TECHNOLOGIES, INC.

# Soil Vapor Intrusion Work Plan



*For:*

**CIABATTONI BROWNFIELDS SITE**
**ID# C 344068**
153 South Liberty Drive
Stony Point
Rockland County, New York

*Prepared for:*

**Mr. Josh Beyer, P.E.**
**Director of Development**
Sembler/Treasure New York Joint Venture
c/o Sembler Florida, Inc.
5858 Central Avenue
Saint Petersburg, FL 33707

**NEW YORK STATE**
**DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
**BROWNFIELDS CLEANUP PROGRAM**
21 South Putt Corners Road
New Paltz, NY 12561

*Prepared by:*

**A2L TECHNOLOGIES, INC.**
10220 Harney Road NE
Thonotosassa, Florida 33592
(813) 248-8558

March 17, 2008
Project #050409

# TABLE OF CONTENTS



## FIGURES

## 1.0. INTRODUCTION

A2L Technologies, Inc. was retained by Mr. Josh Beyer of The Sembler Company to prepare a Soil Vapor Intrusion Work Plan (SVIWP) for the Ciabattoni Brownfields site located at 153 South Liberty Drive, Stony Point, NY. Petroleum hydrocarbons were identified in the soils at the site during previous investigations. This SVIWP has been prepared in response to a request by New York State Department of Environmental Conservation (NYSDEC) dated December 24, 2007.

### 1.1 Assessment Objectives

The objectives of the soil vapor intrusion work plan are summarized as follows:

1. Evaluate the sub-slab concentrations of chemicals related to the release of petroleum hydrocarbons that may potentially migrate to indoor air.
2. Evaluate exterior ambient air concentrations of chemicals.
3. Evaluate subsurface concentrations of chemicals related to the release of petroleum hydrocarbons within the area surrounding the site to determine if potential off-site impacts are present.

### 1.2 Scope of Work

This Work Plan proposes and describes methods for collection of sub-slab soil, exterior ambient and surficial soils air samples in accordance with the New York State Department of Health (NYSDOH) October 2006 *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* The current structure being constructed consists of a 3,950 square foot slab-on-grade foundation. The foundation was prepared by bringing two and one half feet of clean soils from off site borrow pits and compacting to 95% modified proctor. The footings and other features were prepared and a polyethelyne vapor barrier installed prior to poring the four inch slab to a finished elevation of 121'. The building will be used for a commercial banking establishment.

We propose to collect two sub-slab soil vapor samples below the foundation of the building. The sub-slab vapor samples will be collected simultaneously as well as two adjacent ambient indoor air samples. Concurrent with the indoor air sampling, one upwind outdoor air sample will be collected. The sub-slab soil vapor samples will be collected at points identified in Figure 1.

Additionally, to evaluate the subsurficial soil vapor concentration in the adjacent areas adjacent to the building, we propose to install three temporary vapor monitoring points as identified in Figure 2.

All of the samples will be collected with SUMMA® passivated stainless steel canisters over a 2-hour time period. An evacuated 6-liter SUMMA® canister (> 28" Hg) will provide a recoverable whole gas sample of approximately 5.5 liters when allowed to fill to a vacuum of 2" Hg. The intakes of the indoor air and outdoor air samples will be set at five (5) feet above ground surface, to represent the typical breathing zone for an adult. The canisters will subsequently submitted to a New York State ELAP approved laboratory for analysis.

## 2.0 FIELD ACTIVITIES PLAN

### 2.1 Pre-Field Activities

The pre-field activities consist of a visit to the site to install the temporary sub-slab monitoring points at the locations identified in Figure 1. Additionally, we will ensure that proper utility clearance is performed prior to any intrusive exterior temporary monitoring points being installed.

The NYSDOH Indoor Air Quality Questionnaire and Building Inventory Field Form (Appendix A) will be completed while conducting the building survey and chemical inventory. Drilling permits will not be required for the proposed soil vapor sampling.

### 2.2 Sub-Slab Soil Vapor Sampling

To collect sub-slab soil vapor samples, drill holes will be advanced using an electric hammer drill to obtain access to the soil beneath the slab. Glass beads will be installed with 1/8" food grade polyethylene tubing and sealed with fast setting concrete grout. The proposed monitoring points are presented in Figure 1. Prior to collecting the samples the sampling train will be evacuated using low flow methods (<0.2 LPM) to purge the system one to three volumes. The samples will subsequently be collected in a 6 liter SUMMA® passivated stainless steel canister fitted with the appropriate flow controller for a two hour sample collection. During the sampling, a tracer compound, isopropanol, will be used for quality control/quality assurance as defined in Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance document section 2.7.5. The tracer liquid will be applied to a papertowel soaked in the liquid tracer that is placed over all connection points and over the penetration in the slab during sample collection. As illustrated in the Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance document Figure 2.4 (D).

### 2.3 Exterior Surficial Sampling

To collect exterior subgrade soil vapor samples, an AMS Soil Vapor Sampling system will be utilized to install temporary soil vapor extraction points at four feet below ground surface. After the stainless steel probe tip is advanced to depth the sample train consisting of food grade polyethylene tubing (1/8" O.D.) will be evacuated using low flow methods (<0.2 LPM) to purge the system one to three volumes. The samples will be collected in a 6 liter SUMMA® passivated stainless steel canister fitted with the appropriate flow controller for a two hour sample collection. During the sampling, a tracer compound, ispropanol, will be used for quality control/quality assurance as defined in NYSDOH guidance document section 2.7.5.

### 2.4 Indoor Air Sampling

Two air samples will be obtained from adjacent to the sub-slab SVI points within the open area of the building. This samples will be taken from five feet above the floor to simulate the average adults breathing zone. The samples will be taken concurrent (within minutes of each other) with the subslab and outdoor air sampling. The samples will be collected in a 6 liter SUMMA® passivated stainless steel canister fitted with the appropriate flow controller for a two hour sample collection.

### 2.5 Outdoor Air Sampling

An outdoor air sample will be collected simultaneously with the indoor air samples to evaluate the potential influence, if any, of outdoor air on indoor air quality. This sample will be collected simultaneously with soil vapor samples to identify potential outdoor air interferences associated with infiltration of outdoor air into the sampling apparatus while the soil vapor was collected.

## 3.0 DATA RECORDING AND MANAGEMENT

Measurements will be recorded in a bound field logbook and on the necessary chain of custody. Each of the sampling events previously described requires method specific notations as delineated within each subsection of the NYDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006. Soil borings and permanent ground water monitoring wells will be installed as previously described in Section 1.2 of this document. Field techniques and laboratory procedures employed during the Site Assessment will comply with the NYDEC standards

as set forth in Draft DEC-10, Section 2.0 QA For Sampling and Lab Analysis. The following details each of these assessment methods.

## 4.0 LABORATORY ANALYSIS

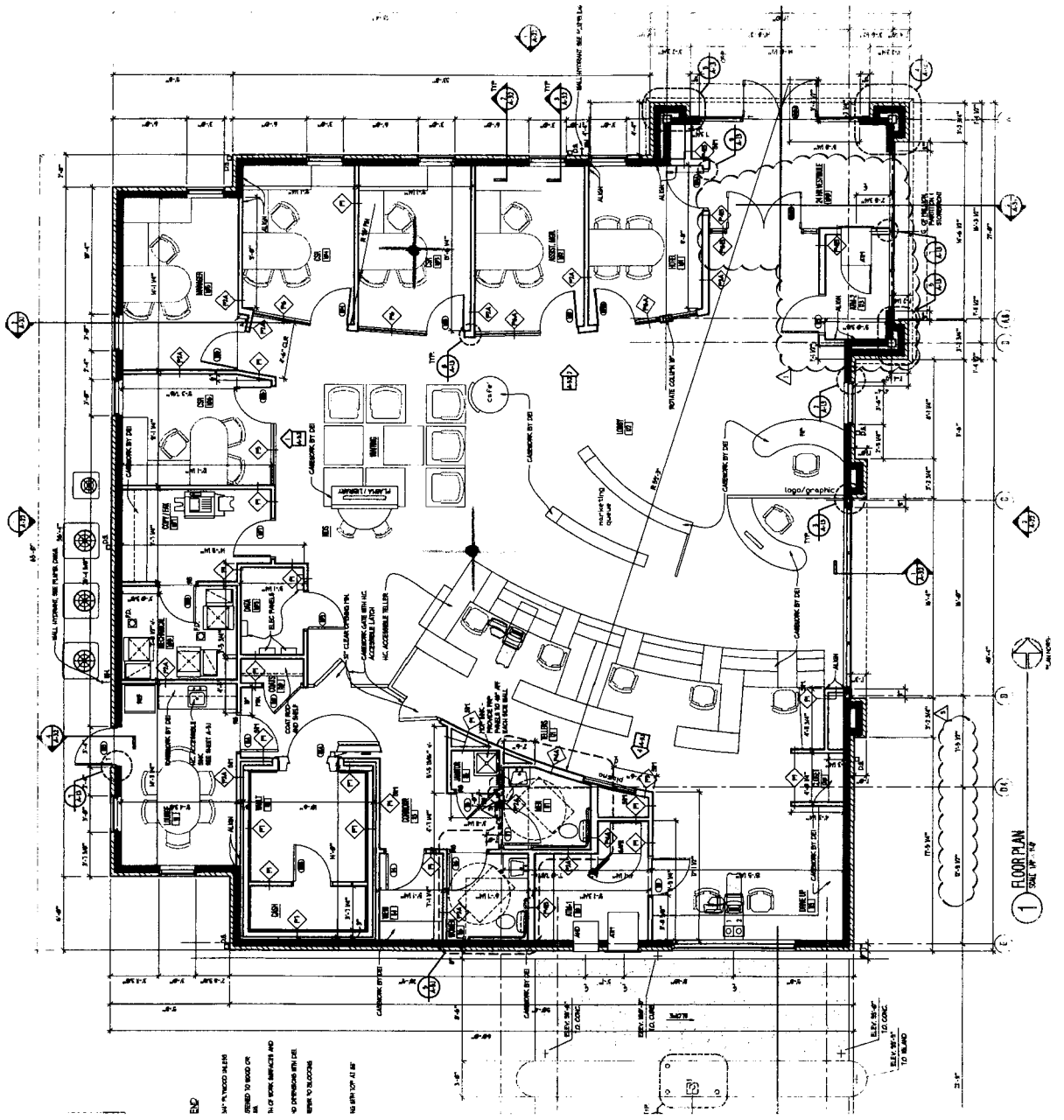
The soil vapor samples will be analyzed for petroleum-specific volatile organic compounds, including using USEPA Method TO-15 at a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory (Landcaster Laboratories). Constituents specific to a petroleum hydrocarbon source, specifically gasoline, will be analyzed for using the proposed method. The proposed method detection limits are method specific and will be are as low as the laboratory can provide.

## 5.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) samples for the soil vapor analysis at this site will include one trip blank per shipment. Laboratory QA/AC analysis will include a method blank and laboratory control samples. Extreme care will be used during all aspects of vapor sample collection to ensure that sampling error is minimized and high-quality data are obtained.

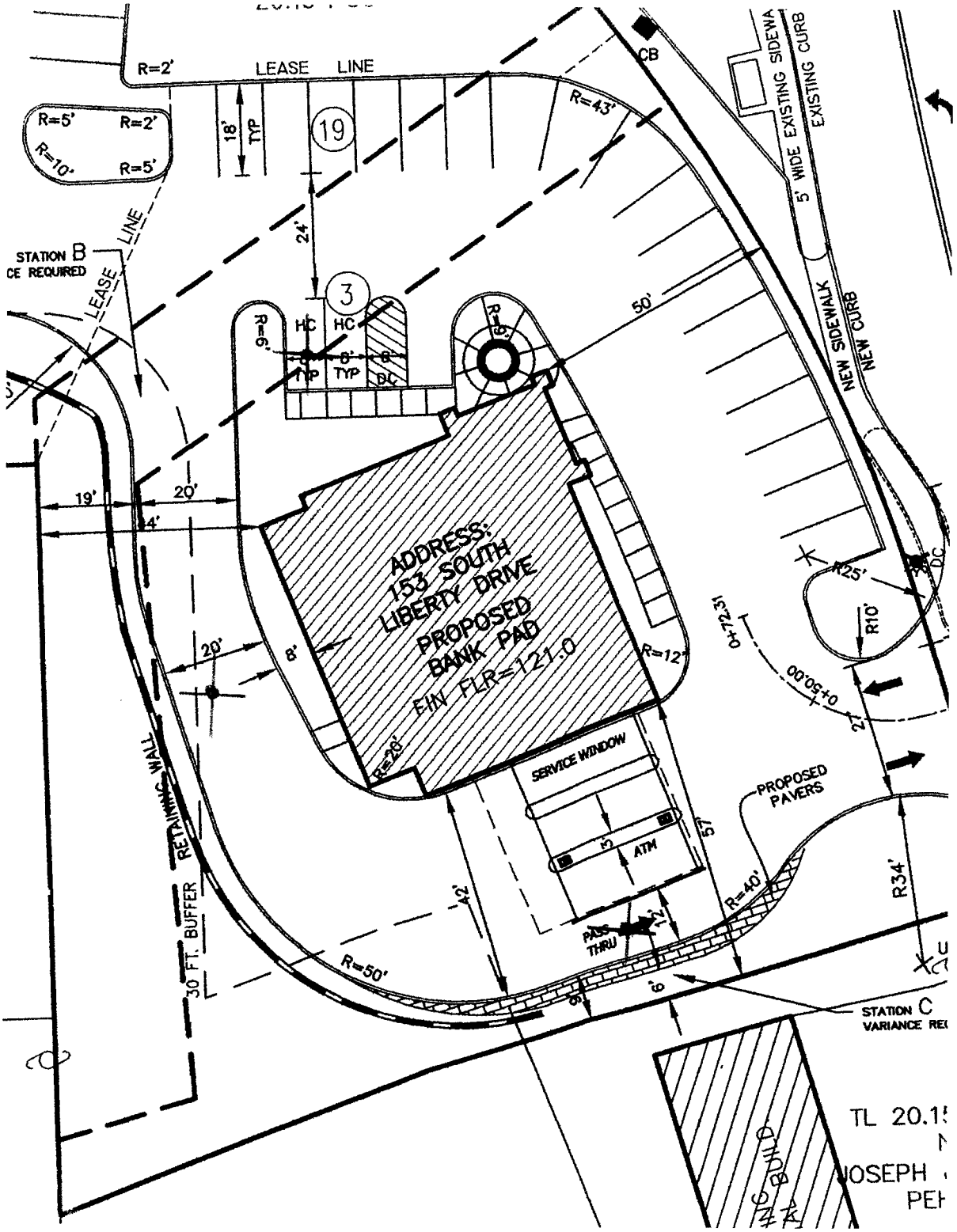
## 6.0 Schedule and Reporting

A2L is prepared to commence the field activities for the soil vapor intrusion study at the Ciabattoni Brownfields site in Stony Point, NY as soon as this plan is approved. The installation of the sub-slab and the exterior monitoring points is anticipated to take one day and the sampling the following day. It is anticipated the sampling will be completed during the heating season, late March or early April after the building exterior is completed and the HVAC systems installed. However, the HVAC system services the entire bank area and will be operational annually after the bank is opened in May. The receipt of laboratory analysis of the obtained soil vapor samples are anticipated within three weeks of submittal to the laboratory. The completed Soil Vapor Intrusion Report is anticipated to be submitted to the NYSDEC within 90 days of receipt of laboratory analytical data. The report will present the data collected during the field investigation and will include a description of the field activities, methods of investigation and the findings of the field sampling investigation. Laboratory analytical reports will be provided as appendices to the report.




North

| 050409 | **Figure 1 SVI Sub-Slab Monitoring Points** |
|---|---|
| | *A2L Technologies, Inc.* |




North

| 050409 | **Figure 2 Exterior SVI Monitoring Points** |
|---|---|
| | *A2L Technologies, Inc.* |