NEW YORK STATE SUPERFUND CONTRACT

Immediate Investigation Work Assignment Report

Former Paul Miller Dry Cleaners Site
Port Richmond, Richmond County

Site I.D. No. 2-43-018

Work Assignment No. D002676-49

DATE: September 2000

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
John Cahill, Commissioner

Division of Environmental Remediation
Michael J. O'Toole, Jr., P.E. Director

By:

Lawler, Matusky & Skelly Engineers LLP

NEW YORK STATE SUPERFUND STANDBY CONTRACT

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LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

BACKGROUND

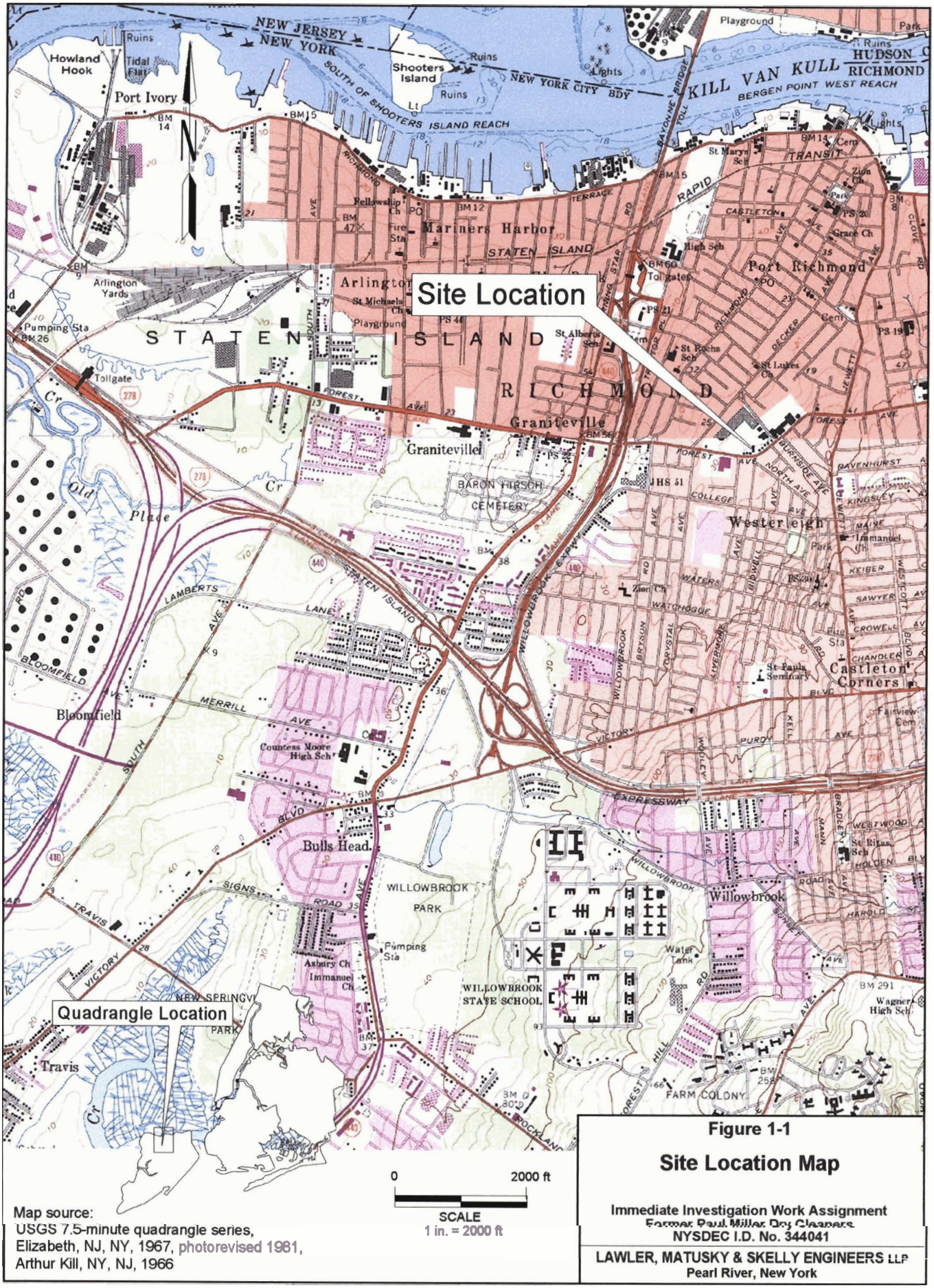
In 1994 an environmental investigation conducted by the owner of the Forest Avenue Shopping Center revealed low levels of tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2-dichloroethylene in the groundwater adjacent to the Former Paul Miller Dry Cleaners building. The maximum concentration of total volatile organic compounds (VOCs) detected was 230 µg/l. Similar contamination was also found adjacent to a second dry cleaning establishment (Carlton Cleaners) located in the same shopping center. The 1994 investigation did not conclusively indicate the groundwater flow direction in the vicinity of the Former Paul Miller Dry Cleaners (now Boston Market).

In May 2000, the New York State Department of Environmental Conservation (NYSDEC) retained Lawler, Matusky & Skelly Engineers LLP (LMS) under terms of the Standby Contract to conduct an Immediate Investigation Work Assignment (IIWA) of the Former Paul Miller Dry Cleaners. The objectives of the IIWA were to determine the groundwater flow direction in the vicinity of the Former Paul Miller Dry Cleaners, to determine the nature and extent of groundwater contamination upgradient and downgradient of the site, and to determine whether a consequential amount of hazardous waste had been disposed of on-site and whether or not the contamination posed a significant threat to the public health and environment.

On 6 June 2000 Mr. Scott Englert and Ms. Karen Wright from LMS met Mr. David Harrington from NYSDEC at the Former Paul Miller Dry Cleaners (Site ID #2-43-018) located at 1465 Forest Avenue, Staten Island, New York to conduct a site visit (see Figure 1-1). The purpose of the site visit was to locate sampling points and to locate the existing monitoring wells.

NYSDEC assigned LMS four tasks to be completed during the IIWA: installation of five groundwater monitoring points, collection of groundwater from the monitoring points and from three existing monitoring wells installed in a previous investigation at the site, collection of water level measurements from all the existing monitoring wells pertaining to the investigation of the property of concern, and an elevation and location survey.

Since one of the primary objectives of the study was to determine the groundwater flow direction, LMS recommended that piezometers be installed instead of groundwater monitoring points (which would be immediately backfilled after groundwater sample



Map source:
USGS 7.5-minute quadrangle series,
Elizabeth, NJ, NY, 1967, photorevised 1981,
Arthur Kill, NY, NJ, 1966

Figure 1-1

Site Location Map

Immediate Investigation Work Assignment
Former Paul Miller Dry Cleaners
NYSDEC I.D. No. 344041

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collection) in order to obtain additional water level monitoring points. This change in the scope of work was accepted by the NYSDEC project manager.

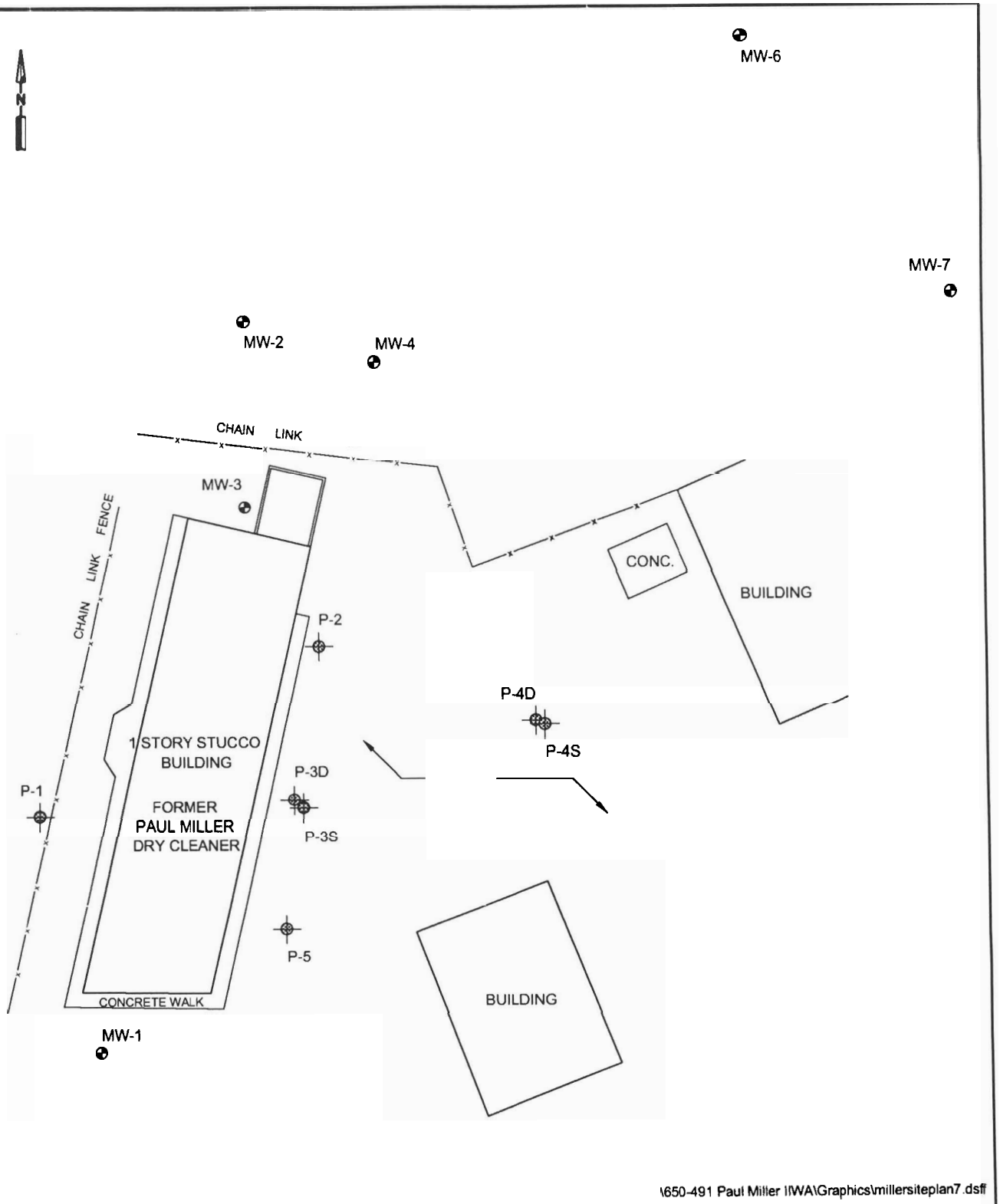
New York City Dig-Safe was contacted on 15 June 2000 for utility markouts along Forest Avenue in the vicinity of the site in anticipation of work beginning 26 June 2000. In addition, LMS contacted Eastern Locating Service, Inc. from Middle Village, New York to conduct a private property utility markout. Eastern Locating conducted the markout at 1465 (the property of concern) and 1453 (a neighboring property) Forest Avenue on 23 June 2000.

PIEZOMETER INSTALLATION

LMS utilized a direct push hydraulic probe rig (AMS Power Probe 9600) to complete the installation of the piezometers on-site. Probing commenced on 26 June 2000 and was completed on 27 June 2000. Five shallow piezometers were completed to a depth of approximately 10-ft below ground surface (bgs). At two of the locations, a deeper piezometer was paired with a shallow one to aid in vertical delineation of the extent of contamination on-site (see Figure 1-2). Originally the deeper piezometers were to be installed to a depth of 25-ft bgs, however, due to glacial till encountered during probing and problems with the boreholes collapsing, they were set at a depth closer to 20-ft bgs.

All piezometers consisted of 5-ft sections of one inch inside diameter (ID), 10 slot, schedule 40 PVC screen coupled with one inch ID schedule 40 PVC riser. All sections of screen and riser were flush threaded and the bottom of the screen was fitted with a threaded point. Morie equivalent #1 filter pack well sand was added to the borehole to several feet above the top of the screened interval. Above the sand pack approximately 2-3 ft of granular bentonite was added to seal the formation from infiltration through the borehole. Each piezometer was completed with a manhole that was grouted in place to form a protective casing mounted flush with the ground surface.

Piezometer P-1 was installed in a driveway west of the building located at 1465 Forest Avenue as an upgradient (based on earlier determinations of groundwater flow direction) sample point. The driveway is active and currently used as an entrance and exit for the large shopping plaza north of the property of concern. P-1 was installed on 26 June 2000 to a depth of 10-ft bgs. The dual tube probing system was utilized for drilling the borehole at this location with soil samples continuously recovered in 4-ft long acetate liners as drilling progressed. Boring logs for the boreholes from which soil cores were



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Legend

Monitoring well

Piezometer

0 40 ft

~SCALE
1 in. = 40 ft

Figure 1-2

Site Plan

Immediate Investigation Work Assignment
Former Paul Miller Dry Cleaners
NYSDEC I.D. No. 344041

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recovered are contained in Appendix A. The PVC piezometer P-1 was set using one 5-ft section of screen and one 5-ft section of riser. Following the installation of the piezometer, a 2-in diameter flush mount cap manhole was grouted in place at the surface to protect the riser.

Piezometer P-2 was installed on 26 June 2000 as part of a line of four downgradient piezometers located along the east side of the building at 1465 Forest Avenue. P-2, the northernmost point in this line, was completed to a depth of 10-ft bgs using the dual tube probing system. NYSDEC requested that either this point or the next most northerly point in the line was to be installed as a shallow (~10-ft bgs) and deep (~25-ft bgs) couplet. P-2 was initially intended to be installed as a couplet however probing proved difficult at this location, with refusal encountered at approximately 9-ft bgs during the first attempt and at 10-ft bgs during the second attempt. It was decided not to risk further refusal by attempting to advance the rods deeper on a third attempt, so P-2 was ultimately installed as a single shallow piezometer. As with P-1, five ft of screen and five ft of PVC riser were used to construct the piezometer. Boring logs for the material recovered during the drilling of P-2 are located in Appendix A.

Since advancement of the probe past 10-ft bgs was refused at P-2, it was decided that a couplet could not be installed at this location and would instead have to be attempted at the next point. The next northernmost point in the line of piezometers paralleling the east edge of the 1465 Forest Avenue building was installed as a shallow and deep couplet. P-3D was installed first at this location – to a depth of approximately 20-ft bgs on 26 June 2000. Many attempts were made to successfully set P-3D closer to a depth of 25-ft bgs but, due to the nature of the subsurface materials, any combination of dual tube, piezometer point, and blind probing yielded a borehole that would not stay open below 20-ft bgs. P-3S was installed within approximately 5-ft of the location of P-3D to a depth of 10-ft bgs on 27 June 2000. The borehole for P-3S was drilled using the piezometer point and was actually overdrilled to a depth of 12.5-ft bgs. The hole was backfilled 1.5-ft to allow the piezometer to be set at exactly 10-ft bgs.

Piezometers P-4S and P-4D were installed as the second deep/shallow couplet on 27 June 2000. They are located in the rear parking lot of 1453 Forest Avenue, adjacent to the property of concern at 1465 Forest Avenue. This location was chosen as the most distant downgradient point (assuming an easterly hydraulic gradient) from the 1465 Forest Avenue property to be installed as part of this investigation. P-4D was installed to a depth of approximately 23-ft bgs by first drilling a test hole to 25-ft bgs using the 1-in

inner rods and then expanding the hole down to a depth of about 20-ft bgs using the dual tube system. Following the successful installation of P-4D, P-4S was installed to a depth of 11.5-ft bgs at a distance of about 10-ft from P-4D.

The final piezometer was installed as the southernmost point in the line of downgradient piezometers located along the east edge of the building at 1465 Forest Avenue. P-5 proved to be quite difficult to install, with refusal being encountered at three separate locations. Probing was refused at depths of 7, 2.5, and 7-ft bgs before the piezometer was successfully installed in a fourth hole drilled using the dual tube and liner system. The piezometer was set at a depth of approximately 10-ft bgs after overdrilling the borehole to 12-ft bgs and backfilling the hole 2-ft.

WATER LEVEL MEASUREMENTS

Water level measurements were collected for all piezometers and monitoring wells associated with the site on 30 June 2000. An additional round of measurements were collected for all on-site piezometers on 5 July 2000 since it was unclear whether the initial measurements collected from P-3S and P-5 (on 30 June 2000) were taken after the groundwater levels had fully equilibrated. Based on the measurements collected on 5 July 2000, it appears that the water levels had stabilized in these two slow to recover piezometers. However, upon analyzing the groundwater elevations derived from these measurements, the potentiometric surface generated from the elevations proved to be difficult to interpret. It was decided that one more round of water level measurements should be taken to verify the quality of the earlier measurements. This final round of water levels was collected on 7 August 2000. The results of the August measurements confirmed the problems in interpreting groundwater flow from the groundwater elevations were not due to measurement errors.

Water levels collected prior to the IIWA using only the on-site monitoring wells indicated either a northerly or easterly flow direction but the more recent data does not support either of these directions conclusively. While the cluster of five northernmost wells confirms flow to the northeast, the lower groundwater elevation in MW-1 does not support this flow direction. Taking the groundwater elevations for all points except the deep piezometers it appears that the highest elevations trend from southeast to northwest through the northern edge of the former Paul Miller Dry Cleaners building. The elevations decrease to both the northeast and southwest as if a divide exists in the vicinity of a line extending through P-4S and P-2. However, these elevations are taken from

wells and piezometers that are screened at many different depths and, therefore, may be influenced by soils having different permeabilities. Since no other far field data points are available to the southeast, northwest, and southwest it is not possible to confirm the overall trend of groundwater flow in the area. Depth to water measurements and groundwater elevations calculated using surveyed reference point elevations for both measurement events are summarized in Table 1-1. Figure 1-3 shows the groundwater elevations calculated from water level measurements obtained on 7 August 2000. During inspection of the site LMS was unable to locate monitoring well MW-5. Asphalt in the shopping plaza parking lot where MW-5 was located appears to be relatively new and, although the other monitoring wells located in the parking lot are still accessible, it appears that MW-5 was covered during paving. Therefore, there is no elevation data available for MW-5.

Due to the difficulty encountered in determining the groundwater flow direction from the data, the data are presented in Figure 1-3 without attempting to contour a potentiometric surface map.

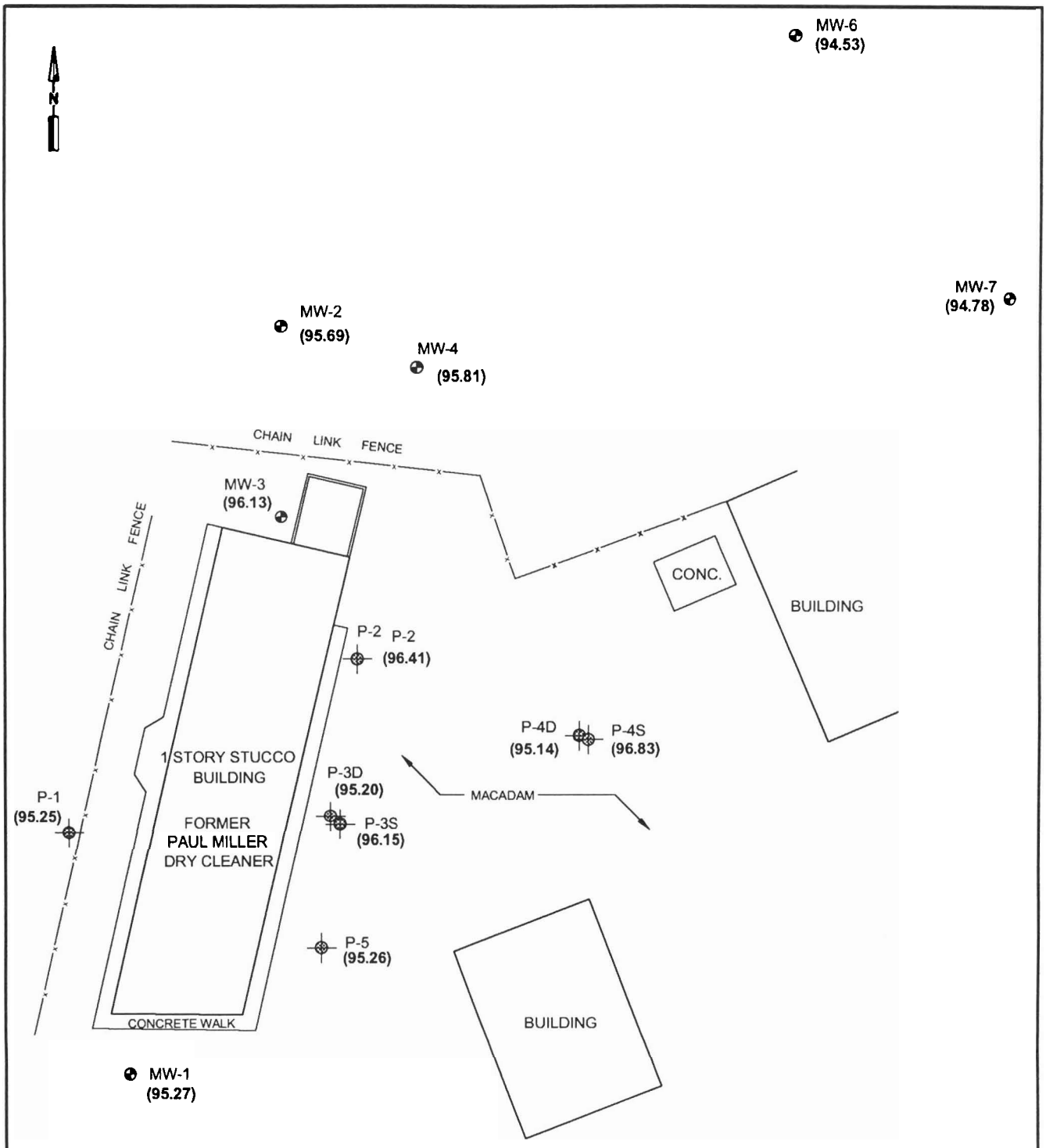
GROUNDWATER SAMPLING

All seven piezometers and three of the existing monitoring wells were sampled on 6 July 2000. The piezometers and one well (MW-4) were purged on 5 July 2000 while two additional wells (MW-1 and MW-3) were purged on 6 July 2000, immediately prior to sampling. Due to their low yields and small diameters each piezometer was purged using a disposable Teflon bailer that was later used for sampling. All of the shallow piezometers were bailed dry during purging while the deeper ones yielded the entire volume required for a full purge. Since the wells were larger diameter they were purged using a small submersible whale pump and dedicated polyethylene tubing. Both MW-1 and MW-4 were pumped dry during purging while MW-3 exhibited a good yield. Since the majority of sample points yielded such small volumes of water it was decided to sample after allowing overnight recovery to take place. A blind duplicate sample was collected from P-2 and labeled P-6. A trip blank accompanied the samples in the field and to the laboratory. The samples were shipped overnight under chain of custody procedures to Mitkem Corporation (Mitkem) in Warwick, Rhode Island for analysis. All samples were analyzed for VOCs using EPA Method 8260. The laboratory data were later validated by Data Validation Services. Appendix B contains the sampling logs, Appendix C contains the Mitkem laboratory report, and Appendix D contains the data validation and usability report.

TABLE 1-1

Piezometer and Monitoring Well
Groundwater Elevation Data
(Former Paul Miller Dry Cleaners IIWA)

Well ID	Well Depth (ft)	DTW (ft) (6/30/00)	DTW (ft) (8/7/00)	Top of PVC riser elevation (ft)	Well bottom elevation (ft)	GW elevation (ft) (6/30/00)	GW elevation (ft) (8/7/00)
P-1	9.99	7.96	7.62	102.87	92.88	94.91	95.25
P-2	9.25	5.72	5.13	101.54	92.29	95.82	96.41
P-3S	9.75	6.93	6.39	102.54	92.79	95.61	96.15
P-3D	18.30	7.64	7.31	102.51	84.21	94.87	95.20
P-4S	11.56	6.60	6.05	102.88	91.32	96.28	96.83
P-4D	22.35	7.96	7.66	102.80	80.45	94.84	95.14
P-5	9.97	8.74	8.39	103.65	93.68	94.91	95.26
MW-1	16.49	9.19	8.82	104.09	87.60	94.90	95.27
MW-2	9.40	4.55	4.07	99.76	90.36	95.21	95.69
MW-3	13.60	5.50	4.83	100.96	87.36	95.46	96.13
MW-4	12.20	5.05	4.55	100.36	88.16	95.31	95.81
MW-5	N/A	Well could not be located					
MW-6	12.55	5.58	5.53	100.06	87.51	94.48	94.53
MW-7	11.30	5.72	5.59	100.37	89.07	94.65	94.78



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Legend

- Monitoring well
- Piezometer
- (96.15) Groundwater elevation (8/7/00)

0 40 ft

~SCALE
1 in. = 40 ft

Figure 1-3

Groundwater Elevations August 2000

Immediate Investigation Work Assignment
Former Paul Miller Dry Cleaners
NYSDEC I.D. No. 344041

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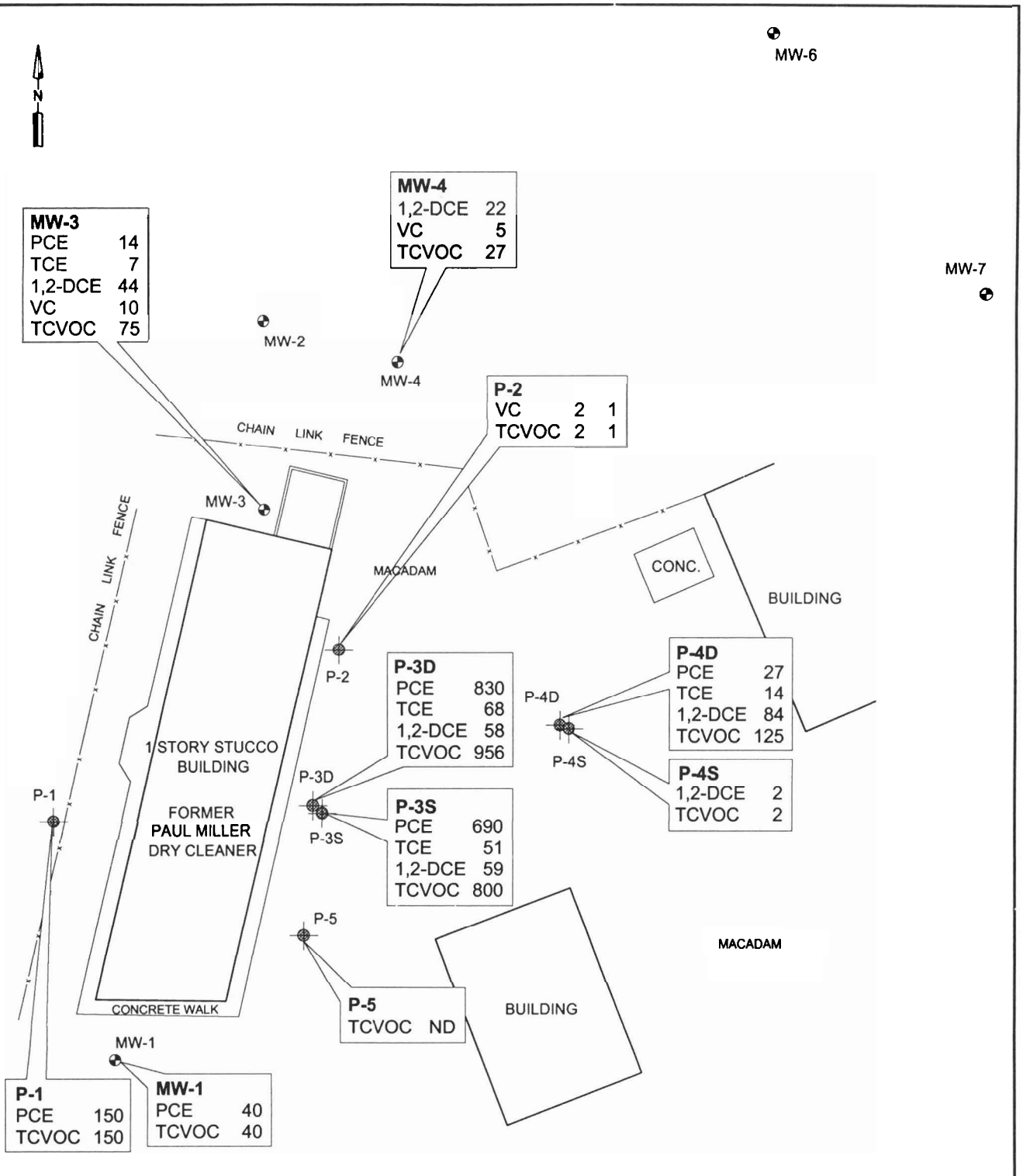
Sampling results indicate that the compounds of concern (chlorinated solvents) are present in several of the sampling points at concentrations exceeding NYSDEC Class GA standards. Analytical results for the samples collected as part of the IIWA are presented in Figure 1-4 and compiled in Table 1-2.

In monitoring well MW-1, PCE was detected at 40 µg/l, a level that exceeds the Class GA standard of 5 µg/l for this compound. Four compounds – vinyl chloride at a concentration of 10 µg/l, total 1,2-dichloroethylene (1,2-DCE) at a concentration of 44 µg/l, TCE at a concentration of 7 µg/l, and PCE at 14 µg/l were found at levels exceeding Class GA standards in MW-3. Vinyl chloride (5 µg/l) and 1,2-DCE (22 µg/l) were detected in MW-4 at concentrations exceeding the Class GA standards.

In the piezometers where contaminants were detected, the concentrations of the compounds present generally tend to be higher than in the monitoring wells. PCE, at a concentration of 150 µg/l, was the only compound detected in P-1. Three compounds were detected in P-3D at levels well above the Class GA standards for these compounds. The highest concentration was 830 µg/l of PCE, followed by 68 µg/l of TCE, and 58 µg/l of 1,2-DCE. Similar levels of these three compounds were also found in the shallow piezometer P-3S with PCE, TCE, and 1,2-DCE detected at concentrations of 690, 51, and 59 µg/l, respectively. PCE, TCE, and 1,2-DCE were also detected in P-4D at 27, 14, and 84 µg/l, respectively, at levels exceeding the Class GA standards. P-2 had 2 µg/l of vinyl chloride (1 µg/l in the blind duplicate). P-2 also had 4 µg/l of methyl tert-butyl ether (MTBE) and 2 µg/l of chlorobenzene with the blind duplicate having the identical concentrations of these two compounds. None of the contaminants found in P-2 exceeded groundwater standards. P-4S had 2 µg/l of 1,2-DCE, 1 µg/l of MTBE, and 2 µg/l of chloroform, all below groundwater standards. P-5 had 19 µg/l of MTBE, 58 µg/l of 2-butanone or methyl ethyl ketone (MEK), and 2 µg/l of 4-methyl-2-pentanone. Only the MEK exceeded the groundwater guidance value of 50 µg/l. The source of the MEK, 4-methyl-2-pentanone, chloroform, and chlorobenzene is unknown but these compounds are unrelated to dry cleaning activities and, therefore, not related to the Former Paul Miller Dry Cleaners site. MTBE is a gasoline additive and is probably related to the Hess gasoline station located to the west of the site.

PCE is the chemical generally used for dry cleaning. The other chlorinated solvents (TCE, 1,2-DCE, and VC) are the breakdown products of PCE, therefore, their presence is related to the presence of PCE. The highest concentration of PCE (and total chlorinated solvents) detected was found at P-3D. The level of contamination found in the deep



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Legend

- Monitoring well
- Piezometer

0 40 ft

~SCALE
1 in. = 40 ft

Abbreviations

PCE	Tetrachloroethylene
TCE	Trichloroethylene
1,2-DCE	1,2-dichloroethylene
VC	Vinyl chloride
TCVOC	Total chlorinated volatile organic compounds

Figure 1-4

Chlorinated Solvent Contamination in Groundwater

Immediate Investigation Work Assignment
Former Paul Miller Dry Cleaners
NYSDEC I.D. No. 344041

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GROUNDWATER DATA SUMMARY
FORMER PAUL MILLER DRY CLEANERS

Sample ID Date Collected	MW-1 07/06/2000	MW-3 07/06/2000	MW-4 07/06/2000	P-1 07/06/2000	P-2 07/06/2000	P-6 Blind Duplicate of P-2 07/06/2000	NYSDEC CLASS GA STANDARDS (b)
Volatile Organic Compounds (ug/L)		[DL 1:1.5]		[DL 1:5]			
Vinyl Chloride	ND	**10 d**	**5**	ND	2	1	2
1,2-Dichloroethylene (total)	ND	**44 d g**	**22**	ND g	ND	ND	5
Methyl tert-butyl ether	ND	ND g	ND	ND g	4	4	50[1]
2-Butanone	ND g	ND g	ND g	ND g	ND g	ND g	50 GV
Chloroform	ND	ND	ND	ND	ND	ND	7
Trichloroethylene	ND	**7 d**	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	NS
Tetrachloroethylene	**40**	**14 d**	ND	**150 d**	ND	ND	5
Chlorobenzene	ND	ND	ND	ND	2	2	5
Total VOCs:	40	75	27	**150**	8	7	100 [2]

1 - NYSDOH drinking water maximum contaminant level (MCL).
2 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/l.
(b) - Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
DL - Dilution factor.
GV - Guidance Value.
b - Found in associated blanks.
ND - Not detected at analytical reporting limit.
NS - No standard.
Note - Numbers in bold exceed standard.
d - Compound identified in an analysis at a dilution factor.
g - Value considered estimated based on data validator's report (Appendix D).

GROUNDWATER DATA SUMMARY
FORMER PAUL MILLER DRY CLEANERS

Sample ID Date Collected	P-3S 07/06/2000	P-3D 07/06/2000	P-4S 07/06/2000	P-4D 07/06/2000	P-5 07/06/2000	TB-1 07/06/2000	NYSDEC CLASS GA STANDARDS (b)
Volatile Organic Compounds (ug/L)	[DL 1:25]	[DL 1:25]		[DL 1:4]	[DL 1:2]		
Vinyl Chloride	ND	ND	ND	ND	ND	ND	2
1,2-Dichloroethylene (total)	**59 d g**	**58 d**	2	**84 d**	ND	ND	5
Methyl tert-butyl ether	ND g	ND g	1	ND	19 d	ND	50[1]
2-Butanone	ND g	ND g	ND g	ND g	**58 d g**	ND g	50 GV
Chloroform	ND	ND	2	ND	ND	ND	7
Trichloroethylene	**51 d**	**68 d**	ND	**14 d**	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	2 d	ND	NS
Tetrachloroethylene	**690 d**	**830 d**	ND	**27 d**	ND	ND	5
Chlorobenzene	ND	ND	ND	ND	ND	ND	5
Total VOCs:	**800**	**956**	5	**125**	79	0	100 [2]

1 - NYSDOH drinking water maximum contaminant level (MCL).
2 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/l.
(b) - Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
DL - Dilution factor.
GV - Guidance Value.
b - Found in associated blanks.
ND - Not detected at analytical reporting limit.
NS - No standard.
Note - Numbers in bold exceed standard.
d - Compound identified in an analysis at a dilution factor.
g - Value considered estimated based on data validator's report (Appendix D).

piezometer was slightly higher than the quantity found in the shallow piezometer at this location (956 vs 800 µg/l), indicating that the contamination may be migrating downward. At the other paired piezometer location the total chlorinated solvent contamination found in the deep piezometer (P-4D) was much greater at 125 µg/l than in the shallow piezometer (P-4S) at 2 µg/l. This provides further indication that the contamination has migrated downward.

PCE was not found in MW-4, P-2, and P-4S whereas some of the breakdown products were detected. Since the groundwater movement through the area is extremely low as indicated by the slow recovery times for the wells and piezometers this may be an indicator that the PCE has been reduced to the breakdown products at these locations. P-4S and P-2 are along what appears to be a groundwater high so any contaminants may be flowing away from these areas.

Regardless of the groundwater flow direction, the fact that PCE is present at the highest concentration immediately adjacent to the site and that the PCE concentration is much less at all points surrounding this location (P-3S and P-3D) indicates that the probable source of the PCE is from the Former Paul Miller Dry Cleaners site. Although PCE was found at very high levels adjacent to the Carlton Dry Cleaners site (located to the northeast of Paul Miller near MW-6 and MW-7), the levels of PCE detected in the monitoring wells and piezometers located between the two sites are significantly lower than that found directly adjacent to the Former Paul Miller Dry Cleaners site. This provides further evidence that the PCE found outside the Former Paul Miller Dry Cleaners site is a separate and distinct source from the PCE found adjacent to the Carlton Cleaners site.

MONITORING WELL & PIEZOMETER SURVEY

LMS retained YEC, Inc. of Valley Cottage, New York to conduct an elevation and location survey of all monitoring wells and piezometers associated with the investigation. Surveyed elevations of the top of PVC riser in each well and piezometer provide reference points for depth to water measurements and allow for the calculation of groundwater elevations. These elevations, coupled with the surveyed locations of each measurement point, can then be used to construct a map of the potentiometric surface which indicates groundwater flow direction. A copy of the map generated from the survey conducted by YEC, Inc. on 7 July 2000 is attached to the back of this report.

CONCLUSIONS AND RECOMMENDATIONS

Although an accurate groundwater contour map could not be constructed, the chemical data obtained from the three monitoring wells and seven piezometers sampled provided enough information to conclude that a separate source of PCE exists that can be attributed to the Former Paul Miller Dry Cleaners site. This conclusion is based primarily on the fact that the highest concentration of PCE (and total chlorinated solvents) was found immediately adjacent to the building. All other monitoring wells and piezometers surrounding this location had significantly lower levels of the contaminants of concern. The monitoring wells and piezometers situated between the Former Paul Miller Dry Cleaners site and the Carlton Dry Cleaners site all had much lower concentrations of PCE and/or total chlorinated solvents indicating that the PCE is not from the Carlton Dry Cleaners site but is from the Former Paul Miller Dry Cleaners site. The contamination also appears to be migrating downward as indicated by the finding of higher levels in the deeper piezometers than in the shallow piezometers located next to them. Also because there appears to be a groundwater high in this area, that may explain why contamination is reported in just about all directions around the site as the groundwater at least locally is flowing radially off the high.

LMS recommends that a soil gas survey be conducted in the area to the east of the Former Paul Miller Dry Cleaners site to attempt to locate the source such as a dry well.

Based on the difficulty encountered in probing and determining the local groundwater flow direction for the site and adjacent properties LMS recommends that split spoon samples be collected continuously from the ground surface at several locations to characterize the subsurface stratigraphy at the site. It was unclear from the probing conducted at the site the degree of heterogeneity in the subsurface materials. Additionally, it was difficult to tell whether the shallow piezometers at the site accurately reflected the true groundwater levels or were influenced by perched water that fluctuated rapidly in response to precipitation and subsequent recharge. It was clear from the rounds of water levels collected that relatively small changes in the depths of the piezometers and wells on-site yielded relatively large changes in water levels. The use of split spoons and a full size drill rig would allow for continuous characterization of the subsurface – something that could only be accomplished to relatively shallow depths using a direct push rig.

LMS also recommends that a deeper well be installed in the vicinity of P-3D to determine the vertical extent of contamination. The exact depth and procedure used should be determined after the stratigraphy has been characterized for the site.

APPENDIX A

BORING LOGS

LMS Test Boring Log

	Boring No.: P-1
	Sheet 1 **of** 1
Project Name: Former Paul Miller Dry Cleaners IIWA	**Project No.:** 650-491
Client: NYSDEC	**Date:** Start 6/26/00
Driller: LMS	Finish 6/26/00
Drilling Method: AMS Power Probe 9600	**Total Depth:** 10 ft
Boring Location: 1465 Forest Avenue (Staten Island, NY)	**Depth To Water:** 7.96 ft
Coordinates:	**Surf. Elevation:** 103.06
Logged By: Scott G. Englert	**Hole Diameter:** 2 in
Monitoring Instrument(s): none	

Depth (ft)	Blows On Sampler 0"-6"	6"-12"	12"-18"	18"-24"	Recovery (ft)	Instrument Reading	Sample Retained	Classification Of Material	Remarks
0					2.3	N/A	N	brown soil and fill grading into vf red sand and silt	
4									
4					4	N/A	N	vf red sand and silt grading to red silt with trace of clay; little gravel 7-8 ft moist	
8									
8					2	N/A	N	moist clayey red silt; trace vf sand with little gravel	
12									

f - fine, m - medium, c - coarse

and - 35-50%, some - 20-35%, little - 10-20%, trace - 0-10%

LMS Test Boring Log

	Boring No.: P-2
	Sheet 1 **of** 1
Project Name: Former Paul Miller Dry Cleaners IIWA	**Project No.:** 650-491
Client: NYSDEC	**Date:** Start 6/26/00
Driller: LMS	Finish 6/26/00
Drilling Method: AMS Power Probe 9600	**Total Depth:** 9 ft
Boring Location: 1465 Forest Avenue (Staten Island, NY)	**Depth To Water:** 5.72 ft
Coordinates:	**Surf. Elevation:** 101.69
Logged By: Scott G. Englert	**Hole Diameter:** 2 in.
Monitoring Instrument(s): none	

Depth (ft)	Blows On Sampler 0"-6"	6"-12"	12"-18"	18"-24"	Recovery (ft)	Instrument Reading	Sample Retained	Classification Of Material	Remarks
								f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; *little* - 10-20%; trace - 0-10%	
0					2	N/A	N	dark brown to black moist clayey silt	
4					3.8	N/A	N	0-3' dark brown moist clayey silt 3-3.8' moist to wet red vf sand, clayey silt and silt; trace f gravel	
8									Refusal @ 9 ft bgs

LMS Test Boring Log

	Boring No.: P-3
	Sheet 1 **of** 1
Project Name: Former Paul Miller Dry Cleaners IIWA	**Project No.:** 650-491
Client: NYSDEC	**Date:** Start 6/26/00
Driller: LMS	Finish 6/26/00
Drilling Method: AMS Power Probe 9600	**Total Depth:** 20 ft
Boring Location: 1465 Forest Avenue (Staten Island, NY)	**Depth To Water:** 7.64 ft
Coordinates:	**Surf. Elevation:** 102.66
Logged By: Scott G. Englert	**Hole Diameter:** 2 in.
Monitoring Instrument(s): none	

Depth (ft)	Blows On Sampler 0"-6"	6"-12"	12"-18"	18"-24"	Recovery (ft)	Instrument Reading	Sample Retained	Classification Of Material	Remarks
								f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%	
0					1.8	N/A	N	dark brown to black, some grey; organic; trace of wood, silt/sand; trace clay, trace f gravel	
4					3.8	N/A	N	red and tan clayey silt and silt; little vf sand; little f gravel	
8					3	N/A	N	moist red clayey silt and silty clay with trace f gravel	
12					4	N/A	N	moist red clayey silt with little f-m gravel	
16					4	N/A	N	red silt and clay with little f gravel	
20									

APPENDIX B

SAMPLING LOGS

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-1
Well Condition: new
Well Depth/Diameter: 9.99 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 8.00 ft
Water Column Ht./Vol.: 1.99 ft 0.1 gal
Purge Est.: 0.5 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000 1035-1040
Depth(s): all
Rates (gpm): N/A
Purged Volume: ~ 20 oz.
DTW After Purging: 9.71 ft
Yield Rate: L - M - H
Purge Observations: piezometer purged dry after only ~ 20 oz. removed

DTW Before Sampling: 8.34
Sample Date/Time: 07/06/2000 1200
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 9.45 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	N/A	6	N/A	>200
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
16 oz	24	6.1	1083	>200

dry @ ~ 20 oz.

Comments: low yield

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott D Eglitis Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-2
Well Condition: new
Well Depth/Diameter: 9.25 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 5.75 ft
Water Column Ht./Vol.: 3.5 ft 0.1 gal
Purge Est.: 1.0 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000
1055-1100
Depth(s): all
Rates (gpm): N/A
Purged Volume: ~0.3 gal
DTW After Purging: 9.00 ft
Yield Rate: L - M - H
Purge Observations: water very silty brown

DTW Before Sampling: 5.80 ft
Sample Date/Time: 07/06/2000 1215
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 5.90 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	23.2	6.1	2120	>200
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0.3	22	6.1	2050	>200

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Matt J. Eglof Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-3S
Well Condition: new
Well Depth/Diameter: 9.75 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 7.07 ft
Water Column Ht./Vol.: 2.68 ft 0.1 gal
Purge Est.: 0.6 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000 1112-1117
Depth(s): all
Rates (gpm): N/A
Purged Volume: 0.3 gal
DTW After Purging: 9.55 ft
Yield Rate: L - M - H
Purge Observations: very little sediment noted in bottom

DTW Before Sampling: 7.07 ft
Sample Date/Time: 07/06/2000 1235
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 9.47 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	22.8	6.1	1748	>200
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0.3	22.2	6.2	1753	>200

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott S. Eglist Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-3D
Well Condition: new
Well Depth/Diameter: 18.3 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 7.76 ft
Water Column Ht./Vol.: 10.54 ft 0.4 gal
Purge Est.: 2.6 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000
1130-1205
Depth(s): all
Rates (gpm): N/A
Purged Volume: 2.75 gal
DTW After Purging: 7.64 ft
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 7.75 ft
Sample Date/Time: 07/06/2000 1250
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 7.80 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	20.1	6.4	1153	180
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0.5	20.7	7.3	1311	>200
1.0	19.5	7.1	1065	>200
2.0	19.5	7.2	1064	>200
2.5	19.0	7.1	1064	>200

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott S. Eglin Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-4S
Well Condition: new
Well Depth/Diameter: 11.56 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 6.73 ft
Water Column Ht./Vol.: 4.83 ft 0.2 gal
Purge Est.: 1.3 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000 1300-1306
Depth(s): all
Rates (gpm): N/A
Purged Volume: 0.5 gal
DTW After Purging: 10.6 ft
Yield Rate: L - M - H
Purge Observations: water has stagnant odor

DTW Before Sampling:
Sample Date/Time: 07/06/2000 1345
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 9.10 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	23.9	6.5	1233	>200
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0.5	24.9	6.5	1130	>200

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott D Eyler Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-4D
Well Condition: new
Well Depth/Diameter: 22.35 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 7.96 ft
Water Column Ht./Vol.: 14.39 ft 0.6 gal
Purge Est.: 3.1 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000 1348-1445
Depth(s): all
Rates (gpm): N/A
Purged Volume: 3.5 gal
DTW After Purging: 20.25 ft
Yield Rate: L - M - H
Purge Observations: water is thick with sediment

DTW Before Sampling:
Sample Date/Time: 07/06/2000 1355
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 12.14 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	21.5	6.4	1559	121
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0.5	19.4	7	1005	>200
1.0	19.4	6.6	1454	>200
2.0	19.0	6.8	1494	>200
3.0	20.0	6.3	1563	>200

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott D Eglet Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: P-5
Well Condition: new
Well Depth/Diameter: 9.97 ft 1 in.
Well Casing Type: PVC
Screened Interval: bottom 5 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 8.86 ft
Water Column Ht./Vol.: 1.1 ft 0.1 gal
Purge Est.: 0.3 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000 1215-1220
Depth(s): all
Rates (gpm): N/A
Purged Volume: one bailer
DTW After Purging: ~ 9.90 ft
Yield Rate: L - M - H
Purge Observations: only able to purge one bailer full

DTW Before Sampling:
Sample Date/Time: 07/06/2000 1300
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: ~ 9.8 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	No chems due to low yield			
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.

Could not take chems due to low yield

Comments:

Air Temp: ~ 80 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott D Eglist Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: MW-1
Well Condition: fair
Well Depth/Diameter: 16.49 ft 2 in.
Well Casing Type: PVC
Screened Interval: bottom 10 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 9.40 ft
Water Column Ht./Vol.: 7.09 ft 1.2 gal
Purge Est.: 19.1 gal
Purge Method(s): whale pump
Purge Date/Time(s): 07/06/2000 0930-1010
Depth(s): all
Rates (gpm): ~0.5 gpm
Purged Volume: 7 gal
DTW After Purging: 16.25 ft
Yield Rate: L - M - H
Purge Observations: pumped well dry three times

DTW Before Sampling: 9.21 ft
Sample Date/Time: 07/06/2000 1410
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 9.40 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	20.9	6	384	95
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0	19	7.1	258	>200
6	19	6.9	398	>200

Comments:

Air Temp: 75 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Matt D Eglo Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: MW-3
Well Condition: fair
Well Depth/Diameter: 13.60 ft 2 in.
Well Casing Type: PVC
Screened Interval: bottom 10 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 5.43 ft
Water Column Ht./Vol.: 8.17 ft 1.3 gal
Purge Est.: 22.0 gal
Purge Method(s): whale pump
Purge Date/Time(s): 07/06/2000 1055-1110
Depth(s): all
Rates (gpm): ~ 1.5 gpm
Purged Volume: 23 gal
DTW After Purging: 5.95 ft
Yield Rate: L - M - H
Purge Observations: good yield from well

DTW Before Sampling:
Sample Date/Time: 07/06/2000 1120
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling: 5.90 ft
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	20.3	5.9	1841	>200
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0	19.4	6.5	1859	>200
5	19.5	6.4	1864	49
10	19.0	6	1819	140
15	19.2	6	1831	>200
20	18.7	6.2	1848	122

Comments:

Air Temp: 75 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Scott D. Eglet Date: 7-6-00

LMS Well Sampling Log

Date: 06-Jul-00
Crew: SGE / JP
Job No: 650-491
Project: Miller IIWA
Project Site: Former Paul Miller Dry Cleaners

METERS USED

Temp.: 3000 T-L-C Meter (#8)
pH: DEC 4-99-02 (pHTestr 2)
Cond.: 3000 T-L-C Meter (#8)
Turb.: NYSDEC DRT-15C

Well ID No.: MW-4
Well Condition: fair
Well Depth/Diameter: 12.20 ft 2 in.
Well Casing Type: PVC
Screened Interval: bottom 10 ft
Casing Ht./Lock No.: flush mount
Reference Pt.: top of PVC riser
Depth to Water (DTW): 4.93 ft
Water Column Ht./Vol.: 7.27 ft 1.2 gal
Purge Est.: 19.6 gal
Purge Method(s): bailer
Purge Date/Time(s): 07/05/2000
1455 - 1515
Depth(s): all
Rates (gpm): N/A
Purged Volume: ~ 5.5 gal
DTW After Purging: 10.85 ft
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 5.00 ft
Sample Date/Time: 07/06/2000 1145
Sampling Method: bailer
Sampling Depth(s): top of column
DTW After Sampling:
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corp.
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	22.9	6	1600	19
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
VOCs		<4 deg C	no

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.
0	24	5.9	1834	104
5	22	6.1	1824	>200

Comments: well pumped dry after ~ 4.5 gal
pumped an additional gal.
before pumping dry again

flush mount damaged

Air Temp: 75 deg
Weather Conditions: nice and sunny

Crew Chief Signature: Matt L. Eglet Date: 7-6-00

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-4S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026009

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2349

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
75-71-8	Dichlorodifluoromethane		1	U
74-87-3	Chloromethane		1	U
75-01-4	Vinyl Chloride		1	U
74-83-9	Bromomethane		1	U
75-00-3	Chloroethane		1	U
75-69-4	Trichlorofluoromethane		1	U
75-35-4	1,1-Dichloroethene		1	U
67-64-1	Acetone		2	B
74-88-4	Iodomethane		1	U
75-15-0	Carbon Disulfide		1	U
75-09-2	Methylene Chloride		3	
156-60-5	trans-1,2-Dichloroethene		1	U
1634-04-4	Methyl tert-butyl ether		1	
75-34-3	1,1-Dichloroethane		1	U
108-05-4	Vinyl acetate		1	U
156-59-2	cis-1,2-Dichloroethene		2	
590-20-7	2,2-Dichloropropane		1	U
78-93-3	2-Butanone		1	U
74-97-5	Bromochloromethane		1	U
67-66-3	Chloroform		2	
71-55-6	1,1,1-Trichloroethane		1	U
563-58-6	1,1-Dichloropropene		1	U
56-23-5	Carbon Tetrachloride		1	U
107-06-2	1,2-Dichloroethane		1	U
71-43-2	Benzene		1	U
79-01-6	Tricnloroethene		1	U
78-87-5	1,2-Dichloropropane		1	U
74-95-3	Dibromomethane		1	U
75-27-4	Bromodichloromethane		1	U
110-75-8	2-Chloroethyl vinyl ether		1	U
10061-01-5	cis-1,3-Dichloropropene		1	U
108-10-1	4-Methyl-2-pentanone		1	U
108-88-3	Toluene		1	U
10061-02-6	trans-1,3-Dichloropropene		1	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-4S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026009

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2349

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	1	U
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-4S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026009

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2349

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ **Date Analyzed: 07/13/00**

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-5

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026008

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2348

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	2	U
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
67-64-1	Acetone	10	B
74-88-4	Iodomethane	2	U
75-15-0	Carbon Disulfide	2	U
75-09-2	Methylene Chloride	2	U
156-60-5	trans-1,2-Dichloroethene	2	U
1634-04-4	Methyl tert-butyl ether	19	
75-34-3	1,1-Dichloroethane	2	U
108-05-4	Vinyl acetate	2	U
156-59-2	cis-1,2-Dichloroethene	2	U
590-20-7	2,2-Dichloropropane	2	U
78-93-3	2-Butanone	58	
74-97-5	Bromochloromethane	2	U
67-66-3	Chloroform	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	2	U
78-87-5	1,2-Dichloropropane	2	U
74-95-3	Dibromomethane	2	U
75-27-4	Bromodichloromethane	2	U
110-75-8	2-Chloroethyl vinyl ether	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-10-1	4-Methyl-2-pentanone	2	
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-5

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026008

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2348

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uI

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	2	U
591-78-6	2-Hexanone	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
100-41-4	Ethylbenzene	2	U
100-42-5	Styrene	2	U
1330-20-7	Xylene (Total)	2	U
75-25-2	Bromoform	2	U
98-82-8	Isopropylbenzene	2	U
79-34-5	1,1,2,2-Tetrachloroethane	2	U
108-86-1	Bromobenzene	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-63-6	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
99-87-6	4-Isopropyltoluene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-5

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026008

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2348

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____ Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-6

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026005

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2347

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) **Soil Aliquot Volume:** _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1	U
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	1	
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	1	U
75-35-4	1,1-Dichloroethene	1	U
67-64-1	Acetone	3	B
74-88-4	Iodomethane	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	2	
156-60-5	trans-1,2-Dichloroethene	1	U
1634-04-4	Methyl tert-butyl ether	4	
75-34-3	1,1-Dichloroethane	1	U
108-05-4	Vinyl acetate	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
590-20-7	2,2-Dichloropropane	1	U
78-93-3	2-Butanone	1	U
74-97-5	Bromochloromethane	1	U
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
563-58-6	1,1-Dichloropropene	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
74-95-3	Dibromomethane	1	U
75-27-4	Bromodichloromethane	1	U
110-75-8	2-Chloroethyl vinyl ether	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-10-1	4-Methyl-2-pentanone	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-6

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026005

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2347

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	1	U
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	2	
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-6

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026005

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2347

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) **Dilution Factor:** 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026012

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2351

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(ul

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1	U
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	1	U
75-35-4	1,1-Dichloroethene	1	U
67-64-1	Acetone	1	U
74-88-4	Iodomethane	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	2	
156-60-5	trans-1,2-Dichloroethene	1	U
1634-04-4	Methyl tert-butyl ether	1	U
75-34-3	1,1-Dichloroethane	1	U
108-05-4	Vinyl acetate	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
590-20-7	2,2-Dichloropropane	1	U
78-93-3	2-Butanone	1	U
74-97-5	Bromochloromethane	1	U
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
563-58-6	1,1-Dichloropropene	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
74-95-3	Dibromomethane	1	U
75-27-4	Bromodichloromethane	1	U
110-75-8	2-Chloroethyl vinyl ether	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-10-1	4-Methyl-2-pentanone	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026012

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2351

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	1	U
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026012

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2351

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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APPENDIX D

DATA VALIDATION AND USABILITY REPORT

DATA USABILITY REPORT

This usability report covers the analytical results, submitted by MITKEM Corporation (MITKEM), for the field sampling investigation conducted by Lawler, Matusky & Skelly Engineers LLP (LMS) on 6 July 2000 at the Former Paul Miller Dry Cleaners site (Site No. 2-43-018). The analytical report submitted by MITKEM for sample designation group (SDG) 71026 was validated by Data Validation Services (DVS). LMS reviewed the data validator's final report and assessed the analytical data against the project data quality objectives (DQOs) in preparation of this data usability report. The laboratory performed all the necessary actions in order to provide the most representative data and where resulting quality control (QC) data did not fall within protocol requirements the reported data were appropriately qualified. Overall, the data submitted by MITKEM met the project DQOs and are useable to characterize the levels of specified environmental contamination in the samples collected at the Former Paul Miller Dry Cleaners site.

During this field investigation a total of eleven (11) groundwater samples were collected and analyzed for volatile organic compounds (VOCs) in accordance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP), Rev. 10/95. Trip blank and QC samples were also processed.

Those instances where the reported data were noncompliant with the established protocol requirements are described in the data validator's report. This report presents a discussion of any impact that noncompliant data or any other issues raised by the data validator may have on the usability of the reported analytical results.

The aqueous samples submitted to MITKEM were analyzed for VOCs by NYSDEC ASP Method 8260B. The effects of QC issues on the reported concentrations of VOCs and their usability are discussed below.

1. The data validator cross-referenced detections of acetone and methylene chloride at concentration levels similar to those of the samples in blanks associated with the analysis of the aqueous samples. The reported concentrations for these commonly used laboratory solvents may be the result of laboratory cross-contamination.

The data validator negated the reported numerical results of acetone and methylene chloride in all of the samples of SDG 71026. These results, edited to "nondetect" at the originally reported value, are useable to indicate that elevated levels of these compounds were not present in the related samples.

2. The relative response factors (RRFs) of acetone and 2-butanone were less than the QA limit in the initial and continuing calibrations associated with the aqueous samples of SDG 71026. The reported results of these compound, numerical data and nondetects should be considered estimated values, possible biased low. The respective estimated results were flagged with a **g** in the data summary table.

- The percent differences (%D) of methylene chloride, trans-1,2-dichloroethene, and methyl tert-butyl ether were slightly above the 25% quality assurance (QA) limit, 35%D to 44%D, in the continuing calibration associated with the analysis of samples P-1, P-3S, P-3D, and MW-3. The reported results of these compounds, numerical data and nondetects, should be considered estimated, possibly biased slightly low. The respective estimated results were flagged with a **g** in the data summary table.

The estimated numerical values are usable to identify the presence and show the relative magnitude of VOC contamination in these samples. Undetected values, when estimated, are not suitable to demonstrate that contamination is not present but are usable to indicate that elevated levels of these target compounds were not detected in the affected samples. It is possible that small concentrations of the estimated undetected compounds were overlooked in these samples.

3. In the sample MW-3, matrix spike and matrix spike duplicate analyses were performed with all the target compounds. Recoveries and duplicate correlations of methylene chloride, cis-1,2-dichloroethene, and trans-1,2-dichloroethene were below QC limits. Accordingly, the reported results of these compounds, numerical values and nondetects, in the sample MW-3 should be considered estimated, possibly biased slightly low, and flagged with a **g** in the data summary table.

The estimated numerical values are usable to approximate the magnitude of VOC contamination in this sample. Estimated undetected values are usable to indicate that elevated levels of the relevant compounds were not detected in the sample MW-3.

4. Due to elevated level of target compounds present in the respective samples, additional analyses at a dilution were required for better quantitation. The laboratory did not submit results from the initial analyses where concentrations of target compounds exceeded the calibration range of linearity. In the data summary table, the numerical results were flagged with a **d** when reported from an analysis at a dilution.

In every other respect of data validation and review, no other problems were found and the results are usable as reported by the laboratory.

Data Validation Services

120 Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429
Facsimile 518-251-4428

July 31, 2000

Dr. Maria Heincz
LMS Engineers
One Blue Hill Plaza
Pearl River, NY 10965

RE: Validation of NYSDEC Miller Cleaner Site Data Packages
Mitkem SDG Nos. 71026

Dear Dr. Heincz:

Review has been completed for the data packages generated by Mitkem Laboratories, pertaining to samples collected 7/06/00 at the NYSDEC Miller Cleaner Site. Eleven aqueous samples were analysed for TCL volatiles by NYSDEC ASP 8260B. Matrix spikes/duplicates and a trip blank were also processed.

Data validation was performed with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USEPA SOPs HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate and Internal Standard Recoveries
* Matrix Spike Recoveries/Duplicate Correlations
* Preparation/Calibration Blanks
* Control Spike/Laboratory Control Samples
* Instrumental Tunes
* Calibration Standards
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherance to quality criteria, and reported results are usable as reported, or with minor qualification.

Attached to this report are copies of laboratory case narratives and NYSDEC Sample Identification/Requirement summary forms. These should be reviewed in conjunction with this report. Also attached is a compliance chart.

Data Completeness/General

No resubmissions were required.

Volatile Analyses by EPA8260B

Holding times were met for the analysis of these unpreserved samples, and instrumental tunes were acceptable. Surrogate and internal standard recoveries were within required ranges.

Due to copresence in associated blanks at levels similar to those of the samples, sample detections of methylene chloride and acetone are considered contamination. Results should be edited to nondetection ("U") either the CRDL, or the originally reported value, whichever is greater. Additionally, some of the reported acetone detections produced spectra too poor for identification.

Aqueous matrix spikes of MW-3, which included all target analytes, showed acceptable accuracy and precision values, with the exception of three analytes exhibiting low recoveries, all of which were greater than 40%. Laboratory Control Sample recoveries were acceptable.

Due to poor responses in the calibration standards (RRFs of 0.027 and 0.03), results for acetone and 2-butanone in the samples should be considered estimated ("UJ" and "J"), with a possible low bias.

Due to outlying correlations in the daily standards (38%D to 44%D), results for methylene chloride, trans-1,2,-dichloroethene, and methyl tert butyl ether should be considered estimated ("J" and "UJ") in samples P-1, P-3S, P-3D, and MW-3.

All other sample reported results are substantiated by the raw data.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Judy Harry

COMPLIANCE CHART

Project: LMS Engineers Miller Cleaners Site

SDG Nos. Mitkem SDG No. 71026

Protocol: NYSDEC 1995 ASP/SW846

Rec. Date	Sample ID	Matrix	VOA	Noncompliance
07-06-00	MW-1	Aqueous	OK	
07-06-00	MW-3	Aqueous	OK	
07-06-00	MW-4	Aqueous	OK	
07-06-00	P-1	Aqueous	OK	
07-06-00	P-2	Aqueous	OK	
07-06-00	P-6	Aqueous	OK	
07-06-00	P-3S	Aqueous	OK	
07-06-00	P-3D	Aqueous	OK	
07-06-00	P-5	Aqueous	OK	
07-06-00	P-4S	Aqueous	OK	
07-06-00	P-4D	Aqueous	OK	
07-06-00	Trip Blank	Aqueous	OK	

Mitkem Corporation

New York State Department of Environmental Conservation
Sample Identification and Analytical Requirements Summary

Project Name: NYSDEC Paul Miller 650-491 SDG: 71026

Customer Sample Code	Laboratory Sample Code	Analytical Requirements				
		VOA GC/MS Method #	BNA GC/MS Method #	Pest PCBs Method #	Metals	Other
MW-3	71026001	8260B				
MW-4	-002					
P-1	-003					
P-2	-004					
P-6	-005					
P-3S	-006					
P-3D	-007					
P-5	-008					
P-4S	-009					
P-4D	-010					
MW-1	-011					
TB-1	-012					
MW-3 MS	-013					
MW-3 MSD	-014					
MSB-1	-015					

NYASP 10/95

Mitkem Corporation

New York State Department of Environmental Conservation

Sample Preparation and Analyses Summary
Volatile (VOA) Analyses

Project Name: NYSDEC Paul Miller 650-491 SDG: 71026

Laboratory Sample ID	Matrix	Date Collected	Date Received at Lab	Date Extracted	Date Analyzed
71026001	AQ	7/6/00	7/7/00		7/14/00
-002					7/13/00
-003					7/14/00
-004					7/13/00
-005					↓
-006					7/14/00
-007					↓
-008					7/13/00
-009					↑
-010					↑
-011					↑
-012					↓
-013					7/14/00
-014					↓
-015	↓	↓	↓		7/13/00

NYASP 10/95

Mitkem Corporation

New York State Department of Environmental Conservation

Sample Preparation and Analyses Summary
Volatile (VOA) Analyses

Project Name: NYSDEC Paul Miller 650-491 SDG: 71026

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Low/Med. Level	Dil./Conc. Factor
71026001	AQ	8260		L	1.5
-002					1
-003					5
-004					1
-005					1
-006					25
-007					25
-008					2
-009					1
-010					4
-011					1
-012					1
-013					1
-014					1
-015	↓	↓		↓	1

NYASP 10/95

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to LMS Engineers' project. Under this deliverable, analysis results are presented for twelve aqueous samples that were received on July 7, 2000 and assigned Laboratory Number 71026. Analyses were performed per specifications in the project's contract and the chain of custody forms.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis
MW-3	71026001	V
MW-4	71026002	V
P-1	71026003	V
P-2	71026004	V
P-6	71026005	V
P-3S	71026006	V
P-3D	71026007	V
P-5	71026008	V
P-4S	71026009	V
P-4D	71026010	V
MW-1	71026011	V
TB-1	71026012	V
MW-3MS	71026013	V
MW-3MSD	71026014	V
MBS-1*	71026015	V

* The method blank spike (MSB-1) is denoted as VBLK5ULCS in the data package.

V = Volatile Organics – NYSDEC ASP Method 8260B

The analyses were performed according to NYSDEC ASP protocols (October 1995 update) and reported per NYSDEC ASP requirement for Category B deliverable.

The following observation and/or deviations are observed for the following analyses:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Organic Analysis:

Per requirement, the analyses were performed using 25 mL sample aliquot and reported to 1 ppb level.

Surrogate recovery: recoveries were within the QC limits

Lab control sample: spike recoveries were within the QC limits

Matrix spike/matrix spike duplicate: duplicate matrix spikes were performed on MW-3. Three analytes including methylene chloride, trans-1,2-dichloroethene and cis-1,2-dichloroethene were recovered out of the QC limits.

Sample analysis: the following samples were analyzed at dilution: MW-3 (1.5x), P-1 (5x), P-3D (25x), P-3S (25x), P-4D (4x) and P-5 (2x). No other unusual observation was noted for the analyses.

I certify that this data package is in compliance, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin S. Chiu
Technical Director
7/20/00

APPENDIX C

MITKEM CORPORATION LABORATORY REPORT

MITKEM CORPORATION

* Data Summary Package *

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY: LMS Engineers	PHONE: (914) 735 8300	COMPANY: Same	PHONE:	LAB PROJECT #: 71026
NAME: Heinz	FAX: (914) 735-7466	NAME: Same	FAX: Same	
ADDRESS: One Blue Hill Plaza		ADDRESS:		TURNAROUND TIME:
CITY/ST/ZIP: Pearl River, NY 10965		CITY/ST/ZIP: Same		

CLIENT PROJECT NAME: Former Paul Miller Cleaners IIWA

CLIENT PROJECT #: 650-491

CLIENT P.O.#:

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOCs	COMMENTS
MW-3	7-6-00' 1120		X	X			01	9	X	MS/MSD sample also
MW-4	7-6-00' 1145		X	X			02	3	X	
P-1	7-6-00' 1200		X	X			03	3	X	
P-2	7-6-00' 1215		X	X			04	3	X	
P-6	7-6-00' 1225		X	X			05	3	X	
P-3S	7-6-00' 1235		X	X			06	3	X	
P-3D	7-6-00' 1250		X	X			07	3	X	
P-5	7-6-00' 1300		X	X			08	2	X	only enough yield for 2 vials
P-4S	7-6-00' 1345		X	X			09	3	X	
P-4D	7-6-00 ~~1410~~ 1355 (CC)		X	X			10	3	X	
MW-1	7-6-00' 1410		X	X			11	3	X	
TB-1	7-6-00'			X			12	2	X	Trip Blank

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP
1	Scott D. Enlist	7-6-00' 1730	Steve Wadelton	7-7-00' 9:30		4°C
2		/		/		
3		/		/		

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO			INVOICE TO		
COMPANY LMS Engineers	PHONE (914) 735 8300		COMPANY Same	PHONE	LAB PROJECT #: 71026
NAME Maria Heinz	FAX (914) 735-7466		NAME	FAX Same	
ADDRESS One Blue Hill Plaza			ADDRESS		TURNAROUND TIME:
CITY/ST/ZIP Pearl River, NY 10965			CITY/ST/ZIP Same		

CLIENT PROJECT NAME: Former Paul Miller Cleaners IIWA

CLIENT PROJECT #: 650-491

CLIENT P.O.#:

REQUESTED ANALYSES: VOCs

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOCs	COMMENTS
MW-3	7-6-00' 1120		X	X			01	9	X	MS/MSD sample also
MW-4	7-6-00' 1145		X	X			02	3	X	
P-1	7-6-00' 1200		X	X			03	3	X	
P-2	7-6-00' 1215		X	X			04	3	X	
P-6	7-6-00' 1225		X	X			05	3	X	
P-3S	7-6-00' 1235		X	X			06	3	X	
P-3D	7-6-00' 1250		X	X			07	3	X	
P-5	7-6-00' 1300		X	X			08	2	X	only enough yield for 2 vials
P-4S	7-6-00' 1345		X	X			09	3	X	
P-4D	7-6-00 ~~1410~~ 1355 (DUP)		X	X			10	3	X	
MW-1	7-6-00' 1410		X	X			11	3	X	
TB-1	7-6-00'			X			12	2	X	Trip Blank

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
1	Scott S. Englist	7-6-00' 1730	Steve Underhill	7-7-00' 9:30
2		/		/
3		/		/

ADDITIONAL REMARKS:

COOLER TEMP: 4°C

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026011

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2352

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1	U
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	1	U
75-35-4	1,1-Dichloroethene	1	U
67-64-1	Acetone	1	U
74-88-4	Iodomethane	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
1634-04-4	Methyl tert-butyl ether	1	U
75-34-3	1,1-Dichloroethane	1	U
108-05-4	Vinyl acetate	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
590-20-7	2,2-Dichloropropane	1	U
78-93-3	2-Butanone	1	U
74-97-5	Bromochloromethane	1	U
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
563-58-6	1,1-Dichloropropene	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
74-95-3	Dibromomethane	1	U
75-27-4	Bromodichloromethane	1	U
110-75-8	2-Chloroethyl vinyl ether	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-10-1	4-Methyl-2-pentanone	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER **Lab Sample ID: 71026011**

Sample wt/vol: 25.00 (g/mL) ML **Lab File ID: V5C2352**

Level: (low/med) LOW **Date Received: 07/07/00**

% Moisture: not dec. _____ **Date Analyzed: 07/13/00**

GC Column: DB-624 ID: 0.25 (mm) **Dilution Factor: 1.0**

Soil Extract Volume:_____**(uL)** **Soil Aliquot Volume:** _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	40	
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026011

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2352

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026001

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2372

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.5

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2	U
74-87-3	Chloromethane	2	U
75-01-4	Vinyl Chloride	10	
74-83-9	Bromomethane	2	U
75-00-3	Chloroethane	2	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
67-64-1	Acetone	2	U
74-88-4	Iodomethane	2	U
75-15-0	Carbon Disulfide	2	U
75-09-2	Methylene Chloride	2	U
156-60-5	trans-1,2-Dichloroethene	2	U
1634-04-4	Methyl tert-butyl ether	2	U
75-34-3	1,1-Dichloroethane	2	U
108-05-4	Vinyl acetate	2	U
156-59-2	cis-1,2-Dichloroethene	44	
590-20-7	2,2-Dichloropropane	2	U
78-93-3	2-Butanone	2	U
74-97-5	Bromochloromethane	2	U
67-66-3	Chloroform	2	U
71-55-6	1,1,1-Trichloroethane	2	U
563-58-6	1,1-Dichloropropene	2	U
56-23-5	Carbon Tetrachloride	2	U
107-06-2	1,2-Dichloroethane	2	U
71-43-2	Benzene	2	U
79-01-6	Trichloroethene	7	
78-87-5	1,2-Dichloropropane	2	U
74-95-3	Dibromomethane	2	U
75-27-4	Bromodichloromethane	2	U
110-75-8	2-Chloroethyl vinyl ether	2	U
10061-01-5	cis-1,3-Dichloropropene	2	U
108-10-1	4-Methyl-2-pentanone	2	U
108-88-3	Toluene	2	U
10061-02-6	trans-1,3-Dichloropropene	2	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026001

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2372

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.5

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	2	U
142-28-9	1,3-Dichloropropane	2	U
127-18-4	Tetrachloroethene	14	
591-78-6	2-Hexanone	2	U
124-48-1	Dibromochloromethane	2	U
106-93-4	1,2-Dibromoethane	2	U
108-90-7	Chlorobenzene	2	U
630-20-6	1,1,1,2-Tetrachloroethane	2	U
100-41-4	Ethylbenzene	2	U
100-42-5	Styrene	2	U
1330-20-7	Xylene (Total)	2	U
75-25-2	Bromoform	2	U
98-82-8	Isopropylbenzene	2	U
79-34-5	1,1,2,2-Tetrachloroethane	2	U
108-86-1	Bromobenzene	2	U
96-18-4	1,2,3-Trichloropropane	2	U
103-65-1	n-Propylbenzene	2	U
95-49-8	2-Chlorotoluene	2	U
108-67-8	1,3,5-Trimethylbenzene	2	U
106-43-4	4-Chlorotoluene	2	U
98-06-6	tert-Butylbenzene	2	U
95-63-6	1,2,4-Trimethylbenzene	2	U
135-98-8	sec-Butylbenzene	2	U
541-73-1	1,3-Dichlorobenzene	2	U
99-87-6	4-Isopropyltoluene	2	U
106-46-7	1,4-Dichlorobenzene	2	U
104-51-8	n-Butylbenzene	2	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U
120-82-1	1,2,4-Trichlorobenzene	2	U
87-68-3	Hexachlorobutadiene	2	U
91-20-3	Naphthalene	2	U
87-61-6	1,2,3-Trichlorobenzene	2	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW-3

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026001

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2372

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.5

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026002

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2344

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1	U
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	5	
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	1	U
75-35-4	1,1-Dichloroethene	1	U
67-64-1	Acetone	4	B
74-88-4	Iodomethane	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
1634-04-4	Methyl tert-butyl ether	1	U
75-34-3	1,1-Dichloroethane	1	U
108-05-4	Vinyl acetate	1	U
156-59-2	cis-1,2-Dichloroethene	22	
590-20-7	2,2-Dichloropropane	1	U
78-93-3	2-Butanone	1	U
74-97-5	Bromochloromethane	1	U
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
563-58-6	1,1-Dichloropropene	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
74-95-3	Dibromomethane	1	U
75-27-4	Bromodichloromethane	1	U
110-75-8	2-Chloroethyl vinyl ether	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-10-1	4-Methyl-2-pentanone	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026002

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2344

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	1	U
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW-4

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026002

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2344

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026003

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2369

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uI

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
67-64-1	Acetone	5	U
74-88-4	Iodomethane	5	U
75-15-0	Carbon Disulfide	5	U
75-09-2	Methylene Chloride	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
108-05-4	Vinyl acetate	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
590-20-7	2,2-Dichloropropane	5	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	5	U
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
563-58-6	1,1-Dichloropropene	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
74-95-3	Dibromomethane	5	U
75-27-4	Bromodichloromethane	5	U
110-75-8	2-Chloroethyl vinyl ether	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026003

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2369

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	5	U
142-28-9	1,3-Dichloropropane	5	U
127-18-4	Tetrachloroethene	150	
591-78-6	2-Hexanone	5	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U
108-90-7	Chlorobenzene	5	U
630-20-6	1,1,1,2-Tetrachloroethane	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropylbenzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-86-1	Bromobenzene	5	U
96-18-4	1,2,3-Trichloropropane	5	U
103-65-1	n-Propylbenzene	5	U
95-49-8	2-Chlorotoluene	5	U
108-67-8	1,3,5-Trimethylbenzene	5	U
106-43-4	4-Chlorotoluene	5	U
98-06-6	tert-Butylbenzene	5	U
95-63-6	1,2,4-Trimethylbenzene	5	U
135-98-8	sec-Butylbenzene	5	U
541-73-1	1,3-Dichlorobenzene	5	U
99-87-6	4-Isopropyltoluene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
104-51-8	n-Butylbenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
87-68-3	Hexachlorobutadiene	5	U
91-20-3	Naphthalene	5	U
87-61-6	1,2,3-Trichlorobenzene	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026003

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2369

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(u

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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-2

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026004

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2346

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	1	U
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	2	
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	1	U
75-35-4	1,1-Dichloroethene	1	U
67-64-1	Acetone	1	U
74-88-4	Iodomethane	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
1634-04-4	Methyl tert-butyl ether	4	
75-34-3	1,1-Dichloroethane	1	U
108-05-4	Vinyl acetate	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
590-20-7	2,2-Dichloropropane	1	U
78-93-3	2-Butanone	1	U
74-97-5	Bromochloromethane	1	U
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
563-58-6	1,1-Dichloropropene	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
74-95-3	Dibromomethane	1	U
75-27-4	Bromodichloromethane	1	U
110-75-8	2-Chloroethyl vinyl ether	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-10-1	4-Methyl-2-pentanone	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-2

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026004

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2346

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	1	U
142-28-9	1,3-Dichloropropane	1	U
127-18-4	Tetrachloroethene	1	U
591-78-6	2-Hexanone	1	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-90-7	Chlorobenzene	2	
630-20-6	1,1,1,2-Tetrachloroethane	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (Total)	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-86-1	Bromobenzene	1	U
96-18-4	1,2,3-Trichloropropane	1	U
103-65-1	n-Propylbenzene	1	U
95-49-8	2-Chlorotoluene	1	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
98-06-6	tert-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	1	U
135-98-8	sec-Butylbenzene	1	U
541-73-1	1,3-Dichlorobenzene	1	U
99-87-6	4-Isopropyltoluene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
104-51-8	n-Butylbenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	1	U
87-61-6	1,2,3-Trichlorobenzene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-2

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026004

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2346

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(u

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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-3D

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026007

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2371

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 25.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	U
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	25	U
74-88-4	Iodomethane	25	U
75-15-0	Carbon Disulfide	25	U
75-09-2	Methylene Chloride	25	U
156-60-5	trans-1,2-Dichloroethene	25	U
1634-04-4	Methyl tert-butyl ether	25	U
75-34-3	1,1-Dichloroethane	25	U
108-05-4	Vinyl acetate	25	U
156-59-2	cis-1,2-Dichloroethene	58	
590-20-7	2,2-Dichloropropane	25	U
78-93-3	2-Butanone	25	U
74-97-5	Bromochloromethane	25	U
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
563-58-6	1,1-Dichloropropene	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	25	U
79-01-6	Trichloroethene	68	
78-87-5	1,2-Dichloropropane	25	U
74-95-3	Dibromomethane	25	U
75-27-4	Bromodichloromethane	25	U
110-75-8	2-Chloroethyl vinyl ether	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone	25	U
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-3D

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026007

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2371

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 25.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	25	U
142-28-9	1,3-Dichloropropane	25	U
127-18-4	Tetrachloroethene	830	
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
630-20-6	1,1,1,2-Tetrachloroethane	25	U
100-41-4	Ethylbenzene	25	U
100-42-5	Styrene	25	U
1330-20-7	Xylene (Total)	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
108-86-1	Bromobenzene	25	U
96-18-4	1,2,3-Trichloropropane	25	U
103-65-1	n-Propylbenzene	25	U
95-49-8	2-Chlorotoluene	25	U
108-67-8	1,3,5-Trimethylbenzene	25	U
106-43-4	4-Chlorotoluene	25	U
98-06-6	tert-Butylbenzene	25	U
95-63-6	1,2,4-Trimethylbenzene	25	U
135-98-8	sec-Butylbenzene	25	U
541-73-1	1,3-Dichlorobenzene	25	U
99-87-6	4-Isopropyltoluene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
104-51-8	n-Butylbenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U
87-68-3	Hexachlorobutadiene	25	U
91-20-3	Naphthalene	25	U
87-61-6	1,2,3-Trichlorobenzene	25	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-3S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026006

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2370

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 25.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	U
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	100	
74-88-4	Iodomethane	25	U
75-15-0	Carbon Disulfide	25	U
75-09-2	Methylene Chloride	25	U
156-60-5	trans-1,2-Dichloroethene	25	U
1634-04-4	Methyl tert-butyl ether	25	U
75-34-3	1,1-Dichloroethane	25	U
108-05-4	Vinyl acetate	25	U
156-59-2	cis-1,2-Dichloroethene	59	
590-20-7	2,2-Dichloropropane	25	U
78-93-3	2-Butanone	25	U
74-97-5	Bromochloromethane	25	U
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
563-58-6	1,1-Dichloropropene	25	U
56-23-5	Carbon Tetrachloride	25	U
107-06-2	1,2-Dichloroethane	25	U
71-43-2	Benzene	25	U
79-01-6	Trichloroethene	51	
78-87-5	1,2-Dichloropropane	25	U
74-95-3	Dibromomethane	25	U
75-27-4	Bromodichloromethane	25	U
110-75-8	2-Chloroethyl vinyl ether	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone	25	U
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-3S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026006

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2370

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 25.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	25	U
142-28-9	1,3-Dichloropropane	25	U
127-18-4	Tetrachloroethene	690	
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
630-20-6	1,1,1,2-Tetrachloroethane	25	U
100-41-4	Ethylbenzene	25	U
100-42-5	Styrene	25	U
1330-20-7	Xylene (Total)	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
108-86-1	Bromobenzene	25	U
96-18-4	1,2,3-Trichloropropane	25	U
103-65-1	n-Propylbenzene	25	U
95-49-8	2-Chlorotoluene	25	U
108-67-8	1,3,5-Trimethylbenzene	25	U
106-43-4	4-Chlorotoluene	25	U
98-06-6	tert-Butylbenzene	25	U
95-63-6	1,2,4-Trimethylbenzene	25	U
135-98-8	sec-Butylbenzene	25	U
541-73-1	1,3-Dichlorobenzene	25	U
99-87-6	4-Isopropyltoluene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
104-51-8	n-Butylbenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U
87-68-3	Hexachlorobutadiene	25	U
91-20-3	Naphthalene	25	U
87-61-6	1,2,3-Trichlorobenzene	25	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-3S

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026006

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2370

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/14/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 25.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-4D

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026010

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2350

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 4.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	4	U
75-01-4	Vinyl Chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	4	U
74-88-4	Iodomethane	4	U
75-15-0	Carbon Disulfide	4	U
75-09-2	Methylene Chloride	4	U
156-60-5	trans-1,2-Dichloroethene	4	U
1634-04-4	Methyl tert-butyl ether	4	U
75-34-3	1,1-Dichloroethane	4	U
108-05-4	Vinyl acetate	4	U
156-59-2	cis-1,2-Dichloroethene	84	
590-20-7	2,2-Dichloropropane	4	U
78-93-3	2-Butanone	4	U
74-97-5	Bromochloromethane	4	U
67-66-3	Chloroform	4	U
71-55-6	1,1,1-Trichloroethane	4	U
563-58-6	1,1-Dichloropropene	4	U
56-23-5	Carbon Tetrachloride	4	U
107-06-2	1,2-Dichloroethane	4	U
71-43-2	Benzene	4	U
79-01-6	Trichloroethene	14	
78-87-5	1,2-Dichloropropane	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
110-75-8	2-Chloroethyl vinyl ether	4	U
10061-01-5	cis-1,3-Dichloropropene	4	U
108-10-1	4-Methyl-2-pentanone	4	U
108-88-3	Toluene	4	U
10061-02-6	trans-1,3-Dichloropropene	4	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

P-4D

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026010

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2350

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 4.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(u

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-00-5	1,1,2-Trichloroethane	4	U
142-28-9	1,3-Dichloropropane	4	U
127-18-4	Tetrachloroethene	27	
591-78-6	2-Hexanone	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
100-41-4	Ethylbenzene	4	U
100-42-5	Styrene	4	U
1330-20-7	Xylene (Total)	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
108-86-1	Bromobenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
103-65-1	n-Propylbenzene	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
98-06-6	tert-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
135-98-8	sec-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
99-87-6	4-Isopropyltoluene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
104-51-8	n-Butylbenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4	U
87-61-6	1,2,3-Trichlorobenzene	4	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

P-4D

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 71026

Matrix: (soil/water) WATER Lab Sample ID: 71026010

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: V5C2350

Level: (low/med) LOW Date Received: 07/07/00

% Moisture: not dec. _____ Date Analyzed: 07/13/00

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 4.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	75-37-6	ETHANE, 1,1-DIFLUORO-	2.08	4	NJ
2.					
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