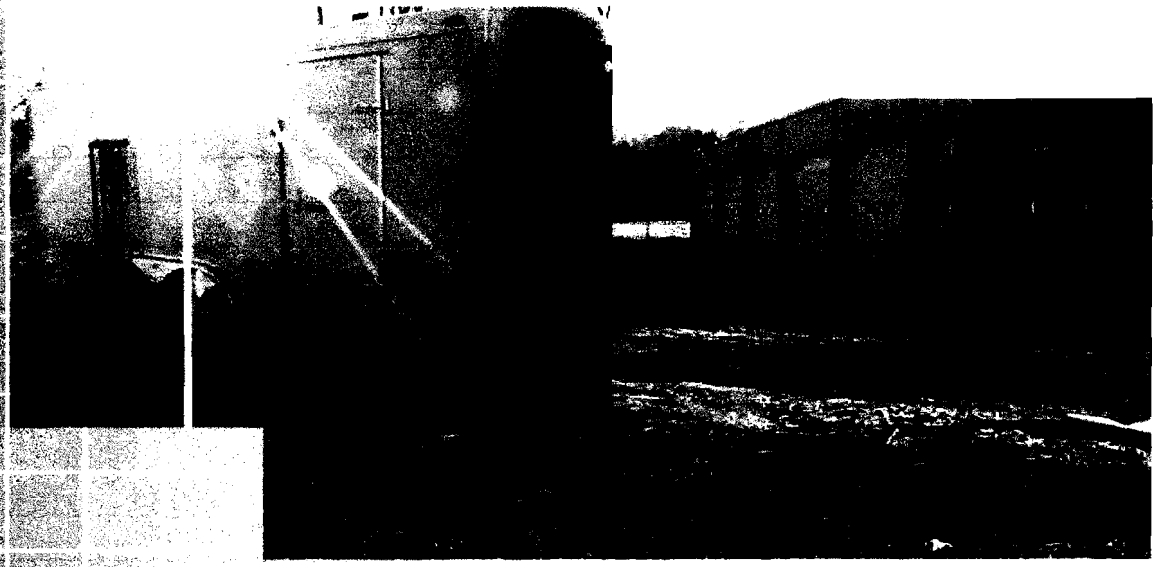
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

Albany, New York

Harrison Subresidency
Town of Harrison
Westchester County, New York

D008873
PIN 8807.31.301

Air Sparging and Soil Vapor Extraction System



Operation and Maintenance Report for January 2001

February 2001

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

Lawler, Matusky & Skelly Engineers LLP

Environmental Science & Engineering Consultants

January 9, 2001
Project No. 446-173

Mr. John LaBarge
Acting Director, Consultant Management Bureau
NYS Dept. of Transportation
1220 Washington Avenue
Albany, NY 12232

Attn: Greg Menard

Re: **D008873, PIN 8007.31.301**
Harrison Petroleum Spill – Remediation
Town of Harrison, Westchester County, New York
Air Sparging/Soil Vapor Extraction System
Monthly Operations & Maintenance Report #3 (January 2001)

Dear Mr. Menard:

Lawler, Matusky & Skelly Engineers LLP (LMS) is pleased to submit the subject report for your use. This report represents the third in a series of twelve scheduled reports. The purpose of this report is to present the information necessary to assess the operation of the air sparging/soil vapor extraction system, to track the progress of the remediation, and to make recommendations to increase operating efficiency or lower operating costs.

January 2001 up time was over 95%, showing a marked increase in operating efficiency and we expect that efficiency to continue into the remainder of 2001; the February 2001 up time has been over 95% thus far. The first round of quarterly groundwater monitoring was conducted on January 30 and 31, 2001. The results are presented in this report.

If you have any questions, please call Ruth Fritsch or myself at 845-735-8300.

Very truly yours,

Robert DeGiorgio, P.E.

cc: Mauricio Roma, NYSDOT (1 copy)
David Wohlbach, NYSDOT (5 copies)

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OPERATION AND MAINTENANCE REPORT
AIR SPARGING AND SOIL VAPOR EXTRACTION SYSTEM
HARRISON SUBRESIDENCY, WESTCHESTER, NEW YORK

FEBRUARY 2001

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MONTHLY OPERATION AND MAINTENANCE REPORT

NYSDOT – HARRISON SUBRESIDENCY D008873
TOWN OF HARRISON – WESTCHESTER, NY PIN 8007.31.301

MONTH: January 2001

1/2/01-LMS arrived on site to monitor system and check pressure and flows in the system. SP-3 flow is below 4 cfm, all other flows and pressures appear normal. Pressure monitoring points are inaccessible due to recent snow cover and were not checked.

1/4/01-LMS arrived on site to monitor system and check pressure and flows in the system. SP-3 flow is below 4 cfm. In an attempt to increase flow in SP-3 the valve setting on SP-2 was reduced from 25% open to 12.5% open. This resulted in a flow of 4 cfm in SP-2 and a flow of 7 cfm in SP-3. All other flows and pressures appear normal. Pressure monitoring points are inaccessible due to recent snow cover and were not checked.

1/8/01 - LMS arrived on site to monitor system and check pressure and flows in the system. Flows in SP-1 and SP-2 are low, all other flows and pressures appear normal. Phone line was checked but there was no dial tone. Air was bubbling out of MW-3. The well cap was tightened to seal well. Pressure monitoring points are inaccessible due to recent snow cover and were not checked.

1/15/01-LMS arrived on site to monitor system and check pressure and flows in the system. Pressure at air sparge outlet has been declining, as well as flows in all air sparge wells. Pressure monitoring points 1,3,5 were uncovered and have been checked. Pressure monitoring points 2 and 4 are still inaccessible.

1/25/01-LMS arrived on site to purge SP-3 in hopes of increasing flows to well. The flow on the control panel indicated air sparge was running at 40.3 Hz. The air sparge unit was shut down to allow for safe access to the well at SP – 3. A static water level indicated that the well reached 19.8-ft below grade and was dry. The air sparging system was restarted and the valve to SP – 3 was open 100% and the valves for SP – 2 and SP – 3 were closed. Air sparge ran at these settings for twenty minutes in an attempt to blow out any material that may prohibit flow into that well. Air sparge unit was then shut down to allow safe access to the well. DI water was poured into the well and then pumped out purged water contained little silt. Air sparge unit was restarted and valves settings were set at: SP - 1 at 50 %, SP - 2 at 50%, and SP - 3 at 25%. All other flows and pressures appear normal. Pressure monitoring points are inaccessible due to recent snow cover and were not checked.

MAINTENANCE THIS MONTH:
Well cap on MW - 3 was tightened; noticeable turbulence in this well due to air sparging; demonstrates sparge effectiveness to a radius of at least 8 – 12 feet.

SPARE PARTS USED:
None.

SPARE PARTS ORDERED:
None.

TYPICAL OPERATING PARAMETERS:

Air Sparging (Total Flow = 12 CFM)

	Pressure	Flow
	(psi)	(scfm)
SP 1	6.5	4
SP 2	6	<4
SP 3	15	4
SP 4	Not Operating	

Vapor Extraction (Total Flow = 218 CFM)

	Vacuum	
	(in.-H_2O)	
VE 1	10	
VE 2	9.5	
VE 3	7.0	
VE 4	7.5	

OUTSTANDING ISSUES AND ACTIONS:

- Verizon has completed the phone system installation. Verizon was on-site February 7 and 8, 2001 and reportedly completed the installation. The phone line must be tested this month.

- Was quarterly well sampling conducted? Yes X No
  If yes, date 1/30/01 and 1/31/01

  Report narrative attached.

SUMMARY OF GROUNDWATER MONITORING - FIRST QUARTER

1.1 SAMPLE COLLECTION

The first quarter sampling was conducted on January 30 and 31, 2001. The objectives of this sampling event were:

- to qualitatively assess the remediation efforts thus far;
- to assess the radius of influence (ROI) afforded by the existing air sparge wells and to assess the performance of the three (out of four) operational air sparge wells;
- to assess the need for additional air sparge wells;
- to determine if a wider array of constituents should be analyzed for in future quarterly sampling.

Groundwater samples were collected by first purging each well a minimum of three well volumes or purging the well dry and allowing the well to recover prior to sample collection. Purging was performed by hand-bailing the well with dedicated disposal bailers. Groundwater samples were collected using 0.5-in. or 1.5-in. diameter dedicated disposable bailers. Static water levels, temperature, pH, conductivity, and turbidity were recorded prior to and after purging and before sampling. These standard parameters were recorded in the well sampling logs, which are located in the attachments. Dissolved oxygen was also measured in the field with a YSI Model 58 dissolved oxygen meter and was recorded during sample collection. The meter was decontaminated and re-calibrated between samples.

The samples were placed into a cooler, cooled to less than 4°C, and submitted under chain-of-custody protocol to a New York State Department of Health (NYSDOH) certified laboratory (Mitkem Corporation, Rhode Island).

1.2 SUMMARY OF ANALYTICAL RESULTS

The groundwater monitoring samples for the first quarter were collected January 30 and 31, 2001. Prior to sample collection, the air sparge system was shutdown approximately 48 hours in advance, the soil vapor extraction system was left running.

The weather was rainy and some snow from a previous snowstorm remained on the ground. The results were received from the laboratory on February 8, 2001. Due to the

expeditious receipt of the analytical data, the results were reviewed and included in this monthly report. Typically, the laboratory requires 21 days to submit results, Mitkem was able to expedite the turnaround process without additional cost. Baseline analytical data for each monitoring well and sparge well were collected in May 2000, prior to system start-up (November 2000). The first quarter results (January 2001) were compared to the baseline data collected in May 2000.

In general, the first quarter results suggest a fairly significant reduction in BTEX concentrations throughout the designated plume area. Virtually all sampled monitoring wells suggest an 80% - 100% reduction in BTEX concentrations. MTBE concentration reduction was not quite as striking, with moderate reductions in some wells but increases in others. Figures 3A (MTBE plume) and 3B (BTEX plume) show the contamination plume developed from the May 2000 data; the first quarter results are overlaid onto the plume maps. The figures suggest a fairly significant reduction in plume size, however, the first quarter data does not include all wells and the extent of the plume in the lateral direction is inferred on the figures.

Table 2 presents the two sets of data as compared to the clean-up objectives established for this site. Figure 7 compares the BTEX and MTBE concentrations from the baseline data and the first quarter results.

1.3 ANALYTICAL RESULTS

Monitoring well MW-1 had not detectable (ND) concentrations of MTBE in both the May 2000 and January 2001 sampling events. In May, MW-1 was ND for MTBE, but had a concentration of 54 µg/L in the January sampling. BTEX was below the cleanup objective of 50 µg/L during both sampling events and MTBE was less than the cleanup objective of 50 µg/L in May and slightly greater than in January. However, historically, the laboratory results have been questionable due to different methods being used.

In the past, there have been some anomalies in the MTBE, which resulted in concentrations that were biased high due to GC shifts. For example, a comparison of the 2000 MTBE sampling results to the 1999 results suggested a marked increase in MTBE concentrations. Since such a large increase in MTBE concentrations seemed unlikely, the laboratory was contacted to verify sample results. The laboratory noted that groundwater samples collected for VOC analyses were analyzed using gas chromatography (GC) methodology. However, as a result of elevated analyte concentrations and, what the

laboratory has described as complex chromatograms, two samples, MW-3 and MW-8 were also analyzed by GC mass spectrometry methods. Subsequent review of the GC/MS results indicated that MTBE was detected in MW-8 at 2.86 µg/l and not detected in MW-3; the initial GC results indicated that MW-8 contained 68 µg/l and MW-3 had 50 µg/l of MTBE. The difference in the reported GC results and the GC/MS results was attributed by the contract laboratory to a minor retention time shift on the GC chromatograms. The chromatograms for the remaining wells also exhibited a complexity similar to those of MW-3 and MW-8, however, GC/MS confirmations were not performed on these samples at that time. The reported values for MTBE listed in Table 2 for the May 2000 and the January 2001 data likely have a positive bias similar to that of MW-3 and MW-8 and, therefore, it is likely that MTBE, if present at all, is present in trace amounts only.

MW-2 had a concentration of 16.6 µg/L of BTEX in the May sampling and 4 µg/L in the January sampling. The MTBE concentration was 5.5 µg/L in May and 15 µg/L in January. MW-2 was less than the cleanup objective for BTEX and MTBE for both sampling events.

MW-3, historically the well with the highest BTEX concentrations, had concentrations greater than the cleanup objective for both BTEX and MTBE in the May sampling event (960 and 50 µg/L, respectively). Both constituents were less than 50 µg/L based on the January 2001 data (2 µg/L and 21µg/L , respectively).

The BTEX and MTBE in MW-4 were less than 50 µg/L in both sampling events. The BTEX and MTBE concentrations in May 2000 were 39.4 and 13 µg/L, respectively. In the January 2001 sampling event, the concentrations were 2 and 3 µg/L, respectively.

MW-5 showed dramatic decreases in the concentrations of the constituents. In May 2000, MW-5 had a BTEX concentration of 916 µg/L an MTBE concentration of 150 µg/L. Both were greater than the cleanup objective of 50 µg/L. However, during the January sampling, the concentration of BTEX was reduced to 45 µg/L and the concentration of MTBE was not detectable.

MW-6 showed similar decreases to MW-5. The baseline (May 2000) concentrations of BTEX and MTBE were 224.9 and 73 µg/L, respectively. These concentrations were

reduced to less than 50 µg/L during the January 2001 sampling event (21 and 20 µg/L, respectively).

The concentrations of BTEX and MTBE in MW-7 were 17.9 and 16 µg/L, respectively, in the May 2000 sampling. These concentrations were ND and 38 µg/L, respectively in the January 2001 sampling event.

MW-8 showed decreases in the concentrations of both BTEX and MTBE. During the May 2000 sampling, the concentration of BTEX was 396 µg/L and the concentration of MTBE was 68 µg/L. Both constituents were greater than the cleanup objective. However, when this monitoring well was sampled again in January 2001, the concentration of BTEX was ND and the concentration of MTBE was 6 µg/L. Both were less than the required cleanup objective.

MW-9 and PC-1 were sampled and analyzed for BTEX and MTBE during the May 2000 and January 2001 sampling events, but both wells were ND for both constituents each sampling event.

SP-1 had a BTEX concentration of 31.1 µg/L during the May 2000 sampling. This concentration was deceased to ND during the January 2001 sampling event. SP-1 had a concentration of MTBE of 3.2 in May 2000, but had a concentration of 31 during January 2001.

1.4 FINDINGS AND CONCLUSIONS

The results thus far are very promising and demonstrate effective remediation throughout the plume area with little evidence of any off site migration. However, groundwater monitoring wells generally present an overly optimistic picture as to the VOC and DO concentrations during, and for a while following, air sparging. This is due to the tendency of sparge air to flow preferentially through a wells filter pack and into the well itself. It is therefore very important to allow sufficient time to elapse between air sparge system shutdowns and confirmation sampling using conventional groundwater monitoring wells. To properly assess rebounding effects, a waiting period of one month to twelve months may be required before confirmatory sampling can be conducted. However, the purpose of our quarterly sampling is not to assess rebounding effects, but to assess the progression of the remediation and provide a snapshot of the efforts thus far.

Again, the results are promising thus far, other salient points are listed below.

- The monitoring wells with the historically highest BTEX/MTBE concentrations are MW-3, MW-4, MW-6, and MW-8. Monitoring wells MW-3 and MW-8 are located adjacent to sparge points SP-1 and SP-3, respectively. It is not surprising to see such reductions in these wells. Also, the sparge points were strategically located next to these wells to facilitate better removals in those areas. However, MW-5 and MW-6 are not located adjacent to any sparge point but did show good reductions in BTEX concentrations. The distance to the nearest sparge point to these monitoring wells is about 25 feet – 35 feet suggesting good radius influence indicating that the current sparge regime is impacting the plume area. This would suggest that additional sparge wells are not needed at this time.

- The laboratory indicates that due to high concentrations of non-target analytes, the MW-5 and MW-6 samples were analyzed at dilution. Also, note that, samples MW-2, 3, 4, 5, 6, and 7 contained non-target analytes eluting after the last target compound for this project. This strongly suggests the presence of other constituents such as naphthalene and 2-methylnapthelene, which are historically present at the project site. The next sampling event should cover a wider array of constituents based on these results, including tetrachloroethylene (PCE) and trichloroethylene (TCE), which were found in the septic tank wastewater at appreciable concentrations.

- There was no appreciable change in static water table elevation between the baseline sampling event and the first quarter sampling. In general, the static water table was approximately 6 inches to 1 foot lower in January 2001 when compared to May 2000. A lower water table in the winter would generally be expected. Water table elevation during system operation has not been assessed.

1.5 RECOMMENDATIONS

- In order to be able to compare the analytical results of the MTBE samples, it is recommended that these samples be analyzed using the MS laboratory procedure, instead of the GC procedures. The MS procedure costs slightly more (approximately $50 per sample), but will provide a more accurate analytical result.

- The analytical sampling should be expanded to include other non-target analytes, such as naphthalene, 2-methylnapthelene, PCE, and TCE that maybe present at the site. Naphthalene and 2-methylnapthelene have established cleanup objectives of 25 µg/L and 50 µg/L, respectively. Also, the groundwater monitoring should be expanded to include all the monitoring and sparge wells.

- It is also recommended that the system be shut-down 3 to 4 weeks prior to the next sampling event to start assessing the effect of rebounding, if any. The next sampling event is schedule for a May/June timeframe.

- The air sparge system is programmed to pulse the air flow into each of the three sparge points. The current programming pulses the wells daily with 16 hours of air flow and 8 hours off. The system should continue to operate with these settings.

TABLE 1 (Page 1 of 2)

SVE CONCENTRATIONS AND LOADINGS AT SYSTEM STARTUP
(11 November 2000)
Harrison Subresidency

Location Collected LMS Sample ID Lab Sample ID Date Sampled	SVE AB13459 00110156-01 11/8/2000 (ppbv)	Formula Weight (g/mole)	(µg/m³)	Loading (lb/hr) (assume Q = 218 ft³/min)
Volatile Organic Compounds (ug/L)				
Dichlorodifluoromethane	ND	120.92	ND	ND
Chloromethane	ND	50.5	ND	ND
Vinyl Chloride	ND	62.5	ND	ND
Bromomethane	ND	95	ND	ND
Chloroethane	ND	64.5	ND	ND
Trichlorofluoromethane	ND	137.37	ND	ND
Acetone	ND	58.08	ND	ND
1,1-Dichloroethene	ND	97	ND	ND
Methylene Chloride	ND	87.9	ND	ND
trans-1,2-Dichloroethene	ND	96.94	ND	ND
MTBE	ND	88.15	ND	ND
1,1-Dichloroethane	ND	99	ND	ND
2-Butanone	ND	72.11	ND	ND
cis-1,2-Dichloroethene	ND	96	ND	ND
2,2-Dichloropropane	ND	112.99	ND	ND
Chloroform	ND	119	ND	ND
Bromochloromethane	ND	129.38	ND	ND
1,1,1-Trichloroethane	ND	133.4	ND	ND
1,1-Dichloropropene	ND	110.97	ND	ND
1,2-Dichloroethane	ND	98.96	ND	ND
Carbon Tetrachloride	ND	154	ND	ND
Benzene	ND	78.1	ND	ND
Trichloroethene	ND	131.39	ND	ND
1,2-Dichloropropane	ND	113	ND	ND
Dibromomethane	ND	173.83	ND	ND
Bromodichloromethane	ND	163.83	ND	ND
trans-1,3-Dichloropropene	ND	111	ND	ND
4-Methyl-2-Pentanone	ND	100.16	ND	ND
cis-1,3-Dichloropropene	ND	111	ND	ND
Toluene	0.60	92.1	2.30	0.0019
trans-1,3-Dichloropropene	ND	110.97	ND	ND
1,1,2-Trichloroethane	ND	133	ND	ND
2-Hexanone	ND	100.16	ND	ND
1,3-Dichloropropane	ND	112.99	ND	ND
Dibromochloromethane	ND	208.28	ND	ND
Tetrachloroethylene	ND	166	ND	ND
1,2-Dibromoethane	ND	187.86	ND	ND
Chlorobenzene	ND	113	ND	ND
1,1,1,2-Tetrachloroethane	ND	168	ND	ND
Ethylbenzene	1.4	106	6.17	0.0050
m/p-Xylene	3.4	106	ND	ND
Styrene	ND	104	ND	ND
O-Xylene	0.77	106	3.39	0.0028
Bromoform	ND	252.73	ND	ND
1,1,2,2-Tetrachloroethane	ND	168	ND	ND

TABLE 1 (Page 2 of 2)

SVE CONCENTRATIONS AND LOADINGS AT SYSTEM STARTUP
(11 November 2000)
Harrison Subresidency

Location Collected LMS Sample ID Lab Sample ID Date Sampled	SVE AB13459 00110156-01 11/8/2000 (ppbv)	Formula Weight (g/mole)	(µg/m³)	Loading (lb/hr) (assume Q = 218 ft³/min)
Isopropylbenzene	ND	120.19	ND	ND
1,2,3-Trichloropropane	ND	147.43	ND	ND
Bromobenzene	ND	157.01	ND	ND
n-Propylbenzene	ND	120.19	ND	ND
2-Chlorotoluene	ND	126.59	ND	ND
4-Chlorotoluene	ND	126.59	ND	ND
1,3,5-Trimethylbenzene	1.5	120	7.48	0.0061
tert-Butylbenzene	ND	134.22	ND	ND
1,2,4-Trimethylbenzene	4.2	120	20.95	0.0171
sec-Butylbenzene	ND	134.21	ND	ND
1,3-Dichlorobenzene	ND	147	ND	ND
1,4-Dichlorobenzene	ND	147	ND	ND
p-Isopropylbenzene	ND	120.19	ND	ND
1,2-Dichlorobenzene	ND	147	ND	ND
n-Butylbenzene	ND	134.22	ND	ND
1,2-Dibromo-3-Chloropropane	ND	236.33	ND	ND
1,2,4-Trichlorobenzene	ND	181	ND	ND
Naphthalene	ND	128.17	ND	ND
Hexachlorobutadiene	ND	261	ND	ND
1,2,3-Trichlorobenzene	ND	181.45	ND	ND
Total VOCs:	11.87			0.0329
Tentively Indentified Compounds, TIC (µg/L)				
2-Methyl-Butane	38.0	72.15	113.98	0.0930
Pentane	33.6	72.15	100.78	0.0823
2-Methyl-Pentane	46.9	86.18	168.03	0.1371
Hexane	49.8	86.18	178.41	0.1456
Methyl Cyclopentane	34.3	84.16	120.00	0.0979
2-Methyl-Hexane	34.7	100.2	144.54	0.1180
3-Methyl-Hexane	32.0	100.2	133.29	0.1088
Heptane	29.4	10.2	12.47	0.0102
Methyl-Cyclohexane	35.9	98.19	146.54	0.1196
1,5-Dimethylcyclopentene	33.5	96.17	133.93	0.1093

ND - Not detected at analytical reporting limit.

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: MW 1	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	ND	54				50
Benzene	ND	ND				1
Toluene	ND	ND				1
Ethylbenzene	ND	ND				1
m,p-Xylene	ND	ND				1
O-Xylene	ND	ND				1
Xylenes (total)	ND	ND				1
TOTAL BTEX	**ND**	**ND**				50
Metals (ug/L)						
Chloride	7,000	♦				250,000
Sodium	**27,000**	♦				20,000
Iron (total)	ND	♦				300
Iron (dissolved)	ND	♦				300
Lead	ND	♦				25
Other (mg/L)						
Nitrogen, Nitrate	4,100	♦				10,000
Sulfate	15,000	♦				250,000
TOC	4,000	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	97,400	♦				N/A
Dissolved Oxygen	3.6	1.97				N/A

WELL ID: MW 2	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	5.5	15				50
Benzene	2.1	ND				1
Toluene	8.0	2				1
Ethylbenzene	2.7	ND				1
m,p-Xylene	ND	-				1
O-Xylene	3.8	-				1
Xylenes (total)	3.8	2				1
TOTAL BTEX	16.6	4				50
Metals (ug/L)						
Chloride	10,000	♦				250,000
Sodium	**22,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	2.6	3.08				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: MW 3	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	**50**	21				50
Benzene	64	ND				1
Toluene	21	ND				1
Ethylbenzene	350	ND				1
m,p-Xylene	460	-				1
O-Xylene	65	-				1
Xylenes (total)	525	2				1
TOTAL BTEX	**960.0**	**2.0**				50
Metals (ug/L)						
Chloride	24,000	♦				250,000
Sodium	**43,000**	♦				20,000
Iron (total)	**18,000**	♦				300
Iron (dissolved)	ND	♦				300
Lead	8	♦				25
Other (mg/L)						
Nitrogen, Nitrate	ND	♦				10,000
Sulfate	ND	♦				250,000
TOC	10,000	♦				N/A
Petroleum Hydrocarbons	9,200	♦				N/A
Carbon Dioxide	105,000	♦				N/A
Dissolved Oxygen	2.1	2.93				N/A

WELL ID: MW 4	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	13	3				50
Benzene	4.4	ND				1
Toluene	ND	ND				1
Ethylbenzene	22	2				1
m,p-Xylene	♦	♦				1
O-Xylene	♦	♦				1
Xylenes (total)	13	ND				1
TOTAL BTEX	**39.4**	**2.0**				50
Metals (ug/L)						
Chloride	8,000	♦				250,000
Sodium	**22,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.5	2.35				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: MW 5	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	**150**	ND				50
Benzene	14	ND				1
Toluene	32	2				1
Ethylbenzene	410	ND				1
m,p-Xylene	♦	♦				1
O-Xylene	♦	♦				1
Xylenes (total)	460	43				1
TOTAL BTEX	**916.0**	**45.0**				50
Metals (ug/L)						
Chloride	60,000	♦				250,000
Sodium	**32,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.4	3.09				N/A

WELL ID: MW 6	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	**73**	20				50
Benzene	7.9	ND				1
Toluene	7	ND				1
Ethylbenzene	98	ND				1
m,p-Xylene	♦	♦				1
O-Xylene	♦	♦				1
Xylenes (total)	112	21				1
TOTAL BTEX	**224.9**	**21**				50
Metals (ug/L)						
Chloride	40,000	♦				250,000
Sodium	**33,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.1	6.05				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: MW 7	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	16	38				50
Benzene	3.4	ND				1
Toluene	4	ND				1
Ethylbenzene	5.7	ND				1
m,p-Xylene	♦	♦				1
O-Xylene	♦	♦				1
Xylenes (total)	4.8	ND				1
TOTAL BTEX	**17.9**	**ND**				50
Metals (ug/L)						
Chloride	40,000	♦				250,000
Sodium	**35,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.2	3.12				N/A

WELL ID: MW 8	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	**68**	6				50
Benzene	110	ND				1
Toluene	26	ND				1
Ethylbenzene	60	ND				1
m,p-Xylene	160	ND				1
O-Xylene	40	ND				1
Xylenes (total)	200	ND				1
TOTAL BTEX	**396.0**	**ND**				50
Metals (ug/L)						
Chloride	5,000	♦				250,000
Sodium	**63,000**	♦				20,000
Iron (total)	**8,600**	♦				300
Iron (dissolved)	230	♦				300
Lead	ND	♦				25
Other (mg/L)						
Nitrogen, Nitrate	33	♦				10,000
Sulfate	ND	♦				250,000
TOC	12,000	♦				N/A
Petroleum Hydrocarbons	7,600	♦				N/A
Carbon Dioxide	264,000	♦				N/A
Dissolved Oxygen	1.5	6.3				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: MW 9	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	ND	ND				50
Benzene	ND	ND				1
Toluene	ND	ND				1
Ethylbenzene	ND	ND				1
m,p-Xylene	♦	♦				1
O-Xylene	♦	♦				1
Xylenes (total)	ND	ND				1
TOTAL BTEX	ND	ND				50
Metals (ug/L)						
Chloride	**260,000**	♦				250,000
Sodium	**160,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.3	7.5				N/A

WELL ID: PC 1	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	ND	ND				50
Benzene	ND	ND				1
Toluene	ND	ND				1
Ethylbenzene	ND	ND				1
m,p-Xylene	ND	ND				1
O-Xylene	ND	ND				1
Xylenes (total)	ND	ND				1
TOTAL BTEX	ND	ND				50
Metals (ug/L)						
Chloride	34,000	♦				250,000
Sodium	**120,000**	♦				20,000
Iron (total)	**17,000**	♦				300
Iron (dissolved)	ND	♦				300
Lead	7	♦				25
Other (mg/L)						
Nitrogen, Nitrate	ND	♦				10,000
Sulfate	23,000	♦				250,000
TOC	13,000	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	67,000	♦				N/A
Dissolved Oxygen	2.4	4.11				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: SP 1	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	3.2	31				50
Benzene	1.4	ND				1
Toluene	3.7	ND				1
Ethylbenzene	4.0	ND				1
m,p-Xylene	8.1	ND				1
O-Xylene	2.9	ND				1
Xylenes (total)	11.0	ND				1
TOTAL BTEX	**31.1**	**ND**				50
Metals (ug/L)						
Chloride	16,000	♦				250,000
Sodium	**45,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	4.6	9.66				N/A

WELL ID: SP 1B	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	4.9	♦				50
Benzene	2.1	♦				1
Toluene	ND	♦				1
Ethylbenzene	ND	♦				1
m,p-Xylene	3.5	♦				1
O-Xylene	5.6	♦				1
Xylenes (total)	9.1	♦				1
TOTAL BTEX	20.3	♦				50
Metals (ug/L)						
Chloride	34,000	♦				250,000
Sodium	**27,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	4.7					N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

WELL ID: SP 2	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	18	♦				50
Benzene	19	♦				1
Toluene	25	♦				1
Ethylbenzene	110	♦				1
m,p-Xylene	52	♦				1
O-Xylene	11	♦				1
Xylenes (total)	63	♦				1
TOTAL BTEX	**217.0**	♦				50
Metals (ug/L)						
Chloride	36,000	♦				250,000
Sodium	**75,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	2.5	♦				N/A

WELL ID: SP 3	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	38	♦				50
Benzene	110	♦				1
Toluene	39	♦				1
Ethylbenzene	200	♦				1
m,p-Xylene	180	♦				1
O-Xylene	57	♦				1
Xylenes (total)	237	♦				1
TOTAL BTEX	**586.0**	♦				50
Metals (ug/L)						
Chloride	6,000	♦				250,000
Sodium	**38,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	3.4	♦				N/A

MONITORING WELL DATA SUMARY
MAY 2000 (BASELINE DATA)
Harrison Subresidency

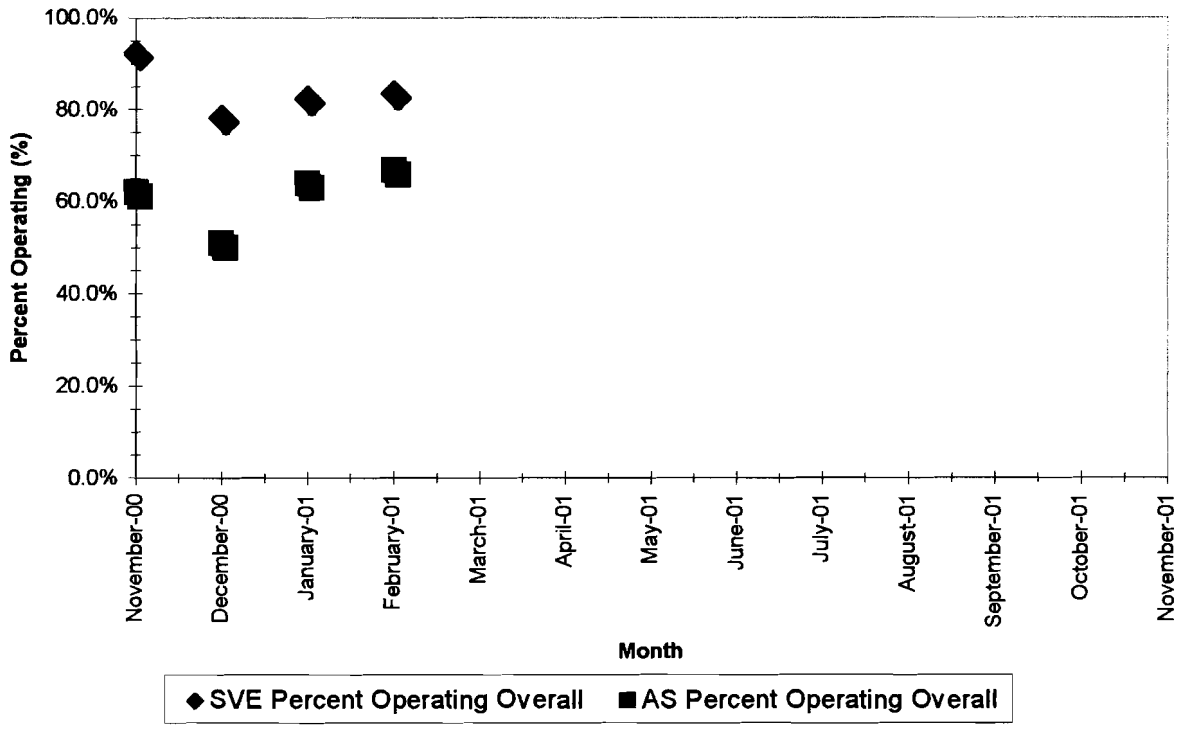
WELL ID: SP 4	BASELINE (May 2000)	2001 QUARTER 1 (JAN 2001)	2001 QUARTER 2	2001 QUARTER 3	2001 QUARTER 4	TARGET EFFLUENT CRITERIA
Volatile Organics (ug/L)						
MTBE	24	♦				50
Benzene	24	♦				1
Toluene	3.8	♦				1
Ethylbenzene	35	♦				1
m,p-Xylene	9.5	♦				1
O-Xylene	2.4	♦				1
Xylenes (total)	11.9	♦				1
TOTAL BTEX	74.7	♦				50
Metals (ug/L)						
Chloride	16,000	♦				250,000
Sodium	**24,000**	♦				20,000
Iron (total)	♦	♦				300
Iron (dissolved)	♦	♦				300
Lead	♦	♦				25
Other (mg/L)						
Nitrogen, Nitrate	♦	♦				10,000
Sulfate	♦	♦				250,000
TOC	♦	♦				N/A
Petroleum Hydrocarbons	♦	♦				N/A
Carbon Dioxide	♦	♦				N/A
Dissolved Oxygen	4.2	♦				N/A

♦ - Not analyzed.
1 - Sum of BTEX and MTBE guidance value of less than 50 mg/L.
N/A - Not available.
ND - Not detected at analytical reporting limit.
Note - Numbers in bold exceed Target Effluent Criterion.

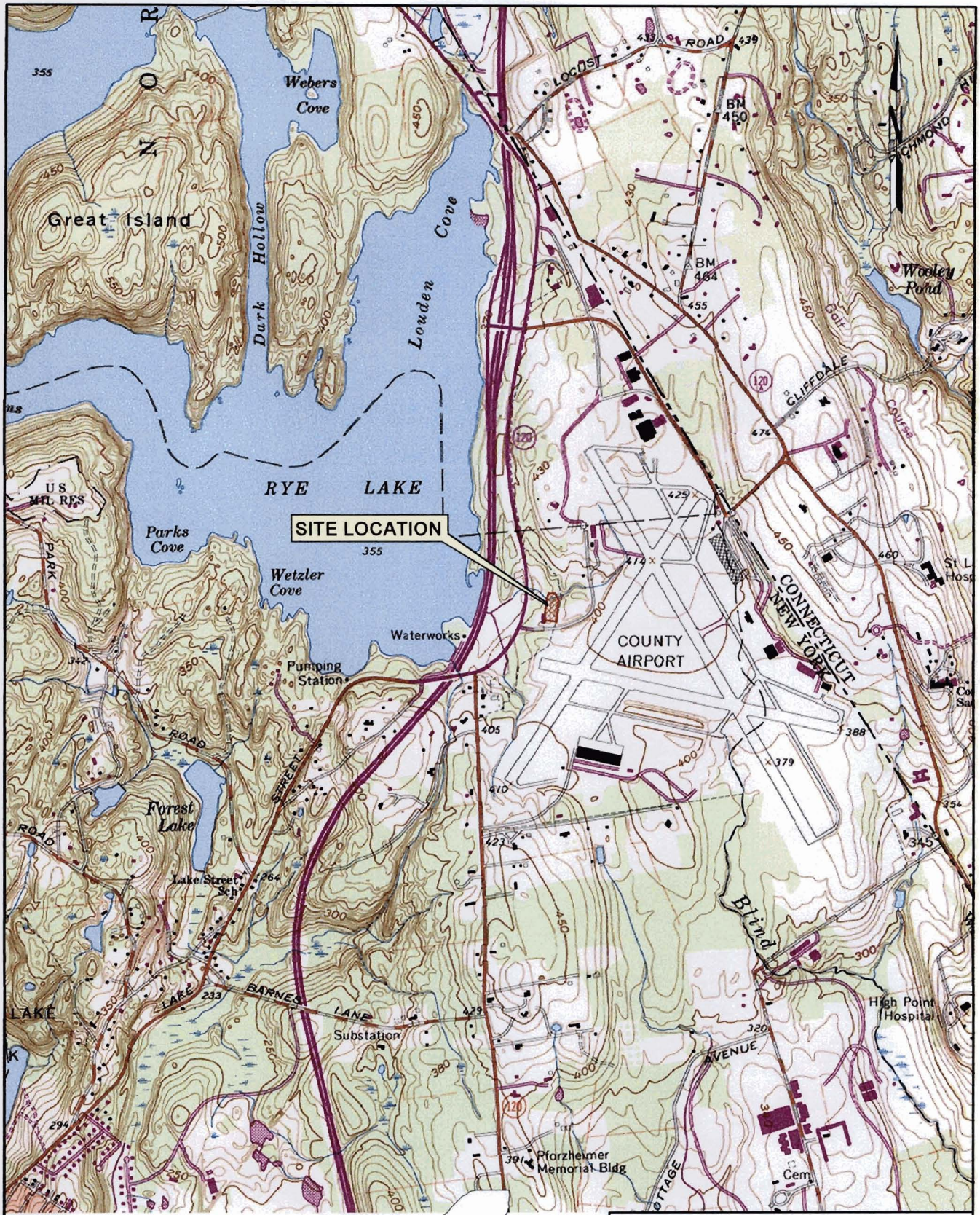
TABLE 4

CUMULATIVE SYSTEM RUNTIME
Harrison Subresidency

Month	SVE Cumulative Hours Running (approx.)	AS Cumulative Hours Running (approx.)	Cumulative Hours Available	OVERALL		MONTH	
				SVE Percent Operating Overall	AS Percent Operating Overall	SVE Percent Operating - Month	AS Percent Operating - Month
November-00	665	447	720	92.4%	62.1%	92.4%	62.1%
December-00	1,146	745	1,464	78.3%	50.9%	64.7%	40.1%
January-01	1,802	1,398	2,184	82.5%	64.0%	91.1%	90.7%
February-01	*1,986*	*1,586*	*2,376*	*83.6%*	*66.8%*	*95.8%*	*97.9%*
March-01			3,120				
April-01			3,840				
May-01			4,584				
June-01			5,304				
July-01			6,048				
August-01			6,792				
September-01			7,512				
October-01			8,256				
November-01			8,976				
Total	**5,599**	**4,176**	**6,744**	**83.0%**	**61.9%**	**86.0%**	**72.7%**



Notes:
Italics denotes partial month.



0 2000 ft

SCALE
1 in. = 2000 ft

NEW YORK STATE

QUADRANGLE LOCATION

Map source: USGS 7.5 minute quadrangle map, Glenville Conn. NY, 1960
Photorevised 1971.

\446\harrison\135usgs.dsf

Figure 1

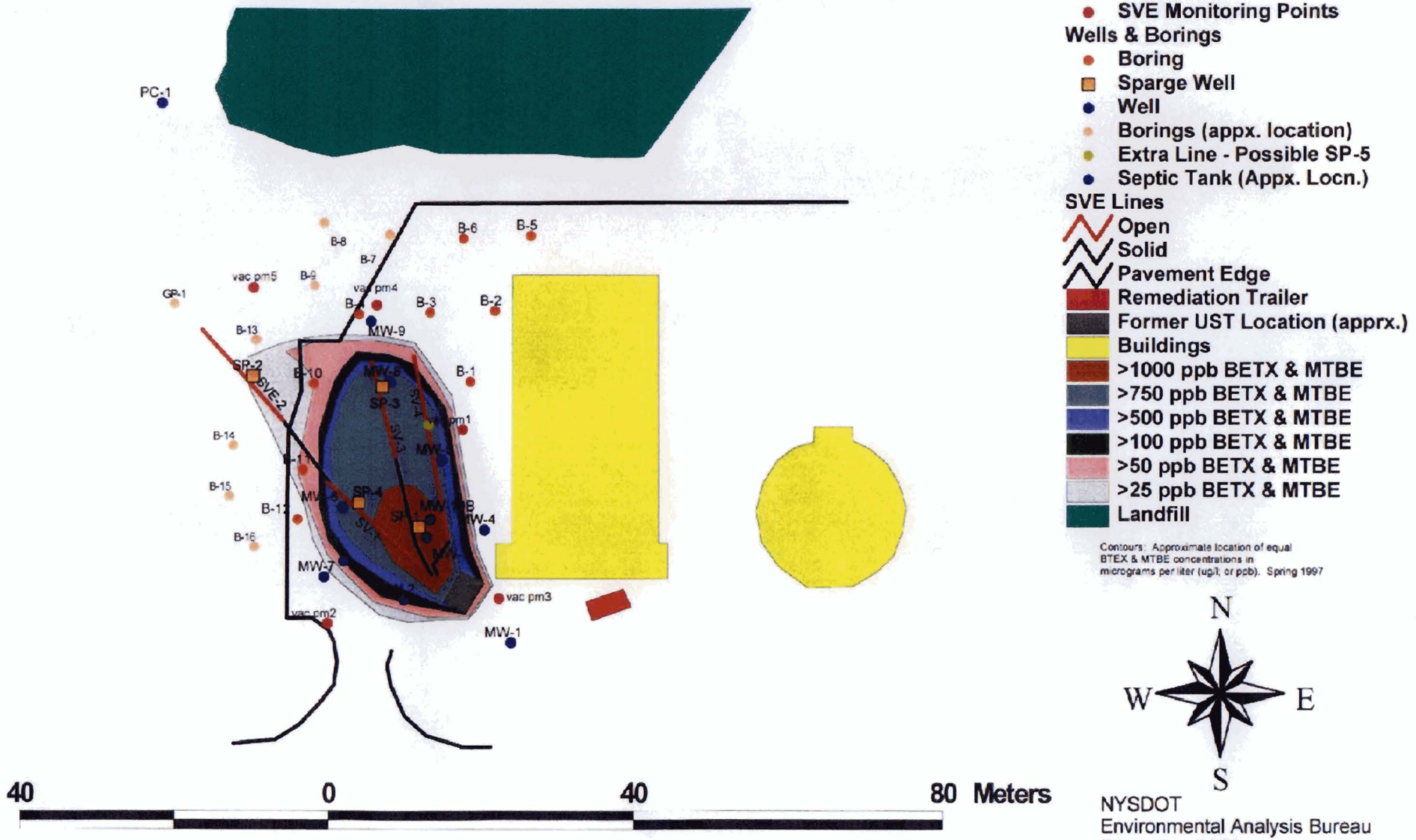
Site Location

HARRISON SUBRESIDENCY
NYSDOT PIN A98906.701

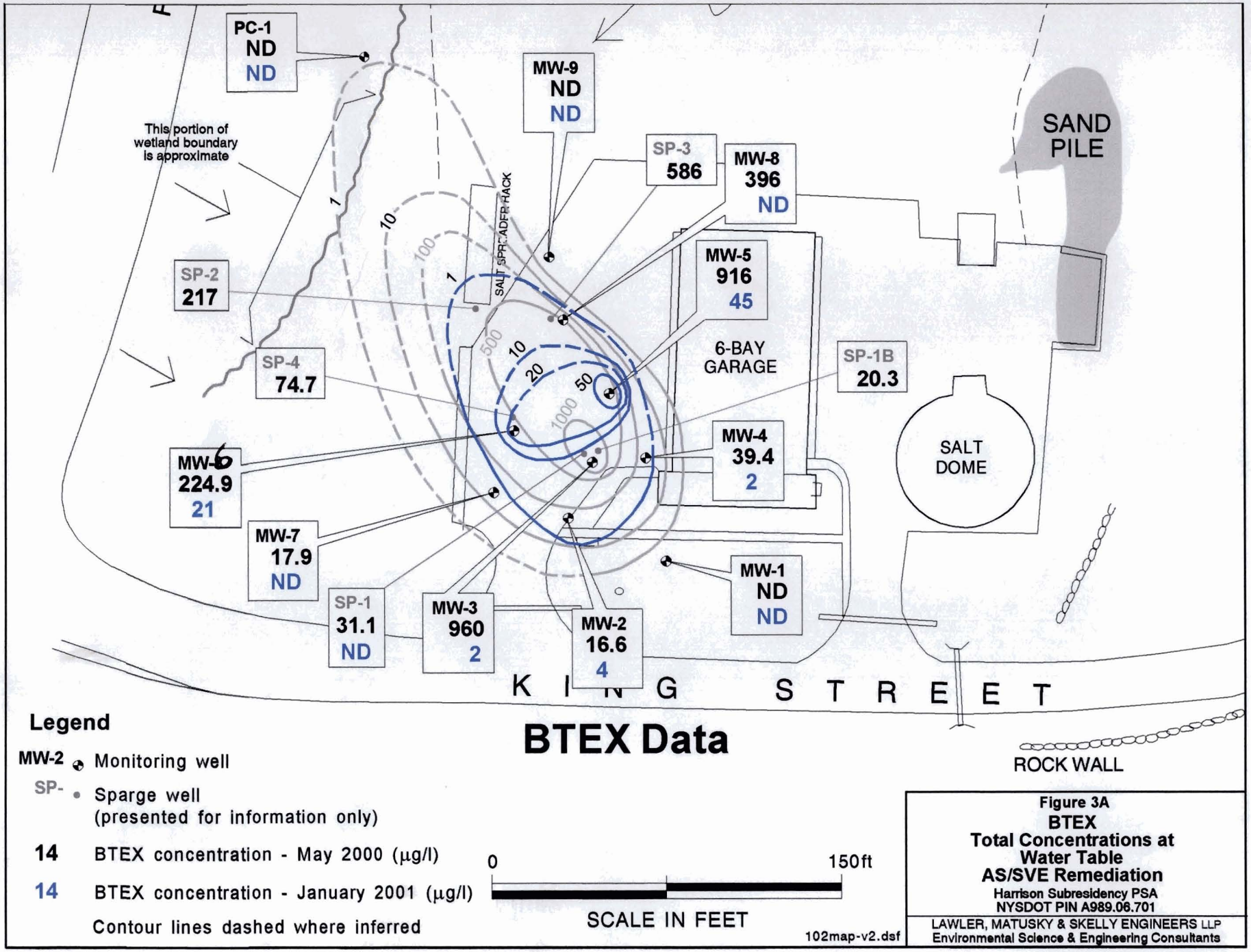
LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York

Figure 2

Harrison Subresidency, Westchester County
Petroleum (BTEX & MTBE) Contaminant Plume at the Water Table (Spring 1997)
Wells, Borings, and Soil Vapor Extraction Lines



NYSDOT
Environmental Analysis Bureau
December 2000



BTEX Data

Figure 3A
BTEX
Total Concentrations at Water Table
AS/SVE Remediation
Harrison Subresidency PSA
NYSDOT PIN A989.06.701

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants

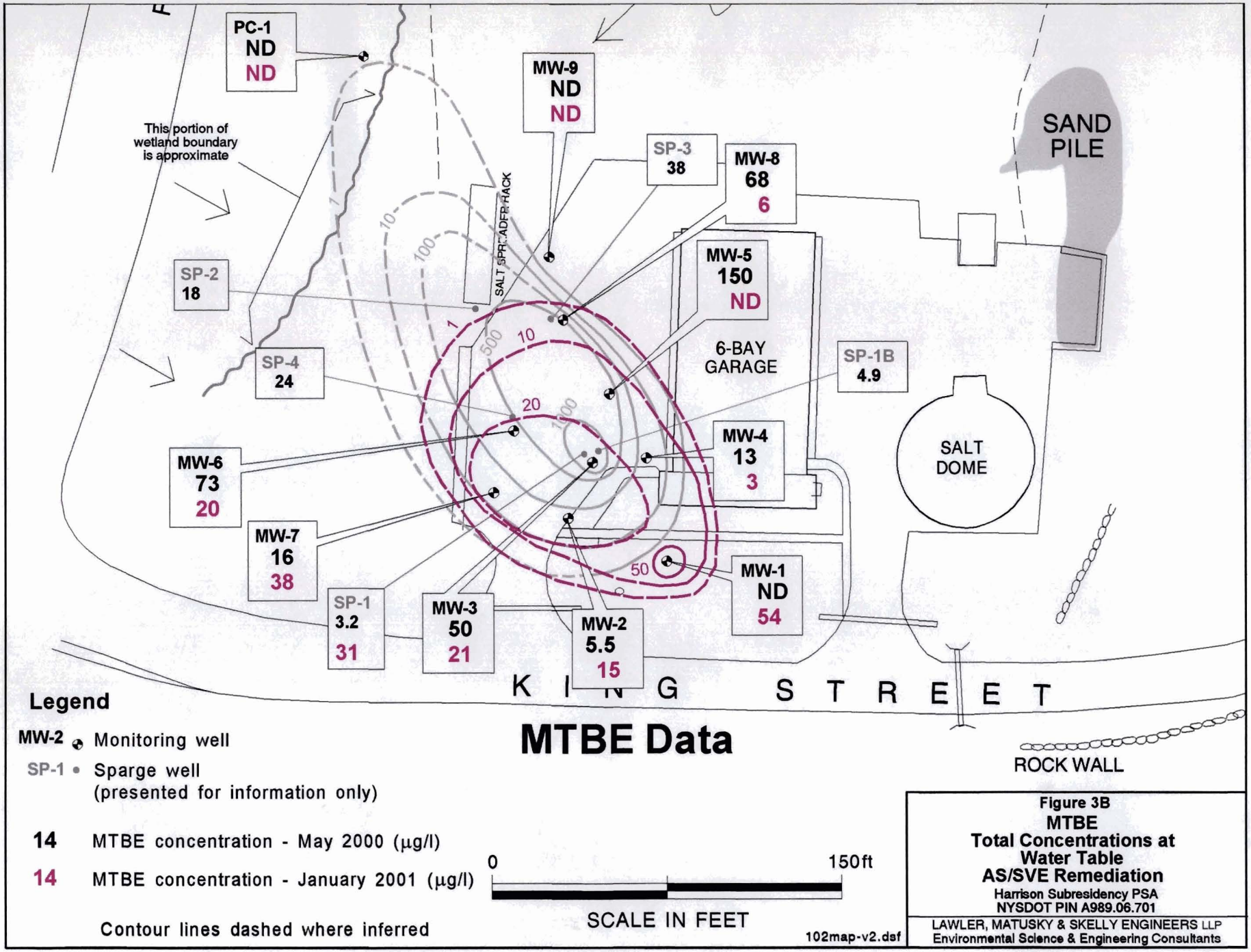
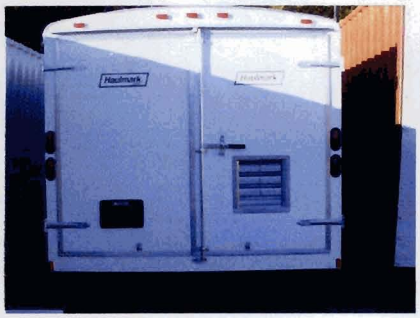


Figure 3B
MTBE
Total Concentrations at Water Table
AS/SVE Remediation
Harrison Subresidency PSA
NYSDOT PIN A989.06.701

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants

FIGURE 4
AS/SVE EQUIPMENT SPECIFICATIONS AND LAYOUT
Harrison Subresidency



NYSDOT HARRISON SUBRESIDENCY

D008873 CPIN 8007.31.301

AIR SPARGING AND SOIL VAPOR EXTRACTION SYSTEM SPECIFICATIONS

TRAILER (Class 1 , Div. 2)

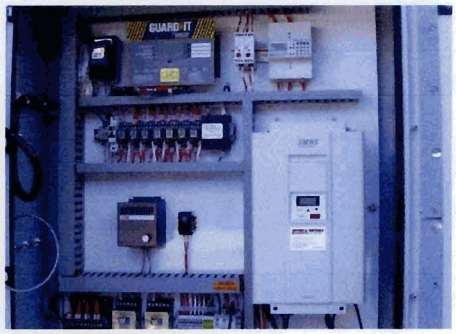
Haulmark	Grizzly
Model	#G816B2
OVERALL	
Length	19'17"
Width	100"
Height	103"
INTERIOR	
Length	16'4"
Width	96"
Height	78"
Platform Height	19"
Tire Size	ST205/R15 15"
Payload Cap.	4280 (avg.)
Double Rear doors	
Side door	
Color	white

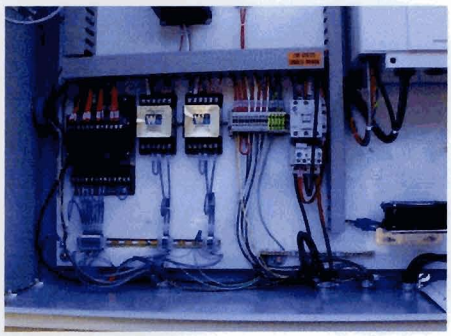
AIR SPARGING SYSTEM

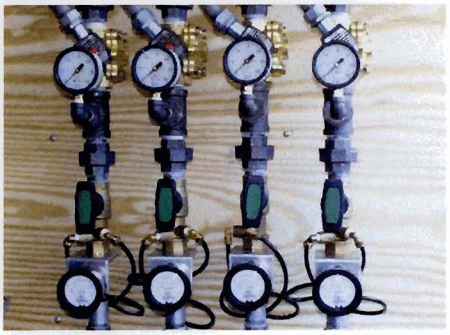
Blower	Becker KDT
Model #	3.140
HP	12
Voltage	230 V/3 phase
Converter	VFD
Max. pressure	22 psig
Max. flow	90 scfm
Max. temp.	125 F
Noise level	84 max. dBA
Outlet size	1 ½ " bsp

SOIL VAPOR EXTRACTION

Blower	Gast
Model #	R6P155Q-50
HP	5.5
Voltage	230 V/1 phase
Max. vacuum	85" w.c.
Max. flow	280 scfm
Max. temp.	100 F
Noise level	81 max. dBA
Moisture sep.	60 gal.







LMS

FIGURE 5
SVE EXHAUST PID READINGS FOR THE YEARS 2000-2001
Harrison Subresidency

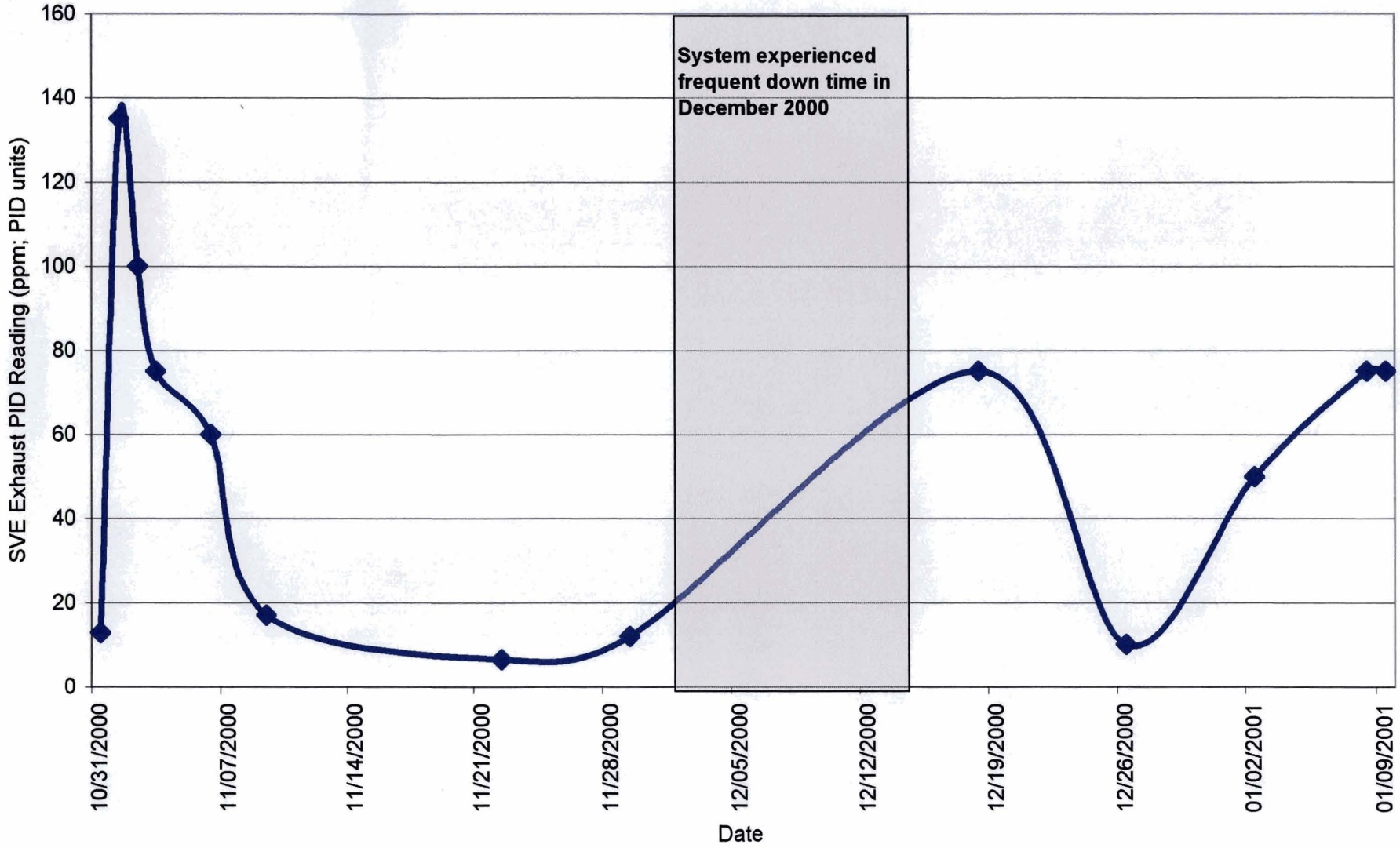


FIGURE 6
OPERATING CALENDAR

Harrison Subresidency

YEAR 2000

November

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

YEAR 2001

January

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

October

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

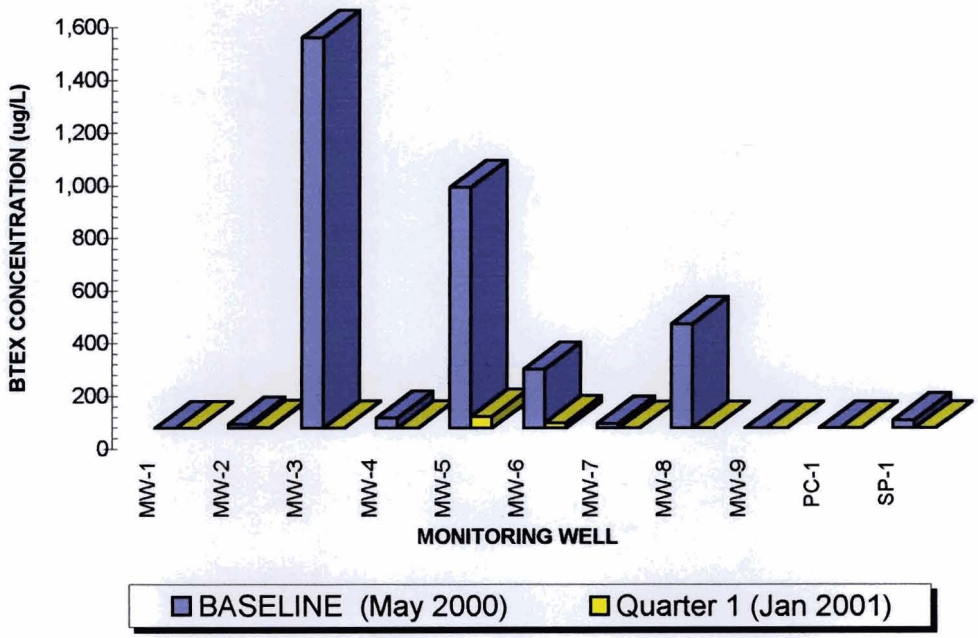
Legend

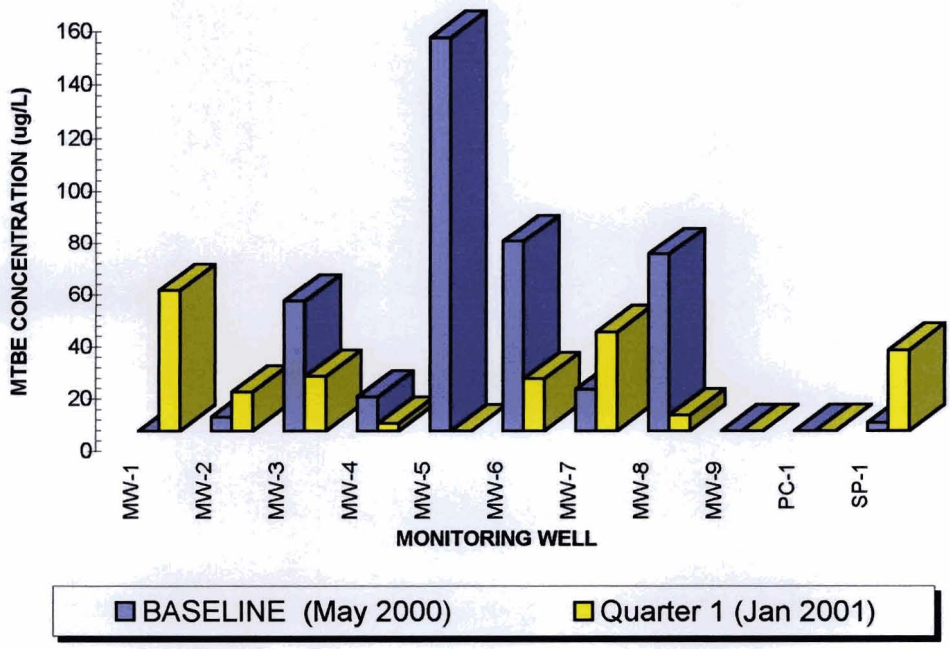
- Planned downtime; quarterly sampling or maintenance
- Unplanned downtime
- Up time
- Site Inspections

Lawler, Matusky & Skelly Engineers LLP

FIGURE 7
GROUNDWATER MONITORING - QUARTER ONE RESULTS (JAN 2001)

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
HARRISON SUBRESIDENCY, WESTCHESTER, NY - DO008873, PIN 8807.31.301





Lawler, Matusky & Skelly Engineers LLP

VAPOR EXTRACTION INSPECTION SHEET
Harrison Subresidency

Lawler, Matusky & Skelly Engineers LLP
Environmental Science & Engineering Consultants

Name: Michael V. Pantliano | Velocity Meter Model No.: Dwyer 471 Thermo-Anemometer

PID Model No.: H-Nu P101/001 | Pressure Gauge Model No.: Magnahelic 0 to 0.250 WC

	Weather: 20's Partly Cloudy Date: 01/02/2001		Weather: 30's Party Cloudy Date: 01/04/2001		Weath 40's Hazy Date: 01/08/2001		Weather: 30's Light Rain Date: 01/15/2001		Weather: 30'3 clear Date: 01/25/2001		Weather: 30's clear Date: 01/29/2001	
SVE hours /time	1147.0 @ 1000		1195 @1030		1292.3 @ 1100		1460.5 @1115		1705.6 @ 1600		1802@1630	
AS hours/time	745.7 @ 1000		745.7 @ 1030		890.9 @ 1100		1059.1 @ 1115		1302.0 @ 1600		1398@1630	
Air Sparging Flow Rate (CFM)	VS		VS		VS		VS		VS		VS	
SP-1	25	6	25	7	25	4	25	< 4	50	12	25	7
SP-3	50	Not Reading	50	4	50	6	50	< 4	25	< 4	50	0
SP-4	-	-	-	-	-	-	-	-	-		-	-
SP-2	25	7	25	6.5	12.5	< 4	25	< 4	50	< 4	50	3
Air Sparging Pressure (PSI)												
SP-1		7.5		7		7		6.5		8		8
SP-3		16 (?)		12		12		10		8.5		8
SP-4		-		-		-		-		-		-
SP-2		7		7		7.5		7.5		9		7
Air Sparging Blower Outlet		17/16.5		13/13		13/13		11/11		9.5/9.5		
SVE Velocity (ft/min)	VS		VS		VS		VS		VS		VS	
VE-1	100	3,600	100	5,100	100	5,400	100	5,750	100	5,750		-
VE-2	100	700	100	560	100	550	100	825	100	825		not read
VE-3	100	2,800	100	4,300	100	4,400	100	4,550	100	4,550		not read
VE-4	100	3,500	100	4,800	100	5,000	100	5,200	100	5,200		not read
SVE Vacuum (in W.C.)												
VE-1		13		12.5		12.5		13		13		12
VE-2		13		12.5		12.5		13		13		12
VE-3		10		10		10		10		10		10
VE-4		10		10		10		10		10		10
SVE Blower Inlet		41		39.5		39.5		39		39		39
Vacuum at SVE Knockout Pot (in W.C.)		23.5		22.5		22.5		22.5		22.5		22.5
Pressure Monitoring Points (in W.C.)												
PM-1		Not Read		Not Read		Not Read		1.1		Not Read		not read
PM-2		Not Read		Not Read		Not Read		Not Read		Not Read		not read
PM-3		Not Read		Not Read		Not Read		1.8		Not Read		not read
PM-4		Not Read		Not Read		Not Read		Not Read		Not Read		not read
PM-5		Not Read		Not Read		Not Read		0.005		Not Read		not read
Air Sparging Temperature (°c)		34		39		34		30.5		30		29
SVE Exhaust Temperature (°c)		30		36		34		32		34		
SVE Exhaust PID Reading		50		Not Read		75		25 (High Humidity)		Not Read		not read
Knockout Pot Water Level (in.)		0		0		0		0		0		0
Date of Last AS Filter Change		-		-		-		-		-		
Date of Last SVE Filter Change		-		-		-		-		-		
Highest Vicinity Ambient PID Reading	5	Background		Not Read	1	Background	2 (High Humidity)					not read
Location	West of Trailer											*SYSTEM OFF FOR SAMPLING*

VS - Valve Setting, % (e.g., 0, 25, 50, 75, 100)

Comments: 1/2-15/01-Pressure Monitring Wells inaccessible due to snow 12/4/00 -AS VS on SP-2 reduced ~12.5 CFM reading 4 SP-3 reading 7 when MVP left site. 12/8/00 Phone line checked- no dial tone. Air bubling out of MW-3. Fixed by tightening well cap. Flows in AS heve been decreasing over time.

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-1
Well Condition: fair to poor
Well Depth/Diameter: 8.46'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 2.87'
Water Column Ht./Vol.: 5.59'/9.5 gal
Purge Est.: 28.5 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 30 gal
DTW After Purging: 5.6'
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 3.19'
Sample Date/Time: 30 Jan 2001/1145
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling:
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	7.1	7.6	0.196	5.05
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	5	7.7	0.2	16.6	1.97 mg/L/5.4°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-2
Well Condition: fair to poor
Well Depth/Diameter: 11.26'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 4.57'
Water Column Ht./Vol.: 6.69'/11.373 gal
Purge Est.: 34 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 35 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 5.17'
Sample Date/Time: 30 Jan 2001/1215
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling:
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	8.6	7	0.384	30.3
End	8.7	7.3	0.384	50.5

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	7.1	7.6	0.266	>200	0.51 mg/L/7.6°
10	7.6	7.6	0.397	>200	
35	8.6	7	0.384	30.3	3.08 mg/L/8.5°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-3
Well Condition: fair to poor
Well Depth/Diameter: 11.43'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 4.70'
Water Column Ht./Vol.: 6.73'/11.441 gal
Purge Est.: 34 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 30 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling:
Sample Date/Time: 30 Jan 2001/1445
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling: : 5.09'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	11	7.6	0.404	5
End	10.5	7.6	0.395	10

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	10.1	7.3	0.388	51	2.38 mg/L/10.3°
10	10.7	7.3	0.401	35	
20	10.9	7.5	0.407	8	
30	11.0	7.6	0.404	5	2.93 mg/L/10.7°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-4
Well Condition: fair to poor
Well Depth/Diameter: 11.77'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 4.73'
Water Column Ht./Vol.: 7.04'/11.97 gal
Purge Est.: 36 gal
Purge Method(s):
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 35 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 7.27'
Sample Date/Time: 30 Jan 2001/1200
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling: : 5.58'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	9.1	7.2	0.269	115
End	8.7	7.1	0.266	35.5

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	7.7	7.4	0.344	14.6	2.42 mg/L/9.1°
10	8.7	7.6	0.285	170	
20	9.4	7.7	0.27	>200	
30	9.2	7.6	0.271	>200	
35	9.1	7.2	0.269	115	2.35 mg/L/9.4°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: # 31 January 2001
Crew: T.S., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: DEC 4-99-03
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-5
Well Condition: fair to poor
Well Depth/Diameter: 10.5'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 4.89'
Water Column Ht./Vol.: 5.61'/9.54 gal
Purge Est.: 28.6 gal
Purge Method(s): : Dedicated bailer (poly)
Purge Date/Time(s):

Depth(s): all
Rates (gpm): <2
Purged Volume: 30 gal
DTW After Purging:
Yield Rate: L
Purge Observations:

DTW Before Sampling: 5.9'
Sample Date/Time: 31 Jan 2001/1300
Sampling Method: Dedicated bailer
Sampling Depth(s): TOC
DTW After Sampling: : 5.9'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	12.2	7.8	0.385	>200
End	12.6	8	0.399	23.9

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
* 0	12.8	8.3	0.224	15	1.12 mg/L
10	12.1	7.9	0.332	>200	
20	12.8	7.9	0.367	>200	
30	12.2	7.8	0.385	>200	3.09 mg/L

Comments:
* Petro odor

Air Temp: 38°
Weather Conditions: Cloudy, light rain

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-6
Well Condition: fair to poor
Well Depth/Diameter: 14.98'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 5.26'
Water Column Ht./Vol.: 9.72'/16.524 gal
Purge Est.: 50 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 50 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling:
Sample Date/Time:
Sampling Method:
Sampling Depth(s):
DTW After Sampling: 10.2.3'
Chain-of-Custody No.(s):
Analytical Lab(s):
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	11.5	7.6	0.389	30
End				

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	10.5	7.5	0.296	69	5.65 mg/L/10.5°
10	10.2	7.4	0.415	16	
40	11.8	7.6	0.405	17	
50	11.5	7.6	0.389	30	6.05 mg/L/11.7°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-7
Well Condition: fair to poor
Well Depth/Diameter: 14.6'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 3.9'
Water Column Ht./Vol.: 10.7'/18.19 gal
Purge Est.: 54.6 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 50 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling:
Sample Date/Time: 30 Jan 2001/1510
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling:
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	12	7	0.365	33
End	11.9	7.2	0.364	18.5

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	10.2	7.6	0.37	>200	0.34 mg/L/9.3°
10	10.8	7.2	0.368	25.2	
30	11.1	7.2	0.367	9.5	
40	11.9	7.2	0.365	158	
50	12.0	7	0.365	33.5	3.12 mg/L/11.8°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-8
Well Condition: fair to poor
Well Depth/Diameter: 14.81'/4"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 7.36'
Water Column Ht./Vol.: 7.45'/12.67 gal
Purge Est.: 38 gal
Purge Method(s): : Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 40 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling:
Sample Date/Time: 30 Jan 2001/1400
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling: : 8.67'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	12.3	7.4	0.318	>200
End	12	7.4	0.339	44

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	11.8	7.6	0.346	129.7	7.29 mg/L/11.9°
10	11.8	7.4	0.343	72.5	
20	12.1	7.4	0.333	>200	
30	12.0	7.4	0.324	>200	
40	12.3	7.4	0.318	>200	6.3 mg/L/11.7°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: # 31 January 2001
Crew: T.S., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: DEC 4-99-03
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: MW-9
Well Condition: fair to poor
Well Depth/Diameter: 13.75'/2"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 7.25'
Water Column Ht./Vol.: 6.5'
Purge Est.: 20 gal
Purge Method(s): : Dedicated bailer (poly)
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 20 gal
DTW After Purging: 7.2'
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling: 7.2'
Sample Date/Time: 31 Jan 2001/1230
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling: : 7.2'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	8.4	8	0.494	>200
End	9.1	8.4	0.485	>200

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	7.3	8.4	0.365	16	5.5 mg/L/8.5°
10	8.3	8.1	0.474	>200	
20	8.4	8	0.494	>200	7.5mg/L/8.3°

Comments:
* Surface water runoo into well on 1/30/01--well not redeveloped.

Air Temp: 38°
Weather Conditions: Cloudy, light rain

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: PC-1
Well Condition: fair to poor
Well Depth/Diameter: 16.83'/2"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): 4.58'
Water Column Ht./Vol.: 12.25'/7.35 gal
Purge Est.: 22 gal
Purge Method(s): Dedicated Bailer
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 30 gal
DTW After Purging: 8.58'
Yield Rate: L
Purge Observations:

DTW Before Sampling:
Sample Date/Time: 30 Jan 2001/1600
Sampling Method: Dedicated bailer
Sampling Depth(s):
DTW After Sampling: : 5.52'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	4.3	7.6	0.545	>200
End	4.3	7.6	0.558	>200

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	3.0	8.2	0.439	6	2..35 mg/L/2.3°
10	4.4	7.8	0.526	187	
20	4.2	7.7	0.545	>200	
30	4.3	7.6	0.558	>200	4.11 mg/L/4.3°

Comments:

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

LMS Well Sampling Log

Date: 30 January 2001
Crew: E.T., J.T., M.L.
Job No: 446-173
Project: Harrison Subresidency
Project Site: Harrison NY

METERS USED
Temp.: TLC #10
pH: #99-08
Cond.: TLC #10
Turb.: DRT-NC

Well ID No.: SP-1
Well Condition: fair to poor
Well Depth/Diameter: 19.32/2"
Well Casing Type: PVC
Screened Interval:
Casing Ht./Lock No.:
Reference Pt.: TOC
Depth to Water (DTW): : 4.63'
Water Column Ht./Vol.: 14.69'/8.8 gal
Purge Est.: 27 gal
Purge Method(s): Whale pump
Purge Date/Time(s):

Depth(s):
Rates (gpm):
Purged Volume: 30 gal
DTW After Purging:
Yield Rate: L - M - H
Purge Observations:

DTW Before Sampling:
Sample Date/Time: 30 Jan 2001/1515
Sampling Method: Dedicated bailer
Sampling Depth(s): TOC
DTW After Sampling: 4.6'
Chain-of-Custody No.(s):
Analytical Lab(s): Mitkem Corporation
Sampling Observations:

SAMPLE CHEMISTRIES

	Temp. (°C)	pH	Sp. Cond.	Turb.
Start	10.7	7.6	0.4	>200
End	10.7	7.6	0.4	>200

SAMPLE ANALYSES

Parameters	Inv. No.	Pres. Meth.	Filter
MTBE/BTEX		ICE	N

PURGE CHEMISTRIES

Vol.	Temp. (°C)	pH	Sp. Cond.	Turb.	DO
0	10.7	7.6	0.4	>200	9.66 mg/L /9.4°
10	10.7	7.6	0.4	>200	

Comments:
A lot of sediment at the bottom.

Air Temp: 35°
Weather Conditions: Rainy

Crew Chief Signature _____ Date: _____

Tyree Environmental Technologies Danbury, CT.

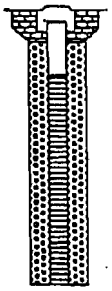
BORING/WELL LOG

BORING/WELL NO. MW-1

CLIENT: NYS OFFICE OF GENERAL SERVICES
PROJECT: NYS DOT MAINTAINANCE GARAGE
LOCATION: NEW KING STREET, HARRISON, NY

DATE STARTED: APRIL 3, 1995
DATE COMPLETED: APRIL 3, 1995
DRILLER: CONNECTICUT TEST BORINGS
LOGGED BY: CHRISTIAN FITZGERALD

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Field Description of Soil
0	13.4	3-3	0-0.5' Asphalt and Base
		4-5	0-2' brown-orange silts/clay w/fs
			2-5' brown silts and fine sand w/some gravel
5	0.0	17-16	5-7' brown silts and fines w/gneiss and quartz gravel
		14-15	
			7-9' brown silt w/some gravel to refusal
10			
15			
20			
25			
30			
35			



BORE HOLE DATA

Drilling Method: Hollow Stem Auger
Hole Dia.: 10.5"
Depth: 8.5'

WELL DATA

Riser
Type: SCH 40 PVC
Riser Dia.: 4"
Riser Length: 1'
Interval: 0' BG - 1' BG

Screen
Type: Sch 40 PVC
Screen Dia.: 4"
Screen Length: 7.5'
Slot: 0.010"
Interval: 1' -8.5'

FILTER PACK

Source: Morie Company, NJ
Composition: #2 Silica Sand
Volume Used: 6 cubic ft.
Interval: 1' - 8.5'

GROUT / SEAL

Type: Bentonite/Cement Mix
Volume Used: 1 cubic ft.
Interval: .5' - 1'

WELL HEAD COMPLETION

Manhole: ☒ YES ☐ NO
Size: 12"
Concrete Pad: ☒ YES ☐ NO
Size: 24" x 24" x 8"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: 12V sub-pump
Duration: 5 well volumes
Date: 4/11/95

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-30%
and=30-50%

very fine sand=0.6-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
course sand=0.5-1mm
very course sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

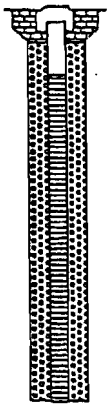
Tyree Environmental Technologies Danbury, CT.

BORING/WELL LOG

BORING/WELL NO. MW-2

CLIENT: NYS OFFICE OF GENERAL SERVICES
PROJECT: NYS DOT MAINTAINANCE GARAGE
LOCATION: NEW KING STREET, HARRISON, NY

DATE STARTED: APRIL 3, 1995
DATE COMPLETED: APRIL 3, 1995
DRILLER: CONNECTICUT TEST BORINGS
LOGGED BY: CHRISTIAN FITZGERALD

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0	252	9-12		0-0.5' Asphalt and Base
		9-7		0.5-2' fine yellow sand to dark clay w/some kneiss gravel
5	1567	6-11		2-5' organics, dark soil w/some fine sands
		10-11		5-7' clays and silts with organics and quartz gravel
10	567	8-16		7-10' organics, dark brown fs w/little grovel
		26-50		10-12' weathered rock, refusal at 12'
15				
20				
25				
30				
35				

BORE HOLE DATA

Drilling Method: Hollow Stem Auger
Hole Dia.: 10.5"
Depth: 12'

WELL DATA

Riser
Type: SCH 40 PVC
Riser Dia.: 4"
Riser Length: 2'
Interval: 0.5' BG - 2' BG

Screen
Type: Sch 40 PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 2' -12'

FILTER PACK

Source: Morie Company, NJ
Composition: #2 Silica Sand
Volume Used: 7 cubic ft.
Interval: 1' - 12'

GROUT / SEAL

Type: Bentonite/Cement Mix
Volume Used: 1 cubic ft.
Interval: .5' - 1'

WELL HEAD COMPLETION

Manhole: ☒ YES ☐ NO
Size: 12"
Concrete Pad: ☒ YES ☐ NO
Size: 24" x 24" x 8"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: 12V sub-pump
Duration: 5 well volumes
Date: 4/11/95

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-30%
and=30-50%

very fine sand=0.6-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
course sand=0.5-1mm
very course sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

Tyree Environmental Technologies Danbury, CT.

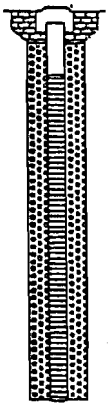
BORING/WELL LOG

BORING/WELL NO. MW-3

CLIENT: NYS OFFICE OF GENERAL SERVICES
PROJECT: NYS DOT MAINTAINANCE GARAGE
LOCATION: NEW KING STREET, HARRISON, NY

DATE STARTED: APRIL 3, 1995
DATE COMPLETED: APRIL 3, 1995
DRILLER: CONNECTICUT TEST BORINGS
LOGGED BY: CHRISTIAN FITZGERALD

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0	327	9-13		0-0.5' asphalt and base
		11-12		0.5-2' fine yellow sand to dark clay w/some kneiss gravel
				2-5' organics, dark soil w/some fine sands
5	1307	4-6		5-7' clays and silts with organics and quartz gravel
		4-5		
				7-10' organics, dark brown fs w/little gravel
10	1357	9-4		10-12' weathered rock, refusol at 12'
		2-6		
15				
20				
25				
30				
35				



BORE HOLE DATA

Drilling Method: Hollow Stem Auger
Hole Dia.: 10.5"
Depth: 12'

WELL DATA

Riser
Type: SCH 40 PVC
Riser Dia.: 4"
Riser Length: 2'
Interval: 0' BG - 2' BG

Screen
Type: Sch 40 PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 2' -12'

FILTER PACK

Source: Morie Company, NJ
Composition: #2 Silica Sand
Volume Used: 9 cubic ft.
Interval: 1' - 12'

GROUT / SEAL

Type: Bentonite/Cement Mix
Volume Used: 1 cubic ft.
Interval: .5' - 1'

WELL HEAD COMPLETION

Manhole: ☒ YES ☐ NO
Size: 12"
Concrete Pad: ☒ YES ☐ NO
Size: 24" x 24" x 8"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: 12V sub-pump
Duration: 5 well volumes
Date: 4/11/95

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-30%
and=30-50%

very fine sand=0.6-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
course sand=0.5-1mm
very course sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

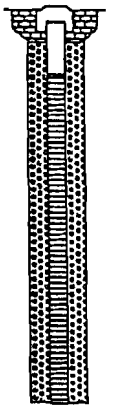
Tyree Environmental Technologies Danbury, CT.

BORING/WELL LOG

BORING/WELL NO. MW-4

CLIENT: NYS OFFICE OF GENERAL SERVICES
PROJECT: NYS DOT MAINTAINANCE GARAGE
LOCATION: NEW KING STREET, HARRISON, NY

DATE STARTED: APRIL 3, 1995
DATE COMPLETED: APRIL 3, 1995
DRILLER: CONNECTICUT TEST BORINGS
LOGGED BY: CHRISTIAN FITZGERALD

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0	180	7-8		0-0.5' asphalt and base
		4-8		0.5-2' organics with fine lite brown sand
				2-5' organics, dark soil w/some fine sands
5	0.0	5-8		5-7' dark brown fs w/little gravel
		16-26		7-10' organics, dark brown fs w/little gravel
10	747	7-23		10-12' weathered rock, refusal at 12'
		11-12		
15				
20				
25				
30				
35				

BORE HOLE DATA

Drilling Method: Hollow Stem Auger
Hole Dia.: 10.5"
Depth: 12'

WELL DATA

Riser
Type: SCH 40 PVC
Riser Dia.: 4"
Riser Length: 2'
Interval: 0' BG - 2' BG

Screen
Type: Sch 40 PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 2' -12'

FILTER PACK

Source: Morie Company, NJ
Composition: #2 Silica Sand
Volume Used: 9 cubic ft.
Interval: 1' - 12'

GROUT / SEAL

Type: Bentonite/Cement Mix
Volume Used: 1 cubic ft.
Interval: .5' - 1'

WELL HEAD COMPLETION

Manhole: ☒ YES ☐ NO
Size: 12"
Concrete Pad: ☒ YES ☐ NO
Size: 24" x 24" x 8"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: 12V sub-pump
Duration: 5 well volumes
Date: 4/11/95

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-30%
and=30-50%

very fine sand=0.6-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
course sand=0.5-1mm
very course sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

Tyree Environmental Technologies Du Bois, CT.

BORING/WELL LOG

BORING/WELL NO
MW-5

CLIENT: State of New York Office of General Services
PROJECT: NYSDOT Building
LOCATION: Old Mine Street Connector, Harrison, NY

DATE STARTED: October 27, 1995
DATE COMPLETED: October 27, 1995
DRILLER: Connecticut Test Borings, Inc.
LOGGED BY: Brent Pitteton

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0				0'-.25' asphalt
5	158.4			Split Spoon Sample 3'-5' black to dark brown fine compact sand
				5'-10' gray silt, little very fine to coarse sand fine to coarse gravel, occasional cobbles (till)
10	1176	4,10,11,15		Split Spoon Sample 10'-12' weathered rock, 2" dark brown sand
				END OF BORING
15				
20				
25				
30				
35				

BORE HOLE DATA

Drilling Method: H.S.A.
Hole Dia.: 6 1/4"
Depth: 12'

WELL DATA

Riser
Type: PVC
Riser Dia.: 4"
Riser Length: 2'
Interval: 0-2'

Screen
Type: PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 2'-12'

FILTER PACK

Source: Morie Company
Composition: #2 silica sand
Volume Used:
Interval: 1.5'-12'

GROUT/SEAL

Type: Bentonite Chips
Volume Used:
Interval: 1'-1.5'

WELL HEAD COMPL.

Riser: ☐ YES ☒ NO
Type: manhole
Concrete Pad: ☒ YES ☐ NO
Size: 12"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: Bailed
Duration:
Date:

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-30%
and=30-50%

LEGEND

very fine sand=0.6-0.13mm	pebble=2-4mm
fine sand=0.13-0.25mm	gravel=4-64mm
medium sand=0.25-0.50mm	cobble=64-256mm
coarse sand=0.5-1mm	boulder=256mm
very coarse sand=1-2mm	groundwater table

Tyree Environmental Technologies Danbury, CT.

BORING/WELL LOG

BORING/WELL NO. MW-6

CLIENT: State of New York Office of General Services
PROJECT: NYSDOT Building
LOCATION: Old King Street Connector, Harrison, NY

DATE STARTED: October 27, 1993
DATE COMPLETED: October 27, 1993
DRILLER: Connecticut Test Borings, Inc.
LOGGED BY: Brent Filteron

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0				0'-.25' asphalt
	120	5,3,4,7		Split Spoon Sample 3'-5' black to dark gray sand (compact)
5	177	7,9,11,15		Split Spoon Sample 5'-7' till, some cobbles, dark brown fine/medium sand
10	413	9,9,5,11		Split Spoon Sample 10'-12' weathered rock, black to brown fine sand, black to gray medium sand
				groundwater at 13'
15				END OF BORING
20				
25				
30				
35				

BORE HOLE DATA

Drilling Method: H.S.A.
Hole Dia.: 6 1/4"
Depth: 15'

WELL DATA

Riser
Type: PVC
Riser Dia.: 4"
Riser Length: 5'
Interval: 0-5'

Screen
Type: PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 5'-15'

FILTER PACK

Source: Morie Company
Composition: #2 silica sand
Volume Used:
Interval: 4'-15'

GROUT/SEAL

Type: Bentonite Chips
Volume Used:
Interval: 2'-4'

WELL HEAD COMPL.

Riser: ☐ YES ☒ NO
Type: manhole
Concrete Pad: ☒ YES ☐ NO
Size: 12"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: Bailed
Duration:
Date:

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=30-35%
and=35-50%

very fine sand=0.0-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
coarse sand=0.5-1mm
very coarse sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

Tyree Environmental Technologies Danbury, CT.

BORING/WELL LOG

BORING/WELL NO. MW-7

CLIENT: State of New York Office of General Services
PROJECT: NYSDOT Building
LOCATION: Old Kiln Street Carpenter Harrison NY

DATE STARTED: October 27, 1995
DATE COMPLETED: October 27, 1995
DRILLER: Connecticut Test Borings, Inc.
LOGGED BY: Brent Fitteron

Depth Below Grade	P.I.D. Reading (ppm)	Blow Counts	Well Completion	Field Description of Soil
0				0'-.25' asphalt
	4.2	1,3,3,5		Split Spoon Sample 3'-5' gray compact fine sand
5	2.2	3,6,8,8		5'-7' till, brown sand
10	3.7	10,15,17,17		Split Spoon Sample 10'-12' dark brown medium sand groundwater at 12'
				15' dark gray loose medium sand
15	2.3			END OF BORING
20				
25				
30				
35				

BORE HOLE DATA

Drilling Method: H.S.A.
Hole Dia.: 6 1/4"
Depth: 15'

WELL DATA

Riser
Type: PVC
Riser Dia.: 4"
Riser Length: 5'
Interval: 0-5'

Screen
Type: PVC
Screen Dia.: 4"
Screen Length: 10'
Slot: 0.010"
Interval: 5'-15'

FILTER PACK

Source: Merie Company
Composition: #2 silica sand
Volume Used:
Interval: 4'-15'

GROUT/SEAL

Type: Bentonite Chips
Volume Used:
Interval: 2'-4'

WELL HEAD COMPL.

Riser: ☐ YES ☒ NO
Type: manhole
Concrete Pad: ☒ YES ☐ NO
Size: 12"

WELL DEVELOPMENT

Performed: ☒ YES ☐ NO
Method: Bailed
Duration:
Date:

LEGEND

concrete
native soil
bentonite seal
well sand
solid PVC
slotted PVC

trace=1-10%
little=10-20%
some=20-35%
and=35-50%

very fine sand=0.6-0.13mm
fine sand=0.13-0.25mm
medium sand=0.25-0.50mm
coarse sand=0.5-1mm
very coarse sand=1-2mm

pebble=2-4mm
gravel=4-64mm
cobble=64-256mm
boulder=256mm
groundwater table

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 446-158

PROJECT NAME: Harrison Subresidency

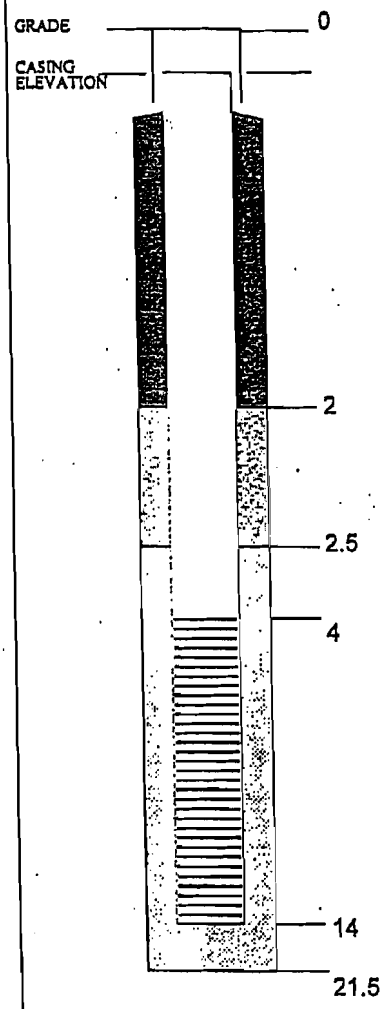
WELL No.: MW-9

CLIENT: NYSDOT

LOCATION: Harrison, NY

DATE DRILLED:	DATE DEVELOPED:	WELL CONSTRUCTION COMPLETED:
17-Mar-99	18-Mar-99	17-Mar-99

DEVELOPING METHOD: Hand surging, pumping, and bailing



NOT TO SCALE

INSPECTOR: J. Thornburg

DRILLING CONTRACTOR: CT&E

TYPE OF WELL: Sparge

STATIC WATER LEVEL: 6.27 DATE: 3/23/99

MEASURING POINT: TOC TOTAL DEPTH OF WELL: 14 TOTAL DEPTH OF BORING: 21

DRILLING METHOD TYPE: HSA

DIAMETER: 8" CASING: NA

SAMPLING METHOD TYPE: NA

DIAMETER: WEIGHT:

FALL: INTERVAL:

RISER PIPE LEFT IN PLACE MATERIAL: PVC

DIAMETER: 1.5" LENGTH: 4 JOINT TYPE: Flush

SCREEN MATERIAL: PVC

INTERVAL: 4-14' DIAMETER: 1.5"

STRATIGRAPHIC UNITS SCREENED: overburden/Saprolite SLOT SIZE: 0.01

FILTER PACK GRADE: #1

SAND: X GRAVEL: NATURAL:

AMOUNT: 250# INTERVAL: 2.5-21

SEAL(s)

	INTERVAL:	AMOUNT:
Portland Cement	2.0-17	
Bentonite Slurry		
Bentonite Pellets	2-2.5	
Other:		

NOTES:

LOCKING CASING: [X] YES [ ] NO KEY NO: 2402

LAWLER, MATUSKY & SKELLY ENGINEERS LLP

TEST BORING/MONITORING WELL CONSTRUCTION LOG

Page 1 of 1

Project Name: Harrison Subresidency

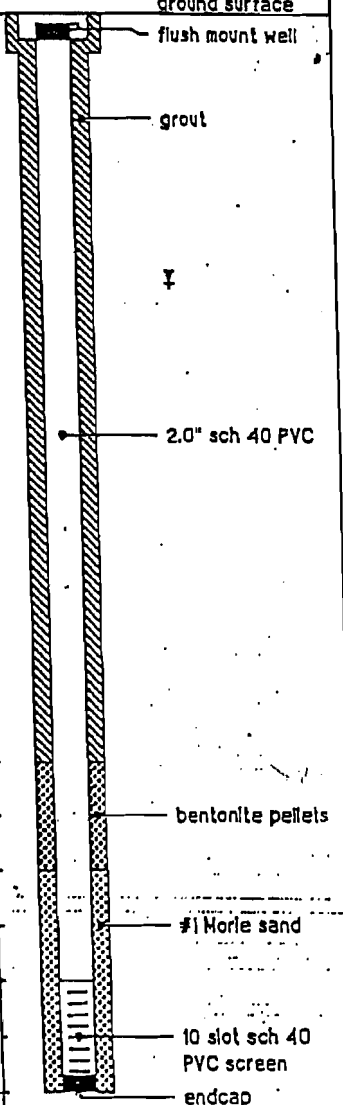
Boring I.D.: SP-01

te Location: Harrison, NY
ob Number: 446-135
ient: NYSDOT
YSDEC Site I.D.
oring Location:
eologist: John Thornburg

Drilling Co.: CT&E
Drilling Method: 4.25" Hollow stem auger
Date Begin/End: 4/14/97
Surface Elevation:
Depth to Water: 5
Total Depth: 20

DEPTH (FT)	SPLIT-SPOON	BLOWS/6 INCHES	RECOVERY (FT)	PID / FID	LITHOLOGY	GEOLOGIC DESCRIPTION
						and = 35-50% f = fine some = 20-35% m = medium little = 10-20% c = coarse trace = 0-10%
0	SS-1	12 13 11	1.0			Brown, fine-medium sand, trace silt. Moist.
2	SS-2	10 9 8 11	2.0			Dark gray silt, fine-medium sand. Moist.
4	SS-3					Dark gray, fine-medium sand, little silt, trace fine gravel. Moist. Brown, fine-medium sand, trace silt. Wet. Slight petroleum odor
8						Pushing cobble with augers. No split spoon recovery. Cuttings have strong odor. Fine-medium sand, some silt.
10		50/0				
12						
14						
16		50/0				
18		50/0				
20						END OF BORING AT 20 FT.
22						

WELL DIAGRAM



MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 446-158

PROJECT NAME: Harrison Subresidency

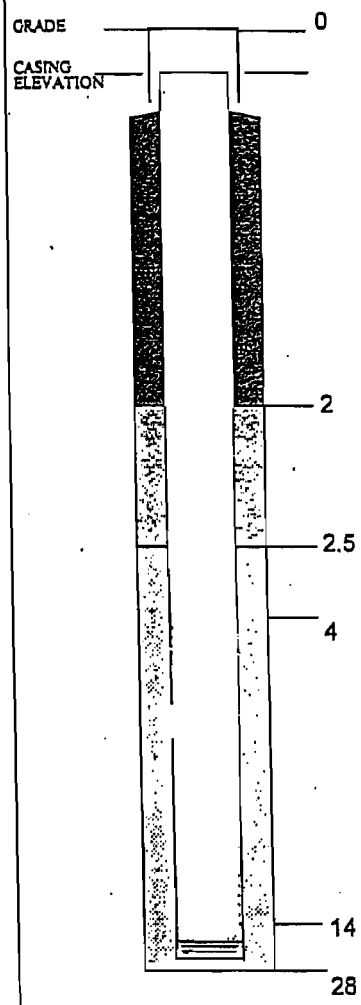
WELL No.: SP-1B

CLIENT: NYSDOT

LOCATION: Harrison, NY

DATE DRILLED:	DATE DEVELOPED:	WELL CONSTRUCTION COMPLETED:
16-Mar-99	18-Mar-99	17-Mar-99

DEVELOPING METHOD: Hand surging and pumping



NOT TO SCALE

INSPECTOR: J. Thornburg

DRILLING CONTRACTOR: CT&E

TYPE OF WELL: Sparge

STATIC WATER LEVEL: 2.64 DATE: 3/23/99

MEASURING POINT: TOC TOTAL DEPTH OF WELL: 27 TOTAL DEPTH OF BORING: 28

DRILLING METHOD TYPE: NX core

DIAMETER: 3" CASING: NA

SAMPLING METHOD TYPE: NA

DIAMETER: 2" WEIGHT: 140#

FALL: 24" INTERVAL: 10-20'

RISER PIPE LEFT IN PLACE MATERIAL: PVC

DIAMETER: 1.5" LENGTH: 22.5 JOINT TYPE: Flush

SCREEN MATERIAL: PVC

INTERVAL: 22.5-26.5 DIAMETER: 1.5"

STRATIGRAPHIC UNITS SCREENED: bedrock SLOT SIZE: 0.01

FILTER PACK GRADE: #1

SAND: X GRAVEL: NATURAL:

AMOUNT: 250# INTERVAL: 20-22.5

SEAL(s)

NOTES:

Portland Cement	INTERVAL: 2.0-19	AMOUNT:
Bentonite Slurry	INTERVAL:	AMOUNT:
Bentonite Pellets	INTERVAL: 2-2.5	AMOUNT:
Other:	INTERVAL:	AMOUNT:

LOCKING CASING: ☐ YES ☐ NO KEY NO: slip cap

LAWLER, MATUSKY & SKELLY ENGINEERS LLP

TEST BORING/MONITORING WELL CONSTRUCTION LOG	Page 1 of 1
Project Name: Harrison Subresidency	Boring I.D.: SP-02

e Location: Harrison, NY
b Number: 446-135
ent: NYSDOT
'SDEC Site I.D.
oring Location:
eologist: John Thornburg

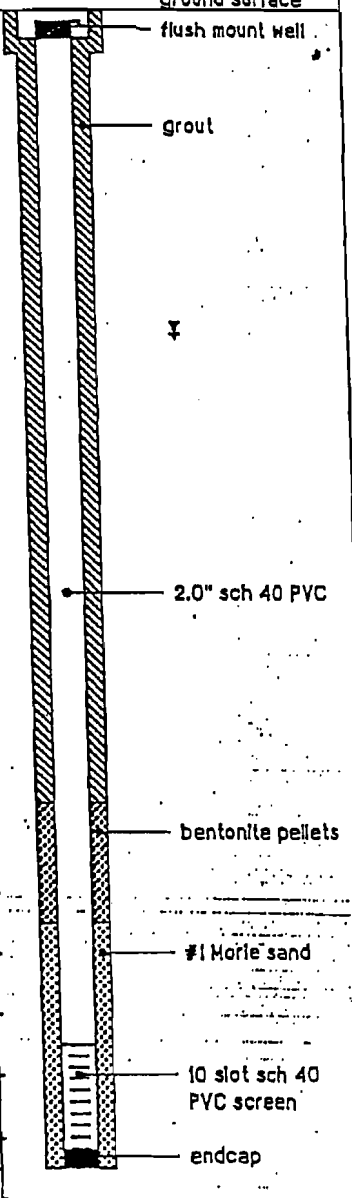
Drilling Co.: CTSE
Drilling Method: 4.25" Hollow stem auger
Date Begin/End: 4/14/97
Surface Elevation:
Depth to Water: 5.5
Total Depth: 20

GEOLOGIC DESCRIPTION

and = 35-50% f = fine
some = 20-35% m = medium
little = 10-20% c = coarse
trace = 0-10%

Depth (ft)	Split-Spoon	Blows/6 inches	Recovery (ft)	PID / FID	Lithology	Geologic Description
2	SS-1	6 6 4	2.0			Gray and dark gray, fine-coarse sand, some gravel. Moist. FILL.
4	SS-2	4 3 4 3	0.4			Olive gray, silty fine-medium sand, trace fine gravel. Moist FILL. Cuttings have fuel odor.
10	SS-3	7 7 17 50/3	1.5			Gray, fine-medium sand, trace fine-coarse gravel, some silt. Wet. Cuttings have fuel odor.
14		50/0				
18	SS-4	35 35 17 29	1.8			17.0-17.6 Black organic silt with roots, and decayed vegetation. 17.6-18.2 Gray rock, broken cobble. Dry. 18.2-18.8 Olive-brown, silty fine-coarse sand, some clay, trace gravel. Moist.
20						END OF BORING AT 18.5 FT - REFUSAL

WELL DIAGRAM



MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 446-158

PROJECT NAME: Harrison Subresidency

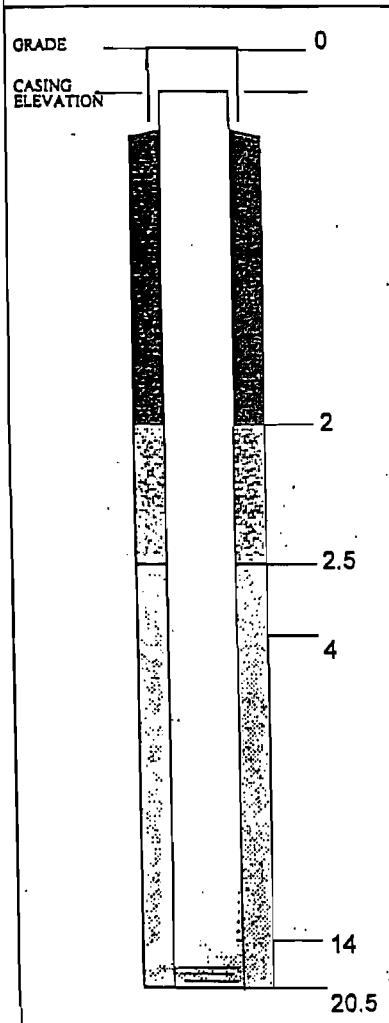
WELL No.: SP-3

CLIENT: NYSDOT

LOCATION: Harrison, NY

DATE DRILLED:	DATE DEVELOPED:	WELL CONSTRUCTION COMPLETED:
17-Mar-99	18-Mar-99	17-Mar-99

DEVELOPING METHOD: Hand surging and pumping



NOT TO SCALE

INSPECTOR: J. Thornburg

DRILLING CONTRACTOR: CT&E

TYPE OF WELL: Sparge

STATIC WATER LEVEL: 6.59 DATE: 3/23/99

MEASURING POINT: TOC TOTAL DEPTH OF WELL: 20.5 TOTAL DEPTH OF BORING: 20.5

DRILLING METHOD TYPE: HSA

DIAMETER: 8" CASING: NA

SAMPLING METHOD TYPE: NA

DIAMETER: WEIGHT:

FALL: INTERVAL:

RISER PIPE LEFT IN PLACE MATERIAL: PVC

DIAMETER: 1.5" LENGTH: 18 JOINT TYPE: Flush

SCREEN MATERIAL: PVC

INTERVAL: 18.5-20.5 DIAMETER: 1.5"

STRATIGRAPHIC UNITS SCREENED: Saprolite SLOT SIZE: 0.01

FILTER PACK GRADE: #1

SAND: X GRAVEL: NATURAL:

AMOUNT: 250# INTERVAL: 17.5-20.5

SEAL(s)

	INTERVAL:	AMOUNT:
Portland Cement	2.0-16.5	
Bentonite Slurry		
Bentonite Pellets	2-2.5	
Other:		

NOTES:

LOCKING CASING: ☐ YES ☐ NO KEY NO: slip cap

LAWLER, MATUSKY & SKELLY ENGINEERS LLP

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 446-158

PROJECT NAME: Harrison Subresidency

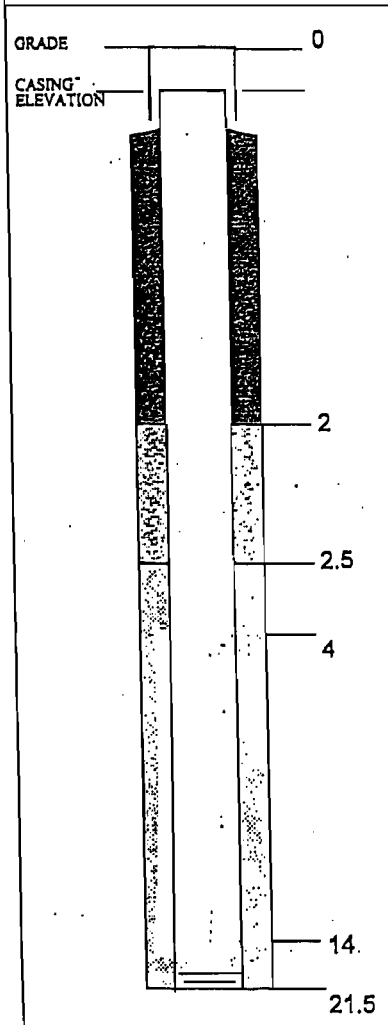
WELL No.: SP-4

CLIENT: NYSDOT

LOCATION: Harrison, NY

DATE DRILLED:	DATE DEVELOPED:	WELL CONSTRUCTION COMPLETED:
17-Mar-99	18-Mar-99	17-Mar-99

DEVELOPING METHOD: Hand surging and pumping



NOT TO SCALE

INSPECTOR: J. Thornburg

DRILLING CONTRACTOR: CT&E

TYPE OF WELL: Sparge

STATIC WATER LEVEL: 3.67 DATE: 3/23/99

MEASURING POINT: TOC TOTAL DEPTH OF WELL: 21.5 TOTAL DEPTH OF BORING: 21.5

DRILLING METHOD TYPE: HSA

DIAMETER: 8" CASING: NA

SAMPLING METHOD TYPE: NA

DIAMETER: WEIGHT:

FALL: INTERVAL:

RISER PIPE LEFT IN PLACE MATERIAL: PVC

DIAMETER: 1.5" LENGTH: 19 JOINT TYPE: Flush

SCREEN MATERIAL: PVC

INTERVAL: 19.5-21.5 DIAMETER: 1.5"

STRATIGRAPHIC UNITS SCREENED: Saprolite SLOT SIZE: 0.01

FILTER PACK GRADE: #1

SAND: X GRAVEL: NATURAL:

AMOUNT: 250# INTERVAL: 18-21.5

SEAL(s)

NOTES:

Portland Cement	INTERVAL: 2.0-17	AMOUNT:
Bentonite Slurry	INTERVAL:	AMOUNT:
Bentonite Pellets	INTERVAL: 2-2.5	AMOUNT:
Other:	INTERVAL:	AMOUNT:

LOCKING CASING: ☐ YES ☐ NO KEY NO: slip cap

LAWLER, MATUSKY & SKELLY ENGINEERS LLP

MITKEM CORPORATION

"Environmental Testing For The New Millennium"

February 6, 2001

LMS Engineering
One Blue Hill Plaza, PO Box 150
Pearl River, NY 10965
Attn: Ms. Maria Heincz

RE: Client Project: NYSDOT-Harrison Spill Site, 446-173
Mitkem Lab Project # 80197

Dear Ms. Heincz:

Enclosed please find the data report of the required analysis for the samples associated with the above referenced project.

If you have any questions regarding this report, please call me.

We appreciate your business

Sincerely,

Edward A. Lawler
Laboratory Operations Manager

Environmental Chemistry Section

FEB 0 8 2001

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

Mitkem Corporation

New York State Department of Environmental Conservation

Sample Preparation and Analyses Summary
Volatile (VOA) Analyses

Project Name: NYSDOT HARRISON SPILLSITE SDG: 80197

Laboratory Sample ID #	Matrix	Date Collected	Date Received at Lab	Date Extracted	Date Analyzed
80197001	AQ	1/30/01	2/1/01	—	2/4/01
002					
003					
004		↓			
005		1/31/01			2/5/01
006		1/30/01			2/5/01
007					
008		↓			
009		1/31/01			
010		1/30/01			
011		↓			↓
012	↓	1/31/01	↓	↓	2/4/01

NYASP 10/95

Mitkem Corporation

New York State Department of Environmental Conservation

Sample Preparation and Analyses Summary
Volatile (VOA) Analyses

Project Name: NYSDOT HARRISON SPILL SITE SDG: 80197

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Low/Med. Level	Dil./Conc. Factor
80197001	AQ	8021	—	L	1
002					
003					
004					
005					2
006					2
007					
008					
009					
010					
011					
012					

NYASP 10/95

Mitkem Corporation

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

Project Name: NYSDOT HARRISON SPILL SITE SDG: 80197

Customer Sample Code	Laboratory Sample Code	Analytical Requirements: VOA GC/MS Method #	BNA GC/MS Method #	Pest PCBs Method #	Metals	Other
MW-1	80197001	8021				
MW-2	002					
MW-3	003					
MW-4	004					
MW-5	005					
MW-6	006					
MW-7	007					
MW-8	008					
MW-9	009					
SP-1	010					
PC-1	011					
TRIPBLANK	012	↓				

NYASP 10/95

Analytical Data Package for LMS Engineers

Client Project: NYSDOT-Harrison Spill Site, 446-173

SDG# 80197

Mitkem Project ID: 80197

February 6, 2001

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to LMS Engineers' NYSDOT project. Under this deliverable, analysis results are presented for twelve aqueous samples that were received on February 1, 2001 and assigned Laboratory Number 80197. 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-1	80197001	V
MW-2	80197002	V
MW-3	80197003	V
MW-4	80197004	V
MW-5	80197005	V
MW-6	80197006	V
MW-7	80197007	V
MW-8	80197008	V
MW-9	80197009	V
SP-1	80197010	V
PC-1	80197011	V
TRIPBLANK	80197012	V

V = Volatile Organics (BTEX + MTBE) – NYSDEC ASP Method 8021

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

Surrogate recovery: recoveries were within the QC limits with the exception of MW-2, its reanalysis and the MS/MSD performed on this sample. The undiluted analyses of samples MW-5 and MW-6 were also below the lower QC limit. The dilution analysis of

MW-5 continued to have low surrogate recovery, while the dilution analysis of MW-6 had surrogate recovery within the normal range.

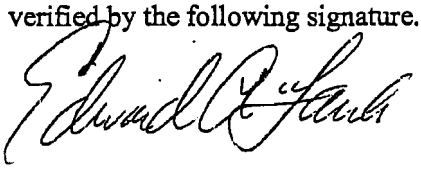
Lab control sample: spike recoveries were within the QC limits

Matrix spike/matrix spike: duplicate matrix spikes were performed on MW-2. Four of the five spiked compounds had percent recoveries below the lower QC limit in both the MS and MSD, indicating matrix interference.

Sample analysis: Due to high concentration of non-target analytes, the following samples were analyzed at dilution: MW-5 and MW-6 (both at 2x dilution). Please note, samples MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7 contained non-target analytes eluting after the last target compound for this project.

No other unusual observation was made 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.



Edward A. Lawler
Laboratory Operations Manager
2/6/01

Sample Transmittal Documentation

MITKEM CORPORATION

02/02/01 03:45 PM | Page 1 of2 | Revision #1 | Lab Workorder #: **80197**

Lab Workorder **80197** R1

Client: **Lawler, Matusky & Skelly Eng.**
Lab Workorder ID: **NYSDOT HARRISON SPILL SITE**
Client Proj ID: **NYSDOT**
Client PO #: **446-173**
Project / Profile Name: **NYS Dept. of Transportation**
Date Due: **02/15/01**
Customer Service: **PAS**
Del Req'd: **ASP A (2 copies)**
Completed?:
Profile Notes: **Expect unpreserved aqueous VOCs**
Project Notes: **R1: Added PO**

Logged In By: _____
Reviewed By: _____

Date Opened: **02/01/01 10:37**
Date Closed: **02/01/01 10:44**

Project Status: **WP**

Lab ID	Client ID	Matrix	Type	Analysis Code	Collected	Received	Due	Notes
80197001	MW-1	W	SAMPLE	8021W BTEX	01/30/01 11:45	02/01/01	02/15/01	BTEX/MTBE
80197002	MW-2	W	SAMPLE	8021W BTEX	01/30/01 12:15	02/01/01	02/15/01	BTEX/MTBE
80197003	MW-3	W	SAMPLE	8021W BTEX	01/30/01 14:45	02/01/01	02/15/01	BTEX/MTBE
80197004	MW-4	W	SAMPLE	8021W BTEX	01/30/01 17:00	02/01/01	02/15/01	BTEX/MTBE
80197005	MW-5	W	SAMPLE	8021W BTEX	01/31/01 13:00	02/01/01	02/15/01	BTEX/MTBE-PETRO ODOR
80197006	MW-6	W	SAMPLE	8021W BTEX	01/30/01 15:10	02/01/01	02/15/01	BTEX/MTBE
80197007	MW-7	W	SAMPLE	8021W BTEX	01/30/01 13:45	02/01/01	02/15/01	BTEX/MTBE
80197008	MW-8	W	SAMPLE	8021W BTEX	01/30/01 14:20	02/01/01	02/15/01	BTEX/MTBE
80197009	MW-9	W	SAMPLE	8021W BTEX	01/31/01 12:30	02/01/01	02/15/01	BTEX/MTBE
80197010	SP-1	W	SAMPLE	8021W BTEX	01/30/01 15:15	02/01/01	02/15/01	BTEX/MTBE
80197011	PC-1	W	SAMPLE	8021W BTEX	01/30/01 16:00	02/01/01	02/15/01	BTEX/MTBE
80197012	TRIPBLANK	W	SAMPLE	8021W BTEX	01/31/01 12:00	02/01/01	02/15/01	BTEX/MTBE

400

MITKEM CORPORATION

02/02/01 03:45 PM

Revision #1

Lab Workorder #: **80197**

INVOICE AND REPORT GO TO:

Maria Heincz
Lawler, Matusky & Skelly Eng.
One Blue Hill Plz, PO Box 150
Pearl River, NY, 10965
E-Mail: mheincz@lmseng.com
W: 845-735-8300
F : 845-735-7466

003

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

AIR BILL # 0[illegible]

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO			INVOICE TO		
COMPANY LAWLER, MATUSKY & SKELLY	PHONE (845) 735-8300		COMPANY SAME	PHONE	LAB PROJECT #: 80197
NAME MARIA HEINCE	FAX (845) 735-7466		NAME	FAX	
ADDRESS ONE BLUE HILL PLAZA			ADDRESS		TURNAROUND TIME:
CITY/ST/ZIP PEARL RIVER, N.Y. 10965			CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
[illegible] Spill Site #2	2116-[illegible]	

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	MTBE/BTEX	COMMENTS
MW-1	1/31/01 1145		✓	✓			01		3	
MW-2	1215						02			
MW-3	1445						03			
MW-4	1700						04			
MW-5*	1/31/01 1300						05			*Petro only
MW-6	1/30/01 1510						06			
MW-7	1/30/01 1345						07			
MW-8	1420						08			
MW-9	1/31/01 1230						09			
SP-1	1/30/01 1515						10			
PC-1	1600		✓	✓			11		✓	
TRIP BLANKS	1/31/01		—	—			12		2	

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
1	T. Schneider	1/31/01	Maria Faria	2/1/01 0900	[illegible]	5°C
2	00	/		/		
3	5	/		/		

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

MITKEM CORPORATION
Sample Condition Form

Received By: [illegible] Reviewed By: SV Date: 2/1/01 MITKEM Project #: 80197

Client Project: Client: LMS

Condition:

1) Custody Seal(s) (Present) / Absent
Coolers / (Bottles) TB ONLY
(Intact) / Broken

2) Custody Seal Number(s)

3) Chain-of-Custody (Present) / Absent

4) Cooler Temperature 5°C
Coolant Condition ice

5) Airbill(s) FedEx
Airbill Number(s) 8213 5453 7250

6) Sample Bottles (Intact)
Broken
Leaking

7) Date Received 2/1/01

8) Time Received 0900

Lab Sample ID	Preservation (pH) HNO_3	Preservation (pH) H_2SO_4	Preservation (pH) HCl	Preservation (pH) NaOH	VOA Matrix	Comments/Remarks/ Corrective Action*
80197 01					OA	
02					↓	
03						
04						
05						
06						
07						
08						
09						
10						
11						
12					✓	

OA Matrix Key:

S = Unpreserved Soil
A = Unpreserved Aqueous
= Both MeOH & $NaHSO_4$
a = $NaHSO_4$
M = MeOH
E = Encore
H = HCl
A = AIR

See Sample Notification Form yes / (no)

007

MITKEM CORPORATION

* Volatiles *

008

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.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197001

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6947

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	54	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197002

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6948

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	13	
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2RE

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197002RE

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6961

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	15	
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	2	

FORM I VOA

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.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197003

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6951

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	21	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	2	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197004

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6952

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	3	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	2	
1330-20-7	Xylene (Total)	1	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197005

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6963

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	43	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5DL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197005DL

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6957

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (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
1634-04-4	MTBE	2	U
71-43-2	Benzene	2	U
108-88-3	Toluene	2	D
100-41-4	Ethylbenzene	2	U
1330-20-7	Xylene (Total)	40	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197006

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6964

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	12	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	15	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6DL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197006DL

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6958

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (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
1634-04-4	MTBE	20	D
71-43-2	Benzene	2	U
108-88-3	Toluene	2	U
100-41-4	Ethylbenzene	2	U
1330-20-7	Xylene (Total)	21	D

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-7

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197007

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6953

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	38	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-8

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197008

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6955

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	6	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-9

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197009

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6956

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PC-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197011

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6960

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SP-1

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197010

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6965

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/05/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	31	
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIPBLANK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: 80197012

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6946

Level: (low/med) LOW Date Received: 02/01/01

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK4N

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix: (soil/water) WATER Lab Sample ID: V4B0204A

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4A6944

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/04/01

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	MTBE	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (Total)	1	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

	EPA SAMPLE NO.	SMC1 (BFB) #	SMC2 #	SMC3 #	OTHER	TOT OUT
01	VBLK4N	106				0
02	VBLK4NLCS	101				0
03	TRIPBLANK	105				0
04	MW-1	105				0
05	MW-2	47*				1
06	MW-2MS	42*				1
07	MW-2MSD	44*				1
08	MW-3	107				0
09	MW-4	83				0
10	MW-7	90				0
11	MW-8	106				0
12	MW-9	105				0
13	MW-5DL	15*				1
14	MW-6DL	70				0
15	PC-1	105				0
16	MW-2RE	49*				1
17	MW-5	16*				1
18	MW-6	45*				1
19	SP-1	107				0
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS

SMC1 (BFB) = Bromofluorobenzene (67-148)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix Spike - EPA Sample No.: MW-2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT (ug/L)	MS AMOUNT (ug/L)	MS % REC #	QC. LIMITS REC.
MTBE	10	13	18	50	42-154
Benzene	10	0.0	5	50*	78-127
Toluene	10	2	6	40*	87-125
Ethylbenzene	10	0.0	5	50*	85-132
Xylene (Total)	30	1	14	43*	86-134

COMPOUND	SPIKE ADDED (ug/L)	MSD AMOUNT (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
MTBE	10	18	50	0	40	42-154
Benzene	10	5	50*	0	40	78-127
Toluene	10	6	40*	0	40	87-125
Ethylbenzene	10	5	50*	0	40	85-132
Xylene (Total)	30	15	47*	9	40	86-134

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

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 8 out of 10 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Matrix Spike - Sample No.: VBLK4N

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT (ug/L)	LCS AMOUNT (ug/L)	LCS % REC #	QC. LIMITS REC.
MTBE	10	0.0	10	100	42-154
Benzene	10	0.0	10	100	78-127
Toluene	10	0.0	10	100	87-125
Ethylbenzene	10	0.0	10	100	85-132
Xylene (Total)	30	0.0	30	100	86-134

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

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLK4N

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: SAS No.: SDG No.: 80197

Lab File ID: V4A6944 Lab Sample ID: V4B0204A

Date Analyzed: 02/04/01 Time Analyzed: 1308

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: V4

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK4NLCS	V4L0204A	V4A6945	1414
02	TRIPBLANK	80197012	V4A6946	1510
03	MW-1	80197001	V4A6947	1557
04	MW-2	80197002	V4A6948	1645
05	MW-2MS	80197002	V4A6949	1732
06	MW-2MSD	80197002	V4A6950	1819
07	MW-3	80197003	V4A6951	1906
08	MW-4	80197004	V4A6952	1953
09	MW-7	80197007	V4A6953	2040
10	MW-8	80197008	V4A6955	2213
11	MW-9	80197009	V4A6956	2300
12	MW-5DL	80197005DL	V4A6957	0940
13	MW-6DL	80197006DL	V4A6958	1028
14	PC-1	80197011	V4A6960	1203
15	MW-2RE	80197002RE	V4A6961	1250
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COMMENTS:

Last Page of Data Report