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 March 2001

April 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

April 16, 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 #5 (March 2001)

Dear Mr. Menard:

Lawler, Matusky & Skelly Engineers LLP (LMS) is pleased to submit the subject report for your use. This report represents the fifth 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.

Periodic shutdowns in March of the AS/SVE system were prevalent due to the wet weather conditions and elevated water table. The system has been restarted and is currently up and running. Thus far for April, the SVE system has been operational 88% of the time. The next scheduled site visit to monitor system performance is Tuesday, 17 April 2001.

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

Very truly yours,

George G. Gattullo

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

J:\04xx-xxx\0446-NYSDOT\0446-173 Harrison Spill - Construction\Correspondence - NYSDOT\ltr - Menard monthly report mar 2001.doc (04/16/01 1:39 PM)

MONTHLY OPERATION AND MAINTENANCE REPORT

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

MONTH: March 2001

3/2/01- LMS arrived on site to reprogram auto-dialer and to verify sparge function to well SP-3, which has been slow to resume flow when pulsed off. SP-3 was at 8.5 scfm, which is desired. Reprogrammed auto-dialer and performed momentary test shutdown. Dialer functioning properly.

3/13/01- LMS arrived on site in response to high water alarm from system auto-dialer. Site was very wet due to ongoing snowmelt. System was off and water knock out was full. LMS also found water in the SVE inlet air filter housing. Drained water from knockout tank and temporarily restarted system to verify that system is operational. Shut down system again until water table recedes.

3/17/01- LMS arrived on site to restart SVE/AS system and to monitor and check pressure and flows in the system. System restarted without incident.

3/19/01- LMS arrived on site to monitor system and check pressure and flows in system. Drained approximately 10 inches of water from water knockout tank. Positive pressure readings at vapor monitoring points are likely to be attributable to the current high water table and are not indicative of actual AS influence. LMS decided to leave system running even though, due to forecasted weather conditions, it is likely to shut itself down on a high water alarm in the next few days. Gripper plug was found to be missing from MW-8.

3/22/01- LMS arrived on site in response to high water alarm from system auto-dialer. System was not running, as anticipated, due to recent heavy rainfall. Shut power to SVE and AS blowers, drained water from water knockout tank, and turned power off. Power to remain off until water table recedes.

3/26/01- LMS arrived on site to replace SVE inlet filter element and to restart the SVE/AS system. Pressure monitoring points were inaccessible due to snow cover and were not checked. Replaced gripper plug at MW-8.

3/30/01- LMS received notification via auto-dialer that the system had shut itself down automatically on a high-water alarm. LMS decided to wait until water table recedes before attempting restart. Operational interruptions of this type are to be expected during these seasonal weather conditions.

MAINTENANCE THIS MONTH:
Extraction blower inlet filter element replaced based on visual inspection.

SPARE PARTS USED:
Extraction blower inlet filter element part Solsberg #851

SPARE PARTS ORDERED:
SVE blower inlet filter element from Scales Air Compressor Corp.:
Solsberg #851 (poly), $32.00 each, quantity: 3; LMS PO# 38774; rec'd: 3/20/01 516-248-9096 (Dave S).

TYPICAL OPERATING PARAMETERS:

Air Sparging (Total Flow = 16 CFM)

	Pressure (psi)	Flow (scfm)
SP 1	9	7
SP 2	9	7
SP 3	19.5	4
SP 4	Not Operating	

Vapor Extraction (Total Flow = 218 CFM)

	Vacuum (in.-H_2O)	
VE 1	13	
VE 2	13	
VE 3	10	
VE 4	11	

OUTSTANDING ISSUES AND ACTIONS:

- The system was not operational at the end of the month due to the high seasonal groundwater level, compounded by recent weather conditions. This circumstance was expected as discussed during the design phase. The system will be restarted again as soon as conditions permit.
- A minimal amount of spare parts, amounting to small monetary value, is called for in the contract but has not yet been provided by Handex/Bisco. LMS is currently in the process of resolving this issue with Handex.

- Was quarterly well sampling conducted? Yes _ No X
  If yes, date: _____

  Since no groundwater sampling was conducted this month, the groundwater monitoring well data summaries are not included in this month's report

M0NTHLY OPERATION AND MAINTENANCE REPORT
AIR SPARGING / SOIL VAPOR EXTRACTION SYSTEM
HARRISON SUBRESIDENCY, WESTCHESTER, NEW YORK

MARCH 2001

LIST OF TABLES, FIGURES, AND ATTACHMENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF TABLES, FIGURES, AND ATTACHMENTS (continued)

ATTACHMENTS

TABLES

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 11/8/00 (ppbv)	Formula Weight (g/mole)	($\mu g/m^3$)	Loading (lb/hr) (assume Q = 218 ft^3/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

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 11/8/00 (ppbv)	Formula Weight (g/mole)	($\mu g/m^3$)	Loading (lb/hr) (assume Q = 218 ft^3/min)
1,1,2,2-Tetrachloroethane	ND	168	ND	ND
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 ($\mu g/L$)				
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

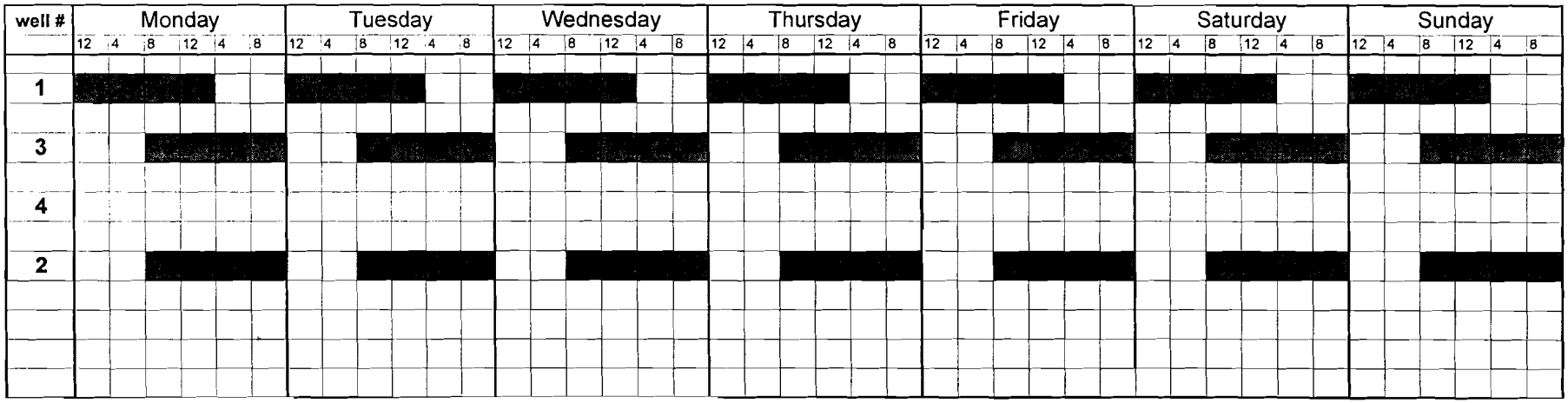
ND - Not detected at analytical reporting limit.

TABLE 3

AIR SPARGE WELL PULSING TIMER SETTING

NYSDOT Harrison Subresidency

timer set on: 2/24/01



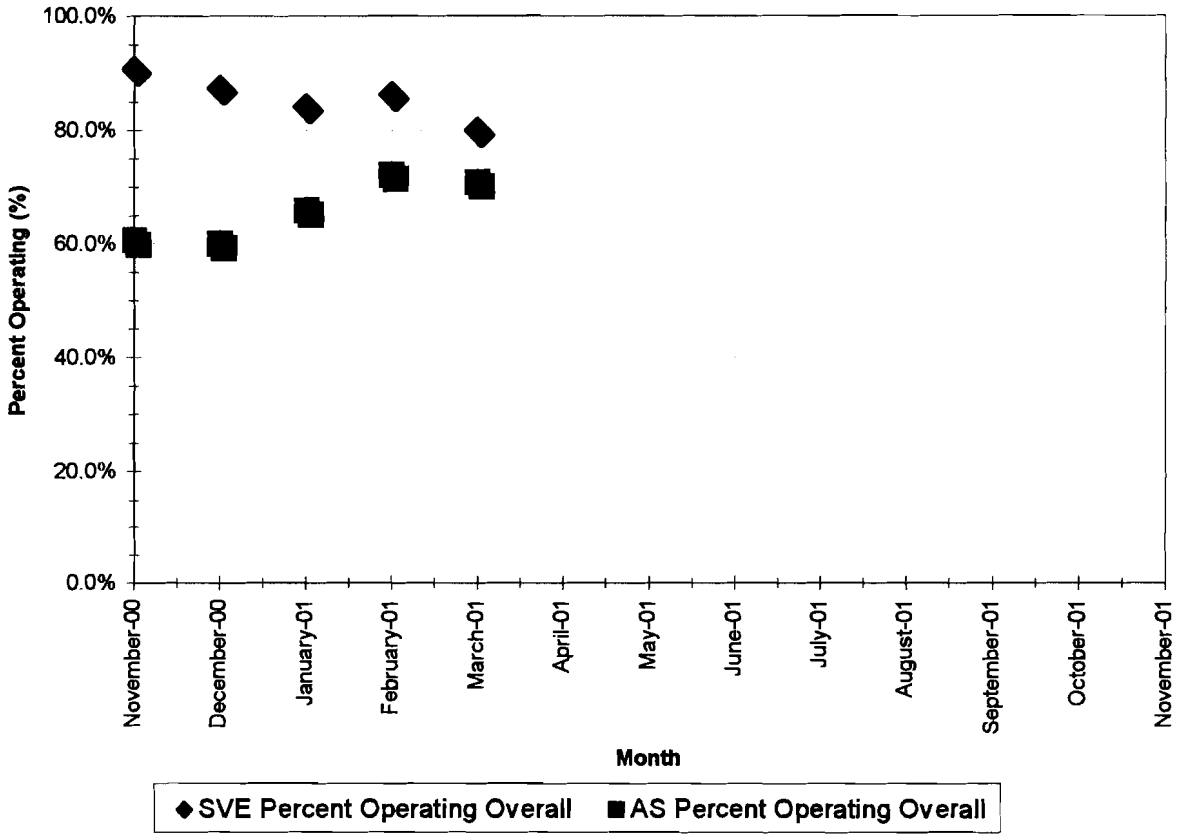
LEGEND:

= sparge air on

TABLE 4

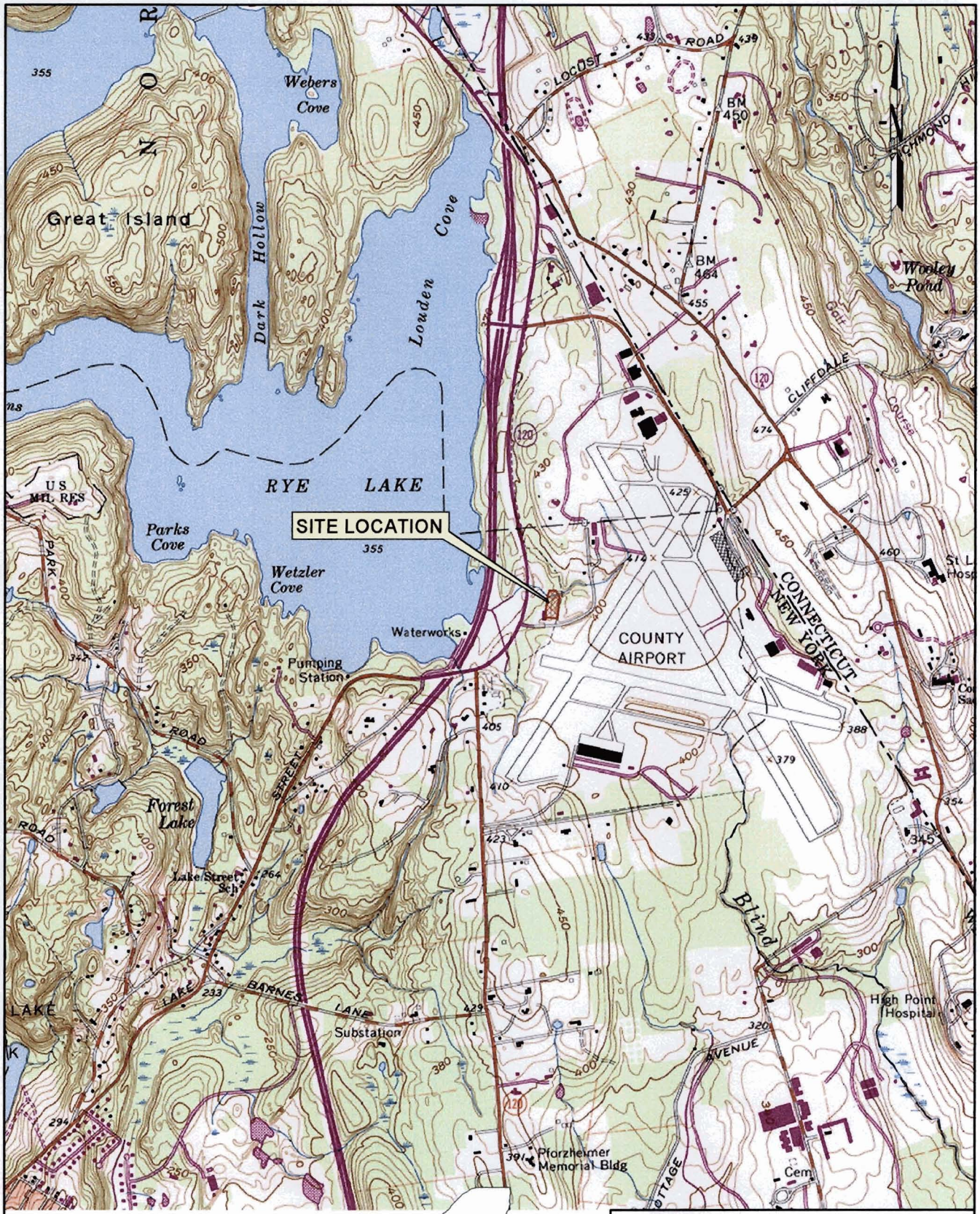
CUMULATIVE SYSTEM RUNTIME
Harrison Subresidency

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	654	436	720	90.8%	60.6%	90.8%	60.6%
December-00	1,280	879	1,464	87.4%	60.0%	84.1%	59.5%
January-01	1,858	1,454	2,208	84.1%	65.8%	77.6%	77.2%
February-01	2,122 (a)	2,076	2,880	86.1% (b)	72.1%	92.6% (b)	92.6%
March-01	*2,613*	*2,567*	*3,624*	*80.0%*	*70.8%*	*66.0%*	*66.0%*
April-01			4,344				
May-01			5,088				
June-01			5,808				
July-01			6,552				
August-01			7,296				
September-01			8,016				
October-01			8,760				
November-01			9,480				



Notes:
(a) Due to a malfunction in the SVE elapsed timer in Febrary, this value is not representative of the actual hours of operation.
(b) This value is calculated using an estimated value for SVE elapsed time..

FIGURES



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

\446\harrison\135usgs.dsf

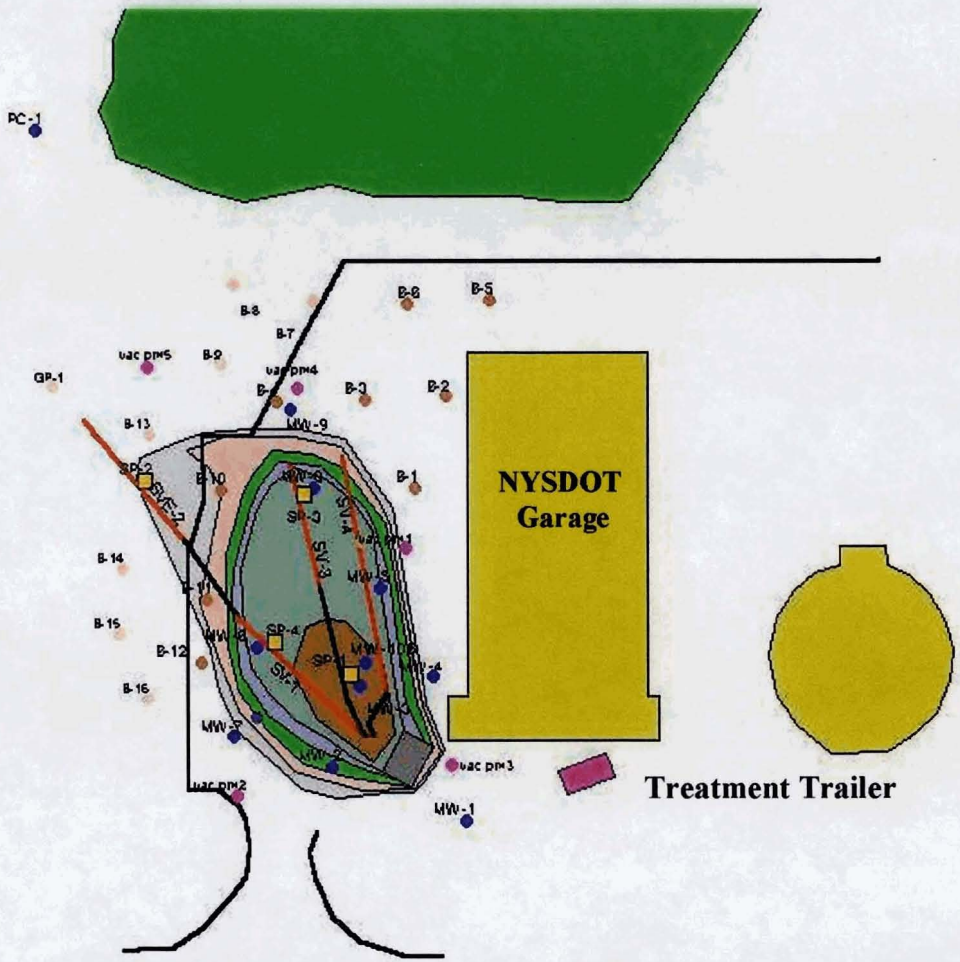
Figure 1

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



- SVE Monitoring Points

Wells & Borings

- Boring
- Sparge Well
- Well
- Borings (appx. location)
- Extra Line - Possible SP-5
- Septic Tank (Appx. Locn.)

SVE Lines

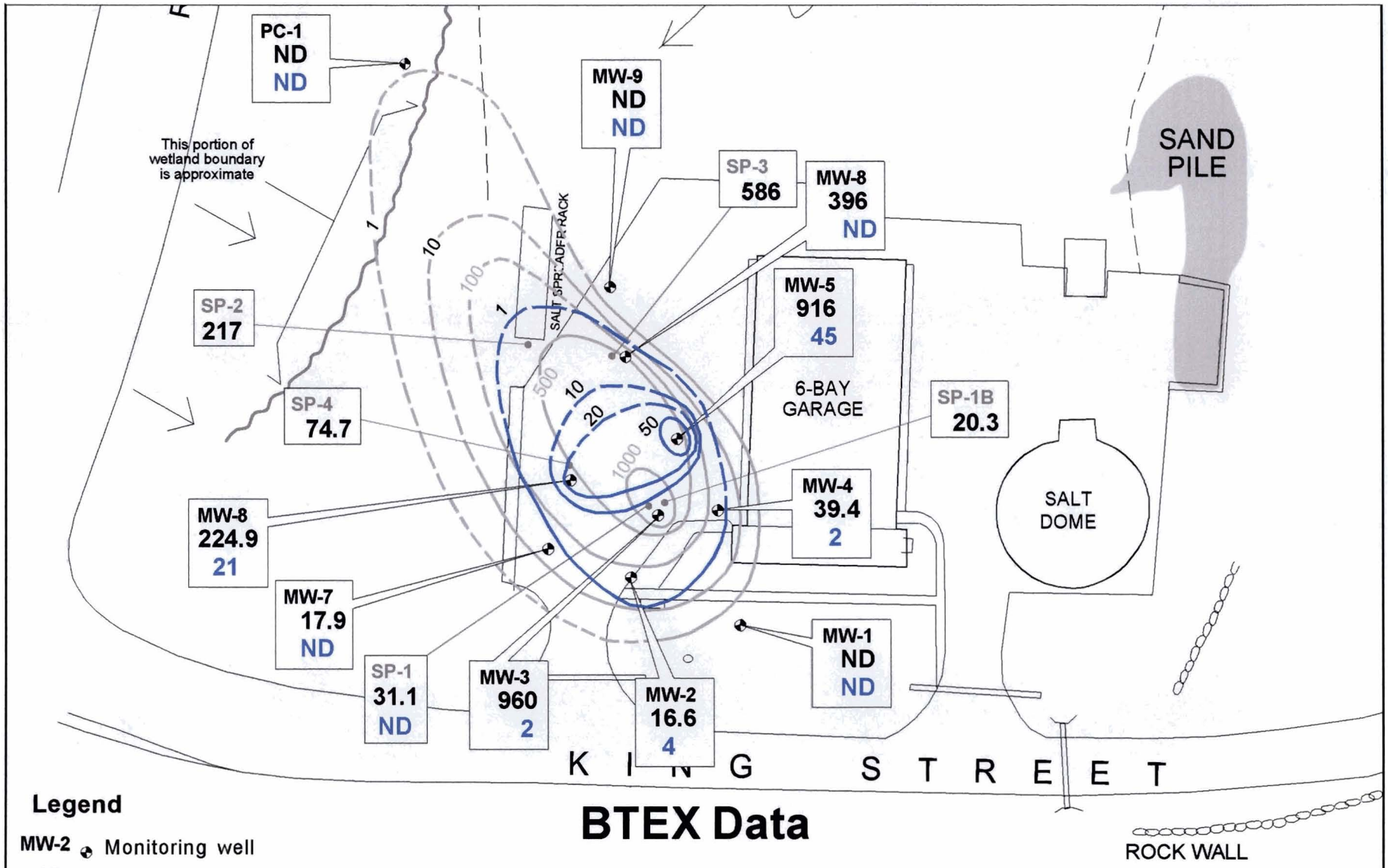
- Open
- Solid
- Pavement Edge
- Remediation Trailer
- Former UST Location (apprx.)
- Buildings
- >1000 ppb BETX & MTBE
- >750 ppb BETX & MTBE
- >500 ppb BETX & MTBE
- >100 ppb BETX & MTBE
- >50 ppb BETX & MTBE
- >25 ppb BETX & MTBE
- Landfill

Contours: Approximate location of equal BTEX & MTBE concentrations in micrograms per liter (ug/l; or ppb). Spring 1997

N
W E
S

40 0 40 80 Meters

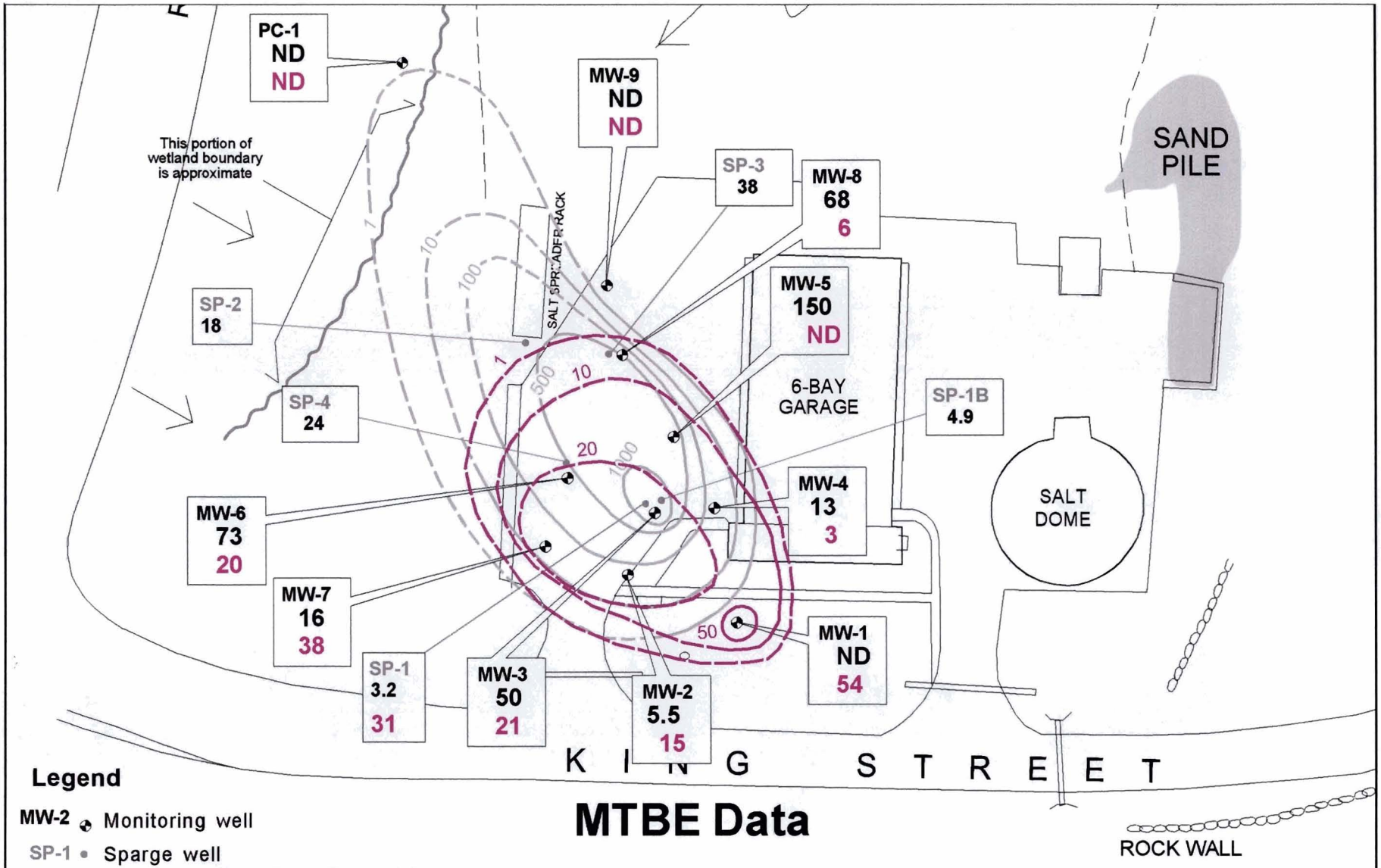
NYSDOT
Environmental Analysis Bureau
December 2000



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



MTBE Data

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)

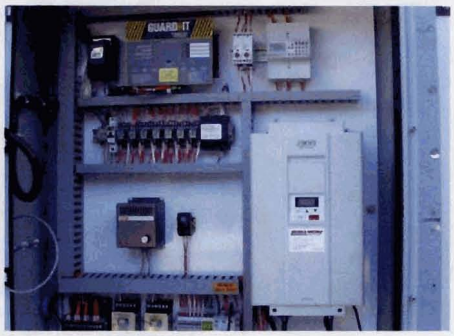
Haulmark	Grizzly
Model	#G816B2
OVERALL	
Length	19'17"
Width	100"
Height	103"
INTERIOR	
Length	16'4"
Width	96"
Height	78"
Platform Height	19"
Tire Size	ST205/R15 15"
Payload Cap.	4280 (avg.)
Double Rear doors	
Side door	
Color	white

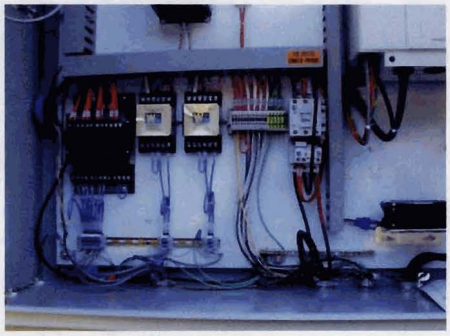
AIR SPARGING SYSTEM

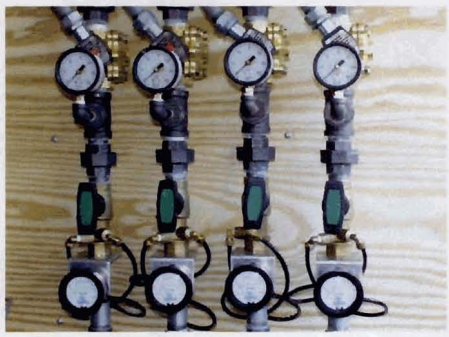
Blower	Becker KDT
Model #	3.140
HP	12
Voltage	230 V/3 phase
Converter	VFD
Max. pressure	22 psig
Max. flow	90 scfm
Max. temp.	125 F
Noise level	84 max. dBA
Outlet size	1 ½ " bsp

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

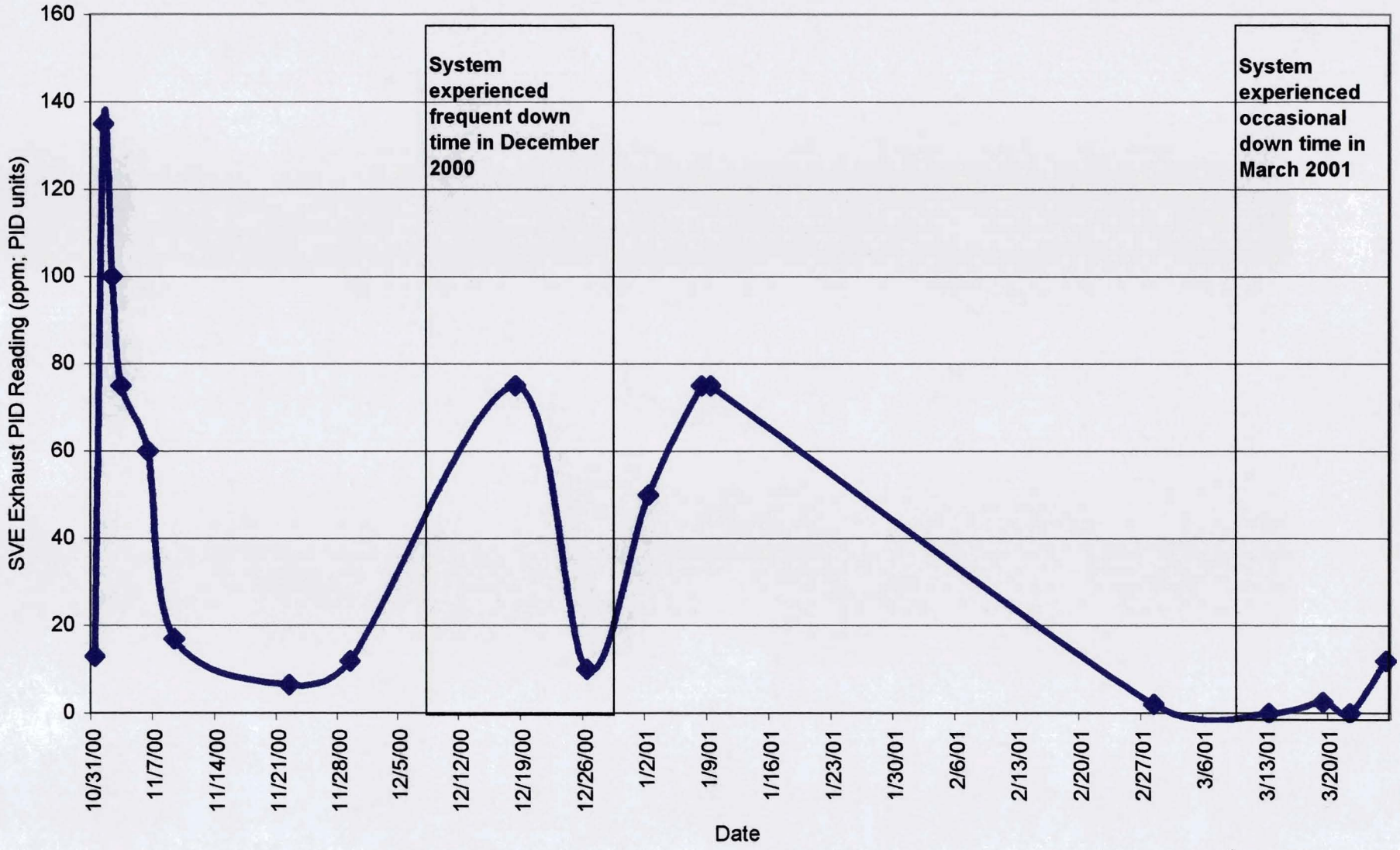
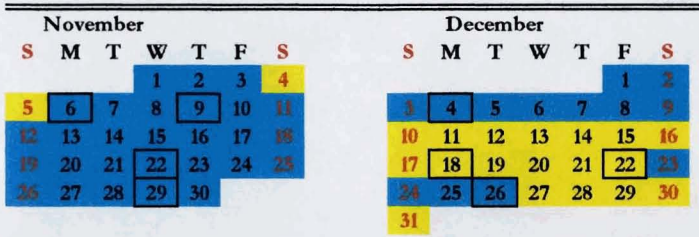


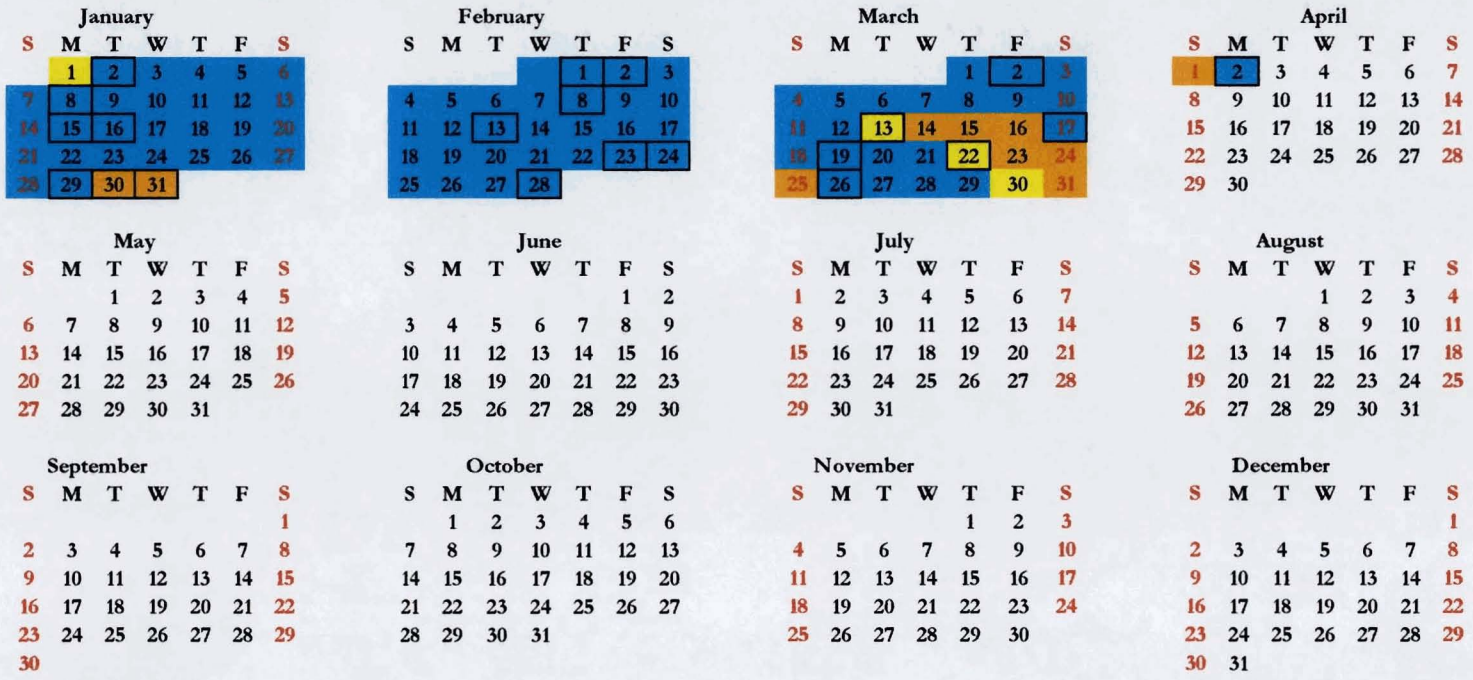
FIGURE 6
OPERATING CALENDAR

Harrison Subresidency

YEAR 2000



YEAR 2001

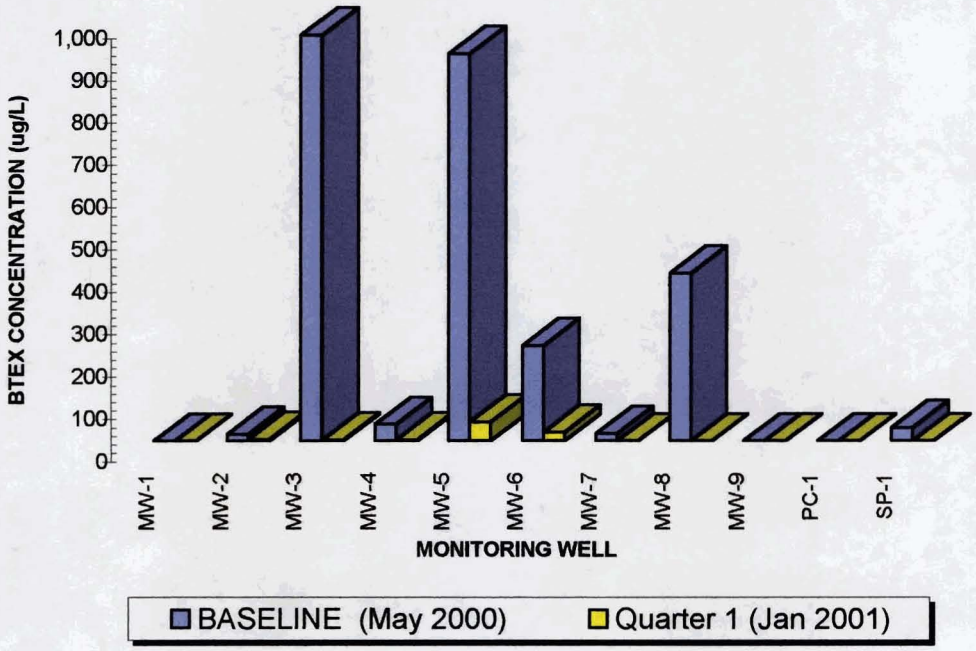


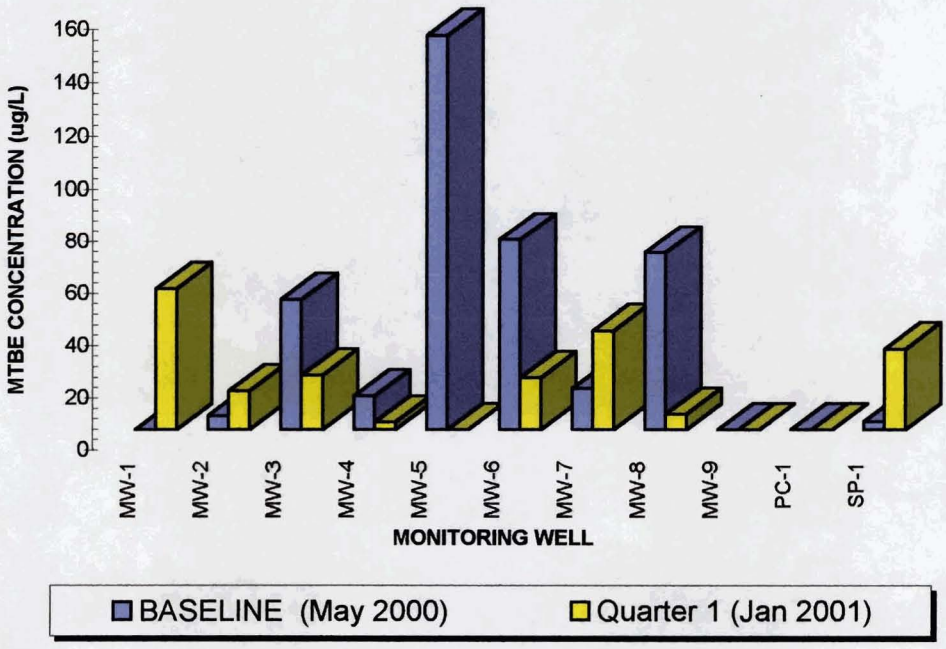
Legend

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

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

ATTACHMENT A

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

AIR SPARGING/VAPOR EXTRACTION
INSPECTION REPORT SHEET
Harrison Subresidency

MARCH 2001 (Page 1 of 1)

Name: George Gattullo / Mike Pantliano	Velocity Meter Model No.:	Velocity Meter Model No.:
PID Model No.: H-Nu P101/001	Pressure Gauge Model No.:	Pressure Gauge Model No.:

	Weath 25 F		Weather: 45		Weather: cool		Weather: 30	
	raw, light snow		overcast		partly cloudy		Snow	
	Date: 3/2/01(GG)		Date: 3/17/01(GG)		Date: 3/19/01(MP)		Date: 3/26/01(MP)	
SVE hours /time	2161.9 @ 1620		2415.0 @ 0800		2471.5@ 1630		2524.9@ 1300	
AS hours/time	2116.2 @ 1620		2369.2 @ 0800		2425.6@ 1630		2478.5@1300	
Air Sparging Flow Rate (CFM)	**VS**		**VS**		**VS**		**VS**	
SP-1	50	timed off	50	7	50	timed off	50	7.5
SP-3	75	8.5	75	<4	75	<4	75	<4
SP-4	-	Not Read	-	-	-	-	-	-
SP-2	25	Not Read	25	4	25	7	25	7
Air Sparging Pressure (PSI)								
SP-1		timed off		10.5		timed off		8.5
SP-3		20		21		20.5		20.5
SP-4		Not Read		-		-		-
SP-2		Not Read		15		7		9
Air Sparging Blower Outlet		Not Read		23		20/20		Not Read
SVE Velocity (ft/min)	**VS**		**VS**		**VS**		**VS**	
VE-1	100	Not Read	100	Not Read		Not Read		Not Read
VE-2	100	Not Read	100	Not Read		Not Read		Not Read
VE-3	100	Not Read	100	Not Read		Not Read		Not Read
VE-4	100	Not Read	100	Not Read		Not Read		Not Read
SVE Vacuum (in W.C.)								
VE-1		Not Read		14		13		16
VE-2		Not Read		14		13		15.5
VE-3		Not Read		12		10		12
VE-4		Not Read		13		10		14
SVE Blower Inlet		Not Read		44		39		43
Vacuum at SVE Knockout Pot (in W.C.)		Not Read		Not Read		23		26
Pressure Monitoring Points (in W.C.)								
PM-1		Not Read		Not Read		*PRESS <0.005		NA--Snow
PM-2		Not Read		Not Read		*PRESS <0.005		NA--Snow
PM-3		Not Read		Not Read		0		NA--Snow
PM-4		Not Read		Not Read		*PRESS <0.005		NA--Snow
PM-5		Not Read		Not Read		0.01		NA--Snow
Air Sparging Temperature (°C)		Not Read		Not Read		50		28
SVE Exhaust Temperature (°C)		Not Read		Not Read		40		30
SVE Exhaust PID Reading		Not Read		Not Read		2.5		12 (see note)
Knockout Pot Water Level (in.)		Not Read		Not Read		10		0
Date of Last AS Filter Change		2/13/01		2/13/01		2/13/01		2/13/01
Date of Last SVE Filter Change		-		see note (3/17)		see note (3/17)		**3/26/01**
Highest Vicinity Ambient PID Reading		Not Read		Not Read		0		0
Location								

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

Comments: 3/2 On site to verify SP-3 flow recovery; reprogrammed auto dialer (test=okay).
3/13: Respond to Autodialer alarm. Sys down. Water in SVE filter. Drain knockout. Leave sys off.
3/17: Restart system (down since 3/13) with cleaned, used SVE filter. New filter element on order.
3/26: Restart system (down since 3/22) with new SVE filter element. PID on SVE exhaust 20 mins after startup.