



**Pilot Test Report
and
Interim Remedial Measures Work Plan
Elks Plaza, LLC
157-189 West Merrick Road
Freeport, NY
NYSDEC Site No.: 130193**

September 2011

Prepared for:

**Elks Plaza, LLC
c/o Galaxy Management, Inc.
28 Campbell Drive
Dix Hills, NY 11746-7902**

Prepared by:

**CA RICH CONSULTANTS, INC.
17 Dupont Street
Plainview, NY 11803-1614**



e-mail: eweinstock@carichinc.com

September 23, 2011

NYSDEC

Division of Hazardous Waste Remediation
625 Broadway
Albany, New York 12207-2942

Attention: Melissa Sweet, Project Manager

Re: **Pilot Test Report and Interim Remedial
Measures Work Plan
Elks Plaza, LLC
157-189 West Merrick Road
Freeport, NY
NYSDEC Site No.: 130193**

Dear Ms. Sweet:

CA RICH Consultants, Inc. (CA RICH) is pleased to present this Pilot Test Report and Interim Remedial Measures Work Plan for Elks Plaza, LLC at 157-189 West Merrick Road Freeport, NY.

Introduction

The property has been the subject of a series of investigations that have included testing and analysis of the groundwater, soil, soil vapor and indoor air at the property. The results of these investigations are summarized in the following documents (Refs. 1 and 2).

- Site Characterization Report, Elks Plaza LLC March 2010
- Supplemental Soil Vapor Investigation, Elks Plaza LLC June 2010

Based on the results of those investigations elevated levels of perchloroethene (PCE) were identified below the units 179A and 181. Unit 181 was the former location of a dry cleaning tenant. The focus of this work was to perform a pilot test within units 179A, 181 and 181A, the space currently occupied by a Laundromat. This work was performed in accordance with our Revised Pilot Test Work Plan and Work Plan Addendum #1 (Refs. 3 and 4). An initial test boring was performed to delineate the vertical extent of PCE below a former dry cleaning machine that existed in unit 181. The results of the test boring and the pilot test were, in turn, used to design a venting system to address the sub-slab soil vapor issues identified in the earlier investigations.

Summary of Field Activities

1) Test Boring

One soil boring, identified as EP-01, was installed on June 15, 2011 in the area of the former dry cleaning machine using a Geoprobe sampling device. The purpose of this boring was to characterize the soil quality from the ground surface to the water table in the area of the former dry cleaning machine. A shallow boring, identified as boring SB-4, was installed in this same

area as part of the March 2010 Site Characterization Report. One soil sample was collected from boring SB-4 at 3 to 4 feet below grade. Sample SB-4 (3-4 FT BG) contained Perchloroethene (PCE) at a concentration of 26 ug/kg. The locations of these borings are illustrated on Figure 1.

Soil samples were collected continuously in boring EP-01 from the ground surface to the water table, which was encountered at a depth of 13 feet. A boring log is attached to this report. Cores from 1 to 5 feet, 5 to 9 feet, 9 to 13 feet and 13 to 17 feet were examined and screened with a Photo-Ionization Detector (PID). None of the soil cores displayed elevated detections on the PID meter. Soil samples were collected from the following depths: 1 to 2 feet; 7 to 8 feet; 12 to 13 feet; and 13 to 15 feet. The 13 to 15 foot sample was collected from below the water table.

Summary of Results - The results of the soil sample analyses are presented on Table 1. PCE was detected in the 1 to 2 foot deep sample at a concentration of 21.6 ug/kg. No other Volatile Organic Compounds (VOCs) were detected in this sample. This concentration is similar to the level of detection found in the 3 to 4 foot deep sample from boring SB-04. The PCE concentration in that sample was 26 ug/kg. There were no detections of PCE or any other VOCs in the samples collected from 7 to 8 feet; 12 to 13 feet; and 13 to 15 feet.

The PCE detection of 21.6 ug/kg in the shallow soil sample from boring EP-01 is significantly lower than the 6NYCRR Part 375 soil cleanup objective (Ref. 5) of 1,300 ug/kg for "unrestricted use" or "protection of groundwater". The 6NYCRR Part 375 soil cleanup objective for "commercial use" is 150,000 ug/kg.

The results indicate that there was a low level release of PCE to the shallow soils below the former dry cleaning machine. As demonstrated by the results from the 7 to 8 foot, 12 to 13 foot, and 13 to 15 foot samples, the PCE has not migrated to the deeper soils below the Laundromat.

2) Installation of the Sub-Slab Venting System

Based on the test boring results, the sub-slab venting system design was focused to address the shallow soils below the Laundromat floor. As shown on Figure 2, the vents extend approximately one foot below the bottom of the concrete slab floor. The locations of the four vents are displayed on Figure 3.

A core drill was used to penetrate the concrete floor. A hole was then advanced using a hand auger until the final depth required for the vent was achieved. Four-inch diameter perforated PVC pipe was then lowered into the ground and surrounded with pea gravel. A concrete seal was placed at the top of the vent.

3) Performance of the Pilot Test

On August 18, 2011, a pilot test of two of the four newly installed vents was performed. The test was conducted using two different Fantech™ vapor abatement fans (a model HP2109 and model HP220) and a portable, 3-horsepower, Rotron™ regenerative blower with a variable frequency drive to control the discharge rate. Each flow rate tested was performed for at least 20 minutes. The weather conditions during the test were cloudy and humid. Vacuum monitoring points were installed at five locations as shown on Figure 3 by drilling a 5/16th-inch diameter hole in the floor and inserting a rubber stopper equipped with a barbed fitting in the hole and sealing it with bee's wax. A set of static vacuum readings were recorded using an Infiltec model DM1 Digital Micro-Manometer and are included on Table 2.

South West Vent

The south west vent was tested first. The vent was tested at three different rates. The first test was run using a four-inch diameter Fantec model HP2109 fan. This was followed by a second test conducted using six-inch diameter Fantec model HP220 fan. The final test was run using the

regenerative blower. The vacuum created at the test vent was recorded for each test. The regenerative blower, which was equipped with a Pitot tube, was used to calculate the flow rates for each test.

<u>Test #</u>	<u>Vacuum at Vent in Inches of H₂O</u>	<u>Flow Rate in CFM</u>
Test 1	1.8	12.4
Test 2	2.2	15.9
Test 3	4.1	30

A summary of the vacuum created below the sub slab during the test is included on Table 3 and is illustrated on Figures 4A to 4C. The field measurements indicated that a radius of vacuum of at least 55 feet was created during all three of the tests run on the south west vent. One of the vacuum monitoring points (point #4) was non-responsive during the test and probably did not tap porous material below the slab. Photo-Ionization Detector (PID) readings were measured at the beginning and end of each step of the test and are recorded on the Figures 4A, B & C and 5A, B & C. In addition, a sample was collected using a SUMMA canister 13 minutes after the beginning of the first test and at a flow rate of 12.4 Cubic Feet per Minute (CFM). Identified as sample number EP-SW-Grab, this sample had a PCE concentration of 94,990 ug/m³. The laboratory data is summarized on Table 5 of this report.

North East Vent

The north east vent was tested on the same day. The vent was tested at three different rates using the regenerative blower. The vacuum created at the test vent was recorded for each test. A Pitot tube, was used to calculate the flow rates for each test.

<u>Test #</u>	<u>Vacuum at Vent in Inches of H₂O</u>	<u>Flow Rate in CFM</u>
Test 1	1.798	9.6
Test 2	2.298	11
Test 3	3.998	12.4

A summary of the vacuum created below the sub slab during the test is included on Table 4 and is illustrated on Figures 5A to 5C. The field measurements indicated that a radius of vacuum of at least 48 feet was created during all three of the tests run on the north east vent. Photo-Ionization Detector (PID) readings were measured at the beginning and end of each step of the test. In addition, a sample was collected using a SUMMA canister and the end of the third test. The sample was collected at a flow rate of 12.4 CFM. Identified as sample number EP-NE-Grab, this sample had a PCE concentration of 210,335 ug/m³. The sample results are summarized on Table 5.

4) Venting System Design

Based on the results of the pilot test and the evaluation of the emissions data, we recommend that the four vents installed for the pilot test be converted into permanent sub-slab depressurization vents. Four-inch diameter sheet metal ducts would be extended and connected to a six-inch diameter sheet metal duct discharging above the roof. A six-inch diameter Fantech model HP220 in-line duct fan would be installed to provide the vacuum for the system.

The system will draw equally from each vent at a vacuum of 1.8 inches of water and would discharge 50 CFM from the four vents. This will create a radius of vacuum of at least 50 feet from each vent and will ensure that negative pressure is maintained across the space formerly occupied by the dry cleaner. A drawing illustrating this proposed design is included as Figure 6.

5) Evaluation of Emissions

The pilot test measurements, laboratory data and proposed venting design were evaluated using the NYSDEC's DAR-1 (Air Guide 1): Guidelines for the Control of Toxic Ambient Air Contaminants. Calculations were performed using the proposed design flow of 50 CFM and the maximum concentration of 210,335 ug/m³ from the SUMMA Canister results. The calculated exposures are orders of magnitude lower than the NYSDEC and NYSDOH guidelines and no controls are proposed for this project.

This data was evaluated using the worst case "short stack" dispersion from a Sub-Slab Depressurization (SSD) vent located on the roof of the Laundromat. The Annual Cavity Impact (C_C) and Short-Term Cavity Impact (C_{CST}) were calculated. The results for PCE are:

$$C_C = 2.3 \times 10^{-3} \text{ ug/m}^3 \text{ vs Annual Guideline Concentration (AGC) } = 1 \times 10^{-3} \text{ ug/m}^3$$

$$C_{CST} = 1.5 \times 10^{-2} \text{ ug/m}^3 \text{ vs Short-term Guideline Concentration (SGC) } = 1.0 \text{ ug/m}^3$$

6) Venting System Design

Based on the results of the pilot test and the evaluation of the emissions data, we recommend that the four vents installed for the pilot test be converted into permanent sub-slab depressurization vents. Four-inch diameter sheet metal ducts should be extended to the roof and connected to a four-inch diameter sheet metal duct which extends above the roof. A six-inch diameter Fantech model HP220 should then be connected to the six-inch riser duct set above the roof. Assuming an average flow rate of 12.5 CFM per vent, this would equal approximately 50 CFM from the four vents. At a vacuum of approximately 2 inches of water, this will create a radius of vacuum of at least 50 feet from each vent and will ensure that negative pressure is maintained across the space formerly occupied by the dry cleaner. A drawing illustrating this proposed design is included as Figure 6 and Fantech literature is included as Appendix C.

7) Operations, Maintenance and Monitoring for the Venting System

There are no periodic maintenance procedures required for the Fantech SSD fan based on the manufacturer's literature. The motor is sealed and does not require lubrication. There are no filters that have to be changed. The fan should be inspected at least on an annual basis to confirm that it is working properly. The vacuum gauge on the exhaust stack should be checked to confirm that the vacuum within the vent lines has not changed. If the fan malfunctions, it should be replaced.

If you have any questions regarding this plan, please do not hesitate to call our office.

Respectfully,

CA RICH CONSULTANTS, INC.



Stephen J. Osmundsen, P.E.
Senior Engineer



Eric A. Weinstock
Vice President

Attachments

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Suzanne Avena
savena@garfunkelwild.com



References

1. Preferred Environmental Services March 2010, Site Characterization Report, Elks Plaza LLC - Site # 130193, 157 -189 West Merrick Road, Freeport, NY.
2. Preferred Environmental Services June 2010, Supplemental Soil Vapor Investigation, Elks Plaza LLC - Site # 130193, 157 -189 West Merrick Road, Freeport, NY.
3. CA RICH, April 2011, Revised Pilot Test Work Plan, Elks Plaza, LLC, 157-189 West Merrick Road, Freeport, NY.
4. CA RICH, May 2011, Revised Pilot Test Work Plan Addendum Number 1, Elks Plaza, LLC, 157-189 West Merrick Road, Freeport, NY.
5. NYSDEC, 6NYCRR Part 375, Environmental Remediation Programs.
6. NYSDEC, DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants.

Figures

1. Location of Test Boring EP-01
2. Typical Soil Vapor Vent
3. Layout of Sub Slab Vents and Temporary Vacuum Points
- 4A to 4C. Results of Pilot Test, SW Vent
- 5A to 5C. Results of Pilot Test, NE Vent
6. Proposed SSD Layout

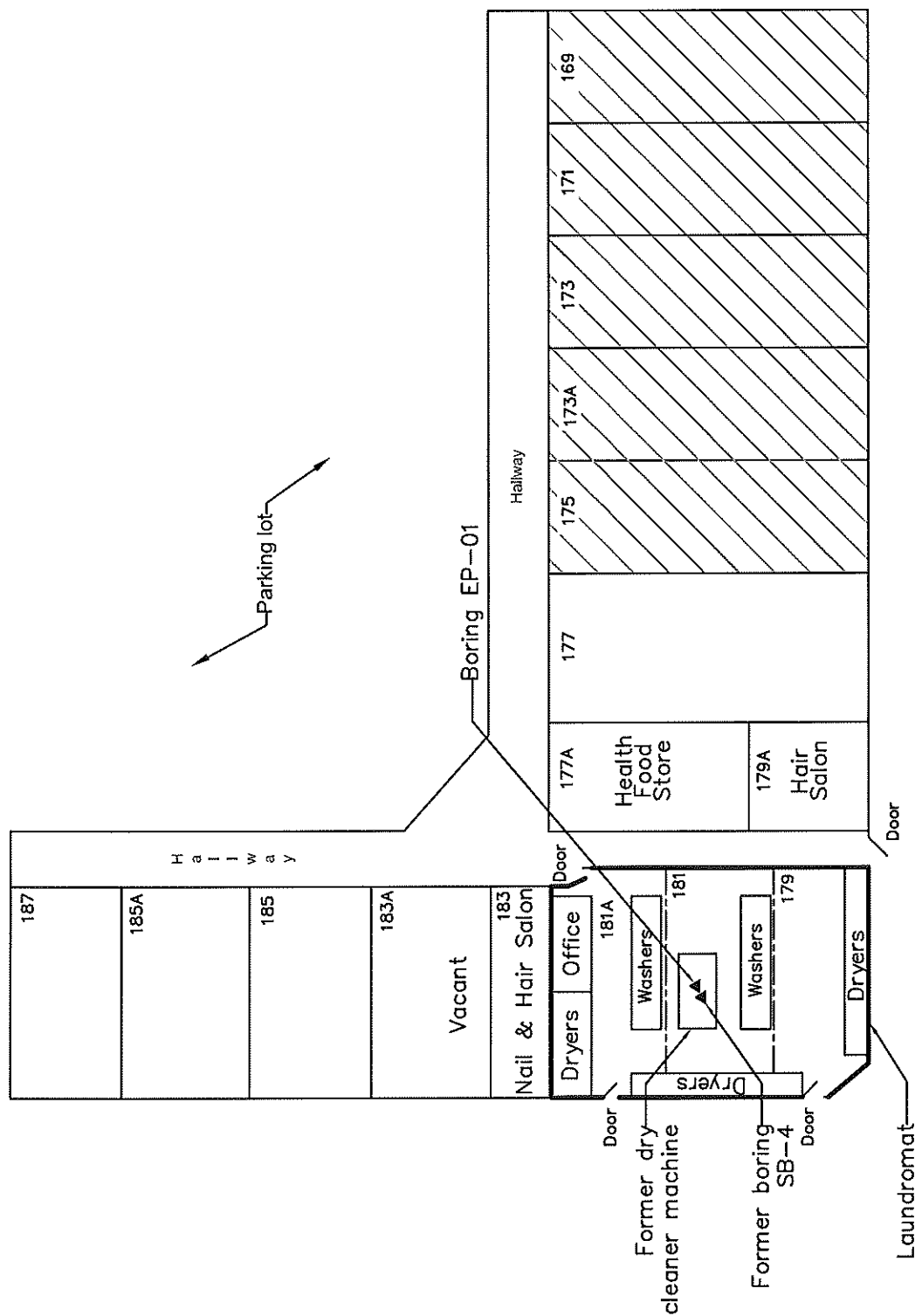
Tables

1. Analytical Results of VOCs in Samples from Soil Boring
2. Pre-test Static Vacuum Data
3. Results of Pilot Test, SW Vent
4. Results of Pilot test, NE Vent
5. Pilot Test Laboratory Data

Appendices

- A. Boring Log
- B. Laboratory Report
- C. Fantech Literature

FIGURES



LEGEND

- ▲ Boring location

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17 Dupont Street, Plainview, New York 11803

Location of Test
Boring EP-01

DATE: _____

SCALE:

FIGURE 2

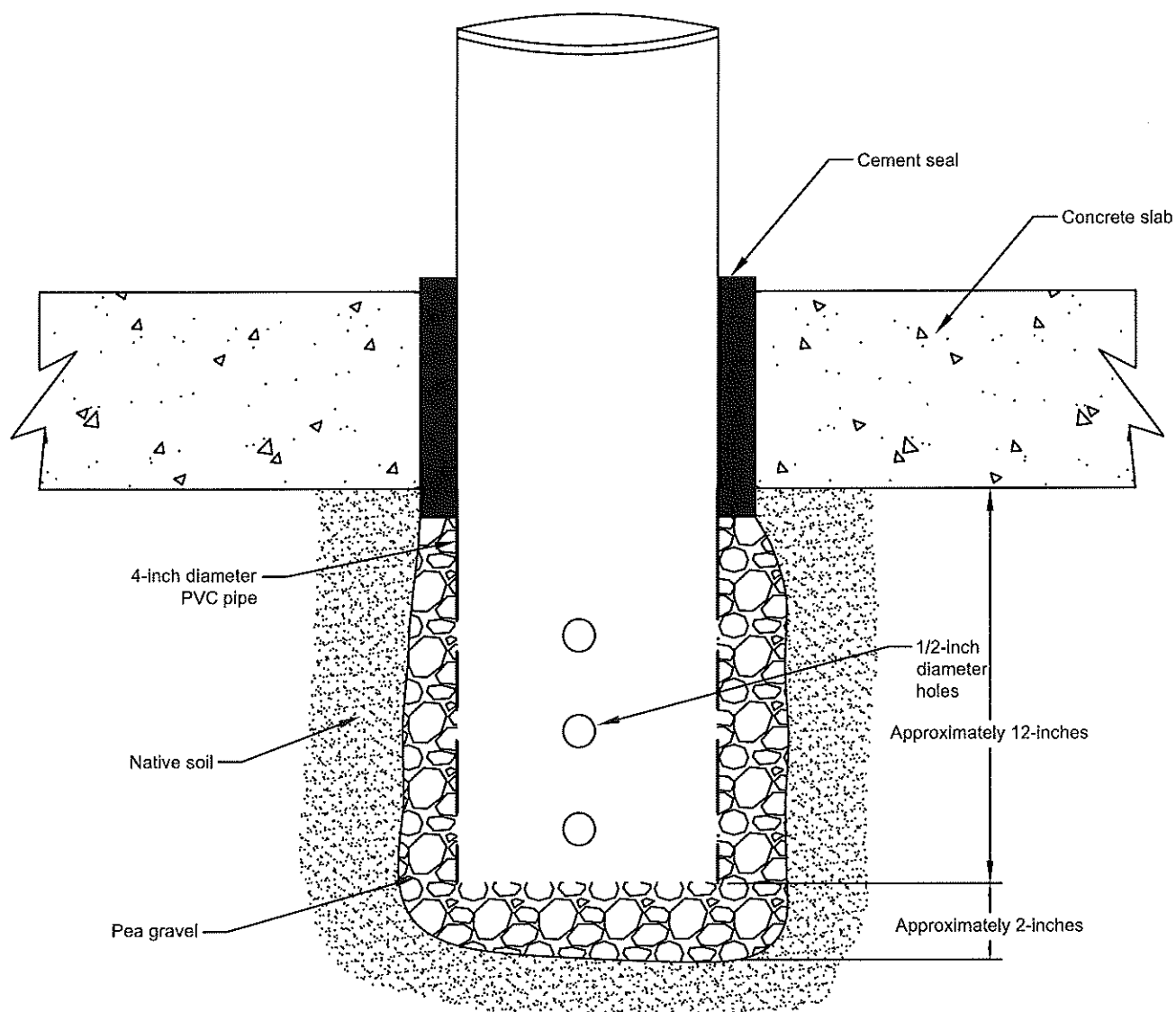
—

DRAWN BY:

J.T.C.

APPR. BY: FAW





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17 Dupont Street, Plainview, New York 11803

TITLE:

Typical Soil Vapor Vent

DATE:

9/22/2011

SCALE:

N.T.S.

FIGURE:

2

DRAWING NO:

2011-M4

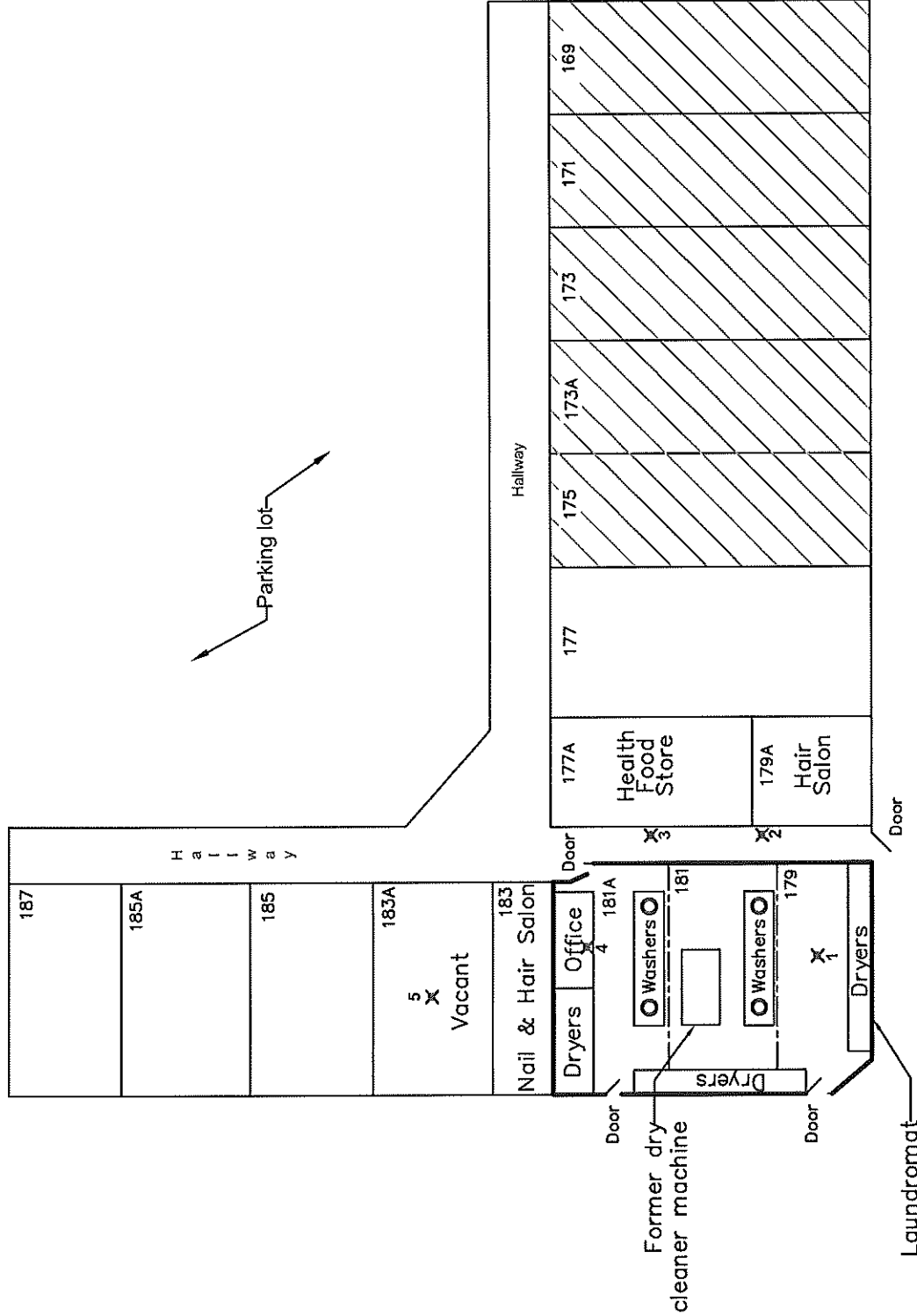
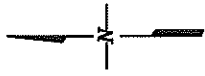
Elks Plaza, LLC
157-189 W. Merrick Road
Freeport, New York

DRAWN BY:

J.T.C.

APPR. BY:

E.A.W.



LEGEND

- Sub slab vent
- × Temporary vacuum point
-  Units have basement, basement unit is # 165

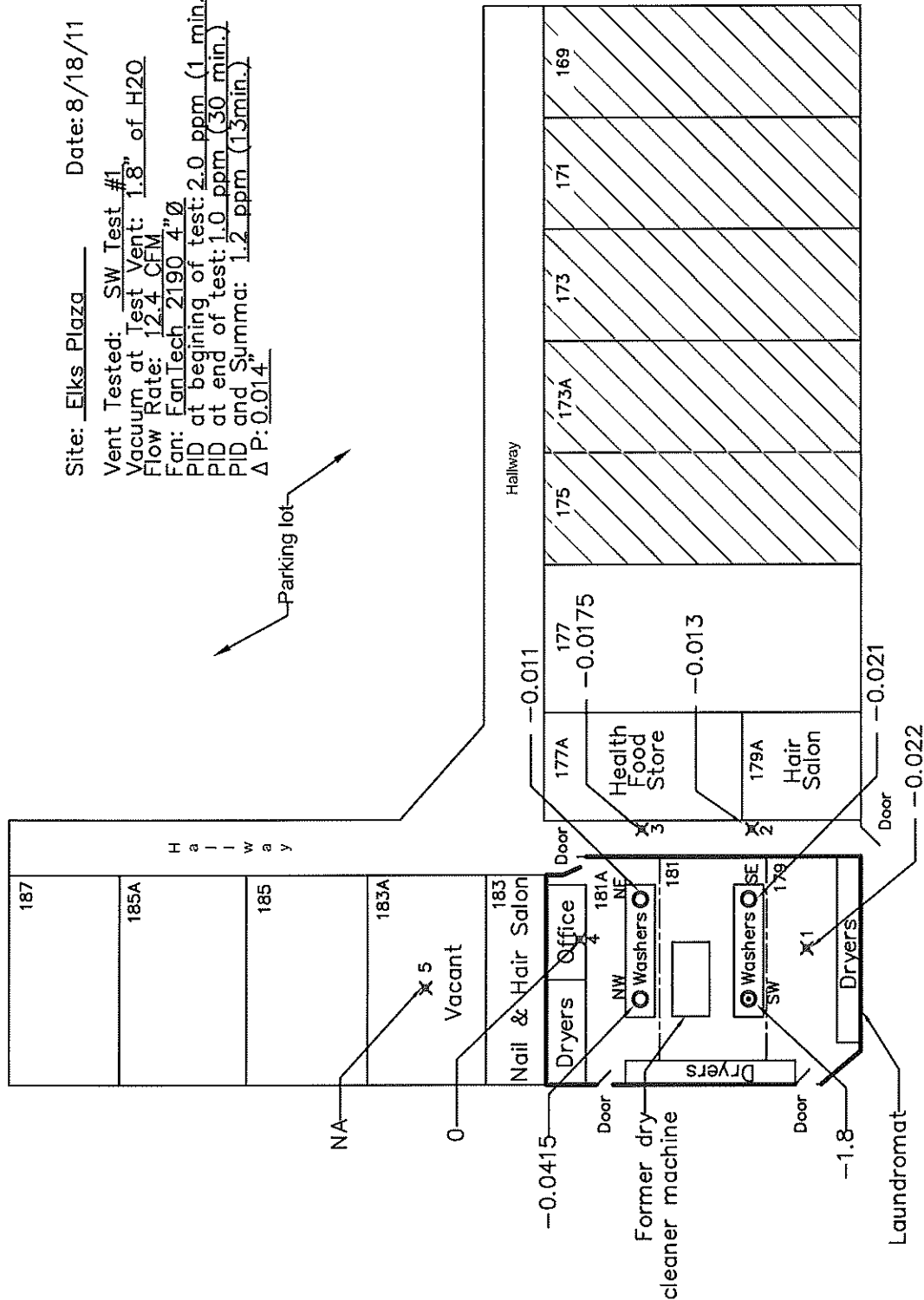
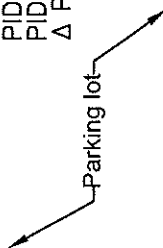
CA RICH CONSULTANTS, INC.		Environmental Specialists Since 1982	
17 Dupont Street, Plainview, New York 11803		DATE: 9/22/2011	
TITLE: Layout of Sub Slab Vents and Temporary Vacuum Points		SCALE: 1"=40'	
FIGURE: 3	DRAWING NO.: 2011-M3	DRAWN BY: J.T.C.	APPROVED BY: E.A.W.





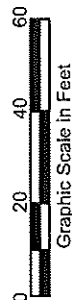
Site: Elks Plaza Date: 8/18/11

Vent Tested: SW Test #1
Vacuum at Test Vent: 1.8" of H₂O
Flow Rate: 12.4 CFM
Fan: FanTech 2190 4"Ø
PID at beginning of test: 2.0 ppm (1 min.)
PID at end of test: 1.0 ppm (30 min.)
PID and Summa: 1.2 ppm (13 min.)
 ΔP : 0.014"



LEGEND

- Vent
- Vent pilot tested
- x Temporary vacuum point
- 0.022 Vacuum in inches of water
- Units have basement, basement unit is # 165



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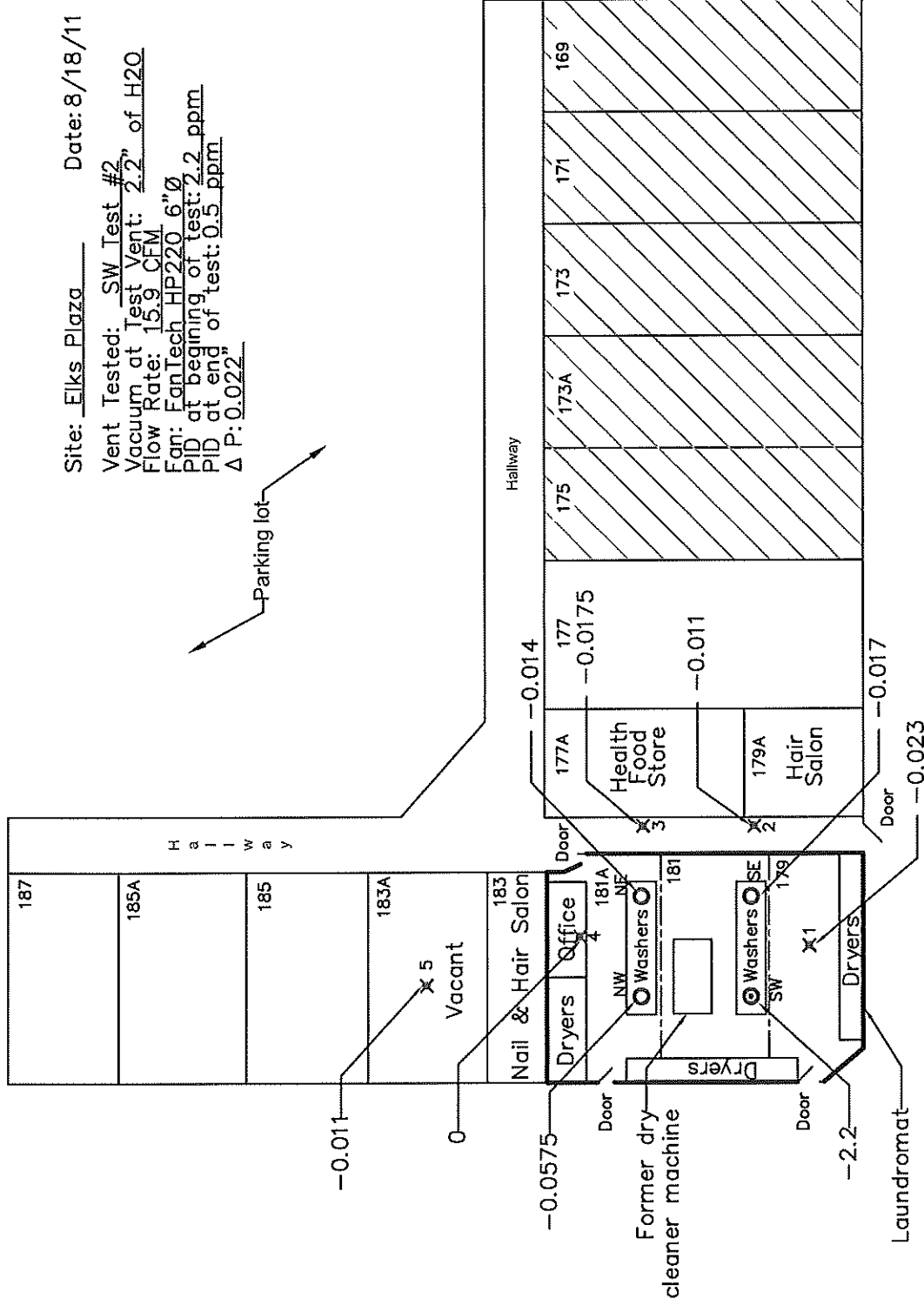
Environmental Specialists Since 1982
17 Dupont Street, Plainview, New York 11803

TITLE	Results of Pilot Test, SW Vent	DATE	9/22/2011
FIGURE	4A	SCALE	1"=40'
DRAWING NO.	SW-1	DRAWN BY	T.R.B.
		APPROVED BY	E.A.W.

Site: Elks Plaza Date: 8/18/11

Vent Tested: SW Test #2
Vacuum at Test Vent: 2.2" of H₂O
Flow Rate: 15.9 CFM
Fan: FanTech HP220 6"Ø
PID at beginning of test: 2.2 ppm
PID at end of test: 0.5 ppm
Δ P: 0.022"

Parking lot



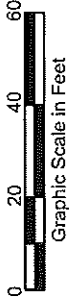
LEGEND

- Vent
- Vent pilot tested
- ✕ Temporary vacuum point
- 0.023 Vacuum in inches of water
- Units have basement, basement unit is # 165

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TITLE		DATE
Results of Pilot Test, SW Vent		9/22/2011
FIGURE		SCALE
4B		1"=40'
DRAWING NO.		DRAWN BY
SW-2		T.R.B.
Elks Plaza, LLC 157-189 W. Merrick Road Freeport, New York		E.A.W.

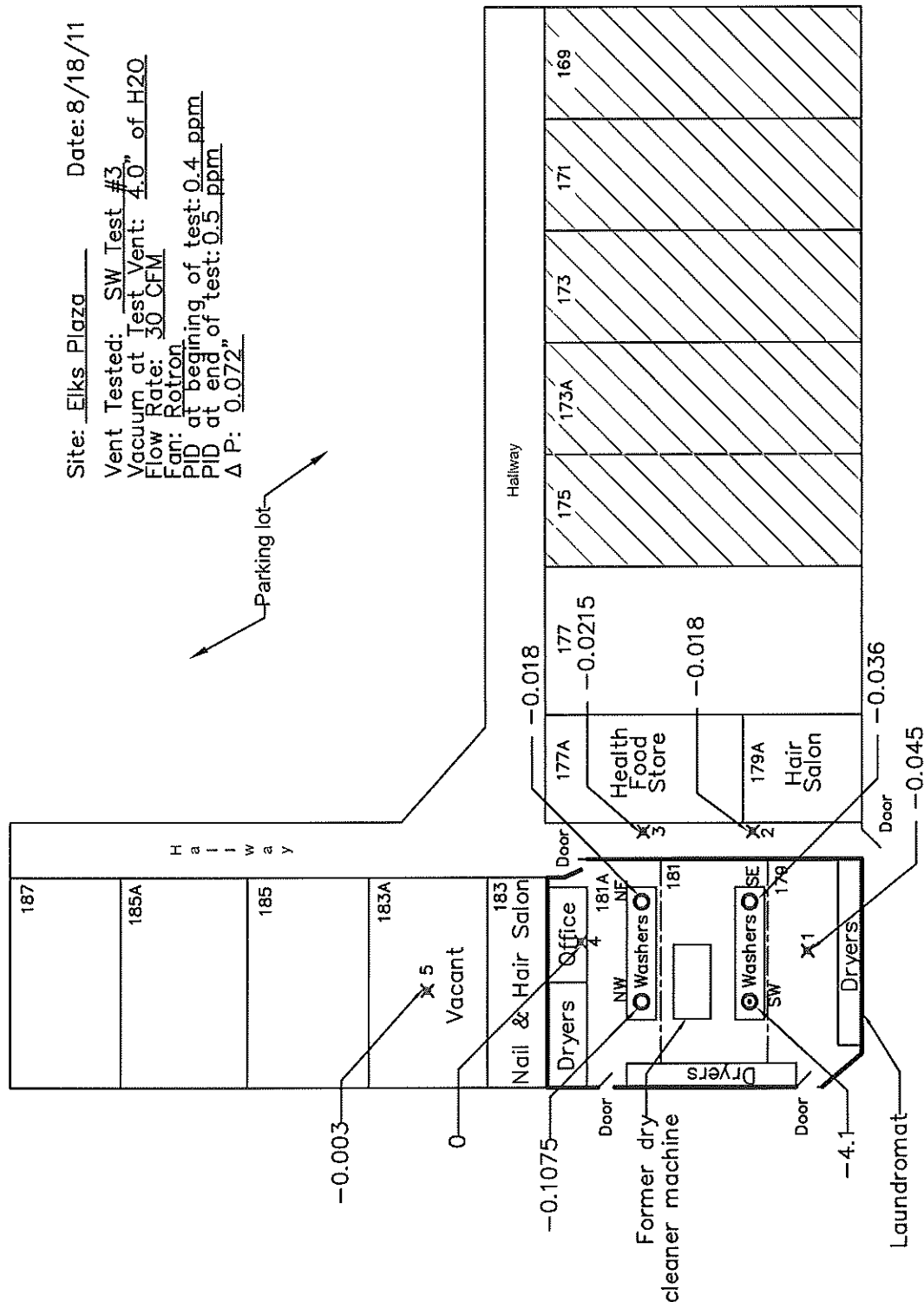




Site: Elks Plaza Date: 8/18/11

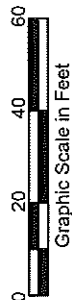
Vent Tested: SW Test #3
 Vacuum at Test Vent: 4.0" of H₂O
 Flow Rate: 30 CFM
 Fan: Rotron
 PID at beginning of test: 0.4 ppm
 PID at end of test: 0.5 ppm
 Δ P: 0.072"

Parking lot



LEGEND

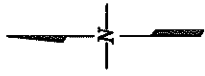
- Vent
- Vent pilot tested
- × Temporary vacuum point
- 0.045 Vacuum in inches of water
- Units have basement, basement unit is # 165



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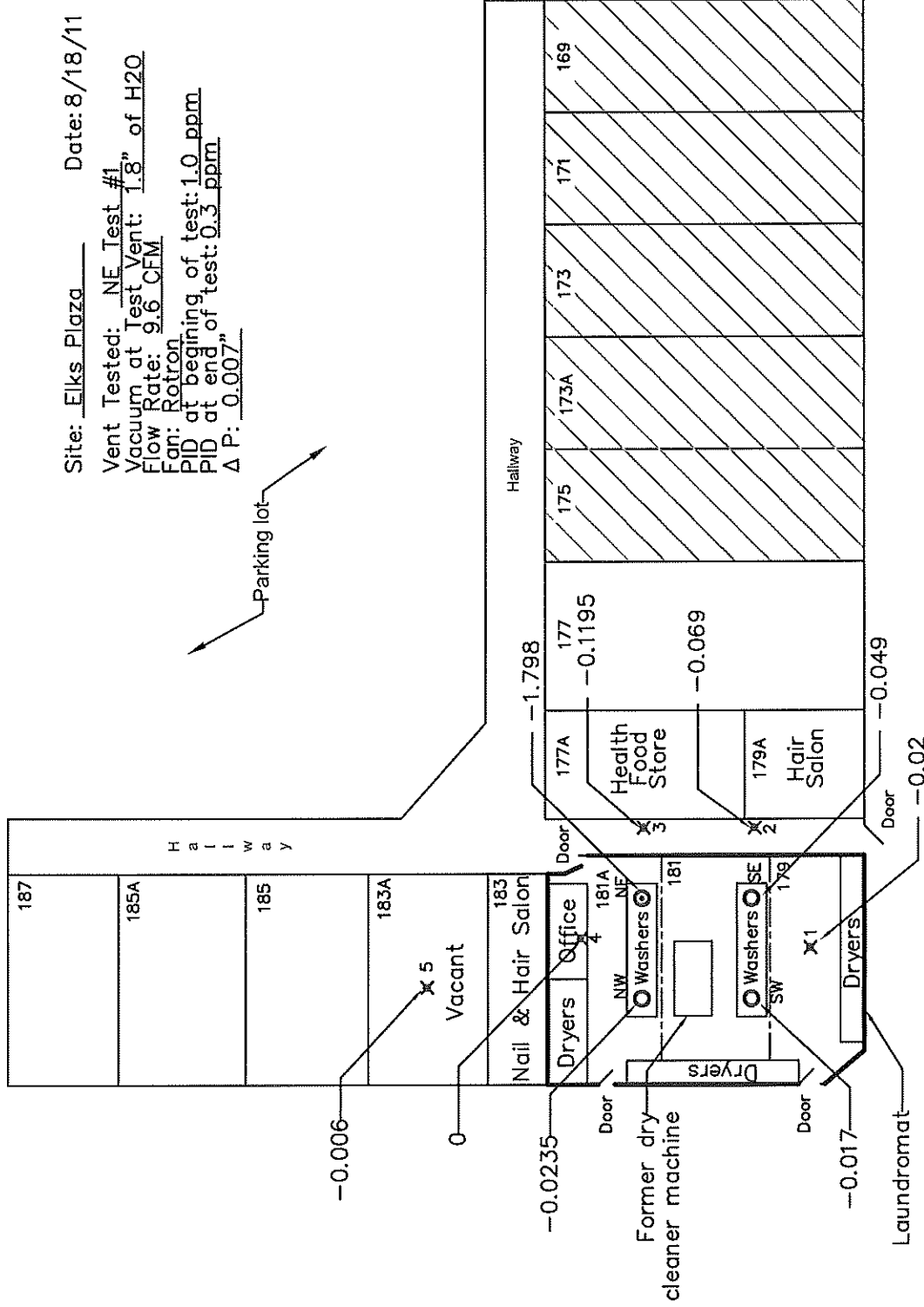
TITLE	Results of Pilot Test, SW Vent		
	DATE	9/22/2011	
FIGURE	SCALE	1"=40'	
	DESKIN BY	T.R.B.	
DRAWING NO.	4C	Elks Plaza, LLC	
	SW-3	157-189 W. Merrick Road Freeport, New York	
		E.A.W.	



Site: Elks Plaza Date: 8/18/11

Vent Tested: NE Test #1
Vacuum at Test Vent: 1.8" of H₂O
Flow Rate: 9.6 CFM
Fan: Rotron
PID at beginning of test: 1.0 ppm
PID at end of test: 0.3 ppm
 ΔP : 0.007"

Parking lot



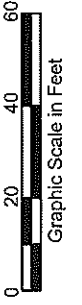
LEGEND

- Vent
- Vent pilot tested
- x Temporary vacuum point
- 0.02 Vacuum in inches of water
- Units have basement, basement unit is #165

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TITLE	Results of Pilot Test, NE Vent	DATE	9/22/2011
FIGURE	5A	SCALE	1"=40'
DRAWING NO.	NE-1	DRAWN BY:	T.R.B.
		APPROVED BY:	E.A.W.



APPR BY:



• Vent to be pilot tested
 ✕ Temporary vacuum point
 -0.048 Vacuum in inches of water
 Units have basement, basement unit is # 165

APPR. BY: _____

Plan View

4-inch diameter
vents and stacks

Fantech Model HP220 fan
with rain cap connected
to 6-inch diameter riser

4-inch diameter
header duct

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TITLE	Proposed SSD Layout		DATE	9/22/2011
			SCALE	N.T.S.
FIGURE	6	Elks Plaza, LLC 157-189 W. Merrick Road Freeport, New York	DRAWN BY:	T.R.B.
DRAWING NO:	2011-M5		APPR. BY:	E.A.W.

TABLES

Table 2
Pre Test Data
Elks Plaza, LLC
157-189 West Merrick Road
Freeport, NY

<u>Locations</u>	<u>High</u>	<u>Low</u>	<u>Avg.</u>
NW	-0.002	-0.003	-0.0025
NE	0.001	-0.005	-0.002
SW	NA	NA	Test Vent
SE	0.006	0.006	0.006
#1	0.003	-0.001	0.001
#2	0.003	-0.001	0.001
#3	-0.001	0.004	0.0015
#4	-0.001	-0.001	-0.001
#5	-0.006	-0.008	-0.007

Table 3
South West Vent Test
Elks Plaza, LLC
157-189 West Merrick Road
Freeport, NY

<u>SW Vent Test # 1</u>				
<u>Locations</u>	<u>Field Reading</u> (Inches of H2O)	<u>Pre Test Data</u> (Inches of H2O)	<u>Adjusted Field</u> Readings(Inches of H2O)	<u>Approx. Distance</u> from SW Vent (Feet)
NW	-0.044	-0.0025	-0.0415	28
NE	-0.013	-0.002	-0.011	43
SW	-1.8	No Value	-1.8	NA
SE	-0.015	0.006	-0.021	32
#1	-0.021	0.001	-0.022	22
#2	-0.012	0.001	-0.013	38
#3	-0.016	0.0015	-0.0175	55
#4	0	-0.001	Non-Responsive	50
#5	0.001 to -0.009	-0.007	NA	77
<u>SW Vent Test # 2</u>				
<u>Locations</u>	<u>Field Reading</u> (Inches of H2O)	<u>Pre Test Data</u> (Inches of H2O)	<u>Adjusted Field</u> Readings(Inches of H2O)	<u>Approx. Distance</u> from SW Vent (Feet)
NW	-0.06	-0.0025	-0.0575	28
NE	-0.016	-0.002	-0.014	43
SW	-2.2	No Value	-2.2	NA
SE	-0.011	0.006	-0.017	32
#1	-0.022	0.001	-0.023	22
#2	-0.01	0.001	-0.011	38
#3	-0.016	0.0015	-0.0175	55
#4	0	-0.001	Non-Responsive	50
#5	-0.018	-0.007	-0.011	77
<u>SW Vent Test # 3</u>				
<u>Locations</u>	<u>Field Reading</u> (Inches of H2O)	<u>Pre Test Data</u> (Inches of H2O)	<u>Adjusted Field</u> Readings(Inches of H2O)	<u>Approx. Distance</u> from SW Vent (Feet)
NW	-0.11	-0.0025	-0.1075	28
NE	-0.02	-0.002	-0.018	43
SW	-4.1	No Value	-4.1	NA
SE	-0.03	0.006	-0.036	32
#1	-0.044	0.001	-0.045	22
#2	-0.017	0.001	-0.018	38
#3	-0.02	0.0015	-0.0215	55
#4	0	-0.001	Non-Responsive	50
#5	-0.01	-0.007	-0.003	77

Table 4
South West Vent Test
Elks Plaza, LLC
157-189 West Merrick Road
Freeport, NY

NE Vent Test # 1				
<u>Locations</u>	<u>Field Reading (Inches of H2O)</u>	<u>Pre Test Data (Inches of H2O)</u>	<u>Adjusted Field Readings(Inches of H2O)</u>	<u>Approx. Distance from NE Vent (Feet)</u>
NW	-0.026	-0.0025	-0.0235	28
NE	-1.8	-0.002	-1.798	NA
SW	-0.017	No Value	-0.017	43
SE	-0.043	0.006	-0.049	32
#1	-0.019	0.001	-0.02	37
#2	-0.068	0.001	-0.069	27
#3	-0.118	0.0015	-0.1195	14
#4	0	-0.001	Non-Responsive	20
#5	-0.013	-0.007	-0.006	48
NE Vent Test # 2				
<u>Locations</u>	<u>Field Reading (Inches of H2O)</u>	<u>Pre Test Data (Inches of H2O)</u>	<u>Adjusted Field Readings(Inches of H2O)</u>	<u>Approx. Distance from NE Vent (Feet)</u>
NW	-0.023	-0.0025	-0.0205	28
NE	-2.3	-0.002	-2.298	NA
SW	-0.012	No Value	-0.012	43
SE	-0.04	0.006	-0.046	32
#1	-0.028	0.001	-0.029	37
#2	-0.088	0.001	-0.089	27
#3	-0.15	0.0015	-0.1515	14
#4	0	-0.001	Non-Responsive	20
#5	-0.02	-0.007	-0.013	48
NE Vent Test # 3				
<u>Locations</u>	<u>Field Reading (Inches of H2O)</u>	<u>Pre Test Data (Inches of H2O)</u>	<u>Adjusted Field Readings(Inches of H2O)</u>	<u>Approx. Distance from NE Vent (Feet)</u>
NW	-0.045	-0.0025	-0.0425	28
NE	-4	-0.002	-3.998	NA
SW	-0.013	No Value	-0.013	43
SE	-0.082	0.006	-0.088	32
#1	-0.047	0.001	-0.048	37
#2	-0.147	0.001	-0.148	27
#3	-0.285	0.0015	-0.2865	14
#4	0	-0.001	Non-Responsive	20
#5	-0.04	-0.007	-0.033	48

Table 5
Pilot Test Laboratory Data
Elks Plaza, Freeport, NY

Sample ID: Date Collected ANALYTE	EP-SW-Grab 8/18/2011 UG/M3	EP-NE-Grab 8/18/2011 UG/M3
1,1 Dichloroethane	< 8.10	< 8.10
1,1 Dichloroethene	< 3.97	< 3.97
1,2 Dibromoethane	< 15.38	< 15.38
1,2 Dichlorobenzene (v)	< 30.08	< 30.08
1,2 Dichloroethane	< 20.26	< 20.26
1,2 Dichloropropane	< 23.12	< 23.12
1,2-Dichlorotetrafluoroethane	< 13.99	< 13.99
1,3 Butadiene	< 22.10	< 22.10
1,3 Dichlorobenzene (v)	< 12.03	< 12.03
1,4 Dichlorobenzene (v)	< 30.08	< 30.08
1,4-Dioxane	< 36.01	< 36.01
111 Trichloroethane	< 10.92	< 10.92
112 Trichloroethane	< 10.92	< 10.92
1122Tetrachloroethane	< 13.74	< 13.74
124-Trimethylbenzene	< 24.60	< 24.60
135-Trimethylbenzene	< 24.60	< 24.60
2,2,4-Trimethylpentane	< 23.33	< 23.33
2-Hexanone	< 20.46	< 20.46
3-Chloropropene	< 15.66	< 15.66
Acetone	< 23.78	< 23.78
Acrylonitrile	< 21.69	< 21.69
Benzene	< 6.38	< 6.38
Benzyl Chloride	< 10.36	< 10.36
Bromodichloromethane	< 13.26	< 13.26
Bromoform	< 20.70	< 20.70
Bromomethane	< 7.77	< 7.77
c-1,2-Dichloroethene	< 7.93	< 7.93
c-1,3Dichloropropene	< 22.71	< 22.71
Carbon disulfide	< 15.55	< 15.55
Carbon Tetrachloride	< 25.18	< 25.18
Chlorobenzene	< 9.22	< 9.22
Chlorodibromomethane	< 16.86	< 16.86
Chloroethane	< 26.40	< 26.40
Chloroform	< 9.74	< 9.74
Chloromethane	< 20.67	< 20.67
Cyclohexane	< 6.89	< 6.89
Dichlorodifluoromethane	< 9.90	< 9.90
Ethyl Acetate	< 180.05	< 180.05
Ethyl alcohol	< 37.66	< 37.66
Ethyl Benzene	< 8.68	< 8.68
Freon 113	< 7.67	< 7.67
Heptane	< 20.46	< 20.46
Hexachlorobutadiene	< 53.35	< 53.35
Hexane	< 17.64	< 17.64
Isopropyl Alcohol	< 122.75	< 122.75
m + p Xylene	< 21.73	< 21.73
Methyl Ethyl Ketone	< 29.46	< 29.46
Methylene Chloride	< 6.95	< 6.95
Methylisobutylketone	< 41.01	< 41.01
o Xylene	< 8.69	< 8.69
p-Ethyltoluene	< 24.56	< 24.56
Propylene	< 8.60	< 8.60
Styrene	< 8.51	< 8.51
t-1,2-Dichloroethene	< 7.93	< 7.93
t-1,3Dichloropropene	< 9.08	< 9.08
ter. ButylMethylEther	< 7.04	< 7.04
tert. Butyl Alcohol	< 60.56	< 60.56
Tetrachloroethene	94,990.00	210,335.00
Tetrahydrofuran	< 14.74	< 14.74
Toluene	< 7.53	< 7.53
Trichloroethene	182.68	381.48
Trichlorofluoromethane	< 11.24	< 11.24
Vinyl Acetate	< 17.60	< 17.60
Vinyl Bromide	< 8.76	< 8.76
Vinyl Chloride	< 5.12	< 5.12

APPENDIX A

CA RICH Consultants, Inc.

Environmental Specialists

17 Dupont Street, Plainview, NY 11803

FIELD BORING LOG

BOREHOLE NO.: **EP-01**

TOTAL DEPTH: **15**

PROJECT INFORMATION

PROJECT: **Elks Plaza**
SITE LOCATION: **157-189 Merrick Road**
JOB NO.: **Elks Plaza/Freeport SSD**
LOGGED BY: **Michael Yager**
PROJECT MANAGER: **Eric Weinstock**
DATES DRILLED: **6/15/11**

DRILLING INFORMATION

DRILLING CO.: **Aarco Environmental**
DRILLER: **Kevin and John**
RIG TYPE: **Geoprobe 7822DT - Remote**
METHOD OF DRILLING: **Direct Push**
SAMPLING METHODS: **5' & 2' Cores**
HAMMER WT./DROP **Push**

☞ Water level in boring

DEPTH	SOIL TYPE	SOIL DESCRIPTION	COMMENTS	SAMPLE	Blows per ft.	PID ppm
0		Concrete				
		Brown/tan fine/coarse sand with some small rounded pebbles		EP-01 (1-2)	0	
					Push	
5		Orange/tan fine/medium sand with some small rounded pebbles		EP-01 (7-8)	0	
					Push	
10		Orange/tan fine/medium sand with some small rounded pebbles; tip (12.75' to 13') wet		EP-01 (12-13)	0	
					Push	
15		Orange/tan/brown medium/coarse sand ; saturated		EP-01 (13-15)	0	
					Push	

NOTES: Sunny/Clear

Page 1 of 1

APPENDIX B

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO.113797.01

08/30/11

C.A. Rich Consultants, Incorporated

17 Dupont Street

Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D:08/18/11 RECEIVED:08/19/11

TIME COL'D:1631

MATRIX:Air

SAMPLE: EP-NE-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME	LRL	ANALYTICAL
			FLAG OF ANALYSIS		METHOD
Propylene	ppbv	< 5	082211	5	EPATO-15
Dichlorodifluoromethane	ppbv	< 2	082211	2	EPATO-15
1,2-Dichlorotetrafluoroethane	ppbv	< 2	082211	2	EPATO-15
Chloromethane	ppbv	< 10	082211	10	EPATO-15
1,3 Butadiene	ppbv	< 10	082211	10	EPATO-15
Vinyl Chloride	ppbv	< 2	082211	2	EPATO-15
Bromomethane	ppbv	< 2	082211	2	EPATO-15
Chloroethane	ppbv	< 10	082211	10	EPATO-15
Vinyl Bromide	ppbv	< 2	082211	2	EPATO-15
Trichlorofluoromethane	ppbv	< 2	082211	2	EPATO-15
Ethyl alcohol	ppbv	< 20	082211	20	EPATO-15
Freon 113	ppbv	< 1	082211	1	EPATO-15
1,1 Dichloroethene	ppbv	< 1	082211	1	EPATO-15
Acetone	ppbv	< 10	082211	10	EPATO-15
Carbon disulfide	ppbv	< 5	082211	5	EPATO-15
Isopropyl Alcohol	ppbv	< 50	082211	50	EPATO-15
3-Chloropropene	ppbv	< 5	082211	5	EPATO-15
Methylene Chloride	ppbv	< 2	082211	2	EPATO-15
tert. Butyl Alcohol	ppbv	< 20	082211	20	EPATO-15
ter. Butyl Methyl Ether	ppbv	< 2	082211	2	EPATO-15
t-1,2-Dichloroethene	ppbv	< 2	082211	2	EPATO-15
Acrylonitrile	ppbv	< 10	082211	10	EPATO-15
Hexane	ppbv	< 5	082211	5	EPATO-15
Vinyl Acetate	ppbv	< 5	082211	5	EPATO-15
1,1 Dichloroethane	ppbv	< 2	082211	2	EPATO-15

cc:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR

rn = 23038

NYSDOH ID # 10320

Page 1 of 3

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO. 113797.01

08/30/11

C.A. Rich Consultants, Incorporated
17 Dupont Street
Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D: 08/18/11 RECEIVED: 08/19/11

TIME COL'D: 1631

MATRIX: Air

SAMPLE: EP-NE-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME	FLAG OF ANALYSIS	LRL	ANALYTICAL METHOD
c-1,2-Dichloroethene	ppbv	< 2	082211		2	EPATO-15
Methyl Ethyl Ketone	ppbv	< 10	082211		10	EPATO-15
Ethyl Acetate	ppbv	< 50	082211		50	EPATO-15
Tetrahydrofuran	ppbv	< 5	082211		5	EPATO-15
Chloroform	ppbv	< 2	082211		2	EPATO-15
Cyclohexane	ppbv	< 2	082211		2	EPATO-15
111 Trichloroethane	ppbv	< 2	082211		2	EPATO-15
Carbon Tetrachloride	ppbv	< 4	082211		4	EPATO-15
Benzene	ppbv	< 2	082211		2	EPATO-15
2,2,4-Trimethylpentane	ppbv	< 5	082211		5	EPATO-15
1,2 Dichloroethane	ppbv	< 5	082211		5	EPATO-15
Heptane	ppbv	< 5	082211		5	EPATO-15
Trichloroethene	ppbv	71	082211		2	EPATO-15
1,2 Dichloropropane	ppbv	< 5	082211		5	EPATO-15
1,4-Dioxane	ppbv	< 10	082211		10	EPATO-15
Bromodichloromethane	ppbv	< 2	082211		2	EPATO-15
c-1,3Dichloropropene	ppbv	< 5	082211		5	EPATO-15
Methylisobutylketone	ppbv	< 10	082211		10	EPATO-15
Toluene	ppbv	< 2	082211		2	EPATO-15
t-1,3Dichloropropene	ppbv	< 2	082211		2	EPATO-15
112 Trichloroethane	ppbv	< 2	082211		2	EPATO-15
Tetrachloroethene	ppbv	31000	082611		90	EPATO-15
2-Hexanone	ppbv	< 5	082211		5	EPATO-15
Chlorodibromomethane	ppbv	< 2	082211		2	EPATO-15
1,2 Dibromoethane	ppbv	< 2	082211		2	EPATO-15

cc:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR



377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO. 113797.01

08/30/11

C.A. Rich Consultants, Incorporated
17 Dupont Street
Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D: 08/18/11 RECEIVED: 08/19/11

TIME COL'D: 1631

MATRIX: Air

SAMPLE: EP-NE-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME FLAG OF ANALYSIS	LRL	ANALYTICAL METHOD
Chlorobenzene	ppbv	< 2	082211	2	EPATO-15
Ethyl Benzene	ppbv	< 2	082211	2	EPATO-15
m + p Xylene	ppbv	< 5	082211	5	EPATO-15
o Xylene	ppbv	< 2	082211	2	EPATO-15
Styrene	ppbv	< 2	082211	2	EPATO-15
Bromoform	ppbv	< 2	082211	2	EPATO-15
1122Tetrachloroethane	ppbv	< 2	082211	2	EPATO-15
p-Ethyltoluene	ppbv	< 5	082211	5	EPATO-15
135-Trimethylbenzene	ppbv	< 5	082211	5	EPATO-15
124-Trimethylbenzene	ppbv	< 5	082211	5	EPATO-15
1,3 Dichlorobenzene (v)	ppbv	< 2	082211	2	EPATO-15
1,4 Dichlorobenzene (v)	ppbv	< 5	082211	5	EPATO-15
Benzyl Chloride	ppbv	< 2	082211	2	EPATO-15
1,2 Dichlorobenzene (v)	ppbv	< 5	082211	5	EPATO-15
Hexachlorobutadiene	ppbv	< 5	082211	5	EPATO-15

CC:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR

rn = 23040

NYSDOH ID # 10320

Page 3 of 3

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO.113797.02

08/30/11

C.A. Rich Consultants, Incorporated
17 Dupont Street
Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D:08/18/11 RECEIVED:08/19/11

TIME COL'D:1036

MATRIX:Air

SAMPLE: EP-SW-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME	FLAG OF ANALYSIS	LRL	ANALYTICAL METHOD
Propylene	ppbv	< 5	082211		5	EPATO-15
Dichlorodifluoromethane	ppbv	< 2	082211		2	EPATO-15
1,2-Dichlorotetrafluoroethane	ppbv	< 2	082211		2	EPATO-15
Chloromethane	ppbv	< 10	082211		10	EPATO-15
1,3 Butadiene	ppbv	< 10	082211		10	EPATO-15
Vinyl Chloride	ppbv	< 2	082211		2	EPATO-15
Bromomethane	ppbv	< 2	082211		2	EPATO-15
Chloroethane	ppbv	< 10	082211		10	EPATO-15
Vinyl Bromide	ppbv	< 2	082211		2	EPATO-15
Trichlorofluoromethane	ppbv	< 2	082211		2	EPATO-15
Ethyl alcohol	ppbv	< 20	082211		20	EPATO-15
Freon 113	ppbv	< 1	082211		1	EPATO-15
1,1 Dichloroethene	ppbv	< 1	082211		1	EPATO-15
Acetone	ppbv	< 10	082211		10	EPATO-15
Carbon disulfide	ppbv	< 5	082211		5	EPATO-15
Isopropyl Alcohol	ppbv	< 50	082211		50	EPATO-15
3-Chloropropene	ppbv	< 5	082211		5	EPATO-15
Methylene Chloride	ppbv	< 2	082211		2	EPATO-15
tert. Butyl Alcohol	ppbv	< 20	082211		20	EPATO-15
ter. Butyl Methyl Ether	ppbv	< 2	082211		2	EPATO-15
t-1,2-Dichloroethene	ppbv	< 2	082211		2	EPATO-15
Acrylonitrile	ppbv	< 10	082211		10	EPATO-15
Hexane	ppbv	< 5	082211		5	EPATO-15
Vinyl Acetate	ppbv	< 5	082211		5	EPATO-15
1,1 Dichloroethane	ppbv	< 2	082211		2	EPATO-15

cc:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR

rn = 23041

NYSDOH ID # 10320

Page 1 of 3

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO. 113797.02

08/30/11

C.A. Rich Consultants, Incorporated
17 Dupont Street
Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D: 08/18/11 RECEIVED: 08/19/11

TIME COL'D: 1036

MATRIX: Air

SAMPLE: EP-SW-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME	FLAG OF ANALYSIS	LRL	ANALYTICAL METHOD
c-1,2-Dichloroethene	ppbv	< 2	082211		2	EPATO-15
Methyl Ethyl Ketone	ppbv	< 10	082211		10	EPATO-15
Ethyl Acetate	ppbv	< 50	082211		50	EPATO-15
Tetrahydrofuran	ppbv	< 5	082211		5	EPATO-15
Chloroform	ppbv	< 2	082211		2	EPATO-15
Cyclohexane	ppbv	< 2	082211		2	EPATO-15
111 Trichloroethane	ppbv	< 2	082211		2	EPATO-15
Carbon Tetrachloride	ppbv	< 4	082211		4	EPATO-15
Benzene	ppbv	< 2	082211		2	EPATO-15
2,2,4-Trimethylpentane	ppbv	< 5	082211		5	EPATO-15
1,2 Dichloroethane	ppbv	< 5	082211		5	EPATO-15
Heptane	ppbv	< 5	082211		5	EPATO-15
Trichloroethene	ppbv	34	082211		2	EPATO-15
1,2 Dichloropropane	ppbv	< 5	082211		5	EPATO-15
1,4-Dioxane	ppbv	< 10	082211		10	EPATO-15
Bromodichloromethane	ppbv	< 2	082211		2	EPATO-15
c-1,3Dichloropropene	ppbv	< 5	082211		5	EPATO-15
Methylisobutylketone	ppbv	< 10	082211		10	EPATO-15
Toluene	ppbv	< 2	082211		2	EPATO-15
t-1,3Dichloropropene	ppbv	< 2	082211		2	EPATO-15
112 Trichloroethane	ppbv	< 2	082211		2	EPATO-15
Tetrachloroethene	ppbv	14000	082411		30	EPATO-15
2-Hexanone	ppbv	< 5	082211		5	EPATO-15
Chlorodibromomethane	ppbv	< 2	082211		2	EPATO-15
1,2 Dibromoethane	ppbv	< 2	082211		2	EPATO-15

cc:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR



377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO.113797.02

08/30/11

C.A. Rich Consultants, Incorporated
17 Dupont Street
Plainview, NY 11803

ATTN: Eric Weinstock

PO#:

SOURCE OF SAMPLE: Elks Plaza

SOURCE OF SAMPLE:

COLLECTED BY: Client

DATE COL'D:08/18/11 RECEIVED:08/19/11

TIME COL'D:1036

MATRIX:Air

SAMPLE: EP-SW-Grab

ANALYTICAL PARAMETERS	UNITS	RESULT	DATE TIME FLAG OF ANALYSIS	LRL	ANALYTICAL METHOD
Chlorobenzene	ppbv	< 2	082211	2	EPATO-15
Ethyl Benzene	ppbv	< 2	082211	2	EPATO-15
m + p Xylene	ppbv	< 5	082211	5	EPATO-15
o Xylene	ppbv	< 2	082211	2	EPATO-15
Styrene	ppbv	< 2	082211	2	EPATO-15
Bromoform	ppbv	< 2	082211	2	EPATO-15
1122Tetrachloroethane	ppbv	< 2	082211	2	EPATO-15
p-Ethyltoluene	ppbv	< 5	082211	5	EPATO-15
135-Trimethylbenzene	ppbv	< 5	082211	5	EPATO-15
124-Trimethylbenzene	ppbv	< 5	082211	5	EPATO-15
1,3 Dichlorobenzene (v)	ppbv	< 2	082211	2	EPATO-15
1,4 Dichlorobenzene (v)	ppbv	< 5	082211	5	EPATO-15
Benzyl Chloride	ppbv	< 2	082211	2	EPATO-15
1,2 Dichlorobenzene (v)	ppbv	< 5	082211	5	EPATO-15
Hexachlorobutadiene	ppbv	< 5	082211	5	EPATO-15

cc:

LRL=Laboratory Reporting Limit

REMARKS:

The LOQ for all analytes was confirmed with a daily LOQ std.

DIRECTOR

113797.01

ECOTEST LABORATORIES INC.

377 Sheffield Ave.
North Babylon, NY 11703
tel. 631-422-5777, fax 631-422-5770, Email ECOTESTLAB@aol.com

CANISTER SAMPLING DATA SHEET

CANISTER SERIAL NO.	SAMPLE TRAIN SERIAL NO.	FLOW
EcoTest 27	NA	GRAB

This above referenced Summa can and sample train was received in good condition

DATE: 8/18/2011
CLIENT: CA Rich
CLIENTS AGENT (print):
SIGNED: *[Signature]*

Client agrees to pay all replacement costs associated with loss or damage of canister train. Client acknowledges that this canister is valid for a maximum of 30 days from the date of evacuation. Client is responsible for any vacuum loss or contamination while in clients custody.

VAC leaving EcoTest:	29" Hg	PERSON RECEIVING REPORT:
Date Evacuated:	8/18/2011	ANALYSIS:
VAC/PRES returned EcoTest:	0" Hg	TAT:

CANISTER SERIAL NO. 1319 EcoTest #27
SAMPLE TRAIN SERIAL NO. NA

RETURNED IN GOOD CONDITION TO ECOTEST LABORATORIES INC.

DATE: 8/19/11
SIGNED: *[Signature]* for ECOTEST LABS.

ALL INFORMATION BELOW MUST BE PROVIDED BY CLIENT:

CLIENT	EA Rich	SAMPLE TYPE	
SOURCE	EIKS Plaza	CHECK ONE	
SAMPLE	EP-NE-Grab	AMBIENT AIR	
DATE SAMPLED	8/19/11	SUB SLAB VAPOR	
TIME SAMPLING STARTED:	4:30 PM	VAPOR WELL	
TIME SAMPLING FINISHED:	4:31 PM	SVE SYSTEM	X
TEMPERATURE SAMPLING STARTED:	40°	EXPECTED CONC	
TEMPERATURE SAMPLING FINISHED:	80°	CHECK ONE	
DATE:	8/19/11	LOW	
CLIENT:	CA Rich	MEDIUM	
CLIENTS AGENT:	Eric Weinstock	HIGH	

PID=24 pp

RELINQUISHED BY:	DATE/TIME:
RECEIVED BY: <i>[Signature]</i>	DATE/TIME: 8/19/11 17:05
RELINQUISHED BY:	DATE/TIME:
RECEIVED BY:	DATE/TIME:

suspect
PEE in
sample

113797.02

ECOTEST LABORATORIES INC.

377 Sheffield Ave.

North Babylon, NY 11703

tel. 631-422-5777, fax 631-422-5770, Email ECOTESTLAB@aol.com

CANISTER SAMPLING DATA SHEET

CANISTER SERIAL NO.

SAMPLE TRAIN SERIAL NO.

FLOW

EcoTest 35

NA

GRAB

This above referenced Summa can and sample train was received in good condition

DATE: 8/12/2011

CLIENT: CA Rich

CLIENTS AGENT (print): Michael Yager

SIGNED: Michael Yager

Client agrees to pay all replacement costs associated with loss or damage of canister train. Client acknowledges that this canister is valid for a maximum of 30 days from the date of evacuation. Client is responsible for any vacuum loss or contamination while in clients custody.

VAC leaving EcoTest:

29" Hg

PERSON RECEIVING REPORT: Eric Weinstock

Date Evacuated:

8/12/2011

ANALYSIS:

VAC/PRES returned EcoTest:

0" Hg

TAT: Standard

CANISTER SERIAL NO.

EcoTest # 35

1311

SAMPLE TRAIN SERIAL NO.

N/A

RETURNED IN GOOD CONDITION TO ECOTEST LABORATORIES INC.

DATE: 8/19/11

SIGNED: Michael Yager for ECOTEST LABS.

ALL INFORMATION BELOW MUST BE PROVIDED BY CLIENT:

CLIENT	CA RICH	SAMPLE TYPE CHECK ONE AMBIENT AIR SUB SLAB VAPOR VAPOR WELL SVE SYSTEM	
SOURCE	ELKS PLAZA		
SAMPLE	EPSW - GRAB		
DATE SAMPLED	8/18/11		
TIME SAMPLING STARTED:	1035	EXPECTED CONC CHECK ONE LOW MEDIUM HIGH	
TIME SAMPLING FINISHED:	1036		
TEMPERATURE SAMPLING STARTED:	~ 75-80°F		
TEMPERATURE SAMPLING FINISHED:	~ 75-80°F		
DATE:			
CLIENT:	CA RICH Consultants, Inc.		
CLIENTS AGENT:			

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: Michael Yager

DATE/TIME: 8/19/11 17:05

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

PID
= 2.0
PPM

suspect
PCE in
sample

ECOTEST ID	113797.01			
SOURCE OF SAMPLE	Elks Plaza			
SAMPLE ID	EP-NE-Grab			
DATE SAMPLED	8/18/2011			
MATRIX	Air			
ANALYTICAL METHOD	EPA TO-15			
ANALYTE	CAS NO	DATE OF ANALYSIS	CONC UG/M3	LRL UG/M3
1,1 Dichloroethane	75-34-3	8/22/2011	< 8.10	0.81
1,1 Dichloroethene	75-35-4	8/22/2011	< 3.97	0.40
1,2 Dibromoethane	106-93-4	8/22/2011	< 15.38	1.54
1,2 Dichlorobenzene (v)	95-50-1	8/22/2011	< 30.08	3.01
1,2 Dichloroethane	107-06-2	8/22/2011	< 20.26	2.03
1,2 Dichloropropane	78-87-5	8/22/2011	< 23.12	2.31
1,2-Dichlorotetrafluoroethane	76-14-2	8/22/2011	< 13.99	1.40
1,3 Butadiene	106-99-0	8/22/2011	< 22.10	2.21
1,3 Dichlorobenzene (v)	541-73-1	8/22/2011	< 12.03	1.20
1,4 Dichlorobenzene (v)	106-46-7	8/22/2011	< 30.08	3.01
1,4-Dioxane	123-91-1	8/22/2011	< 36.01	3.60
111 Trichloroethane	71-55-6	8/22/2011	< 10.92	1.09
112 Trichloroethane	79-00-5	8/22/2011	< 10.92	1.09
1122Tetrachloroethane	79-34-5	8/22/2011	< 13.74	1.37
124-Trimethylbenzene	95-63-6	8/22/2011	< 24.60	2.46
135-Trimethylbenzene	108-67-8	8/22/2011	< 24.60	2.46
2,2,4-Trimethylpentane	540-84-1	8/22/2011	< 23.33	2.33
2-Hexanone	591-78-6	8/22/2011	< 20.46	2.05
3-Chloropropene	107-05-1	8/22/2011	< 15.66	1.57
Acetone	67-64-1	8/22/2011	< 23.78	2.38
Acrylonitrile	107-13-1	8/22/2011	< 21.69	2.17
Benzene	71-43-2	8/22/2011	< 6.38	0.64
Benzyl Chloride	100-44-7	8/22/2011	< 10.36	1.04
Bromodichloromethane	75-27-4	8/22/2011	< 13.26	1.33
Bromoform	75-25-2	8/22/2011	< 20.70	2.07
Bromomethane	74-83-9	8/22/2011	< 7.77	0.78
c-1,2-Dichloroethene	156-59-2	8/22/2011	< 7.93	0.79
c-1,3Dichloropropene	10061-01-5	8/22/2011	< 22.71	2.27
Carbon disulfide	75-15-0	8/22/2011	< 15.55	1.56
Carbon Tetrachloride	56-23-5	8/22/2011	< 25.18	2.52
Chlorobenzene	108-90-7	8/22/2011	< 9.22	0.92
Chlorodibromomethane	124-48-1	8/22/2011	< 16.86	1.69
Chloroethane	75-00-3	8/22/2011	< 26.40	2.64
Chloroform	67-66-3	8/22/2011	< 9.74	0.97
Chloromethane	74-87-3	8/22/2011	< 20.67	2.07
Cyclohexane	110-82-7	8/22/2011	< 6.89	0.69
Dichlorodifluoromethane	75-71-8	8/22/2011	< 9.90	0.99
Ethyl Acetate	141-78-6	8/22/2011	< 180.05	18.01
Ethyl alcohol	64-17-5	8/22/2011	< 37.66	3.77
Ethyl Benzene	100-41-4	8/22/2011	< 8.68	0.87
Freon 113	76-13-1	8/22/2011	< 7.67	0.77

ECOTEST ID	113797.01			
SOURCE OF SAMPLE	Elks Plaza			
SAMPLE ID	EP-NE-Grab			
DATE SAMPLED	8/18/2011			
MATRIX	Air			
ANALYTICAL METHOD	EPA TO-15			
ANALYTE	CAS NO	DATE OF ANALYSIS	CONC UG/M3	LRL UG/M3
Heptane	142-82-5	8/22/2011	< 20.46	2.05
Hexachlorobutadiene	87-68-3	8/22/2011	< 53.35	5.34
Hexane	110-54-3	8/22/2011	< 17.64	1.76
Isopropyl Alcohol	67-63-0	8/22/2011	< 122.75	12.28
m + p Xylene	XYL-MP	8/22/2011	< 21.73	2.17
Methyl Ethyl Ketone	78-93-3	8/22/2011	< 29.46	2.95
Methylene Chloride	75-09-2	8/22/2011	< 6.95	0.69
Methylisobutylketone	108-10-1	8/22/2011	< 41.01	4.10
o Xylene	95-47-6	8/22/2011	< 8.69	0.87
p-Ethyltoluene	622-96-8	8/22/2011	< 24.56	2.46
Propylene	115-07-1	8/22/2011	< 8.60	0.86
Styrene	100-42-5	8/22/2011	< 8.51	0.85
t-1,2-Dichloroethene	156-60-5	8/22/2011	< 7.93	0.79
t-1,3Dichloropropene	10061-02-6	8/22/2011	< 9.08	0.91
ter. ButylMethylEther	1634-04-4	8/22/2011	< 7.04	0.70
tert. Butyl Alcohol	75-65-0	8/22/2011	< 60.56	6.06
Tetrachloroethene	127-18-4	8/26/2011	210335.00	1.36
Tetrahydrofuran	109-99-9	8/22/2011	< 14.74	1.47
Toluene	108-88-3	8/22/2011	< 7.53	0.75
Trichloroethene	79-01-6	8/22/2011	381.48	1.07
Trichlorofluoromethane	75-69-4	8/22/2011	< 11.24	1.12
Vinyl Acetate	108-05-4	8/22/2011	< 17.60	1.76
Vinyl Bromide	593-60-2	8/22/2011	< 8.76	0.88
Vinyl Chloride	75-01-4	8/22/2011	< 5.12	0.51

ECOTEST ID	113797.02			
SOURCE OF SAMPLE	Elks Plaza			
SAMPLE ID	EP-SW-Grab			
DATE SAMPLED	8/18/2011			
MATRIX	Air			
ANALYTICAL METHOD	EPA TO-15			
ANALYTE	CAS NO	DATE OF ANALYSIS	CONC UG/M3	LRL UG/M3
1,1 Dichloroethane	75-34-3	8/22/2011	< 8.10	0.81
1,1 Dichloroethene	75-35-4	8/22/2011	< 3.97	0.40
1,2 Dibromoethane	106-93-4	8/22/2011	< 15.38	1.54
1,2 Dichlorobenzene (v)	95-50-1	8/22/2011	< 30.08	3.01
1,2 Dichloroethane	107-06-2	8/22/2011	< 20.26	2.03
1,2 Dichloropropane	78-87-5	8/22/2011	< 23.12	2.31
1,2-Dichlorotetrafluoroethane	76-14-2	8/22/2011	< 13.99	1.40
1,3 Butadiene	106-99-0	8/22/2011	< 22.10	2.21
1,3 Dichlorobenzene (v)	541-73-1	8/22/2011	< 12.03	1.20
1,4 Dichlorobenzene (v)	106-46-7	8/22/2011	< 30.08	3.01
1,4-Dioxane	123-91-1	8/22/2011	< 36.01	3.60
111 Trichloroethane	71-55-6	8/22/2011	< 10.92	1.09
112 Trichloroethane	79-00-5	8/22/2011	< 10.92	1.09
1122Tetrachloroethane	79-34-5	8/22/2011	< 13.74	1.37
124-Trimethylbenzene	95-63-6	8/22/2011	< 24.60	2.46
135-Trimethylbenzene	108-67-8	8/22/2011	< 24.60	2.46
2,2,4-Trimethylpentane	540-84-1	8/22/2011	< 23.33	2.33
2-Hexanone	591-78-6	8/22/2011	< 20.46	2.05
3-Chloropropene	107-05-1	8/22/2011	< 15.66	1.57
Acetone	67-64-1	8/22/2011	< 23.78	2.38
Acrylonitrile	107-13-1	8/22/2011	< 21.69	2.17
Benzene	71-43-2	8/22/2011	< 6.38	0.64
Benzyl Chloride	100-44-7	8/22/2011	< 10.36	1.04
Bromodichloromethane	75-27-4	8/22/2011	< 13.26	1.33
Bromoform	75-25-2	8/22/2011	< 20.70	2.07
Bromomethane	74-83-9	8/22/2011	< 7.77	0.78
c-1,2-Dichloroethene	156-59-2	8/22/2011	< 7.93	0.79
c-1,3Dichloropropene	10061-01-5	8/22/2011	< 22.71	2.27
Carbon disulfide	75-15-0	8/22/2011	< 15.55	1.56
Carbon Tetrachloride	56-23-5	8/22/2011	< 25.18	2.52
Chlorobenzene	108-90-7	8/22/2011	< 9.22	0.92
Chlorodibromomethane	124-48-1	8/22/2011	< 16.86	1.69
Chloroethane	75-00-3	8/22/2011	< 26.40	2.64
Chloroform	67-66-3	8/22/2011	< 9.74	0.97
Chloromethane	74-87-3	8/22/2011	< 20.67	2.07
Cyclohexane	110-82-7	8/22/2011	< 6.89	0.69
Dichlorodifluoromethane	75-71-8	8/22/2011	< 9.90	0.99
Ethyl Acetate	141-78-6	8/22/2011	< 180.05	18.01
Ethyl alcohol	64-17-5	8/22/2011	< 37.66	3.77
Ethyl Benzene	100-41-4	8/22/2011	< 8.68	0.87
Freon 113	76-13-1	8/22/2011	< 7.67	0.77

ECOTEST ID	113797.02				
SOURCE OF SAMPLE	Elks Plaza				
SAMPLE ID	EP-SW-Grab				
DATE SAMPLED	8/18/2011				
MATRIX	Air				
ANALYTICAL METHOD	EPA TO-15				
ANALYTE	CAS NO	DATE OF ANALYSIS	CONC UG/M3	LRL UG/M3	
Heptane	142-82-5	8/22/2011	< 20.46	2.05	
Hexachlorobutadiene	87-68-3	8/22/2011	< 53.35	5.34	
Hexane	110-54-3	8/22/2011	< 17.64	1.76	
Isopropyl Alcohol	67-63-0	8/22/2011	< 122.75	12.28	
m + p Xylene	XYL-MP	8/22/2011	< 21.73	2.17	
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Methylene Chloride	75-09-2	8/22/2011	< 6.95	0.69	
Methylisobutylketone	108-10-1	8/22/2011	< 41.01	4.10	
o Xylene	95-47-6	8/22/2011	< 8.69	0.87	
p-Ethyltoluene	622-96-8	8/22/2011	< 24.56	2.46	
Propylene	115-07-1	8/22/2011	< 8.60	0.86	
Styrene	100-42-5	8/22/2011	< 8.51	0.85	
t-1,2-Dichloroethene	156-60-5	8/22/2011	< 7.93	0.79	
t-1,3Dichloropropene	10061-02-6	8/22/2011	< 9.08	0.91	
ter. ButylMethylEther	1634-04-4	8/22/2011	< 7.04	0.70	
tert. Butyl Alcohol	75-65-0	8/22/2011	< 60.56	6.06	
Tetrachloroethene	127-18-4	8/24/2011	94990.00	1.36	
Tetrahydrofuran	109-99-9	8/22/2011	< 14.74	1.47	
Toluene	108-88-3	8/22/2011	< 7.53	0.75	
Trichloroethene	79-01-6	8/22/2011	182.68	1.07	
Trichlorofluoromethane	75-69-4	8/22/2011	< 11.24	1.12	
Vinyl Acetate	108-05-4	8/22/2011	< 17.60	1.76	
Vinyl Bromide	593-60-2	8/22/2011	< 8.76	0.88	
Vinyl Chloride	75-01-4	8/22/2011	< 5.12	0.51	

APPENDIX C



HP Series Fans are Specially Designed with Higher Pressure Capabilities for Radon Mitigation Applications

MOST RADON MITIGATORS WHO PREVIOUSLY USED THE FANTECH FR SERIES FANS HAVE SWITCHED TO THE NEW HP SERIES.

PERFORMANCE DATA

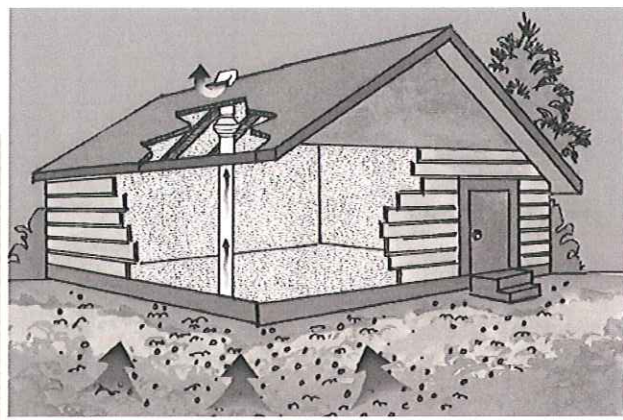
Fan Model	Volts	Wattage Range	Max. Amps	CFM vs. Static Pressure in Inches W.G.								Max. Ps
				0"	0.5"	0.75"	1.0"	1.25"	1.5"	1.75"	2.0"	
HP2133	115	14 - 20	0.17	134	68	19	-	-	-	-	-	0.84
HP2190	115	60 - 85	0.78	163	126	104	81	58	35	15	-	1.93
HP175	115	44 - 65	0.57	151	112	91	70	40	12	-	-	1.66
HP190	115	60 - 85	0.78	157	123	106	89	67	45	18	1	2.01
HP220	115	85 - 152	1.30	344	260	226	193	166	137	102	58	2.46

PERFORMANCE CURVES

Fantech provides you with independently tested performance specifications.

The performance curves shown in this brochure are representative of the actual test results recorded at Texas Engineering Experiment Station/Energy Systems Lab, a recognized testing authority for HVI. Testing was done in accordance with AMCA Standard 210-85 and HVI 916 Test Procedures. Performance graphs show air flow vs. static pressure.

Use of HP Series fans in low resistance applications such as bathroom venting will result in elevated sound levels. We suggest FR Series or other Fantech fans for such applications.



HVI
MEMBER™

HP FEATURES INCLUDE

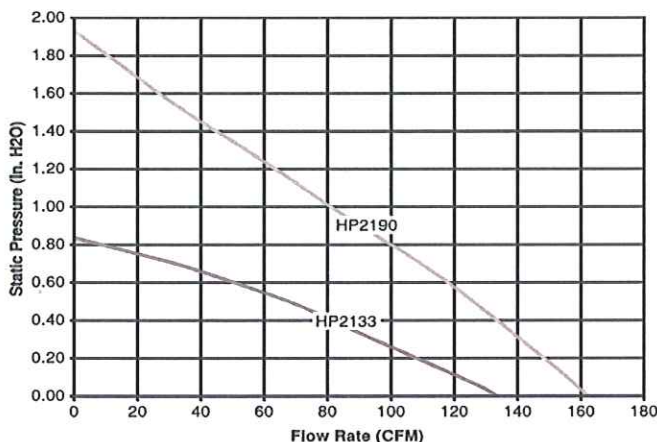
- Improved UV resistant housings approved for commercial applications.
- UL Approved for Wet Locations (Outdoors)
- Sealed housings and wiring boxes to prevent Radon leakage or water penetration
- Energy efficient permanent split capacitor motors
- External wiring box
- Full Five Year Factory Warranty



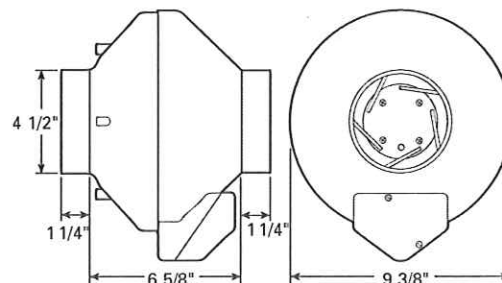
NOTE:

Installations that will result in condensate forming in the outlet ducting should have a condensate bypass installed to route the condensate outside of the fan housing. Conditions that are likely to produce condensate include but are not limited to: outdoor installations in cold climates, long lengths of outlet ducting, high moisture content in soil and thin wall or aluminum outlet ducting. Failure to install a proper condensate bypass may void any warranty claims.

HP2133 & HP2190 RADON MITIGATION FANS



Tested with 4" ID duct and standard couplings.



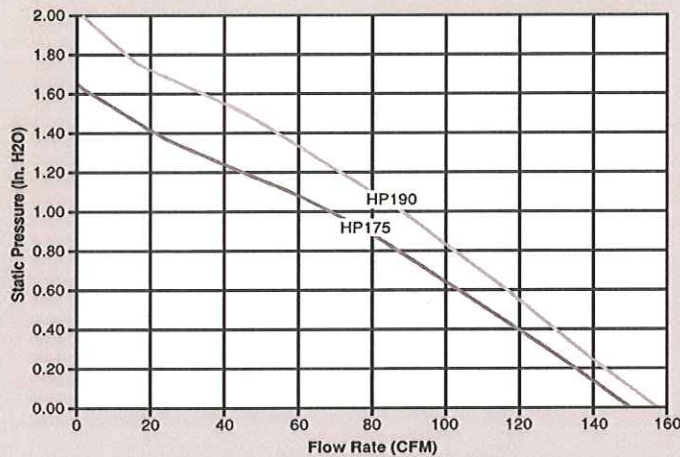
HP2133 – For applications where lower pressure and flow are needed. Record low power consumption of 14-20 watts! Often used where there is good sub slab communication and lower Radon levels.

HP2190 – Performance like the HP190 but in a smaller housing. Performance suitable for the majority of installations.

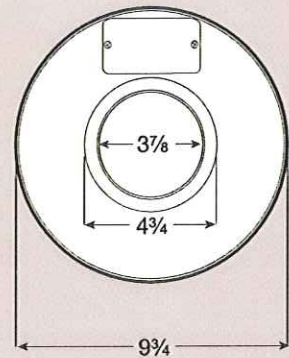
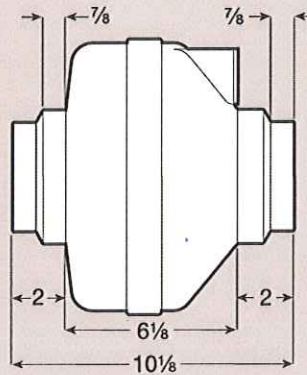
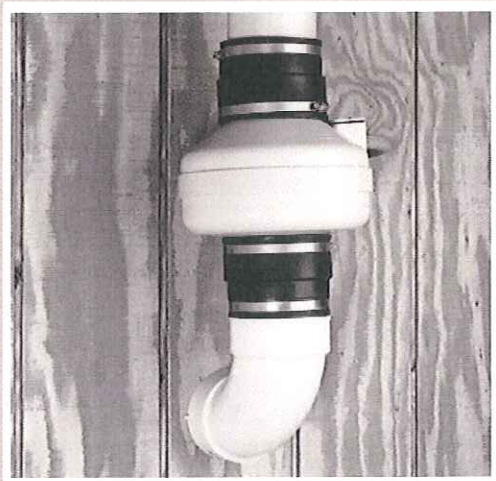
Fans are attached to PVC pipe using flexible couplings.

For 4" PVC pipe use Indiana Seals #156-44, Pipecon PCX 56-44 or equivalent.
For 3" PVC pipe use Indiana Seals #156-43, Pipecon PCX 56-43 or equivalent.

HP175 & HP190 RADON MITIGATION FANS



Tested with 4" ID duct and standard couplings.



HP175 – The economical choice where slightly less air flow is needed. Often used where there is good sub slab communication and lower Radon levels.

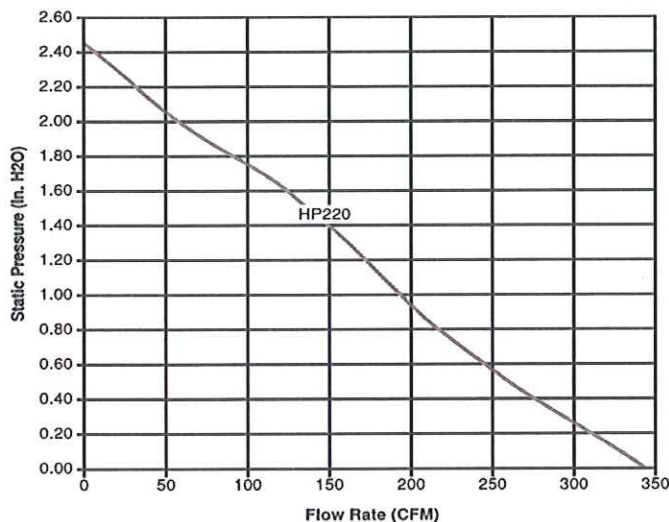
HP190 – The standard for Radon Mitigation. Ideally tailored performance curve for a vast majority of your mitigations.

Fans are attached to PVC pipe using flexible couplings.

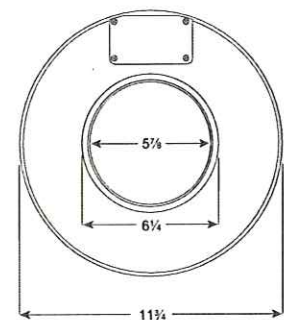
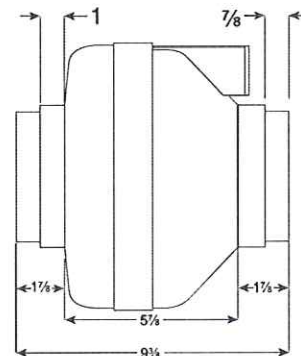
For 4" PVC pipe use Indiana Seals #151-44, Pipeconx PCX 51-44 or equivalent.

For 3" PVC pipe use Indiana Seals #156-43, Pipeconx PCX 56-43 or equivalent.

HP220 RADON MITIGATION FAN



Tested with 6" ID duct and standard couplings.



HP 220 – Excellent choice for systems with elevated radon levels, poor communication, multiple suction points and large subslab footprint. Replaces FR 175.

Fans are attached to PVC pipe using flexible couplings.

For 4" PVC pipe use Indiana Seals #156-64, Pipeconx PCX 56-64 or equivalent.

For 3" PVC pipe use Indiana Seals #156-63, Pipeconx PCX 56-63 or equivalent.