

ENVIRONMENTAL BUSINESS CONSULTANTS

February 21, 2019

Richard Mustico Division of Environmental Remediation New York State Department of Environmental Conservation 625 Broadway, Albany, NY 12233-7016

Re: Indoor Air Sampling Work Plan

1815-1825 Ocean Avenue, Brooklyn, NY NYSDEC BCP Number: C224217

Mr. Mustico:

Environmental Business Consultants (EBC) is submitting the following work plan to perform indoor air sampling and negative pressure testing under the slab at the above referenced site. The property is located at 1815-1825 Ocean Avenue Brooklyn, New York and is identified as Block 7656 Lot 58 (**Figure 1**). The lot has 150.5 ft of frontage along Ocean Avenue, is 16,555 sf in area and is improved with one 8-story residential building with a cellar and a parking area. Petroleum contaminated soil from 15 feet below grade down to the water table is being remediated with an air sparge / soil vapor extraction system.

The purpose of the study will be to determine if the installed remedial systems (AS and SVE) is working properly and to confirm indoor air volatile organic compound (VOC) levels are acceptable for residential occupancy. The study will include the sampling and analysis of four indoor air samples as follows: one sample in the gym, once sample in the building staff office & storage room, one sample in the in the recreation room accessory to unit A above and one sample within the 1st floor of unit A. This study will also include the installation of five monitoring ports to confirm negative pressure under the slab.

Building Conditions

The property is improved with a eight-story residential building with a cellar which covers a 69 x 138 foot area on the west side of the Site. The remaining square footage on the east side of the site is developed with a parking area. The site is not currently occupied. The cellar will be occupied by utility rooms, an electrical room, gym, laundry room, elevator control room, building staff office and storage room, a refuse room and eight recreation rooms which are accessory space to the residential units above. The first floor is equipped with parking areas, a recreation room, lobby and residential units. The second to eighth floors are developed with residential units. A site location map is included as **Figure 1**. A layout of the cellar floor is included as **Figure 2**.

The type of HVAC system is unknown though it is highly likely that the heating system is operating at the present time. Prior to collecting the samples, a pre-sampling inspection will be performed to gather information regarding the building's characteristics such as air flow patterns; heating, venting and air conditioning (HVAC); utilities; chemical and maintenance





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product inventory; and any other factors that may affect indoor air quality in the areas to be sampled.

A NYSDOH Indoor Air Quality Questionnaire and Building Inventory form will be used to document the building conditions and any chemicals that may be present. A photoionization detector will be used during the survey to screen for VOCs near windows and air supply vents. A floor plan sketch will be drawn for the indoor air sampling locations. A copy of the NYSDOH Indoor Air Quality Questionnaire and Building Inventory form is provided in **Appendix A**.

Proposed Indoor Air Sampling

The indoor air sampling event will include the following samples:

- Collect pressure readings from the five monitoring port locations;
- Collect one indoor air sample (IA1) from the breathing zone of the gym area, one indoor air sample (IA2) from the building staff office & storage room and one indoor air sample (IA3) from the breathing zone of the recreation room accessory to unit A above and one indoor air sample (IA4) from the breathing zone of the 1st floor of Unit A;
- Collect one ambient outdoor air sample (OA1).

See Figure 4 & 4a for the indoor air, outdoor air sampling locations and the monitoring port locations.

Monitoring Ports

A total of five monitoring point locations will be installed within the cellar level. Monitoring port locations will be placed in easily accessible areas and closer to the location of the former USTs. A map noting the location of the former USTs is included as **Figure 3**. These locations will be permanent and will be constructed with ¼ inch inert tubing that will extend no further then 2 inches in to the sub slab material. The implant will be sealed with cement bentonite and covered with a manhole cover. All of the morning port locations will be constructed in the same manner. Vacuum readings will be collected from each of these locations to confirm negative pressure under the slab.

<u>Sampling Procedures</u>

Air sampling will be performed over a 24-hour period to average the exposure condition. The building will be sealed (doors- windows closed) a minimum of 18 hours prior to collecting the samples. Due to the cold weather conditions it will not be possible to ventilate the building to the outside air prior to sealing.

All air samples will be collected with 6-liter Summa canisters equipped with 24-hour flow controllers. Air samples will be collected in accordance with NYSDOH protocols as presented in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). Indoor air samples will be collected in the breathing zone at a height of 3-4 feet above the floor.





All air samples will be collected using the vacuum from the 6-liter SUMMA canister. Prior to beginning sample collection, the canister identification number, flow regulator identification number and sample ID will be recorded on the sample tag attached to each canister. Sampling will then be initiated by fully opening the flow control valve on each canister in turn. Immediately after opening the flow control valve on a canister, the initial vacuum (inches of mercury) will be recorded on the sample tag and in a bound field notebook. When the vacuum level in the canister is between 5 and 8 inches of mercury (approx. 24 hours), the flow controller valve will be closed, and the final vacuum recorded on the sample tag.

All collected air samples will be analyzed by Phoenix Environmental Labs of Manchester Connecticut (NYSDOH Lab I.D. No. 11301). NYSDOH-certified lab for VOCs using EPA Method TO-15. Analytical procedures and corresponding reporting limits will be identified when reporting the sampling results. As per DEC, indoor air laboratory reporting limits for the following five compounds must be 0.20 micrograms per cubic meter mcg/m3 or less: trichloroethene; cis-1,2 Dichloroethene; 1,1-Dichloroethene; carbon tetrachloride and vinyl chloride.

Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Note that the laboratory deliverables package can take up to 3 weeks to be completed. Upon receipt of the laboratory results, a brief summary report will be prepared and submitted for your review. A copy of the competed NYSDOH Indoor Air Quality Questionnaire and Building Inventory form will be provided to NYSDEC and NYSDOH. This report will not include the deliverables package which will be forwarded upon receipt. Please call if you have any questions or would like to discuss the project further.

Very truly yours,

Environmental Business Consultants

Chawinie Reilly

Project Manager / Industrial Hygienist

FIGURES



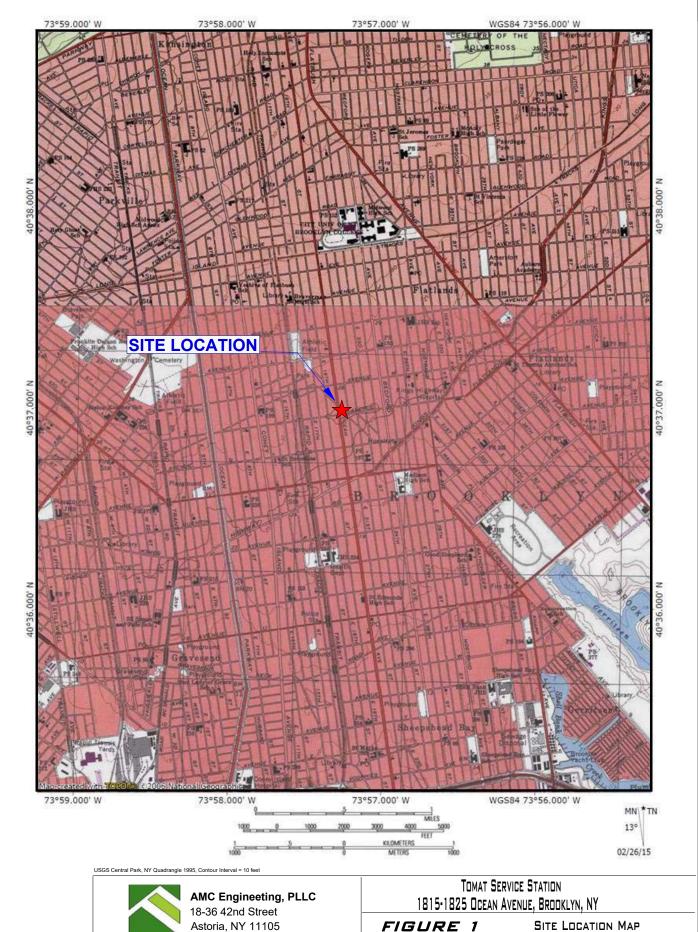
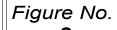


FIGURE 1

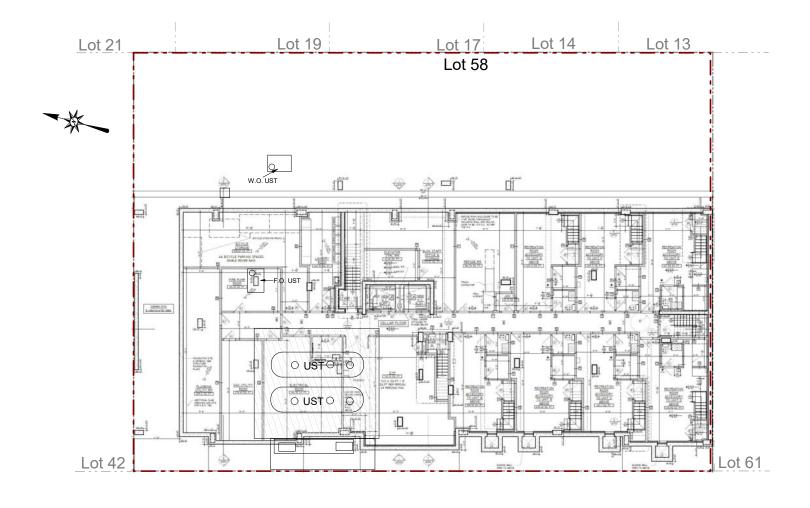
SITE LOCATION MAP





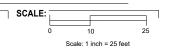


Site Address: 1815-1825 OCEAN AVENUE, BROOKLYN, NY Drawing Title: REDEVELOPMENT PLAN

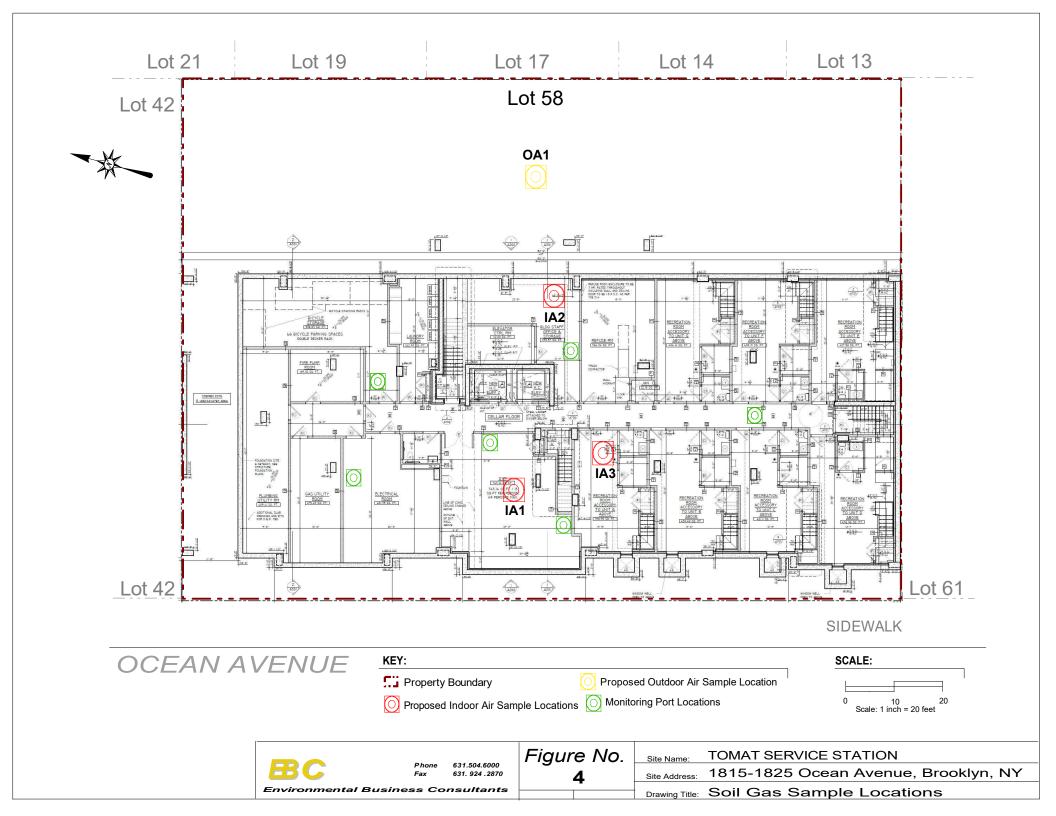


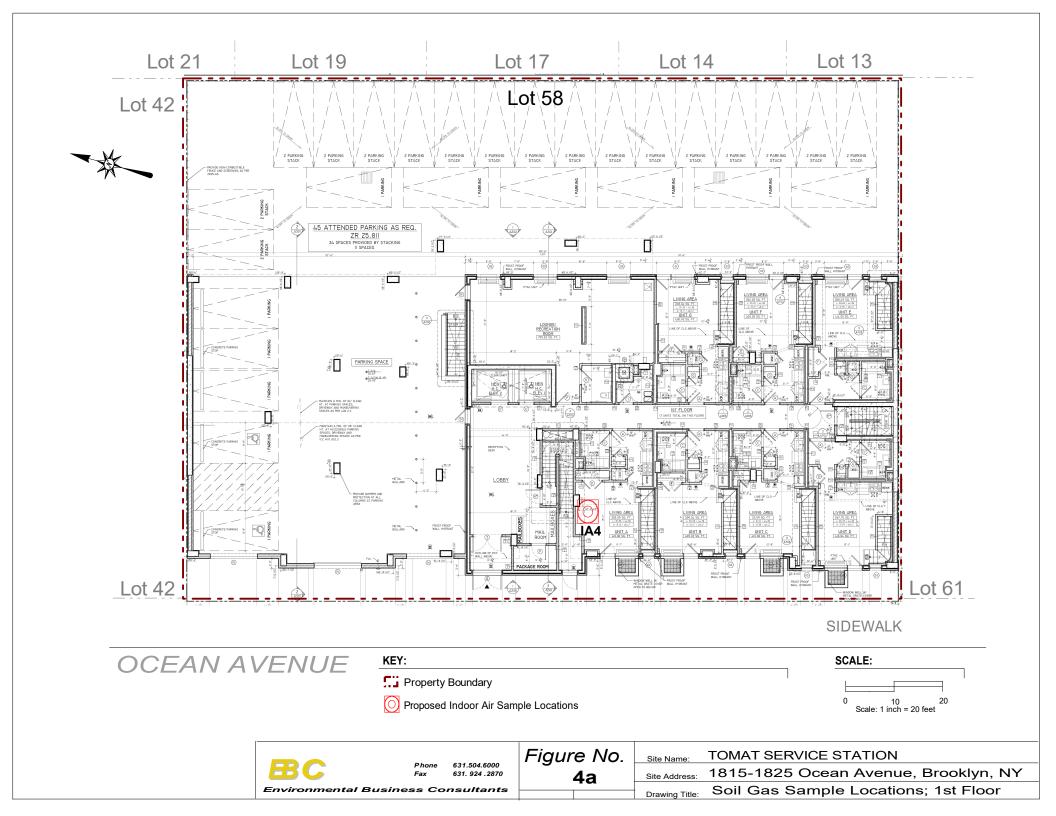
SIDEWALK

OCEAN AVENUE KEY: Property Boundary



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APPENDIX A NYSDOH Indoor Air Quality Questionnaire and Building Inventory

631.504.6000

631.924.2870

PHONE

FAX

Appendix B

Indoor air quality questionnaire and building inventory

As discussed in Section 2.11, products in buildings should be inventoried every time indoor air is sampled to provide an accurate assessment of the potential contribution of volatile chemicals. In addition, the type of structure, floor layout and physical conditions of the building being studied should be noted to identify (and minimize) conditions that may interfere with the proposed testing.

Toward this end, a blank copy of the NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory is provided in this appendix. Also provided is an example that demonstrates how the form should be completed properly.

NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name		Date/Time Prepared _	
Preparer's Affiliation		Phone No	
Purpose of Investigation			
1. OCCUPANT:			
Interviewed: Y/N			
Last Name:		First Name:	
Address:			
County:			
Home Phone:	Offi	ce Phone:	
Number of Occupants/pers	sons at this location	on Age of Occupants	
2. OWNER OR LANDLO	ORD: (Check if s	same as occupant)	
Interviewed: Y/N			
Last Name:	F	First Name:	
Address:			
County:			
Home Phone:	Off	ice Phone:	
3. BUILDING CHARAC	TERISTICS		
Type of Building: (Circle	appropriate respo	nse)	
Residential	School Church	Commercial/Multi-use	

If the property is residential, type? (Circle appropriate response)

Ranch Raised Ranch Cape Cod	Contemporary	3-Famil Colonia Mobile	l Home	
Duplex Modular	Apartment House Log Home	e Townho Other:_	ouses/Condos	
If multiple units, how	many?			
If the property is com	nercial, type?			
Business Type(s) _				
Does it include resi	dences (i.e., multi-use)?	Y / N	If yes, how many?	
Other characteristics:				
Number of floors	I	Building age		
Is the building insul	ated? Y / N	How air tight?	Tight / Average / Not Tigh	t
4. AIRFLOW				
Use air current tubes o	or tracer smoke to evalua	ate airflow pat	terns and qualitatively des	scribe:
Airflow between floors				
Airflow near source				
Outdoor air infiltration				
Infiltration into air ducts	S			

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construc	tion: wood	frame concre	te stone	brick
b. Basement type:	full	crawls	pace slab	other
c. Basement floor:	concr	ete dirt	stone	other
d. Basement floor:	uncov	vered covere	d covered w	vith
e. Concrete floor:	unsea	led sealed	sealed wit	th
f. Foundation walls:	poure	d block	stone	other
g. Foundation walls:	unsea	led sealed	sealed wit	th
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finish	ed unfinis	hed partially f	ïnished
j. Sump present?	Y / N			
k. Water in sump?	Y/N/not ap	plicable		
Basement/Lowest level dept	h below grade: _	(feet)		
6. HEATING, VENTINGCype of heating system(s) us				mary)
Hot air circulation	Heat j	oump	Hot water baseboa	
Space Heaters Electric baseboard		n radiation l stove	Radiant floor Outdoor wood box	iler Other
The primary type of fuel use	ed is:			
Natural Gas Electric Wood	Fuel (Propa Coal		Kerosene Solar	
Domestic hot water tank fue	eled by:			
Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other

Are there air distribution ducts present?	Y / N
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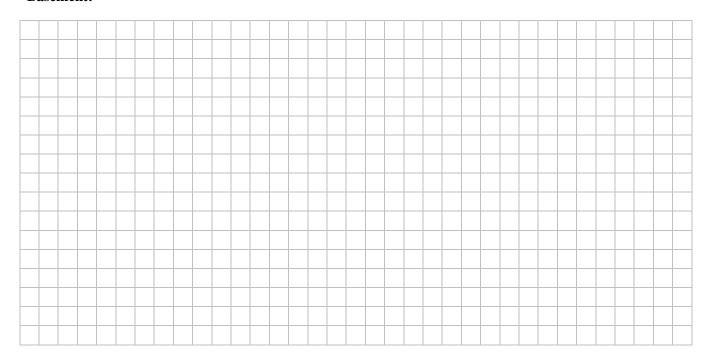
	e supply and cold air return ductwork, and its ld air return and the tightness of duct joints.			
7. OCCUP	PANCY			
Is basement	/lowest level occupied? Full-time Occa	asionally	Seldom	Almost Never
<u>Level</u>	General Use of Each Floor (e.g., familyro	om, bedro	om, laundry, wo	orkshop, storage)
Basement				
1 st Floor				
2 nd Floor				
3 rd Floor				
4 th Floor				
8. FACTOR	RS THAT MAY INFLUENCE INDOOR AIR (QUALITY	<i>I</i>	
a. Is there	e an attached garage?		Y/N	
b. Does th	ne garage have a separate heating unit?		Y/N/NA	
	roleum-powered machines or vehicles in the garage (e.g., lawnmower, atv, car)		Y / N / NA Please specify_	
d. Has the	e building ever had a fire?		Y/N When?	
e. Is a ker	osene or unvented gas space heater present?		Y/N Where	?
f. Is there	a workshop or hobby/craft area?	Y / N	Where & Type	?
g. Is there	smoking in the building?	Y / N	How frequently	?
h. Have cl	leaning products been used recently?	Y / N	When & Type?	
i. Have co	smetic products been used recently?	Y / N	When & Type?	

j. Has painting/sta	en?					
k. Is there new car	pet, drapes or o	Y / N	Where & Wh	en?		
l. Have air freshen	ers been used re	When & Typ	e?			
m. Is there a kitch	en exhaust fan?	Y/N	If yes, where	vented?		
n. Is there a bathr	oom exhaust far	If yes, where	vented?			
o. Is there a clothe	s dryer?	If yes, is it ve	ented outside? Y / N			
p. Has there been a	a pesticide appli	Y / N	When & Typ	e?		
Are there odors in If yes, please desc	_		Y/N			
Do any of the building (e.g., chemical manufaboiler mechanic, pesti	acturing or laboracide application,	tory, auto mech cosmetologist	anic or auto body		•	
If yes, what types o	f solvents are use	d?				
If yes, are their clothes washed at work? Y/N						
Do any of the building response)	ig occupants reg	ularly use or w	ork at a dry-clea	nning service?	(Circle appropriate	
Yes, use dry-cleaning regularly (weekly) Yes, use dry-cleaning infrequently (monthly or less) Unknown Yes, work at a dry-cleaning service						
Is there a radon mitigation system for the building/structure? Y / N Date of Installation: Is the system active or passive? Active/Passive						
9. WATER AND SE	WAGE					
Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other:	
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other:	
10. RELOCATION 1	NFORMATION	N (for oil spill r	esidential emerg	ency)		
a. Provide reasor	s why relocation	n is recommend	led:			
b. Residents choo	ose to: remain in	home reloca	ate to friends/fam	ily reloc	ate to hotel/motel	
c. Responsibility for costs associated with reimbursement explained? $Y \ / \ N$						
d. Relocation package provided and explained to residents? Y / N						

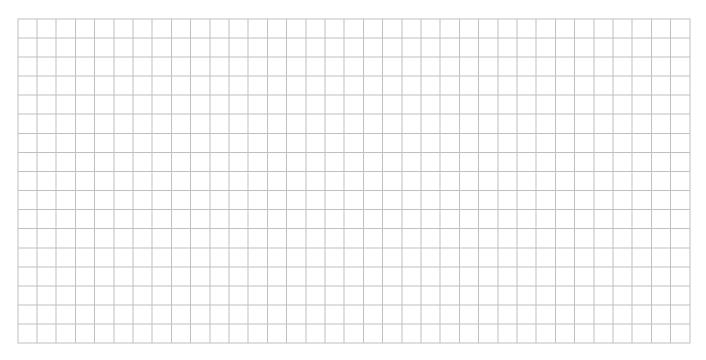
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



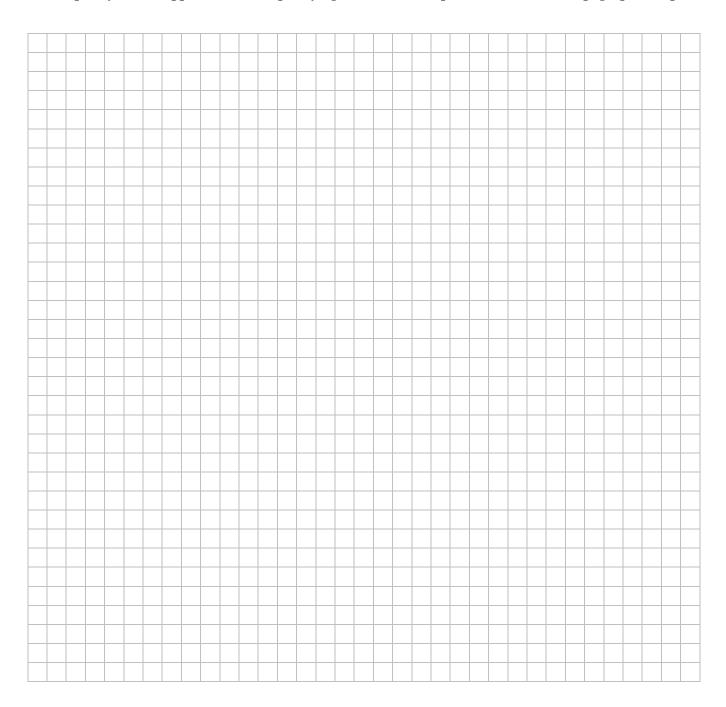
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



1	12	DD/	JULI	α	INIVEN	ITORV	FODM
		PKI					HUNKIN

Make & Model of field instrument used:	
List specific products found in the residence that have the potential to affect indoor air qual	ity.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** <u>Y / N</u>

^{*} Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

^{**} Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

OSR-3 Example

Correct

NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Example (orrect "	2
If the property is resident	ial, type? (Circle appropri	ate response)
Ranch Raised Ranch Cape Cod Duplex Modular	<u> </u>	
If multiple units, how ma	ny? <u>NA</u>	
If the property is commen	cial, type?	
Business Type(s)	<i>I</i> A	
Does it include residen	ces (i.e. multi-use)? Y/N	If yes, how many?
Other characteristics:		
Number of floors	Build	ling age 20 Years
Is the building insulate	d?(Y) N How	air tight? (Tight) Average / Not Tight
Airflow between floors		irflow patterns and qualitatively describe: + Floor through plumbing waste Floor penetrations
Airflow near source Yes, Furnace/	sil tank area of	sen to rest of basement
sill plate nea	ters at loose b r furnace.	pilco doorway openings, and at
Infiltration into air ducts Basement air flo Cold air return		f hot air unit and in loose

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)										
a. Above grade construction:	wood frame	concrete	stone	brick						
b. Basement type:	full	crawlspace	slab	other						
c. Basement floor:	concrete	dirt	stone covered with _	other						
d. Basement floor:	uncovered	covered								
e. Concrete floor:	unsealed	sealed	sealed with							
f. Foundation walls:	poured	block	stone	other						
g. Foundation walls:	unsealed	sealed	sealed with							
h. The basement is:	wet	damp	dry	moldy						
i. The basement is:	he basement is: finished unfinished partially finish									
j. Sump present?	YN									
k. Water in sump? Y/1	N / not applicable									
Basement/Lowest level depth below	v grade:	_(feet)								
Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)										
Floor drain in laund	ry area		14.000							
6. HEATING, VENTING and AI Type of heating system(s) used in t		·		y)						
Hot air circulation Space Heaters Electric baseboard	Heat pump Stream radiatio Wood stove	on Radian	ater baseboard nt floor or wood boiler	Other						
The primary type of fuel used is:										
Natural Gas Electric Wood	Fuel Oi Propane Coal	Kerose Solar	ene							
Domestic hot water tank fueled by:	gas		_							
Boiler/furnace located in: Base	ement Outdo	ors Main l	Floor	Other						
Air Conditioning: Cent	tral Air Windo	w units Open	Windows	None						

Example Correct 4	
Are there air distribution ducts present? YN	
Describe the supply and cold air return ductwork, and its there is a cold air return and the tightness of duct joints. I diagram.	
Cold air return ductwork on cei	ling in basement, Cold
Cold air return ductwork on cei air return joints appear loose	<u>.</u>
7. OCCUPANCY	
Basement / Is lowest level occupied? Full time Occa Never	asionally Seldom Almost
Level General Use of Each Floor (e.g., familyro	om, bedroom, laundry, workshop, storage)
Basement Storage and laundry	
Basement <u>Storage and laundry</u> 1st Floor <u>living area and bedroo</u>	
2 nd Floor	//15
3 rd Floor	
4 th Floor	
4 F100F	
8. FACTORS THAT MAY INFLUENCE INDOOR AIR	QUALITY
a. Is there an attached garage?	(Y) N
b. Does the garage have a separate heating unit?	Y (N) NA
c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car etc.)	(Ý)/ N / NA Please specify lawnmower, Car
d. Has the building ever had a fire?	Y N When?
e. Is a kerosene or unvented gas space heater present?	Y (N) Where?
f. Is there a workshop or hobby/craft area?	Y (N) Where & Type?
g. Is there smoking in the building?	Y/N How frequently?
h. Have cleaning products been used recently?	Y) N When & Type? Win week-windex, tilex
i. Have cosmetic products been used recently?	(Y)/N When & Type? yesterday - hairspray

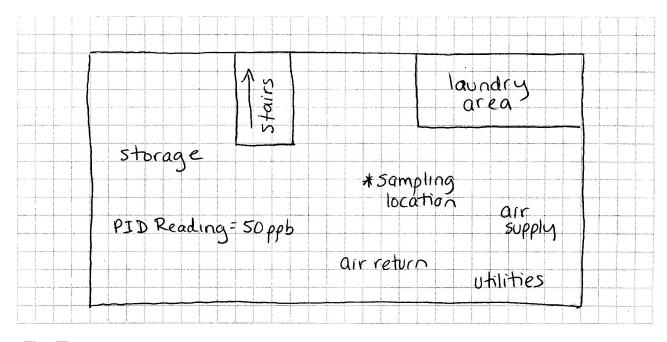
Example Correct 5	
j. Has painting/staining been done in the last 6 months?	Y/N Where & When?
k. Is there new carpet, drapes or other textiles?	(Y) N Where & When? <u>Carpe + in dining roo</u>
l. Have air fresheners been used recently?	Y/N When & Type?
m. Is there a kitchen exhaust fan?	(Y) N If yes, where vented? <u>OUTSI'de</u>
n. Is there a bathroom exhaust fan?	Y/N If yes, where vented?
o. Is there a clothes dryer?	Y/N If yes, is it vented outside YNN
p. Has there been a pesticide application?	Y / When & Type?
Are there odors in the building? If yes, please describe:	Y (N)
Do any of the building occupants use solvents at work? (e.g., chemical manufacturing or laboratory, automechanic or boiler mechanic, pesticide application, cosmetologist etc.) If yes, what types of solvents are used? hair salon decompositions are used?	
If yes, are their clothes washed at work?	Y (N)
Do any of the building occupants regularly use or work at response)	
Yes, use dry-cleaning regularly (weekly) Yes, use dry-cleaning infrequently (monthly or less) Yes, work at a dry-cleaning service	No Unknown
Is there a radon mitigation system for the building/structu Is the system active or passive? Active Passive	re?(Y)/N Date of Installation: June 2000
9. WATER AND SEWAGE	
Water Supply: Public Water Drilled Well Driv	en Well Dug Well Other:
Sewage Disposal: Public Sewer Septic Tank Lead	ch Field Dry Well Other:
10. RELOCATION INFORMATION (for oil spill resident	• • • • • • • • • • • • • • • • • • • •
a. Provide reasons why relocation is recommended:	not applicable
	riends/family relocate to hotel/motel
c. Responsibility for costs associated with reimburseme	ent explained? Y/N
d. Relocation package provided and explain	ned to residents? Y/N

Example Correct

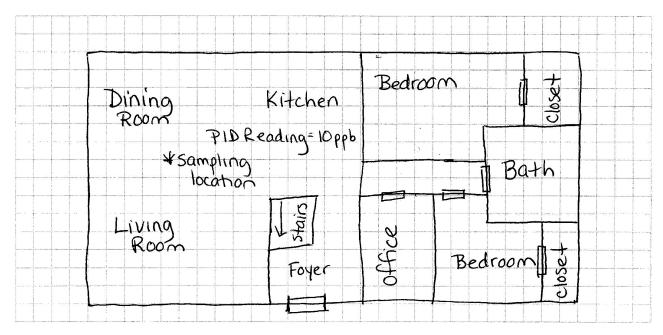
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



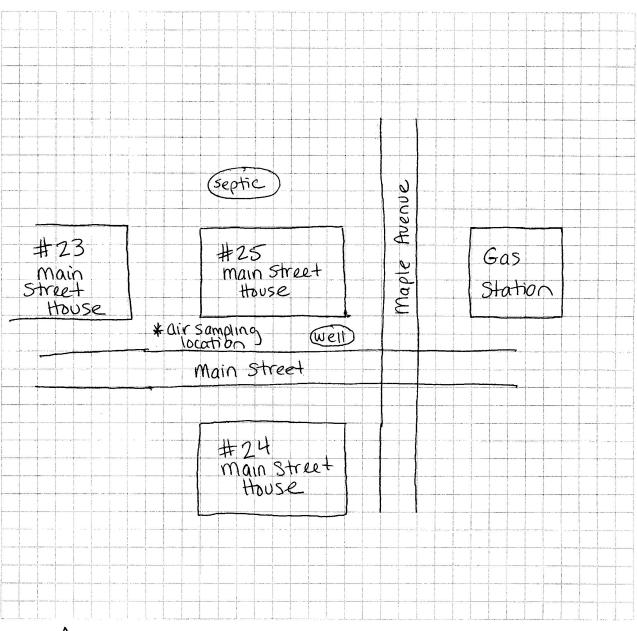
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



N Wind direction = NE Example Correct

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: RAE photoion 1 zation detector

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (oz.)	Condition*	Chemical Ingredients	Field Instrument Reading	Photo ** Y/N
Kitchen	WD-40	1202	UO	See photo	10 pp b	γ
garage	mineral spirits	2402	U	benzene, toluene	, , ,	N
garage	American Semi-Gloss latex paint	6402	U	benzene, toluene, titanium dioxide, ethylene, alycol, aluminum hydroxide,	2ppb	N
5 5	•			2,2,4-trimethyl 1-1,3- pentanedial isobutyrate,	1 \	
				Vinyl acetate		
garage	Krylon Semi-gloss	6402	D	butane, propane,	10 ppb	N
2. 2				titanium dioxide, xylene, ethylbenzene, acetone,	1,	
				MEK, butanol, MIK		
garage	Rustoleum	1202	V	talc, calcium carbonate.	4 ppb	N
guinge				titanium dioxide, xylene,	*1	
				talc, calcium carbonate, titanium dioxide, xylene, ethylbenzene, acetone, liquified petroleum gases, pentaerythritol		
				' J		
garage	Deep lo Double Strength Insect Repeilent	802	D	propone, isobutane,	0.5ppb	N
3 3	Repellent			propone, Isabutane, N,N-Diethyl-meta- tolvamide		
				Di-n-propyl isocinchomeronal	e	
base- ment	12 cans latex	12802	U	talc, titanium dioxide,	0	N
	paint			Kaolin Clay, 2,24-trimethyl		
				Isobutyrate, vinyl acetate		

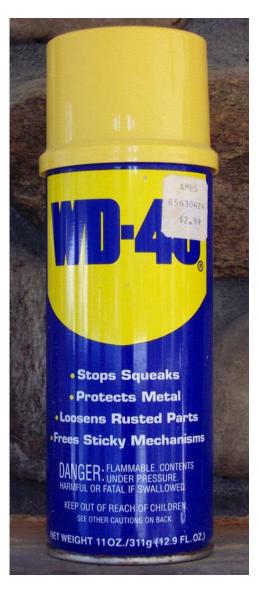
^{*} Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

^{**} Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Product Inventory Attachment - 25 Main Street, City

WD-40 FRONT

WD-40 INGREDIENTS



HARMFUL OR FATAL IF SWALLOWED:
Contains petroleum distillates. If
swallowed, DO NOT induce vomiting. Call physician immediately.
Use in a well-ventilated area.
DELIBERATE OR DIRECT INHALATION
OF VAPOR OR SPRAY MIST MAY BE
HARMFUL OR FATAL.