

Berninger Environmental, Inc.
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January 22, 2010

Udomlug (Nok) Siriphonlai,
P.E. Senior Engineer Bureau of
Environmental Quality
Westchester County Department of Health (WCDH)
145 Huguenot Street New Rochelle New York
10801

RECEIVED
JAN 28, 2010

Re: **Schmukler's Dry Cleaners, 358-364 North Avenue
City of New Rochelle, Westchester County Brownfield Cleanup
Agreement Site No. C360088 Authorization to File Applications
and Plans to WCDH Re: Permit to Construct Active Sub-Slab
Depressurization System Response to November 30, 2009 Letter**

Division

Dear Mr. Siriphonlai:

This letter is in reponse to the WCDH's comments letter dated November 30, 2009 on the re-submittal of a permit to *Construct Active Sub-Slab Depressurization System* required at the Schmukler's Dry Cleaners property located at 358-364 North Avenue, City of New Rochelle, Westchester County relative to a Brownfield Cleanup Agreement Site No. C360088.

Comment: Calculations showing the emission rates shall be provided. The emission rates shall be calculated based on the potential emissions without air pollution control equipment and control efficiency of the air pollution shall also be included. Breakthrough calculation of the air pollution control equipment shall also be included. The values sampled at the inlet of the air pollution control equipment may be used. All contaminants shall be taken into consideration when calculating the equipment breakthrough.

Response:

The calculations showing the emission rates for the VOCs quantified during the pilot test into the air pollution equipment is re-attached. Please note that only three compounds were reported - PCE, TCE and its breakdown, 1,2-DCE. Prior data or VOC emission calculations showing other constituents was associated with soil vapor sampling at other areas of the property and are not representative of VOCs emissions from the SSDS. No other VOCs were present in the influent data (collected in March of 2009) to the air pollution equipment - see attached original influent test data.

Again, as provided before, Siemens was contacted regarding the specific vapor phase isotherm design parameters for their vapor phase Granulated Activated Carbon (GAC) such that a calculation could be made for the rated control efficiency of the air pollution control equipment as well as a breakthrough calculation of the air pollution control equipment. This specifically addressed the three VOCs reported (in the March 2009 data) in a cumulative fashion. Information on the air flow rate, system temperature, system pressure, chemical characteristics, inclusive of concentrations of Volatile Organic Compounds (VOCs) was provided to Siemens and they calculated the pounds of carbon individually and collectively for the three VOCs of

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concern (tetrachloroethylene, trichloroethylene, and 1,2-cis-dichloroethene) present in the sampling inlet sample (influent sample).

As per the attached Vapor Phase Design Sheets prepared by Siemens according to their specific brand of GAC used on this project, total pounds of carbon estimated at breakthrough is 0.1818 pounds of GAC per day. A 55-gallon drum contains 148 pounds of carbon¹. At an estimated breakthrough is 0.1818 pounds of GAC per day, the lead drum should theoretically last 814 days.

148 pounds of carbon per drum ÷ 0.1818 pounds of GAC per day = 814.08 days of Carbon Use

As a safety margin, 50% of the theoretical usage is typically projected, in this case, 407 days (at least one year). For further safety to ensure no break through of the lag drum, the system will be monitored via a Photoionization detector monthly and/or a sample will be taken to the lab for analysis. Based upon the aforementioned, the emission rates based on the rated control efficiency of the air pollution control equipment should be 99.99 percent effective.

Based upon the above rates, one drum of carbon is theoretically capable of removing 26.91 pounds of VOC contamination at the pilot test concentrations.

Comment: Supporting documents from the manufacturer including specifications for the all the equipment, such as make, model, capacity, flow (including superficial velocity), diameter and dimensions, shall be provided. In addition, the basis for determining the equipment size shall be provided. The capacity, flow and dimension of the air pollution control equipment shall also be included on plans.

Response: All of the aforementioned available supporting documents from the manufacturer including specifications for the all the equipment, such as make, model, capacity, flow, diameter and dimensions, were provided and are re-attached again. In order to calculate the Superficial Velocity of the air within the air pollution control equipment (Siemens Vent Scrub 200), the following formula was used:

$$V_s = Q/A$$

Where:

V_s = Superficial Velocity

Q = Volumetric Flow Rate

A = Cross-section Area of the Packed Bed (e.g., carbon within Vent Scrub)

Given that the $Q = 212$ cfm (flow rate of the blower) and $A = 2.8$ ft² (as per the spec sheet for the Siemens Vent Scrub 200), the surficial velocity within the Vent Scrub 200 is calculated at 75.7 feet per minute (fpm).

The pilot test was used as the basis for confirming what equipment size was adequate for this project via the measurement of vacuum monitoring points and a determination of the radius of influence. Vacuum was measured at the six small diameter shallow Pressure Vapor Points. Adequate pressure readings were noted at all six Pressure Vapor Points (0.10 to 2.0 inches of mercury on the magnahelic gauges). The measurements of vacuum present at the Pressure Vapor Points and monitoring points for the four SVE wells confirmed the

¹

Volume of a 55-gallon drum is 5.3 cubic feet, bulk density of carbon is 28lb/cubic foot = 148 pounds of carbon.

Udomlug (Nok) Siriphonlai, P.E.
Westchester County Department of Health (WCDH)

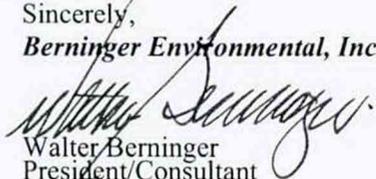
January 22, 2010

Page 3

effectiveness of the system design and an appropriate 20 foot radius of influence. **As per your request, the capacity, flow and dimension of the air pollution control equipment have been included on the appropriate design plans. Pressure gauges (Ashcroft Model 169790A C-PT 5WZ56 0-30 psi) have been installed to measure the pressure drop across each carbon adsorber and are depicted on site drawings - see attached.**

In summary, the breakthrough calculations, the confirmed appropriate radius of influence and the high regulatory acceptance of the use of a vapor phase carbon drum in series for air pollution control was the technical basis for the determination of adequacy of equipment size and selection.

Sincerely,
Berninger Environmental, Inc.


Walter Berninger
President/Consultant


Michael W. McKeown, P.E.

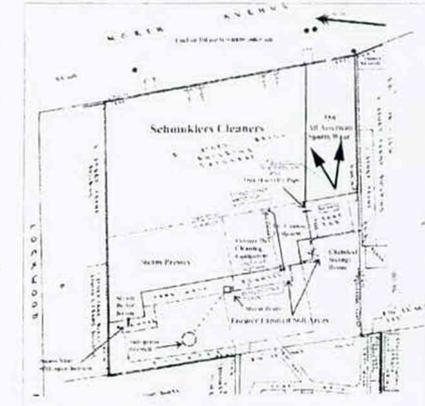
cc: Lou Carrea, P.E. Associate Engineer
Westchester County Department of Health
Bureau of Environmental Quality
145 Huguenot Street, 7th Floor
New Rochelle, New York 10801

cc: Hal Shapiro, HNJ Realty, LLC.
S. Avena - Garfunkel, Wild, & Travis, P.C.





FRONT ELEVATION - FACING NORTH AVENUE (LOOKING WEST)

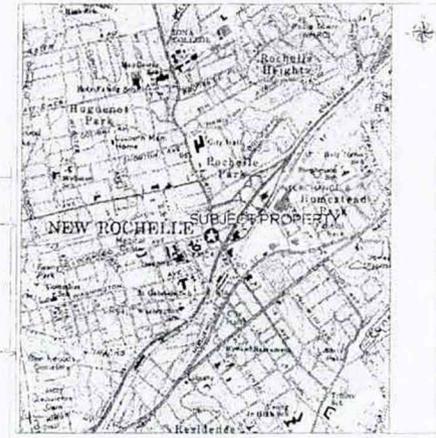


SCHEMATIC FLOOR PLAN AND SITE FEATURES

NOT SCALE
 INFORMATION ON THIS PLAN IS THE PROPERTY OF THE ARCHITECT. NO LIABILITY IS ASSUMED FOR ANY ERRORS OR OMISSIONS.



REAR ELEVATION - LOOKING EAST



LOCATION PLAN

NOT SCALE

DRAWING ALTERATION

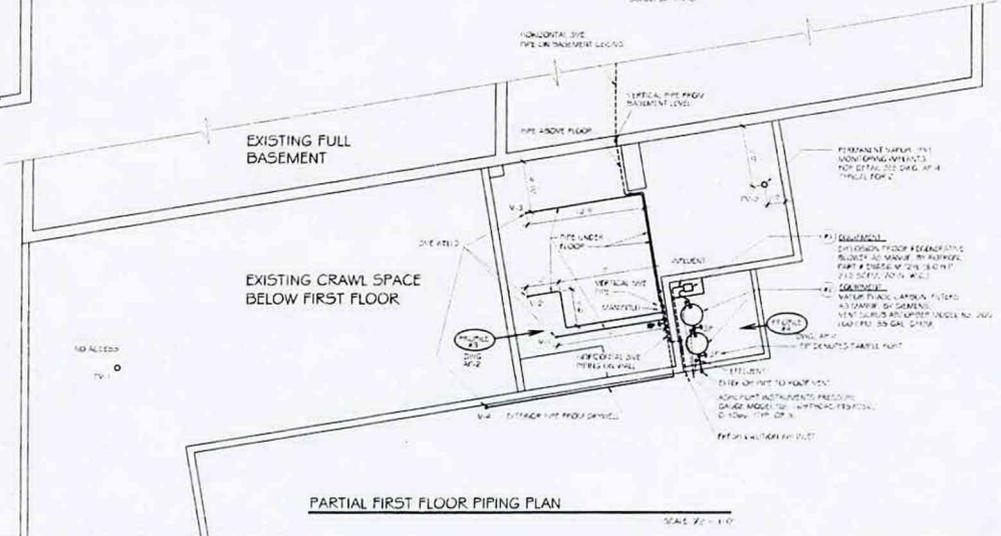
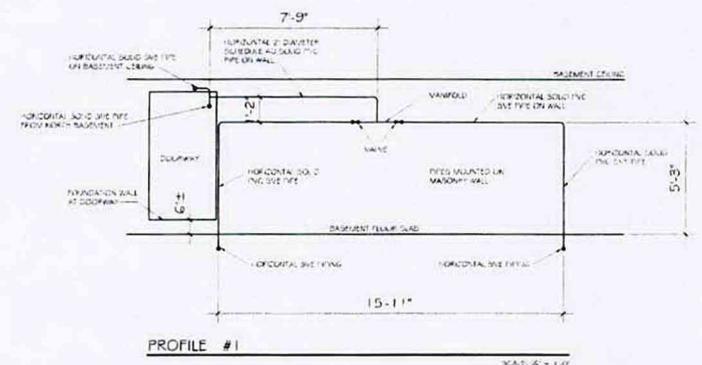
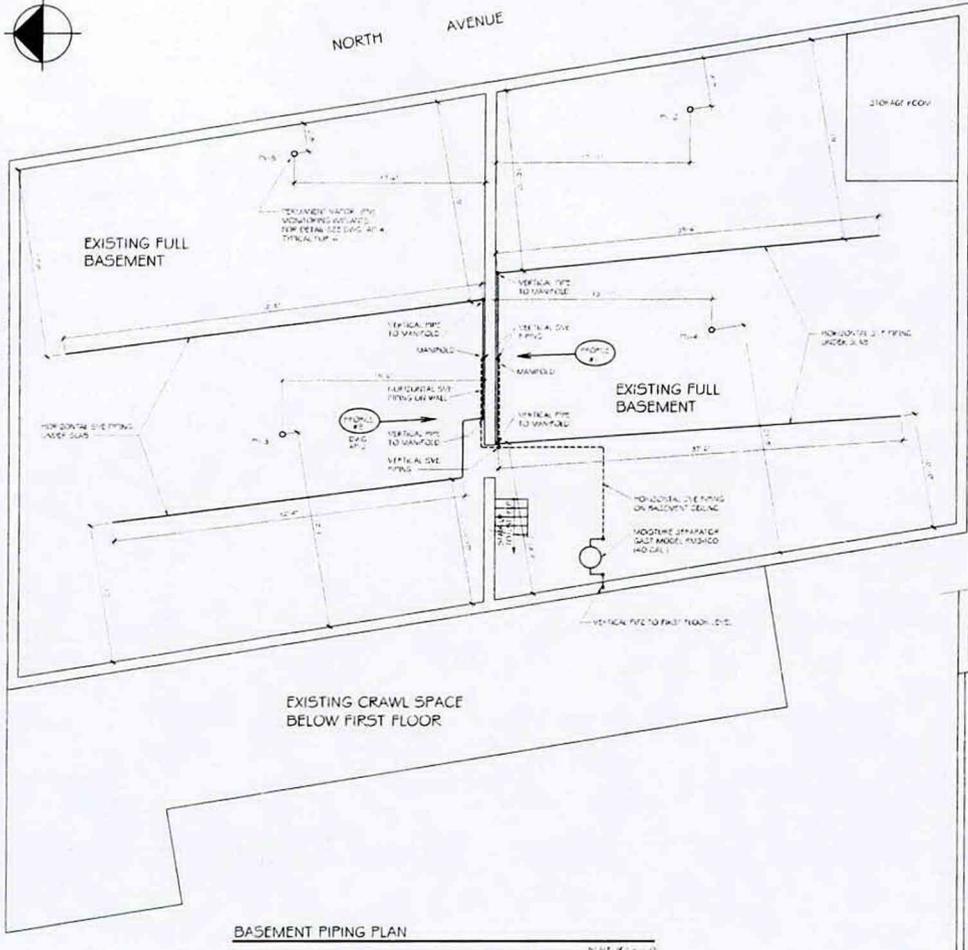
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, PROFESSIONAL ENGINEER, OR LAND SURVEYOR TO ALTER ANY ITEM ON THIS DOCUMENT IN ANY WAY.
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Issued for Approval

<p>Berninger Environmental Inc. 90 Kaickerbucker Avenue Bohemia, New York 11716</p>	<p>Michael W. Mckeown, P.E. 8 Oak Ridge Court Massena, New York 11949</p>	<table border="1"> <tr> <td>NO.</td> <td>DATE</td> <td>REVISION</td> </tr> <tr> <td>1</td> <td>03/10/16</td> <td>ISSUED FOR APPROVAL</td> </tr> <tr> <td>2</td> <td>03/10/16</td> <td>REVISED PER DEPARTMENT OF HEALTH APPROVAL</td> </tr> <tr> <td>3</td> <td>03/10/16</td> <td>REVISED PER DEPARTMENT OF HEALTH APPROVAL</td> </tr> </table>	NO.	DATE	REVISION	1	03/10/16	ISSUED FOR APPROVAL	2	03/10/16	REVISED PER DEPARTMENT OF HEALTH APPROVAL	3	03/10/16	REVISED PER DEPARTMENT OF HEALTH APPROVAL	<p>Air Permit Application for : Schmuklers Cleaners 358-364 North Ave., New Rochelle, NY Site # C360088</p>	<table border="1"> <tr> <td>DATE</td> <td>03/10/16</td> </tr> <tr> <td>TIME</td> <td>10:30 AM</td> </tr> <tr> <td>BY</td> <td>MJM</td> </tr> <tr> <td>FOR</td> <td>03/10/16</td> </tr> </table>	DATE	03/10/16	TIME	10:30 AM	BY	MJM	FOR	03/10/16	<p>Location Plan, Schematic Floor Plan and Building Elevations</p>	<p>AP-1</p>
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NORTH AVENUE



DRAWING ALTERATION

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Berminger Environmental Inc. 90 Knickerbocker Avenue Hoboken, New York 11776	Michael W. Mckeown, P.E. c/o Oak Ridge Court Maersville, New York 11949	NO	DATE	REVISION	BY
Air Permit Application for : Schmuklers Cleaners 358-364 North Ave., New Rochelle, NY Site # C360088					
Part Plans and Schematic Piping Elevations					
AP-3					

