 C
6.2 EC
1.5 B

1.5 B

ND
210 C
61
ND

61

ND
60
83
ND

123

ND
ND
ND

421 B(5)
106 BC
314 B(9)
ND
ND
10 B
10 B

**SINCLAIR REFINERY
WELLSTVILLE, NEW YORK
CHEMICAL ANALYSIS-BACKGROUND SURFACE WATER (BOB-RIVER)**

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	SW-42 EW-5679\P3778 10/22/86 WATER	SW-43 EW-5680\P3779 10/22/86 WATER	SW-44 EW-5681\P3780 10/22/86 WATER
Unknown Phthalate	ND	ND	ND
Hexadecane,2,6,10,14-Tetramethyl	ND	ND	23 E
Total Nonpriority Base/Neutral Concentration	111 E	77 E	123 E

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(2) - Indicates the number of identical compounds in a specific sample.

SW-45

HW-5032/P3012

10/26/06

WATON

245 E(4)

ND

1020 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-BACKGROUND SURFACE WATER GENESEE RIVER

Sample Location
Lab. I.D. Numbers
Date Sampled
Sample Matrix

SW-39
SW-3544\P1403
9/10/85
WATER

SWB-40
EW-6187\P3998
11/6/86
WATER

SWB-41
EW-5882\P3781
10/21/86
WATER

VOLATILE ORGANICS (ppb)

Methylene Chloride	ND	20.3 C	5.6 C
Acetone	ND	150 C	5.4 EC
Total Volatile Concentration	ND	ND	ND

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Phenol	ND	ND	42
Di-n-Butylphthalate	0.7 EC	ND	ND
bis(2-Ethylhexyl)Phthalate	ND	28 C	ND
Total Base\Neutral Concentration	ND	ND	42

PESTICIDES/PCB's (ppb)

ND FOR ALL SAMPLES

METALS (ppb)

Lead	14	23.8 *	ND
Nickel	480	ND	ND
Zinc	39	31	86
Total Metal Concentration	513	54.8	86

CYANIDES AND PHENOLICS (ppb)

ND FOR ALL SAMPLES

NONPRIORITY VOLATILE ORGANICS (ppb)

1-Propene	ND	5 E	ND
Trichlorofluoromethane	ND	5 E	ND
Trimethyl Silanol	ND	7 E	ND
Hexane	ND	ND	5 E
Total Nonpriority Volatile Concentration	ND	17 E	5 E

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Methyl Benzene	35.3 E	ND	ND
Butyl Ester Hexadecanoic Acid	144.1 E	ND	ND
Octadecanoic Acid Butyl Ester	36 E	ND	ND
Formic Acid, Propyl Ester	ND	230 E	ND
Tetrachloroethene	ND	42 EC	120 EC
2(3H) Furanone, Dihydro	ND	45 E	ND
Unknown	ND	17 E	11 E
	ND	24 E	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-BACKGROUND SURFACE WATER GENESEE RIVER

Sample Location	SW-39	SWB-40	SWB-41
Lab. I.D. Numbers	SW-3544\P1403	EW-6187\P3998	EW-5882\P3781
Date Sampled	9/10/85	11/8/86	10/21/86
Sample Matrix	WATER	WATER	WATER
Unknown Alkane	ND	10 E	87 E(3)
Unknown Butyl Ester	ND	ND	25 E
Unknown Ester	ND	ND	12 E
Hexadecane, 2, 6, 10, 14-Tetramethyl	ND	ND	24 E
Total Nonpriority Base/Neutral Concentration	215.4 E	326 E	159 E

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- (2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-OIL PHASE OF WASTE
FROM ABANDONED OIL SEPARATOR

Sample Location
Lab. I.D. Numbers
Date Sampled
Sample Matrix

SW-33
SW-3539\Pl451
9/9/85
WATER

SW-

VOLATILE ORGANICS (ppb)

Methylene Chloride	9700 C
Acetone	6000 C
Carbon Disulfide	110 E
1,1-Dichloroethane	580
Trans-1,2-Dichloroethene	3300
2-Butanone	6800
1,1,1-Trichloroethane	1100
1,1,2,2-Tetrachloroethane	1500
1,2-Dichloropropene	300 E
Trichloroethene	5000
Benzene	3300
4-Methyl-2-Pentanone	20000 E
Chlorobenzene	43000 E
Ethylbenzene	3800
Total Xylenes	2700
Total Volatile Concentration	107190 E

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

1,4-Dichlorobenzene	ND
1,2-Dichlorobenzene	120
2,4-Dimethylphenol	ND
Naphthalene	150
2-Methylnaphthalene	710
Fluorene	170
N-Nitrosodiphenylamine(1)	970
Phenanthrene	240
Fluoranthene	360
Pyrene	180
Butylbenzylphthalate	1710
bis(2-Ethylhexyl)Phthalate	4360 C
Di-n-Octyl Phthalate	101
Benzo(k)Fluoroanthene	575
Total Base\Neutral Concentration	5286

PESTICIDES/PCB's (ppb)

Heptachlor Epoxide	ND
Total Pest\PCB Concentration	ND

SW-34
-3540\PI407
9/9/85
WATER

330 C
170 C
ND
ND
55
ND
39
ND
ND
30
7.6 E
ND
ND
ND
ND

631.6

3.6 E
ND
1.3 E
0.9 E
2 E
ND
1.8 E
ND
ND
ND
ND
3.3 EC
ND
ND

9.6 E

0.01 E

0.01 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-OIL PHASE OF WASTE
FROM ABANDONED OIL SEPARATOR

Sample Location	SW-33	SW-34
Lab. I.D. Numbers	SW-3539\P1451	SW-3540\P1407
Date Sampled	9/9/85	9/9/85
Sample Matrix	WATER	WATER

Arsenic	11.8	645
Copper	378	30
Lead	4051	813
Nickel	202	2560
Zinc	604	613

Total Metal Concentration	5246.6	4681

CYANIDES AND PHENOLICS (ppb)	ND FOR ALL SAMPLES

NONPRIORITY VOLATILE ORGANICS (ppb)

Cyclohexane	260 E	ND
Unknown Hydrocarbon	44000 E(3)	ND
Isomer of Dimethyl Cyclohexane	18700 E(2)	ND
Unknown	33000 E(2)	ND
1,1,3-Trimethyl Cyclohexane	6700 E	ND
Heptane, 2-Methyl	9600 E	ND

Total Nonpriority Volatile Concentration	112260 E	ND

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Unknown Hydrocarbon	198900 E(20)	342.4 E(15)
Dodecane	9800	ND
Methyl Benzene	ND	32.8 E
2-Butoxy Etanol	ND	12.3 E
1-Methylethyl Benzene	ND	10.7 E
Cyclopentadecanone	ND	22.1 E

Total Nonpriority Base\Neutral Concentration	208700 E	420.3 E

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

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(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLS, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER
GENESEE RIVER-REFINERY AREA

Sample Location
Lab. I.D. Nunmbers
Date Sampled
Sample Matrix

SW-35
SW-3541\P1400
9/10/85
WATER

SW-36
SW-3542\P1401
9/10/85
WATER

SW-37
SW-3494\P1398
9/9/85
WATER

VOLATILE ORGANICS (ppb)

Acetone	35 C	ND	8.3 C
Trans-1,2-Dichloroethene	28	ND	26
2-Butanone	13	ND	7.8 E
1,1,1-Trichloroethane	ND	ND	16
Trichloroethene	ND	ND	13
Benzene	ND	ND	4.1 E
Total Volatile Concentration	41	ND	66.9

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

1,4-Dichlorobenzene	ND	ND	1.1 E
Nitrobenzene	ND	ND	3.2 E
Di-n-Butylphthalate	ND	ND	1.2 EC
Butylbenzylphthalate	5 E	ND	ND
bis(2-Ethylhexyl)Phthalate	56 EC	ND	ND
Total Base/Neutral Concentration	5 E	ND	4.3 E

PESTICIDES/PCB's (ppb)

METALS (ppb)

Arsenic	ND	ND	45
Copper	33	55	18
Lead	46.5	11.1	51.5
Nickel	799	527	1316
Zinc	67	33	81
Total Metal Concentration	945.5	626.1	1511.5

CYANIDES AND PHENOLICS (ppb)

ND FOR ALL SAMPLES

NONPRIORITY VOLATILE ORGANICS (ppb)

Methylene Chloride	ND	ND	7.4 E
1-Propene	ND	ND	9.5 E
2-Menthyl Propane	ND	ND	8.6 E
2-Menthyl-1-Pentene	ND	ND	34 E
2-Menthyl-1-Propene	ND	ND	21.4 E

SINCLAIR REFINERY
WELLSVILLS, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER
GENESEE RIVER-REFINERY AREA

Sample Location	SW-35	SW-38	SW-37
Lab. I.D. Nunmbers	SW-3541\P1400	SW-3542\P1401	SW-3494\P1398
Date Sampled	9/10/85	9/10/85	9/9/85
Sample Matrix	WATER	WATER	WATER

1-Butyne	ND	ND	5.1 E
Total Nonpriority Volatile Concentration	ND	ND	86 E

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Toluene	ND	9 E	ND
Menthyl Benzene	33.9 E	ND	31 E
Napthalene D8	95.3 E	ND	ND
Tetrachloroethene	ND	ND E	14 EC
2-Furane Carboxaldehyde	ND	ND E	25 E
7-Oxabicyclo[4.1.0] Heptane	ND	ND E	14 E
2-Cyclohexene-1-One	ND	ND E	9.7 E
Benzoic Acid, 2-Hydroxy	ND	ND E	27 E
Total Nonpriority Base\Neutral Concentration	129.2 E	9 E	106.7 E

QUALIFIERS

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SINCLAIR REFINERY
WELLSVILLS, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER
GENESEE RIVER-REFINERY AREA

Sample Location
Lab. I.D. Nunmbers
Date Sampled
Sample Matrix

SW-35
SW-3541\P1400
9/10/85
WATER

SW-36
SW-3542\P1401
9/10/85
WATER

SW-37
SW-3494\P1398
9/9/85
WATER

VOLATILE ORGANICS (ppb)

Acetone	35 C	ND	8.3 C
Trans-1,2-Dichloroethene	28	ND	28
2-Butanone	13	ND	7.8 E
1,1,1-Trichloroethane	ND	ND	18
Trichloroethene	ND	ND	13
Benzene	ND	ND	4.1 E
Total Volatile Concentration	41	ND	66.9

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

1,4-Dichlorobenzene	ND	ND	1.1 E
Nitrobenzene	ND	ND	3.2 E
Di-n-Butylphthalate	ND	ND	1.2 EC
Butylbenzylphthalate	5 E	ND	ND
bis(2-Ethylhexyl)Phthalate	58 EC	ND	ND
Total Base/Neutral Concentration	5 E	ND	4.3 E

PESTICIDES/PCB's (ppb)

ND FOR ALL SAMPLES

METALS (ppb)

Arsenic	ND	ND	45
Copper	33	55	18
Lead	48.5	11.1	51.5
Nickel	799	527	1316
Zinc	67	33	81
Total Metal Concentration	945.5	626.1	1511.5

CYANIDES AND PHENOLICS (ppb)

ND FOR ALL SAMPLES

NONPRIORITY VOLATILE ORGANICS (ppb)

Methylene Chloride	ND	ND	7.4 E
1-Propene	ND	ND	9.5 E
2-Menthyl Propane	ND	ND	8.6 E
2-Menthyl-1-Pentene	ND	ND	34 E
2-Menthyl-1-Propene	ND	ND	21.4 E

SINCLAIR REFINERY
WELLSVILLS, NEW YORK
CHEMICAL ANALYSES-SURFACE WATER
GENESEE RIVER-REFINERY AREA

Sample Location	SW-35	SW-36	SW-37
Lab. I.D. Nunmbers	SW-3541\P1400	SW-3542\P1401	SW-3494\P1398
Date Sampled	9/10/85	9/10/85	9/9/85
Sample Matrix	WATER	WATER	WATER

1-Butyne	ND	ND	5.1 E
Total Nonpriority Volatile Concentration	ND	ND	88 E

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Toluene	ND	9 E	ND
Menthyl Benzene	33.9 E	ND	31 E
Napthalene D8	95.3 E	ND	ND
Tetrachloroethene	ND	ND E	14 EC
2-Furane Carboxaldehyde	ND	ND E	25 E
7-Oxabicyclo[4.1.0] Heptane	ND	ND E	14 E
2-Cyclohexene-1-One	ND	ND E	9.7 E
Benzoic Acid, 2-Hydroxy	ND	ND E	27 E
Total Nonpriority Base\Neutral Concentration	129.2 E	9 E	108.7 E

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SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-WATER CONDUIT\SEWER\PIPELINE ACCESS POINTS

Sample Location	MH-1	MH-2	MH-3
Lab. I.D. Number	SW-3564\P1410	SW-3563\P1408	SS-3562\P1493
Date Sampled	9/8/85	9/8/85	9/8/85
Sample Matrix	WATER	WATER	WATER
VOLATILE ORGANICS (ppb)			
Methylene Chloride	99 C	7.5 C	1100 C
Acetone	67 C	120 C	1400 C
Trans-1,2-Dichloroethene	140	3.5 E	ND
Chloroform	ND	6.6	ND
2-Butanone	24	ND	3200
1,1,1-Trichloroethane	32	ND	ND
Vinyl Acetate	ND	2 E	ND
1,1,2,2-Tetrachloroethane	ND	ND	240 E
Trichloroethene	49	ND	ND
Benzene	48	4.2 E	280 E
2-Hexanone	ND	19	ND
Toluene	ND	20	ND
Total Xylenes	102	2.8 E	140 E
Total Volatile Concentration	395	58.1	3860
BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
Aniline	ND	ND	121 E
2-Methylphenol	ND	40 E	ND
bis(2-chloroisopropyl)Ether	ND	ND	1031
4-Methylphenol	ND	ND	22 E
Nitrobenzene	ND	ND	19 E
4-Chloro-3-Methylphenol	ND	ND	84 E
2-Methylnaphthalene	ND	ND	140 E
Fluorene	ND	ND	60 E
N-Nitrosodiphenylamine	ND	ND	160 E
Phenanthrene	ND	ND	130 E
Di-n-Butylphthalate	1.7 EC	0.5 EC	ND
Fluoranthene	ND	ND	78 E
Pyrene	ND	ND	140 E
Butylbenzylphthalate	ND	ND	26 E
bis(2-Ethylhexyl)Phthalate	65 C	35 EC	340 C
Di-n-Octyl Phthalate	10.4 E	120 E	95 E
Benzo(k)Fluoroanthene	24	345	44 E
Total Base\Neutral Concentration	34.4	505	2150
PESTICIDES/PCB's (ppb)			
ND FOR ALL SAMPLES			

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-WATER CONDUIT\SEWER\PIPELINE ACCESS POINTS

Sample Location	MH-1	MH-2	MH-3
Lab. I.D. Number	SW-3564\P1410	SW-3563\P1408	SS-3562\P1493
Date Sampled	9/8/85	9/8/85	9/8/85
Sample Matrix	WATER	WATER	WATER
METALS (ppb)			
Arsenic	32.5	ND	34.9
Cadmium	ND	ND	3.7
Copper	46	182	453
Lead	368	59.8	341
Nickel	2288	628	45.5
Silver	ND	ND	0.7
Zinc	215	313	893
Total Metal Concentration	2949.5	1182.8	1771.8
CYANIDES AND PHENOLICS (ppb)			
Cyanide	ND	28	ND
Total Phenols	NA	NA	NA
Total Cyanide\Phenol Concentration	ND	28	ND
NONPRIORITY VOLATILE ORGANICS (ppb)			
Unknown	3.3 E	ND	7080 E(5)
1-Propene	7.3 E	ND	ND
Methyl, Methylene Cyclopropane	8.3 E	ND	ND
2-Methyl Butane	8.9 E	ND	ND
1,1-Dimethyl Cyclopropane	9.5 E	ND	ND
Butane	33 E	ND	ND
1,2-Dimethyl Benzene	92 E	ND	ND
3-Dimethyl Benzene	92 E	ND	ND
Pentane	5.1 E	ND	ND
Cyclohexane	30.2 E(2)	7.6 E	650 E
Methyl Pentane	14.5 E	ND	ND
Unknown Alcohol	5.8 E	ND	ND
Hexane	ND	ND	1000 E
Unknown Ketone	ND	ND	2050 E(2)
Total Nonpriority Volatile Concentration	309.9 E	7.6 E	10780 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-WATER CONDUIT\SEWER\PIPELINE ACCESS POINTS

Sample Location	MH-1	MH-2	MH-3
Lab. I.D. Number	SW-3564\P1410	SW-3563\P1408	SS-3562\P1493
Date Sampled	9/8/85	9/8/85	9/8/85
Sample Matrix	WATER	WATER	WATER

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Unknown	ND	1300 E(2)	ND
Methyl Benzene	210 E	ND	ND
Unknown Ester	55 E	2380 E(2)	ND
Unknown Hydrocarbon	ND	14328 E(9)	34940 E(16)
1,3-Dimethyl Cyclopentane	ND	450 E	ND
Octamethyl Cyclotetrasiloxane	ND	610 E	ND
3-Methyl-5-Propyl Nonane	ND	360 E	ND
2-Dodecane	ND	660 E	ND
Hexadecanoic Acid	ND	1310 E	ND
1,1-Tetradecadiene	ND	4100 E	ND
Farnesol	ND	860 E	ND
Vitamin E	ND	830 E	ND
1,2,4-Trithiolane	ND	ND	1200 E
Unknown Carboxylic Acid	ND	ND	4600 E(2)
Sulfur	ND	ND	2000 E
Total Nonpriority Base\Neutral Concentration	265 E	27188 E	42740 E

QUALIFIERS

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Appendix B

Phase I and IIA Analytical Data

PHASE IIA

- **SOLID SAMPLES (SURFACE SOILS, SUBSURFACE SOILS, OTHERS)**

**STICLAIR WRETHURY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-COMPOSITE SURFACE SOILS-WRETHURY AREA**

Sample Location	SS-27	SS-28	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	SS-35	SS-36
Lab. I.D. Numbers	ES-5703	ES-5704	ES-5705	ES-5706	ES-5707	ES-5837	ES-5838	ES-5839	ES-5847	ES-5886
Sample Depth (in.)	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Date Sampled	10/13/86	10/13/86	10/13/86	10/15/86	10/15/86	10/16/86	10/16/86	10/16/86	10/17/86	10/17/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL

METALS (ppm)

Antimony	161.4	162.3	ND	ND	ND	12.5	ND	ND	ND	ND
Chromium	29.3	29.6	18.1	18.3	16.7	8.5	6.3	ND	8.6	8.4
Copper	15.1	36.2	39.7	52.8	12.9	12.5	19.5	10.5	36	12.3
Lead	61.4	336.2	289.6	372.5	50.6	59.3	65.6	ND	41.9	27.9
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1
Nickel	19.2	17.5	15.5	26.1	15.4	19	10.6	17.4	18.7	9.1
Zinc	70	131.4	99.5	85.5	85.8	59.5	59.7	41.6	79.7	41
Total Metal Concentration	347.4	733.2	462.4	535.2	161.4	172.3	161.7	69.5	185.8	88.8

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

C - Indicates that contamination is probably the result of laboratory and field contamination.

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(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
BACKGROUND COMPOSITE SURFACE SOIL
SAMPLE RESULTS

Sample Location	SS-37	SS-38	SS-39
Lab. I.D. Number	ES-5887	ES-5888	ES-5889
Sample Depth (in.)	0-3	0-3	0-3
Date Sampled	10/17/86	10/17/86	10/17/86
Sample Matrix	SOIL	SOIL	SOIL

METALS (ppm)

Chromium	11.4	ND	7.5
Copper	ND	5.9	5.6
Lead	2.8	33.2	ND
Nickel	21.7	17.3	14.6
Zinc	53.3	37.3	32
Total Metal Concentration	89.2	93.7	59.7

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

C - Indicates that contamination is probably the result of laboratory and field contamination.

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(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-COMPOSITE SUBSURFACE SOILS
UPPER AQUIFER-REFINERY AREA

Sample Location Lab. I.D. Numbers Sample Depth (ft.) Date Sampled Sample Matrix	NW-25 EP-0150\P1070 15-22 1/13/86 SOIL	NW-26 EP-0102\P1950 5-12 1/9/86 SOIL	NW-27 EP-0104\P1952 20-27 1/9/86 SOIL	NW-28 EP-0161\P1979 15-22 1/13/86 SOIL	NW-29 SS-5072\P1001 6-11 12/18/85 SOIL	NW-30 EP-0201\P2021 5-17 1/13/86 SOIL
VOLATILE ORGANICS (ppb)						
Methylene Chloride	1200.0 EC	5.0 EC	54.0 EC	1100.0 EC	4.0 EC	220.0 C
Acetone	4100.0 EC	7000.0 EC	7000.0 EC	3000.0 EC	7300.0 EC	22000.0 EC
Carbon Disulfide	160.0 E	4.9 E	9.4 E	150.0 E	5.0 E	7.0 E
4-Methyl-2-Pentanone	ND	ND	ND	ND	1300.0	ND
1,1,1-Trichloroethane	ND	ND	10.0 E	ND	ND	ND
Benzene	260.0 E	24.0 E	14.0 E	100.0	41.0	3.7 E
2-Hexanone	ND	ND	ND	ND	440.0	14.0 E
Toluene	820.0 E	ND	ND	910.0	ND	ND
2-Butanone	ND	ND	ND	ND	53.0	ND
Chlorobenzene	ND	370.0	ND	ND	300.0	ND
Ethylbenzene	ND	1100.0	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	76.0	ND
Total Xylenes	ND	6100.0 E	330.0	ND	ND	ND
Total Volatile Concentration	1240.0 E	7590.0 E	371.4	1240.0	2215.0	24.7 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)						
Phenol	36.0 E	ND	ND	ND	100.0 E	ND
4-Methylphenol	6.3 E	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	240.0 E	ND	ND	ND
Naphthalene	ND	440.0 E	40.0 E	21.0 E	2400.0	ND
2-Methylnaphthalene	33.0 E	930.0 E	220.0	360.0 E	ND	20.0 E
Dibenzofuran	ND	51.0 E	ND	ND	100.0 E	ND
Diethylphthalate	36.0 E	180.0 E	42.0 E	ND	ND	43.0 E
Fluorene	ND	45.0 E	ND	31.0 E	660.0 E	ND
Phenanthrene	ND	ND	ND	130.0 E	2200.0	5.2 E
Anthracene	ND	ND	ND	ND	270.0 E	ND
Di-n-Butylphthalate	220.0 EC	1800.0 C	3400.0 EC	390.0 EC	ND	180.0 EC
Fluoranthene	ND	ND	40.0 E	ND	120.0 E	ND
N-Nitrosodiphenylamine(1)	ND	ND	ND	ND	330.0 E	ND
Pyrene	ND	ND	ND	ND	430.0 E	ND
Butylbenzylphthalate	ND	ND	ND	40.0 E	ND	ND
Benzo(a)Anthracene	ND	ND	14.0 E	ND	ND	ND
bis(2-Ethylhexyl)Phthalate	23000.0 EC	6500.0 C	ND	13000.0 EC	17000.0 C	14000.0 EC
Di-n-Octyl Phthalate	7.1 E	ND	6.9 E	10.0 E	ND	ND
Benzo(a)Pyrene	490.0 E	ND	26.0 E	530.0 E	ND	ND
Total Base/Neutral Concentration	680.0 E	1646.0	620.0	1140.0 E	6610.0	76.2 E
PESTICIDES/PCN's (ppb)						
ND OR NA FOR ALL SAMPLES						
HEAVY METALS (ppm)						
Arsenic	9.0	10.0	0.6	6.7	21.2	17.1
Cadmium	1.1	1.1	ND	ND	ND	ND
Chromium	ND	14.9	4.2	3.3	21.7	ND
Copper	13.9	10.3	13.6	5.9	16.8	5.6

Lead	8.3	8.4	9.1
Mercury	ND	ND	0.11
Nickel	12.4	15.2	11.9
Silver	ND	ND	ND
Thallium	ND	ND	ND
Zinc	32.8	29.2	27.5
Total Metal Concentration	77.5	90.0	74.0

CYANIDES AND PHENOLICS (ppm)

Cyanide	0.11	ND	ND
Total Phenols	ND	ND	ND
Total Cyanide/Phenol Concentration	0.1	ND	ND

NONPRIORITY VOLATILE ORGANICS(ppb)

Unknown	ND	12850.0 E(5)	11500.0 E(3)
Propanol, 2-Methyl	5600.0 E	ND	ND
Unknown Ketone	1700.0 E	ND	ND
3-Pentanone	2300.0 E	ND	ND
Butanoic Acid, Methyl Ester	2700.0 E	ND	ND
Butanoic Acid,2-Methyl-,Methyl Ester	770.0 E	ND	ND
Unknown Alkane/Alkene	ND	1200.0 E	ND
Unknown Alkene	ND	10200.0 E(2)	2000.0 E
Hexane	ND	920.0 E	860.0 E
Cyclohexane	ND	ND	1100.0 E
Unknown Alkane	ND	ND	2160.0 E(2)
Unknown Cyclohexane	ND	ND	1600.0 E
Unknown Cyclic Compound	ND	ND	760.0 E
Total Nonpriority Volatile Concentration	13070.0 E	25170.0 E	20020.0 E

NONPRIORITY BASE/NEUTRALS EXTRACTABLES(ppb)

Unknown	460.0 E	6000.0 E(2)	ND
Unknown Hydrocarbon	19550.0 E(16)	46300.0 E(15)	21600.0 E(10)
Mal. Sulfur	660.0 E	ND	ND
Unknown Aromatic	ND	5200.0 E(2)	ND
Unknown Cyclic Hydrocarbon	ND	1700.0 E	ND
Total Nonpriority Base/Neutral Concentration	20670.0 E	58200.0 E	21600.0 E

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

C - Indicates that contamination is probably the result of laboratory and field contamination.

0 - Indicates that duplicate analysis is not within control limits.

(2) - Indicates the number of identical compounds in a specific sample.

7.5	25.1	0.1
ND	ND	ND
11.7	19.4	10.7
ND	0.24	ND
ND	2.5	ND
21.5	59.3	33.8
56.5	166.5	75.3

0.11	ND	ND
ND	ND	ND
0.1	ND	ND

700.0 E	3600.0 E(2)	ND
ND	ND	ND
1400.0 E	ND	ND
2200.0 E	ND	ND
2600.0 E	ND	ND
ND	ND	ND
ND	ND	ND
ND	ND	ND
ND	ND	ND
ND	740.0 E	ND
ND	2600.0 E(3)	ND
ND	700.0 E	ND
ND	2100.0 E(3)	ND
6100.0 E	9020.0 E	ND

ND	8300.0	300.0 E
11200.0 E(3)	520300.0 E(16)	10230.0 E(11)
ND	ND	ND
ND	30000.0 E(3)	ND
ND	ND	ND
11200.0 E	560400.0 E	10610.0 E

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER - REFINERY AREA**

Sample Location Lab. I.D. Number Sample Depth (ft.) Data Sampled Sample Matrix	HW-31 KP-0080\P1918 35-40 1/6/86 SOIL	HW-32 KP-0202\P2022 5-17 1/16/86 SOIL	HW-33 KP-0081\P1924 15-22 1/7/86 SOIL
VOLATILE ORGANICS (ppb)			
Methylene Chloride	19 EC	149 EC	32 C
Acetone	839 EC	5700 EC	970 C
Carbon Disulfide	0.9 E	7.3 E	34
Benzene	1 E	4.4 E	180
2-Hexanone	ND	ND	320
4-Methyl-2-Pentanone	ND	ND	1700 E
Toluene	2.4 E	4.4 E	ND
Ethylbenzene	ND	ND	240
Total Xylenes	0.7 E	ND	ND
Chlorobenzene	ND	ND	210
Total Volatile Concentration	13 E	16.1 E	2684 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
Phenol	ND	62 E	ND
2-Methylphenol	ND	ND	ND
Nitrobenzene	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND
Naphthalene	ND	ND	ND
2-Methylnaphthalene	55 E	18 E	1800 E
Dimethyl Phthalate	ND	ND	ND
Acenaphthene	ND	ND	ND
Dibenzofuran	ND	ND	ND
Diethylphthalate	270 E	ND	190 E
Fluorene	ND	ND	200 E
Phenanthrene	ND	ND	ND
Di-n-Butylphthalate	5400 C	840 C	6200 C
Fluoranthene	ND	ND	ND
Pyrene	ND	ND	270 E
Butylbenzylphthalate	ND	ND	ND
Benzo(a)Anthracene	ND	ND	ND
bis(2-Ethylhexyl)Phthalate	18000 EC	14000 EC	11000 C
Chrysene	ND	ND	620 E
Di-n-Octyl Phthalate	ND	ND	ND
Benzo(a)Pyrene	ND	ND	100
Total Base/Neutrals Concentration	325	80 E	3260
PESTICIDES/PCB's (ppb)			
Gamma-BHC (Lindane)	NA	2.48 E	ND

EW-36
EP-0162\PI000
5-18
1/15/06
SOIL

2000 IC
5100 IC
130 E
470 E
920 E
ND
ND
3600
26000
ND
31100 E

ND
12 E
76 E
20 E
~~3300~~
~~0300~~
33 E
200 E
67 E
59 E
630 E
1900
400 EC
120 E
290 E
200 E
40 E
13000 EC
ND
12 E
240 E
15595 E

廣告

SINCLAIR REFINERY
WILLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER - REFINERY AREA

Sample Location Lab. I.D. Number Sample Depth (ft.) Date Sampled Sample Matrix	HW-31 EP-0008/P1918 35-40 1/6/86 SOIL	HW-32 EP-0202/P2022 5-17 1/16/86 SOIL	HW-33 EP-0001/P1924 15-22 1/7/86 SOIL
Total Pest/PCB Concentration	NA	2.48 E	ND
HEAVY METALS (ppm)			
Antimony	17.1	ND	ND
Arsenic	22.2	15.0	6.6
Cadmium	ND	ND	ND
Chromium	ND	ND	ND
Copper	21.8	ND	43.4
Lead	10.5	15.4	7.2
Manganese	NA	310.0	NA
Mercury	0.1	ND	0.1
Nickel	30.4	11.1	36.8
Silver	0.3	ND	ND
Vanadium	ND	ND	ND
Zinc	61.5	31.0	99.1
Total Metal Concentration	163.8	73.3	193.2
CYANIDES AND PHENOLICS (ppm)			
Cyanide	ND	ND	ND
Total Phenols	ND	ND	1.4
Total Cyanide/Phenol Concentration	ND	ND	1.4
NONPRIORITY VOLATILE ORGANICS(ppb)			
Unknown Ketone	ND	ND	4700 E
Unknown	ND	ND	3500 E
Unknown Alkane	9.2 E	ND	2200 E
Unknown Cyclohexane	ND	ND	13000 E(2)
Unknown Cyclic Compound	ND	ND	2200 E
Unknown Alkene	ND	ND	3500 E
Unknown Cyclic/Alkene	ND	ND	ND
Unknown Cyclic/Alkene Compound	ND	ND	ND
Cyclohexane	ND	ND	2900 E
Hexane	0.3 E	ND	2000 E
Unknown Benzene	2700	ND	ND
Total Nonpriority Volatile Concentration	2717.5 E	0	34000 E

HW-34 ES-6307\P4058 5-12 11/13/86 SOIL	HW-35 EP-0203\P2023 10-17 1/16/86 SOIL	HW-36 EP-0162\P1000 5-18 1/15/86 SOIL
ND	ND	NA
ND	ND	ND
11.9 *	23.1	11.5
ND	ND	ND
5.4	ND	5.5
14.1	8.8	7.5
20.3 *	10.1	5.6
NA	386.3	NA
ND	ND	ND
ND	21.0	ND
ND	ND	ND
NA	10.1	ND
41.1	42.2	21.3
92.0	501.7	51.4
ND	ND	0.1
ND	ND	ND
ND	ND	0.1
ND	ND	ND
600 K(0)	16400 K(2)	49000 K(2)
160 K	ND	176000 K(0)
25	23000 K(3)	ND
ND	262600 K(3)	21000 K
ND	14000 K	ND
ND	10000 K	ND
ND	ND	14000 K
ND	ND	ND
ND	ND	ND
ND	ND	ND
705 K	326000 K	260000 K

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER - REFINERY AREA

Sample Location	NW-31	NW-32	NW-33
Lab. I.D. Number	EP-0080\P1918	EP-0202\P2022	EP-0001\P1924
Sample Depth (ft.)	35-40	5-17	15-22
Date Sampled	1/6/86	1/16/86	1/7/86
Sample Matrix	SOIL	SOIL	SOIL

Unknown	5700 E(2)	2720 E(3)	21600 E(3)
Unknown Hydrocarbon	112100 E(10)	39970 E(16)	59300 E(10)
Mol. Sulfur	ND	470 E	ND
Formic Acid, Propyl Ester	ND	ND	ND
Unknown Alkane	ND	ND	ND
Undecane, 2,6-Dimethyl	ND	ND	ND
Octadecanoic Acid, Butyl Ester	ND	ND	ND
Unknown Cyclic Hydrocarbon	ND	ND	1700 E
Unknown Aromatic	ND	ND	21900 E(6)
Pentadecane	ND	ND	ND
Unknown Cyclic Compound	ND	ND	ND

Total Nonpriority Base/Neutral Concentration	117600 E	43160 E	104500 E

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

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C - Indicates that contamination is probably the result of laboratory and field contamination.

(2) - Indicates the number of identical compounds in a specific sample.

HN-34	HN-35	HN-36
KS-6307\P4056	XP-0203\P2023	XP-0162\P1000
5-12	10-17	5-10
11/13/86	1/16/86	1/15/86
SOIL	SOIL	SOIL

49000 E(2)	4000 E(2)	0400 E(2)
ND	32600 E(12)	24800 E(6)
ND	ND	ND
07000 E	ND	ND
160940 E(15)	ND	7900 E
18000 E	ND	ND
25000 E	ND	ND
ND	13200 E(4)	ND
ND	1900 E	68000 E(10)
ND	ND	2400 E
ND	1500 E	ND

339940 E	54000 E	112500 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL-COMPOSITE SUBSURFACE SOILS
SUBSURFACE SOIL INVESTIGATION-REFINERY AREA

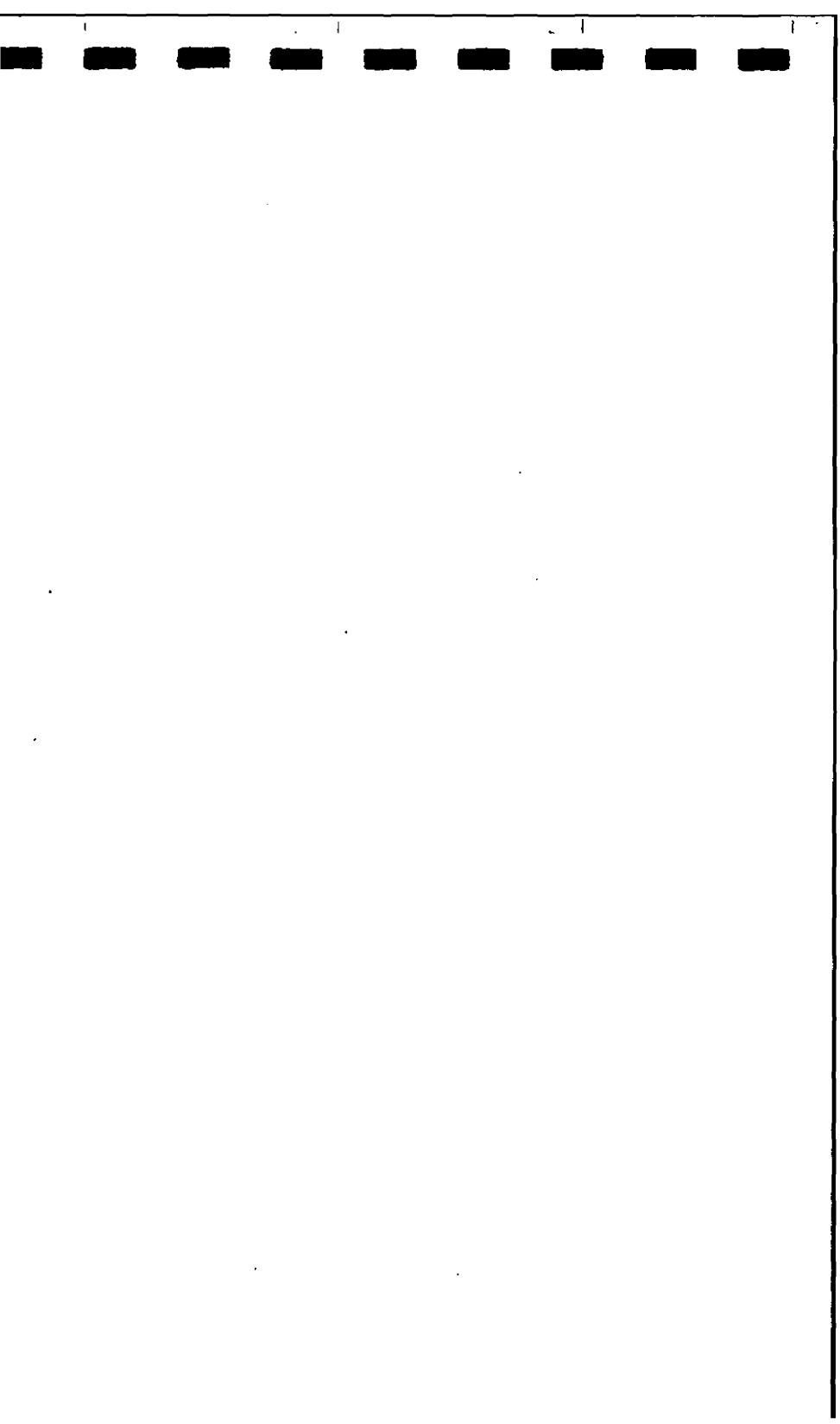
Sample Location	NW-49	NW-50	NW-51	NW-52	NW-53	NW-54
Sample Depth (ft.)	0-10	5-11	5-12	10-12	0-12	0-7
Date Sampled	12/17/85	12/17/85	1/10/86	1/7/86	12/17/85	12/20/85
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL

VOLATILE ORGANICS (ppb)

Methylene Chloride	18 C	13 C	5.5 EC	80 C	14 C	11 C
Acetone	1100 EC	370 EC	1200	7500 EC	9200 EC	130 C
Carbon Disulfide	7	5.7	5 E	48	4 E	4.4 E
2-Butanone	130	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	4.6 E	ND	ND	ND	0.1 E	2.2 E
1,1,2,2-Tetrachloroethane	630 E	38	ND	ND	49	330 E
Benzene	46	4.6 E	0.0 E	1450	4 E	1.1 E
2-Hexanone	1900 E	ND	ND	ND	67	ND
Chloroform	ND	0.3 E	ND	ND	0.6 E	ND
Chlorobenzene	ND	130	10 E	ND	ND	ND
Ethylbenzene	ND	100	ND	1200	ND	ND
Styrene	ND	ND	1.7 E	1.8 E	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND	360 E	ND
Total Xylenes	ND	260 E	310	ND	2500 E	300 E
Total Volatile Concentration	2717.6 E	536.6 E	327.6 E	2699.0 E	2984.7 E	637.7 E

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

1,3-Dichlorobenzene	ND	ND	ND	ND	160 E	ND
2,4-Dimethylphenol	190	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	250 E	ND
Naphthalene	ND	120 E	360 E	520 E	960 E	49 E
2-Methylnaphthalene	2200	4400	660	1500	17000	230 E
2,4,5-Trichlorophenol	ND	ND	ND	ND	490 E	ND
Dimethyl Phthalate	ND	ND	ND	ND	370 E	33 E
Acenaphthylene	ND	ND	ND	ND	350 E	16 E
Acenaphthene	ND	ND	ND	ND	1500 E	22 E
Dibenzofuran	ND	ND	ND	170 E	590 E	ND
Diethylphthalate	ND	ND	90 E	430 E	1090 E	87 E
Fluorene	ND	760 E	ND	110 E	2500 E	67 E
N-Nitrosodiphenylamine	580 E	ND	ND	133 E	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	370 E	ND
Phenanthrene	1300 E	2300	ND	270 E	6100	120 E
Anthracene	ND	380 E	ND	ND	1500 E	24 E
Di-n-Butylphthalate	4600 C	6300 C	3000 C	3300 C	3600 C	6800 C
Fluoranthene	ND	140 E	ND	ND	580 E	85 E
Pyrene	ND	580 E	ND	ND	1500 E	81 E
Butylbenzylphthalate	ND	1700	ND	ND	1100 E	1900
Benzo(a)Anthracene	ND	ND	ND	ND	570 E	ND
bis(2-Ethylhexyl)Phthalate	27000 C	21000 C	3000 C	135000 EC	19000 C	18000 C
Chrysene	310	ND	ND	ND	800 E	ND
Di-n-Octyl Phthalate	ND	ND	ND	45 E	400 E	200 E
Benzo(k)Fluoranthene	ND	ND	ND	ND	1600 E	ND
Benzo(a)Pyrene	ND	ND	520 E	1000	ND	ND



**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL-COMPOSITE SUBSURFACE SOILS
SUBSURFACE SOIL INVESTIGATION-REFINERY AREA**

Sample Location	HW-49	HW-50	HW-51	HW-52	HW-53	HW-54
Sample Depth (ft.)	0-10	5-11	5-12	10-12	0-12	0-7
Date Sampled	12/17/85	12/17/85	1/10/86	1/7/86	12/17/85	12/20/85
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Total Base/Neutral Concentra	4588	10389	1630	4176 E	39710 E	2983
PESTICIDES/PCB's (ppb)						
ND FOR ALL SAMPLES						
HEAVY METALS (ppm)						
Antimony	ND	ND	ND	ND	12.01 *	ND
Arsenic	10.87	10.20	9.56	15.44	ND	14.82
Chromium	12.19	12.86	0.49	ND	14.38	13.98
Copper	29.26	13.6	10.34	15.63	18	10
Lead	13.89	11.5	0.66	6.10	12.98	16.05
Mercury	ND	ND	ND	0.11	ND	ND
Nickel	23.8	12	13.1	13.44	13.2	19.6
Thallium	2.02	ND	ND	ND	ND	ND
Zinc	84.88	35.64	34.47	39.69	58	55.2
Total Metal Concentration	186.71	95.88	84.62	98.08	124.55	137.45
CYANIDES AND PHENOLICS (ppm)						
Cyanide	ND	0.025	ND	ND	ND	ND
Total Phenols	ND	ND	1.26	1.72	ND	0.022
Total Cyanide/Phenol Concent	ND	0.025	1.26	1.72	ND	0.022
NONPRIORITY VOLATILE ORGANICS (ppb)						
Unknown	15300 E(2)	4400 E(3)	ND	10200 E(3)	2400 E(3)	700 E
Unknown Cyclic Compound	13900 E(3)	ND	ND	17500 E(3)	680 E(3)	ND
Unknown Alkane	14300 E(4)	1100 E(2)	7700 E	2600 E	1030 E(2)	10500 E(3)
Unknown Benzene Der.	3100 E	ND	ND	ND	ND	ND
Unknown Alkane, Alkene	ND	1050 E(2)	ND	ND	3100 E	ND
Unknown Triethyl Benzene	ND	5900 E	ND	ND	ND	ND
Unknown Cyclohexane	ND	ND	ND	ND	ND	ND
Hexane	ND	ND	ND	3800 E	ND	ND
Unknown Ketone	ND	ND	ND	ND	ND	520 E
Unknown Alkene	ND	930 E	ND	ND	2100 E	3100 E
Cyclohexane	ND	ND	ND	2900 E	ND	ND
Unknown Benzene Substituted	ND	ND	ND	6100 E	ND	ND
Total Nonpriority Volatile Concentration	46600 E	14150 E	7700 E	43300 E	9470 E	22900 E
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)						
Unknown	13000 E	16000 E	570 E	7300 E(2)	33000 E(3)	2500 E
Unknown Hydrocarbon	263000 E(1)	61600 E(7)	14970 E(1)	83500 E(1)	58700 E(5)	13660 E(6)



SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL-COMPOSITE SUBSURFACE SOILS
SUBSURFACE SOIL INVESTIGATION-REFINERY AREA

Sample Location	HN-49	HN-50	HN-51	HN-52	HN-53	HN-54
Sample Depth (ft.)	8-10	5-11	5-12	10-12	0-12	0-7
Date Sampled	12/17/85	12/17/85	1/10/86	1/7/86	12/17/85	12/20/85
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Unknown Aromatic	68000 E(4)	54400 E(8)	4240 E(6)	5500 E	48600 E(4)	9520 E(4)
Napthalene Dimethyl	ND	12500 E(2)	ND	ND	47600 E(3)	ND
Methyl Ethyl Napthalene	ND	4300 E	ND	ND	ND	ND
Sulfur, Mol.	ND	18000 E	ND	ND	ND	ND
Dodecane	ND	ND	1200 E	ND	ND	ND
Unknown Cyclic Compound	ND	ND	ND	15000 E(3)	ND	ND
Trimethyl Benzene	ND	ND	ND	ND	30000 E	ND
1H-Indene, 2,3-Dihydro-Methyl	ND	ND	ND	ND	39200 E(3)	ND
Unknown Aromatic(Polycyclic)	ND	ND	ND	ND	11000 E	ND
Unknown Ester	ND	ND	ND	ND		13200 E(4)
Total Nonpriority Base/Neutral Concentration	344000 E	166000 E	28900 E	111300 E	269100 E	39000 E

QUALIFIERS

ND - NOT DETECTED

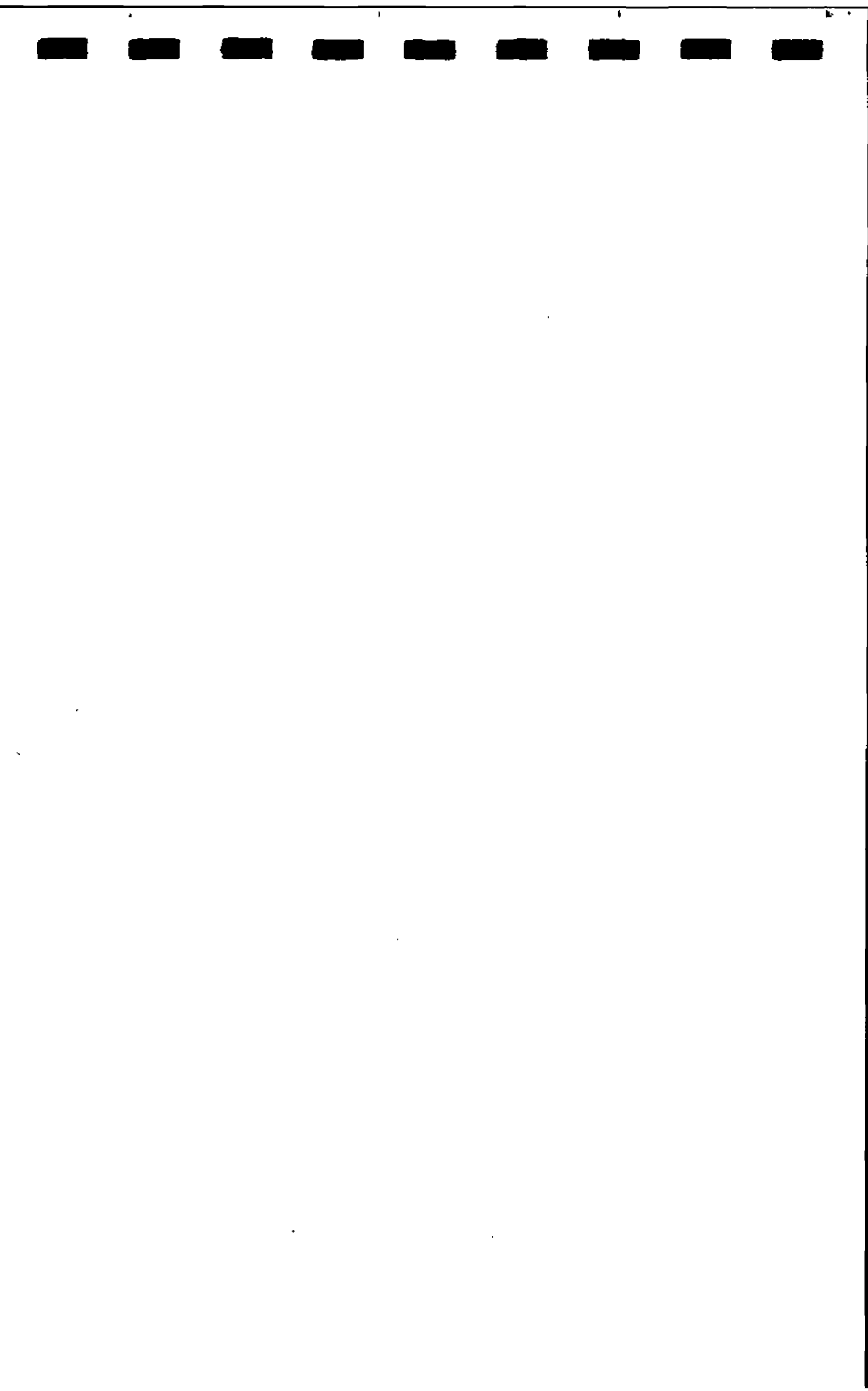
NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

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(2) - Indicates the number of identical compounds in a specific sample.



SINCLAIR EXPIRENT
WELLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER-EXPIRENT AREA

Sample Location Lab. I.D. Numbers Sample Depth (ft.) Date Sampled Sample Matrix	EXP-56 ES-6283/P4056 0-30 11/12/86 SOIL	EXP-2 ES-6150/P3983 0-20 11/4/86 SOIL	EXP-46 ES-6100/P4045 0-20 11/3/86 SOIL	EXP-48 ES-6284/P4057 0-80 11/11/86 SOIL	EXP-39 ES-5704/P3816 7-23 10/9/86 SOIL	AD-39 ES-5030/P3810 5-62 10/23/86 SOIL	AD-40 ES-5702/P3713 0-42 10/14/86 SOIL
VOLATILE ORGANICS (ppb)							
Bethylene Chloride	26 C	41 C	56 C	24 C	ND	7.8 C	63 EC
Acetone	550 C	27 C	15 C	830 C	51 C	38 C	2200 EC
2-Butanone	ND	ND	ND	ND	ND	ND	27
1,1,1-Trichloroethane	ND	ND	2 E	ND	ND	ND	ND
Benzene	ND	ND	2 E	3.9 E	ND	ND	ND
4-Methyl-2-Pentanone	720	370	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	5
Ethylbenzene	45	46	ND	ND	ND	ND	ND
Total Xylenes	69	294	ND	53	ND	ND	ND
Total Volatile Concentration	834	626	4 E	56.9	ND	ND	32
BASE NEUTRALS/ACID EXTRACTABLES (ppb)							
2-Methylnaphthalene	1700	ND	ND	620 E	ND	ND	ND
Phenanthrene	510	ND	ND	ND	ND	ND	ND
Di-n-Butylphthalate	ND	ND	350 EC	340 EC	ND	ND	ND
bis(2-Ethylhexyl)Phthalate	ND	ND	ND	760 C	ND	530 EC	1000 C
Total Base/Neutrals Concentration	2210	ND	ND	620 E	ND	ND	ND
PESTICIDES/PCB's (ppb)							
Beta-BHC	0.4	ND	ND	ND	ND	ND	NA
Dieldrin	4	ND	ND	ND	ND	ND	NA
Endrin	3	ND	ND	ND	ND	ND	NA
Total Pest/PCB Concentration	7.4	ND	ND	ND	ND	ND	NA
HEAVY METALS (ppm)							
Antimony	ND	ND	ND	ND	110.5	ND	134.5
Arsenic	12.1 *	16.3	6.4	11 *	ND	4.7	ND
Beryllium	ND	ND	ND	0.5	ND	0.5	ND
Cadmium	ND	ND	ND	ND	1	ND	ND
Chromium	16.4	7.8	10.0	30.4	14.4	13.5	17.9
Copper	17.7	6.9	17.1	ND	6.4	13.5	9.7
Lead	32.5 *	35.9 *	22 *	33.3 *	11.1 *	14.9 *	51.3
Nickel	20.7	8	15	32.8	ND	16.7	16.3
Selenium	ND	ND	ND	ND	7.9	ND	ND
Silver	ND	ND	13.8	21.5	ND	30.7	ND
Zinc	53.6	30.3	60.6	83.2	27.6	16.3	60.7
Total Metal Concentration	153	99.2	105.7	212.7	178.9	110.8	290.4

SIOCLAIR REFINERY
WELLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER-REFINERY AREA

Sample Location	HWP-56	HWP-2	HWP-46	HWP-40	HWC-39	AB-39	AB-40
Lab. I.D. Numbers	KS-6283/P4056	KS-6150/P3993	KS-6106/P4045	KS-6284/P4057	KS-5784/P3616	KS-5938/P3618	KS-5782/P3713
Sample Depth (ft.)	0-30	0-20	0-20	0-80	7-23	5-62	0-42
Date Sampled	11/12/86	11/4/86	11/3/86	11/11/86	10/9/86	10/23/86	10/14/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL

CYANIDES AND PHENOLICS (ppm)

ND FOR ALL SAMPLES

NONPRIORITY VOLATILE ORGANICS(ppb)

Unknown	130 E(5)	334 E(7)	ND	136 E(6)	6 E	13.2 E(2)	ND
2-Methyl Butane	97 E(2)	ND	ND	ND	ND	ND	ND
Cyclohexane	103 E	ND	ND	ND	ND	ND	ND
Methylcyclopentane	89 E(2)	ND	ND	ND	ND	ND	ND
3-Methyl Pentane	36 E	ND	ND	ND	ND	ND	ND
2-Methyl Pentane	62 E	ND	ND	ND	ND	ND	ND
3-Methyl Cyclohexane	39 E	ND	ND	ND	ND	ND	ND
Cyclohexane Dot	ND	314 E	ND	ND	ND	ND	ND
Unknown Cyclohexane Isomer	ND	28 E	ND	ND	ND	ND	ND
Unknown Alkane	ND	17 E	ND	7 E	ND	ND	ND
Pentane	ND	ND	ND	7.1 E	ND	ND	ND
Hexane	14 E	ND	ND	6.9 E	ND	ND	9 E
Unknown Alkene	97	ND	ND	9.9 E	ND	ND	ND
Cyclohexane Isomer	ND	ND	ND	ND	ND	ND	ND
Total Nonpriority Volatile Concentration	667 E	665 E	ND	168.9 E	6	13.2 E	9 E

NONPRIORITY BAK/NEUTRALS EXTRACTABLES(ppb)

Unknown	9455 E(4)	28000 E(4)	2203 E	44300 E(2)	11270 E(3)	2600 E(2)	780 E
Unknown Alkane	10470 E(6)	136030 E(14)	21200 E(10)	33600 E(11)	800 E(2)	860 E	ND
Benzene, Ethyl Substituted	18 E	ND	ND	ND	ND	ND	ND
Isomer Of Cyclohexane	18 E	ND	ND	ND	ND	ND	ND
Isomer of Benzene Substituted	267 E(7)	ND	ND	ND	ND	ND	ND
Unknown Alkene	6600 E(6)	ND	ND	ND	ND	ND	ND
Undecane, 2,6-Dimethyl	ND	16000 E	ND	ND	ND	ND	ND
Tetracosane, 2,6,10,14,18,22-Hexamethyl	ND	10500 E	ND	ND	ND	ND	ND
Formic Acid, Propyl Ester	ND	ND	12000 E	ND	ND	ND	ND
3-Pentene-2-One, 4-Methyl	3100 E	ND	5100 E	ND	ND	ND	ND
Heptane, 2,4-Dimethyl	ND	ND	1800 E	ND	ND	4400 E	ND
Heptane, 2,6-Dimethyl	ND	ND	2700 E	ND	ND	6400 E	ND
2-Pentanone, 4-Hydroxy-4-Methyl	36000 EC	ND	51000 EC	34000 EC	ND	38000 EC	28000 EC
2(3H) Furanone, Dihydro	ND	ND	2000 E	ND	ND	ND	ND
Hexadecane, 2,6,10,14-Tetramethyl	1300 E	ND	3300 E	ND	ND	ND	ND
Sulfur, Mol	2900	ND	5800 E	3300 E	ND	ND	2900 E
Pentadecane	ND	ND	ND	4600 E	ND	ND	ND
-----	ND	ND	ND	4800 E	ND	ND	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
COMPOSITE SUBSURFACE SOIL SAMPLE RESULTS
UPPER AQUIFER-REFINERY AREA

Sample Location	HW-56	HW-2	HW-40	HW-40	HW-39	AB-39	AB-40
Lab. I.D. Numbers	ES-6283/P4056	ES-6150/P3903	ES-6188/P4045	ES-6284/P4057	ES-5784/P3616	ES-5938/P3618	ES-5782/P3713
Sample Depth (ft.)	0-30	0-20	0-20	0-30	7-23	5-62	0-42
Date Sampled	11/12/86	11/4/86	11/3/86	11/11/86	10/9/86	10/23/86	10/14/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Heptadecane	ND	ND	ND	3380 E	ND	ND	ND
Dodecane	ND	ND	ND	4580 E	ND	ND	ND
Tetradecane	ND	ND	ND	5820 E	ND	ND	ND
3-Penten-3-One, 4-Methyl	ND	ND	ND	ND	2500 E	ND	2600 E
Tetrachloroethene	ND	ND	ND	ND	4300 EC	5600 EC	3400 EC
2-Pentane, 4-Hydroxy-4-Methyl	ND	ND	ND	ND	10000 E	ND	ND
Unknown Carboxylic Acid	ND	ND	ND	ND	ND	1300 E	ND
Isomer Of 1,2 Benzenedicarboxylic Acid	ND	ND	ND	ND	ND	ND	600 E
Unknown Hydrocarbon	ND	ND	ND	ND	1400 E(2)	ND	670 E
Isomer Of Hexane	ND	ND	ND	ND	540 E	ND	ND
Total Nonpriority Base/Neutral Concentration	34128 E	198630 E	56272 E	102820 E	34590 E	15560 E	7550 E

QUALIFIERS

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(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
CLAY SUBSTRATUM-REFINERY AREA

Sample Location Lab. I.D. Numbers Sample Depth (ft.) Date Sampled Sample Matrix	NWC-37 KS-5697\P3607 25-37 10/8/86 SOIL	NWC-38 KS-5703\P3615 17-32 10/10/86 SOIL	NWC-40 KS-5698\P3606 20-37 10/9/86 SOIL	NWC-41 KS-5696\P3606 25-32 10/7/86 SOIL	AB-41 KS-5841\P3769 20-32 10/15/86 SOIL	AB-42 KS-5883\P3808 25-37 10/20/86 SOIL
VOLATILE ORGANICS (ppb)						
Methylene Chloride	6.8 C	ND	5.5 C	ND	7 KC	12 C
Acetone	140 C	66 C	97 C	100 C	2400 C	170 C
Benzene	ND	ND	ND	ND	ND	1.0 E
Total Volatile Concentration	ND	ND	ND	ND	ND	1.0 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)						
Di-n-Butylphthalate	2600 C	3400 C	2600 C	2900 C	ND	120 KC
bis(2-Ethylhexyl)Phthalate	ND	ND	ND	ND	2100 C	ND
Di-n-Octyl Phthalate	ND	ND	ND	ND	290 E	ND
Total Base/Neutral Concentration	ND	ND	ND	ND	290 E	ND
PESTICIDES/PCB's (ppb)						
Beta-BHC	15.4 E	NA	6.5 E	NA	NA	9.3 E
Total Pest./PCB Concentration	15.4 E	NA	6.5 E	NA	NA	9.3 E
METALS (ppm)						
Arsenic	ND	50	13.5	ND	ND	14
Beryllium	1.3	ND	ND	0.8	ND	0.5
Chromium	54.4	22.9	37.3	38.5	9.4	ND
Copper	27.9	13.3	17.0	26.3	ND	19.5
Lead	1.5 *	10.4 *	10.6 *	14.9 *	77.2	3.2
Nickel	57.7	20.5	37.8	39.2	19.4	36.0
Selenium	ND	ND	1.0	ND	ND	ND
Silver	ND	15.2	24.6	ND	ND	ND
Thallium	ND	ND	6.2	ND	ND	ND
Zinc	165.1	70.7	100.1	127.1	46.4	89.3
Total Metal Concentration	307.9	219	266.7	246.8	152.4	163.3
CYANIDES AND PHENOLICS (ppm)						
ND FOR ALL SAMPLES						
NONPRIORITY VOLATILE ORGANICS (ppb)						
Ethane,1-1 Oxylis	ND	ND	ND	ND	15 E	ND
Hexane	ND	ND	ND	ND	7 E	ND
Unknown	ND	ND	ND	760 E	31 E(3)	ND
Unknown Hydrocarbons	ND	ND	ND	ND	11 E	ND

SINCLAIR REFINERY
WILLSTVILLE, NEW YORK
CHEMICAL ANALYSIS-COMPOSITE SUBSURFACE SOILS
CLAY SUBSTRATUM-REFINERY AREA

Sample Location	HVC-37	HVC-38	HVC-40	HVC-41	AB-41	AB-42
Lab. I.D. Numbers	ES-5697\P3607	ES-5703\P3615	ES-5698\P3608	ES-5698\P3608	ES-5841\P3769	ES-5843\P3608
Sample Depth (ft.)	25-37	17-32	20-37	25-32	20-32	25-37
Date Sampled	10/8/86	10/10/86	10/9/86	10/7/86	10/15/86	10/20/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Tetrachloromethane	ND	ND	9.1 E	ND	ND	ND
Total Nonpriority Volatile Concentration	0	0	9.1 E	768 E	64 E	0
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)						
3-Penten-3-One,4-Methyl	5300 E	1800 E	ND	6000 E	ND	ND
Tetrachloroethene	2700 EC	3400 EC	2400 EC	3100 EC	5500 EC	8500 EC
2-Pentene,4-Hydroxy-4-Methyl	24000 E	13000 E	20000 E	20000 E	22000 E	ND
Cyclohexanol,4-Chloro,-Trans	ND	ND	ND	600 E	ND	ND
3-Penten-2-One,4-Methyl	ND	ND	4500 E	ND	ND	4200 E
Heptane,2,6-Dimethyl	ND	ND	ND	ND	ND	1200 E
2-Pentanone,4-Hydroxy-4-Methyl	ND	ND	20000 EC	ND	ND	40200 EC
Unknown	ND	ND	ND	ND	ND	1900 E
Unknown Ester	ND	ND	ND	ND	ND	1700 E
Unknown	ND	710 E	ND	ND	700 E	ND
2-Cyclohexene	ND	ND	ND	ND	500 E	ND
-Buten-2-ol	ND	ND	ND	ND	1900 E	ND
Unknown Alkane	ND	625 E(2)	12900 E(3)	ND	770 E	ND
Hexadecane 2,6,10,14-Tetramethyl	ND	ND	ND	ND	590 E	ND
1,2 Benzenedicarboxylic Acid (isomer)	ND	ND	ND	ND	860 E	ND
Nonanal	ND	ND	460 E	ND	ND	ND
Unknown Hydrocarbon	ND	490	ND	ND	ND	ND
Total Nonpriority Base/Neutral Concentration	20300 E	16625 E	37060 E	34600 E	27400 E	9000 E

QUALIFIERS

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(2) - Indicates the number of identical compounds in a specific sample.

SIMCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
SEWER AND PIPE INVESTIGATION-REFINERY AREA

Sample Location	NW-55	AB-35	AB-37	AB-38
Lab. I.D. Numbers	SS-5867\PI880	EP-0003\PI926	ES-5840\PI3800	ES-5842\PI3770
Sample Depth (ft.)	6-12	10-17	0-22	0-22
Date Sampled	12/16/85	1/7/86	10/16/86	10/15/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL

VOLATILE ORGANICS (ppb)

Methylene Chloride	15 C	36 C	36 C	15 C
Acetone	39 C	4500 C	140 C	91 C
Carbon Disulfide	5	34	ND	ND
Trans-1,2-Dichloroethene	ND	ND	ND	2 E
1,1,2,2-Tetrachloroethane	22 E	ND	ND	ND
1,2-Dichloropropane	1 E	ND	ND	ND
Trans-1,3-Dichloropropene	1 E	ND	ND	ND
Benzene	ND	11	ND	ND
2-Hexanone	ND	230	910 E	ND
4-Methyl-2-Pentanone	ND	1200 E	5100 E	ND
Chlorobenzene	ND	320	ND	ND
Ethylbenzene	ND	130	260 E	ND
Total Xylenes	0.3 E	130	5100 E	ND
Total Volatile Concentration	29.3 E	2055 E	11370 E	2 E

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Phenol	36 E	ND	ND	ND
Naphthalene	29 E	130 E	1600 E	ND
4-Chloroaniline	ND	ND	ND	ND
2-Methylnaphthalene	ND	1300	3900 E	250 E
Acenaphthene	26 E	ND	ND	ND
Diethylphthalate	91 E	250 E	ND	ND
Fluorene	66 E	71 E	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	250 E
Phenanthrene	280 E	150 E	ND	102 E
Anthracene	130 E	ND	ND	ND
Di-n-Butylphthalate	2000 C	2600 C	ND	420 EC
Fluoranthene	540 E	ND	ND	ND
Pyrene	560 E	ND	ND	ND
Butylbenzylphthalate	ND	150 E	ND	ND
Benzo(a)Anthracene	200 E	ND	ND	ND
bis(2-Ethylhexyl)Phthalate	ND	8600 C	ND	2100 C
Chrysene	140 E	ND	ND	ND
Di-n-Octyl Phthalate	42 E	47 E	ND	220 E
Benzo(b)Fluoranthene	160 E	ND	ND	ND
Total Base/Neutral Concentration	2300 E	2000	5500 E	822 E

PESTICIDES/PCB's (ppb)

ND FOR ALL SAMPLES

METALS (ppm)

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
SEWER AND PIPELINE INVESTIGATION-REFINERY AREA

Sample Location Lab. I.D. Numbers Sample Depth (ft.) Date Sampled Sample Matrix	HW-55 SS-5867\P1888 0-12 12/16/85 SOIL	AB-35 WP-0693\P1926 10-17 1/7/86 SOIL	AB-37 HS-5840\P3800 0-22 10/16/86 SOIL	AB-38 HS-5842\P3770 0-22 10/15/86 SOIL
Arsenic	7.96	3.02	ND	ND
Cadmium	ND	1.32	ND	ND
Chromium	14.57	13.2	7.2	ND
Copper	15.5	14.95	9.8	27.7
Lead	10.35	10.77	40.1	24.3
Mercury	ND	0.11	ND	ND
Nickel	15.31	13.41	9.1	17.8
Silver	1.15	NA	ND	ND
Zinc	39.6	36.05	34.8	54.9
Total Metal Concentration	104.44	93.63	100.0	124.7
CYANIDES AND PHENOLICS (ppm)				
Cyanide	0.055 E	ND	ND	ND
Total Phenols	ND	1.76	ND	ND
Total Cyanide/Phenol Concentration	0.055 E	1.76	ND	ND
NONPRIORITY VOLATILE ORGANICS (ppb)				
Unknown	700 E	9500 E(2)	2100 E(3)	53 E(4)
Unknown Methyl Ethyl Benzene	710 E	ND	ND	ND
Unknown Trimethyl Benzene	9200 E(2)	ND	ND	ND
Unknown Benzene Derivative Comp.	910 E	ND	ND	ND
Unknown Cyclic Compound	ND	10000 E	ND	ND
Unknown Alkane	ND	3200 E	5500 E(4)	ND
Unknown Alkene	ND	9600 E(2)	ND	ND
Unknown Alkane/Ketone	ND	10000 E	ND	ND
Unknown Cyclic/Alkane	ND	2900 E	ND	ND
Unknown Cyclic/Alkene	ND	4400 E	ND	ND
Hexane	ND	ND	780 E	7 E
Heptane, 2-Methyl	ND	ND	810 E	ND
Isomer of Dimethyl Benzene	ND	ND	1900 E	ND
Ethane, 1-1 Oxidic	ND	ND	ND	14 E
Isomer of Trimethyl Cyclohexane	ND	ND	ND	9 E
Isomer of Dimethyl Cyclohexane	ND	ND	ND	8 E
Total Nonpriority Volatile Concentration	11600 E	49600 E	11170 E	91 E
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)				
Unknown	ND	9700 E(3)	ND	1400 E
Unknown Hydrocarbon	14019 E(9)	49540 E(14)	ND	ND
Unknown Alkane	ND	ND	104120 E(11)	14290 E(8)
Butane	1584 E	ND	ND	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
SEWER AND PIPELINE INVESTIGATION-REFINERY AREA

Sample Location	BN-55	AB-35	AB-37	AB-38
Lab. I.D. Numbers	SS-5867/P1880	EP-0003/P1926	ES-5840/P3800	ES-5842/P3770
Sample Depth (ft.)	6-12	10-17	6-22	6-22
Date Sampled	12/16/85	1/7/86	10/16/86	10/15/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL
Sulfur	1035 E	ND	ND	ND
Unknown Ester	5365 E	ND	ND	ND
Unknown Cyclic Compound	ND	8400 E(2)	ND	ND
Unknown Cyclic Hydrocarbon	ND	1900 E	ND	ND
Hexane, 3-Ethyl, 2-Methyl	ND	ND	11000 E	ND
Octane, 3-Methyl	ND	ND	9500 E	ND
Isomer of Cyclohexane, Ethylmethyl	ND	ND	8900 E	ND
Nonane	ND	ND	14000 E	ND
Nonane, 2-Methyl	ND	ND	7600 E	ND
Nonane, 3-Methyl	ND	ND	8900 E	ND
Isomer of Trimethyl Benzene	ND	ND	14000 E	ND
Decane	ND	ND	16000 E	ND
Pentadecane, 2,6,10,14-Tetramethyl	ND	ND	5600 E	3700 E
Tetrachloroethene	ND	ND	ND	4700 EC
2-Pentanone 4-Hydroxy 4-Methyl	ND	ND	ND	16000 EC
Isomer of Cyclohexane	ND	ND	ND	5720 E(4)
Isomer of Trimethyl Decane	ND	ND	ND	2300 E
Hexadecane, 2,6,10,14-Tetramethyl	ND	ND	ND	2100 E
Sulfur, Mol	ND	ND	ND	2900 E
Total Nonpriority Base/Neutral Concentration	22003 E	69540 E	199620 E	32410 E

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TABLE:

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
LOWER AQUIFER-REFINERY AREA

Sample Location
Lab.I.D. Numbers
Sample Depth (ft.)
Date Sampled
Sample Matrix

MWD-47
ES-6582\P4240
85-112
11/20/86
SOIL

VOLATILE ORGANICS (ppb)

Methylene Chloride	22 C
Acetone	4500 C
1,1,1-Trichloroethane	0.6 E
Total Xylenes	9.7
Total Volatile Concentration	10.3

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Di-n-Butylphthalate	2200 C
Total Base\Neutral Concentration	ND

PESTICIDES/PCB's (ppb)

ND

METALS (ppm)

Arsenic	5
Copper	14
Lead	6 *
Nickel	18
Zinc	39
Total Metal Concentration	80

CYANIDES AND PHENOLICS (ppm)

Cyanide	ND
Total Phenols	ND
Total Cyanide\Phenol Concentration	ND

NONPRIORITY VOLATILE ORGANICS (ppb)

Unknown	11 E
Total Nonpriority Volatile Concentration	11 E

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

TABLE:

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
LOWER AQUIFER-REFINERY AREA

Sample Location	MWD-47
Lab.I.D. Numbers	ES-8582\P4240
Sample Depth (ft.)	85-112
Date Sampled	11/20/88
Sample Matrix	SOIL
Unknown	7000 E(2)
3-Penten-2-One, 4-Methyl	18000 E
Unknown Alkane	23200 E(2)
2-Pentanone, 4-Hydroxy-4-Methyl	130000 EC
Sulfur, Mol.	3500 E
Total Nonpriority Base\Neutral Concentration	49700 E

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SINCLAIR REFINERY
WILLSTVILLE, NEW YORK
CHEMICAL ANALYSIS-COMPOSITE SUBSURFACE SOILS
OFFSITE BACKGROUND CONDITIONS

	UPPER AQUIFER		CLAY SUBSTRATUM		LOWER AQUIFER
Sample Location	HWB-61	HWB-63	HWCB-42	HWCB-62	HWDB-43
Lab. I.D. Numbers	KS-5845/P3772	KS-5843/P3798	KS-5844/P3771	KS-5846/P3799	KS-5781/P3712
Sample Depth (ft.)	5-32	0-20	37-50	35-47	0-47
Date Sampled	10/17/88	10/15/88	10/15/88	10/17/88	10/16/88
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
VOLATILE ORGANICS (ppb)					
Methylene Chloride	53 C	530 EC	12 C	37 C	77 C
Acetone	170 C	520 EC	91 C	99 C	840 EC
Toluene	ND	ND	ND	ND	6
Total Volatile Concentration	ND	ND	ND	ND	6
BASE/NEUTRAL ACID EXTRACTABLES (ppb)					
Di-n-Butylphthalate	3200 C	ND	450 EC	ND	ND
Pyrene	ND	ND	100 E	ND	ND
bis(2-Ethylhexyl)Phthalate	14000 C	1500 C	1200 C	1300 C	ND
Di-n-Octyl Phthalate	ND	ND	300 E	ND	ND
Total Base/Neutral Concentration	ND	ND	560	ND	ND
PESTICIDES/PCB's (ppb)					
Beta-BHC	2.2 E	0.0 E	7.9 E	15.2 E	ND
Endrin	ND	0.2 E	ND	ND	ND
Total Pest./PCB Concentration	2.2 E	1 E	7.9 E	15.2 E	ND
HEAVY METALS (ppm)					
Antimony	ND	ND	ND	ND	162.1
Beryllium	ND	ND	ND	0.5	ND
Chromium	3.1	3.2	12.7	20.5	20.5
Copper	0.0	11.3	17.2	20.3	15.3
Lead	13.0	34.7	57.7	57.4	43
Nickel	7.1	15.2	20.2	39.7	19.1
Zinc	10.4	26.7	52.7	95.4	64
Total Metal Concentration	51.3	91.1	160.5	233.8	324
CYANIDES AND PHENOLICS (ppm)					
	ND FOR ALL SAMPLES				

SINCLAIR REFINERY
WILLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
OFFSITE BACKGROUND CONDITIONS

	UPPER AQUIFER		CLAY SUBSTRATUM		LOWER AQUIFER
Sample Location	HNB-01	HNB-03	HNCB-42	HNCB-62	HND0-43
Lab. I.D. Numbers	ES-5045/P3772	ES-5043/P3798	ES-5044/P3771	ES-5046/P3799	ES-5781/P3712
Sample Depth (ft.)	5-32	0-20	37-50	35-47	0-47
Date Sampled	10/17/06	10/15/06	10/15/06	10/17/06	10/14/06
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
NONPRIORITY VOLATILE ORGANICS (ppb)					
Ethane, 1,1 Oxylis	156 E	ND	20 E	ND	ND
Hexane	ND	90 E	8 E	11 E	13 E
Unknown	ND	133 E(2)	ND	ND	ND
Unknown Alkane	ND	ND	ND	16 E	ND
Total Nonpriority Volatile Concentrations	156 E	223 E	28 E	27 E	13
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)					
Unknown	2986 E	2260 E(2)	ND	3034 E(3)	2350 E(2)
2-Pentanone, 4-Hydroxy, 4-Methyl	18679 EC	16900 EC	20200 EC	13748 EC	14000 EC
Tetrachloroethene	ND	4700 EC	5500 EC	4313 EC	3100 EC
1-Oxibicyclo Heptane	ND	670 E	810 E	ND	ND
2-Cyclohexen-1	ND	720 E	710 E	663 E	1000 E
Isomer of Benzene Dicarboxylic Acid	ND	840 E	ND	640 E	ND
Hexadecanoic Acid	ND	520 E	ND	ND	ND
Unknown Alkane	ND	ND	890 E(2)	ND	ND
3-Buten-2-ol	ND	ND	1900 E	ND	ND
Unknown Hydrocarbon	ND	ND	ND	ND	870 E(2)
Isomer of 1,2 Benzene Dicarboxylic Acid	ND	ND	ND	ND	1000 E
Total Nonpriority Base/Neutral Concentration	2986 E	4010 E	4310 E	4337 E	5220 E

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**STINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SURFACE SOIL-DRAINAGE SWALES-REFINERY AREA**

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	SS-21 SS-3487/P1424 9/8/85 SOIL	SS-22 SS-3489/P1426 9/8/85 SOIL	SS-23 SS-3489/P1427 9/8/85 SOIL
VOLATILE ORGANICS (ppb)			
Methylene Chloride	18 C	19 C	8.5 C
Acetone	73 C	22 C	8.9 C
Carbon Disulfide	35	ND	2.7 E
2-Butanone	13	ND	ND
Benzene	2.4 E	ND	2.2 E
Toluene	1.8 E	ND	ND
Chloromethane	ND	ND	ND
Total Volatile Concentration	52.2	ND	4.9 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
Phenol	428 E	ND	ND
Diethylphthalate	65 E	138 E	168 E
4-Chlorophenyl-phenylether	ND	ND	ND
Fluorene	ND	ND	ND
Phenanthrene	ND	ND	118 E
Anthracene	ND	ND	ND
Di-n-Butylphthalate	1200 C	2600 C	3000 C
Fluoranthene	ND	33 E	228 E
Pyrene	ND	36 E	258 E
Butylbenzylphthalate	ND	ND	91 E
Benzo(a)Anthracene	ND	ND	79 E
bis(2-Ethylhexyl)Phthalate	76 EC	ND	398 EC
Chrysene	ND	ND	93 E
Di-n-Octyl Phthalate	ND	ND	ND
Benzo(b)Fluoranthene	ND	ND	ND
Benzo(k)Fluoranthene	318 E	ND	ND
Benzo(a)Pyrene	ND	ND	ND
Total Base/Neutral Concentration	883 E	198 E	1683 E
PESTICIDES/PCB's (ppb)			
4,4'-DDE	1.84 E	8.79 E	ND
Endrin	ND	ND	4.98 E
Endosulfan Sulfate	ND	ND	ND
Total Pest/PCB Concentration	1.84 E	8.79 E	4.98 E
HEAVY METALS (ppm)			
Arsenic	5.7	5.5	7.4
Beryllium	8.17	ND	ND

SS-24	SS-25	SS-26
S-3490\PI420	SS-3537\PI440	SS-3538\PI450
9/8/85	9/10/85	9/10/85
S01L	S01L	S01L

9.7 C	4100 KC	4984 KC
18 C	28 C	70 C
ND	ND	ND
16	27 E	40
2.6 E	2.8 E	4.3 E
ND	ND	4.7 E
ND	ND	23

10.6	29.0 E	72

680 E	1100 E	ND
140 E	150 E	225 E
ND	ND	ND
ND	ND	52 E
ND	170 E	630 E
ND	29 E	70 E
2400 C	3500 C	4600 C
ND	280 E	1100
ND	350 E	920
ND	120 E	ND
ND	120 E	280 E
150 KC	17000 KC	1100 C
ND	170 E	480 E
ND	40 E	ND
ND	150 E	ND
514 E	440 E	470 E
ND	290 E	450 E
1334 E	3409 E	4605 E

ND	ND	ND
ND	ND	ND
ND	19.35 E	ND
ND	19.35 E	ND

6.9	7	1.4
ND	ND	ND

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SURFACE SOIL-DRAINAGE SWALES-REFINERY AREA**

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	SS-21 SS-3487/P1424 9/8/85 SOIL	SS-22 SS-3488/P1426 9/8/85 SOIL	SS-23 SS-3489/P1427 9/8/85 SOIL
Chromium	16.4	18.9	15.2
Copper	15.8	9.6	1.1
Lead	22.9	58.9	ND
Nickel	19.6	16.1	26
Potassium	ND	ND	ND
Selenium	ND	0.13	ND
Silver	0.056	0.051	0.049
Thallium	ND	ND	11.8
Zinc	45.8	43.5	54.4
Total Metal Concentration	126.426	142.681	115.749
CYANIDES AND PHENOLICS (ppm)			
Cyanide	0.03	0.23	0.09
Total Phenols	ND	ND	ND
Total Cyanide/Phenol Concentration	0.03	0.23	0.09
NONPRIORITY VOLATILE ORGANICS (ppb)			
Unknown	1.3 E	ND	ND
Hexane	12.8 E	15.2 E	18.9 E
1,1,2-Trichloro-1,1,1-Trifluoro Ethane	ND	ND	36.4 E
1,1'-Oxybis Ethane	ND	ND	ND
Furan	ND	8.9 E	ND
1,3-Pentadiene	ND	5.2 E	ND
1,1,2-Trichloro-1,2,2-Trifluoro	ND	ND	ND
Total Nonpriority Volatile Concentration	14.1 E	29.3 E	47.3 E
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)			
Unknown	1010 E(2)	ND	1400 E
2-Pentanone,4-Hydroxy-4-Methyl	14000 EC	ND	2500 EC
7-Oxabicyclo (4.1.0) Heptane	330 E	ND	ND
Isomer of Trimethyl Hexane	510 E	ND	ND
Unknown Hydrocarbon	710 E(2)	1530 E(3)	ND
Unknown Ester	1290 E(2)	ND	ND
Toluene	ND	ND	1100 E
2-Propanone	ND	340 E	1200 E
Acetone	ND	ND	ND
Isomer Of Trimethyl Hexane	ND	ND	ND
Cyclopropane Carboxaldehyde	ND	ND	ND
2,2,4,6,6-Pentamethyl Heptane	ND	ND	ND
3-Methyl-5-Propyl-Nonane	ND	ND	ND

55-24	55-25	65-26
SS-3490\P1428	SS-3537\P1449	SS-3538\P1450
9/8/85	9/10/85	9/10/85
SOIL	SOIL	SOIL
16.6	34.2	11.7
12.9	19.8	12
676.7	91.7	54.8
32.4	ND	ND
ND	24	14
0.17	ND	ND
0.094	0.062	0.047
ND	8.1	ND
56.4	68.9	59.3
882.164	273.762	153.247
0.11	0.09	0.04
ND	ND	ND
0.11	0.09	0.04
ND	ND	ND
15.8 K	ND	ND
ND	ND	ND
ND	440 K	710 K
ND	ND	ND
ND	ND	ND
45.2 K	ND	ND
61 K	440 K	710 K
ND	ND	ND
28000 KC	16000 KC	ND
ND	ND	ND
1000 K	ND	ND
6520 K(1)	ND	6540 K(1)
ND	ND	ND
ND	ND	ND
ND	ND	1000 K
810 K	ND	ND
ND	ND	2330 K(2)
ND	ND	218 K
ND	ND	870 K
ND	ND	1100 K

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SURFACE SOIL-DRAINAGE SWALES-REFINERY AREA**

Sample Location	SS-21	SS-22	SS-23	SS-24
Lab. I.D. Numbers	SS-3487/P1424	SS-3488/P1426	SS-3489/P1427	SS-3490/P1428
Date Sampled	8/8/85	8/8/85	8/8/85	8/8/85
Sample Matrix	SOIL	SOIL	SOIL	SOIL
Sulfur	ND	ND	ND	ND
Menthyl Benzene	ND	1200 E	ND	ND
Tetrachloroethene	ND	1400 EC	ND	ND
Total Nonpriority Base/Neutral Concentration	3050 E	3070 E	3700 E	6330 E

QUALIFIERS

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- C - Indicates that contamination is probably the result of laboratory and field contamination.
- s - Indicates that duplicate analysis is not within control limits.
- (2) - Indicates the number of identical compounds in a specific sample.

SS-25
SS-3537\PI449
9/10/85
SOIL

ND
ND
ND

ND

SS-26
SS-3538\PI450
9/10/85
SOIL

600 L
ND
ND

12850 L

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SEDIMENT-DRAINAGE
SWALES AND OUT FALLS

Sample Location	RS-10	RS-11
Lab. I.D. Numbers	SS-3484/P1480	SS-3485/P1422
Date Sampled	9/8/85	9/8/85
Sample Matrix	SOIL	SOIL
VOLATILE ORGANICS (ppb)		
Methylene Chloride	6.3 C	41 C
Acetone	68 C	210 C
Carbon Disulfide	ND	68
2-Butanone	33	74
1,1,2,2-Tetrachloroethane	ND	31
Benzene	5.2	120
2-Hexanone	ND	51
Chlorobenzene	ND	31
Total Volatile Concentration	38.2	375
BASE NEUTRALS/ACID EXTRACTABLES (ppb)		
Diethylphthalate	1000	260 E
Phenanthrene	ND	250 E
Anthracene	ND	63 E
Di-n-Butylphthalate	5300 C	5000 C
Fluoranthene	ND	1200
Pyrene	ND	990
Benzo(a)Anthracene	ND	330 E
bis(2-Ethylhexyl)Phthalate	210 EC	440 EC
Chrysene	ND	520 E
Benzo(k)Fluoroanthene	510 E	590 E
Benzo(a)Pyrene	ND	860
Total Base\Neutral Concentration	1510	5063 E
PESTICIDES/PCB's (ppb)		
4,4'-DDE	0.07 E	ND
Total Pest\PCB Concentration	0.07 E	ND
METALS (ppm)		
Cadium	21.6	ND
Copper	147	17
Lead	802	16.5
Nickel	272	37
Silver	0.24	0.06
Zinc	159	172
Total Metal Concentration	1401.84	242.58

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SEDIMENT-DRAINAGE
SWALES AND OUT FALLS

Sample Location	RS-10	RS-11
Lab. I.D. Numbers	SS-3484/P1480	SS-3485/P1422
Date Sampled	9/8/85	9/8/85
Sample Matrix	SOIL	SOIL

CYANIDES AND PHENOLICS (ppm)

Cyanide	0.25	0.12
Total Phenols	ND	ND
Total Cyanide\Phenol Concentration	0.25	0.12

NONPRIORITY VOLATILE ORGANICS (ppb)

Hexane	23.7 E	ND
Methane, Thiobis	ND	147.6 E
Methyl Cyclopentane	ND	188 E
3-Methyl Pentene	ND	50 E
Cyclobutanone, 2,2-Dimethyl	ND	46.8 E
Unknown	ND	46.2 E
Cyclohexane, Ethenyl	ND	24.5 E
2,3 Dimethyl Pentane	ND	29.3 E
3-Methyl Cyclohexane	ND	32.1 E
Methyl Cycloheptane	ND	182 E
2,4,4-Trimethyl-2-Pentene	ND	22.8 E
1,2,4-Trimethyl Cyclopentane	ND	26.2 E
1,1,3-Trimethyl Cyclohexane	ND	126.2 E
Total Nonpriority Volatile Concentration	23.7 E	923.7 E

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Methyl Benzene	1400 E	ND
Acetone	1200 E	ND
2-Pentanone, 4-Hydroxy-4-Methyl	28000 EC	7100 EC
Unknown Hydrocarbon	1600 E	ND
Sulfur	6200 E	5200 E
Unknown	ND	300 E
Unknown Ester	ND	1220 E(2)
Total Nonpriority Base\Neutral Concentration	10400 E	6720 E

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SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SEDIMENT-DRAINAGE
SWALES AND OUT FALLS

Sample Location	RS-10	RS-11
Lab. I.D. Numbers	SS-3484/P1460	SS-3485/P1422
Date Sampled	9/8/85	9/8/85
Sample Matrix	SOIL	SOIL

- C - Indicates that contamination is probably the result of laboratory and field contamination.
* - Indicates that duplicate analysis is not within control limits.
(2) - Indicates the number of identical compounds in a specific sample.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SEDIMENT
GENESSEE RIVER-REFINERY AREA

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	RS-9 SS-3536\P1448 9/10/85 SOIL	RS-12 SS-3498\P1423 9/9/85 SOIL	RS-13 SS-3558\P1453 9/10/85 SOIL
VOLATILE ORGANICS (ppb)			
Ethylene Chloride	76 C	21 C	2150 C
Acetone	770 C	76 C	8.3 EC
Trans-1,2-Dichloroethene	ND	6.7	ND
2-Butanone	72	32	ND
1,1,1-Trichloroethane	ND	1.4 E	ND
Vinyl Acetate	0.4 E	ND	3.2 E
1,1,2,2-Tetrachloroethane	ND	ND	ND
1,2-Dichloropropene	ND	ND	ND
Benzene	ND	11	2.3 E
cis-1,3-Dichloropropene	ND	ND	ND
2-Hexanone	ND	5.6	ND
Toluene	ND	5.6	ND
Chlorobenzene	ND	ND	ND
Ethylbenzene	ND	6.7	ND
Total Xylenes	ND	3.2 E	ND
Total Volatile Concentration	81.4	72.2	5.5 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
Phenol	ND	ND	210 E
Naphthalene	29	ND	ND
2-Nethylanaphthalene	ND	110	ND
Dimethyl Phthalate	ND	ND	400 E
Diethylphthalate	ND	550 E	ND
Phenanthrene	52 E	53 E	ND
Di-n-Butylphthalate	5300 C	1070 C	4600 C
Fluoranthene	130 E	130 E	ND
Benzidine	ND	ND	ND
Pyrene	68 E	88 E	ND
Butylbenzylphthalate	ND	78 E	ND
bis(2-Ethylhexyl)Phthalate	5600 C	850 C	310 EC
Chrysene	ND	47 E	ND
Di-n-Octyl Phthalate	ND	81 E	ND
Benzo(h)Fluoranthene	790	440 E	360 E
Total Base/Neutral Concentration	1069	1577 E	1050 E
PESTICIDES/PCB's (ppb)			
4,4'-DDX	ND	5.53 E	ND
Endrin	ND	ND	2.33 E
Total Pest/PCB Concentration	ND	5.53 E	2.33 E
HYALS (ppm)			

BS-14
SS-3557\PI452
9/19/85
S01L

1250 KC
65 C
ND
216
1.2 K
ND
95
7.2
9.9
3.7 K
ND
4.7 K
58
ND
71

466.7

ND
ND
74 K
ND
530 K
ND
4900 C
ND
ND
ND
54 K
360 KC
ND
ND
390 K
1040 K

ND
ND
ND

SINGLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SEDIMENT
GENESSEE RIVER-REFINERY AREA

Sample Location Lab. I.D. Numbers Date Sampled Sample Matrix	BS-9 SS-3536/P1448 9/10/85 SOIL	BS-12 SS-3486/P1423 9/9/85 SOIL	BS-13 SS-3558/P1453 9/10/85 SOIL
Arsenic	2.4	98.3	4
Chromium	13.2	ND	ND
Copper	10.7	188	5.8
Lead	11.4	nd	2.3
Nickel	19.4	357	17.3
Silver	0.056	0.58	0.38
Zinc	43.2	1030	25.9
Total Metal Concentration	100.356	1673.88	55.66
CYANIDES AND PHENOLICS (ppm)			
Cyanide	0.06	1.46	ND
Total Phenols	ND	ND	ND
Total Cyanide/Phenol Concentration	0.06	1.46	ND
NONPRIORITY VOLATILE ORGANICS (ppb)			
1,1'-Oxybis Ethane	53.9 E	ND	448 E
Hexane	14.8 E	4.9 E	23.2 E
Cyclohexane	ND	15.4 E	ND
Unknown	ND	30.5 E(2)	ND
Methyl Cyclopentane	ND	ND	ND
3-Methyl Pentane	ND	ND	ND
2-Methyl Pentane	ND	ND	ND
Methyl Cyclohexane	ND	ND	ND
Heptane	ND	ND	ND
Unknown Hydrocarbon	ND	ND	ND
Total Nonpriority Volatile Concentration	68.7 E	50.8 E	471.2 E
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)			
7-Oxabicyclo [4.1.0.] Heptane	970 E	ND	ND
2-Propanone	1100 E	ND	ND
Sulfur	1500 E	ND	ND
Heptacosane	700 E	ND	ND
Methyl Benzene	ND	1240 E	ND
2-Pentanone, 4-Hydroxy-4-Methyl	ND	20340 EC	6900 EC
Unknown Hydrocarbon	ND	4140 E(4)	4890 E(8)
Dodecane	ND	910 E	ND
Formic Acid, Propyl Ester	ND	ND	460 E
Unknown Ester	ND	ND	1360 E(2)
Total Nonpriority Base/Neutral Concentration	4270 E	6290 E	6710 E

85-14
SS-3557\PI452
9/10/85
501L

6.2
ND
4.6
6.5
61
ND
6.8

65.1

ND
ND
ND

ND
569 K
325 K
ND
341 K
300 K
479 K
1157 K
1149 K(2)
1595 K(2)

5915 K

ND
ND
ND
ND
ND
ND
2500 K(5)
ND
ND
ND

2500 K

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SEDIMENT
GENESSEE RIVER-REFINERY AREA

Sample Location	RS-9	RS-12	RS-13	RS-14
Lab. I.D. Numbers	SS-3536\P1440	SS-3486\P1423	SS-3550\P1453	SS-3557\P1452
Date Sampled	9/18/85	9/9/85	9/18/85	9/18/85
Sample Matrix	SOIL	SOIL	SOIL	SOIL

QUALIFIERS

ND - NOT DETECTED

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E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

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SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SOIL/SEDIMENT-SEWER/PIPELINE ACCESS POINTS

Sample Location Lab. I.D. Number Date Sampled Sample Matrix	MH-4 SS-3561\P1494 9/9/85 SOIL	MH-5 SS-3560\P1495 9/9/85 SOIL	MH-6 SS-3559\P1490 9/9/85 SOIL
PRIORITY VOLATILE ORGANICS (ppb)			
Vinyl Chloride	375 BDL	ND	ND
Chloroethane	ND	29 E	ND
Methylene Chloride	1560 C	16 EC	4300 C
Acetone	51560 C	22 EC	12000 C
Trans-1,2-Dichloroethene	2970 BDL	ND	ND
Trichloroethene	5940	ND	ND
2-Butanone	5940	ND	38000
Vinyl Acetate	5470 BDL	24 E	5100
1,2 Dichloropropane	ND	9.5 E	ND
Benzene	1390 BDL	5.8 E	1000
Chlorobenzene	3260	16 E	2500
Ethylbenzene	ND	24	ND
Total Xylenes	8440	6 E	1300
Total Volatile Concentration	23600	118.3 E	45900
PRIORITY BASE NEUTRALS/ACID EXTRACTABLES (ppb)			
Aniline	ND	580 E	ND
1,3-Dichlorobenzene	5600 BDL	ND	ND
1,4-Dichlorobenzene	7000 BDL	ND	ND
4-Methylphenol	ND	ND	960
Benzoic Acid	ND	ND	5500
Naphthalene	3300 BDL	ND	ND
2-Methylnaphthalene	16000 BDL	ND	1600
Dibenzofuran	1340 BDL	ND	ND
Fluorene	2320 BDL	ND	ND
Phenanthrene	3510 BDL	ND	1100
Di-n-Butylphthalate	820 BDLC	860 C	ND
Fluoranthene	ND	ND	420
Pyrene	2170 BDL	ND	1700
Butylbenzylphthalate	1260 BDL	ND	ND
bis(2-Ethylhexyl)Phthalate	6012 BDLC	137 EC	5600 C
Di-n-Octyl Phthalate	ND	ND	1800
Benzo(k)Fluoroanthene	9830 BDL	2100	2100
Total Base\Neutral Concentration	52550 E	2680	14980
::			
PESTICIDES/PCB's (ppb)			
Endosulfan I	ND	ND	224.87
Total Pest\PCB Concentration	ND	ND	244.87
MTALS (ppm)			

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SOIL/SEDIMENT-SEWER/PIPELINE ACCESS POINTS**

Sample Location Lab. I.D. Number Date Sampled Sample Matrix	MH-4 SS-3561\P1494 9/9/85 SOIL	MH-5 SS-3560\P1495 9/9/85 SOIL	MH-6 SS-3559\P1490 9/9/85 SOIL
Arsenic	4.2	ND	18.4
Cadium	0.7	7.1	0.78
Chromium	ND	ND	18.8
Copper	580	1183	198
Lead	863	111	182.2
Nickel	37.7	70.6	83.1
Silver	0.43	0.85	0.246
Zinc	574	2037	444
Total Metal Concentration	1860.03	3409.55	925.326
CYANIDES AND PHENOLICS (ppm)			
Cyanide	ND	0.22	ND
Total Phenols	ND	ND	ND
Total Cyanide\Phenol Concentration	ND	0.22	0
HARDOUS NONPRIORITY VOLATILE ORGANICS (ppb)			
Cyclohexane	ND	ND	22000 E
Total Hazardous Nonpriority Volatile Concentration			
OTHER NONPRIORITY VOLATILE ORGANICS (ppb)			
Unknown	16562 E(3)	ND	54400 E(4)
Unknown Cyclohexane	28593 E(4)	8000 E	59000 E(2)
Unknown Alkane	9688 E(3)	ND	ND
Unknown Cyclopentane	ND	6666.6 E	ND
Unknown Trimethyl Cyclohexane	ND	ND	1500 E
Unknown Derivative Cyclohexane	ND	ND	15000 E
Unknown Cyclic Compound	ND	ND	24000 E
Total Nonpriority Volatile Concentration	16562 E	0 E	76400 E
NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)			
Unknown Hydrocarbon	1125720 E(10)	2100 E	448000 E(16)
Decane	73420 E	ND	ND
Dodecane	129910 E	ND	ND
Tridecane	170270 E	ND	ND
Isomer of Trimethyl Dodecane	81360 E	ND	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SOIL/SEDIMENT-SEWER/PIPELINE ACCESS POINTS

Sample Location	MH-4	MH-5	MH-6
Lab. I.D. Number	SS-3581\P1494	SS-3580\P1495	SS-3559\P1490
Date Sampled	9/9/85	9/9/85	9/9/85
Sample Matrix	SOIL	SOIL	SOIL
Tetradecane	203800 E	ND	ND
Unknown Cyclic Hydrocarbon	120930 E	ND	21000 E
Pentadecane	127530 E	ND	ND
Hexadecane	85330 E	ND	ND
2,6,10,14-Tetramethyl Pentadecane	162150 E	ND	ND
2,6,10,14-Tetramethyl Hexadecane	99880 E	ND	ND
Methyl Benzene	ND	6800 E	ND
2-Pentanone, 4-Hydroxy-4-Methyl	ND	5800 EC	ND
Sulfur	ND	5900 E	37000 E
Unknown Ester	ND	8700 E(2)	ND
Unknown Ketone	ND	ND	16000 E
Unknown Carboxylic Acid	ND	ND	20000 E
Total Nonpriority Base\Neutral Concentration	2360100 E	23300 E	542000 E

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- * - Indicates that duplicate analysis is not within control limits.
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SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-SURFACE SOIL-REFINERY AREA

Sample Location	SBW-1
Lab. I.D. Numbers	ES-5885\P3809
Sample Depth (in.)	0-7
Date Sampled	10/21/86
Sample Matrix	SOIL

VOLATILE ORGANICS (ppb)

Methylene Chloride	10 C
Acetone	9.4 EC
Benzene	1.4 E
Total Volatile Concentration	1.4 E

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

ND FOR ALL SAMPLES

PESTICIDES/PCB's (ppb)

Beta-BHC	0.23 E
Total Pest\PCB Concentration	0.23 E

METALS (ppm)

Chromium	8.4
Copper	9.4
Lead	84
Silver	40.7
Zinc	40.2
Total Metal Concentration	182.7

CYANIDES AND PHENOLICS (ppm)

ND FOR SAMPLE SBW-1

NONPRIORITY VOLATILE ORGANICS (ppb)

ND FOR SAMPLE SBW-1

Total Nonpriority Volatile Concentration	ND

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Unknown	31000 E(2)
Tetrachloroethene	19000 EC
2-Pentanone-4-Hydroxy-4-Methyl	390000 EC
Unknown Alkane	150000 E(4)
Octane, 2,3,7 Trimethyl	9900 E
Total Nonpriority Base\Neutral Concentration	190900 E

QUALIFIERS

SINCLAIR REFINERY
WELLSVILL, NEW YORK
CHEMICAL ANALYSES-SURFACE SOIL-REFINERY AREA

Sample Location	SBW-1
Lab. I.D. Numbers	ES-5885\P3809
Sample Depth (in.)	0-7
Date Sampled	10/21/88
Sample Matrix	SOIL

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NA - NOT ANALYZED
E - Indicates an estimated value. Compound is either tentatively identified thru a library search,
or has been detected at less than quantifiable limits.
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(2) - Indicates the number of identical compounds in a specific compound.

Appendix B

Phase I and IIA Analytical Data

PHASE IIA

- **OFF-SITE TANK FARM (GROUNDWATER)**

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
BED ROCK AQUIFER-OFF SITE TANK FARM

Sample Location	MWDB-1	MWDB-2	MWDB-3
Lab.I.D. Numbers	EW-6996\P4498	EW-6997\P4499	EW-6998\P4481
Completion Depth (ft.)	108	109	89
Date Sampled	12/12/86	12/12/86	12/12/86
Sample Matrix	WATER	WATER	WATER
Total Nonpriority Base\Neutral Concentration	448 E	98 E	125 E

QUALIFIERS

- ND - NOT DETECTED
- NA - NOT ANALYZED
- E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.
- C - Indicates that contamination is probably the result of laboratory and field contamination.
- * - Indicates that duplicate analysis is not within control limits.
- (2) - Indicates the number of identical compounds in a specific sample.

Sample Location
Lab.I.D. Numbers
Completion Depth (ft.)
Date Sampled
Sample Matrix

EW-

VOLATILE ORGANICS (ppb)

Methylene Chloride
Acetone

Total Volatile Concentration

BASE NEUTRALS/ACID EXTRACTABLES (ppb)

Di-n-Butylphthalate
bis(2-Ethylhexyl)Phthalate
Di-n-Octyl Phthalate

Total Base\Neutral Concentration

PESTICIDES/PCB's (ppb)

METALS (ppb)

Zinc

Total Metal Concentration

CYANIDES AND PHENOLICS (ppb)

Cyanide
Total Phenols

Total Cyanide\Phenol Concentration

NONPRIORITY VOLATILE ORGANICS (ppb)

Unknown

Total Nonpriority Volatile Concentration

NONPRIORITY BASE\NEUTRAL EXTRACTABLES (ppb)

Unknown
Benzothiazole,2-Methyl
1,2-Benzenedicarboxylic Acid, Disodecyl Ester
Benzothiazole,2-Butyl
Cyanic Acid, Propyl Ester
Cyclopentanamine

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-GROUND WATER
BED ROCK AQUIFER-OFF SITE TANK FARM

MWDB-1
6998\P4498
108
12/12/86
WATER

MWDB-2
EW-8997\P4499
108
12/12/86
WATER

MWDB-3
EW-8998\P4481
89
12/12/86
WATER

38 C
38 C

22 C
240 C

14 C
150 C

ND

ND

ND

4.8 EC
180 C
16

ND
58 C
ND

ND
30 C
ND

16

ND

ND

ND FOR ALL SAMPLES

649

442

1447

649

442

1447

ND
18.3 *

ND
14.1 *

ND
11.9 *

18.3

14.1

11.9

7 E

8 E

ND

7 E

6 E

ND

332 E(11)
51 E
29 E
25 E
11 E
ND

98 E(4)
ND
ND
ND
ND
ND

114 E(4)
ND
ND
ND
ND
11 E

Appendix B

Phase I and IIA Analytical Data

PHASE IIA

- **OFF-SITE TANK FARM (SURFACE SOILS, SUBSURFACE SOILS)**

STEWART DEFENSE
WELLSTOWN, NEW YORK
CHEMICAL ANALYSES-SURFACE SOILS
OFF SITE TANK FARM

Sample Location	S-1	S-2	S-3	S-4
Lab. I.D. Numbers	SS-3180/72638	SS-3181/72639	SS-3182/72640	SS-3183/72641
Sample Depth (in.)	0-6	0-6	0-6	0-6
Date Sampled	6/11/86	6/12/86	6/12/86	6/12/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL
VOLATILE ORGANICS (ppb)				
Methylene Chloride	10 C	15 C	13 C	12 C
Acetone	15 C	10 C	15 C	150 C
Carbon Disulfide	ND	0.6 E	ND	ND
Benzene	1 E	1 E	1 E	0.9 E
Total Volatile Concentration	1 E	1.6 E	1 E	0.9 E
BASE NEUTRALS/ACID EXTRACTABLES (ppb)				
ND FOR ALL SAMPLES				
PESTICIDES/PCB's (ppb)				
Endosulfan II	1.91 E	ND	ND	ND
Aroclor-1260	189.7 E	ND	ND	ND
Total Pest./PCB Concentration	171.61	ND	ND	ND
METALS (ppm)				
Arsenic	20.4	21.0	15.0	19.5
Cadmium	7	ND	1.0	ND
Chromium	13.7	4.2	ND	3.3
Copper	32.7	20.4	33.7	26.9
Lead	31.5	50.7	103.5	65.0
Nickel	15.3	11.2	ND	0.7
Zinc	70.3	81.0	68.0	65.6
Total Metal Concentration	190.0	199.2	243.0	189.0
CYANIDES AND PHENOLICS (ppb)				
Cyanide	0.2	ND	ND	ND
Total Phenols	ND	ND	ND	1.3
Total Cyanide/Phenol Concentration	0.2	ND	ND	1.3
NONPRIORITY VOLATILES ORGANICS (ppb)				
Unknown Hydrocarbons	100 E	ND	ND	ND
Total Nonpriority Volatile Concentration	100 E	ND	ND	ND
NONPRIORITY BASE/NEUTRALS EXTRACTABLES(ppb)				

S-5	S-6
SS-3104/P2642	SS-3105/P2643
0-6	0-6
6/12/06	6/12/06
SOIL	SOIL

1 C	14 C
4 DC	ND
ND	ND
0.0 B	1 B
0.0 B	1 B

ND	ND
ND	ND
ND	ND

12.9	23.9
4.2	ND
7.6	ND
20.6	ND
47	27.6
9.1	ND
11.5	ND
172.9	51.5

0.2	0.2
ND	ND

0.2	0.2

ND	ND
ND	ND

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSIS-SURFACES SOILS
OFF SITE TANK FARM

Sample Location	S-1	S-2	S-3
Lab. I.D. Numbers	SS-3180/P2633	SS-3181/P2633	SS-3182/P2640
Sample Depth (in.)	0-6	0-6	0-6
Date Sampled	6/11/66	6/12/66	6/12/66
Sample Matrix	SOIL	SOIL	SOIL
Unknown	4700 E(2)	8310 E(5)	13800
Unknown Hydrocarbon	13100 E(5)	ND	ND
3-Pentan-2-one, 4-Methyl	1600 E	ND	ND
2-Pentanone, 4-hydroxy-4-Methyl	34000 EC	20000 EC	20000 EC
Heptane, 2,4-Dimethyl	3100 E	ND	ND
Heptane, 2,6-Dimethyl	6200 E	ND	ND
Heptane, 2,2,4-Trimethyl	ND	ND	ND
Hexamethyloic Acid, Diethyl Ester	21000 E	52000	35000 E
2E-1-Benzopyran-2-one	ND	ND	ND
Total Nonpriority Base/Neutral Concentration	49500 E	68310 E	40800 E

QUALIFIERS

ND - NOT DETECTED

NA - NOT ANALYZED

E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

* - Indicates duplicate analysis for this sample was not within control limit.

C - Indicates that contamination was probably the result of laboratory or field contamination.

(Z)- Indicates the number of identical compounds in a specific sample.

S-4	S-5	S-6
SS-3103/P2641	SS-3104/P2642	SS-3105/P2643
0-6	0-6	0-6
6/12/86	6/12/86	6/12/86
SOIL	SOIL	SOIL
552100 E(12)	2500 E	11170 E(7)
1750000 E(8)	12600 E(5)	NO
NO	NO	NO
NO	30000 DC	24000 DC
NO	NO	NO
NO	NO	NO
NO	NO	1000 E
NO	NO	16000 E
NO	4700 E	NO
2302100 E	19000 E	28970 E

SINCLAIR REFINERY
WILLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
OVERBUNDER-OFF-SITE TANK FARM

Sample Location Lab. I.D. Numbers Sample Depth (ft.) Date Sampled Sample Matrix	HWDB-1 ES-5084\P3786 0-1 10/20/86 SOIL	HWDB-2 ES-5046\3449 0-34 10/24/86 SOIL	HWDB-3 ES-5031\P3811 0-17 10/23/86 SOIL	AB-43 ES-6147\P3975 0-20 11/3/86 SOIL
VOLATILE ORGANICS (ppb)				
Methylene Chloride	9.6 C	17 C	6.7 C	21 C
Acetone	13 C	389 C	4.9 EC	1200 C
Toluene	ND	3.9 E	ND	ND
Total Volatile Concentration	ND	3.9 E	ND	ND
BASE NEUTRALS/ACID EXTRACTABLES (ppb)				
Di-n-Butylphthalate	ND	1400 C	ND	2300 C
bis(2-Ethylhexyl)Phthalate	ND	ND	ND	ND
Total Base/Neutral Concentration	ND	ND	ND	ND
PESTICIDES/PCB's (ppb)				
Dieldrin	ND	NA	ND	ND
Endrin	ND	NA	ND	ND
Total Pest./PCB Concentration	ND	NA	ND	ND
HEAVY METALS (ppm)				
Arsenic	ND	ND	ND	ND
Chromium	15.1	22.3	4.6	9.1
Copper	15.5	16.1	ND	7.7
Lead	39.1	21.6 *	9.3 *	17.8 *
Nickel	22.6	23.2	12	9.1
Silver	16	ND	13.9	ND
Zinc	55.5	62.5	ND	30.5
Total Metal Concentration	163.8	145.7	39.6	74.2
CYANIDES AND PHENOLICS (ppm)				
ND FOR ALL SAMPLES				
NONPRIORITY VOLATILE ORGANICS (ppb)				
Unknown	ND	ND	ND	ND
Hexane	5.8	ND	ND	ND
3-Pentanone	ND	ND	5.8 E	ND
Unknown Cyclopentane	ND	ND	ND	ND

AB-44
RS-6140\P3976
0-20
11/3/86
SOIL

AB-45
RS-6140\P3977
0-20
11/4/86
SOIL

19 C
540 C
ND

ND

ND
ND

ND

29 C
930 C
ND

ND

1700 C
470 NC

ND

1.11 E
0.34 E
1.45 E

0.74 E
0.34 E
1.08 E

19.5
17.5
13
37 *

18.6
ND
53

150.6

5.7
ND
13.8
14.7 *

19.1
ND
40.7

103

ND
ND
ND
ND

16 E(2)
ND
ND
7.5 E

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
CHEMICAL ANALYSES-COMPOSITE SUBSURFACE SOILS
OVERBUNDEN-OFF-SITE TANK FARM

Sample Location	HWDB-1	HWDB-2	HWDB-3	AB-43	AB-44	AB-45
Lab. I.D. Numbers	KS-5884\P3788	KS-5946\3889	KS-5931\P3811	KS-6147\P3975	KS-6148\P3976	KS-6149\P3977
Sample Depth (ft.)	0-7	0-34	0-17	0-20	0-20	0-20
Date Sampled	10/29/86	10/24/86	10/23/86	11/3/86	11/3/86	11/4/86
Sample Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Total Nonpriority Volatile Concentration	5.8 E	ND	5.8 E	ND	ND	23.5 E
NONPRIORITY BASE/NEUTRAL EXTRACTABLES (ppb)						
Unknown	1900 E(3)	4300 E(2)	2250 E(2)	2590 E(2)	5600 E(3)	4600 E(2)
Tetrachloroethene	2400 EC	3600 EC	5220 EC	2600 EC	2800 EC	2800 EC
2, 4-Dimethyl Naphthalene	1700 E	130 E	1204 E	5000 E	1200 E	12000 E
2, 6-Dimethyl Naphthalene	2700 E	18000 E	2103 E	7040 E	1600 E	17000 E
2-Pentanone, 4-Hydroxy-4-Methyl	23000 EC	6200 EC	33072 EC	30100 EC	ND	40000 EC
Unknown Alkane	5920 E(2)	ND	874 E	10670 E(7)	21500 E(8)	14500 E(7)
Unknown Ester	680 E	ND	ND	ND	1800 E	710 E
Isomer of Hepten Dimethyl	ND	ND	ND	ND	ND	ND
Heptane, 2,2,4,6,6-Pentamethyl	ND	1500 E	ND	ND	ND	ND
Unknown Carboxylic Acid	ND	ND	1241 E	ND	ND	ND
2-Pentanone	ND	ND	ND	ND	ND	ND
1-2-Benzeneedicarboxylic Acid, Butyl Ester	ND	ND	ND	1700 E	ND	ND
Hexanedioic Acid, Diethyl Ester	ND	ND	ND	ND	65900 E(4)	ND
Total Nonpriority Base/Neutral Concentration	12900 E	24930 E	7761 E	27000 E	97600 E	48610 E

QUALIFIERS

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E - Indicates an estimated value. Compound is either tentatively identified thru a library search, or has been detected at less than quantifiable limits.

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(2) - Indicates the number of identical compounds in a specific sample.

Appendix C

Phase IIB Tentatively Identified Compounds (TICs)

- **VOLATILES (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**
- **VOLATILES (SOLID SAMPLES: TEST PITS, SUBSURFACE SOILS,
RIVER SEDIMENTS)**
- **SEMIVOLATILES (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**
- **SEMIVOLATILES (SOLID SAMPLES: TEST PITS, SUBSURFACE SOILS,
RIVER SEDIMENTS)**

Appendix C
Phase IIB Tentatively
Identified Compounds (TICs)

- **VOLATILES (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)**

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SREM0102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or <u>Scan</u>	Estimated Concentration (ug/Kg or <u>ug/L</u>)
11	UNKNOWN	IVDA	190	31 JN
12				
13				
14				
15				
16				
17				
18				
19				
110				
111				
112				
113				
114				
115				
116				
117				
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123				
124				
125				
126				
127				
128				
129				
130				

88
2-1-89

Organics Analysis Data Sheet
 (Page 4)

Tentatively Identified Compounds

CBS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or %/l)
11.	NO VOLATILES DETECTED	NOA	NA	NA
12.				
13.				
14.				
15.				
16.				
17.				
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27.				
28.				
29.				
30.				

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3800

SAMPLE ID
ISR GW07 02

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11..287-92-3....	ICYCLOPENTANE (DOT).....	IVDA.....	233	12 J..
12..142-29-0....	ICYCLOPENTENE.....	IVDA.....	257	1 J..
13.....	UNKNOWN.....	IVDA.....	286	7 J..
14..109-66-0....	IPENTANE (ACN) (DOT).....	IVDA.....	325	4 J..
15..110-82-7....	ICYCLOHEXANE (DOT).....	IVDA.....	342	53 J..
16.....	UNKNOWN CYCLIC HYDROCARBON.....	IVDA.....	360	31 J..
17..110-83-8....	ICYCLOHEXENE.....	IVDA.....	376	15 J..
18.....	UNKNOWN.....	IVDA.....	390	1 J..
19.....	UNKNOWN HYDROCARBON.....	IVDA.....	410	5 J..
20.....	UNKNOWN DIMETHYL CYCLOPENTANE.....	IVDA.....	456	4 J..
11..1640-89-7....	ICYCLOPENTANE, ETHYL.....	IVDA.....	494	5 J..
112.....	UNKNOWN CYCLIC HYDROCARBON.....	IVDA.....	506	16 J..
113.....	UNKNOWN HYDROCARBON.....	IVDA.....	530	12 J..
114.....	UNKNOWN HYDROCARBON.....	IVDA.....	543	2 J..
115.....	UNKNOWN.....	IVDA.....	564	1 J..
116.....	UNKNOWN.....	IVDA.....	588	2 J..
117.....	UNKNOWN DIMETHYL CYCLOHEXANE.....	IVDA.....	610	4 J..
118.....	UNKNOWN DIMETHYL CYCLOHEXANE.....	IVDA.....	627	2 J..
119.....	UNKNOWN SUBSTITUTED CYCLOHEXANE.....	IVDA.....	640	3 J..
120.....	UNKNOWN HYDROCARBON.....	IVDA.....	683	1 J..
121.....	UNKNOWN.....	IVDA.....	745	0.43 J..
122.....	UNKNOWN CYCLIC HYDROCARBON.....	IVDA.....	776	1 J..
123.....	.....	.....	.....	.....
124.....	.....	.....	.....	.....
125.....	.....	.....	.....	.....
126.....	.....	.....	.....	.....
127.....	.....	.....	.....	.....
128.....	.....	.....	.....	.....
129.....	.....	.....	.....	.....
130.....	.....	.....	.....	.....

000101

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW0702(SVMS)

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.: 17

Matrix: (soil/water) WATER

Lab Sample ID: 61621

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1476

Level: (low/med) LOW

Date Received: 11/17/88

% Moisture: not dec. 100

Date Analyzed: 12/05/88

Column: (pack/cap) PACK

Dilution Factor: 1

CONCENTRATION UNITS:

Number TICs found: 0

(ug/l or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM0902

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 287-92-3	ICYCLOPENTANE (DOT)	IVDA	237	19 JN
2 5618-62-2	HYDROXYLAMINE, O-(2-METHYLPROPYL)-	IVDA	286	18 J
3 75-28-5	PROPANE, 2-METHYL-	IVDA	323	17 J
4 110-82-7	ICYCLOHEXANE (DOT)	IVDA	344	60 J
5 96-37-7	ICYCLOPENTANE, METHYL	IVDA	360	17 J
6 110-83-8	ICYCLOHEXENE	IVDA	376	10 J
7 4372-94-5	ICYCLOPROPANE, 1,1-DIMETHYL-2-METHYLENE-	IVDA	407	7 J
8				
9				
10				
11				
12				
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100237

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3800

SAMPLE ID
SRG0982-SVMS

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	VOA	231	37 JN
2	UNKNOWN HYDROCARBON	VOA	282	53 J
3	UNKNOWN	VOA	320	46 J
4 110-62-7	CYCLOHEXANE (DOT)	VOA	341	130 J
5	UNKNOWN HYDROCARBON	VOA	358	28 J
6	UNKNOWN HYDROCARBON	VOA	375	6 J
7	UNKNOWN HYDROCARBON	VOA	385	2 J
8	UNKNOWN HYDROCARBON	VOA	407	6 J
9	UNKNOWN HYDROCARBON	VOA	453	6 J
110	UNKNOWN SUBSTITUTED CYCLOHEXANE	VOA	504	3 J
111	UNKNOWN HYDROCARBON	VOA	527	5 J
112				
113				
114				
115				
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128				
129				
130				

100384

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
15REW1002

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVDA	167	140 J N
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	222	180 J
3	UNKNOWN	IVDA	272	330 J
4 109-66-0	IPENTANE (ACN) (DOT)	IVDA	310	370 J
5 110-82-7	ICYCLOHEXANE (DOT)	IVDA	331	1,100 J
6 96-37-7	ICYCLOPENTANE, METHYL-	IVDA	348	130 J
7 110-83-8	ICYCLOHEXENE	IVDA	364	50 J
8	UNKNOWN	IVDA	442	30 J
9	UNKNOWN CYCLIC HYDROCARBON	IVDA	466	330 J
10	UNKNOWN HYDROCARBON	IVDA	527	15 J
11				
112				
113				
114				
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129				
130				

100024

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRGW1002 (sums)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVOA	168	130 J
2 287-92-3	ICYCLOPENTANE (DOT)	IVOA	224	290 J
3 142-29-0	ICYCLOPENTENE	IVOA	247	120 J
4	UNKNOWN	IVOA	274	270 J
5	UNKNOWN	IVOA	312	340 J
6 110-82-7	ICYCLOHEXANE (DOT)	IVOA	332	1,100 J
7 96-37-7	ICYCLOPENTANE, METHYL-	IVOA	350	130 J
8 110-83-8	ICYCLOHEXENE	IVOA	366	67 J
9	UNKNOWN	IVOA	397	36 J
110	UNKNOWN	IVOA	444	29 J
111	UNKNOWN CYCLIC HYDROCARBON	IVOA	468	360 J
112	UNKNOWN SUBSTITUTED CYCLOHEXENE	IVOA	495	26 J
113	UNKNOWN	IVOA	519	22 J
114				
115				
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126				
127				
128				
129				
130				

100074

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRGW2702

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or scan	Estimated Concentration (ug/Kg or ug/l)
1 75-28-5	PROPANE, 2-METHYL-	IVDA	178	12 J N
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	234	39 J
3 5618-62-2	HYDROXYLAMINE, O-(2-METHYLPROPYL)-	IVDA	284	160 J
4 34419-76-6	1-PROPANAMINE, N,2-DIMETHYL-N-NITROSO-	IVDA	322	22 J
5 930-18-7	ICYCLOPROPANE, 1,2-DIMETHYL-, CIS-	IVDA	332	6 J
6 110-82-7	ICYCLOHEXANE (DOT)	IVDA	342	320 J
7 96-37-7	ICYCLOPENTANE, METHYL-	IVDA	359	8 J
8 79-29-8	IBUTANE, 2,3-DIMETHYL-	IVDA	388	4 J
9 16747-25-4	HEXANE, 2,2,3-TRIMETHYL-	IVDA	408	12 J
110	UNKNOWN	IVDA	417	10 J
111	UNKNOWN DIMETHYL CYCLOPENTANE	IVDA	454	3 J
112	UNKNOWN	IVDA	471	6 J
113	UNKNOWN HYDROCARBON	IVDA	498	1 J
114	UNKNOWN CYCLIC HYDROCARBON	IVDA	505	1 J
115	UNKNOWN CYCLIC HYDROCARBON	IVDA	527	4 J
116	UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	604	13 J
117	UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	620	8 J
118	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	636	2 J
119				
120				
121				
122				
123				
124				
125				
126				
127				
128				
129				
130				

100016

Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM2702 D

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 287-92-3	ICYCLOPENTANE (DOT)	IVOA	222	42 J N
2 5618-62-2	IHYDROXYLAMINE, O-(2-METHYLPROPYL)-	IVOA	272	150 J
3 5963-74-6	IHYDROXYLAMINE, O-PENTYL-	IVOA	311	23 J
4 110-82-7	ICYCLOHEXANE (DOT)	IVOA	331	370 J
5 96-37-1	ICYCLOPENTANE, METHYL-	IVOA	348	7 J
6 79-29-8	IBUTANE, 2,3-DIMETHYL-	IVOA	378	3 J
7 16747-25-4	IHEXANE, 2,2,3-TRIMETHYL	IVOA	397	10 J
8	IUNKNOWN	IVOA	487	9 J
9	IUNKNOWN DIMETHYL CYCLOPENTANE	IVOA	444	3 J
10 ~~5150-82-1~~	~~IEN-DYDAN-2,6-DIETHYL-2,6-DIETHYL-1,4-DIMETHYL~~ UNK	IVOA	461	5 J
11 590-66-9	ICYCLOHEXANE, 1,1-DIMETHYL-	IVOA	518	4 J
12	IUNKNOWN DIMETHYL CYCLOHEXANE	IVOA	595	15 J
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100068

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
186M2002

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 109-66-0	PENTANE, (ACN) (DOT)	IVDA	324	59 JN
2 110-82-7	ICYCLOHEXANE (DOT)	IVDA	344	218 J
3	UNKNOWN HYDROCARBON	IVDA	361	43 J
4	UNKNOWN HYDROCARBON	IVDA	408	16 J
5	UNKNOWN	IVDA	416	20 J
6	UNKNOWN HYDROCARBON	IVDA	453	12 J
7 100-87-2	ICYCLOHEXANE, METHYL-	IVDA	476	170 J
8	UNKNOWN	IVDA	526	19 J
9	UNKNOWN CYCLIC HYDROCARBON	IVDA	617	37 J
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2-2-88

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRM3102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11	UNKNOWN	IVDA	286	54 J
12	UNKNOWN HYDROCARBON	IVDA	343	120 J
13	UNKNOWN HYDROCARBON	IVDA	360	29 J
14	UNKNOWN HYDROCARBON	IVDA	487	12 J
15	UNKNOWN	IVDA	417	12 J
16	UNKNOWN HYDROCARBON	IVDA	453	6 J
17	UNKNOWN CYCLIC HYDROCARBON	IVDA	477	110 J
18	UNKNOWN CYCLIC HYDROCARBON	IVDA	525	17 J
19	UNKNOWN CYCLIC HYDROCARBON	IVDA	601	39 J
110	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	631	27 J
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11 2289

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW3202RE

Lab Name: VERSAR

Contract:

Lab Code: VERSAR Case No.: 6483

SAS No.:

SDG No.: 19

Matrix: (soil/water) WATER

Lab Sample ID: 61914

Sample wt/vol: 25 (g/ml) ML

Lab File ID: U5178

Level: (low/med) LOW

Date Received: 11/19/88

% Moisture: not dec. 100

Date Analyzed: 12/01/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 13

CONCENTRATION UNITS:
(UG/L or UG/KG) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	R
1. 110-82-7	CYCLOHEXANE (DOT)	14.3333	89	JA
2. -----	UNKNOWN	16.1666	1	J
3. -----	UNKNOWN HYDROCARBON	16.95	1	J
4. -----	UNKNOWN	17.45	1	J
5. -----	UNKNOWN DIMETHYL CYCLOPENTAN	18.8666	1	J
6. -----	UNKNOWN DIMETHYL CYCLOPENTAN	19.5833	1	J
7. -----	UNKNOWN CYCLIC HYDROCARBON	19.8666	9	J
8. -----	UNKNOWN	21	1	J
9. -----	UNKNOWN CYCLIC HYDROCARBON	21.9166	1	J
10. -----	UNKNOWN	23.5333	9	J
11. -----	UNKNOWN DIMETHYL CYCLOHEXANE	25.0333	11	J
12. -----	UNKNOWN	25.6666	7	J
13. -----	UNKNOWN SUBSTITUTED CYCLOHEX	26.25	6	J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: VERSAR

Contract:

SRGW3202SVMS

Lab Code: VERSAR Case No.: 6483

SAS No.:

SDG No.: 19

Matrix: (soil/water) WATER

Lab Sample ID: 61917

Sample wt/vol: 25 (g/ml) ML

Lab File ID: U5179

Level: (low/med) LOW

Date Received: 11/19/88

% Moisture: not dec. 100

Date Analyzed: 12/01/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 14

CONCENTRATION UNITS:
(UG/L or UG/KG) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.75-71-8	METHANE, DICHLORODIFLUORO-	3.61666	4	J, B
2.110-82-7	CYCLOHEXANE (DOT)	14.3333	75	J
3.	UNKNOWN HYDROCARBON	17	2	J
4.	UNKNOWN	17.45	3	J
5.	UNKNOWN DIMETHYL CYCLOPENTAN	18.9166	1	J
6.	UNKNOWN	19.5833	2	J
7.	UNKNOWN CYCLIC HYDROCARBON	19.8666	20	J
8.	UNKNOWN	21	3	J
9.	UNKNOWN CYCLIC HYDROCARBON	21.9166	3	J
10.	UNKNOWN	24.2833	2	J
11.	UNKNOWN DIMETHYL CYCLOHEXANE	25.0833	5	J
12.	UNKNOWN	25.6666	4	J
13.	UNKNOWN ETHYL DIMETHYL CYCLO	26.2833	4	J
14.	UNKNOWN SUBSTITUTED BENZENE	28.0333	1	J
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISR 6W33 02

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

For P-12

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11..75-69-4.....	METHANE, TRICHLOROFLUORO-	IVDA.....	205	3 J...1
12..287-92-3....	ICYCLOPENTANE (DOT)	IVDA.....	235	11 J...1
13..142-29-0....	ICYCLOPENTENE.....	IVDA.....	258	3 J...1
14..109-66-0....	PENTANE (ACN) (DOT)	IVDA.....	324	6 J...1
15..110-82-7....	ICYCLOHEXANE (DOT)	IVDA.....	340	19 J...1
16..96-37-7....	ICYCLOPENTANE, METHYL-	IVDA.....	359	4 J...1
17..110-83-8....	ICYCLOHEXENE.....	IVDA.....	374	3 J...1
18..5145-99-3...	PROPANE, 2-(ETHYLTHIO)-	IVDA.....	512	3 J...1
19.....	UNKNOWN.....	IVDA.....	538	2 J...1
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISA-6W34-82

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVDA	33	9 JN
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	224	23 J
3 5618-62-2	LINDORAYLANINE, O-(2-METHYLPROPYL) UNK	IVDA	275	34 J
4	UNKNOWN	IVDA	313	17 J
5 110-82-7	ICYCLOHEXANE (DOT)	IVDA	329	45 J
6 96-37-7	ICYCLOPENTANE, METHYL	IVDA	347	7 J
7 110-83-8	ICYCLOHEXENE	IVDA	363	2 J
8 96-34-0	HEPTANE, 3-METHYL UNK	IVDA	397	2 J
9	UNKNOWN HYDROCARBON	IVDA	494	2 J
110 589-34-4	HEXANE, 3-METHYL	IVDA	518	1 J
111	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	596	2 J
112 103-65-1	BENZENE, PROPYL-	IVDA	819	1 J
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100103

Versar Inc., Laboratory Operations
5850 Versar Center, Springfield VA 22151 (703) 750-3000

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVDA	171	290 J
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	222	420 J
3 142-29-0	ICYCLOPENTENE	IVDA	245	100 J
4 75-28-5	IPROPANE, 2-METHYL	IVDA	312	670 J
5 930-18-7	ICYCLOPROPANE, 1,2-DIMETHYL-, CIS-	IVDA	322	530 J
6 110-82-7	ICYCLOHEXANE (DOT)	IVDA	329	710 J
7 96-37-7	ICYCLOPENTANE, METHYL	IVDA	347	11 J
8 110-83-0	ICYCLOHEXENE	IVDA	363	12 J
9	UNKNOWN METHYL CYCLOPENTENE	IVDA	395	7 J
110 110-54-3	HEXANE (DOT)	IVDA	445	2 J
111	UNKNOWN	IVDA	467	1 J
112	UNKNOWN METHYL CYCLOHEXENE	IVDA	494	4 J
113 690-92-6	13-HEXENE, 2,2-DIMETHYL-, (Z)-	IVDA	516	4 J
114	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	596	17 J
115	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	613	8 J
116 183-65-1	IBENZENE, PROPYL-	IVDA	820	3 J
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100165

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.....	UNKNOWN.....	VOA.....	286	86 J..
12.....	UNKNOWN HYDROCARBON.....	VOA.....	324	110 J..
13..110-82-7...	ICYCLOHEXANE (DOT).....	VOA.....	344	320 J..
14.....	UNKNOWN.....	VOA.....	361	13 J..
15.....	UNKNOWN CYCLIC HYDROCARBON.....	VOA.....	378	2 J..
16.....	UNKNOWN HYDROCARBON.....	VOA.....	407	4 J..
17.....	UNKNOWN.....	VOA.....	416	4 J..
18.....	UNKNOWN.....	VOA.....	453	2 J..
19.....	UNKNOWN.....	VOA.....	470	2 J..
110.....	UNKNOWN CYCLIC HYDROCARBON.....	VOA.....	477	48 J..
111.....	UNKNOWN HYDROCARBON.....	VOA.....	504	2 J..
112.....	UNKNOWN.....	VOA.....	526	3 J..
113.....	UNKNOWN HYDROCARBON.....	VOA.....	601	41 J..
114.....	UNKNOWN SUBSTITUTED CYCLOHEXANE.....	VOA.....	616	28 J..
115.....	UNKNOWN CYCLIC HYDROCARBON.....	VOA.....	630	18 J..
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Concentration of ENTRIES # 4 → # 12 ARE "LOW" DUE
TO Coelution of Unknown Cyclic #11
Compound (Scan 477) w/ IS # 2 which
Resulted in excessive area abundance
of IS # 2 12-28-88 100086

Versar Inc., Laboratory Operations
50 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRG4084301

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CDS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	100A.....	NA	NA ..
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM5002

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-28-5	PROPANE, 2-METHYL-	IVDA	183	46 JN
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	237	200 J
3 142-29-0	ICYCLOPENTENE	IVDA	259	18 J
4 5618-62-2	HYDROXYLAMINE, O-(2-METHYLPROPYL)-	IVDA	286	390 J
5	UNKNOWN AMINE	IVDA	323	420 J
6	UNKNOWN HYDROCARBON	IVDA	333	23 J
7 110-82-7	ICYCLOHEXANE (DOT)	IVDA	343	670 J
8	UNKNOWN HYDROCARBON	IVDA	360	75 J
9	UNKNOWN CYCLIC HYDROCARBON	IVDA	376	17 J
10	UNKNOWN HYDROCARBON	IVDA	400	14 J
11	UNKNOWN	IVDA	454	12 J
12	UNKNOWN CYCLIC HYDROCARBON	IVDA	478	90 J
13 591-48-0	ICYCLOHEXENE, 3-METHYL-	IVDA	504	8 J
14	UNKNOWN	IVDA	528	14 J
15	UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	605	31 J
16	UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	621	19 J
17	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	637	17 J
18 592-13-2	HEXANE, 2,5-DIMETHYL-	IVDA	659	15 J
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2-8-89

100115

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRGMS102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 287-92-3	1 CYCLOPENTANE (DOT)	IVDA	232	160 J
2	1 UNKNOWN	IVDA	283	240 J
3	1 UNKNOWN	IVDA	322	220 J
4 110-82-7	1 CYCLOHEXANE (DOT)	IVDA	343	910 J
5 96-37-7	1 CYCLOPENTANE, METHYL-	IVDA	360	70 J
6 110-83-8	1 CYCLOHEXENE	IVDA	377	7 J
7 79-29-8	1 BUTANE, 2,3-DIMETHYL-	IVDA	390	4 J
8	1 UNKNOWN HYDROCARBON	IVDA	409	13 J
9	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	480	56 J
110	1 UNKNOWN METHYL CYCLOHEXANE	IVDA	506	9 J
111	1 UNKNOWN	IVDA	530	9 J
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3800

SRGWS202

SAMPLE ID
ISREM202

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
110-82-7	ICYCLOHEXANE(DOT	IVDA	353	440 J
96-37-7	ICYCLOPENTANE, METHYL-	IVDA	370	200 J
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 756-3888

SAMPLE ID
SRGN5382

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVDA	172	77 JN
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	227	358 J
3	UNKNOWN	IVDA	275	788 J
4	UNKNOWN	IVDA	313	990 J
5	UNKNOWN	IVDA	333	1,380 J
6 96-37-7	ICYCLOPENTANE, METHYL-	IVDA	358	58 J
7 110-83-8	ICYCLOHEXENE	IVDA	366	11 J
8	UNKNOWN	IVDA	398	13 J
9	UNKNOWN HYDROCARBON	IVDA	444	26 J
10	UNKNOWN	IVDA	467	16 J
11	UNKNOWN CYCLIC HYDROCARBON	IVDA	495	9 J
12	UNKNOWN	IVDA	518	12 J
13	UNKNOWN HYDROCARBON	IVDA	529	32 J
14	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	555	48 J
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100183

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRGMS302-SVMS

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	VOA	232	390 JN
2	UNKNOWN AMINE	VOA	320	2,000 J
3 110-82-7	1 CYCLOHEXANE (DOT	VOA	341	2,400 J
4	UNKNOWN CYCLIC HYDROCARBON	VOA	358	2,300 J
5	UNKNOWN HYDROCARBON	VOA	407	100 J
6	UNKNOWN HYDROCARBON	VOA	415	200 J
7	UNKNOWN HYDROCARBON	VOA	452	300 J
8	UNKNOWN	VOA	527	220 J
9	UNKNOWN HYDROCARBON	VOA	538	120 J
110	UNKNOWN SUBSTITUTED CYCLOHEXANE	VOA	637	340 J
111	UNKNOWN SUBSTITUTED CYCLOHEXANE	VOA	680	110 J
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100339

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 758-3888

U
SAMPLE ID
SRM5482

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 109-66-8	PENTANE (ACN) (DOT)	IVDA	326	13 J
2 110-82-7	CYCLOHEXANE (DOT)	IVDA	347	53 J
3 96-37-7	CYCLOPENTANE, METHYL-	IVDA	354	6 J
4	UNKNOWN	IVDA	421	3 J
5	UNKNOWN	IVDA	457	5 J
6	UNKNOWN	IVDA	482	36 J
7	UNKNOWN METHYL CYCLOHEXANE	IVDA	508	5 J
8	UNKNOWN	IVDA	532	9 J
9	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	609	15 J
110	UNKNOWN HYDROCARBON	IVDA	625	18 J
111	UNKNOWN CYCLIC HYDROCARBON	IVDA	642	18 J
112	UNKNOWN CYCLIC HYDROCARBON	IVDA	686	4 J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW5502RE

Lab Name: VERSAR

Contract:

Lab Code: VERSAR Case No.: 6483

SAS No.:

SDG No.: 19

Matrix: (soil/water) WATER

Lab Sample ID: 61913RE

Sample wt/vol: 5 (g/ml) ML

Lab File ID: U5177

Level: (low/med) LOW

Date Received: 11/19/88

% Moisture: not dec. 100

Date Analyzed: 12/01/88

Column: (pack/cap) PACK

Dilution Factor: 5

Number TICs found: 10 CONCENTRATION UNITS:
(UG/L or UG/KG) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	11.95	52	J
2.	UNKNOWN HYDROCARBON	13.5333	67	J
3.	UNKNOWN HYDROCARBON	14.3333	200	J
4.	UNKNOWN CYCLIC HYDROCARBON	15.0333	21	J
5.	UNKNOWN CYCLIC HYDROCARBON	15.75	5	J
6.	UNKNOWN	17	5	J
7.	UNKNOWN	18.8666	5	J
8.	UNKNOWN CYCLIC HYDROCARBON	21.0333	4	J
9.	UNKNOWN	21.95	3	J
10.	UNKNOWN	25.6666	15	J
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Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM1102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
110-82-7	ICYCLOHEXANE (DOT	IVDA	343	148 J N
2	IUNKNOWN HYDROCARBON	IVDA	360	15 J
3	IUNKNOWN HYDROCARBON	IVDA	407	9 J
4	IUNKNOWN HYDROCARBON	IVDA	477	120 J
5	IUNKNOWN HYDROCARBON	IVDA	504	16 J
6	IUNKNOWN	IVDA	526	22 J
7	IUNKNOWN DIMETHYL CYCLOHEXANE	IVDA	601	53 J
8	IUNKNOWN	IVDA	616	47 J
9	IUNKNOWN CYCLIC HYDROCARBON	IVDA	631	27 J
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2-1-89

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW1602

Lab Name: __VERSAR__

Contract:

Lab Code: __VERSAR__ Case No.: 6483

SAS No.:

SDG No.: 18

Matrix: (soil/water) WATER

Lab Sample ID: _61730

Sample wt/vol: 5 _(g/ml) ML

Lab File ID: __U5107

Level: (low/med) LOW

Date Received: __11/18/88

% Moisture: not dec. 100

Date Analyzed: __11/28/88

Column: (pack/cap) _PACK

Dilution Factor: _ 5

Number TICs found: _ 0

CONCENTRATION UNITS:
(UG/L or UG/KG) __UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW1602D

Lab Name: _VERSAR_

Contract:

Lab Code: _VERSAR_ Case No.: 6483

SAS No.:

SDG No.: 18

Matrix: (soil/water) WATER

Lab Sample ID: _61731

Sample wt/vol: 25 (g/ml) ML

Lab File ID: _U5108

Level: (low/med) LOW

Date Received: _11/18/88

% Moisture: not dec. 100

Date Analyzed: _11/28/88

Column: (pack/cap) _PACK

Dilution Factor: _ 1

Number TICs found: _ 0

CONCENTRATION UNITS:
(UG/L or UG/KG) _UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 758-3888

SAMPLE ID
ISAGM2582

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-28-5	PROPANE, 2-METHYL	IVDA	178	74 J
2 287-92-3	ICYCLOPENTANE (DOT)	IVDA	235	100 J
3	UNKNOWN	IVDA	285	100 J
4	UNKNOWN	IVDA	323	220 J
5 646-04-8	12-PENTENE, (E)-	IVDA	334	89 J
6 110-82-7	ICYCLOHEXANE (DOT)	IVDA	344	300 J
7 96-37-7	ICYCLOPENTANE, METHYL-	IVDA	361	96 J
8 110-83-8	ICYCLOHEXENE	IVDA	377	41 J
9	UNKNOWN HYDROCARBON	IVDA	408	31 J
10	UNKNOWN	IVDA	455	31 J
11	UNKNOWN	IVDA	488	120 J
12	UNKNOWN HYDROCARBON	IVDA	506	23 J
13	UNKNOWN	IVDA	538	16 J
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SAMPLE ID
SRGW5702

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	VOA.....	NA	NA ..
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW6302

Name: VERSAR

Contract:

Lab Code: VERSAR Case No.: 6483

SAS No.:

SDG No.: 19

Matrix: (soil/water) WATER

Lab Sample ID: 61915

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1475

Level: (low/med) LOW

Date Received: 11/19/88

% Moisture: not dec. 100

Date Analyzed: 12/05/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 1

CONCENTRATION UNITS:
(UG/L or UG/KG) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.7783-06-4	HYDROGEN SULFIDE (H2S)	1.25	61	JN
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SAMPLE ID
18RM6502

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or ug/l)
110-82-7	1 CYCLOHEXANE (DOT	IVDA	322	9 J
2	1 UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	501	11 J
3	1 UNKNOWN	IVDA	551	7 J
4	1 UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	576	17 J
5	1 UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	591	11 J
6	1 UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	606	22 J
7	1 UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	645	9 J
8	1 UNKNOWN	IVDA	667	5 J
9	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	697	7 J
110	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	723	18 J
111	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	762	6 J
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Handwritten note: 18-2-78

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SAMPLE ID
ISR-MMD-66-01

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	IVQA	337	8 J /
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Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 756-3800

SAMPLE ID
ISRMND6681D

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CRS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 124-38-9	CARBON DIOXIDE (ACH)	IVOA	27	3 J /-1
2	UNKNOWN	IVOA	337	9 J /-1
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Verter Inc., Laboratory Operations
6850 Verter Center, Springfield VA 22151 (703) 750-3800

1 SAMPLE ID
18000101

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-07-0	1ACETALDEHYDE (DOT)	IVDA	63	150 JN
1 75-71-0	1METHANE, DICHLOROFLUORO	IVDA	88	9 J
1 67-63-0	12-PROPANOL (ACN)	IVDA	125	7 J
1 4 78-78-4	1BUTANE, 2-METHYL-	IVDA	287	6 J
1 5 109-60-0	1PENTANE, (ACN) (DOT)	IVDA	324	6 J
1 6 110-82-7	1CYCLOHEXANE (DOT)	IVDA	343	15 J
1 7	1UNKNOWN HYDROCARBON	IVDA	360	6 J
1 8	1UNKNOWN HYDROCARBON	IVDA	377	5 J
9	1UNKNOWN	IVDA	641	3 J
110	1UNKNOWN KETONE	IVDA	678	3 J
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2154

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW49-01

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 60245

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1271

Level: (low/med) LOW

Date Received: 11/01/88

% Moisture: not dec. 100

Date Analyzed: 11/07/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.287-92-3	CYCLOPENTANE (DOT)	9.03333	8	JN
2.5618-62-2	HYDROXYLAMINE, O-(2-METHYLPR	11.2	13	J
3.	UNKNOWN	12.8333	14	J
4.110-82-7	CYCLOHEXANE (DOT)	13.5333	50	J
5.96-37-7	CYCLOPENTANE, METHYL-	14.3333	5	J
6.110-83-8	CYCLOHEXENE	15	2	J
7.	UNKNOWN HYDROCARBON	16.3666	2	J
8.	UNKNOWN	18.3666	1	J
9.	UNKNOWN CYCLIC HYDROCARBON	20.45	2	J
10.	UNKNOWN	21.5	1	J
11.	UNKNOWN DIMETHYL CYCLOHEXANE	25.3666	1	J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: Versar

Contract:

SR-SW50-01

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 60246

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1278

Level: (low/med) LOW

Date Received: 11/01/88

% Moisture: not dec. 100

Date Analyzed: 11/07/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.287-92-3	CYCLOPENTANE (DOT)	9.53333	3	JN
2.5618-62-2	HYDROXYLAMINE, O-(2-METHYLPR	11.6166	4	J
3.75-28-5	PROPANE, 2-METHYL-	13.1666	2	J
4.110-82-7	CYCLOHEXANE (DOT)	13.8333	17	J
5.96-37-7	CYCLOPENTANE, METHYL-	14.5833	2	J
6.110-83-8	CYCLOHEXENE	15.25	1	J
7.	UNKNOWN	16.5833	0.43	J
8.1001-89-4	HEPTANE, 2-CHLORO-	18.5333	0.28	J
9.591-48-0	CYCLOHEXENE, 3-METHYL-	20.6166	1	J
10.16491-15-9	CYCLOPENTENE, 1,5-DIMETHYL-	21.6666	0.26	J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW50-01D

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 60242

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1287

Level: (low/med) LOW

Date Received: 11/01/88

% Moisture: not dec. 100

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 1

CONCENTRATION UNITS:

Number TICs found: 9

(ug/l or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.287-92-3	CYCLOPENTANE (DOT)	9.66666	9	JN
2.5618-62-2	HYDROXYLAMINE, O-(2-METHYLPR	11.6666	10	J
3.	UNKNOWN	13.2	4	J
4.110-82-7	CYCLOHEXANE (DOT)	13.8666	49	J
5.96-37-7	CYCLOPENTANE, METHYL-	14.6166	4	J
6.110-83-8	CYCLOHEXENE	15.2833	2	J
7.16327-38-1	CYCLOBUTENE, 3,3-DIMETHYL-	16.6166	1	J
8.591-48-0	CYCLOHEXENE, 3-METHYL-	20.6166	1	J
9.4516-69-2	CYCLOPENTANE, 1,1,3-TRIMETHY	21.5333	1	J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW51-01

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 60248

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1270

Level: (low/med) LOW

Date Received: 11/01/88

% Moisture: not dec. 100

Date Analyzed: 11/07/88

Column: (pack/cap) PACK

Dilution Factor: 1

CONCENTRATION UNITS:

Number TICs found: 9

(ug/l or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.287-92-3	CYCLOPENTANE (DOT)	9	5	J
2.5618-62-2	HYDROXYLAMINE, O-(2-METHYLPR	11.2	7	J
3.691-37-2	1-PENTENE, 4-METHYL-	12.8333	2	J
4.110-82-7	CYCLOHEXANE (DOT)	13.5833	34	J
5.96-37-7	CYCLOPENTANE, METHYL-	14.3333	1	J
6.110-83-8	CYCLOHEXENE	15.0333	1	J
7.16747-25-4	HEXANE, 2,2,3-TRIMETHYL-	16.45	0.49	J
8.591-49-1	CYCLOHEXENE, 1-METHYL-	20.5333	1	J
9.4516-69-2	CYCLOPENTANE, 1,1,3-TRIMETHY	21.4166	1	J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW52-01

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.: 6

Matrix: (soil/water) WATER

Lab Sample ID: 60283

Sample wt/vol: 5 (g/ml) ML

Lab File ID: R1292

Level: (low/med) LOW

Date Received: 11/02/88

% Moisture: not dec. 100

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 5

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	CYCLOHEXANE (DOT)	13.95	73	1JN
2. 96-37-7	CYCLOPENTANE, METHYL-	14.6666	10	1J
3. 110-83-8	CYCLOHEXENE	15.3333	5	1J
4.	UNKNOWN	17.0333	6	1J
5.	UNKNOWN CYCLIC HYDROCARBON	20.5333	4	1J
6.	UNKNOWN CYCLIC HYDROCARBON	21.5833	4	1J
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW53-01

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.: 6

Matrix: (soil/water) WATER

Lab Sample ID: 60284

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1289

Level: (low/med) LOW

Date Received: 11/02/88

% Moisture: not dec. 100

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 1

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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Appendix C

Phase IIB Tentatively Identified Compounds (TICs)

- **VOLATILES (SOLID SAMPLES: TEST PITS, SUBSURFACE SOILS,
RIVER SEDIMENTS)**

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SL-R015-01

Lab Name: VERSAR INC.

Contract: SINCLAIR

Lab Code: VERSAR

Case No.: 6483K

SAS No.: B14

SDG No.: 1

Matrix: (soil/water) SOIL

Lab Sample ID: 61342

Sample wt/vol: 5.0 (g/mL) 0

Lab File ID: Y3464

Level: (low/med) LOW

Date Received: 11/11/88

% Moisture: not dec. 20.6

Date Analyzed: 11/18/88

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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100070

SAMPLE ID
SRTP3704

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CDS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or ug/l)
11.	NO VOLATILES DETECTED.....	IVQA.....	NA	NA
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SAMPLE ID
S RTP37021

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	IVOA.....	NA	NA ..
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100249

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SAMPLE ID
SRTF3604

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or ug/l)
11.	NO VOLATILES DETECTED.....	VOA.....	NA	NA
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100242

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SAMPLE ID
S RTP3601

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or ug/l)
11.	NO VOLATILES DETECTED.....	VOA.....	NA	NA ..
12.				
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100235

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SAMPLE ID
S RTP3404

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CRS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	IVOL.....	NA	NA ..
12.				
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000318

Versar Inc., Laboratory Operations
70 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
S RTP3402

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	IVDA.....	NA	NA ..
12.				
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000311

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3900

SAMPLE ID
ISRT00204

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
110-82-7	1 CYCLOHEXANE (DOT	IVDA	322	24,000 JN
2	1 UNKNOWN DIMETHYL CYCLOPENTANE	IVDA	445	950 J
3	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	452	5,000 J
4	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	501	1,300 J
5	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	549	1,900 J
6	1 UNKNOWN DIMETHYL HEXENE	IVDA	565	8,900 J
7	1 UNKNOWN SUBSTITUTED CYCLOHEXANE	IVDA	575	7,900 J
8	1 UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	590	5,200 J
9 7094-26-0	1 CYCLOHEXANE, 1,1,2-TRIMETHYL	IVDA	607	4,500 J
110	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	645	1,200 J
111	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	666	910 J
112	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	695	1,200 J
113	1 UNKNOWN CYCLIC HYDROCARBON	IVDA	721	3,400 J
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12-22-88

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3888

SAMPLE ID
ISRT0201

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 1638-26-2	ICYCLOPENTANE, 1,1-DIMETHYL	IVDA	395	400 JN
2 590-66-9	ICYCLOHEXANE, 1,1-DIMETHYL	IVDA	581	2,300 J
3	UNKNOWN	IVDA	549	1,400 J
4	UNKNOWN	IVDA	553	1,400 J
5 2287-04-7	ICYCLOHEXANE, 1,4-DIMETHYL-, TRANS-	IVDA	575	2,100 J
6	UNKNOWN	IVDA	589	2,700 J
7 3873-66-3	ICYCLOHEXANE, 1,1,3-TRIMETHYL	IVDA	606	4,000 J
8 7667-60-9	ICYCLOHEXANE, 1,2,4-TRIMETHYL-,	IVDA	626	1,800 J
9	UNKNOWN	IVDA	645	1,400 J
10	UNKNOWN	IVDA	666	970 J
11	UNKNOWN	IVDA	720	2,000 J
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12-17-97

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1E

EPA SAMPLE

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SR-TP1-04

Lab Name: VERSAR INC. Contract: SINCLAIR

Lab Code: VERSAR Case No.: 6483B SAS No.: B3 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 59904

Sample wt/vol: 5.0 (g/mL) G Lab File ID: Y3291

Level: (low/med) LOW Date Received: 10/27/88

% Moisture: not dec. 18 Date Analyzed: 11/02/88

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	G
=====	=====	=====	=====	=====

I2qI2q

1E

EPA SAMPLE

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SR-TP1-01

Lab Name: VERSAR INC.Contract: SINCLAIRLab Code: VERSARCase No.: 6483BSAS No.: B3SDG No.: Matrix: (soil/water) SOILLab Sample ID: 59903Sample wt/vol: 5.0 (g/mL) gLab File ID: Y3292Level: (low/med) LOWDate Received: 10/27/88% Moisture: not dec. 16Date Analyzed: 11/02/88Column (pack/cap) PACKDilution Factor: 1.0Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR- 1893+-02

Lab Name: VERSAR INC. Contract: SINCLAIR

Lab Code: VERSAR Case No.: 6483H SAS No.: B10 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 60977

Sample wt/vol: 5.0 (g/mL) G Lab File ID: Y3362

Level: (low/med) LOW Date Received: 11/05/88

% Moisture: not dec. 14 Date Analyzed: 11/10/88

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	G
=====	=====	=====	=====	=====

100210

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-AB93-01

Lab Name: VERSAR INC. Contract: SINCLAIR
Lab Code: VERSAR Case No.: 6483H SAS No.: B10 SDG No.:
Matrix: (soil/water) SOIL Lab Sample ID: 60976
Sample wt/vol: 5.0 (g/mL) G Lab File ID: Y3361
Level: (low/med) LOW Date Received: 11/05/88
% Moisture: not dec. 28 Date Analyzed: 11/10/88
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

100197

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRAB18201

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-71-8	1 METHANE, DICHLORODIFLUORO	IVDA	66	1,800 J.E.
2	UNKNOWN	IVDA	344	2,600 J.
3	UNKNOWN CYCLIC HYDROCARBON	IVDA	527	1,300 J.
4	UNKNOWN	IVDA	576	2,400 J.
5	UNKNOWN	IVDA	592	15,000 J.
6	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	602	11,000 J.
7	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	617	7,300 J.
8	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	632	8,800 J.
9	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	650	2,500 J.
10	UNKNOWN CYCLIC HYDROCARBON	IVDA	667	3,300 J.
11	UNKNOWN CYCLIC HYDROCARBON	IVDA	685	2,900 J.
12	UNKNOWN	IVDA	712	2,800 J.
13	UNKNOWN CYCLIC HYDROCARBON	IVDA	734	13,000 J.
14	UNKNOWN CYCLIC HYDROCARBON	IVDA	768	5,400 J.
15	UNKNOWN CYCLIC HYDROCARBON	IVDA	785	2,800 J.
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000273

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISR-ABJO/-a

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-71-8	METHANE, DICHLORODIFLUORO	IVDA	87	3,600 J, B
2	UNKNOWN HYDROCARBON	IVDA	344	3,700 J
3	UNKNOWN CYCLIC HYDROCARBON	IVDA	527	2,100 J
4	UNKNOWN HYDROCARBON	IVDA	577	4,300 J
5	UNKNOWN	IVDA	592	26,000 J
6	UNKNOWN CYCLIC HYDROCARBON	IVDA	602	24,000 J
7	UNKNOWN DIMETHYL CYCLOHEXANE	IVDA	617	17,000 J
8	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	632	14,000 J
9	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	650	4,900 J
110	UNKNOWN CYCLIC HYDROCARBON	IVDA	667	4,200 J
111	UNKNOWN CYCLIC HYDROCARBON	IVDA	686	3,000 J
112	UNKNOWN	IVDA	712	4,600 J
113	UNKNOWN	IVDA	734	17,000 J
114	UNKNOWN TRIMETHYL CYCLOHEXANE	IVDA	768	8,300 J
115	UNKNOWN HYDROCARBON	IVDA	785	3,700 J
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100065

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAM

SR-AB-68-03

Lab Name: VERSAR INC. Contract: SINCLAIR
Lab Code: VERSAR Case No.: 6483E SAS No.: BB SDG No.: _____
Matrix: (soil/water) SOIL Lab Sample ID: 60489A
Sample wt/vol: 5.0 (g/mL) 0 Lab File ID: Y3350
Level: (low/med) LOW Date Received: 11/03/88
% Moisture: not dec. 22 Date Analyzed: 11/09/88
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPL

SR-AB-68-02

Lab Name: VERSAR INC. Contract: SINCLAIR
Lab Code: VERSAR Case No.: 6483E SAS No.: BB SDG No.:
Matrix: (soil/water) SOIL Lab Sample ID: 60488A
Sample wt/vol: 5.0 (g/mL) g Lab File ID: Y3352
Level: (low/med) LOW Date Received: 11/03/88
% Moisture: not dec. 19 Date Analyzed: 11/09/88
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	g
=====	=====	=====	=====	=====

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-AB-68-0

Names: Versar

Contract: _____

Lab Code: Versar Case No.: 6483

SAS No.: B8

SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 60487

Sample wt/vol: 5.0 (g/ml) G

Lab File ID: Y3359

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. 86

Date Analyzed: 11/10/88

Dilution Factor: 1

CONCENTRATION UNITS:

(ug/l or ug/Kg) ug/Kg

Number TICs found: 14

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	11.5	170	JN
2. 110-82-7	CYCLOHEXANE (DOT)	13.9333	1100	J
3. 96-37-7	CYCLOPENTANE, METHYL-	14.6166	84	J
4.	UNKNOWN	16.5666	39	J
5.	UNKNOWN	18.5166	35	J
6.	UNKNOWN CYCLOPENTANE	19.25	41	J
7.	UNKNOWN CYCLIC HYDROCARBON	19.55	330	J
8.	UNKNOWN CYCLOHEXENE	20.7166	45	J
9.	UNKNOWN	21.6333	64	J
10.	UNKNOWN	24.05	180	J
11.	UNKNOWN CYCLOHEXANE	24.8833	380	J
12.	UNKNOWN CYCLIC HYDROCARBON	25.5333	320	J
13.	UNKNOWN CYCLOHEXANE	26.2166	210	J
14.	UNKNOWN CYCLIC HYDROCARBON	31.15	91	J
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100170

Versar Inc., Laboratory Operations

70 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID

SRAB-6703

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.....	IVOA.....	NA	NA
12.				
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100223

Versar Inc., Laboratory Operations

50 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID

SRAB-6702

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11..	NO VOLATILES DETECTED.....	VOA.....	NA	NA ..
12.....				
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100222

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRB-6701

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	IVOA	322	43 J
2	UNKNOWN HYDROCARBON	IVOA	338	8 J
3	UNKNOWN HYDROCARBON	IVOA	384	9 J
4	UNKNOWN HYDROCARBON	IVOA	396	6 J
5	UNKNOWN HYDROCARBON	IVOA	446	11 J
6	UNKNOWN	IVOA	502	13 J
7	UNKNOWN CYCLOHEXANE	IVOA	576	19 J
8	UNKNOWN CYCLOHEXANE	IVOA	591	13 J
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100195

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (783) 758-3888

SAMPLE ID
ISRA8-6683

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 75-71-8	METHANE, DICHLORODIFLUORO	IVOA	97	12 J, 8 TR
2				
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4				
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Versar Inc., Laboratory Operations
50 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRAB-6682

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11.	NO VOLATILES DETECTED.	IVOA.	NA	NA
12.				
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100173

Versar Inc., Laboratory Operations
150 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRAB-66010

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/kg or ug/l)
11.	NO VOLATILES DETECTED.....	VQA.....	NA	NA ..
12.				
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100166

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRA8-6601

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or scan	Estimated Concentration (ug/Kg or ug/l)
1 75-71-8	METHANE, DICHLORODIFLUORO	IVOA	97	16 J, B-1-2-
2				
3				
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100158

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-RS17-01

Lab Name: VERSAR INC. Contract: SINCLAIR

Lab Code: VERSAR Case No.: 6483K SAS No.: B14 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 61343

Sample wt/vol: 5.0 (g/mL) 2 Lab File ID: Y3470

Level: (low/med) LOW Date Received: 11/11/88

% Moisture: not dec. 19.3 Date Analyzed: 11/18/88

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	G
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-RS16-01D

Lab Name: VERSAR INC. Contract: SINCLAIR
Lab Code: VERSAR Case No.: 6483L SAS No.: B15 SDG No.:
Matrix: (soil/water) SOIL Lab Sample ID: 61480
Sample wt/vol: 5.0 (g/mL) 0 Lab File ID: Y3467
Level: (low/med) LOW Date Received: 11/12/88
% Moisture: not dec. 19 Date Analyzed: 11/18/88
Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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100102

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-RS16-01

Lab Name: VERSAR INC. Contract: SINCLAIR

Lab Code: VERSAR Case No.: 64831 SAS No.: B15 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 61479

Sample wt/vol: 5.0 (g/mL) 0 Lab File ID: Y3466

Level: (low/med) LOW Date Received: 11/12/88

% Moisture: not dec. 19.3 Date Analyzed: 11/18/88

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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100095

Appendix C
Phase IIB Tentatively
Identified Compounds (TICs)

- SEMIVOLATILES (LIQUID SAMPLES: GROUNDWATER, SURFACE WATER)

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SRGW0102

Lab Name: VERSAR INC.

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 22 23

Matrix: (soil/water) WATER

Lab Sample ID: 62596

Sample wt/vol: _____

1000

(g/mL)

ML

Lab File ID: 78853

Level: (low/med) LDW

Date Received: 12/01/88

% Moisture: not dec. _____

dec. _____

Date Extracted: 12/06/88

Extraction: (SepF/Cont/Sonc) _____

CONT

Date Analyzed: 12/22/88

GPC Cleanup: _____

(Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
-----	-----	-----	-----	-----

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SR-SW54-01

Lab Name: Versar

Contract:

Lab Code: Versar Case No.: 6483

SAS No.:

SDG No.: 6

Matrix: (soil/water) WATER

Lab Sample ID: 60285

Sample wt/vol: 25 (g/ml) ML

Lab File ID: R1290

Level: (low/med) LOW

Date Received: 11/02/88

% Moisture: not dec. 100

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factors: 1

CONCENTRATION UNITS:

(ug/l or ug/Kg) ug/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN TRIMETHYL BENZENE	20.95	1	JN
2.	UNKNOWN TRIMETHYL BENZENE	25.2833	2	JN
3.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SRGW0302

Lab Name: VERSAR INC.

Contract: _____

Lab Code: VERSAR

Case No.: 5483

SAS No.: _____

SDG No.: 22 23

Matrix: (soil/water) WATER

Lab Sample ID: 62597

Sample wt/vol: 1050 (g/mL) ML

Lab File ID: 78864

Level: (low/med) LOW

Date Received: 12/01/88

% Moisture: not dec. _____

dec. _____

Date Extracted: 12/06/88

Extraction: (SepF/Cont/Sonc) _____

CONT

Date Analyzed: 12/23/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 0.95

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRGW0702

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 17

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61612

Sample wt/vol: 1000

Lab File ID: __V2324

Level: (low/med) LOW

Date Received: __11/17/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/21/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/05/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factors: 1.0

CONCENTRATION UNITS:

Number TICs found: 24

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	D
1. _____	UNKNOWN	3.60	26	J
2. _____	UNKNOWN	4.80	85	J
3. _____	UNKNOWN HYDROCARBON	5.80	23	J
4. _____	UNKNOWN	5.93	42	J
5. _____	UNKNOWN	7.83	56	J
6. _____	UNKNOWN	8.25	36	J
7. _____	UNKNOWN HYDROCARBON	8.38	54	J
8. _____	UNKNOWN HYDROCARBON	8.57	43	J
9. _____	UNKNOWN	9.87	44	J
10. _____	UNKNOWN HYDROCARBON	10.20	32	J
11. _____	UNKNOWN	11.18	16	J
12. _____	UNKNOWN	11.65	18	J
13. _____	UNKNOWN	11.78	44	J
14. _____	UNKNOWN HYDROCARBON	12.52	21	J
15. _____	UNKNOWN HYDROCARBON	13.00	15	J
16. _____	UNKNOWN	13.22	14	J
17. _____	UNKNOWN	14.18	34	J
18. _____	UNKNOWN NAPHTHALENE	15.58	41	J
19. _____	UNKNOWN HYDROCARBON	15.77	41	J
20. _____	UNKNOWN NAPHTHALENE	16.85	29	J
21. _____	UNKNOWN HYDROCARBON	17.90	66	J
22. _____	UNKNOWN HYDROCARBON	18.52	97	J
23. _____	UNKNOWN HYDROCARBON	19.58	51	J
24. _____	UNKNOWN	22.40	19	J
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract:

SRGW0902

Lab Code: VERSAR

Case No.: 6483

SAS No.:

SDG No.: 20.21

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: 62317

Sample wt/vol: 1000

Lab File ID: V2401

Level: (low/med) LOW

Date Received: 11/29/88

X Moisture: not dec. dec.

Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 9

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.78	92	1.1
2.	UNKNOWN	5.90	35	1.1
3.	UNKNOWN SUBSTITUTED BENZENE	6.52	43	1.1
4.	UNKNOWN SUBSTITUTED BENZENE	8.53	13	1.1
5.	UNKNOWN SUBSTITUTED BENZENE	9.02	23	1.1
6.	UNKNOWN HYDROCARBON	17.82	12	1.1
7.	UNKNOWN HYDROCARBON	18.43	19	1.1
8.	UNKNOWN HYDROCARBON	19.50	12	1.1
9.	UNKNOWN	27.57	17	1.1
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
SRG0902DC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN DIMETHYL BENZENE	1BNA	311	55 J N
2	UNKNOWN HYDROCARBON	1BNA	340	8 J
3	UNKNOWN TRIMETHYL BENZENE	1BNA	430	11 J
4	UNKNOWN ETHYL, METHYL BENZENE	1BNA	445	7 J
5	UNKNOWN TRIMETHYL BENZENE	1BNA	461	22 J
6	UNKNOWN TRIMETHYL BENZENE	1BNA	490	7 J
7	UNKNOWN AROMATIC HYDROCARBON	1BNA	516	5 J
8	UNKNOWN	1BNA	630	13 J
9	UNKNOWN	1BNA	652	11 J
10	UNKNOWN	1BNA	851	7 J
11	UNKNOWN	1BNA	1056	6 J N
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IF
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRGW1002

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 20 21

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __62251

Sample wt/vol: 1000

Lab File ID: __V2400

Level: (low/med) LOW

Date Received: __11/29/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

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

Number TICs found: 19

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN CYCLIC HYDROCARBON	3.55	31	IJ
2.	UNKNOWN HYDROCARBON	4.42	35	IJ
3.	UNKNOWN	4.78	35	IJE
4.	UNKNOWN	5.90	28	IJE
5.	UNKNOWN SUBSTITUTED BENZENE	6.35	44	IJV
6.	UNKNOWN DIMETHYL BENZENE	6.53	200	IJ
7.	UNKNOWN SUBSTITUTED BENZENE	7.03	31	IJ
8.	UNKNOWN SUBSTITUTED BENZENE	7.68	36	IJ
9.	UNKNOWN	8.25	41	IJ
10.	UNKNOWN SUBSTITUTED BENZENE	8.42	23	IJ
11.	UNKNOWN SUBSTITUTED BENZENE	8.77	42	IJ
12.	UNKNOWN METHYL BENZENE	9.02	64	IJ
13.	UNKNOWN SUBSTITUTED BENZENE	9.57	37	IJ
14.	UNKNOWN SUBSTITUTED BENZENE	9.82	39	IJ
15.	UNKNOWN SUBSTITUTED BENZENE	10.62	27	IJ
16.	UNKNOWN	10.93	20	IJ
17.	UNKNOWN	11.10	4	IJ
18.	UNKNOWN SUBSTITUTED BENZENE	11.72	33	IJ
19.	UNKNOWN	14.12	27	IJ
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SAMPLE ID
ISRW1002DC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN ALKYL SUBSTITUTED BENZENE	1BNA	303	42 J
2	UNKNOWN DIMETHYL BENZENE	1BNA	312	200 J
3	UNKNOWN ALKYL SUBSTITUTED BENZENE	1BNA	340	32 J
4	UNKNOWN ALKYL SUBSTITUTED BENZENE	1BNA	377	32 J
5 103-65-1	BENZENE, PROPYL-	1BNA	412	35 J
6	UNKNOWN ETHYL METHYL BENZENE	1BNA	422	17 J
7	UNKNOWN TRIMETHYL BENZENE	1BNA	430	15 J
8	UNKNOWN ETHYL METHYL BENZENE	1BNA	445	34 J
9	UNKNOWN TRIMETHYL BENZENE	1BNA	462	48 J
10	UNKNOWN TRIMETHYL BENZENE	1BNA	498	20 J
11	UNKNOWN SUBSTITUTED BENZENE	1BNA	516	20 J
12	UNKNOWN ETHYL DIMETHYL BENZENE	1BNA	574	21 J
13	UNKNOWN SUBSTITUTED BENZENE	1BNA	612	12 J
14	UNKNOWN SUBSTITUTED BENZENE	1BNA	656	22 J
15	UNKNOWN POLYCYCLIC AROMATIC	1BNA	823	22 J
16	UNKNOWN POLYCYCLIC AROMATIC	1BNA	843	21 J
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100134

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SAMPLE ID
ISRM1102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Do Not Report
if A TLV VOA

COS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/L)
1	UNKNOWN	10NA	357	11 J N
2	UNKNOWN	10NA	370	11 J N
3	UNKNOWN KETONE	10NA	386	15 J N
4 79-34-5	1,1,2,2-TETRACHLOROETHANE	10NA	390	23 J N
5 930-68-7	12-CYCLOHEXYL-1-ONE	10NA	417	16 J N
6	UNKNOWN	10NA	448	11 J
7	UNKNOWN	10NA	459	17 J
8	UNKNOWN SUBSTITUTED BENZENE	10NA	477	24 J
9	UNKNOWN SUBSTITUTED BENZENE	10NA	494	10 J
10	UNKNOWN SUBSTITUTED BENZENE	10NA	532	15 J
11	UNKNOWN	10NA	538	11 J
12	UNKNOWN SUBSTITUTED BENZENE	10NA	551	24 J
13	UNKNOWN	10NA	573	9 J
14	UNKNOWN SUBSTITUTED BENZENE	10NA	647	19 J
15	UNKNOWN SUBSTITUTED BENZENE	10NA	653	11 J
16	UNKNOWN KETONE	10NA	663	11 J
17	UNKNOWN SUBSTITUTED BENZENE	10NA	693	31 J
18	UNKNOWN	10NA	782	9 J
19	UNKNOWN NAPHTHALENE ISOMER	10NA	860	9 J
20	UNKNOWN	10NA	870	11 J
21	UNKNOWN	10NA	883	12 J
22	UNKNOWN NAPHTHALENE ISOMER	10NA	990	11 J
23	UNKNOWN ORGANIC ACID	10NA	1450	10 J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRGW1602

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 18

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61725

Sample wt/vol: 860

Lab File ID: __V2331

Level: (low/med) LOW

Date Received: __11/18/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/21/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: _1

CONCENTRATION UNITS:

Number TICs found: 11

(ug/L or ug/Kg) _ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.1193-11-9	1,3-DIOXOLANE, 2,2,4-TRIMETH	3.60	57	JB
2.	UNKNOWN	4.80	40	JB
3.	UNKNOWN	5.93	30	JB
4.	UNKNOWN	7.83	24	JB
5.	UNKNOWN HYDROCARBON	8.27	17	JB
6.	UNKNOWN	8.38	11	JB
7.	UNKNOWN HYDROCARBON	9.50	14	JB
8.	UNKNOWN HYDROCARBON	15.80	14	JB
9.	UNKNOWN HYDROCARBON	17.93	13	JB
10.	UNKNOWN HYDROCARBON	18.55	21	JB
11.	UNKNOWN HYDROCARBON	19.63	11	JB
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRGW1602D

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 18

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61726

Sample wt/vol: 905

Lab File ID: __V2332

Level: (low/med) LOW

Date Received: __11/18/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/21/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.83	59	J
2.	UNKNOWN	5.95	32	J
3.	UNKNOWN	7.85	18	J
4.	UNKNOWN	8.28	12	J
5.	UNKNOWN HYDROCARBON	9.52	10	J
6.	UNKNOWN HYDROCARBON	18.55	8	J
7.	UNKNOWN	27.73	13	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract:

SRSW2702

Lab Code: VERSAR

Case No.: 16483

SAS No.:

SDG No.: 20-21

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: 62319

Sample wt/vol: 1000

Lab File ID: 02411

Level: (low/med) LOW

Date Received: 11/29/88

* Moisture: not det. det.

Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/12/88

GPC Cleanup: (Y/N) N

pH:

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 21

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-87-2	CYCLOHEXANE, METHYL-	3.52	16	JN
2.	UNKNOWN DIMETHYL CYCLOHEXANE	4.57	12	J
3.	UNKNOWN	4.75	18	J
4.	UNKNOWN DIMETHYL CYCLOHEXANE	4.97	9	J
5.	UNKNOWN HYDROCARBON	5.73	14	J
6.	UNKNOWN	5.88	14	J
7.	UNKNOWN	6.48	8	J
8.	UNKNOWN	7.55	5	J
9. 98-82-8	BENZENE, (1-METHYLETHYL)-	7.67	15	J
10.	UNKNOWN HYDROCARBON	7.75	7	J
11.	UNKNOWN	8.25	19	J
12.	UNKNOWN	8.85	540	J
13.	UNKNOWN HYDROCARBON	9.82	10	J
14.	UNKNOWN	11.03	460	J
15.	UNKNOWN HYDROCARBON	11.17	8	J
16.	UNKNOWN HYDROCARBON	11.73	13	J
17.	UNKNOWN <i>Residual in Sample</i>	14.12	9	J
18.	UNKNOWN	14.92	18	J
19.	UNKNOWN	15.20	1	J
20.	UNKNOWN <i>Residual ASD</i>	24.73	10	J
21.	UNKNOWN	27.60	12	J
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FORM I SV-TIC

100187

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRGW2702D

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 20 21

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __62320

Sample wt/vol: 1000

Lab File ID: __V2412

Level: (low/med) LOW

Date Received: __11/29/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/12/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 20

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.108-87-2	ICYCLOHEXANE, METHYL-	3.50	18	13
2.	UNKNOWN DIMETHYL CYCLOHEXANE	4.57	13	13
3.	UNKNOWN	4.75	13	13
4.	UNKNOWN DIMETHYL CYCLOHEXANE	4.97	10	13
5.	UNKNOWN HYDROCARBON	5.72	13	13
6.	UNKNOWN	5.87	9	13
7.	UNKNOWN	6.48	9	13
8.	UNKNOWN HYDROCARBON	7.65	16	13
9.	UNKNOWN HYDROCARBON	7.75	9	13
10.	UNKNOWN	8.23	19	13
11.	UNKNOWN	8.85	480	13
12.	UNKNOWN HYDROCARBON	9.82	11	13
13.	UNKNOWN	11.02	390	13
14.	UNKNOWN HYDROCARBON	11.15	8	13
15.	UNKNOWN HYDROCARBON	11.73	11	13
16.	UNKNOWN POLYNUCLEAR AROMATIC H/C	13.85	6	13
17.	UNKNOWN POLYNUCLEAR AROMATIC H/C	14.12	8	13
18.	UNKNOWN	14.92	8	13
19. 101-84-8	BENZENE, 1,1'- OXYBIS -	15.22	10	13
20.	UNKNOWN	27.60	12	13
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FORM I SV-TIC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN DIMETHYL BENZENE	1BNA	315	83 J M
2	UNKNOWN ETHYL, METHYL CYCLOHEXANE	1BNA	335	14 J
3	UNKNOWN ETHYL, METHYL CYCLOHEXANE	1BNA	359	11 J
4	UNKNOWN	1BNA	375	20 J
5	UNKNOWN METHYL, ETHYL BENZENE	1BNA	380	18 J
6	UNKNOWN CYCLIC HYDROCARBON	1BNA	386	33 J
7	UNKNOWN	1BNA	402	18 J
8 103-65-1	BENZENE, PROPYL-	1BNA	416	17 J
9	UNKNOWN HYDROCARBON	1BNA	420	20 J
10	UNKNOWN ETHYL, METHYL BENZENE	1BNA	425	67 J
11	UNKNOWN TRIMETHYL BENZENE	1BNA	434	100 J
12	UNKNOWN TRIMETHYL BENZENE	1BNA	466	100 J
13	UNKNOWN TRIMETHYL BENZENE	1BNA	502	90 J
14	UNKNOWN	1BNA	520	16 J
15	UNKNOWN METHYL, PROPYL-BENZENE	1BNA	535	21 J
16	UNKNOWN ETHYL, DIMETHYL-BENZENE	1BNA	544	34 J
17	UNKNOWN ETHYL, DIMETHYL-BENZENE	1BNA	567	13 J
18	UNKNOWN	1BNA	582	67 J
19	UNKNOWN	1BNA	587	78 J
20	UNKNOWN SUBSTITUTED BENZENE	1BNA	616	16 J
21	UNKNOWN SUBSTITUTED BENZENE	1BNA	621	19 J
22	UNKNOWN METHYL, PROPENYL-BENZENE	1BNA	646	18 J
23	UNKNOWN BENZENE DERIVATIVE	1BNA	660	35 J
24	UNKNOWN 2,3-DIHYDRO, DIMETHYL-1H-INDENE	1BNA	715	13 J
25	UNKNOWN POLYCYCLIC AROMATIC	1BNA	848	65 J
26	UNKNOWN SUBSTITUTED NAPHTHALENE	1BNA	934	12 J
27	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	946	19 J
28	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	962	27 J
29	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	966	16 J
30	UNKNOWN SUBSTITUTED NAPHTHALENE	1BNA	983	8 J M

100183

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6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISREM2002

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

DO NOT RE-ANALYZE

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN SUBSTITUTED CYCLOHEXANE	18NA	353	19 JN
2 79-34-5	1,1,2,2-TETRACHLOROETHANE	18NA	391	21 JN
3	UNKNOWN	18NA	404	23 JN
4	UNKNOWN	18NA	415	43 J
5	UNKNOWN	18NA	441	26 J
6	UNKNOWN HYDROCARBON	18NA	449	26 J
7	UNKNOWN SUBSTITUTED BENZENE	18NA	464	210 J
8	UNKNOWN SUBSTITUTED BENZENE	18NA	530	25 J
9	UNKNOWN SUBSTITUTED BENZENE	18NA	534	110 J
110	UNKNOWN SUBSTITUTED BENZENE	18NA	552	20 J
111	UNKNOWN SUBSTITUTED BENZENE	18NA	567	20 J
112	UNKNOWN SUBSTITUTED BENZENE	18NA	575	48 J
113	UNKNOWN SUBSTITUTED BENZENE	18NA	648	21 J
114	UNKNOWN SUBSTITUTED BENZENE	18NA	654	24 J
115	UNKNOWN SUBSTITUTED BENZENE	18NA	679	17 J
116	UNKNOWN SUBSTITUTED BENZENE	18NA	694	45 J
117	UNKNOWN	18NA	804	76 J
118	UNKNOWN NAPHTHALENE ISOMER	18NA	902	26 J
119	UNKNOWN NAPHTHALENE ISOMER	18NA	999	37 J
120	UNKNOWN NAPHTHALENE ISOMER	18NA	1002	22 J
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see attached

100148

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6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM2802DC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN DIMETHYL BENZENE	1BNA	315	83 J M
2	UNKNOWN ETHYL, METHYL CYCLOHEXANE	1BNA	335	14 J
3	UNKNOWN ETHYL, METHYL CYCLOHEXANE	1BNA	359	11 J
4	UNKNOWN	1BNA	375	20 J
5	UNKNOWN METHYL, ETHYL BENZENE	1BNA	388	18 J
6	UNKNOWN CYCLIC HYDROCARBON	1BNA	386	33 J
7	UNKNOWN	1BNA	402	18 J
8 103-65-1	BENZENE, PROPYL-	1BNA	416	17 J
9	UNKNOWN HYDROCARBON	1BNA	420	20 J
10	UNKNOWN ETHYL, METHYL BENZENE	1BNA	425	67 J
11	UNKNOWN TRIMETHYL BENZENE	1BNA	434	180 J
12	UNKNOWN TRIMETHYL BENZENE	1BNA	466	180 J
13	UNKNOWN TRIMETHYL BENZENE	1BNA	582	90 J
14	UNKNOWN	1BNA	520	16 J
15	UNKNOWN METHYL, PROPYL-BENZENE	1BNA	535	21 J
16	UNKNOWN ETHYL, DIMETHYL-BENZENE	1BNA	544	34 J
17	UNKNOWN ETHYL, DIMETHYL-BENZENE	1BNA	567	13 J
18	UNKNOWN	1BNA	582	67 J
19	UNKNOWN	1BNA	587	78 J
20	UNKNOWN SUBSTITUTED BENZENE	1BNA	616	16 J
21	UNKNOWN SUBSTITUTED BENZENE	1BNA	621	19 J
22	UNKNOWN METHYL, PROPENYL-BENZENE	1BNA	646	18 J
23	UNKNOWN BENZENE DERIVATIVE	1BNA	660	35 J
24	UNKNOWN 2,3-DIHYDRO, DIMETHYL-1H-INDENE	1BNA	715	13 J
25	UNKNOWN POLYCYCLIC AROMATIC	1BNA	848	65 J
26	UNKNOWN SUBSTITUTED NAPHTHALENE	1BNA	934	12 J
27	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	946	19 J
28	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	962	27 J
29	UNKNOWN DIMETHYL NAPHTHALENE	1BNA	966	16 J
30	UNKNOWN SUBSTITUTED NAPHTHALENE	1BNA	983	8 J M

100183

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRGW2802 DC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN	BNA	1057	12 J
2	UNKNOWN HYDROCARBON	BNA	1213	6 J
3 10544-50-0	SULFUR, MOL. (S8)	BNA	1534	4 J
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100184

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
1986M3102

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN SUBSTITUTED CYCLOHEXANE	IBNA	354	10 J
2	UNKNOWN	IBNA	362	12 J
3	UNKNOWN	IBNA	394	15 J
4	UNKNOWN	IBNA	405	26 J
5	UNKNOWN	IBNA	431	16 J
6	UNKNOWN HYDROCARBON	IBNA	439	19 J
7	UNKNOWN SUBSTITUTED BENZENE	IBNA	453	12 J
8	UNKNOWN SUBSTITUTED CYCLOHEXANE	IBNA	471	11 J
9	UNKNOWN SUBSTITUTED BENZENE	IBNA	485	31 J
10	UNKNOWN HYDROCARBON	IBNA	515	13 J
11	UNKNOWN SUBSTITUTED BENZENE	IBNA	523	17 J
12	UNKNOWN SUBSTITUTED BENZENE	IBNA	541	29 J
13	UNKNOWN SUBSTITUTED BENZENE	IBNA	554	11 J
14	UNKNOWN	IBNA	604	29 J
15	UNKNOWN SUBSTITUTED BENZENE	IBNA	637	14 J
16	UNKNOWN SUBSTITUTED BENZENE	IBNA	682	27 J
17	UNKNOWN SUBSTITUTED 2,3-DIHYDRO-1H-INDENE	IBNA	738	11 J
18	UNKNOWN HYDROCARBON	IBNA	743	12 J
19	UNKNOWN HYDROCARBON	IBNA	809	9 J
20	UNKNOWN	IBNA	872	23 J
21	UNKNOWN NAPHTHALENE ISOMER	IBNA	906	13 J
22	UNKNOWN HYDROCARBON	IBNA	1008	20 J
23	UNKNOWN HYDROCARBON	IBNA	1186	20 J
24	UNKNOWN HYDROCARBON	IBNA	1237	34 J
25	UNKNOWN HYDROCARBON	IBNA	1326	18 J
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100203

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: VERSAR

Contract: _____

SRGW3202

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 19

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61906

Sample wt/vol: 1050

Lab File ID: __V2384

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/08/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.7

Number TICs found: 7

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.1193-11-9	1,3-DIOXOLANE, 2,2,4-TRIMETHYL	3.57	14	JB
2.	UNKNOWN	4.77	20	JB
3.	UNKNOWN	5.88	32	JB
4.	UNKNOWN	9.80	9	JN
5.	UNKNOWN	11.70	9	JN
6.	UNKNOWN	20.92	6	J
7.	UNKNOWN	22.57	13	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRGW3302

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 17

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61613

Sample wt/vol: 1000

Lab File ID: __V2325

Level: (low/med) LOW

Date Received: __11/17/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/21/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/05/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 23

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.78	19	J
2.	UNKNOWN	5.92	30	J
3.	UNKNOWN	12.63	83	J
4.	UNKNOWN	12.73	44	J
5.	UNKNOWN	12.98	18	J
6.	UNKNOWN	13.10	45	J
7.	UNKNOWN	13.35	69	J
8.	UNKNOWN	13.95	43	J
9.	UNKNOWN	14.35	73	J
10.	UNKNOWN	14.50	45	J
11.	UNKNOWN ORGANIC ACID	14.60	67	J
12.	UNKNOWN	14.72	70	J
13.	UNKNOWN	15.22	94	J
14.	UNKNOWN	15.57	47	J
15.	UNKNOWN	15.63	43	J
16.	UNKNOWN	15.80	90	J
17.	UNKNOWN	16.03	72	J
18.	UNKNOWN	16.83	78	J
19.	UNKNOWN	17.70	41	J
20.	UNKNOWN	18.32	21	J
21.	UNKNOWN	20.87	23	J
22.	UNKNOWN	22.05	12	J
23.	UNKNOWN	27.63	16	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRGW3502

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61561

Sample wt/vol: 1040

Lab File ID: __V2321

Level: (low/med) LOW

Date Received: __11/16/88

% Moisture: not dec. dec.

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) Cont

Date Analyzed: _____

GPC Cleanup: (Y/N) __

pH: _____

Dilution Factor: _ 1

CONCENTRATION UNITS:

Number TICs found: 26

(ug/L or ug/Kg) _ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.108-87-2	CYCLOHEXANE, METHYL-	3.60	31	IJN
2.	UNKNOWN	4.45	26	IJ
3.	UNKNOWN HYDROCARBON	4.50	20	IJ
4.	UNKNOWN CYCLIC HYDROCARBON	4.65	21	IJ
5.	UNKNOWN	4.82	97	RJ
6.	UNKNOWN HYDROCARBON	5.80	26	IJN
7.	UNKNOWN	5.95	29	IJ
8.	UNKNOWN DIMETHYL BENZENE	6.57	160	IJ
9.	UNKNOWN DIMETHYL BENZENE	7.08	23	IJ
10.	UNKNOWN	7.83	31	IJ
11.	UNKNOWN	8.27	20	IJ
12.	UNKNOWN BENZENE	8.82	29	IJ
13.	UNKNOWN BENZENE	9.62	18	IJ
14.	UNKNOWN BENZENE	9.88	25	IJ
15.	UNKNOWN METHYL BENZENE	11.18	21	IJ
16.	UNKNOWN METHYL BENZENE	11.78	37	IJ
17.	UNKNOWN	13.48	10	IJ
18.	UNKNOWN	14.18	27	IJ
19.	UNKNOWN DIMETHYL NAPHTHALENE	15.58	12	IJ
20.	UNKNOWN HYDROCARBON	18.50	12	IJ
21.	UNKNOWN HYDROCARBON	19.58	8	IJ
22.	UNKNOWN PHTHALATE	27.80	36	RJ
23.	UNKNOWN PHTHALATE	27.97	45	RJ
24.	UNKNOWN PHTHALATE	28.05	65	RJ
25.	UNKNOWN PHTHALATE	28.15	76	RJ
26.	UNKNOWN PHTHALATE	28.23	39	RJ
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FORM I SV-TIC

200094

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SRGWDB4302

Lab Name: VERSAR INC. Contract: _____
Lab Code: VERSAR Case No.: 6483 SAS No.: _____ SDG No.: 22 23
Matrix: (soil/water) WATER Lab Sample ID: 62603
Sample wt/vol: 920 (g/mL) ML Lab File ID: 48867
Level: (low/med) LOW Date Received: 12/01/88
% moisture: not dec. _____ dec. _____ Date Extracted: 12/06/88
Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/23/88
GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

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

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. U

Lab Name: VERSAR Contract: SRG05002

Lab Code: VERSAR Case No: 16483 SAS No.: SDG No.: 20 21

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 62318

Sample wt/vol: 1000 Lab File ID: V2410

Level: (low/med) LOW Date Received: 11/29/88

% Moisture: not dec. dec. Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/12/88

GPC Cleanup: (Y/N) N pH: 1.0 Dilution Factor: 1.0

Number TICs found: 20 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.73	65	1J
2.	UNKNOWN	6.32	97	1J
3.	UNKNOWN	6.48	92	1J
4.	UNKNOWN OCTADECENE ISOMER	7.77	89	1J
5.	UNKNOWN	8.20	55	1J
6.	UNKNOWN HYDROCARBON	8.32	71	1J
7.	UNKNOWN HYDROCARBON	8.50	54	1J
8.	UNKNOWN TRIMETHYL BENZENE IS	9.02	58	1J
9.	491-11-7 1H-INDENE, 2,3-DIHYDRO-	9.82	78	1J
10.	UNKNOWN	10.15	52	1J
11.	UNKNOWN HYDROCARBON	11.53	48	1J
12.	UNKNOWN HYDROCARBON	11.72	100	1J
13.	UNKNOWN HYDROCARBON	12.47	54	1J
14.	2471-83-2 1H-INDENE, 1-ETHYLIDENE-	14.13	110	1J
15.	UNKNOWN HYDROCARBON	14.67	49	1J
16.	UNKNOWN DIMETHYL NAPHTHALENE	15.52	66	1J
17.	UNKNOWN DIMETHYL UNDECANE	15.72	70	1J
18.	UNKNOWN HYDROCARBON	17.85	82	1J
19.	UNKNOWN HYDROCARBON	18.45	130	1J
20.	UNKNOWN HYDROCARBON	19.52	76	1J
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FORM I SV-TIC

100125

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SRGW5302

Lab Name: VERSAR

Contract:

Lab Code: VERSAR

Case No.: 6483

SAS No.:

SDG No.: 20 21

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: 62321

Sample wt/vol: 1000

Lab File ID: V2413

Level: (low/med) LOW

Date Received: 11/29/88

X Moisture: not dec. dec.

Date Extracted: 12/01/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/12/88

GPC Cleanup: (Y/N) N

pH:

Dilution Factor: 1.0

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	g
1.	UNKNOWN DIMETHYL BENZENE ISO	6.33	280	IJ N
2.	UNKNOWN DIMETHYL BENZENE ISO	6.52	360	IJ
3.	UNKNOWN HYDROCARBON	7.78	210	IJ
4.	UNKNOWN	8.20	130	IJ
5.	UNKNOWN HYDROCARBON	8.52	160	IJ
6.	UNKNOWN HYDROCARBON	8.82	130	IJ
7.	UNKNOWN TRIMETHYL BENZENE IS	9.05	600	IJ
8.	UNKNOWN HYDROCARBON	9.47	150	IJ
9.	UNKNOWN TRIMETHYL BENZENE IS	9.58	330	IJ
10.	UNKNOWN HYDROCARBON	10.17	150	IJ
11.	UNKNOWN ETHYL DIMETHYL BENZE	10.63	120	IJ
12.	UNKNOWN	11.60	62	IJ
13.	UNKNOWN HYDROCARBON	11.75	110	IJ
14.	UNKNOWN HYDROCARBON	12.48	82	IJ
15.	UNKNOWN HYDROCARBON	13.30	71	IJ
16.	UNKNOWN	14.15	130	IJ
17.	UNKNOWN DIMETHYL NAPHTHALENE	15.55	190	IJ
18.	UNKNOWN HYDROCARBON	17.87	180	IJ
19.	UNKNOWN HYDROCARBON	18.47	290	IJ
20.	UNKNOWN HYDROCARBON	19.55	160	IJ
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRGW5382 DC

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN DIMETHYL BENZENE	IBNA	310	330 J M
2	UNKNOWN SUBSTITUTED BENZENE	IBNA	420	50 J
3	UNKNOWN TRIMETHYL BENZENE	IBNA	428	110 J
4	UNKNOWN SUBSTITUTED BENZENE	IBNA	443	60 J
5	UNKNOWN TRIMETHYL BENZENE	IBNA	461	540 J
6	UNKNOWN TRIMETHYL BENZENE	IBNA	497	270 J
7	UNKNOWN SUBSTITUTED BENZENE	IBNA	514	66 J
8	UNKNOWN SUBSTITUTED BENZENE	IBNA	562	28 J
9	UNKNOWN SUBSTITUTED BENZENE	IBNA	564	28 J
10	UNKNOWN AROMATIC HYDROCARBON	IBNA	576	44 J
11	UNKNOWN SUBSTITUTED BENZENE	IBNA	615	35 J
12	UNKNOWN SUBSTITUTED BENZENE	IBNA	640	34 J
13	UNKNOWN SUBSTITUTED BENZENE	IBNA	654	63 J
14	UNKNOWN POLYCYCLIC AROMATIC	IBNA	709	24 J
15	UNKNOWN POLYCYCLIC AROMATIC	IBNA	787	10 J
16	UNKNOWN BENZENE DERIVATIVE	IBNA	842	120 J
17	UNKNOWN SUBSTITUTED NAPHTHALENE	IBNA	928	19 J
18	UNKNOWN DIMETHYL NAPHTHALENE	IBNA	939	31 J
19	UNKNOWN DIMETHYL NAPHTHALENE	IBNA	955	45 J
20	UNKNOWN DIMETHYL NAPHTHALENE	IBNA	959	27 J
21	UNKNOWN SUBSTITUTED NAPHTHALENE	IBNA	976	14 J
22	UNKNOWN DIMETHYL NAPHTHALENE	IBNA	980	12 J
23	UNKNOWN HYDROCARBON	IBNA	1206	11 J
24	UNKNOWN POLYCYCLIC AROMATIC	IBNA	1401	4 J
25	UNKNOWN ORGANIC ACID	IBNA	1415	4 J
26	UNKNOWN	IBNA	1491	4 J M
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100017

Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRM5482

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CRS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	1BNA	333	210 J N
2 6235-88-8	1-CYCLOHEXANE, 1-ETHYL-4-METHYL-, TRANS-	1BNA	356	120 J
3	UNKNOWN	1BNA	396	190 J
4	UNKNOWN ALCOHOL	1BNA	408	390 J
5	UNKNOWN HYDROCARBON	1BNA	418	110 J
6	UNKNOWN HYDROCARBON	1BNA	434	270 J
7	UNKNOWN HYDROCARBON	1BNA	442	340 J
8	UNKNOWN HYDROCARBON	1BNA	454	270 J
9	UNKNOWN SUBSTITUTED CYCLOHEXANE	1BNA	474	150 J
10	UNKNOWN SUBSTITUTED BENZENE	1BNA	489	490 J
11	UNKNOWN HYDROCARBON	1BNA	517	200 J
12	UNKNOWN SUBSTITUTED BENZENE	1BNA	525	200 J
13	UNKNOWN SUBSTITUTED CYCLOHEXANE	1BNA	535	130 J
14	UNKNOWN	1BNA	559	130 J
15	UNKNOWN	1BNA	568	200 J
16	UNKNOWN HYDROCARBON	1BNA	576	110 J
17	UNKNOWN SUBSTITUTED BENZENE	1BNA	645	95 J
18	UNKNOWN HYDROCARBON	1BNA	745	92 J
19	UNKNOWN HYDROCARBON	1BNA	1011	150 J
20	UNKNOWN HYDROCARBON	1BNA	1186	170 J
21	UNKNOWN HYDROCARBON	1BNA	1239	300 J
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100351

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRBW5502

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 19

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61907

Sample wt/vol: 1050

Lab File ID: __V2392

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: _____

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

Number TICs found: 22

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNK METHYL-CYCLOHEXENE ISOME	4.43	24	JN
2.	UNKNOWN	4.75	19	J
3.	UNKNOWN	5.87	33	J
4. 100-41-4	BENZENE, ETHYL	6.33	24	J
5.	UNK DIMETHYL BENZENE ISOMER	6.50	90	J
6.	UNKNOWN	7.02	14	J
7. 98-82-8	BENZENE, (1-METHYLETHYL)	7.65	30	J
8.	UNKNOWN	8.23	26	J
9.	UNK ETHYLMETHYL BENZENE ISOM	8.73	68	J
10.	UNK SUBSTITUTED BENZENE	8.98	59	J
11.	UNK SUBSTITUTED TRIMETHYLBEN	9.53	39	J
12.	UNKNOWN PAH	9.80	55	J
13.	UNK DIETHYL BENZENE ISOMER	9.97	22	J
14.	UNKNOWN PAH	10.65	50	J
15.	UNKNOWN PAH	11.52	17	J
16.	UNK SUBSTITUTED BENZENE	11.70	50	J
17.	UNKNOWN PAH	11.77	11	J
18.	UNK DIHYDRO DIMETHYL-1H INDE	12.40	11	J
19.	UNKNOWN PAH	14.10	65	J
20.	UNK DIMETHYL NAPHTHALENE ISO	15.50	19	J
21.	UNKNOWN	20.93	7	J
22.	UNKNOWN	22.58	12	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SR6W6302

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 19

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __61908

Sample wt/vol: 1050

Lab File ID: __V2386

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/08/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.77	25.1 JB	
2.	UNKNOWN	5.90	29.1 JB	
3.	UNKNOWN	22.58	8.1 JB	
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Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
18001-65-00

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN SUBS CYCLOHEXANE	IDNA	362	12 JN
2	UNKNOWN SUBS CYCLOHEXANE	IDNA	386	12 JN
3 79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	IDNA	390	28 JN
4	UNKNOWN	IDNA	403	16 JN
5	UNKNOWN	IDNA	414	28 J
6	UNKNOWN	IDNA	424	11 J
7	UNKNOWN HYDROCARBON	IDNA	440	21 J
8	UNKNOWN SUBSTITUTED CYCLOHEXANE	IDNA	480	12 J
9	UNKNOWN HYDROCARBON	IDNA	524	18 J
10	UNKNOWN	IDNA	646	10 J
11	UNKNOWN	IDNA	667	14 J
12	UNKNOWN HYDROCARBON	IDNA	753	23 J
13	UNKNOWN	IDNA	789	11 J
14	UNKNOWN HYDROCARBON	IDNA	819	20 J
15	UNKNOWN	IDNA	904	14 J
16	UNKNOWN HYDROCARBON	IDNA	931	19 J
17	UNKNOWN HYDROCARBON	IDNA	1018	27 J
18	UNKNOWN HYDROCARBON	IDNA	1196	28 J
19	UNKNOWN HYDROCARBON	IDNA	1247	51 J
20	UNKNOWN HYDROCARBON	IDNA	1336	28 J
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DO NOT REPORT HERE - IS A
TCL VOA ANALYSIS

100035

Versar Inc., Laboratory Operations
5850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
18000101

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or scan	Estimated Concentration (ug/Kg or ug/l)
1 24070-77-7	1CYCLOPENTANOL, 2-METHYL-	18NA	350	44 JN
1 2	1UNKNOWN	18NA	374	20 J
1 3	1UNKNOWN	18NA	446	25 J
1 4	1UNKNOWN SUBSTITUTED BENZENE	18NA	524	8 J
1 5	1UNKNOWN SUBSTITUTED PHENOL	18NA	579	13 J
1 6	1UNKNOWN	18NA	729	49 J
1 7 112-35-6	1ETHANOL, 2-(2-(2-METHOXYETHOXY)ETHOXY)-	18NA	752	19 J
1 8 112-50-5	1ETHANOL, 2-(2-(2-ETHOXYETHOXY)ETHOXY)-	18NA	826	8 J
1 9 143-22-6	1ETHANOL, 2-(2-(2-BUTOXYETHOXY)ETHOXY)-	18NA	1023	22 J
110	1UNKNOWN	18NA	1204	9 J
111	1UNKNOWN	18NA	1436	34 J
112	1UNKNOWN ORGANIC ACID	18NA	1448	11 J
113				
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100265

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-SW49-01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: 60240

Sample wt/vol: 1000

Lab File ID: T6756

Level: (low/med) LOW

Date Received: 11/01/88

% Moisture: not dec. dec.

Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) Cont

Date Analyzed: 11/10/88

GPC Cleanup: (Y/N) _____ pH: _____

Dilution Factor: 1

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	31.05	15	J
2.				
3.				
4.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-SW50-01

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.:_____

SDG No.: 5

Matrix: (soil/water)WATER (g/ml)ML

Lab Sample ID: __60241

Sample wt/vol: 990

Lab File ID: __T6755

Level:(low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 100 dec._____

Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/10/88

GPC Cleanup: (Y/N)N

pH:_____

Dilution Factor: _1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg)_ug/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	31.05	11	J
2.				
3.				
4.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-SW50-01D

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 5

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __60240

Sample wt/vol: 1000

Lab File ID: __T6754

Level: (low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 100 dec. _____

Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/10/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	31.03	13	J
2.				
3.				
4.				
5.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR-SW51-01

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.:_____

SDG No.: 5

Matrix: (soil/water)WATER (g/ml)ML

Lab Sample ID: __60243

Sample wt/vol: 975

Lab File ID: __T6750

Level:(low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 100 dec._____

Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/10/88

GPC Cleanup: (Y/N)N

pH:_____

Dilution Factor: _____ 1

Number TICs found: _____

CONCENTRATION UNITS:

(ug/L or ug/Kg)_ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRSW5201

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 7 8

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __60280

Sample wt/vol: 935

Lab File ID: __V2183

Level: (low/med) LOW

Date Received: __11/02/88

* Moisture: not dec. dec.

Date Extracted: 11/05/88

Extraction: (SepF/Cont/Sonc) Cont

Date Analyzed: 11/16/88

GFC Cleanup: (Y/N) ___ pH: _____

Dilution Factor: _ 1

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.75	10	J
2.	UNKNOWN TRIMETHYLBENZENE	7.42	20	J
3.	UNKNOWN TRIMETHYLBENZENE	8.05	14	J
4.	UNKNOWN	26.15	14	J
5.				
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200032

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRSW5301

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.: _____

SDG No.: 7_8

Matrix: (soil/water)WATER (g/ml)ML

Lab Sample ID: __60281

Sample wt/vol: 920

Lab File ID: __V2184

Level: (low/med) LOW

Date Received: __11/02/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/05/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/16/88

GPC Cleanup: (Y/N)N

pH: _____

Dilution Factor: _1.0_

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRSW5401

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 7 8

Matrix: (soil/water) WATER (g/ml) ML

Lab Sample ID: __60282

Sample wt/vol: 870

Lab File ID: __V2185

Level: (low/med) LOW

Date Received: __11/02/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/05/88

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/16/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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Appendix C

Phase IIB Tentatively Identified Compounds (TICs)

- **SEMIVOLATILES (SOLID SAMPLES: TEST PITS, SUBSURFACE SOILS,
RIVER SEDIMENTS)**

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRRS-15-01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 3-5

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60059

Sample wt/vol: 30.12

Lab File ID: __Z8460

Level: (low/med) LOW

Date Received: __10/31/88

X Moisture: not dec. 19 dec.14

Date Extracted: 11/02/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/08/88

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: _1.00

CONCENTRATION UNITS:

Number TICs found: 12

(ug/L or ug/Kg) _ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. _____	UNKNOWN HYDROCARBON	3.82	810	JB
2. _____	UNKNOWN	4.60	830	JB
3. 3377-86-4	HEXANE, 2-BROMO-	4.87	410	J
4. _____	UNKNOWN KETONE	5.17	220	JB
5. _____	UNKNOWN KETONE	5.37	200	J
6. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	6.00	200	J
7. _____	UNKNOWN	14.70	210	JB
8. _____	UNKNOWN	16.03	340	JB
9. 10544-50-0	SULFUR, MOL. (S8)	22.97	190	J
10. _____	UNKNOWN	26.38	800	JB
11. _____	UNKNOWN	30.53	630	JB
12. _____	UNKNOWN	30.95	180	J
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

1F
SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET.

EPA SAMPLE NO.

SRRS-16-01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SDIL (g/ml) G

Lab Sample ID: __60060

Sample wt/vol: 30.19

Lab File ID: __Z8461

Level: (low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 22 dec. 15

Date Extracted: 11/02/88

Extraction: (SepF/Cont/Sonc) Sonc

Date Analyzed: 11/08/88

GPC Cleanup: (Y/N) N

pH: 1

Dilution Factor: _ 1

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.85	170	JN
2.	UNKNOWN	14.68	200	JN
3.	UNKNOWN	16.03	330	JN
4. 10544-50-0	SULFUR, MOL. (S8)	22.97	720	JN
5.	UNKNOWN	26.37	880	JN
6.	UNKNOWN	30.52	670	JN
7.				
8.				
9.				
10.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRRS-16-01D

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 3-5

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60061

Sample wt/vol: 30.2

Lab File ID: __Z8462

Level: (low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 20 dec. 19

Date Extracted: 11/02/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/08/88

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 1.0

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

Number TICs found: 11

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. _____	UNKNOWN HYDROCARBON	3.82	910	RJE
2. _____	UNKNOWN	4.60	660	RJE
3. 3377-86-4	HEXANE, 2-BROMO-	4.87	300	JN
4. _____	UNKNOWN KETONE	5.17	290	RJE
5. _____	UNKNOWN KETONE	5.37	250	JN
6. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	6.00	180	JN
7. _____	UNKNOWN	14.68	170	RJE
8. _____	UNKNOWN	16.03	280	RJE
9. 10544-50-0	SULFUR, MOL. (S8)	22.97	930	JN
10. _____	UNKNOWN	26.37	750	RJE
11. _____	UNKNOWN	30.52	540	RJE
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

FORM I SV-TIC

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRRS-17-01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 3-5

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60062

Sample wt/vol: 30.1

Lab File ID: __Z8463

Level: (low/med) LOW

Date Received: __10/31/88

% Moisture: not dec. 28 dec. 21

Date Extracted: 11/02/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/08/88

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: _1.0

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

Number TICs found: 20

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. _____	UNKNOWN HYDROCARBON	3.82	6600 <i>1.78</i>	
2. _____	UNKNOWN	4.60	10000 <i>1.78</i>	
3. 3377-86-4	HEXANE, 2-BROMO-	4.87	1000 <i>1.78</i>	
4. _____	UNKNOWN HYDROCARBON	20.82	650 <i>1.78</i>	
5. _____	UNKNOWN HYDROCARBON	22.10	2100 <i>1.78</i>	
6. 10544-50-0	SULFUR, MOL. (S8)	23.00	1800 <i>1.78</i>	
7. _____	UNKNOWN HYDROCARBON	23.33	4000 <i>1.78</i>	
8. _____	UNKNOWN HYDROCARBON	24.50	9600 <i>1.78</i>	
9. _____	UNKNOWN HYDROCARBON	25.63	10000 <i>1.78</i>	
10. _____	UNKNOWN	26.37	1000 <i>1.78</i>	
11. _____	UNKNOWN HYDROCARBON	26.72	10000 <i>1.78</i>	
12. _____	UNKNOWN HYDROCARBON	27.77	10000 <i>1.78</i>	
13. _____	UNKNOWN HYDROCARBON	28.77	9700 <i>1.78</i>	
14. _____	UNKNOWN HYDROCARBON	29.73	9500 <i>1.78</i>	
15. _____	UNKNOWN HYDROCARBON	30.63	9100 <i>1.78</i>	
16. _____	UNKNOWN HYDROCARBON	31.48	7600 <i>1.78</i>	
17. _____	UNKNOWN HYDROCARBON	32.28	5400 <i>1.78</i>	
18. _____	UNKNOWN HYDROCARBON	33.20	3700 <i>1.78</i>	
19. _____	UNKNOWN HYDROCARBON	34.30	1900 <i>1.78</i>	
20. _____	UNKNOWN HYDROCARBON	35.58	930 <i>1.78</i>	
21. _____				
22. _____				
23. _____				
24. _____				
25. _____				
26. _____				
27. _____				
28. _____				
29. _____				
30. _____				

FORM I SV-TIC

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6601

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61103

Sample wt/vol: 30.0

Lab File ID: __T6899

Level: (low/med) LOW

Date Received: __11/09/88

% Moisture: not dec. 42 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N) N

pH: 6.5

Dilution Factors: 1.00

Number TICs found: 14

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. _____	UNKNOWN	4.40	230	IJ
2. _____	UNKNOWN KETONE	4.83	3400	IJ
3. _____	UNKNOWN KETONE	5.28	730	IJ
4. _____	UNKNOWN	5.73	320	IJ
5. _____	UNKNOWN	6.38	3000	IJ
6. _____	UNKNOWN	17.67	240	IJ
7. 120-51-4	BENZOIC ACID, PHENYLMETHYL E	18.18	280	IJ
8. _____	UNKNOWN	18.75	340	IJ
9. _____	UNKNOWN	20.45	390	IJ
10. _____	UNKNOWN	20.55	330	IJ
11. _____	UNKNOWN ORGANIC ACID	20.68	720	IJ
12. 10544-50-0	SULFUR, MOL. (28)	21.80	1000	IJ
13. _____	UNKNOWN	29.62	340	IJ
14. _____	UNKNOWN	32.73	260	IJ
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

FORM I SV-TIC

200021

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6601D

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water)SOIL (g/ml)G

Lab Sample ID: __61104

Sample wt/vol: 30.0

Lab File ID: __T6901

Level: (low/med) LOW

Date Received: __11/09/88

* Moisture: not dec. 38 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N)N

pH:6.4

Dilution Factors: _1.00

CONCENTRATION UNITS:

Number TICs found: 20

(ug/L or ug/Kg)_ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	2.92	640	IJ
2.	UNKNOWN HYDROCARBON	3.00	2200	IJ
3.	UNKNOWN HYDROCARBON	3.12	2100	IJ
4.17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL	4.05	1100	IJ
5.	UNKNOWN KETONE	4.37	2100	IJ
6.	UNKNOWN	4.82	440	IJ
7.	UNKNOWN	5.17	2700	IJ
8.	UNKNOWN	6.22	1600	IJ
9.	UNKNOWN ORGANIC ACID	20.68	590	IJ
10.	UNKNOWN HYDROCARBON	21.17	670	IJ
11.10544-50-0	SULFUR, M OL. (S8)	21.80	980	IJ
12.	UNKNOWN HYDROCARBON	22.40	1200	IJ
13.	UNKNOWN HYDROCARBON	24.70	2000	IJ
14.	UNKNOWN HYDROCARBON	25.78	2100	IJ
15.	UNKNOWN HYDROCARBON	26.83	2300	IJ
16.	UNKNOWN HYDROCARBON	27.85	1500	IJ
17.	UNKNOWN HYDROCARBON	28.83	1300	IJ
18.	UNKNOWN HYDROCARBON	29.77	800	IJ
19.	UNKNOWN	30.12	510	IJ
20.	UNKNOWN HYDROCARBON	31.47	330	IJ
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FORM I SV-TIC

200066

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAR6602

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61105

Sample wt/vol: 30.0

Lab File ID: __T6898

Level: (low/med) LOW

Date Received: __11/09/88

% Moisture: not dec. 13 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N) N pH: 7.7

Dilution Factor: 1.00

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 921-47-1	HEXANE, 2,3,4-TRIMETHYL-	2.98	1800	IJ
2. _____	UNKNOWN HYDROCARBON	3.08	1900	IJ
3. 17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL)	4.03	670	IJ
4. _____	UNKNOWN KETONE	4.35	810	IJ
5. _____	UNKNOWN KETONE	4.53	560	IJ
6. _____	UNKNOWN	5.15	600	IJ
7. 556-67-2	CYCLOTETRAILOXANE, OCTAMETH	5.25	180	IJ
8. _____	UNKNOWN	6.18	340	IJ
9. _____	UNKNOWN	8.17	160	IJ
10. _____	UNKNOWN	14.12	210	IJ
11. _____	UNKNOWN ORGANIC ACID	20.65	160	IJ
12. _____	UNKNOWN	21.78	810	IJ
13. _____	UNKNOWN HYDROCARBON	24.67	230	IJ
14. _____	UNKNOWN HYDROCARBON	25.77	350	IJ
15. _____	UNKNOWN HYDROCARBON	26.80	330	IJ
16. _____	UNKNOWN HYDROCARBON	27.82	280	IJ
17. _____	UNKNOWN HYDROCARBON	28.80	380	IJ
18. _____	UNKNOWN	29.60	220	IJ
19. _____	UNKNOWN HYDROCARBON	29.73	310	IJ
20. _____	UNKNOWN HYDROCARBON	30.82	250	IJ
21. _____				
22. _____				
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26. _____				
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FORM I SV-TIC

200123

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6603

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61106

Sample wt/vol: 30.0

Lab File ID: __T6897

Level: (low/med) LOW

Date Received: __11/09/88

* Moisture: not dec. 25 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N) N

pH: 8.5

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 10

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 921-47-1	HEXANE, 2,3,4-TRIMETHYL-	2.92	640	J
2. _____	UNKNOWN HYDROCARBON	3.00	2200	J
3. _____	UNKNOWN HYDROCARBON	3.10	2600	J
4. 17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL)	4.05	330	J
5. _____	UNKNOWN KETONE	4.37	2700	J
6. _____	UNKNOWN SUBSTITUTED BENZENE	4.72	210	J
7. _____	UNKNOWN	5.17	310	J
8. _____	UNKNOWN	6.20	490	J
9. _____	UNKNOWN	25.78	300	J
10. _____	UNKNOWN	29.62	400	J
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FORM I SV-TIC

200180

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6701

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61107

Sample wt/vol: 30.0

Lab File ID: __T6900

Level: (low/med) LOW

Date Received: __11/09/88

% Moisture: not dec. 44 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N) N

pH: 7.3

Dilution Factor: 1.00

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	2.92	650	JB
2.	UNKNOWN HYDROCARBON	3.00	2100	JB
3.	UNKNOWN HYDROCARBON	3.10	2300	JB
4. 17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL	4.05	1000	JB
5.	UNKNOWN KETONE	4.37	1500	JB
6.	UNKNOWN KETONE	4.53	920	J
7.	UNKNOWN	5.17	2100	J
8.	UNKNOWN	6.22	1600	J
9.	UNKNOWN	20.43	370	J
10.	UNKNOWN ORGANIC ACID	20.68	1400	J
11.	UNKNOWN	20.92	1100	J
12. 10544-50-0	SULFUR, MOL. (S8)	21.85	3800	J
13.	UNKNOWN ALDEHYDE	23.87	970	J
14.	UNKNOWN HYDROCARBON	24.60	390	J
15.	UNKNOWN HYDROCARBON	26.82	1400	J
16.	UNKNOWN HYDROCARBON	28.82	570	J
17.	UNKNOWN	30.07	370	J
18.	UNKNOWN	32.72	710	J
19.	UNKNOWN	33.87	400	J
20.	UNKNOWN	34.25	730	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6702

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water)SOIL (g/ml)G

Lab Sample ID: __61108

Sample wt/vol: 30.0

Lab File ID: __T6895

Level:(low/med) LOW

Date Received: __11/09/88

X Moisture: not dec. 14 dec. _____

Date Extracted: 11/17/88

Extractions: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N)N

pH:8.5

Dilution Factor: _1.00

CONCENTRATION UNITS:

Number TICs found: 8 (ug/L or ug/Kg)_ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	2.98	2300	JF
2.17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL	3.97	770	JF
3.	UNKNOWN KETONE	4.30	1100	JF
4.	UNKNOWN	5.12	440	J
5.	UNKNOWN	6.17	410	J
6.10544-50-0	SULFUR, MOL. (S8)	21.78	370	J
7.	UNKNOWN	25.78	250	J
8.	UNKNOWN	29.63	160	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6703

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.: _____

SDG No.: 12

Matrix: (soil/water)SOIL (g/ml)G

Lab Sample ID: __61109

Sample wt/vol: 30.1

Lab File ID: __T6896

Level:(low/med) LOW

Date Received: __11/09/88

% Moisture: not dec. 16 dec. _____

Date Extracted: 11/17/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/01/88

GPC Cleanup: (Y/N)N

pH:8.6

Dilution Factor: _1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg)_ug/Kg

Number TICs found: 8

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	2.92	570	1J
2.921-47-1	HEXANE, 2,3,4-TRIMETHYL-	3.00	1900	1JB
3.	UNKNOWN HYDROCARBON	3.12	2100	1JB
4.17257-81-7	ETHANONE, 1-(3-ETHYLOXIRANYL	4.05	460	1JB
5.	UNKNOWN KETONE	4.37	1200	1JB
6.	UNKNOWN	5.17	230	1J
7.	UNKNOWN	25.80	240	1J
8.	UNKNOWN	29.63	270	1J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6801

Lab Name:VERSAR

Contract:_____

Lab Code:VERSAR

Case No.:6483

SAS No.:_____

SDG No.: 6

Matrix: (soil/water)SOIL (g/ml)G

Lab Sample ID: __60482

Sample wt/vol: 30.1

Lab File ID: __V2174

Level:(low/med) LOW

Date Received: __11/03/88

% Moisture: not dec. 86 dec._____

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/15/88

GPC Cleanup: (Y/N)N

pH:7.2

Dilution Factor: _1.0

CONCENTRATION UNITS:

Number TICs found: 24

(ug/L or ug/Kg)_ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	4.83	4800	JB
2.	UNKNOWN	5.80	5000	JB
3.	UNKNOWN	6.08	3000	JB
4.	UNKNOWN KETONE	6.50	6200	JB
5.	UNKNOWN KETONE	6.72	1200	JB
6.	UNKNOWN	7.45	10000	JB
7.	UNKNOWN	8.62	4200	JB
8.	UNKNOWN POLYAROMATIC HYDROCA	10.45	1900	JB
9.	UNKNOWN POLYAROMATIC HYDROCA	12.85	5100	JB
10.	UNKNOWN DIMETHYLNAPHTHALENE	14.07	2200	JB
11.	UNKNOWN DIMETHYLNAPHTHALENE	14.25	2900	JB
12.	UNKNOWN	15.32	4000	JB
13.57-10-3	HEXADECANOIC ACID	19.75	8200	JB
14.10544-50-0	SULFUR, MOL. (S8)	20.95	27000	JB
15.	UNKNOWN	22.58	5300	JB
16.	UNKNOWN	23.65	5600	JB
17.	UNKNOWN	24.15	12000	JB
18.	UNKNOWN HYDROCARBON	25.57	6100	JB
19.	UNKNOWN HYDROCARBON	26.88	6000	JB
20.	UNKNOWN HYDROCARBON	28.15	6400	JB
21.	UNKNOWN	29.38	11000	JB
22.	UNKNOWN	29.58	10000	JB
23.	UNKNOWN	29.98	65000	JB
24.	UNKNOWN	30.32	21000	JB
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6802

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 6

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60483

Sample wt/vol: 30.1

Lab File ID: __V2175

Level: (low/med) LOW

Date Received: __11/03/88

% Moisture: not dec. 19 dec. _____

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/15/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

Number TICs found: 19

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	G
1.	UNKNOWN HYDROCARBON	4.83	1100	1JF
2.	UNKNOWN	5.80	1600	1JF
3.	UNKNOWN	6.10	680	1J
4.	UNKNOWN KETONE	6.50	1000	1J
5.	UNKNOWN KETONE	6.72	330	1J
6.	UNKNOWN	7.45	1100	1J
7.	UNKNOWN	8.60	930	1J
8.	UNKNOWN POLYAROMATIC HYDROCA	12.60	210	1J
9.	UNKNOWN POLYAROMATIC HYDROCA	12.83	200	1J
10.57-10-3	HEXADECANOIC ACID	19.73	860	1J
11.10544-50-0	SULFUR, MOL. (S8)	20.90	1100	1J
12.	UNKNOWN ALKENE	21.37	300	1J
13.	UNKNOWN ALKENE	24.13	520	1J
14.	UNKNOWN	28.67	580	1J
15.	UNKNOWN	29.37	740	1J
16.	UNKNOWN	29.57	670	1J
17.	UNKNOWN	29.95	4100	1J
18.	UNKNOWN	30.03	650	1J
19.	UNKNOWN	30.30	760	1J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB6803

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 6

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60484

Sample wt/vol: 30.1

Lab File ID: __V2176

Level: (low/med) LOW

Date Received: __11/03/88

X Moisture: not dec. 22 dec. _____

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/15/88

GPC Cleanup: (Y/N) N

pH: 7.6

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 8

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.75	870	IJ
2.	UNKNOWN	6.05	260	IJ
3.	UNKNOWN KETONE	6.45	790	IJ
4.	UNKNOWN	7.40	290	IJ
5.	UNKNOWN	8.57	550	IJ
6.	10544-50-0 SULFUR, MOL. (S8)	20.85	200	IJ
7.	UNKNOWN	29.90	720	IJ
8.	UNKNOWN	30.23	180	IJ
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRAB/0/01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 16

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61571

Sample wt/vol: 30.0

Lab File ID: Z8677

Level: (low/med) LOW

Date Received: 11/16/88

% Moisture: not dec. 16 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N

pH: 6.7

Dilution Factor: 1.00

Number TICs found: 30

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.07	3300	1.78
2. 6236-88-0	CYCLOHEXANE, 1-ETHYL-4-METHY	5.43	1200	1.7
3.	UNKNOWN HYDROCARBON	5.95	990	1.7
4.	UNKNOWN	6.08	2000	1.7
5.	UNKNOWN	6.27	5800	1.7
6.	UNKNOWN HYDROCARBON	6.43	1200	1.7
7.	UNKNOWN KETONE	6.55	660	1.78
8. 62108-23-0	DECAEN, 2,5,6-TRIMETHYL-	6.70	3100	1.7
9. 52896-95-4	HEPTANE, 2,3,4-TRIMETHYL-	6.83	4500	1.7
10.	UNKNOWN	6.88	1200	1.7
11.	UNKNOWN SUBSTITUTED BENZENE	7.03	3000	1.7
12.	UNKNOWN CYCLOHYDROCARBON	7.33	1500	1.7
13.	UNKNOWN	7.40	860	1.7
14.	UNKNOWN SUBSTITUTED BENZENE	7.57	4900	1.7
15.	UNKNOWN HYDROCARBON	8.07	2000	1.7
16.	UNKNOWN SUBSTITUTED BENZENE	8.18	1300	1.7
17. 1678-93-9	CYCLOHEXANE, BUTYL-	8.33	1300	1.7
18.	UNKNOWN	8.75	600	1.7
19.	UNKNOWN HYDROCARBON	8.83	680	1.7
20.	UNKNOWN	8.88	1200	1.7
21.	UNKNOWN HYDROCARBON	9.03	500	1.7
22.	UNKNOWN SUBSTITUTED BENZENE	10.15	550	1.7
23.	UNKNOWN HYDROCARBON	11.83	460	1.7
24.	UNKNOWN HYDROCARBON	12.92	400	1.7
25.	UNKNOWN	13.42	260	1.7
26.	UNKNOWN HYDROCARBON	16.22	390	1.7
27.	UNKNOWN HYDROCARBON	19.15	380	1.7
28.	UNKNOWN HYDROCARBON	20.00	560	1.7
29.	UNKNOWN	28.40	1100	1.78
30.	UNKNOWN	32.47	1800	1.78

FORM I SV-TIC

200165

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SR AB93 01

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 10

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60970

Sample wt/vol: 30.21

Lab File ID: __T6838

Level: (low/med) LOW

Date Received: __11/05/88

% Moisture: not dec. 29 dec. _____

Date Extracted: 11/14/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/21/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 20

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN KETONE	1.82	1200	JN
2.	UNKNOWN KETONE	1.95	3400	JN
3.	UNKNOWN KETONE	2.58	15000	R JB
4.	UNKNOWN	3.15	4000	JN
5. 3074-71-3	HEPTANE, 2,3-DIMETHYL-	3.38	800	R JB
6. 921-47-1	HEXANE, 2,3,4-TRIMETHYL-	3.50	1600	R JB
7. 52896-87-4	HEPTANE, 4-(1-METHYLETHYL)-	3.63	2000	R JB
8.	UNKNOWN	4.68	.830	JN
9.	UNKNOWN KETONE	5.03	3300	R JB
10.	UNKNOWN KETONE	5.87	2400	JN
11.	UNKNOWN	7.00	620	JN
12.	UNKNOWN	16.03	720	R JB
13.	UNKNOWN ORGANIC ACID	21.70	1000	JN
14.	UNKNOWN KETONE	22.08	820	JN
15.	UNKNOWN	25.07	380	JN
16.	UNKNOWN	26.52	1900	R JB
17.	UNKNOWN	27.15	380	JN
18.	UNKNOWN HYDROCARBON	29.88	9700	JN
19.	UNKNOWN	30.68	7200	R JB
20.	UNKNOWN	31.70	3600	JN
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SR 9013 02

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 10

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __60971

Sample wt/vol: 30.42

Lab File ID: __T6839

Level: (low/med) LOW

Date Received: __11/05/88

% Moisture: not dec.15 dec. _____

Date Extracted: 11/14/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/21/88

GPC Cleanup: (Y/N) N

pH: _____

Dilution Factor: _1.0

CONCENTRATION UNITS:

Number TICs found: _____

(ug/L or ug/Kg) _ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN KETONE	1.82	810	IJN
2.	UNKNOWN KETONE	1.95	2800	IJN
3.	UNKNOWN KETONE	2.58	12000	IJE
4.	UNKNOWN	3.15	2800	IJN
5. 3074-71-3	HEPTANE, 2,3-DIMETHYL-	3.38	650	IJE
6. 921-47-1	HEXANE, 2,3,4-TRIMETHYL-	3.52	1300	IJE
7. 52896-87-4	HEPTANE, 4-(1-METHYLETHYL)-	3.63	1600	IJE
8.	UNKNOWN	4.68	360	IJN
9.	UNKNOWN KETONE	5.00	870	IJE
10.	UNKNOWN SUBSTITUTED BENZENE	5.42	100	IJN
11.	UNKNOWN	14.67	470	IJN
12.	UNKNOWN	16.03	540	IJE
13.	UNKNOWN	24.18	160	IJV
14.	UNKNOWN	24.40	310	IJN
15.	UNKNOWN	26.50	4300	IJE
16.	UNKNOWN	26.73	240	IJN
17.	UNKNOWN	28.67	160	IJN
18.	UNKNOWN	30.68	6900	IJE
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Organics Analysis Data Sheet
 (Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	IDNA	228	680 JNR
2 3377-86-4	HEXANE, 2-BROMO-	IDNA	290	320 JN
3	UNKNOWN KETONE	IDNA	309	700 JNR
4 18641-71-9	1,3-HEPTANONE, 2,4-DIETHYL-	IDNA	359	330 JN
5	UNKNOWN SUBSTITUTED BENZENE	IDNA	362	230 JN
6	UNKNOWN	IDNA	724	140 JN
7	UNKNOWN	IDNA	881	200 JNR
8	UNKNOWN SILOXANE	IDNA	900	330 JN
9	UNKNOWN	IDNA	962	300 JNR
10	UNKNOWN	IDNA	1053	170 JN
11	UNKNOWN HYDROCARBON	IDNA	1089	300 J
112	UNKNOWN HYDROCARBON	IDNA	1176	250 J
113	UNKNOWN	IDNA	1233	180 J
114	UNKNOWN HYDROCARBON	IDNA	1249	220 J
115	UNKNOWN	IDNA	1289	270 J
116	UNKNOWN HYDROCARBON	IDNA	1399	340 J
117	UNKNOWN	IDNA	1429	280 J
118	UNKNOWN HYDROCARBON	IDNA	1538	410 J
119	UNKNOWN	IDNA	1584	700 JNR
120	UNKNOWN HYDROCARBON	IDNA	1726	440 JN
121	UNKNOWN HYDROCARBON	IDNA	1784	630 JN
122	UNKNOWN	IDNA	1823	600 JNR
123	UNKNOWN HYDROCARBON	IDNA	1888	1,200 JN
124	UNKNOWN HYDROCARBON	IDNA	1992	1,100 JN
125				
126				
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130				

DO NOT REPORT AS SAMPLE CONSTITUENT

JJ 12-22-88

JJ 12-22-88

SAMPLE ID
 SRTP1-04

Organics Analysis Data Sheet
 (Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1	UNKNOWN HYDROCARBON	IDNA	229	420 J ¹⁸ R
2	UNKNOWN	IDNA	276	720 J ¹⁸ R
3 3377-86-4	HEXANE, 2-BROMO-	IDNA	291	210 J N
4	UNKNOWN KETONE	IDNA	310	530 J ¹⁸ R
5	UNKNOWN	IDNA	360	220 J N
6	UNKNOWN CYCLOHYDROCARBON	IDNA	407	170 J
7	UNKNOWN	IDNA	434	200 J
8	UNKNOWN CYCLOHYDROCARBON	IDNA	524	180 J
9	UNKNOWN HYDROCARBON	IDNA	544	210 J
10 62106-25-2	DECANE, 2,6,7-TRIMETHYL-	IDNA	611	570 J
11	UNKNOWN SUBSTITUTED CYCLOHEXANE	IDNA	640	260 J
12	UNKNOWN ORGANIC ACID	IDNA	652	300 J
13	UNKNOWN HYDROCARBON	IDNA	674	450 J
14	UNKNOWN CYCLOHYDROCARBON	IDNA	751	270 J
15	UNKNOWN HYDROCARBON	IDNA	867	390 J
16	UNKNOWN	IDNA	881	250 J ¹⁸ R
17	UNKNOWN	IDNA	962	430 J ¹⁸ R
18	UNKNOWN HYDROCARBON	IDNA	1090	220 J N
19 10544-50-0	SULFUR, MOL. (S8)	IDNA	1381	2,300 J
20	UNKNOWN HYDROCARBON	IDNA	1536	250 J
21	UNKNOWN	IDNA	1582	920 J ¹⁸ R
22	UNKNOWN HYDROCARBON	IDNA	1670	2,200 J N
23	UNKNOWN	IDNA	1726	240 J
24	UNKNOWN HYDROCARBON	IDNA	1792	3,000 J
25	UNKNOWN	IDNA	1831	640 J ¹⁸ R
26	UNKNOWN HYDROCARBON	IDNA	1991	670 J N
27				
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J 12-22-84

Versar Inc., Laboratory Operations
6858 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRT00201

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
11	UNKNOWN HYDROCARBON	10NA	299	25,000 J
12	UNKNOWN HYDROCARBON	10NA	307	23,000 J
13	UNKNOWN HYDROCARBON	10NA	400	36,000 J
14	UNKNOWN HYDROCARBON	10NA	413	28,000 J
15	UNKNOWN	10NA	441	23,000 J
16	UNKNOWN HYDROCARBON	10NA	552	26,000 J
17	UNKNOWN HYDROCARBON	10NA	570	25,000 J
18	UNKNOWN HYDROCARBON	10NA	618	54,000 J
19	UNKNOWN CYCLOHYDROCARBON	10NA	648	25,000 J
110	UNKNOWN	10NA	661	23,000 J
111	UNKNOWN HYDROCARBON	10NA	682	51,000 J
112	UNKNOWN HYDROCARBON	10NA	731	23,000 J
113	UNKNOWN CYCLOHYDROCARBON	10NA	760	32,000 J
114	UNKNOWN HYDROCARBON	10NA	791	50,000 J
115 573-90-8	1-NAPHTHALENE, 1,2-DIMETHYL	10NA	844	24,000 J
116	UNKNOWN DIMETHYL NAPHTHALENE	10NA	847	20,000 J
117	UNKNOWN CYCLOHYDROCARBON	10NA	865	33,000 J
118	UNKNOWN HYDROCARBON	10NA	876	63,000 J
119	UNKNOWN HYDROCARBON	10NA	1099	69,000 J
120	UNKNOWN HYDROCARBON	10NA	1186	41,000 J
121				
122				
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12-12-88

Versar Inc., Laboratory Operations
6850 Versar Center, Springfield VA 22151 (703) 750-3000

SAMPLE ID
ISRT00204

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan	Estimated Concentration (ug/Kg or ug/l)
1 6236-88-8	ICYCLOHEXANE, 1-ETHYL-4-METHYL-, TRANS-	1BNA	252	110,000 J N
2 1678-92-8	ICYCLOHEXANE, PROPYL	1BNA	297	130,000 J
3	IUNKNOWN HYDROCARBON	1BNA	306	85,000 J
4	IUNKNOWN HYDROCARBON	1BNA	323	110,000 J
5 4291-79-6	ICYCLOHEXANE, 1-METHYL-2-PROPYL	1BNA	357	89,000 J
6	IUNKNOWN HYDROCARBON	1BNA	401	130,000 J
7	IUNKNOWN CYCLOHYDROCARBON	1BNA	414	110,000 J
8	IUNKNOWN NAPHTHALENE	1BNA	442	82,000 J
9 4292-92-6	ICYCLOHEXANE, PENTYL	1BNA	532	53,000 J
110	IUNKNOWN HYDROCARBON	1BNA	553	58,000 J
111 17381-23-4	IUNDECANE, 2,6-DIMETHYL	1BNA	619	110,000 J
112	IUNKNOWN CYCLOHYDROCARBON	1BNA	649	60,000 J
113	IUNKNOWN HYDROCARBON	1BNA	683	110,000 J
114	IUNKNOWN CYCLOHYDROCARBON	1BNA	761	90,000 J
115 54185-67-8	IHEPTADECANE, 2,6-DIMETHYL	1BNA	792	150,000 J
116 54185-67-8	IHEPTADECANE, 2,6-DIMETHYL	1BNA	877	220,000 J
117	IUNKNOWN	1BNA	965	80,000 J
118 54185-67-8	IHEPTADECANE, 2,6-DIMETHYL	1BNA	1100	300,000 J
119	IUNKNOWN HYDROCARBON	1BNA	1187	200,000 J
120 10544-50-0	ISULFUR, MOL. (S8)	1BNA	1392	140,000 J
121				
122				
123				
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129				
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Handwritten signature and date: 12-21-88

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S RTP3402

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 17

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61634

Sample wt/vol: 30.0

Lab File ID: Z8661

Level: (low/med) LOW

Date Received: 11/17/88

% Moisture: not dec. 17 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/03/88

GPC Cleanup: (Y/N) N pH: 6.4

Dilution Factor: 1.00

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

Number TICs found: 23

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.22	1400	R JB
2.	UNKNOWN HYDROCARBON	6.37	770	I J N
3.	UNKNOWN KETONE	6.72	1500	R JB
4.	UNKNOWN SUBSTITUTED BENZENE	7.22	180	I J N
5.	UNKNOWN KETONE	7.60	820	I J N
6.	UNKNOWN SUBSTITUTED BENZENE	7.75	190	I J N
7.	UNKNOWN	16.70	280	I JB
8.	UNKNOWN	18.10	340	I JB
9.	UNKNOWN ORGANIC ACID	23.68	330	R JB
10.	UNKNOWN	25.45	450	I J N
11.	UNKNOWN	25.95	350	R JB
12.	UNKNOWN HYDROCARBON	26.63	660	I J N
13.	UNKNOWN HYDROCARBON	27.78	930	I J N
14.	UNKNOWN	28.63	2100	R JB
15.	UNKNOWN HYDROCARBON	28.88	970	I J N
16.	UNKNOWN HYDROCARBON	29.93	1000	I J
17.	UNKNOWN HYDROCARBON	30.90	890	I J
18.	UNKNOWN HYDROCARBON	31.82	750	I J
19.	UNKNOWN	32.73	5200	R JB
20.	UNKNOWN HYDROCARBON	33.82	1000	I J N
21.	UNKNOWN HYDROCARBON	35.07	550	I J
22.	UNKNOWN HYDROCARBON	36.55	440	I J
23.	UNKNOWN HYDROCARBON	38.30	220	I J
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25.				
26.				
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FORM I SV-TIC

200187

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRTP3404

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 17

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61635

Sample wt/vol: 30.0

Lab File ID: 28662

Level: (low/med) LOW

Date Received: 11/17/88

% Moisture: not dec. 18 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/03/88

GPC Cleanup: (Y/N) N

pH: 6.9

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 26

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.20	1400	RJB
2.	UNKNOWN	6.37	640	JN
3.	UNKNOWN KETONE	6.72	1500	RJB
4.	UNKNOWN KETONE	7.60	1700	JN
5.	UNKNOWN	18.10	310	RJB
6.	UNKNOWN HYDROCARBON	20.18	370	JN
7.	UNKNOWN	23.50	1000	JN
8.	UNKNOWN	23.60	410	J
9.	UNKNOWN ORGANIC ACID	23.72	1200	RJB
10.	UNKNOWN	25.43	830	JJ
11.	UNKNOWN	25.98	1600	RJB
12.	UNKNOWN ORGANIC ACID	26.22	440	JN
13.	UNKNOWN HYDROCARBON	26.65	1300	JN
14.	UNKNOWN HYDROCARBON	27.80	2100	JN
15.	UNKNOWN	28.67	1900	RJB
16.	UNKNOWN HYDROCARBON	28.90	2700	JJ
17.	UNKNOWN	29.22	430	J
18.	UNKNOWN HYDROCARBON	29.95	3200	J
19.	UNKNOWN HYDROCARBON	30.92	3000	J
20.	UNKNOWN HYDROCARBON	31.83	2900	J
21.	UNKNOWN OCTADECENE	32.10	330	JJ
22.	UNKNOWN	32.75	13000	RJB
23.	UNKNOWN HYDROCARBON	33.83	5700	JN
24.	UNKNOWN HYDROCARBON	35.10	2800	J
25.	UNKNOWN HYDROCARBON	36.58	2600	J
26.	UNKNOWN HYDROCARBON	38.33	920	J
27.				
28.				
29.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S RTP3501

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 18

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61744

Sample wt/vol: 30.0

Lab File ID: Z8678

Level: (low/med) LOW

Date Received: 11/18/88

X Moisture: not dec. 17 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N pH: 6.4

Dilution Factor: 1.00

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.07	1400	JB
2.	UNKNOWN KETONE	6.57	1300	JB
3.	UNKNOWN KETONE	7.45	890	JB
4.	UNKNOWN	16.53	210	JB
5.	UNKNOWN	17.93	300	JB
6.	UNKNOWN ORGANIC ACID	23.50	360	JB
7.	UNKNOWN HYDROCARBON	24.00	160	JB
8.	UNKNOWN	25.25	190	JB
9.	UNKNOWN	25.75	200	JB
10.	UNKNOWN HYDROCARBON	26.43	220	JB
11.	UNKNOWN HYDROCARBON	27.58	210	JB
12.	UNKNOWN	28.43	1300	JB
13.	UNKNOWN HYDROCARBON	28.68	210	JB
14.	UNKNOWN HYDROCARBON	29.73	270	JB
15.	UNKNOWN HYDROCARBON	30.72	220	JB
16.	UNKNOWN HYDROCARBON	31.62	390	JB
17.	UNKNOWN	32.50	2400	JB
18.	UNKNOWN	32.95	390	JB
19.	UNKNOWN HYDROCARBON	33.55	430	JB
20.	UNKNOWN HYDROCARBON	36.17	330	JB
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22.				
23.				
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRTP3504

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 18

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61745

Sample wt/vol: 30.0

Lab File ID: Z8679

Level: (low/med) LOW

Date Received: 11/18/88

% Moisture: not dec. 14 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N

pH: 6.7

Dilution Factors: 1.00

Number TICs found: 25

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.07	2100	JB
2.	UNKNOWN	6.22	870	J
3.	UNKNOWN KETONE	6.57	1700	JB
4.	UNKNOWN SUBSTITUTED BENZENE	7.03	420	J
5.	UNKNOWN KETONE	7.43	940	J
6.	UNKNOWN	7.58	470	J
7.	UNKNOWN SUBSTITUTED BENZENE	8.17	210	J
8.	UNKNOWN SUBSTITUTED BENZENE	8.87	180	J
9.	UNKNOWN HYDROCARBON	9.60	240	J
10.	UNKNOWN HYDROCARBON	11.55	190	J
11. 2471-83-2	1H-INDENE, 1-ETHYLIDENE-	13.90	280	J
12. 575-37-1	1NAPHTHALENE, 1,7-DIMETHYL-	15.53	230	J
13. 575-37-1	1NAPHTHALENE, 1,7-DIMETHYL-	15.80	310	J
14. 575-43-9	1NAPHTHALENE, 1,6-DIMETHYL-	15.87	180	J
15.	UNKNOWN HYDROCARBON	16.22	180	JV
16.	UNKNOWN	16.52	230	JB
17.	UNKNOWN	17.92	360	JB
18.	UNKNOWN HYDROCARBON	19.15	180	JV
19.	UNKNOWN HYDROCARBON	20.00	310	J
20.	UNKNOWN HYDROCARBON	22.68	160	J
21.	UNKNOWN POLYAROMATIC HYDROCA	23.22	210	J
22.	UNKNOWN	23.48	340	J
23.	UNKNOWN	25.73	170	JB
24.	UNKNOWN	28.42	1200	JB
25.	UNKNOWN	32.48	2900	JB
26.				
27.				
28.				
29.				
30.				

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: VERSAR

Contract: _____

SRTP3504D

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 18

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61746

Sample wt/vol: 30.0

Lab File ID: 28680

Level: (low/med) LOW

Date Received: 11/18/88

% Moisture: not dec. 17 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) N

pH: 6.7

Dilution Factor: 1.00

Number TICs found: 19

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. _____	UNKNOWN HYDROCARBON	5.08	1500	1JB
2. _____	UNKNOWN	6.23	730	1J
3. _____	UNKNOWN KETONE	6.58	1400	1JB
4. _____	UNKNOWN SUBSTITUTED BENZENE	7.05	320	1J
5. _____	UNKNOWN KETONE	7.45	770	1J
6. _____	UNKNOWN	7.60	360	1J
7. _____	UNKNOWN HYDROCARBON	9.62	180	1J
8. 2471-83-2	1H-INDENE, 1-ETHYLIDENE-	13.92	260	1J
9. 575-37-1	1NAPHTHALENE, 1,7-DIMETHYL-	15.55	200	1J
10. 575-37-1	1NAPHTHALENE, 1,7-DIMETHYL-	15.82	270	1J
11. _____	UNKNOWN	16.53	230	1JB
12. _____	UNKNOWN	17.93	340	1JB
13. _____	UNKNOWN HYDROCARBON	20.02	260	1J
14. _____	UNKNOWN	22.70	270	1J
15. _____	UNKNOWN	23.23	310	1J
16. _____	UNKNOWN	23.50	440	1J
17. _____	UNKNOWN	28.43	1300	1JB
18. _____	UNKNOWN	32.50	2700	1JB
19. _____	UNKNOWN HYDROCARBON	33.55	200	1J
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: VERSAR

Contract: _____

SRTTP3604

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 19

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61931

Sample wt/vol: 30.0

Lab File ID: __V2395

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. 13 dec. _____

Date Extracted: 11/23/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.7

Dilution Factor: 1

CONCENTRATION UNITS:

Number TICs found: 27

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.10	3000	JN
2.	UNKNOWN	5.08	18000	J
3.	UNKNOWN	5.92	2300	J
4.	UNKNOWN HYDROCARBON	6.22	460	J
5.	UNKNOWN HYDROCARBON	6.37	1200	J
6.	UNKNOWN HYDROCARBON	6.52	1300	J
7.	UNKNOWN	7.73	360	J
8.	UNK CYCLIC HYDROCARBON	7.80	260	J
9.	UNKNOWN	8.08	980	J
10.	UNK SUBSTITUTED BENZENE	8.53	280	J
11.	UNKNOWN	8.92	2400	J
12.	UNK SUBSTITUTED BENZENE	9.03	300	J
13.	UNKNOWN	9.97	700	J
14.	UNKNOWN HYDROCARBON	17.30	220	J
15.	UNKNOWN HYDROCARBON	18.38	230	J
16.	UNKNOWN HYDROCARBON	18.45	280	J
17.	UNKNOWN HYDROCARBON	19.42	240	J
18.	UNKNOWN HYDROCARBON	20.40	300	J
19.	UNKNOWN	20.97	440	J
20.	UNKNOWN HYDROCARBON	22.23	510	J
21.	UNKNOWN HYDROCARBON	23.08	940	J
22.	UNKNOWN HYDROCARBON	23.92	1000	J
23.	UNKNOWN HYDROCARBON	24.70	1000	J
24.	UNKNOWN HYDROCARBON	25.47	1200	J
25.	UNKNOWN HYDROCARBON	26.18	970	J
26.	UNKNOWN HYDROCARBON	26.90	1200	J
27.	UNKNOWN HYDROCARBON	28.25	1500	J
28.				
29.				
30.				

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: VERSAR

Contract: SRP3501

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____

SDG No.: 19

Matrix: (soil/water) SOIL (g/ml) 6

Lab Sample ID: __61930

Sample wt/vol: 30.0

Lab File ID: __V2394

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. 11 dec. _____

Date Extracted: 11/23/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.6

Dilution Factor: __1

Number TICs found: 20

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.10	4000	J
2.	UNKNOWN	5.10	20000	J
3.	UNKNOWN	5.78	270	J
4.	UNKNOWN	5.92	3100	J
5.	UNKNOWN HYDROCARBON	6.20	500	J
6.	UNKNOWN HYDROCARBON	6.27	280	J
7.	UNKNOWN HYDROCARBON	6.37	1200	J
8.	UNKNOWN HYDROCARBON	6.52	1500	J
9.	UNKNOWN HYDROCARBON	7.73	560	J
10.	UNKNOWN	8.08	1200	J
11.	UNKNOWN	8.90	2100	J
12.	UNKNOWN	9.97	1100	J
13.	UNKNOWN	22.85	390	J
14.	UNKNOWN HYDROCARBON	23.18	250	J
15.	UNKNOWN HYDROCARBON	23.60	360	J
16.	UNKNOWN HYDROCARBON	24.97	270	J
17.	UNKNOWN	27.60	230	J
18.	UNKNOWN	27.88	220	J
19.	UNKNOWN HYDROCARBON	28.23	290	J
20.	UNKNOWN HYDROCARBON	29.58	350	J
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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S RTP3702

Lab Name: VERSAR

Contract: _____

Lab Code: VERSAR

Case No.: 6483

SAS No.: _____ SDG No.: 19

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: __61932

Sample wt/vol: 30.0

Lab File ID: __V2396

Level: (low/med) LOW

Date Received: __11/19/88

% Moisture: not dec. 11 dec. _____

Date Extracted: 11/22/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N

pH: 7.1

Dilution Factor: _ 1

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

Number TICs found: 27

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.12	3300	I J N
2.	UNKNOWN	5.10	17000	I J
3.	UNKNOWN	5.93	2900	I J
4.	UNKNOWN HYDROCARBON	6.22	480	I J
5.	UNKNOWN HYDROCARBON	6.38	1100	I J
6.	UNKNOWN HYDROCARBON	6.53	1400	I J
7.	UNKNOWN	8.10	1600	I J
8.	UNKNOWN	8.92	2000	I J
9.	UNKNOWN	9.05	500	I J
10.	UNKNOWN HYDROCARBON	16.18	340	I J
11.	UNKNOWN HYDROCARBON	17.33	510	I J
12.	UNKNOWN HYDROCARBON	18.48	1100	I J
13.	UNKNOWN HYDROCARBON	19.45	820	I J
14.	UNKNOWN HYDROCARBON	19.55	670	I J
15.	UNKNOWN	20.43	850	I J
16.	UNKNOWN	21.05	680	I J
17.	UNKNOWN HYDROCARBON	21.37	770	I J
18.	UNKNOWN HYDROCARBON	22.27	750	I J
19.	UNKNOWN	23.93	2400	I J
20.	UNKNOWN HYDROCARBON	24.72	1000	I J
21.	UNKNOWN HYDROCARBON	25.48	2600	I J
22.	UNKNOWN HYDROCARBON	26.22	1400	I J
23.	UNKNOWN HYDROCARBON	26.92	3600	I J
24.	UNKNOWN HYDROCARBON	27.58	1800	I J
25.	UNKNOWN	27.93	1900	I J
26.	UNKNOWN HYDROCARBON	28.28	4200	I J
27.	UNKNOWN HYDROCARBON	29.60	2900	I J
28.				
29.				
30.				

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SRTP3704

Name: VERSAR

Contract:

Code: VERSAR

Case No.: 6483

SAS No.:

SDG No.: 19

Matrix: (soil/water) SOIL (g/ml) G

Lab Sample ID: 61933

Sample wt/vol: 30.0

Lab File ID: V2397

Level: (low/med) LOW

Date Received: 11/19/88

Moisture: not dec. 10 dec.

Date Extracted: 11/23/88

Reaction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/09/88

Cleanup: (Y/N) N

pH: 7.7

Dilution Factor: 1

CONCENTRATION UNITS:

Number TICs found: 27

(ug/L or ug/Kg) ug/Kg

SAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN <i>hexane</i>	4.12	3700	IJ
2.	UNKNOWN <i>hexane</i>	5.12	14000	IJ
3.	UNKNOWN	5.92	3100	IJ
4.	UNKNOWN HYDROCARBON	6.22	380	IJ
5.	UNKNOWN HYDROCARBON	6.37	970	IJ
6.	UNKNOWN HYDROCARBON	6.52	1200	IJ
7.	UNKNOWN	7.75	1100	IJ
8.	UNKNOWN	8.08	1300	IJ
9.	UNKNOWN	8.90	1600	IJ
10.	UNKNOWN	9.97	1600	IJ
11.	UNKNOWN HYDROCARBON	18.43	390	IJ
12.	UNKNOWN HYDROCARBON	19.40	170	IJ
13.	UNKNOWN HYDROCARBON	19.52	240	IJ
14.	UNKNOWN HYDROCARBON	20.38	170	IJ
15.	UNKNOWN	20.80	190	IJ
16.	UNKNOWN HYDROCARBON	21.30	160	IJ
17.	UNKNOWN	22.00	160	IJ
18.	UNKNOWN HYDROCARBON	22.20	130	IJ
19.	UNKNOWN HYDROCARBON	23.07	200	IJ
20.	UNKNOWN	23.88	200	IJ
21.	UNKNOWN ORGANIC ACID	24.72	170	IJ
22.	UNKNOWN HYDROCARBON	25.43	170	IJ
23.	UNKNOWN	26.18	940	IJ
24.	UNKNOWN HYDROCARBON	26.87	190	IJ
25.	UNKNOWN	27.58	230	IJ
26.	UNKNOWN HYDROCARBON	28.23	350	IJ
27.	UNKNOWN HYDROCARBON	29.58	260	IJ
28.				
29.				
30.				

**Appendix D
Priority Pollutant
and
Target Compound Lists**

APPENDIX D

Attached is a list of all compounds evaluated under the Priority Pollutant and Target Compound List analyses. Each compound is marked to indicate the list on which it appears.

Both lists contain compounds not listed on the other. Compounds that are Priority Pollutants but not on the TCL are asbestos, benzdine, 1,2-diphenylhydrazine, N-nitrosodimethylamine, endrin aldehyde, 2-chloroethyl vinyl ether, acroline and acrylonitrile. Thirty-three compounds are present on the TCL that were not Priority Pollutants. These are marked on the list with an asterisk.

COMPARISON OF PRIORITY POLLUTANT VS. CLP TARGET COMPOUND LISTS

<u>PARAMETER</u>	<u>ALTERNATE NOMENCLATURE</u>	<u>PPL</u>	<u>TCL</u>
<u>METALS</u>			
*ALUMINUM			Y
ANTIMONY		Y	Y
ARSENIC		Y	Y
*BARIUM			Y
BERYLLIUM		Y	Y
CADMIUM		Y	Y
*CALCIUM			Y
CHROMIUM		Y	Y
*COBALT			Y
COPPER		Y	Y
*IRON			Y
LEAD		Y	Y
*MAGNESIUM			Y
*MANGANESE			Y
MERCURY		Y	Y
NICKEL		Y	Y
*POTASSIUM			Y
SELENIUM		Y	Y
SILVER		Y	Y
*SODIUM			Y
THALLIUM		Y	Y
*VANADIUM			Y
ZINC		Y	Y
CYANIDE		Y	Y
<u>OTHER</u>			
ASBESTOS		Y	
2,3,7,8-TCDD	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	Y	Y
<u>VOLATILE ORGANICS</u>			
CHLOROMETHANE	METHYL CHLORIDE	Y	Y
BROMOMETHANE	METHYL BROMIDE	Y	Y
VINYL CHLORIDE	CHLOROETHYLENE	Y	Y
CHLOROETHANE		Y	Y
METHYLENE CHLORIDE	DICHLOROMETHANE	Y	Y
*ACETONE	2-PROPANONE		Y
*CARBON DISULFIDE			Y
1,1-DICHLOROETHENE		Y	Y
1,1-DICHLOROETHANE		Y	Y
*CIS 1,2-DICHLOROETHENE			Y
TRANS 1,2-DICHLOROETHENE		Y	Y
CHLOROFORM		Y	Y
1,2-DICHLOROETHANE		Y	Y
*2-BUTANONE	METHYL ETHYL KETONE		Y

PARAMETER	ALTERNATE NOMENCLATURE	PPL	TCL
*2,4,5-TRICHLOROPHENOL			Y
2-CHLORONAPHTHALENE		Y	Y
*2-NITROANILINE			Y
DIMETHYL PHTHALATE		Y	Y
ACENAPHTHYLENE		Y	Y
2,6-DINITROTOLUENE		Y	Y
*3-NITROANILINE			Y
ACENAPHTHENE	NAPHTHYLENEETHYLENE	Y	Y
2,4-DINITROPHENOL		Y	Y
4-NITROPHENOL		Y	Y
*DIBENZOFURAN			Y
2,4-DINITROTOLUENE		Y	Y
DIETHYL PHTHALATE		Y	Y
4-CHLOROPHENYL PHENYL ETHER		Y	Y
FLUORENE		Y	Y
*4-NITROANILINE			Y
4,6-DINITRO-2-METHYLPHENOL	4,6-DINITRO-o-CRESOL	Y	Y
N-NITROSO-DIPHENYLAMINE		Y	Y
4-BROMOPHENYL PHENYL ETHER		Y	Y
HEXACHLOROBENZENE		Y	Y
PENTACHLOROPHENOL		Y	Y
PHENANTHRENE		Y	Y
ANTHRACENE		Y	Y
DI-N-BUTYLPHTHALATE		Y	Y
FLUORANTHENE		Y	Y
PYRENE		Y	Y
BUTYL BENZYL PHTHALATE		Y	Y
3,3-DICHLOROBENZIDINE		Y	Y
BENZO(a)ANTHRACENE	1,2-BENZANTHRACENE	Y	Y
CHRYSENE		Y	Y
BIS(2-ETHYLHEXYL)PHTHALATE		Y	Y
DI-N-OCTYL PHTHALATE		Y	Y
BENZO(b)FLUORANTHENE	3,4-BENZOFUORANTHENE	Y	Y
BENZO(k)FLUORANTHENE	11,12-BENZOFUORANTHENE	Y	Y
BENZO(a)PYRENE	3,4-BENZOPHYRENE	Y	Y
INDENO(1,2,3-cd)PYRENE	2,3-o-PHENYLENEPYRENE	Y	Y
DIBENO(a,h)ANTHRACENE	1,2,5,6-DIBENZANTHRACENE	Y	Y
BENZO(g,h,i)PERYLENE	1,12-BENZOPERYLENE	Y	Y
BENZIDINE		Y	
1,2-DIPHENYLHYDRAZINE		Y	
N-NITROSODIMETHYLAMINE		Y	

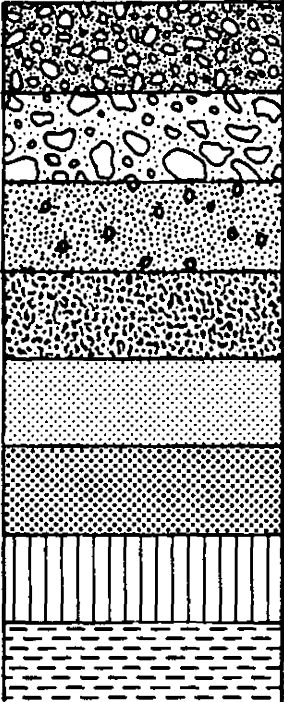
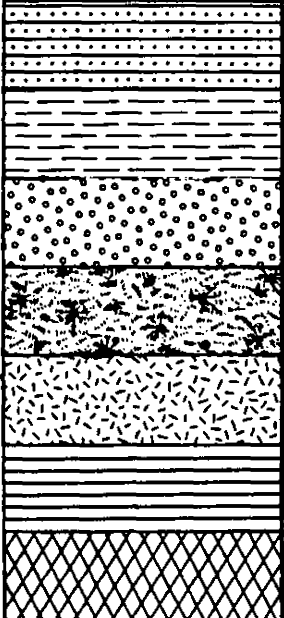
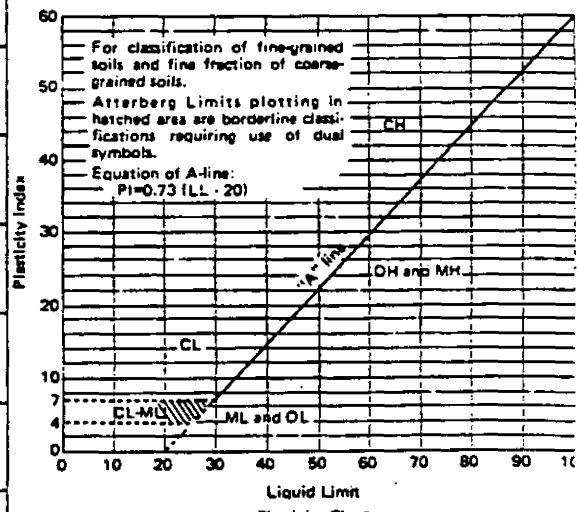
PESTIDCIDE/PCB

ALPHA-BHC		Y	Y
BETA-BHC		Y	Y
DELTA-BHC		Y	Y
GAMMA-BHC	LINDANE	Y	Y
HEPTACHLOR		Y	Y
ALDRIN		Y	Y
HEPTACHLOR EPOXIDE		Y	Y
ENDOSULFAN I		Y	Y
DIELDRIN		Y	Y
4,4'-DDE		Y	Y

Appendix E Boring Logs

SOIL BORING KEY

UNIFIED SOIL CLASSIFICATION SYSTEM

Major divisions		Group symbols	Typical names	Laboratory classification criteria	
 Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW	
		GM d c	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	
	Gravels with fines (Appreciable amount of fines)	GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
		SW	Well-graded sands, gravelly sands, little or no fines	$C_u \frac{D_{60}}{D_{10}}$ greater than 5; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
		SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	SM d u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	
		SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
				Limits plotting in hatched zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.	
 Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silty sands and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	 For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols. Equation of A-line: $PI = 0.73(LL - 20)$	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
		OL	Organic silts and organic silty clays of low plasticity		
	Silty sands and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
		CH	Inorganic clays of high plasticity, fat clays		
		OH	Organic clays of medium to high plasticity, organic silts		
	Highly organic soils	Pt	Peat and other highly organic soils		

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-42

Location: N770333.32 E673072.14

Project: SINCLAIR REFINERY

Project Number: 8169

Date Started: 8/25/88 Date Completed: 8/25/88

Field Geologist: M. Sayres

Elevation: 1494.6

GW Depth: NA

Sampling Method: Trowel: 0-6" Hand auger below 6"

Driller: EBASCO

Drilling Method: Stainless steel shovel to 2.5'

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
01/11	1				SM	0-1'6" - Dark brown fine SAND and SILT, some medium to fine gravel; organic-rich; roots present; dry		No elevated readings with HNu prior to augering
SR-AB 42-01 and 01D	2				SM	1'6"-2'6" - Dark brown medium-fine SAND and SILT, some coarse- fine gravel, (cobbles & boulders to 10"); dry		At 2'6" HNu= 25ppm
SR-AB 42-02	3				ML/CL	2'6" to 4' - Gray SILT and CLAY; moderate plasticity; moist; strong petroleum-like odor.		
	4				ML/CL	4' to 7' - Gray SILT and CLAY, little medium to fine gravel; moist		Elevated readings on HNu continue throughout augering. Readings were taken down auger hole.
	5							
	6							
	7				ML/CL	7' to 8' - Gray and brown SILT and CLAY, some coarse-fine sand, some medium-fine gravel; moist.		
	8							
SR-AB 42-03	9				SM	8' to 10' - Dark gray and brown fine SAND and SILT, little clay, little medium to fine gravel.		
	10							
	11					TOTAL DEPTH = 10 Ft.		
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: Total depth of hand auger boring is 10 Ft.

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-43

Location: N770163.97 E673225.36

Project: SINCLAIR REFINERY

Project Number: 8169

Date Started: 8/25/88

Date Completed: 8/25/88

Field Geologist: M. Sayres

Elevation: 1494.6

GW Depth: NA

Sampling Method: Trowel: 0-6"; Hand auger below 6"

Driller: EBASCO

Drilling Method: Hand auger - stainless steel

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 43-01	0					0-2' - Dark brown fine SAND and SILT, some medium to fine gravel; organic-rich; roots; dry		0-2' no elevated readings on HNU
	1				SM/FILL			
	2							
SR-AB 43-02	3				ML/CL/FILL	2-4' - Gray and brown SILT and CLAY; moist; moderate plasticity; strong petroleum-like odor		At 2.0' below surface, reading of 75 ppm in auger hole.
	4							
	5							
	6							
	7				ML/CL/FILL	6' to 7'6" - same as above with decomposed wood fragments (fill).		Elevated readings on HNU continue throughout augering
	8				SW	7'6" to 8' - Gray coarse to fine SAND, some medium-fine gravel; moist		Readings were taken down auger hole.
SR-AB 43-03	9							
	10				SM/SW	8' to 10' - Gray and brown coarse to fine SAND, some silt, some coarse to fine gravel, trace clay; moist.		
	11							
	12					TOTAL DEPTH = 10 ft.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #5

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-44

Location: N770305.56 E673313.98

Project: SINCLAIR REFINERY

Project Number: 8169

Date Started: 8/26/88 Date Completed: 8/26/88

Field Geologist: B. Burns

Elevation: 1495.6' GW Depth: NA

Sampling Method: Hand Auger; trowel used 0-6"

Driller: EBASCO

Drilling Method: Hand Auger - stainless steel

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 01/11	1				SM/FILL	0-6" - Dark brown, fine SAND and SILT, some (+) coarse (-) to fine gravel; roots; dry; metal post found at - 6 & 8" below surface, glass found		Prior to augering, no elevated readings on HNU
	2							
SR-AB 02/22	3				ML/CL	2'6" to 4' - Gray SILT and CLAY; moist; strong petroleum odor		At 1'10", HNU= 10 ppm in hole
	4							
	5				ML/CL	5' - Gray SILT and CLAY, little medium (-) to fine gravel; moist		Sample #2 HNU= 18ppm
	6					6' to 6'4" - Gray SILT and Clay, some medium to fine gravel; moist		At 5' HNU= 25ppm Reading taken down auger hole.
SR-AB 03	7							
	8					TOTAL DEPTH = 6'4"		At 6' HNU= 0ppm in breathing zone; HNU= 0ppm in auger hole; 20ppm on soil cuttings.
	9							At 6'4" HNU= 0ppm in Breathing zone; HNU= 10ppm in auger hole; 50ppm on soil cuttings; Peak = 100ppm.
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: Boring ends at 6'4" due to the presence of a hard layer at this depth which could not be penetrated.
H & S Logbook #5

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-45

Location: N770483.97 E673141.36

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-26-88 Date Completed: 10-26-88

Field Geologist: R. BURNS

Elevation: 1494.8'

GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 45-01	1	NA	NA		SM	0'-6" - Dark brown coarse to fine SAND, some silt, little(-) medium to fine gravel	1105 10-26-88	at 0-6" Sample OVA/HNu = 0 ppm
	2							
SR-AB 45-02	3	6	75%		CL	2'-2.5' - Dark gray silty CLAY, organic rich	1120 10-26-88	at 2-4' SS OVA = 0 ppm HNu = 1-2 ppm
	4	5				2.5-4.0' - Reddish brown SILT and CLAY, little(+) fine sand		
	5	6						
	6	11						
	7							
	8							
SR-AB 45-03	9	8	71%		CH	8'-10' - Gray SILT and CLAY	1130 10-26-88	at 8-10' SS *OVA = 3-13 ppm HNu = 4-9 ppm
	10							
	11					Total Depth = 10 Ft.		
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6

SS = Split spoon

* The OVA battery is low causing meter drift

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-46

Location: N770850.92 E673061.48

Project Number: 8169

Field Geologist: M. NOBLET

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Drilling Method: 8" OD HOLLOW STEM AUGER

Project: SINCLAIR REFINERY SITE

Date Started: 11-02-88 Date Completed: 11-02-88

Elevation: 1490.7' GW Depth: 9 FT

Driller: EMPIRE SOILS

Sample ID	Depth (feet)	Blows per 6"	Recover %	Profile	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 46-01	1	NA	NA		ML	0-6" - Dark brown SILT, trace gravel, dry	1105 10-26-88	at 0-6" Sample HNu= 0ppm
	2							
SR-AB 46-02	3	3	21%		ML	2'-4' - Light gray to brown silt, dry	1120 10-26-88	at 2-4' ss HNu= 0.4ppm
	4	5						
		8						
	4	8						
	5							
	6							
	7							
	8							
SR-AB 46-03	9	6	25%		ML/SM	8'-10' - Orange brown to gray SILT, some medium sand, dry (bottom 2" saturated)	1130 10-26-88	at 8-10' ss HNu= 0.4ppm
	10	3						
		3						
	10	1						
	11					TOTAL DEPTH = 10 FT.		
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #11; ss = Split Spoon; All BZ levels were 0ppm (HNu).

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-47

Location: N770429.82 E673231.68

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-26-88 Date Completed: 10-26-88

Field Geologist: R. BURNS

Elevation: 1494.3' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 47-01	0	NA	NA		SM	0-6" - Dark brown coarse to fine SAND, some silt, little(-) fine gravel, organic rich	0950 10-26-88	at 0-6" Sample OVA/HNu = 0ppm
	1							
	2							
SR-AB 47-02	3	8	71%		SM	2'-2.1' - SAME 2.1'-4' - Light yellow brown fine SAND, some(+) silt, very dry, laminated	1000 10-26-88	at 2-4' ss OVA/HNu = 0ppm
	4	15						
	5	20						
	6	23						
	7							
SR-AB 47-03	8		29%		SM	8'-10' - Yellow brown and reddish brown coarse to fine SAND, some(-) silt, little coarse to fine gravel	1015 10-26-88	at 8-10' SS OVA = >100ppm HNU = >200ppm
	9	15						
	10	13						
	11	20						
	12	22				TOTAL DEPTH = 10 FT.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6
SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-48

Location: N770998.95 E673179.44

Project: SINCLAIR REFINERY SITE
 Date Started: 10-25-88 Date Completed: 10-25-88
 Elevation: 1495.6' GW Depth: NA
 Driller: EMPIRE SOILS

Project Number: 8169
 Field Geologist: R. BURNS
 Sampling Method: 2" OD SPLIT SPOON SAMPLER
 Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 48-01	1	NA	NA		SP	0-6" - Dark brown coarse to fine SAND, little silt, little coarse to fine gravel, organic rich	1530 10-25-88	at 0-6" Sample OVA/OVM = 0ppm
	2							
SR-AB 48-02	3	17	75%		SW	2'-4' - Yellow brown, reddish brown, and light gray coarse to fine SAND, some coarse to fine gravel, little silt	1540 10-25-88	at 2-4' ss OVA/OVM = 0ppm
	4	32						
	5	46						
	6	37						
	7				Grading to			
	8							
SR-AB 48-03	9	8	67%		SW/GP	8'-10' - Yellow brown and reddish brown coarse to fine SAND and coarse to fine GRAVEL, little silt	1600 10-25-88	at 8-10' SS OVA/OVM = 0ppm
	10	6						
	11	11						
	12	18						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S Logbook #1
 SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SL-AB-49

Location: N770172.06 E673512.15

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-31-88 Date Completed: 10-31-88

Field Geologist: R. Burns

Elevation: 1495.4'

GW Depth: ND

Sampling Method: 2" OD Split spoon & Stainless

Driller: EMPIRE SOILS

Drilling Method: steel shovel for 0-6" sample

8" OD Hollow Stem Auger

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SL-AB 49-01	0		NA			0-6" - Dark brown coarse to fine SAND, some coarse to fine gravel, some silt		
	1				SW			
	2							
SL-AB 49-02	3	3	42%		ML/CL	2'-4' - Yellowish brown SILT and CLAY, little fine sand		
	4	5						
	5	8						
	6	12						
	7							
	8				SW			
SL-AB 49-03	9	7	46%			8'-10' - Light gray to dark brown coarse to fine SAND, some coarse to fine gravel, little silt, dry		
	10	16						
	11	11						
	12					TOTAL DEPTH = 10 Ft.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: Blows with a 140lb Hammer. H & S Logbook #1

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-50

Location: N770069.43 E673415.32

Project: SINCLAIR REFINERY SITE
 Date Started: 11-01-88 Date Completed: 11-01-88
 Elevation: 1496.3' GW Depth:
 Driller: EMPIRE SOILS

Project Number: 8169
 Field Geologist: M. CONTOS
 Sampling Method: 2" OD SPLIT SPOON SAMPLER
 Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 50-01	1	NA	NA		SM	0-6" - Brown silty SAND, some medium to fine gravel, organics, dry	1530 11-01-88	at 0-6" Sample OVA = 0ppm
	2							
SR-AB 50-02	3	8	46%		ML/CL	2'-4' - Dark brown clayey SILT and silty CLAY, little fine sand, little gravel, slightly moist	1540 11-01-88	at 2-4' ss OVA = 0ppm
	4	5						
	5	6						
	6	8						
	7							
	8							
SR-AB 50-03	9	39	58%		SM/GM	8'-10' - Dark gray medium to fine silty SAND, some coarse to medium gravel	1550 11-01-88	at 8-10' ss OVA = ~200ppm BZ = 1.4ppm
	10	13						
	11	12						
	12	11						
	13					TOTAL DEPTH = 10 FT.		
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #10
 SS = Split spoon BZ = Breathing zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-51

Location: N769912.51 E673202.53

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-02-88 Date Completed: 11-02-88

Field Geologist: M. CONTOS

Elevation: 1496.2' GW Depth:

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 51-01	0							
	1	NA	NA		GW/FILL	0'-6" - Brown GRAVEL and COBBLES, some silty sand, dry	1425 11-02-88	at 0-6" Sample OVA = 0ppm
	2							
SR-AB 51-02	3	27	75%		GM/FILL	2'-4' - Brown to black coarse to fine GRAVEL, some cobbles, little brown silty sand	1440 11-02-88	3" split spoon and 140 lb. hammer used at 2-4' ss OVA = 0ppm
	4	24						
	5	16						
	6	100/.4						
	7							
SR-AB 51-03	8		25%		FILL	8'-9' - wood particles (waste) 8'-10' - Dark brown coarse SAND, some(+) gravel	1540 11-02-88	at 8-10' ss OVA = 200ppm
	9	3						
	10	8			SW			
	11	31						
	12	13						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
						TOTAL DEPTH = 10 FT.		

Notes: H & S Logbook #10
SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-52

Location: N769680.61 E673439.00

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-03-88 Date Completed: 11-03-88

Field Geologist: M. CONTOS

Elevation: 1496.8' GW Depth:

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 52-01	1	NA	NA		GW/FILL	0-6" - Brown coarse to fine GRAVEL, subrounded, little cobbles, little silt, sand	815 11-03-88	at 0-6" Sample HNu = 0ppm
	2							
SR-AB 52-02	3	13	63%		FILL	2'-3.7' - Gray GRAVEL, little angular silt and medium sand, little brick fragments	830 11-03-88	at 2-4' ss HNu = 0.4ppm
	4	41						
	5	26			CL/FILL	3.7' - 4' - Gray CLAY, some very fine sand, high plasticity		
	6	15						
	7							
	8							
SR-AB 52-03	9	3	46%		GP	8'-10' - Dark gray coarse to fine GRAVEL, little cobbles, little coarse sand, trace silt	11-03-88	at 8-10' ss 3" split spoon 300 lb. hammer HNu= 2.8ppm
	10	7						
	11	31						
	12	42						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S Logbook #10
 SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-53

Location: N769868.59 E673700.31

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-01-88 Date Completed: 11-01-88

Field Geologist: M. CONTOS

Elevation: 1495.9' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 53-01	0	NA	NA		GM	0-6" - Dark brown coarse to fine SAND, some silt, some coarse to fine gravel, moist	0820 11-01-88	at 0-6" Sample HNu = 0ppm
	1							
	2							
SR-AB 53-02	3	15	50%		ML/CL	2'-4' - Brown to dark brown clayey SILT and silty CLAY, some(-) gravel, moist, low plasticity	0825 11-01-88	at 2-4' ss HNu = 1.2 ppm
	4	25						
	5	13						
	6	10						
SR-AB 53-03	7		92%		GM	8'-10' - Gray to brown, medium to fine silty sand, some medium gravel, moist	0835 11-01-88	HNU not functioning due to moisture
	8	22						
	9	23						
	10	18						
	11	19						
	12					TOTAL DEPTH = 10 FT.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #10; ss = Split Spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-54

Location: N769706.80 E673845.87

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-01-88 Date Completed: 11-01-88

Field Geologist: M. CONTOS

Elevation: 1496.6' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 54-01	1	NA	NA		GM	0-6" - Very dark brown silty SAND, some medium gravel, organics, moist	0900 11-01-88	HNu not functioning await OVA
	2							
SR-AB 54-02	3	9	83%		SM	2'-4' - Brown to dark brown SILT, some fine sand, moist	0910 11-01-88	at 2-4' SS OVA = ~1.0ppm
	4	11						
	5							
	6							
	7							
	8							
SR-AB 54-03	9	17	NA		GM	8'-10' - Brown coarse to medium GRAVEL, some medium sand, trace silt, moist	0925 11-01-88	at 8-10' SS, OVA = 10ppm. During homogenizing OVA = ~20ppm
	10	17						
	11	19						
	12	14						
	13					TOTAL DEPTH = 10 FT.		
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #10
 SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-55

Project: SINCLAIR REFINERY SITE

Location: NA

Date Started: 10-26-88 Date Completed: 10-26-88

Project Number: 8169

Elevation: 1496.6' GW Depth: NA

Field Geologist: R. Burns

Driller: EMPIRE SOILS

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 55-01	0	NA	NA		SM	0'-6" - Dark brown coarse to fine SAND, some silt, trace fine gravel, organics	1240 10-26-88	at 0-6" Sample HNU = 0ppm
	1							
	2							
SR-AB 55-02	3	5	29%		ML/CL	2'-4' - Gray SILT and CLAY, some medium to fine sand	1245 10-26-88	at 2-4' ss HNU = 0ppm
	4	4						
	5	5						
	6	5						
	7							
SR-AB 55-03	8	4	42%		SW	8'-10' - Dark gray coarse to fine SAND, some coarse to fine gravel, some silt, wet	1305 10-26-88	at 8-10' ss HNU = 5-10ppm
	9	9						
	10	17						
	11	17						
	12					TOTAL DEPTH = 10 FT.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6
SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-56

Location: N769207.08 E674227.56

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-01-88 Date Completed: 11-01-88

Field Geologist: M. CONTOS

Elevation: 1498.1' GW Depth:

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro- file	USCS Class	Material Description	Collection Time Date	Comments	
	0								
SR-AB 56-01	1	NA	NA		GM	0-6" - Very dark brown coarse to fine silty SAND, some medium to fine gravel, organics, moist	1015 11-01-88	No elevated readings on any of the SS samples	
	2				SM	2'-4' - Light brown fine silty SAND, little gravel, subangular/subrounded, trace coarse sand,moist	1025 11-01-88		
SR-AB 56-02	3	7	92%						
	4	12							
	5	17							
	6								
	7								
	8								
SR-AB 56-03	9	32	75%		SW	8'-10' - Grayish brown coarse to fine SAND, some coarse to fine gravel, subangular/angular, trace silt	1035 11-01-88		
	10	19							
	11	12							
	12					TOTAL DEPTH = 10 FT.			
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								
	26								
	27								
	28								

Notes: H & S Logbook #10
SS = Split spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-57

Location: N768997.68 E674396.22

Project: SINCLAIR REFINERY SITE

Project Number: 8306

Date Started: 10\27\88 Date Completed: 10\27\88

Field Geologist: R. Burns

Elevation: 1498.7' GW Depth: NA

Sampling Method: 2" Split spoon

Driller: Empire Soils

Drilling Method: 8" OD hollow stem auger

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 57-01	1		N/A		SW/SW	0-6" - Black coarse to fine SAND, some silt, little fine gravel (Fill?)	0915 10\27\88	No elevated readings on HNu or OVA during sampling.
	2	9						
SR-AB 57-02	3	11	54%		SP/SW	2'-4' - Yellowish brown medium to fine SAND, some silt, trace coal, dry (Fill?)	0935 10\27\88	
	4	16						
	5	20						
	6							
	7							
	8	28			SW	8'-8.8' - Dark brown coarse to fine SAND, some silt, little fine gravel	0945 10\27\88	
SR-AB 57-03	9	74	37.5%		SW	8.8'-10' - Brownish yellow coarse to fine SAND, some silt, some coarse to fine gravel, dry		
	10	56						
	11	45						
	12					TOTAL DEPTH = 10 Ft.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-58

Location: N768699.81 E674610.24

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-26-88 Date Completed: 10-26-88

Field Geologist: R. BURNS

Elevation: 1499.2' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 58-01	1	NA	NA		SM	0-6" - Dark brown coarse to fine SAND, some silt, little(-) fine gravel	1555 10-26-88	at 0-6" Sample OVA/HNu = 0ppm
	2							
SR-AB 58-02	3	25	29%		SM	2'-4' - Brownish yellow coarse to fine SAND, some(+) silt, trace(+) fine gravel	1603 10-26-88	at 2-4' ss OVA/HNu = 0ppm
	4	26						
		23						
		11						
	5							
	6							
	7							
	8							
SR-AB 58-03	9	6	75%		ML	8'-9.7' - Dark gray clayey SILT, some fine sand, trace fine gravel	1615 10-26-88	at 8-10' ss OVA = ~40ppm pk 3-12ppm Ave
	10	3				9.7'-10' - Greenish gray coarse to fine SAND, little silt, little(-) fine gravel		HNu = 15ppm pk 10-12ppm Ave.
		10			SW			
		28						
	11							
	12					TOTAL DEPTH = 10 FT.		
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6
 ss = Split Spoon; Ave. = Average; pk = peak

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-59

Location: N768530.40 E674479.25

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-15-88 Date Completed: 11-15-88

Field Geologist: M. CONTOS

Elevation: 1496.7' GW Depth: = 9.5'

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 59-01	0	NA	NA		ML/SM	0-6" - Dark brown sandy SILT, little medium to coarse gravel, sub-rounded, organics	1330 11-15-88	at 0-6" Sample OVA = 0ppm
	1							
	2							
SR-AB 59-02	3	3	54%		ML	2'-4' - Dark gray SILT, little gravel, subrounded, trace sand, moist	1525 11-15-88	at 2-4' ss OVA = >10ppm BZ = 2-2.4ppm
	4	4						
	5	4						
	6							
	7							
	8							
SR-AB 59-03	9	12	21%		SW	8'-10' - Dark gray to brown medium to coarse SAND and fine to coarse GRAVEL, little silt, moist to wet	1536 11-15-88	at 8-10' ss OVA = 1ppm BH = 5ppm
	10	10						
	11	8						
	12	15						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S Logbook #6; ss = Split Spoon; BZ = Breathing Zone; BH = Bore Hole

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-60

Location: N768477.61 E674762.10

Project Number: 8169

Field Geologist: M. CONTOS

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Drilling Method: 8" OD HOLLOW STEM AUGER

Project: SINCLAIR REFINERY SITE

Date Started: 11-01-88 Date Completed: 11-01-88

Elevation: 1498.5' GW Depth: NA

Driller: EMPIRE SOILS

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 60-01	1	NA	NA				1405 11-01-88	at 0-6" sample OVA= 0ppm
	2							
SR-AB 60-02	3	12	63%		SM	2'-4' - Dark brown very fine silty SAND, little gravel, moist	1415 11-01-88	at 2-4' ss OVA= 0ppm
	4	5						
	5	8						
	6	8						
	7							
	8							
SR-AB 60-03	9	17	50%		GM	8'-10' - Dark grayish brown coarse to fine silty SAND and coarse GRAVEL, very moist	1430 11-01-88	at 8-10' ss OVA= 30.0ppm BZ= 4.8ppm
	10	18						
	11	25						
	12	21						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S logbook #10
 ss = Split Spoon; BZ = Breathing Zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-61

Location: N768348.30 E674816.64

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-25-88 Date Completed: 10-25-88

Field Geologist: R. BURNS

Elevation: 1498.2' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 61-01	0	NA	NA		SP	0'-6" - Dark brown coarse to fine SAND, some(-) coarse to fine gravel, little(-) silt	1345 10-25-88	at 0-6" sample OVA/OVM = 0ppm
	1							
	2							
SR-AB 61-02	3	19	71%		SM	2'-3' - Greenish brown coarse to fine SAND, some clayey silt, some coarse to fine gravel	1355 10-25-88	at 2-4' ss OVA/OVM = 0ppm
	4	6						
	5	7			SW	3'-4' - Gray medium to fine sand, trace reddish brown medium gravel		
	6	7						
	7							
	8							
SR-AB 61-03	9	12	50%		GP	8'-10' - Light gray, gray and brownish green coarse to fine GRAVEL, little silt, very wet	1415 10-25-88	at 8-10' ss; OVA = 8-10ppm; OVM = 2.1 ppm Ave. Sample is oil stained.
	10	17						
	11	16						
	12	18						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
TOTAL DEPTH = 10 FT.								

Notes: H & S logbook #6
ss = Split Spoon; Ave. = Average

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-62

Location: N768246.96 E674667.18

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-02-88 Date Completed: 11-02-88

Field Geologist: M. CONTOS

Elevation: 1498.6' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 62-01	1	NA	NA		SM	0'-6" - Dark brown fine silty SAND, some(-) gravel	0820 11-02-88	at 0-6" Sample OVA = 0ppm
	2							
SR-AB 62-02	3	3	25%		ML	2'-4' - Brown clayey SILT, some gravel, little sand, moist	0830 11-02-88	at 2-4' ss OVA = 0ppm
	4	3						
	5	4						
	6							
	7							
	8							
SR-AB 62-03	9	54	25%		GP	8'-10' - Dark brown GRAVEL and cobbles, little silt, little sand, saturated	0855 11-02-88	3" OD split spoon. Blows maybe high due to cobble wedged in nose of spoon. BZ - OVA = 4.4ppm
	10	40						
		40						
		53						
	11					TOTAL DEPTH = 10 FT.		
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S logbook #10
ss = Split Spoon; BZ = Breathing zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-63

Location: N768273.09 E674505.36

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-15-88 Date Completed: 11-15-88

Field Geologist: M. CONTOS

Elevation: 1498.0' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 63-01	1	NA	NA	.....	ML	0'-6" - Dark brown SILT, little coarse sand, little gravel, organics, moist	1612 11-15-88	0-6" Sample OVA = 0ppm
	2							
SR-AB 63-02	3	5	63%		SP	2'-4' - Dark gray very fine SAND, moist	1621 11-15-88	after pull ss; BZ = >10ppm. Evacuate EZ and vent. BH= 400-600ppm on OVA.
	4	5						
	5							
	6							
	7							
	8							
SR-AB 63-03	9	9	0%			8'-10' - NO RECOVERY	1745 11-15-88	3" OD split spoon used, 300 lb hammer
	10	12						
		13						
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
TOTAL DEPTH = 10 FT.								

Notes: H & S Logbook #6; ss = Split Spoon; BZ = Breathing Zone
 BH = Bore Hole; EZ = Exclusion Zone.

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-64

Location: N767964.04 E675001.72

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 10-25-88 Date Completed: 10-25-88

Field Geologist: R. BURNS

Elevation: 1500.8' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 64-01	1	NA	NA		SW	0'-6" - Dark brown coarse to fine SAND, some(+) coarse to fine gravel, little silt	1045 10-25-88	at 0-6" sample OVA/OVM = 0ppm
	2							
SR-AB 64-02	3	5	54%		SW	2'-4' - Dark brown coarse to fine SAND, some(+) coarse to fine gravel, little silt	1125 10-25-88	at 2-4' ss OVA/OVM = 0ppm
	4	6						
	5	8						
	6	9						
	7							
	8							
SR-AB 64-03	9	4	21%		GM	8'-10' - Dark gray coarse to fine GRAVEL, some coarse to fine sand, little(-) silt, very wet	1135 10-25-88	at 8-10' ss OVA = 4ppm OVM = 1.7ppm pK 0.6ppm Ave.
	10	6						
	11	3						
	12	10						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: M & S logbook #6
 ss = Split Spoon; Ave. = Average; pK = Peak

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-65

Project: SINCLAIR REFINERY SITE

Location: NA

Date Started: 10-25-88 Date Completed: 10-25-88

Project Number: 8169

Elevation: NA

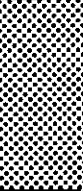
GW Depth: NA

Field Geologist: R. BURNS

Driller: EMPIRE SOILS

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 65-01	0	NA	NA		SM	0'-6" - Dark brown coarse to fine SAND, some(-) silt, little medium to fine gravel	0940 10-25-88	at 0-6" sample OVA/OVM = 0ppm
	1							
	2							
SR-AB 65-02	3	6	42%		SM	2'-4' - Reddish brown medium to fine SAND, some silty clay, very moist	0950 10-25-88	at 2-4' ss OVA/OVM = 0ppm
	4	8						
	5	16						
SR-AB 65-03	6	16	25%		SP	8'-10' - Dark brown medium to fine(-) GRAVEL, little(+) medium to fine sand, little clayey silt	1005 10-25-88	at 8-10' ss OVA/OVM = 0ppm
	7							
	8							
	9	16						
	10	14						
	11	13						
	12	13						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
						TOTAL DEPTH = 10 FT.		

Notes: H & S logbook #6
ss = Split Spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-66

Location: N769569.88 E674104.94

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-08-88 Date Completed: 11-08-88

Field Geologist: M. NOBLET

Elevation: 1485.3' GW Depth: 0'

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 66-01	1	NA	NA		SM	0'-6" - Dark gray SILT and SAND, some organics	0900 11-08-88	at 0-6" sample HNu = 0ppm
	2							
SR-AB 66-02	3	9	50%		GM	2'-4' - Tan to olive gray silty SAND and GRAVEL, saturated	1150 11-08-88	at 2-4' ss HNu = 0ppm
	4	22						
		12						
	4	14						
	5							
	6							
	7							
	8							
SR-AB 66-03	9	3	67%		ML/CL	8'-10' - Light gray to olive gray silty CLAY, moist	1215 11-08-88	at 8-10' ss HNu = 0ppm
	9	5						
		7						
	10	8						
	11					TOTAL DEPTH = 10'		
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: Boring in drainage swale
H & S Logbook #11; ss = Split Spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-67

Location: N769094.92 E674445.25

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-08-88 Date Completed: 11-08-88

Field Geologist: M. NOBLET

Elevation: 1491.9' GW Depth: 0'

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 67-01	0	NA	NA		GM/SM	0'-6" - Gray to black silty SAND and GRAVEL, organics, saturated	0755 11-08-88	Oily sheen. 0-6" sample; OVA= 1.0ppm BZ= 1.0ppm
	1							
	2							
SR-AB 67-02	3	8	67%		SM/SC	2'-4' - Medium to dark brown silty SAND, some light brown clay, saturated	0825 11-08-88	at 2-4' ss OVA= 0.2ppm BZ= 0.4ppm
	4	8						
	5	7						
SR-AB 67-03	6	9	67%		CL	8'-10' - Light brown to olive gray silty CLAY, some sand	0840 11-08-88	at 8-10' ss OVA= 0.4ppm BZ= 0.4ppm
	7							
	8	6						
	9	7						
	10	7						
	11	6						
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10'

Notes: Boring in drainage swale
H & S Logbook #11; ss = Split Spoon; BZ = Breathing Zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-68

Location: N768624.90 E674752.18

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-01-88 Date Completed: 11-01-88

Field Geologist: M. Noblet

Elevation: 1487.4' GW Depth: 0'

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
SR-AB 68-01	1	NA	NA		GM	0'-6" - Brown to black silty SAND and GRAVEL, organics, saturated	1448 11-01-88	at 0-6" sample HNU= 0ppm; BZ= 0ppm
	2							
SR-AB 68-02	3	4	58%		GM	2'-4' - Brown silty SAND and GRAVEL, saturated	1500 11-01-88	at 2-4' ss, and BZ HNU= 0ppm
	4	16						
		20						
	4	10						
	5							
	6							
	7							
	8							
	9	9	13%		GM	8'-10' - Brown SILT, SAND and GRAVEL, saturated	1515 11-01-88	at 8-10' ss; HNU= 1ppm; BZ= 0ppm
	9	9						
		8						
	10	4						
SR-AB 68-03	11	5	50%		CL	10'-12' - Gray silty CLAY, moist	1525 11-01-88	at 10-12' ss, and BZ; HNU= 0.2ppm
	11	5	50%					
	12	6						
		9						
	13					TOTAL DEPTH = 12'		
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: Boring in drainage swale
H & S Logbook #11; ss = Split Spoon; BZ = Breathing Zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-93

Project: SINCLAIR REFINERY SITE

Location: NA

Date Started: 11-03-88 Date Completed: 11-04-88

Project Number: N767184.73 E674368.00

Elevation: 1525.2

GW Depth: NA

Field Geologist: M. CONTOS

Driller: EMPIRE SOILS

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Profile	USCS Class	Material Description	Collection Time Date	Comments
	0							
AB 93-01	1	NA	NA		FILL	0'-6" - Brown sandy SILT, some sand, little coarse to fine gravel, trace wood particles and cork	1420 11-03-88	*
.5-2'	2	5	22%			6"-1' - Wood particles (waste)		
	3	14	42%			1'-2' - Brown coarse silty SAND, some medium gravel (waste)	11-03-88	
	4	20				2'-2.3' - Wood particles (waste)		
	5	23				2.3'-4' - Brown to gray GRAVEL, angular, some coarse sand, little silt		
	6	27			GW	5'-6' - Brown coarse to fine GRAVEL, angular, some coarse to medium sand, little(-) silt, dry	1455 11-03-88	
	7	25				6'-7' - Brown GRAVEL, angular, little medium sand, little silt	1500 11-03-88	Note: spoon driven 1 ft.
	8	11	N/A					
AB 93-02	9	20	58%		GM	8'-9' - Greenish brown coarse to medium GRAVEL, some coarse to fine sand, moist	1515 11-03-88	
	10	14				9'-10' - Greenish brown silty CLAY, little sand, little gravel, very stiff	1530 11-03-88	
	11	12	58%		CL/ML	10-12' - SAME		
	12	13						
	13	6	100%			12-14' - SAME	1535 11-03-88	
	14	8			GM	12.5-13' - Brown medium to fine GRAVEL		
	15	7	100%		CL/ML	14-16' - Greenish gray silty CLAY	1555 11-03-88	
	16	8						
	17	5	100%			16-18' - SAME	1603 11-03-88	
	18	6						
	19	7	100%			18-20' - SAME	1615 11-03-88	
	20	3						
	21	4						
	22	4						
	23	6						
	24		42%			24-26' - SAME	1650 11-03-88	
	25	WOR						
	26	4						
	27	6						
	28							

Notes: WOR = Weight of rods

* No elevated readings with HNU on any split spoon samples.

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-93

Location: N767184.73 E674368.00

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-03-88 Date Completed: 11-04-88

Field Geologist: M. CONTOS

Elevation: 1525.2 GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	28							
	29							*
	30							
	31	2	100%		CL/ML	30'-32' - SAME	0755 11-04-88	
	32	3						
	33	4						
	34							
	35	WOR				34'-36' - SAME	0830 11-04-88	
	36	2						
	37	4						
	38	5						
	39							
	40							
	41	1			ML/SM	40'-42' - Greenish gray silty SAND	0855 11-04-88	
	42	5						
	43	7						
	44	9						
	45					TOTAL DEPTH = 42 Ft.		
	46							
	47							
	48							
	49							
	50							
	51							
	52							
	53							
	54							
	55							
	56							

Notes: * NO elevated readings with HNU on any split spoon samples.

Ebasco Services, Inc. Log of Boring

Boring Number: SL-AB-94

Location: N770394.98 E672806.04

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-02-88 Date Completed: 11-02-88

Field Geologist: M. CONTOS

Elevation: 1495.6' GW Depth: 9 FT

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 94-01	0							
	1	NA	NA		ML	0-6" - Brown SILT, some sand, little(+) gravel, organics	1045 11-02-88	at 0-6" Sample OVA= 0ppm
	2							
SR-AB 94-02	3	3	58%		ML/CL	2'-4' - Brown to reddish brown clayey SILT, little fine sand	1055 11-02-88	at 2-4' ss OVA= 0ppm
	4	4						
	5	3						
	6	7						
	7							
	8							
SR-AB 94-03	9	48			GP	8'-10' - Brownish gray medium to coarse GRAVEL, some(-) silt, moist to saturated	1105 11-02-88	3" Split Spoon Oily Sheen. 8-10' ss; OVA = ~4 ppm; BZ= 2.4ppm
	10	41						
	11	39						
	12	40						
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S Logbook #10; ss = Split Spoon
BZ = Breathing zone

Ebasco Services, Inc. Log of Boring

Boring Number: SL-AB-95

Location: N765662.49 E675266.58

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-03-88 Date Completed: 11-03-88

Field Geologist: M. CONTOS

Elevation: 1506.2' GW Depth: NA

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Profile	USCS Class	Material Description	Collection Time Date	Comments
SR-AB 95-01	0	NA	NA		SP/FILL	0-6" - Brown coarse to fine SAND, some gravel, subrounded, trace silt	0935 11-02-88	at 0-6" Sample HNu= Oppm
	1							
	2							
	3							
	4							
	5							
	6							
	7							
SR-AB 95-02	8	18			GP	8'-10' - Dark grayish green coarse to fine GRAVEL, subangular/subrounded, some coarse sand, trace silt	0950 11-03-88	3" Split Spoon Oily Sheen. at 8-10' ss HNu= Oppm
	9	20						
	10	20						
	11	19						
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 10 FT.

Notes: H & S Logbook #10
ss = Split Spoon

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-101

Location: N769928.19 E673338.17

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-14-88 Date Completed: 11-14-88

Field Geologist: M. CONTOS

Elevation: 1497.6' GW Depth: 11'10"

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
	1		NA					
	2							
	3	16	71%		ML/FILL	2'-3' - Brown to dark brown SILT, little gravel, subrounded	1410 11-14-88	at 2-4' ss OVA= >100ppm BZ= 1ppm
	4	14			WASTE	3'-3.5' - Gray SILT, some fine gravel, dry, (waste)		
	5	14			SM/FILL	3.5'-4' - Black silty SAND, some (Fill = gravel)		3.5-4' is oily
	6	19						
	7							
SR-AB 101-01	8	7	100%		ML/SM	7'-8.5' - Gray to grayish brown mottled very fine SAND and SILT, moist	1420 11-14-88	3" OD Split Spoon 300 lb Hammer at 7-9' ss; OVA= >100ppm; BZ= 10- 15ppm; Had personnel back off-let vent
	9	8						
	10	12			GW/SW	8.5'-9' - Gray SAND and GRAVEL, sub-rounded		
	11	16						
	12							
	13	12	50%			12'-14' - Gray coarse SAND and GRAVEL, little silt, red mottling, wet	1455 11-14-88	at 12-14' ss OVA= 2ppm BZ= 0ppm
	14	10						
	15	12						
	16	11						
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

TOTAL DEPTH = 14'

Notes: Split Spoon had been opened a few minutes before OVA readings.
H & S Logbook #6; ss = Split Spoon; BZ = Breathing Zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-AB-102

Location: N769918.83 E673231.63

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-14-88 Date Completed: 11-14-88

Field Geologist: M. Contos

Elevation: 1496.1' GW Depth: 11'11"

Sampling Method: 2" OD Split spoon sampler

Driller: EMPIRE SOILS

Drilling Method: 8" OD Hollow stem auger

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
	1		NA					
	2							
	3	10	75%		ML	2'-4' - Brown to dark brown SILT, little sand, little coarse to fine gravel, subrounded	1110 11-14-88	at 2-4' ss OVA= >10ppm BZ= 0ppm
	4	12						
		31						
	4	13						
	5							
	6							
	7							
	8	2			ML	7'-9' - Dark gray SILT, little gravel, moist	1130 11-14-88	at 7-9' ss OVA= 5-7ppm BZ= 0ppm
	8	3						
	9	4						
		3						
	10							
	11							
	12							
	13	1			SM	12'-14' - Dark gray to black very fine SAND and SILT	1140 11-14-88	at 12-14' ss OVA= 30-50ppm BZ= 0ppm
		3						
	14	WOH/12"						
	15					TOTAL DEPTH = 14 Ft.		
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							

Notes: H & S Logbook #6; ss = Split Spoon; BZ = Breathing Zone

Ebasco Services, Inc. Log of Boring

Boring Number: SR-MW-65

Location: N768117.67 E675561.52

Project: SINCLAIR REFINERY SITE

Project Number: 8169

Date Started: 11-07-88 Date Completed: 11-07-88

Field Geologist: M. CONTOS

Elevation: 1500.1' GW Depth: 8.6'

Sampling Method: 2" OD SPLIT SPOON SAMPLER

Driller: EMPIRE SOILS

Drilling Method: 8" OD HOLLOW STEM AUGER

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
	1	NA	NA		ML	0'-6" - Brown SILT, organics	0900 11-07-88	at 0-6" ss HNU= 0ppm
	2							
	3							
	4							
	5	17	63%		GW	4'-6' - Reddish brown GRAVEL, angular/subangular, some fine sand, trace silt	0915 11-07-88	at 4-6' ss HNU= 0ppm
	6	33						
	7	23						
	8	21						
	9	4	13%		GW	8'-10' - Dark gray coarse to fine GRAVEL and coarse SAND, wet	0925 11-07-88	Oily sheen on sample. SS, HNU= 1.0ppm; BZ= 0.2ppm
	10	11						
	11	6						
	12	5	83%		GP/SP	10'-12' - Grayish brown GRAVEL and SAND, little silt	0940 11-07-88	at 10-12' ss HNU= 0.2ppm
	13	6						
	14	10						
	15	17						
	16	13						
	17							
	18							
	19	27	100%		GW	13'-13.5' - Dark gray coarse SAND and fine GRAVEL	1000 11-07-88	at 13-15' ss HNU= 0.8ppm
	20	55				13.5'-14.5' - Gray and yellow brown coarse SAND and GRAVEL (coarse-fine)		BZ during augering of 15-18'
	21	70				14.5'-15' - Yellow brown GRAVEL, angular, some very fine sand.		HNU= 0.6-1.0ppm
	22	62						
	23							
	24							
	25							
	26							
	27							
	28							
						TOTAL DEPTH = 18 FT.		

Notes: H & S Logbook #10
ss = Split Spoon; BZ = Breathing zone

Ebasco Services, Inc. Log of Boring

Project: SINCLAIR REFINERY
 Date Started: 12\14\88 Date Completed: 12\30\88
 Elevation: 1501.4' GW Depth: + 2 ft.
 Driller: EARTH DIMENSIONS

Boring Number: MWD-66
 Location: N769528.81 E672979.89
 Project Number: 8169-122
 Field Geologist: Burns
 Sampling Method: 2" OD Split spoon, 140lb. hammer
 Drilling Method: 8 1/4" ID Hollow Stem Auger - 0-72'
 4" OD Roller Bit - 72-110'

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	0							
	1							
	2							
	3							
	4							
MWD 66-1	5	3	75%		SW	4-6' - Dark gray coarse-fine SAND, some medium-fine gravel, little clayey silt with layers of dark gray clayey silt, little fine gravel		HNu= 15ppm; drill cuttings from approx 6.5' contain brick
	6	10						
		45						
	7	20						
	8							
	9							
	10							
MWD 66-2	11	20	33%		SW	10-12' - Olive coarse to fine SAND, some coarse to fine gravel little silt		Oil sheen on split spoon. HNu= 50ppm
	12	16						
		18						
	13	14						
	14							
MWD 66-3	15	5	71%		SW	15-17' - Olive gray coarse-fine SAND little medium-fine angular gravel, trace silt, small pocket of ~1cm diameter green/gray CLAY & SILT		HNu= 20ppm
	16	14						
		23						
	17	21						
	18							
	19							
MWD 66-4	20							
	21	2	33%		SM	20-22' - Gray medium to fine SAND, trace silt.		HNu= 7ppm Ave. >20ppm pK.
		8						
	22	11						
		18						
	23							
	24							
66-5	25	3	67%		SM	24-26' - Yellowish green medium to fine SAND, little silt		HNu= 150ppm BZ= 5.0ppm
		9						
	26	15						
		17						
	27							
	28							

Notes: Well is flowing, casing is two feet above ground surface.
 H & S Logbook #7; Ave. = Average; pK = Peak.

Ebasco Services, Inc. Log of Boring

Boring Number: MWD-66

Location: N769528.81 E672979.89

Project: SINCLAIR REFINERY

Project Number: 8169-122

Date Started: 12\14\88 Date Completed: 12\30\88

Field Geologist: Burns

Elevation: 1501.4' GW Depth: + 2 ft. above ground

Sampling Method: 2" OD Split Spoon, 140lb. hammer

Driller: EARTH DIMENSIONS

Drilling Method: 8 1/4" ID Hollow Stem Auger 0-72'

4" OD Roller Bit - 72-110'

Sample ID	Depth (feet)	Blows per 6"	Recover %	Profile	USCS Class	Material Description	Collection Time Date	Comments
	28							
MWD 66-6	29	WOH	29%		SM	29-31' - Olive brown medium to fine SAND, little silt		Oil noted on Split spoon. HNu= 50ppm Ave.; 100ppm pK.
	30	11						
	31	13						
	32							
	33							
	34							
MWD 66-7	34	1	50%		SM	34-36' - Gray medium to fine SAND, some silt.		HNu= 50ppm BZ= 3.0ppm
	35	4						
	36	6						
	36	20						
	37							
	38							
MWD 66-8	39	11	33%		GW	39-41' - Dark Gray coarse to fine angular GRAVEL, little sand, little silt (very wet)		Oil sheen noted on spoon. HNu= 5ppm
	40	42						
	41	52						
	41	43						
	42							
	43							
	44							
MWD 66-9	44	57	67%		SW	44-46' - Dark yellowish brown SAND, some rounded gravel, little silt, compact and dry		HNu= 1ppm
	45	40						
	46	45						
	46	96						
	47							
	48							
MWD 66-10	49	WOH	67%		SM	49-51' - Yellowish brown medium to fine SAND, little silt, with a layer of clayey silt = 1" width		HNu= 10ppm
	50	11						
	51	19						
	51	33						
	52							
	53							
	54							
MWD 66-11	54	33	29%		SW	54-54'10" - top 4" Dark brown coarse to fine SAND, little fine gravel, little silt (very wet)		HNu= 3ppm
	55	100/43			ML	Bottom 3" Brown silty CLAY, trace medium to fine rounded gravel		
	56							

Notes: H & S Logbook #7; BZ = Breathing Zone; Ave. = Average; pK = Peak.

Ebasco Services, Inc. Log of Boring

Project: SINCLAIR REFINERY
Date Started: 12\14\88 Date Completed: 12\30\88
Elevation: 1501.4 GW Depth: + 2 ft.
Driller: EARTH DIMENSIONS

Boring Number: MWD-66
Location: N769528.81 E672979.89
Project Number: 8169-122
Field Geologist: Burns
Sampling Method: 2" OD split spoon; 140lb. hammer
Drilling Method: 8 1/4" ID Hollow Stem Auger - 0-72'
4" OD Roller Bit - 72-110'

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	56							
	57							
	58							
MWD 66-12	59	21	46%		ML/CL	59-61' - Intermixed brown clayey SILT, some (-) fine sand, trace fine gravel (rounded) (till)		HNu= 0.4ppm
	60	21						
	61	44						
	62	80						
	63							
	64							
MWD 66-13	65	17	21%		CL/ML & ML	64-66' - Dark gray silty CLAY (till)		HNu= 0.0ppm
	66	24						
	67	37						
	68	54						
MWD 66-14	69	48	27%			68.5-70.5' - Dark gray silty CLAY, little (-) rounded fine gravel (till)		HNu= 0.0ppm
	70	37						
	71	44						
MWD 66-15	72	59	67%		ML/CL & ML	70.5-72.5' - Gray clayey SILT (till)		
	73	17						
	74	36						
MWD 66-16	75	36	50%			74-76' - Weathered gray SHALE fragments, top 4" is highly fractured		HNu= 0.2ppm
	76	48						
MWD 66-17	77	58	21%		SW	76-76'10" - Brown SAND, little clay, silt, and angular gravel little(+) medium-fine angular gravel		
	78	100/4"						
	79							
	80							
MWD 66-18	81	78	54%		SP	80-81'10" - Intermixed yellowish brown and brown medium-fine SAND, some angular medium-fine gravel, little clay and silt		HNu= 0.0ppm
	82	93						
	83	93						
	84	100/4"						

Notes: H & S Logbook #7

Ebasco Services, Inc. Log of Boring

Boring Number: MWD-66

Location: N769528.81 E672979.89

Project: SINCLAIR REFINERY

Project Number: 8169-122

Date Started: 12\14\88 Date Completed: 12\30\88

Field Geologist: R. Burns

Elevation: 1501.4' GW Depth: + 2 ft.

Sampling Method: 2" OD Split spoon; 140lb hammer

Driller: Earth Dimensions

Drilling Method: 8 1/4" ID hollow stem auger - 0-72'

Sample ID	Depth (feet)	Blows per 6"	Recover %	Pro-file	USCS Class	Material Description	Collection Time Date	Comments
	84							
MWD 66-19	85							
	86	100/4"	21%		SM	85-85'10" - Intermixed dark gray and reddish brown fine SAND, some clay and silt		HNu= 0.0ppm
	87							
	88							
	89							
	90							
MWD 66-20	91	100/5"	8%		GP	90-90'5" - Dark gray medium to fine angular GRAVEL, little fine gravel, trace silt		HNu= 0.0ppm
	92							
	93							
	94							
MWD 66-21	95	100/5"	21%		SW	95-95'5" - Intermixed blue & brown SAND, little clay and silt, trace gravel		
	96							
	97							
	98							
	99							
	100							
MWD 66-22	101	16	100%		ML/CL	100-102' - Dark gray clayey SILT, dry and compact (till)		
	102	26						
		38						
	103	42						
	104							
MWD 66-23	105	12	100%			104-106' - Dark gray clayey SILT, dry and compact (till)		
	106	18						
		28						
	107	41						
	108							
MWD 66-24	109	9	83%			108-110' - Dark gray clayey SILT, (till)		
	110	16						
		21						
	111	61						
	112					TOTAL DEPTH = 110 Ft.		

Notes: H & S Logbook #7

TABLE 5.33
UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487) [After USAWES (1967)¹]

Major Divisions		Group Symbols	Typical Abbrev.	Laboratory Classification Criteria															
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels: (More than half of coarse fraction is larger than No. 4-sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from gradation curves. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent More than 12 percent 5 to 12 percent	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3														
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines			Not meeting all gradation requirements for GW													
		GM ^a GC ^a	Silty gravels, gravel-sand-silt mixtures				Atterberg limits below "A" line or P.I. less than 4												
								GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line with P.I. greater than 7									
		SW SP	Well-graded sands, gravelly sands, little or no fines Poorly graded sands, gravelly sands, little or no fines				$C_u = \frac{D_{60}}{D_{10}}$ greater than 5; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3												
								SM ^a SC ^a	Silty sands, sand-silt mixtures Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. less than 4 Atterberg limits above "A" line with P.I. greater than 7									
	Sands: (More than half of coarse fraction is smaller than No. 4-sieve size)	Clean sands (little or no fines)	Gravels with fines (Appreciable amount of fines)		Gravels with fines (Appreciable amount of fines)		Gravels with fines (Appreciable amount of fines)				Gravels with fines (Appreciable amount of fines)								
						SW SP		Well-graded sands, gravelly sands, little or no fines Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW										
										SM ^a SC ^a		Silty sands, sand-silt mixtures Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. less than 4 Atterberg limits above "A" line with P.I. greater than 7						
														SM ^a SC ^a	Silty sands, sand-silt mixtures Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. less than 4 Atterberg limits above "A" line with P.I. greater than 7			
																	SM ^a SC ^a	Silty sands, sand-silt mixtures Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. less than 4 Atterberg limits above "A" line with P.I. greater than 7

Plasticity Chart

¹ Division of GM and SM groups into subdivisions of d and u are for rock and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 25 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 25.
² Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example, GW-GC, well-graded gravel-sand mixture with clay binder.

LOG OF BORING NO. AB-1
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1508.5 ft. msl	
			FILL: Brown SILTY CLAY (CL)	
			FILL: Variable petrochemical waste material intermixed w/soil	12
			- w/petrochemical odor	28
5			- gray granular waste to 4'	3
			- black, tarry material with jelly-like consistency 4'-7'	
			- hard, dry granular ash-like material 7'-12'	9
10				6
			- black oily/tarry silt w/gravel 12'-14'	32
			- black silt and gravel, wet, w/oily film below 14'	28
15				90
				61
20			Dark gray SANDY SILT (ML), w/gravel	92
				131/6

COMPLETION DEPTH: 20.6 ft.
DATE: 04/25/84



SMC Martin Inc.

LOG OF BORING NO. AB-2
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1510 ft. msl	
			FILL: Gray SILTY CLAY (CL) w/sand pockets - w/gravel below 0.5'	17
			FILL: Variable petrochemical waste material intermixed w/soil - w/petrochemical odor	20
5			- gray pastey waste to 4'	110/8
			- gray and black silty, tarry and pastey material 4'-6'	100/6
			- w/gravel and cobble debris at 6'	
10			- sandy & gravelly fill 10'-11'	21
			- dark gray silty clay below 11'	44
15			Dark gray SILTY CLAY (CL) - w/some oil stains	26
20				
25				

COMPLETION DEPTH 14 ft.
DATE: 04/25/84



SMC Martin Inc.

LOG OF BORING NO. AB-3
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1508 ft. msl	
			FILL: Variable petrochemical waste material intermixed w/soil	
			- silty clay at surface	10
			- gray & white pastey material w/clay 0.2' to 1.5'	
			- black fine-grained waste and soil, laminated w/ash-like material	40
5				17
				8
				11
10			Gray SILTY SAND (SM)	
				9
15				
20				
25				
COMPLETION DEPTH: 12 ft. DATE: 04/26/84				SMC Morlin Inc.

LOG OF BORING NO. AB-4
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1500.5 ft. msl	
			Brown SANDY SILT (ML), w/some clay content	17
			Brown medium SAND (SP) - w/gravel below 2.5'	42
5			- brown and gray below 5'	24
10				
15				
20				
25				

COMPLETION DEPTH: 6 ft.
DATE: 04/26/84



SMC Mortin Inc.

LOG OF BORING NO. AB-5
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION	
			SURF EL: Approx. 1503.5 ft. msl		
			FILL: Brown clayey silt, sand, and gravel-size rock fragments	24	
			FILL: Brown medium sand and gravel-size rock fragments	43	
5			FILL: Black ash-like fine grained material	39	
			Gray GRAVELLY SAND (SW) w/waste stains	18	
10				35	
15					
20					
25					

COMPLETION DEPTH: 10 ft.
DATE: 04/27/84



SMC Morlin Inc.

LOG OF BORING NO. AB-6
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1508 ft. msl	
			FILL: Brown silty sand and gravel-size rock fragments	123
				153
5			- w/some silty clay below 5'	157
				100
			- clayey sand below 9'	77
10			Tan SANDY SILT (ML)	
			- w/clay pockets	99
15				
20				
25				

COMPLETION DEPTH: 12 ft.
DATE: 04/27/84



SMC Mortin Inc.

LOG OF BORING NO. AB-7
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1504.5 ft. msl	
			FILL: Variable petrochemical waste material intermixed w/soil	
			- brown silty clay at surface	4
			- w/white pastey and black tarry material 0.3' to 2.5'	3
5			- w/petrochemical odor below 2'	1
			- w/black ash-like material @ 2.5'	
			- black and gray sludgy material and silt fill 2.5'-8'	3
			- black silty clay fill and pastey, oily waste material 8'-12'	2
10				12
			- black silty fill material below 12'	
				61
15				43
				78
			Gray SANDY SILT (ML)	
20			- w/gravel and brown and red mottling	60
25				
COMPLETION DEPTH: 20 ft. DATE: 04/28/84				 SMC Morlin Inc.

LOG OF BORING NO. AB-8
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1508.5 ft. msl	
			FILL: Variable petrochemical waste material intermixed w/soil	10
			- brown clayey silt at surface	
			- coarse gravel and black sludgy waste material 0.3'-6.5'	27
5				9
			- white and dark gray sludgy material 6.5'-8'	7
			- sludge, clay, and Fuller's Earth 8'-9'	
			- white pastey sludge w/wood fiber 9'-14'	26
10				13
				8
			- black gravelly sand and clayey sand below 14'	
15				55
				128
			Dark gray SAND (SW)	46
20			- w/some silt, and gravel-size rock fragments	

25				

COMPLETION DEPTH: 22 ft.
DATE: 05/01/84



SMC Morlin Inc.

LOG OF BORING NO. AB-9
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1511.5 ft. msl	
			FILL: Variable petrochemical waste material intermixed w/soil	
			- tan silty clay to 0.5'	11
			- silty fill 0.5'-2'	
			- gray and white pastey, sludgy material and silt 2'-9.5'	16
5				17
				10
			- Black silt and tarry, oily waste material of jelly-like consistency 9.5'-16'	4
10				4
				16
				101
			- Black gravelly sand w/oil film 16'-19'	68
			- gray clay and gravel, w/oil film	70
20				
			Brown and gray GRAVELLY SAND (SW)	84
			- w/some silt below 22'	173
25				

COMPLETION DEPTH 24 ft.
DATE: 05/01/84



SMC Martin Inc.

LOG OF BORING NO. AB-10
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1511.5 ft. msl	
			FILL: Gray CLAYEY FINE SAND (SC)	7
			FILL: Variable petrochemical waste material intermixed w/soil - Gray and brown pastey sludge, silt and gravel to 7'	12
5				4
			- Black tarry, oily waste w/jelly-like consistency, and silt 7'-15'	6
				4
10				0
				15
15			- Gray and brown sand and gravel w/oil stains	59
				93
			Gray GRAVELLY SAND (SW)	82
20				85
25				

COMPLETION DEPTH: 22 ft.
DATE: 05/01/84



SMC Martin Inc.

LOG OF BORING NO. AB-11
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1511 ft. msl	
			FILL: Variable petrochemical waste material intermixed w/soil	
			- Brown silty sand w/black slag chips and gravel to 2'	17
			- Brown silty sand w/reddish brown mottles 2'-6'	9
5				7
			- Black oily, silty sludge of jelly-like consistency 6'-16'	1
				0
10				1
				14
15				28
			- Black silty sand w/gravel	54
				45
20			Gray GRAVELLY SAND (SW)	117
				120
25			- light brown below 24'	105

COMPLETION DEPTH: 26 ft.
DATE: 05/02/84



SMC Martin Inc.

LOG OF BORING NO. AB-12
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1508.5 ft. msl	
			FILL: Gray and brown SILT (ML) w/black streaks	14
			FILL: Variable petrochemical waste material intermixed w/soil - black sludge and silt w/white nodules to 6.5'	13
5				8
			- dark gray pastey sludge 6.5'-8'	38
			- black silt and sand w/black liquid below 8'	46
10				23
				60
15			Gray GRAVELLY SAND (SW) w/clay pockets	131
				117
20				
25				

COMPLETION DEPTH: 18 ft.
DATE: 05/02/84



SMC Mortin Inc.

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1498 ft. msl	
			FILL: Gravel	
			Gray and brown SILTY SAND (SM)	110
			- w/gravel-size rock fragments and petrochemical odor	131
5			Gray coarse SAND (SW), wet	48
			- w/gravel-size rock fragments, clay seams and oily film	40
				49
10				60
15				
20				
25				

COMPLETION DEPTH: 12 ft.

DATE: 04/28/84



SMC Martin Inc.

LOG OF BORING NO. AB-14

SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1498.3 ft. msl	
			FILL: Brown SILTY SAND - w/gravel-size rock fragments	36
				27
5				22
			Light brown fine SANDY SILT (ML) - w/gravel-size rock fragments, black streaks and petrochemical odor	51
			Gray medium to coarse grained SILTY SAND (SM)	48
10			- w/rounded pebbles	
			- w/gravel-size rock fragments	83
			- w/some clay layers	
			- w/oily appearance and petrochemical odor	43
15				82
				40
20				
25				
COMPLETION DEPTH: 18 ft. DATE: 04/22/84				 SMC Martin Inc.

LOG OF BORING NO. AB-15
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1498.5 ft. msl	
			Gray and Brown SILTY SAND (SM)	43
			- w/gravel-size rock fragments	21
			- w/petrochemical odor to 10'	
5				39
				70
				84
10				83
			- coarse grained w/some clay seams below 10'	87
15				
20				
25				
COMPLETION DEPTH: 14 ft. DATE: 04/28/84				 SMC Martin Inc.

LOG OF BORING NO. AB-16
SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1498.7 ft. msl	
			Gray and Brown SILTY SAND (SM)	13
			light Gray and Brown CLAYEY FINE SAND (SC) - w/black stains with petrochemical odor	30
5			Gray SANDY CLAY (CL) - w/angular and rounded rock fragments - w/black stains with petrochemical odor	66 52 70
10				66
			Brown and Gray medium SILTY SAND (SM) - w/gravel-size rock fragments (½-1")	100
15				33
				48
20				41
25				

COMPLETION DEPTH: 20 ft.
DATE: 04/30/84



SMC Morlin Inc.

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5



LOG OF BORING NO. AB-18
SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1499.3 ft. msl	
			FILL: Brown Sand and Gravel	67
				71
5				15
			Gray SILTY CLAY (CL) - w/some sand and petrochemical odor	67
			Gray SAND and GRAVEL (GW) - w/rock fragments 1/2-3/4"	47
10				79
				116
15				
20				
25				

COMPLETION DEPTH: 16 ft.
DATE: 04/30/84



SMC Martin Inc.

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL: Approx. 1499.5 ft. msl	
			Brown and Gray SILTY CLAY (CL) - w/gravel-size rock fragments	29
				17
5			Dark Gray medium to coarse grained SAND (SP) - w/ gravel and petrochemical odor	36
				63
				39
10				71
				73
15				66
				30
20				
25				

COMPLETION DEPTH: 18 ft.

DATE: 04/30/84



SMC Martin Inc.

LOCATION: See Figure 3-5



LOG OF BORING NO. AB-21
SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1495.5 ft. msl	
			Dark Brown SILTY CLAY (CL)	19
			- w/light brown sandstone fragments	68
5			Light Brown fine to medium grained CLAYEY SAND (SC)	139
			- w/gravel-size rock fragments	115
10			Light Brown coarse SAND and GRAVEL (SW)	48
				13
				20
15				
20				
25				

COMPLETION DEPTH: 14 ft.
DATE: 05/01/84



SMC Martin Inc.

LOG OF BORING NO. AB-22
SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1498.3 ft. msl	
			FILL: Gray and Brown SILTY SAND (SM)	199
			- w/wood pieces & gravel	
			- petrochemical odor	70
5			Gray and Black SILTY SAND (SM)	10
			- w/gravel	16
				34
10			- w/petrochemical odor	20
			Brown and Gray SANDY CLAY (CL)	11
			- w/gravel	
15			Brown GRAVELLY SAND (SW)	130
				91
20			Brown and Gray medium grained SAND (SP)	24
				12
25				

COMPLETION DEPTH: 22 ft.
DATE: 05/02/84



SMC Martin Inc.

LOG OF BORING NO. AB-23

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1495.8 ft. msl	
			FILL: Dark Brown SILTY SAND and GRAVEL	98
			- Black Gray cinder-like material at 1.5'	
			- Light Brown and gray cinder-like material at 1.5'-3'	
			- Gray Silty Clay w/woody fibers below 3'	56
5			Gray and Black SILTY CLAY (CL)	54
			- w/gravel	54
			- w/light gray sandstone fragments below 9'	56
10				137
			Gray coarse SAND and GRAVEL (GW)	115
15				70
			Light Brown SILTY CLAY (CL)	69

20				
25				

COMPLETION DEPTH: 18 ft.
DATE: 05/03/84

SMC Martin Inc.

LOG OF BORING NO. AB-24
SINCLAIR REFINERY- REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1497.2 ft. msl	
			FILL: Brown and Black SILTY CLAY - w/gravel and cinders	58 114 5/6
5			Gray SILTY SAND (SM) - w/black streaks and petrochemical odor	14 36
10			- w/gravel-sized rock fragments below 9' w/clay seams below 10'	77 72
15			Gray and Brown coarse SAND and GRAVEL (GW) - w/gravel-sized rock fragments	115 125 160
20				
25				
COMPLETION DEPTH: 18 ft. DATE: 05/03/84				 SMC Martin Inc.

LOG OF BORING NO. AB-25

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1495.5 ft. msl	
			Brown and Gray SILTY SAND (SM)	68
				28
				11
			- w/petrochemical odor below 8'	16
10				33
			Black coarse SAND and GRAVEL (GW)	58
			- w/petrochemical odor	59
15			Gray fine to medium grained SAND (SW)	34
				57
20				35
			- w/clay seams 22'-24'	69
				105
				116
			- w/gravel-sized rock fragments below 28'	106
30				94
			Gray SAND and GRAVEL (GW)	142
			- w/clay seams to 36'	115
35				186 1/6
				—
40				104
				157
				154
				179
				100 1/5
50				170 1/5

COMPLETION DEPTH: 50 ft.
DATE:

SMC Martin Inc.

**SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK**

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1494.5 ft. msl	
			Pavement	
			Brown and Gray SILTY SAND (SM) - w/gravel-sized rock fragments - w/black streaks and petrochemical odor	120
5			Brown and Gray SAND and GRAVEL (SW) - w/some clay pockets	35
				51
				86
10			- w/black streaks with petrochemical odor 9'-10'	74
				87
				139
15			- w/gray sandstone fragments below 16'	185
20				
25				

COMPLETION DEPTH: 17 ft.

DATE: 05/04/84



SMC Martin Inc.

LOG OF BORING NO. AB-27

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1494.5 ft. msl	
			Pavement	
			Brown and Gray SILTY CLAY (CL)	59
			- w/roots to 3'	
			- w/gray streaks below 3'	17
5				19
				62
10			Light Gray SAND and GRAVEL (GW)	62
				99
				159
15				111
				112
20				
25				

COMPLETION DEPTH: 19 ft.
DATE: 10/04/84

SMC Marlin Inc.

LOG OF BORING NO. AB-28
SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1496.3 ft. msl	
			FILL: Brown SILTY CLAY	64
			- w/gravel and wood	70
			- w/black gravel-like cinders	27
5				
			Gray SILTY CLAY (CL)	52
			-w/black streaks	
10			Gray coarse SAND and GRAVEL (SW)	93
				150
			- w/petrochemical odor	112
15			- w/oily sheen below 14'	82
				61
20				
25				

COMPLETION DEPTH: 18 ft.
DATE: 05/04/84



SMC Martin Inc.

LOG OF BORING NO. AB-29

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1496.5 ft. msl	
			FILL: Brown SANDY CLAY - w/black cinder-like material	17
			Gray SILTY CLAY (CL) - w/some gravel	23
5				
10				
15				
20				
25				

COMPLETION DEPTH: 6 ft.
DATE: 05/04/84

SMC Martin Inc.

**SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK**

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1496.8 ft. msl	
			FILL: Light Brown SANDY CLAY - w/red brick and cinders to 1' - w/gravel below 1'	140 66
5			Gray and Brown SILTY CLAY (CL) - w/sand seams	27 80 79
10			Gray coarse SAND and GRAVEL (SW) - w/petrochemical odor	58 82 129 103
15				
20				
25				

COMPLETION DEPTH: 18 ft.

DATE: 05/04/84



SMC Mortin Inc.

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

LOCATION: See Figure 3-5

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF. EL: Approx. 1494.5 ft. msl	
			FILL: Asphalt and Gravel	50
5				37
			Gray SILTY CLAY (CL) - w/petrochemical odor	26
			- w/wood chips and gravel-sized rock fragments	55
10			Gray SAND and GRAVEL (GM) - w/petrochemical odor - w/ some silt	51
				128
15				198
				135
20				
25				

COMPLETION DEPTH: 19 ft.

DATE: 05/05/84



SMC Martin Inc.

LOG OF BORING NO. AB-32

SINCLAIR REFINERY-REFINERY AREA
WELLSVILLE, NEW YORK

TYPE: 2½-inch Split-spoon sampler

LOCATION:

See Figure 3-5

DEPTH, FT	SYMBOL SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
		SURF EL: Approx. 1494.8 ft. msl	
		Brown and Gray SILTY CLAY (CL) - w/some gravel	61
5			39
		- w/orange and brown sandstone fragments	48
			87
10		Gray and Brown SAND and GRAVEL (GM) - w/petrochemical odor	94
			43
15			218
			163
20			
25			
COMPLETION DEPTH: DATE:			 SMC Martin Inc.

LOG OF BORING NO. AB-33

SINCLAIR REFINERY-LANDFILL AREA
WELLSVILLE, NEW YORK

6-1/4-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL. 1509.0 ft msl	
10			Light brown fine SAND (SP) - w/gravel and some silt	
		X	Greenish brown GRAVELLY SAND (GW)	56
20		X	Brownish gray SILTY CLAY (CL)	39
		X		17
30				
COMPLETION DEPTH 27ft DATE 4-23-85				 SMC Martin Inc

LOG OF BORING NO. AB-34

SINCLAIR REFINERY-LANDFILL AREA

WELLSVILLE, NEW YORK

6-1/4-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS FOR 2' PENETRATION
			SURF EL. 1502.6 ft msl	
			Dark brown SILT (ML) - w/some clay, roots and twigs - with petrochemical odor	1
			Brownish black GRAVELLY SAND (SP) - w/some silt - with petrochemical odor	79
10			Brown SANDY GRAVEL (GW) - w/petrochemical odor	34
				97
20				156 12
				229 18
30			Brownish gray SILTY CLAY (CL)	51
				23
40				17

COMPLETION DEPTH 42 ft.
DATE 4-25-85

SMC Martin Inc

BORING NO. : AB-35

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.06		
5		X	BROWN SILTY SAND (SM) -SOME GRAVEL		
10		X	SANDY CLAY (SC) DARK GRAY -PETROCHEMICAL ODOR 5'-17'	15	
15		X	GRAY SILTY SAND (SM)	59	
		X		81	
COMPLETION DEPTH : 17 FT. DATE : 1 / 8 / 86					



SMC MARTIN INC.

BORING NO. : AB-37

2.50" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES.	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.68		
5		X	SILTY SAND (SM) GRAY - SOME GRAVEL - PETROCHEMICAL ODOR	20	20.0
10		X	GRAVELLY SAND (SW) GRAY	68	0
15		X		39	
20		X			
25		X	CLAY (CL) GRAY - WITH SILT LENSES	0	
30		X		28	0
35		X		17	
				19	

COMPLETION DEPTH : 37 FT.
DATE : 10 / 16 / 86



SMC MARTIN INC.

BORING NO. : AB-38

2.50" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

[illegible]

COMPLETION DEPTH : 37 FT.
DATE : 10 / 15 / 86



SMC MARTIN INC.

BORING NO. : AB-39

2.50" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1500.30		
		X	SILTY CLAY W/ FINE SAND (CL) BROWN		0
		X	SILTY CLAY (CL) W/ FINE SAND AND GRAVEL (GC) BROWNISH GRAY	39	0
-10-		X	SILTY CLAY (CM) W/ FINE SAND/GRAVEL BROWNISH GREY	10	25
		X	SILTY GRAVEL (GM) GRAY - DECREASING AMOUNT OF SILTY CLAY W/ DEPTH	36	0
-20-		X		122	6
		X		210	0
-30-		X	SANDY GRAVEL W/ SOME FINES (GP) GRAY	138	0
		X	SILT AND SOME GRAVEL W/ SOME FINE SAND (GM) GRAY	190	0
-40-		X	SILT W/ SOME GRAVEL AND FINE SAND (ML) GRAY - SOILS TURN BROWN AT 50'	197	0
		X		133	0
-50-		X		160	8
		X	SILTY SAND (SM) AND GRAVEL (GP) BROWN	230	0
-60-		X	FINE SAND (SW) BROWN	236	0
-70-					

COMPLETION DEPTH : 62 FT.
DATE : 10 / 23 / 86



SMC MARTIN INC.

BORING NO. : AB-40

TYPE : 2.50" HOLLOW-STEM AUGER
2.25" SPLIT-SPOON SAMPLER

LOCATION : SINCLAIR REFINERY
WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1504.14		
5		X	SANDY SILT (SM) - SMALL ROUNDED GRAVEL	12	.5
10		X		14	0
15		X			
20		X	SAND AND GRAVEL (SP) - MEDIUM TO FINE GRAINED SAND	38	1.5
25		X		31	1.0
30		X		100 3	1.5
35		X	SILTY CLAY (CL) - SOME GRAVEL - INCREASED AMOUNTS OF GRAVEL	89	0
40		X		239	0
				100 3	0

COMPLETION DEPTH : 42 FT.
DATE : 10 / 14 / 86



SMC MARTIN INC.

BORING NO. : AB-41

2.50" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.62		
		X	SILTY SAND (SM) BROWN AND BLACK		0
5		X		36	0
10		X	SILTY CLAY (CL) LIGHT BROWN - SOME SAND - GRAVEL - PETROCHEMICAL ODOR	79	20.0
15		X		37	5.0
20		X	SILTY CLAY (CL) GRAY	40	.5
25		X		30	1.0
30		X		26	.5

COMPLETION DEPTH : 32 FT.
DATE : 10 / 16 / 86



SMC MARTIN INC.

BORING NO. : AB-42

2.50" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1501.33		
		X	SILTY SAND (SM) & GRAVEL (GP) BROWN	1	0
5		X	SILTY CLAY (CM), BROWN - IRON STAINING	16	0
10		X	SILTY SAND (SM), BROWNISH/GRAY - IRON STAINING	22	0
15		X	SAND AND GRAVEL (SW), GRAY	63	0
20		X	SILTY GRAVEL (GM), GRAY	107	0
25		X			
30		X	CLAY (CL), GRAY - SOME SILT LENSES		
35		X			0

COMPLETION DEPTH : 35 FT.
DATE : 10 / 20 / 86



SMC MARTIN INC.

BORING NO. : AB-43

2.25" HOLLOW-STEM AUGER
TYPE : 2.00" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	OVM / OVA READING (PPM)
			SILTY SAND (SM) BROWN - ROOTS/STEMS	-	0
5		X	SILTY SAND - W/GRAVEL (GM) BROWN	66	0
10		X	CLAYEY SILT (CL)	101	1
15			- MEDIUM GRAINED SANDSTONE	100 0	

COMPLETION DEPTH : 13.5 FT.
DATE : 11 / 3 / 86



SMC MARTIN INC.

BORING NO. : AB-44

2.25" HOLLOW-STEM AUGER
TYPE : 2.00" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	OVM / OVA READING (PPM)
			CLAYEY SAND (ML) GRAY - ROOTS, STEMS		0
5		X	CLAYEY SAND (CL) - GRAVEL	100 5	0
10		X	CLAYEY SAND (ML) - GRADED GRAVEL	131	0
15		X	SILTY CLAY W/ SOME GRAVEL (CL)	43/ 100 4	0
20			- MEDIUM GRAINED SANDSTONE		
25					
30					

COMPLETION DEPTH : 15.5 FT.
DATE : 11 / 3 / 86



SMC MARTIN INC.

BORING NO. : AB-45

2.25" HOLLOW-STEM AUGER
TYPE : 2.00" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	QVM / OVA READING (PPM)
		X	SILTY CLAY (CL) W/ MINOR SAND BROWN ROOTS AND STEMS		0
5		X	SANDY CLAY (SC) BROWN	51	1.5
10		X	GRAVELLY SAND (GM) BROWN TO GRAY	79	1.0
15		X		204	1.5
20		X		119	0
25		X		131	0
30		X			
35		X	CLAY W/MINOR GRAVEL (GC) GRAY	44	0
		X		73	0
40		X	SILTY CLAY W/MINOR GRAVEL AND SANDSTONE BEDROCK FRAGMENTS		0
				100 .4	

COMPLETION DEPTH : 42 FT.
DATE : 11 / 4 / 86



SMC MARTIN INC.

BORING NO. MW-1
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 769, 044
E 673, 308

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS
			SURFACE ELEV. 1505.92 ft msl		Protective Casing with Lock
			Brown SANDY SILT (ML)		Stick-Up, 0'
			- clayey silt to 1'	19	Cement-Bentonite Grout Column
			- with oil stains to 2'	42	
			- with gravel-size rock fragments 4'-14'	59	Bentonite Seal
5				112	
				130	Filter Sand
10				137	
				184	2" Galvanized Well Screen with 0.010" Slots
			- silty clay layer at 14'	-	
15				108	
			Brown GRAVELLY SAND (SW)	125	
				95	
20					Nominal Bore-hole Diameter, 6"
25					

COMPLETION DEPTH 23 ft
DATE 05/04/84



SMC MARTIN INC.

BORING NO. NW-2
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split-barrel sampler

LOCATION N 767, 040
E 675, 264

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLows FOR 2" PENETRATION	WELL COMPLETION DETAILS
			SURFACE ELEV: 1508.94 ft ms		Protective Casing with Lock
			Brown to black SILTY SAND (SM)		Stick-Up, 1.78'
			- silty fine sand to 3'	7	
			- tan and dark gray 3'-5'	12	
5			- dark gray, brown and black, with organic matter and some gravel below 5'	27	Cement-Bentonite Grout Column
			Dark brown to black SILT with organic matter (ML-NH)	46	2" Galvanized Riser Pipe
			Brown SAND (SW)	43	
10			- with trace of silt	77	Bentonite Seal
			- with coarse gravel below 11'		Filter Sand
			Gray and Black SILTY SAND (SM)	37	
15			- with organic matter to 15'	47	
			- with visible oil contamination to 15'		2" Galvanized Well Screen with 0.010" Slots
			- with orange stains below 15'		
			Gray GRAVELLY SAND (SW)	82	
20			- with orange stains to 17'	61	
			- medium brown, with silt seams 17'-19'	103	
			- light to reddish brown below 19'		
			Brown SANDY SILT (ML)	80	Nominal Bore-hole Diameter, 6"
25			- with gravel		
			Brown SILTY CLAY (CL)	34	

COMPLETION DEPTH 27 ft
DATE 03/02/84

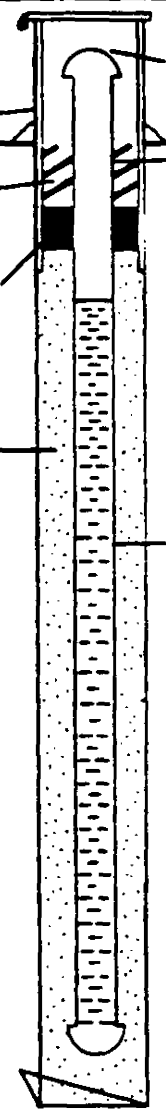


SMC MARTIN INC.

BORING NO. MW-3
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

N 767, 632
 E 675, 756

TYPE 2-1/4" split spoon

DEPTH, FT	SYMBOL	DESCRIPTION OF MATERIALS	FLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS
		SURFACE ELEV. 1498.24 ft msl		 Stick-Up, 2' 2" Galvanized Rise Pipe Bentonite Seal Filter Sand 2" Galvanized Well Screen with 0.010" Slots Nominal Bore-hole Diameter, 6"
		Brown SANDY SILT (ML)	5	
		Brown and tan SANDY SILT (ML) and GRAVEL	67	
5		- with petrochemical odor and oil sheen	48	
			70	
10		Interlayered tan SILTY SAND (SM) and SANDY SILT (ML)	108	
		- with gravel-size rock fragments	89	
15		- tan and brown below 15'	260	
			85	
20			125	
25				

COMPLETION DEPTH 19 ft
 DATE 04/28/84

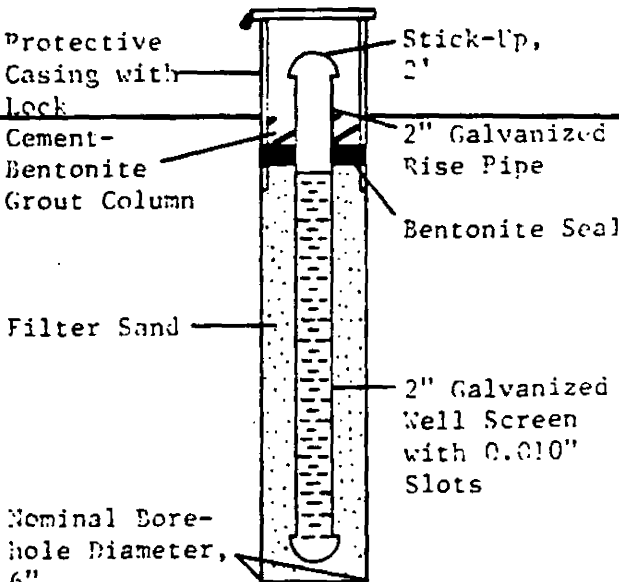


SMC MARTIN INC.

BORING NO. MW-4
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

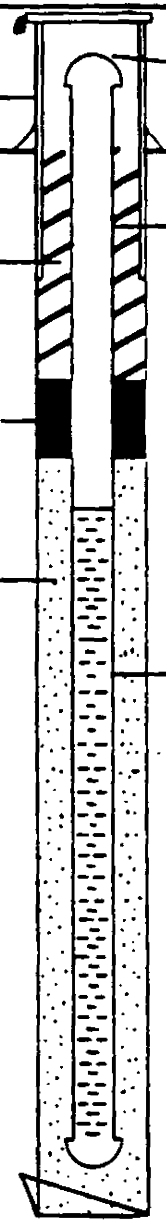
LOCATION N 768, 016
E 675, 808

DEPTH, FT		SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLAWS FOR 2 PENETRATION	WELL COMPLETION DETAILS	
				SURFACE ELEV: 1497.44 ft msl			
				Tan SILT (ML) - with gravel	51 61		
5				Tan SILTY SAND (SM) - with gravel-size rock fragments	93 40 18 26		
10							
15				Greenish gray SANDY CLAY (CL) - with silt pockets and gravel	38 27 23 19		
20							
25				Greenish gray SILTY CLAY (CL)	23 22 19 22		
30							
35				Gray CLAY (CH)	18 12 20 18 27 15 14 31 15 27 17 11 33 24 36 25 20 27 28		
40							
45							
50							
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70				Gray SILTY CLAY (CL)	30 25 20 39		
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BORING NO. MW-5
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 768, 152
E 675, 360

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS
			SURFACE ELEV. 1499.60 ft msl		 Protective Casing with Lock Stick-Up, 2' Cement-Bentonite Grout Column 2" Galvanized Rise Pipe Bentonite Seal Filter Sand 2" Galvanized Well Screen with 0.010" Slots Nominal Bore-hole Diameter, 5"
5			Brown SILT (ML) - with black oil stains - with gravel - tan 4'-6'	11 37 20	
10			Black SILTY SAND (SM) - with oily sheen and clay pockets and gravel	31 40 26 43	
15			Tan SANDY SILT (ML) - with gravel	135 235 245 178	
20					
25					

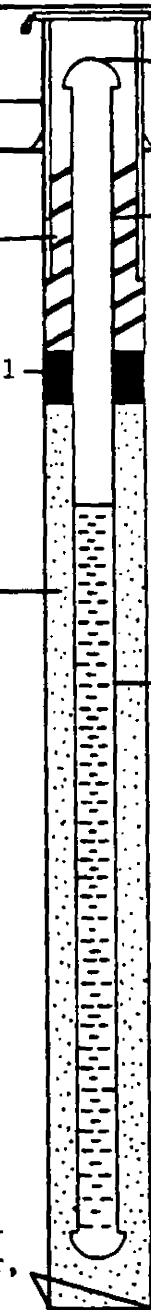
COMPLETION DEPTH 21 ft
DATE 04/25/84

 **SMC MARTIN INC.**

BORING NO. MW-6
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

• LOCATION N 768, 024
 E 675, 100

DEPTH, FT	SYMBOL SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS
		SURFACE ELEV. 1501.34 ft msl		 Protective Casing with Lock Stick-Up, 2' 2" Galvanized Rise Pipe Cement-Bentonite Grout Column Bentonite Seal Filter Sand 2" Galvanized Well Screen with 0.010" Slots Nominal Bore-hole Diameter, 6"
5		Brown GRAVELLY to SANDY SILT (ML)	13	
		- with clay pockets at 5'	18	
10		- with gravel-size rock fragments below 7'	85	
		- tan and gray, very gravelly below 13'	51	
15			71	
20			106	
			105	
			109	
25			152	

COMPLETION DEPTH 23 ft
 DATE 05/23/84



SMC MARTIN INC.

BORING NO. MW-7
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 768, 816
E 674, 532

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2 PENETRATION	WELL COMPLETION DETAILS
			SURFACE ELEV 1498.39 ft msl		Protective Casing with Lock
			Black SANDY SILT (ML)		Stick-Up, 2'
			- with oil contamination and petrochemical odor	6	Cement-Bentonite Grout Column
				8	
5				8	Bentonite Seal
			- gray below 7'	4	
				26	Filter Sand
10				92	
			- with rounded gravel below 12'	66	
15					2" Galvanized Well Screen with 0.010" Slots
			Gray SILTY CLAY (CL)	23	
				46	
20				38	
				48	Nominal Bore-hole Diameter, 6"
25					

COMPLETION DEPTH 25 ft
DATE 05/03/84



SMC MARTIN INC.

BORING NO. MW-8
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 768, 504
E 674, 164

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2 PENETRATION	WELL COMPLETION DETAILS	
					Protective Casing with Lock	Stick-Up, 1'
			SURFACE ELEV: 1498.47 ft msl			
			Brown and black GRAVELLY SAND (SW)	12	Cement-Bentonite Grout Column	2" Galvanized Rise Pipe
			- with organic debris below 2'	21	Bentonite Seal	
5			Brown SILTY CLAY (CL)	27		
			- with organic debris			
			Gray and black GRAVELLY SILT (ML)	59	Filter Sand	
			- with oily sheen	48		
10				92		2" Galvanized Well Screen with 0.010" Slots
				72		
15			Greenish gray and brown SILTY SAND (SM)	40		
			- with gravel-size rock fragments below 17'	49		
20				26	Nominal Bore-hole Diameter, 6"	
25						

COMPLETION DEPTH
DATE: 05/05/84

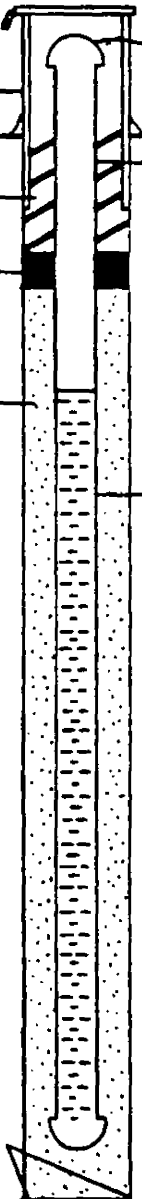


SMC MARTIN INC.

BORING NO. MW-9
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 769, 388
E 674, 064

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS
			SURFACE ELEV. 1497.54 ft msl		 Protective Casing with Lock Stick-up, 2' 2" Galvanized Rise Pipe Cement-Bentonite Grout Column Bentonite Seal Filter Sand 2" Galvanized Well Screen with 0.010" Slots Nominal Bore-hole Diameter, 6"
5			Brown SANDY SILT (ML) - with oil contamination and petrochemical odor	19	
10			- with rounded gravel below 11'	49	
15				74	
20			Tan GRAVELLY SAND (SW)	132	
25				127	
				112	
				115	
				51	

COMPLETION DEPTH 21 ft
DATE 05/04/84

 SMC MARTIN INC.

BORING NO. MW-10
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 770. 188
 E 673. 384

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FEET FOR 2 PENETRATION	WELL COMPLETION DETAILS	
					Protective Casing with Lock	Stick-Up, 2.4'
			SURFACE ELEV. 1495.98 ft msl			
			FILL: Black, charcoal-like organic debris and soil	14	Cement-Bentonite	2" Galvanized Rise Pipe
5				9	Grout Column	
			Greenish gray SILTY CLAY (CL) - with petrochemical odor and soil stains	15	Bentonite Seal	
				56		
10			Greenish gray SANDY SILT (ML) - with oily sheen - with rounded gravel below 14'	43	Filter Sand	
				49		
15				84		2" Galvanized Well Screen with 0.010" Slots
				121		
20				138		
				87		
				80	Nominal Bore-hole Diameter, 6"	
25			Gray CLAY (CH)	41		
				26		
				37		
30				21		
				14		
				27		
				7		
40				19		
				15		
				17		
				18		
				10		
50				19		
				8		
				18		
				20		
				14		
60				9		
				14		
				22		
				24		
				12		
70				22		
				16		
				22		
				22		
				12		
				26		

NOTE: Monitoring Well MW-10 was installed about 10 ft from the sampled soil boring which was grouted at completion.

COMPLETION DEPTH 79 ft
 DATE 04/30/84



SMC MARTIN INC.

BORING NO. MW-11
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE 2-1/4" split spoon

LOCATION N 770, 620
E 673, 215

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2 PENETRATION	WELL COMPLETION DETAILS	
					Protective Casing with Lock	Stick-Up, 2'
			SURFACE ELEV. 1494.33 ft msl			
			Brown CLAYEY SILT (ML)	12		
			Brown SAND (SW)	49	Cement- Bentonite Grout Column	2" Galvanized Rise Pipe
5			- sandy silt to 5'	44		
			- with gravelly sand layers below 8'	98	Bentonite Seal	
10				64		
				63	Filter Sand	
15				81		2" Galvanized Well Screen with 0.010" Slots
				85		
20				49		
				32		
			Greenish gray SILTY CLAY (CL)	32		
25				53	Nominal Bore- hole Diameter, 6"	

COMPLETION DEPTH 25 ft
DATE 05/02/84



SMC MARTIN INC.

BORING NO. MW-13

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOW COUNT PER FEET	WELL COMPLETION DETAILS	OVA READING (ppm)
			SURFACE ELEV 1511.8 ft msl		Protective Casing with Lock	
					Stick-up 2.14'	
			FILL: Variable petrochemical waste intermixed with clay	7	Cement/Bentonite Grout Column	ND
5				7		0.3
10				12		1.0
15				12		1.1
20			Brown medium SAND (SP) - w/rock fragments	51		0.3
25			Light brown SILTY GRAVEL (GW)	118	Bentonite Seal	ND
30				138		ND
35			Light brown GRAVELLY SAND (SW)	259	Filter Sand	0.2
40				66	Sand Bentonite Seal	ND
45			Gray SILTY CLAY (CL)	25	Sand	0.2
50				31	Nominal Borehole Diameter 7"	0.2

COMPLETION DEPTH 52 ft
DATE 04/24/85



SMC MARTIN INC.

BORING NO. MW-16

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK**

7-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2 IN INTRUSION	WELL COMPLETION DETAILS		O.V.A. READING (ppm)
					Protective Casing with Lock	Stick-up 1.99'	
			SURFACE ELEV. 1498.9 ft msl				
5			Dark brown SILT (ML) - w/roots and some sand	54	Cement/ Bentonite Grout Column	2" Galvanized Riser Pipe	.4
10			Grayish black SILTY SAND (SM)	9	Bentonite Seal		.2
15			Dark brown GRAVEL (GP) - w/some silt and fine sand	75			.4
20			- w/petrochemical odor and oily sheen to 20'	77		2" Galvanized Well Screen w/.010" Slots	.2
25			- rock fragments at 21'	53	Bentonite Seal		ND
30			Gray SILTY CLAY (CL)	14	Filter Sand		0.9
35				25			
					Nominal Borehole Diameter, 7"		

COMPLETION DEPTH 32 ft
DATE 4-22-85



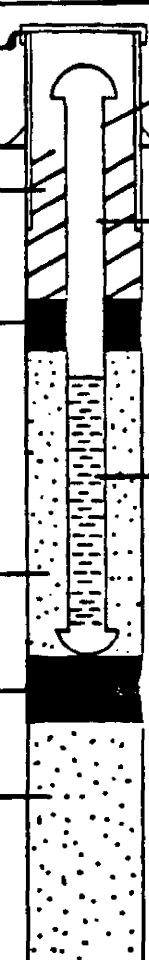
SMC MARTIN INC.

BORING NO. MW-19

SINCLAIR REFINERY WELLSVILLE, NEW YORK

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	O.V.A. READING (ppm)
			SURFACE ELEV. 1496.8 ft msl			
5			Brown GRAVELLY SAND (SW)	1	Cement/Bentonite Grout Column	ND
			- grayish brown, 5.5' - 10'	52	Bentonite Seal	ND
10				136		ND
15			- becoming sandier below 15'	208 / 18	Filter Sand	ND
20			Grayish brown SILTY CLAY (CL)	48	Bentonite Seal	ND
25				25	Filter Sand	ND
30				19		ND
35					Nominal Borehole Diameter, 7"	

COMPLETION DEPTH 32 ft
DATE 04/17/85



SMC MARTIN INC.

BORING NO. MW-20

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK**

7-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FEET FOR PENETRATION	WELL COMPLETION DETAILS	OVA READING (ppm)
			SURFACE ELEV 1515.4 ft msl		Protective Casing with Lock Stick-up 2.7' 2" Galvanized Riser Pipe 2" Galvanized Well Screen w/.010" Slots Nominal Borehole Diameter, 7"	
5			Light brown very fine SAND (SP) - w/gravel and some silt - w/roots and organic material grayish black below 5'	152	Cement/Bentonite Grout Column Bentonite Seal	ND
10			Greenish brown SANDY GRAVEL (GW)	62	Filter Sand	ND
15				59		0.1
20			Grayish brown SILTY CLAY (CL)	16	Bentonite Seal	0.1
25			- siltier below 25'	17	Filter Sand	0.1
30			Grayish brown CLAY (CH)	17		ND
35						

COMPLETION DEPTH 32 ft
DATE 04/23/85



SMC MARTIN INC.

BORING NO. MW-21

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS		O.V.A. READING (ppm)
			SURFACE ELEV 1501.3 ft msl				
			Brown SILTY SAND (SM) - w/roots and sticks - gray clay below 5'	10	Cement/ Bentonite Grout Column	2" Galvanized Riser Pipe	ND
5			Grayish brown SANDY GRAVEL (GW)	140	Bentonite Seal		ND
10				48	Filter Sand		ND
15			Grayish brown SAND (SP) - w/some gravel	29		2" Galvanized Well Screen w/.010" Slots	ND
20			Grayish brown CLAY (CH) - w/silt partings	21	Bentonite Seal		ND
25					Nominal Borehole Diameter, 7"		

COMPLETION DEPTH 22 ft
DATE 04/16/85

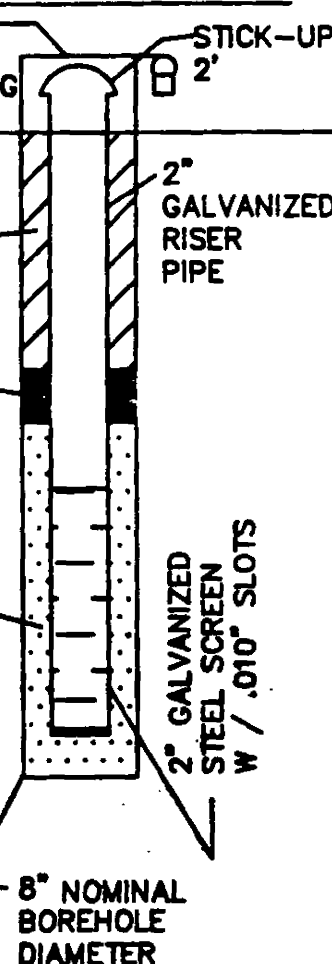


SMC MARTIN INC.

BORING NO. : MW-25

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVA / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1495.52		PROTECTIVE CASING W / LOCKING CAP	
		X	SANDY CLAY (SC) BROWN	1		0.7
5		X	SILTY CLAY (CL) BROWN	20		67.5
10		X	SANDY GRAVEL (GP) GREENISH GRAY	74		0.1
15		X		90		ND
20		X	-RUNNING SAND TO 25'	97		3.5
25		X	SILTY CLAY (CL) GREENISH GRAY	33		3.9

COMPLETION DEPTH : 25 FT.
DATE : 1 / 13 / 86



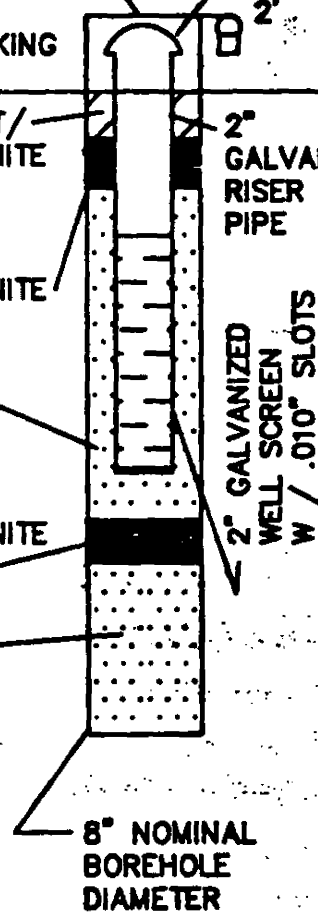
SMC MARTIN INC.

BORING NO. : MW-26

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1495.14		PROTECTIVE CASING W/LOCKING CAP STICK-UP 2'	
5		X	SANDY SILT (ML) BROWN - MINOR CLAY AND GRAVEL	-	CEMENT/BENTONITE GROUT	ND
10		X	SANDY GRAVEL (GM) BROWN - FINE-GRAINED SAND AND MINOR SILT - PETROCHEMICAL ODOR 5'-17'	45 31	BENTONITE SEAL FILTER SAND	0.6 22.5
15		X		100		0.6
20		X	SILTY CLAY (CL) GRAY	36	BENTONITE SEAL FILTER SAND	6
25		X		22		6.6
30						



COMPLETION DEPTH : 16 FT.
DATE : 1 / 9 / 86



SMC MARTIN INC.

BORING NO. : MW-27

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.46		PROTECTIVE CASING W/ LOCKING CAP	
					STICK-UP 2"	
			FILL: SILTY SAND (SM) BLACK - MINOR GRAVEL	1	CEMENT/ BENTONITE GROUT	0.8
5		X	SILTY CLAY (CL) BLACK - PETROCHEMICAL ODOR	6	2" GALVANIZED RISER PIPE	58.2
10		X	SANDY GRAVEL (GP) GREENISH GRAY - CONTAMINATED SILT POCKETS	40	BENTONITE SEAL	68.8
15		X		69		6.7
20		X	- OIL SOAKED	55	FILTER SAND	18.6
25		X		33	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	3.9
30		X	SILTY CLAY (CL) GREENISH GRAY		BACKFILL	1.7
35					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 28 FT.
DATE : 1 / 8 / 86



SMC MARTIN INC.

BORING NO. : MW-28

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVA / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.66		PROTECTIVE CASING W/ LOCKING CAP	
					STICK-UP 2'	
			SILTY SAND (SM) BROWN	1	CEMENT/BENTONITE GROUT	0.1
5		X	CLAY (CH) BROWN	12	2" GALVANIZED RISER PIPE	0.5
10		X	SANDY GRAVEL (GP) BLACK - PETROCHEMICAL ODOR 10'-25'	31	BENTONITE SEAL	18.4
15		X		71	FILTER SAND	8.9
20		X		100	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	3.2
25		X	SILTY CLAY (CL) GREENISH GRAY	18	BACKFILL	ND
30		X		14		1.2
35					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 21.5 FT.
DATE : 1 / 15 / 86



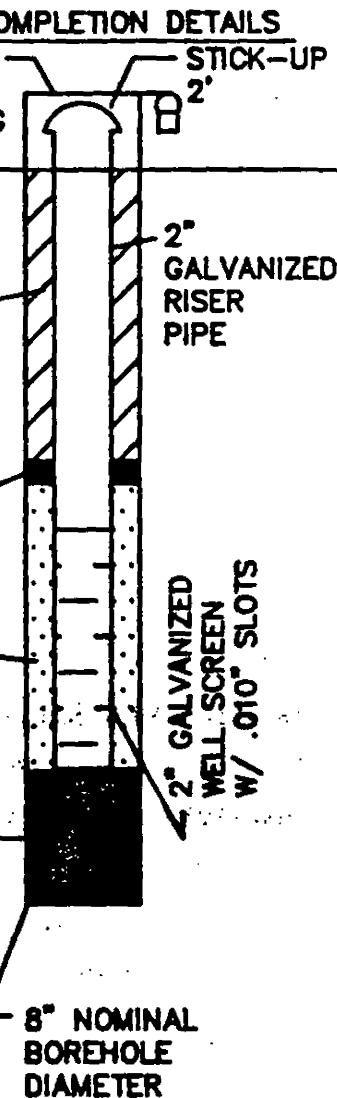
SMC MARTIN INC.

BORING NO. : MW-29

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.34		PROTECTIVE CASING W/ LOCKING CAP	
		X	FILL: SANDY GRAVEL (GW) DARK BROWN	1		10
5		X	SILTY CLAY (CL) GRAY	11	CEMENT/ BENTONITE GROUT	341
10		X	SANDY GRAVEL (GW) BLACK			
15		X	PETROCHEMICAL ODOR TO 22'	22	BENTONITE SEAL	5
20		X		38	FILTER SAND	0.3
25		X		103		11
30		X	SILTY CLAY (CL) GREENISH GRAY	79	BENTONITE SEAL	3.8
				11		4.0



COMPLETION DEPTH : 25 FT.
DATE : 12 / 19 / 85

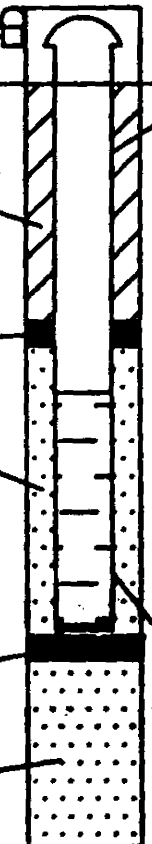


SMC MARTIN INC.

BORING NO. : MW-30

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS		OVM / OVA READING (PPM)
					PROTECTIVE CASING W/ LOCKING CAP	STICK-UP 2'	
			GROUND SURFACE ELEVATION (ft. MSL): 1497.84		 2" GALVANIZED RISER PIPE 2" GALVANIZED WELL SCREEN W/ .010" SLOTS 8" NOMINAL BOREHOLE DIAMETER		
5		X	SANDY SILT (ML) BROWN	1			0.2
		X		14			0.3
10		X	SILTY GRAVEL (GM) GRAY	43			8.2
15		X	-COARSE SAND TO 23'	45			0.5
20		X		47			0.6
25		X	SILTY CLAY (CL) GREENISH GRAY	15			0.9
30		X		14			0.5
35							

COMPLETION DEPTH : 23 FT.
DATE : 1 / 13 / 86



SMC MARTIN INC.

BORING NO. : MW-31

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1497.97		PROTECTIVE CASING W/LOCKING CAP STICK-UP 2'	
5		X	SANDY GRAVEL (GP) BROWN - PETROCHEMICAL ODOR AND OBVIOUS CONTAMINATION TO 15'	1 25	CEMENT/BENTONITE GROUT 2" GALVANIZED RISER PIPE	2.9 57.8
10		X	SANDY GRAVEL (GW) GRAY	56	BENTONITE SEAL	8.0
15		X		57	FILTER SAND	5.3
20		X		66		2.8
25		X	SILTY CLAY (CL) GREENISH GRAY	42	BENTONITE SEAL	2.0
30		X		33	FILTER SAND	ND
35					6" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 25 FT.
DATE : 1 / 6 / 86



SMC MARTIN INC.

BORING NO. : MW-32

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	Q/M / OVA READING (PPM)
			GROUND SURFACE ELEVATION (FT. MSL): 1497.97		PROTECTIVE CASING W/LOCKING CAP	
					STICK-UP 2'	
			CLAYEY SAND (SC) BLACK -SOME GRAVEL	1	CEMENT/BENTONITE GROUT	0.2
5				16	2" GALVANIZED RISER PIPE	0.3
			SILTY GRAVEL (GM) BROWN	90	BENTONITE SEAL	14.9
10						
			- PETROCHEMICAL ODOR 15'-30'	100		0.4
15						
				94	FILTER SAND	0.5
20						
			SAND (SW) GRAY	91	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	1.6
25						
				68		1.8
30			SILT (MH) GRAY			
						1.2
35			SILTY CLAY (CL) GRAY	27	BACKFILL	
40				26		1.2
					6" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 29 FT.
DATE : 1 / 17 / 86



SMC MARTIN INC.

BORING NO. : MW-33

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.81		PROTECTIVE CASING W/LOCKING CAP	
		X	FILL: SILTY SAND (SM) BLACK - PETROCHEMICAL ODOR 3-20'		CEMENT/BENTONITE GROUT	68.7
5		X	SAND (SP) BLACK	27	2" GALVANIZED RISER PIPE	68.7
10		X	SANDY GRAVEL (GP) BROWN	75	BENTONITE SEAL	40.0
15		X		64	FILTER SAND	0.6
20		X		83	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	2.3
25		X	SILTY CLAY (CL) GREENISH GRAY	25	BENTONITE SEAL	0.9
30		X		14	FILTER SAND	0.4
					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 25 FT.
DATE : 1 / 8 / 86



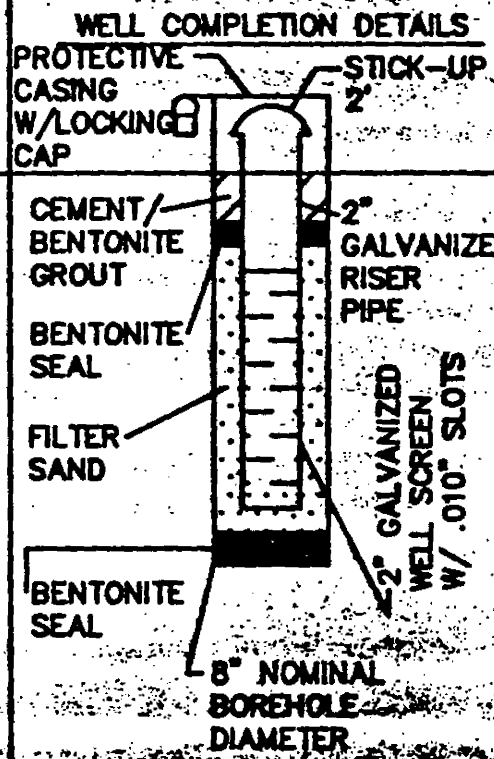
SMC MARTIN INC.

BORING NO. : MW-34

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVA / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1494.86		PROTECTIVE CASING W/ LOCKING CAP	
5		X	SILTY SAND FINE GRAINED W/ GRAVEL (SM) BROWN	16	CEMENT/ BENTONITE GROUT	10
10		X	GRAVEL W/SILT (GM) DARK GRAY	72	BENTONITE SEAL	50
15		X	SILTY CLAY (ML) GRAY	24	FILTER SAND	1
20		X	ALTERNATING W/ LENSES OF VERY FINE SAND	32	BENTONITE SEAL	0



COMPLETION DEPTH : 14 FT.
DATE : 11 / 14 / 86



SNC MARTIN INC.

BORING NO. : MW-35

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.3		PROTECTIVE CASING W/LOCKING CAP	
			SILTY SAND (SM) BROWN; FILL	1	CEMENT/BENTONITE GROUT	0
			-CONCRETE FILL TO 3'		BENTONITE SEAL	
5			CLAYEY SAND (SC) GRAY	14		1.8
			- PETROCHEMICAL ODOR 5'-15'			
10			SANDY GRAVEL (GW) BLACK	66	FILTER SAND	50.8
			- OIL STAINED 10'-15'			
15			SILTY CLAY (CL) GREENISH GRAY	30	BENTONITE SEAL	1.6
20				10	BACKFILL	1.9
					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 15 FT.
DATE : 1 / 17 / 86



SMC MARTIN INC.

BORING NO. : MW-36

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1499.7		PROTECTIVE CASING W/LOCKING CAP	
					STICK-UP 2'	
			SANDY SILT (ML) BROWN	1	CEMENT/BENTONITE GROUT	
5			SILTY SAND (SM) GRAY - PETROCHEMICAL ODOR 5'-27'	19	BENTONITE SEAL	
10			SILTY GRAVEL (GM) GRAY	75		
15				43	FILTER SAND	
20				17		
25					BENTONITE SEAL	
30			SILTY CLAY (CL) GRAY	25	FILTER SAND	
				14		
					2" GALVANIZED RISER PIPE	
					2" GALVANIZED WELL SCREEN W/ .010" SLOTS	
					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 24 FT.
DATE : 1 / 15 / 86



SMC MARTIN INC.

BORING NO. MW-48

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	OVA READING (ppm)
			SURFACE ELEV. 1502.5 ft msl		Protective Casing with Lock	
			Dark brown SILTY SAND (SM) - w/some gravel	1	Stick-up 2.18'	ND
5				18	Cement/Bentonite Grout Column	ND
10			- gray, with visible contamination and clay pockets below 11'	32	2" Galvanized Riser Pipe	0.2
15				56	Bentonite Seal	0.1
20				100	Filter Sand	ND
25				18"	2" Galvanized Well Screen w/.010" Slots	ND
30				100		ND
35			Gray SILTY CLAY (CL)	15"	Bentonite Seal	0.3
40				92	Sand	
45				15		
				14	Nominal Borehole Diameter, 7"	

COMPLETION DEPTH 42 ft
DATE 04/12/85



SMC MARTIN INC.

BORING NO. : MW-49

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.13		PROTECTIVE CASING W/LOCKING CAP	
					STICK-UP 2'	
			GRAVELLY SAND (SP) BROWN -PETROCHEMICAL ODOR TO 12'	1	CEMENT BENTONITE GROUT	37
5					BENTONITE SEAL	
			SANDY GRAVEL (GP) BLACK -OIL STAINED	14	FILTER SAND	109
10				58	2" GALVANIZED WELL SCREEN W / .010" SLOTS	
					8" NOMINAL BOREHOLE DIAMETER	437
15						

COMPLETION DEPTH : 12 FT.
DATE : 12 / 18 / 85



SMC MARTIN INC.

BORING NO. : MW-50

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1497.1		PROTECTIVE CASING W/LOCKING CAP	
			GRAVELLY SAND (SW) DARK GRAY MINOR AMOUNTS OF SILT -PETROCHEMICAL ODOR TO 10'		CEMENT / BENTONITE GROUT	0.8
5			-INCREASED SAND CONTENT	34	BENTONITE SEAL	159
10			SANDY GRAVEL (GW) BROWN	48	FILTER SAND	97
15						

COMPLETION DEPTH : 10 FT.

DATE : 12 / 17 / 85

SMC MARTIN INC.

BORING NO. : MW-51

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS		OVM / OVA READING (PPM)
					PROTECTIVE CASING W/ LOCKING CAP	STICK-UP 2'	
			GROUND SURFACE ELEVATION (ft. MSL): 1497.01				
5			CLAYEY SAND (SC) GRAY -PETROCHEMICAL ODOR TO 10'	1	CEMENT/ BENTONITE GROUT	2" GALVANIZED RISER PIPE	0.8
10			SANDY GRAVEL (GM) BLACK MINOR SILT	22	BENTONITE SEAL		4.8
15			CLAY (CH) GRAY	37		2" GALVANIZED WELL SCREEN W/ .010" SLOTS	0.5
20			SANDY GRAVEL (GM) BROWN -MINOR SILT	86	FILTER SAND		0.9
						8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 11 FT.
DATE : 1 / 10 / 86



EMC MARTIN INC.

BORING NO. : MW-52

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1495.46		PROTECTIVE CASING W / LOCKING CAP	
					STICK-UP 2'	
			SANDY SILT (SM) BROWN	1	CEMENT / BENTONITE GROUT	1.6
					BENTONITE SEAL	
5			SILTY CLAY (CL) BROWN -PETROCHEMICAL ODOR 5' - 12'	15	FILTER SAND	1.5
					BENTONITE SEAL	
10					FILTER SAND	
				5		0.5
15					8" NOMINAL BOREHOLE DIAMETER	
					2" GALVANIZED WELL SCREEN W / .010" SLOTS	
					2" GALVANIZED RISER PIPE	

COMPLETION DEPTH : 9 FT.
DATE : 1 / 7 / 86



SMC MARTIN INC.

BORING NO. : MW-53

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVN / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1497.6		PROTECTIVE CASING W / LOCKING CAP STICK-UP 2'	
			SILTY SAND (SM) BLACK -PETROCHEMICAL ODOR TO 12'	-	CEMENT / BENTONITE GROUT BENTONITE SEAL 2" GALVANIZED RISER PIPE	23.7
5			SANDY GRAVEL (GP) BLACK -OIL STAINED	41	2" GALVANIZED WELL SCREEN W / .010" SLOTS	161.9
10			-INCREASED GRAVEL CONTENT	33	FILTER SAND 8" NOMINAL BOREHOLE DIAMETER	72.5
15						

COMPLETION DEPTH : 8.3 FT.
DATE : 12 / 17 / 85



SMC MARTIN INC.

BORING NO. : MW-54

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1499.06		PROTECTIVE CASING W / LOCKING CAP	
					STICK-UP 2'	
			SANDY GRAVEL (GP) BROWN -MINOR SILT, PROBABLY FILL	1	CEMENT / BENTONITE GROUT	ND
5				42	BENTONITE SEAL	43.8
10					FILTER SAND	
					2" GALVANIZED RISER PIPE	
					2" GALVANIZED WELL SCREEN W / .010" SLOTS	
					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 7.7 FT.
DATE : 12 / 20 / 85



SMC MARTIN INC.

BORING NO. : MW-55

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.73		PROTECTIVE CASING W / LOCKING CAP STICK-UP 2"	
5			SILTY SAND (SM) BROWN -MINOR GRAVEL	1	CEMENT / BENTONITE GROUT BENTONITE SEAL	28
10			SILTY SAND (SM) DARK GRAY -WOOD FRAGMENTS TO 7' -PETROCHEMICAL ODOR TO 11' 8" -GRAVEL LAYER	18 46	2" GALVANIZED RISER PIPE 2" GALVANIZED WELL SCREEN W / .010" SLOTS 8" NOMINAL BOREHOLE DIAMETER	76 53

COMPLETION DEPTH : 10 FEET
DATE : 12 / 16 / 85



SMC MARTIN INC.

BORING NO. : MWB-61

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1505.12		PROTECTIVE CASING W / LOCKING CAP	
		X	SILTY SAND (SM) BROWN		STICK-UP 2.5'	
		X	MEDIUM TO FINE SAND		2" GALVANIZED RISER PIPE	0
5		X	SANDY GRAVEL (GW) BROWN	50	BENTONITE SEAL	
10		X	- GRAVEL COMPOSED OF 1"-5" DIAMETER PIECES OF ROUNDED SANDSTONE AND QUARTZ PEBBLES	15	FILTER SAND	0
15		X		80	2" GALVANIZED WELL SCREEN W / .010" SLOTS	0
					8" NOMINAL DIAMETER BOREHOLE	

COMPLETION DEPTH : 17 FT.
DATE : 10 / 23 / 86



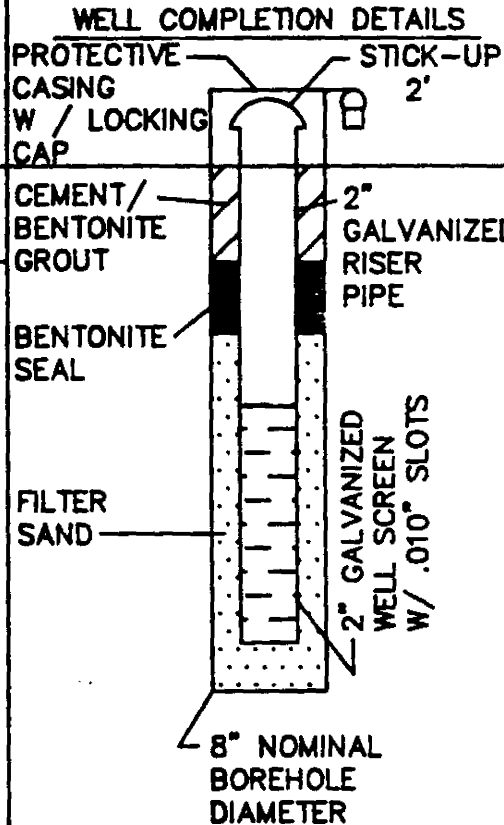
SMC MARTIN INC.

BORING NO. : MWB-63

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL):		PROTECTIVE CASING W / LOCKING CAP	
		X	SILTY SAND (SM) - W/FINE SAND		CEMENT/BENTONITE GROUT	0
5		X	SANDY GRAVEL (GP) WITH SOME (5%) SILT, GRAY	46	BENTONITE SEAL	0.5
10		X	- MED SAND TO 9 FT.	41		0
15		X	- COARSE SAND 9-20 FT.	55	FILTER SAND	0
20		X	- BECOMES BROWN AT 16 FT.	69		0



COMPLETION DEPTH : 20 FT.
DATE : 10 / 16 / 86



SMC MARTIN INC.

BORING NO. MWC-14

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2 IN. PENETRATION	WELL COMPLETION DETAILS		O.V.A. READING (ppm)
					Protective Casing with Lock	Stick-up 2.26'	
			SURFACE ELEV. 1499.8 ft msl				
5			Brown GRAVELLY SAND (SW) - w/sticks and twigs	1			ND
10			Grayish brown SANDY GRAVEL (G:G)	33			ND
15			Gray coarse-grained GRAVELLY SAND (SW) - greenish gray (16'-6" to 20'-5")	27	Cement/Bentonite Grout Column	2" Galvanized Riser Pipe	ND
20			Gray SILTY CLAY (CL)	75	Bentonite Seal		ND
25				30	Filter Sand		ND
30				21		2" Galvanized Well Screen w/.010" Slots	ND
35				23			ND
40				19			ND
45					Nominal Borehole Diameter, 7"		
50							

COMPLETION DEPTH 42 ft
DATE 04/18/85



SMC MARTIN INC.

BORING NO. MWC-15

**SINCLAIR REFINERY
WELLSVILLE, NEW YORK**

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FLWS FOR 2 INTEGRATION	WELL COMPLETION DETAILS	NOVA READING (DDM)
			SURFACE ELEV. 1496.1 ft msl		Protective Casing with Lock	
					Stick-up 2.26'	
5			Dark brown GRAVELLY SAND (SW) - w/twigs - slightly clayey below 5' - brownish gray below 5'	28		ND
10				78	Cement/ Bentonite Grout Column	ND
15						ND
20			Greenish brown SANDY GRAVEL (GW) - w/fines, 16.5' - 20' - w/coarse grained sand below 20'	155		ND
25				128		ND
30			Gray SILTY CLAY (CL)	76	Bentonite Seal	ND
35				51		ND
40					Filter Sand	ND
45			Gray CLAY (CH)	24		ND
50				23		ND
				28		ND
					Nominal Borehole Diameter, 7"	
					2" Galvanized Well Screen w/.010" Slots	
					2" Galvanized Riser Pipe	

COMPLETION DEPTH 47 ft
DATE 04/19/85



SMC MARTIN INC.

BORING NO. MWC-18

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

6-1/4-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	WELL COMPLETION DETAILS	NOVA READING (ppm)
			SURFACE ELEV 1509.8 ft msl	Protective Casing with Lock	
				Stick-up 1.42'	
5			FILL: Black clay w/sludge and petrochemical odor w/wood debris to 5'		ND
			FILL: Black and gray sand w/petrochemical odor		ND
10			Gray CLAYEY SAND (SC) w/sludge pockets, some silt and petrochemical odor		ND
15			Gray and brown fine SAND (SP) - w/oil stains - w/gravel at 15.5'	Cement/Bentonite Grout Column	0.4
20			Gray SANDY GRAVEL (GW) - w/oil stains and sludge pockets to 25'		0.3
25					0.2
30			brown and green below 30'		0.2
35					ND
40			Grayish brown SILTY CLAY (CL)	Bentonite Seal	ND
50				Filter Sand	ND
60				2" Galvanized Well Screen w/.010" Slots	ND
				Nominal Borehole Diameter, 7"	ND

COMPLETION DEPTH 62 ft
DATE 04/15/85



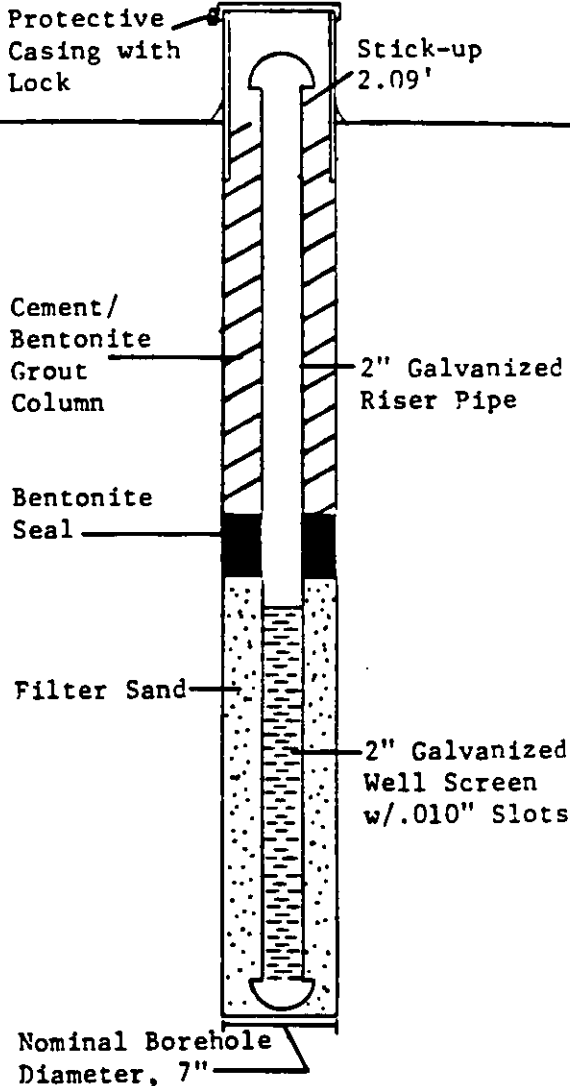
SMC MARTIN INC.

BORING NO. MWC-23

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS		OVA READING (ppm)
			SURFACE ELEV. 1499.5 ft msl				
			Brownish gray SILTY SAND (SM) - w/slight petrochemical odor				
5							
			Brownish gray SANDY GRAVEL (GW)	85			ND
10				90	Cement/ Bentonite Grout Column	2" Galvanized Riser Pipe	ND
15				20	Bentonite Seal		ND
20			Gray CLAY (CM) - silt seam at 16'-8"	26			ND
25				23	Filter Sand	2" Galvanized Well Screen w/.010" Slots	ND
30				14			ND
35				16	Nominal Borehole Diameter, 7"		ND
40							

COMPLETION DEPTH 37 ft
DATE 04/16/85



SMC MARTIN INC.

BORING NO. MWC-24

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-1/2-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

NOTE SCALE CHANGE

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FEET FOR 2 INFORMATION	WELL COMPLETION DETAILS	OVA READING (ppm)
			SURFACE ELEV 1498.4 ft msl		Protective Casing with Lock	
5			Brown SILTY CLAY (CL) - w/fine sand - w/roots and twigs to 3'	-	Stick-up 2.97'	ND
10			Dark gray SANDY GRAVEL (GW) - w/some silt - w/petrochemical odor and oily sheen below 10'	31 34		ND 0.1
15			Greenish gray SILTY SAND (SM) - w/petrochemical odor	46	Cement/Bentonite Grout Column	ND
20			Greenish gray SANDY GRAVEL (GW) - w/petrochemical odor and clay pockets	92	2" Galvanized Riser Pipe	ND
25			Greenish gray SILTY CLAY (CL) - possibly varved - w/petrochemical odor, 29'-40'	24		ND
30				9	Bentonite Seal	0.6
40				9		0.2
50				7	Filter Sand	0.2
60				11	2" Galvanized Well Screen w/.010" slots	ND
			- w/sand pockets below 56'	10 12		ND ND
					Nominal Borehole Diameter, 7-1/2"	
COMPLETION DEPTH 57 ft					SMC MARTIN INC.	
DATE 04/24/85						

BORING NO. : MWC-37

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1495.1		PROTECTIVE CASING W / LOCKING CAP	
		X	GRAVELY SAND WITH SOME FINES (GP) BLACK	-	2" GALVANIZED RISER PIPE 2" GALVANIZED SCREEN W/ .010" SLOTS 8" NOMINAL BOREHOLE DIAMETER BENTONITE SEAL FILTER SAND	0
- 5 -		X	SANDY CLAY (SC) GRAY - SAND IS FINE GRAINED - PETROCHEMICAL ODORS	19		0
- 10 -		X	SANDY GRAVEL (GW) BROWN - PETROCHEMICAL ODOR 8-23 FT. - MEDIUM SAND 8-23 FT. - 80% GRAVEL	92		20
- 15 -		X		113		0
- 20 -		X		159		1
- 25 -		X	SILTY CLAY (CL) GRAY - HIGH PLASTICITY - LAMINATED SILT LAYERS	31		0
- 30 -		X		20		0
- 35 -		X		15		0

COMPLETION DEPTH : 35 FT.
DATE : 10 / 8 / 86



SMC MARTIN INC.

BORING NO. : MWC-38

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.68		PROTECTIVE CASING W / LOCKING CAP	
		X	FILL - SANDY GRAVEL - SOME 6" COBBLES		STICK-UP 2'	0
5		X	SILTY SAND (SM) GRAY - FINE SAND AT 6 FT. - GRADING TO A SANDY GRAVEL AT 10.5 FT. - STRONG PETROCHEMICAL ODOR	13	CEMENT / BENTONITE GROUT	1
10		X				
15		X	SANDY CLAY (SP) GRAY - PETROCHEMICAL ODOR - SUBANGULAR GRAVEL	32		1
20		X				
25		X	CLAY (CH) GRAY - MODERATE PLASTICITY	30	BENTONITE SEAL	1
30		X		16	FILTER SAND	0
35				12		1
				11	2" GALVANIZED SCREEN W / .010" SLOTS	0
					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 32 FT.
DATE : 10 / 13 / 86



SMC MARTIN INC.

BORING NO. : MWC-39

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	Q/M / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.37		PROTECTIVE CASING W / LOCKING CAP	
		X	FILL: SANDY GRAVEL W/ PIECES OF BRICK			
- 5 -		X	SANDY CLAY (CL) BROWN TO GRAY - FINE SAND	10	CEMENT/ BENTONITE GROUT	0
- 10 -		X	SANDY GRAVEL (GW) GRAY TO GREEN - RED LIQUID STAINING	63		0
- 15 -		X		90		5
- 20 -		X		97	BENTONITE SEAL	4
- 25 -		X	CLAY (CH) GRAY - 25% SILT - LAMINATIONS 23-37 FT. - MODERATE PLASTICITY	24		0
- 30 -		X		17	FILTER SAND	0
- 35 -		X		14	2" GALVANIZED WELL SCREEN W / .010" SLOTS	0
- 40 -					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 35 FT.
DATE : 10 / 10 / 86



SMC MARTIN INC.

BORING NO. : MWC-40

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.79		PROTECTIVE CASING W / LOCKING CAP	
			SILTY CLAY (CL) BROWN	1	CEMENT / BENTONITE GROUT	0
5				28		2
10			SANDY GRAVEL WITH SOME FINES (GP) GREENISH-BROWN - PETROCHEMICAL ODOR 8-18 FT.	32		1
15				20		2
20			CLAY (CH) GRAY - MEDIUM TO HIGH PLASTICITY	20	BENTONITE SEAL	0
25				15		0
30				22	FILTER SAND	0
35				10		0
					2" GALVANIZED WELL SCREEN W / .010" SLOTS	
					8" NOMINAL BOREHOLE DIAMETER	
					STICK-UP 2'	

COMPLETION DEPTH : 35 FT.
DATE : 10 / 9 / 86



SBC MARTIN INC.

BORING NO. : MWC-41

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1497.92		PROTECTIVE CASING W / LOCKING CAP	
					STICK-UP 2'	
			GRAVELLY CLAY WITH SAND (SW) DARK BROWN - ROOTS, STEMS	-	CEMENT / BENTONITE GROUT	-
5			SANDY CLAY (CL) BROWN - FINE SAND	26	2" GALVANIZED RISER PIPE	0
10			SANDY GRAVEL (GP) GRAY - PETROCHEMICAL ODOR	62		1
15				89		0
20			SILTY CLAY (CL) GRAY - MODERATE PLASTICITY TO LOW PLASTICITY	43	BENTONITE SEAL	0
25				27	FILTER SAND	0
30				-	2" GALVANIZED WELL SCREEN W / .010" SLOTS	1
35					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 33.9 FT.
DATE : 10 / 7 / 86



SMC MARTIN INC.

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FEET FOR 2" INfiltration	WELL COMPLETION DETAILS		OVA READING (ppm)
			SURFACE ELEV 1512.0 ft msl		Protective Casing with Lock	Stick-up 2.93'	
10			Brown SANDY GRAVEL (GW) - w/some silt	65			
20			Greenish gray SILTY CLAY (CL) - possible varved	27	Cement/ Bentonite Grout Column	2" Galvanized Riser Pipe	
30				11			
40				9			
50				12			
60			Dark gray SAND (SP) - some silt and clay	10			
70			Dark gray SANDY GRAVEL (GW)	13			
80				11	Bentonite Seal		
90				20			
					Filter Sand	2" Galvanized Well Screen w/.010" Slots	
					Nominal Borehole Diameter, 1-1/2"		

COMPLETION DEPTH 80.5 ft

DATE 04/22/85

SMC MARTIN INC.

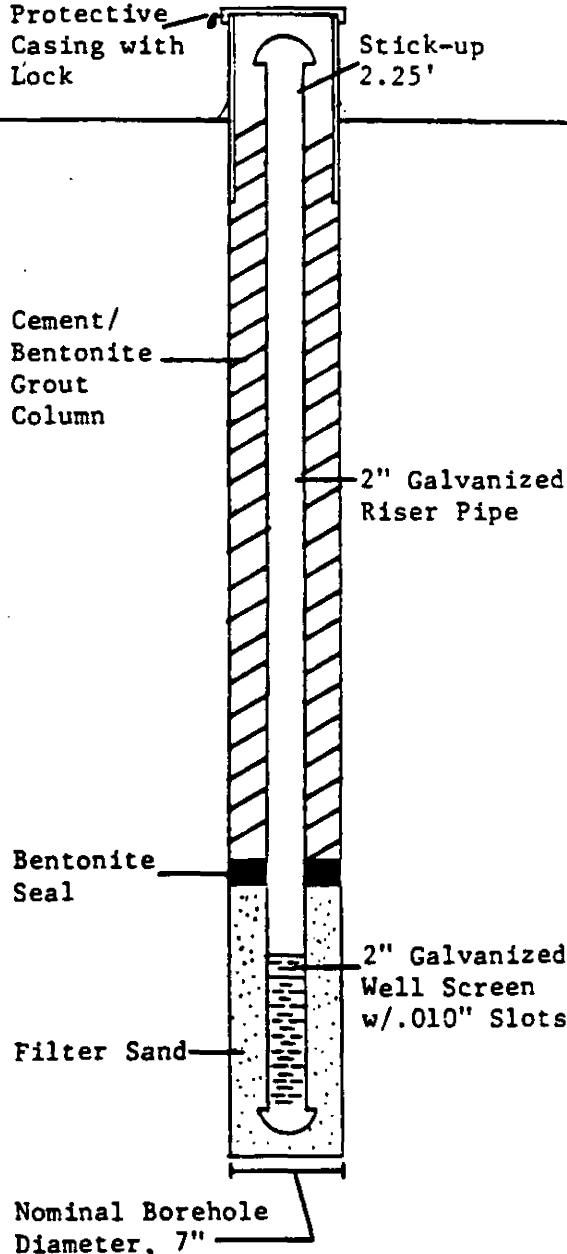
BORING NO. MWD-43

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-inch hollow-stem auger

TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS		O.V.A. READING (ppm)
			SURFACE ELEV. 1501.9 ft msl				
			Brown GRAVELLY SAND (SW)	1			0.1
				36			0.1
10			Greenish Gray SANDY GRAVEL (GW) - w/ petrochemical odor below 12'	50			0.1
				78			0.1
20			Greenish gray SILTY CLAY (CL) - possibly varved	21	Cement/ Bentonite Grout Column		ND
				13			ND
30				10		2" Galvanized Riser Pipe	ND
				12			ND
40			Greenish gray CLAY (CH)	11			ND
				13			ND
50				14			ND
				14			ND
60				11	Bentonite Seal		ND
				13		2" Galvanized Well Screen w/.010" Slots	ND
70				12	Filter Sand		ND
80				15			ND
					Nominal Borehole Diameter, 7"		

COMPLETION DEPTH 82 ft
DATE: 04/16/85

 SMC MARTIN INC.

COMPLETION DEPTH 82 ft
DATE 04/16/85



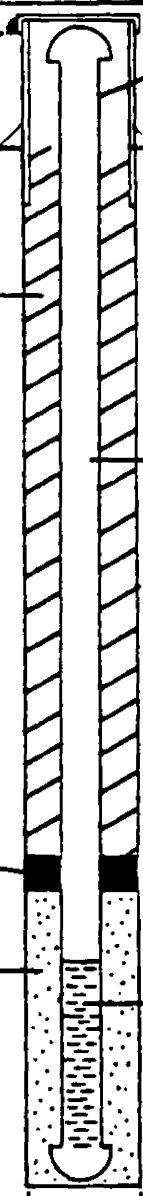
SMC MARTIN INC.

BORING NO. MWD-44

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-1/2-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT		SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	ROWS FOR 2 1 1/2" DIAMETER	WELL COMPLETION DETAILS		O.V.A. READING (ppm)
				SURFACE ELEV. 1497.0 ft msl				
				Brown SANDY GRAVEL (GW) - cobbles on surface	36	Cement/ Bentonite Grout Column	2" Galvanized Riser Pipe	ND
10					74			ND
					111			ND
20				Greenish gray GRAVELLY SAND (SW)	39			ND
				Greenish gray SILTY CLAY (CL) -possibly varved	22			ND
30					14			ND
40				Greenish gray CLAY (CH)	10	Bentonite Seal		ND
					10			ND
50					12			ND
60					4	Filter Sand	2' Galvanized Well Screen w/.010" Slots	ND
70					13			ND
80					10			ND
90								Nominal Borehole Diameter, 7-1/2"

COMPLETION DEPTH 82 ft
DATE 04/18/85

 SMC MARTIN INC.

COMPLETION DEPTH 82 ft
DATE 04/18/85



SMC MARTIN INC.

BORING NO.MWD-45

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

7-1/2-inch hollow-stem auger
TYPE 2-1/4-inch split-spoon sampler

LOCATION

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	FEET FOR 2 PENETRATION	WELL COMPLETION DETAILS	OVA READING (ppm)
			SURFACE ELEV 1499.3 ft msl		Protective Casing with Lock	
					Stick-up 2.13'	
			Brown-gray GRAVELLY SAND (SW)	64		ND
10			- greenish gray w/petrochemical odor 11' - 15'	60		ND
				98		ND
20			Gray SANDY GRAVEL (GW) w/light petrochemical odor	61		ND
			Greenish gray GRAVELLY SAND (SW)	77		ND
30				83		ND
			Greenish gray SILTY CLAY (CL) - possibly varved	27		ND
40				20	Cement/ Bentonite Grout Column	ND
				17		ND
50				18		ND
			Greenish gray CLAY (CH)	13		ND
60				13		ND
				21	Bentonite Seal	ND
70				18		ND
				15	Filter Sand	ND
80				15		ND
				14		ND
90				19		ND
100						
					Nominal Borehole Diameter, 7"	
					2" Galvanized Riser Pipe	
					2" Galvanized Well Screen w/.010" Slots	

COMPLETION DEPTH 92 ft
DATE 04/12/85



SMC MARTIN INC.

BORING NO. : MWD-46

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1495.23		PROTECTIVE CASING W / LOCKING CAP	
		X	SILTY CLAY (CL) BLACK BROWN		STICK-UP 1.5'	0
		X	GRAVEL (GC), SAND, SOME SILTY CLAY BROWN	80	CEMENT / BENTONITE GROUT	0
10		X		31	BENTONITE SEAL	3
		X		148		7
20		X	SILT (ML) GRAY	49	FILTER SAND	0
		X		39		0
30		X	SILTY CLAY (CL) GRAY	31	8" NOMINAL BOREHOLE DIAMETER	0
		X		22	2" GALVANIZED WELL SCREEN W / .010" SLOTS	0
40		X		21		0
		X		17		0
50		X		23		0
		X		26		0
60		X		21		0
		X		21		0
70		X		-		0
		X		-		0
80		X		-		0
		X		16		0
100		X		17		0
		X		25		0
120		X		13		0
		X		32		0
		X		34		0

COMPLETION DEPTH : 20 FT.
DATE : 10 / 27 / 86



SMC MARTIN INC.

BORING NO. : MWD-47

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (FT. MSL): 1500.4		PROTECTIVE CASING W / LOCKING CAP	
			SILTY SAND W/ GRAVEL (SM)	84	CEMENT/ BENTONITE GROUT	-
			SANDY GRAVEL (SP) - PETROCHEMICAL FUMES	101		0
10				18		1.5
			SAND SOME GRAVEL (SW)	70		1.0
20				75		1.0
				33		
			SILTY SAND (SM) - NO GRAVEL	95		
30				36		0
			SANDY GRAVEL (SP) DARK GRAY	55		0
40				101		0
			SILTY GRAVEL GRAY (GM)			0
50				36	BENTONITE SEAL	5
			SANDY GRAVEL (SP) - SOME SILT	18		0
60				24		.5
			CLAYEY SILT W/ GRAVEL (ML)	12		5
			SILTY CLAY -NO GRAVEL (OL)	126		2
80				104		0
			SILTY SANDY GRAVEL (SP)	110		
100			1' OF SANDY CLAY WITH GRAVEL GRADING TO SILTY CLAY	205		0
				143		0
120			SILTY CLAY (OL) REDDISH GRADING TO FINE TO MEDIUM SILTY SAND (SM)			
					FILTER SAND	
					2" GALVANIZED RISER PIPE	
					2" GALVANIZED WELL SCREEN W/ .010" SLOTS	
					8" NOMINAL BOREHOLE DIAMETER	

NOTE SCALE CHANGE

COMPLETION DEPTH : 110 FT.
DATE : 11 / 20 / 86

SMC MARTIN INC.

BORING NO. : MWD-48

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1496.0		PROTECTIVE CASING W / LOCKING CAP	
			GRAVEL W/SAND, SILT (GW) GRAY ODOR	19	CEMENT/BENTONITE GROUT	0
			SILT W/SAND (ML) BROWN			5
10			CLAY (CH)	41		30
			GRAVEL, MED. SAND (GW) GREENISH GRAY SANDY - OILY - COARSE SAND	129		.5
20				101	2" GALVANIZED RISER PIPE	2
				113		1
30				30		0
			SILTY CLAY W/ SOME SAND (CH) GRAY			
40				15	BENTONITE SEAL	0
50				14		0
60				12	FILTER SAND	1
70				-		-
80				15	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	0
90				16		0
110				24	8" NOMINAL BOREHOLE DIAMETER	0

COMPLETION DEPTH : 105 FT.
DATE : 11 / 11 / 86



SMC MARTIN INC.

BORING NO. : MWD-49

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.44		PROTECTIVE CASING W / LOCKING CAP	
			SILTY SAND W/GRAVEL (SM)	13	CEMENT/ BENTONITE GROUT	25
10			SILTY CLAY (CL) BROWN	43		72
20			SANDY GRAVEL (SW) ODOROUS - RUNNING SAND	50		80
30			SILTY CLAY (CL) GRAY	12		18
40			GRAY	12		0
50			SLIGHTY SILTY	9		0
60				12		0
70			LIGHT BROWN AT 70'	22		0
80			GRAVEL W/ SAND MED GRAINED AND SILT (GC) GRAY	13	BENTONITE SEAL	1
				29		1
				32	FILTER SAND	1
				23		.5
				134		1
80						1



COMPLETION DEPTH : 83.5 FT.
DATE : 11 / 7 / 86



SMC MARTIN INC.

BORING NO. : MWP-2

8.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1494.72		PROTECTIVE CASING W / LOCKING CAP	
			SILTY LOAM (SM) BROWN - GRAY, CLAYEY		CEMENT / BENTONITE GROUT	0
5		X	SAND W/SOME SILT (SM) BROWN ODOROUS	4	6" RISER	0
10		X	GRAVEL (GM) W/SOME SILT GRAY	44	FILTER GRAVEL	200
15		X	- SAND, ODOROUS, SATURATED	87	6" GALVANIZED WELL SCREEN W / .020" SLOTS	>100
20		X		21	BENTONITE SEAL	15
25		X	CLAY SOME SILT (CL) GRAY	20	6" GALVANIZED WELL SUMP	18
30					12" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 25 FT.
DATE : 11 / 5 / 86



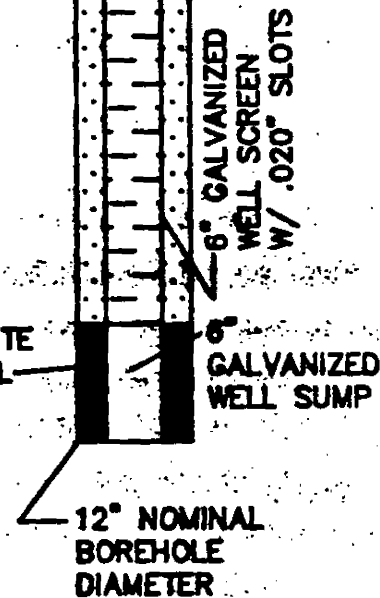
SMC MARTIN INC.

BORING NO. : MWP-56

8.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2 PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.18		PROTECTIVE CASING W / LOCKING CAP	
					STICK-UP 2'	
5		X	SILTY SAND W/GRAVEL (SP) BROWN		CEMENT/BENTONITE GROUT	8
10		X	SILTY SAND W/GRAVEL (GM) DARK GRAY OILY	21		16
15		X	COARSE SAND AND GRAVEL (SM) - BROWN	97	FILTER GRAVEL	5
20		X	SAND COARSE TO MEDIUM GRAINED	45		7
25		X	CLAY (OL) GRAY	96		1
30		X		22	BENTONITE BACKFILL	0
35		X		6		0



COMPLETION DEPTH : 30 FT.
DATE : 11 / 13 / 86



SMC MARTIN INC.

BORING NO. : MWP-57

12" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	QVA / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1498.15		PROTECTIVE CASING W / LOCKING CAP	
			GRAVEL WELLROUNDED, CLEAN, BLACK/BROWN MATRIX (GW)	-	CEMENT/BENTONITE GROUT	ND
5			CLAYEY GRAVEL; GRAY (GC)	-	BENTONITE SEAL	ND
10			CLAY; SMALL AMOUNT OF SILT, GRAY (CL)			
15		X	SANDY GRAVEL (GP), BROWN-WHITE	44	FILTER GRAVEL	2
20		X	RUNNING GRAVEL & SAND	84		3
25		X		33		14
30		X	SILTY CLAY (CL), GRAY TO GREENISH GRAY	14	6" GALVANIZED WELL SCREEN W/ 0.02" SLOTS	7
35					6" GALVANIZED WELL SUMP	52
					12" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 30 FT.
DATE : 2 / 25 / 87



SMC MARTIN INC.

BORING NO. : MWCB-42

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1505.49		PROTECTIVE CASING W / LOCKING CAP	
		X	SILTY SAND (SM) - W/FINE SAND	-	CEMENT/BENTONITE GROUT	0
5		X	SANDY GRAVEL (GP) WITH SOME SILT (5%) GRAY	46	2" GALVANIZED RISER PIPE	0.5
10		X	- MED SAND TO 9 FT. - COARSE SAND 9-34 FT. - BECOMES BROWN AT 16 FT.	41		0
15		X		55		0
20		X		69		0
25		X		46 18"		0
30		X		69 18"		0
35		X	SAND (SW) - FINE TO MED.		BENTONITE SEAL	0
40		X	SILTY CLAY (CL) - LAMINATED - MED TO HIGH PLASTICITY	35		0
45		X		14	FILTER SAND	
50				15	2" GALVANIZED WELL SCREEN W/ .010" SLOTS	0
55					8" NOMINAL BOREHOLE DIAMETER	

COMPLETION DEPTH : 50 FT.
DATE : 10 / 15 / 86



SMC MARTIN INC.

BORING NO. : MWCB-62

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1505.05		PROTECTIVE CASING W / LOCKING CAP	
			SILTY SAND MEDIUM TO FINE (SM) BROWN		STICK-UP 2'	
5			SANDY GRAVEL (GW) BROWN	50	CEMENT / BENTONITE GROUT	0
10				15	2" GALVANIZED RISER PIPE	0
15			- GRAVEL COMPOSED OF 1"-5" DIAMETER PIECES OF ROUNDED SANDSTONE AND QUARTZ PEBBLES	80		1
20				150		0
25			- FINE TO MEDIUM GRAINED SAND	62		0
				18		0
30				40		0
				12		0
35			SILTY CLAY (CL) GRAY	31	BENTONITE SEAL	0
40				20		0
45				10	FILTER SAND	0
50					2" GALVANIZED WELL SCREEN W / .010" SLOTS	0
55					8" NOMINAL DIAMETER BOREHOLE	

COMPLETION DEPTH : 50 FT.
DATE : 10 / 17 / 86



SMC MARTIN INC.

BORING NO. : MWDB-1

2.9" NX DIAMOND CORE BARREL
3.875" OPEN HOLE (AIR ROTARY DRILLING)

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

TYPE : 6.25" HOLLOW-STEM AUGER

LOCATION : TANK FARM

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1695.48		4" PROTECTIVE CASING W / LOCKING CAP	
		X	SILTY CLAY (GC) W/GRAVEL BROWN	111	CEMENT GROUT	0
-10-			SANDSTONE AND SHALE BROWNISH GRAY	100 6"	6.25" NOMINAL BOREHOLE	0
-20-			SANDSTONE GREENISH BROWN		5.875" NOMINAL BOREHOLE	
-30-			SHALE GRAY AND RED SANDSTONE GRAY SANDSTONE GRAYISH GREEN		3.875" OPEN BOREHOLE	
-40-			SHALE GRAY SHALE W/ INTERBEDDED GRAY SANDSTONE			
-50-						
-60-						
-70-						
-80-			GRAY SHALE			
-90-			GRAY SHALE & LIGHT GRAY SANDSTONE - FRACTURE NOTED AT 97.35' - SIGNIFICANT FRACTURE AT 99.1'			
-100-			GRAY SHALE & PINK SANDSTONE TAN SANDSTONE		2.9" OPEN BOREHOLE	
-110-						

COMPLETION DEPTH : 108.8 FT.
DATE : 10 / 22 / 86



SMC MARTIN INC.

BORING NO. : MWDB-2

2.9" NX DIAMOND CORE BARREL
3.875" OPEN HOLE (AIR ROTARY DRILLING)
TYPE : 6.25" HOLLOW-STEM AUGER

SINCLAIR REFINERY
WELLSVILLE, NEW YORK
LOCATION : TANK FARM

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1657.30		4" PROTECTIVE CASING W / LOCKING CAP	
			SILTY GRAVEL LIGHT BROWN (GM)			
			CLAYEY SILT W/GRAVEL (GM)			
-10		X	LIGHT BROWN GRAVEL W/SOME SANDSTONE FRAGMENTS	62	CEMENT GROUT	0
		X	GRAVELLY SILT (ML-GM) LIGHT BROWN	157		0
-20		X	GRAVELLY SILT (ML-GM) BROWN TO GRAY	129		0
		X	CLAYEY SILT W/GRAVEL (ML-GM) GRAY	140		0
-30			- CHERT AND SANDSTONE FRAGMENTS	18		0
				157		
-40			SANDSTONE INTERBEDDED WITH GRAY SHALE BROWN AND GRAY	100		
				6		
-50						
-60						
-70						
-80						
-90						
-100						
-110						

COMPLETION DEPTH : 109 FT.
DATE : 10 / 28 / 86



SBC MARTIN INC.

BORING NO. : MWDB-3

2.9" NX DIAMOND CORE BARREL
3.875" OPEN HOLE (AIR ROTARY DRILLING)
TYPE : 6.25" HOLLOW-STEM AUGER

SINCLAIR REFINERY
WELLSVILLE, NEW YORK

LOCATION : TANK FARM

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2' PENETRATION	WELL COMPLETION DETAILS	OVM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1617.54		4" PROTECTIVE CASING W / LOCKING CAP	
		X	CLAYEY SILT W/GRAVEL (CL)			0
10		X	SANDY SILT W/GRAVEL (CL)		CEMENT GROUT	0
		X				0
20		X	SILTY CLAY (ML) GRAY			0
		X	SANDY SILT W/GRAVEL (CL)			0
30			SANDSTONE INTERBEDDED W/GRAY SHALE GREENISH BROWN		3.875" OPEN BOREHOLE	
40						
50						
60						
70			SHALE GRAY			
80			SANDSTONE AND SHALE GRAY		2.9" OPEN BOREHOLE	
90						
100						
110						

COMPLETION DEPTH : 89 FT.
DATE : 10 / 23 / 86



SNC MARTIN INC.

BORING NO. : MWDB-43

4.25" HOLLOW-STEM AUGER
TYPE : 2.25" SPLIT-SPOON SAMPLER

SINCLAIR REFINERY
LOCATION : WELLSVILLE, NEW YORK

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS	BLOWS FOR 2" PENETRATION	WELL COMPLETION DETAILS	OWM / OVA READING (PPM)
			GROUND SURFACE ELEVATION (ft. MSL): 1533.32		PROTECTIVE CASING W / LOCKING CAP	
			GRAVELLY CLAY W/SAND (GP) - RED TO BROWN		CEMENT/BENTONITE GROUT	0
5			GRAVELLY SAND (GW) BROWN - SEAMS OF WELL ROUNDED GRAVEL AT 6-7' AND 13-14'	12 12"	2" GALVANIZED RISER PIPE	0
10				93		0
15				64		0
20			SILTY CLAY (CL) GRAY - GRADES TO A SILTY CLAY WITH SAND (CL) 28-29'	43		0
25				45		0
30			SAND (SW) BROWN	57	BENTONITE SEAL	
35				41		0
40				36	FILTER SAND	0
45					2" GALVANIZED WELL SCREEN W/ .010" SLOTS	0
50			SILTY SAND (SM)	40	8" NOMINAL BOREHOLE DIAMETER	0
55						

COMPLETION DEPTH : 44.75'
DATE : 10 / 14 / 86



SMC MARTIN INC.