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June 15, 2015

Mrs. Kiera Thompson
Division of Environmental Remediation
NYS Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7014

Re: Schmukler's Dry Cleaners
Brownfield Cleanup Agreement #C360088
City of New Rochelle, Westchester County
Response to NYSDEC Comments May 26, 2015
April 20, 2015 Pilot Study Work Plan

Dear Mrs. Thompson:

I am responding on behalf of my client, HNJ Realty, LLC, relative to comments received from the New York State Department of Environmental Conservation, Division of Environmental Remediation (NYSDEC DER) dated May 26, 2015 with regard to the submission of the Pilot Study Work Plan (PSWP) dated April 2015. As required, this letter provides a response to the NYSDEC comments on the aforementioned report. Each of the NYSDEC comments is reiterated below, with a response that follows.

Comment 1: The Department requires at least one of the three proposed monitoring wells be located in the downgradient (southeast) groundwater flow direction from the injection site. Either an existing well such as MW-5, should it be producing water or modified to produce water, or a newly installed well is to be used to evaluate the influence and effectiveness of the pilot in situ injection.

Response: Please see revised section 4.4 and 5.0.

Comment 2: In order to evaluate the potential for on-site contamination to migrate off-site, BW-2 and BW-4, located just off-site and downgradient, must also be added to the pilot study monitoring program. While BW-2 and BW-4 are shallow bedrock wells, the site hydrology data submitted in the revised draft Remedial Investigation Report (March 2015) indicates no overburden water exists in these locations, and the groundwater likely flows into the highly weathered bedrock as it moves downgradient at the site.

Response: Please see revised sections 4.3 and 5.0.

Comment 3: Final monitoring well locations, design specifications, and installation methodology must be provided to the Department and appended to the Pilot Study Work Plan before field activities begin.

Response: Please see newly developed figures: 6a and 6b and revised section 4.4.

Comment 4: Because the building is occupied and direct receptors to potential exposures exist, indoor air sampling is required while the combination sub-slab depressurization system and soil vapor extraction system (SSDS/SVES) is shut down during injection(s). A plan to address exposure to site-related contamination in the indoor air (e.g. additional ventilation, etc.,) must be in place before pilot study activities begin. Indoor air sampling is also required 30 days after the SSDS/SVES system is turned back on to ensure that the systems are again effectively addressing exposure.

Response: Please see revised section 7.0, last paragraph “Additional Monitoring Requirements”.

Sincerely,



John V. Soderberg P.E

cc Hal Shapiro
Walter Berninger
Justin Halpin

BROWNFIELD CLEANUP PROGRAM

**PILOT STUDY
WORK PLAN**

FOR

HNJ REALTY LLC.

FOR

SCHMUKLERS CLEANERS

358 - 364 North Avenue, New Rochelle, New York

Site No.: C360088

Index No.: A3-0542-0306

PREPARED FOR

NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

625 BROADWAY

ALBANY, NEW YORK 12233-7016



PREPARED BY

John V. Soderberg

P.O BOX 263

Stony Brook, NY

June 2015

FINAL

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- Attachment-A Micro-Bac Brochure
- Attachment-B Lab Case Study
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- Attachment-E M1000H Material Safety
- Attachment-F Community Air Monitoring Plan

DER-10 Certification

I, John V. Soderberg, certify that I am currently a NYS registered professional engineer [as defined in 6 NYCRR Part 375] , and that this Pilot Study Work Plan was prepared in accordance with all applicable statutes and regulations and is in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

John V. Soderberg P.E

Signature: 

License number: 049975

Date: April 20th, 2015

Seal:



1.0 INTRODUCTION

This document serves as a Pilot Study (PS) Work Plan to be performed at the subject property pursuant to the requirements of an executed Brownfield Cleanup Program Agreement (BCA) (dated February 27, 2006), between the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER) and HNJ Realty, LLC, *the Volunteer*. The Site is a commercial property located at 358 through 364 North Avenue, New Rochelle, New York (see Figures 1 and 2), fully described as Section 4 - Block 1206 - Lot 19 of the tax maps of City of New Rochelle.

The intention of this PS is to determine the effectiveness of the proposed remedy at a select location on-site. The PS will evaluate the remedies ability to reduce groundwater contamination to concentration levels that are applicable with the governing standards. Substantial groundwater impacts have been documented at the subject property through the conduct of the Remedial Investigation (RI) for which the presence of chlorinated solvents and petroleum related hydrocarbons were discovered in groundwater. The overall remedial objective of this study is to meet the regulatory standards for groundwater with regard to the standard guidance values (SGVs) outlined in the New York State Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series (TOGS). Primarily halogenated volatiles dominate the contamination at the subject site but significant petroleum related hydrocarbons remain interior at the site within the groundwater. The simultaneous treatment of both halogenated and petroleum related volatile organic compounds (VOCs) via one (1) type of treatment method is the main objective discussed in the following PS Work Plan.

The proposed in-situ treatment method involves biological remediation by enhanced biological degradation. Micro@Bac International, an environmental biotechnology company, has been chosen as the soul provider of the proposed microbial degradation products to be used at the site. The primary target location for the use of these microbes will be in the area known as the “former dry-

cleaning equipment room”(referred to as the “equipment room” throughout). Significant chlorinated impacts have been discovered in this area with concentrations of tetrachloroethene (PCE) far exceeding the applicable standards. The treatment method proposed herein will aim to reduce chlorinated contamination and petroleum related contamination by employing a single tactical approach. See Attachment-A.

1.1 Site History

According to review of the City of New Rochelle records, as well as a review of historical Sanborn Fire Insurance Maps, the subject property was developed as early as 1891 with two residential-use buildings. The property was subsequently redeveloped with a multi-tenant two-story commercial building. The first floor and basement of the building have been utilized by Schmukler’s Dry Cleaners since around 1914. This business has historically operated on the first floor and in the basement of the building. Currently, the first floor of the building is being rented by United Community Center owned by Jackie A. The southern portion of the building is currently being rented by Comfort Homes. The second floor of the building provides professional space including: a spa, music studio, taxi cab company, HNJ Realty office and a financial company.

1.2 Site Description

Physical Site Description

Site Name: Schmukler’s Dry Cleaners
358 through 364 North Avenue, New Rochelle, New York
Owner: HNJ Realty, LLC
Location: 358 through 364 North Avenue, New Rochelle, New York
Latitude -73.784480", Longitude "40.914176"
Brownfield Cleanup Agreement Site No.: C360088
Index No.: A3-0542-0306

The subject property is located at an elevation of approximately 80 feet above mean sea level according to review of USGS Topographic Map, Mount Vernon Quadrangle (Figure 1). The subject property consists of a partial two-story/part one-story commercial building on a 0.21 acre parcel identified as the street addresses 358 through 364 North Avenue, New Rochelle, New York. The subject parcel (Site) is located in the City of New Rochelle, County of Westchester. The property is assessed as 0.21 acres in size and improved with a commercial building constructed in 1914. The owner of record of the subject property is HNJ Realty, LLC¹. An addition was made to the western portion of the building circa 1937. An addition was also made to the southwestern portion of the building sometime prior to 1987. A final addition was made to the northwestern portion of the building (which includes the steam boiler) in 1987.

1.3 Adjacent Property and Land Use

The subject property is located within a mixed commercial/residential use area. Properties along North Avenue are predominantly occupied for commercial use, with some maintaining residential apartments above. Commercial uses dominate areas within one block east and west of North Avenue. Beyond this one block area, residences are the prevailing land-use.

The following businesses are located to the north of the subject site on the west side of North Avenue: 366 Real Estate Company; 360 Family Dentistry. Located on the southern side of Lockwood Avenue heading to the west the following businesses are noted: 2 Lockwood, Mattress Dealer; 6 Lockwood, Cabinet Store; 8 Lockwood, LB Inc Swimming Pools.; 10 Lockwood, Modern Press; 12 Lockwood, LBI. Located to the direct west is 17 May Street which is mainly a residential complex. To the south on the west side of North Avenue is Love Music Inc.

¹According to the information provided by the client.

1.4 Public Water Supply

Public water is provided to the subject property by United Water New Rochelle. No on-site potable or dry cleaning or washing make-up supply wells, active or inactive, were observed during the inspection. According to information provided by United Water, the supply source is surface water that is purchased from the New York City Department of Environmental Protection (NYCDEP). The three sources of the New York City supply that is utilized includes the Croton, Catskill and Delaware Aqueducts. The Central Avenue and little Catskill pump stations supply the day to day demands to the system.

1.5 Surface Water and Hydrogeology

According to the Surficial Geology Map of New York Lower Hudson Sheet produced by the University of the State of New York; State Education Department, 1989, the subject property is located within an area of New York where the surficial geology is defined as glacial till. The till is described as variable texture (e.g., clay, silt-clay, boulder clay), usually poorly sorted, which was deposited beneath glacial ice. The till is generally characterized by mixtures of relatively impermeable loamy matrix-to-sandy in areas underlain by gneiss or sandstone. The thickness of the till varies between one and 50 meters.

The subject property is located in the eastern portion of the City of New Rochelle and groundwater flow direction could not be determined from published information. As groundwater is not used as a potable water source in the Site vicinity, current groundwater quality data are very limited. No water table elevation maps are available for the City of New Rochelle. However, given both the surface and bedrock topography in the area (which generally slopes down toward the Long Island Sound), groundwater flow in unconsolidated deposits and/or upper weathered bedrock is likely easterly-southeasterly, toward the Long Island Sound. A groundwater flow survey was conducted at the site as part of the supplemental remedial investigation activities utilizing all available overburden wells and bedrock wells. The results of the survey concluded that groundwater appears to be moving in a south-easterly direction.

Due to the heavily developed nature of the immediate surrounding area, groundwater quality is expected to be regionally degraded. No surface water bodies are located on, adjoining or proximate to the subject property. Ferris Creek and The Long Island Sound are located approximately 3,250 feet to the east/southeast of the subject property. According to Freshwater Wetland, National Wetland Inventory, Westchester Wetlands and Tidal Wetlands data available on the Westchester County GIS System, there are no regulated wetlands on or adjoining the subject property.

2.0 SUMMARY OF SITE CONTAMINATION

Historic data collected over the past several years has indicated the presence of chlorinated VOCs and petroleum related VOCs at the subject site in groundwater. The former dry-cleaning equipment room has been the main source area for chlorinated contamination and continues to be the main focus of our remedial efforts. An SVE/SSDS combo remediation system has been in operation since approximately the winter of 2009 and has been removing volatiles from the sub surface around the clock. The SVE/SSDS system is geared heavily towards the dry cleaning equipment room and the basement. The system also extends to the rear of the building focusing on the former dry-well where substantial PCE was found in GW-9 at 25,000 ppb. Concentrations of PCE have been discovered in GW-4 as high as 830,000 ppb and TCE as high as 58,000 ppb in groundwater beneath the dry-cleaning equipment room. (note: These concentrations are from the August 2007 RI). The active SVE/SSDS system has likely reduced these numbers since the system's inception during the winter of 2009. Please see Figure-3 for historical data discussed above. In December of 2008 MW-3 (located in the equipment room) was sampled and lab data indicated that PCE had a concentration of 26,000 ppb, TCE at 6,000 ppb, DCE at 2,400 ppb and Vinyl Chloride (VC) at 430 ppb. Samples were also collected during November of 2009 from MW-3, just prior to the start-up of the SSDS/SVE system, and PCE was recorded at 75,000 ppb, TCE at 4,000, DCE at 4,100 ppb and VC at 250. Nearly four years later, during August of 2012, PCE concentrations in MW-3 have been reduced to 18,000 ppb, TCE was significantly reduced to 810 ppb, DCE was recorded at 1,400 ppb and VC at just 61 ppb. This is most likely attributed to the active and ongoing SVE/SSDS system installed during the winter 2009 volatilizing VOCs from the shallow water table. The basement area had some levels of PCE detected in groundwater but nothing close to the levels found in the

equipment room. A total of three (3) groundwater samples (GW-1, GW-5 and GW-6) were collected from the basement. GW-1 collected in the northeast corner did not detect PCE, GW-6 to the west of this location detected PCE at 310 ppb and GW-5 collected at the center of the southern basement wall detected PCE at 150 ppb. The concentrations in the former dry-cleaning equipment room are far more severe as levels have been discovered at nearly one million parts per billion. Chlorinated VOC levels totaled approximately 10,000 ppb in the basement with the majority of the contamination consisting of DCE (8,700 ppb) in GW-6.

Petroleum related contamination has been found throughout the site in groundwater, mainly in the basement and the former dry-cleaning equipment room. Petroleum constituent levels have been detected as high as 890 ppb (1, 3, 5 trimethylbenzene) in the equipment room and 670 ppb (naphthalene). The source of these impacts is unknown but speculation as to the origin of the source widely differs. Regardless of the source origin remedial efforts provided in this work plan will address all significant petroleum related contamination at the site.

3.0 REMEDIAL ACTION OBJECTIVES

Based upon the NYS TOGs document PCE, trichloroethene (TCE), dichloroethene (1-2 DCE) have a water quality standard of 5 ug/L or ppb. VC or vinyl chloride has a water quality standard of 2 ppb. Benzene has a standard value of 1 ppb, but many if not most of the petroleum related constituent standard values are 5 ppb. The goal of the proposed pilot study is to reduce groundwater contamination within the source area (former cleaner equipment room) to the extent practicable with regard to the applicable standards listed above.

4.0 PROPOSED PLAN

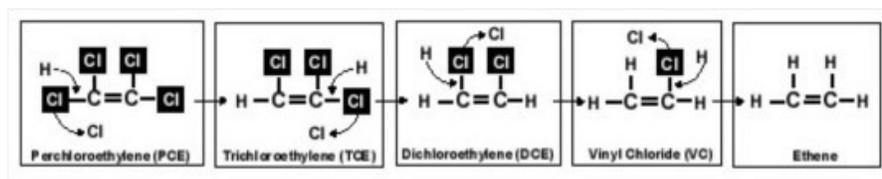
The proposed remedial measure to be undertaken at the subject property involves treatment of both chlorinated VOCs and petroleum related VOCs by enhanced bioremediation. The use of bacteria (microbes/bac-t or M-1000H®) and Tri-Phasic® 12 (nutrients), is proposed to help stimulate the degradation process where the proper naturally occurring microbes may be lackluster or nonexistent.

The applied microbes produce enzymes that break down petroleum products and halogenated compounds, digest it, utilize it as a food source and after they've broken it all down, they die and go away. This remedial method of introducing bac-t and nutrients to a contaminated aquifer has been widely recognized by the environmental industry throughout the United States when treating hydrocarbon and chlorinated solvent spill incidents. This pilot study will provide a unique and exclusive opportunity to treat chlorinated solvent and petroleum impacted groundwater, simultaneously, through enhanced bio-degradation. The following section will give a brief overview of the chemical processes that are undergone when remediation takes action and the process of accelerated degradation. The subsequent sections will provide information regarding dosage amounts and the proposed method for the installation of the microbes. Please see Attachments-C and D.

4.1 Biological Process and Historical Evidence

The proposed microbial treatment method will seek to enhance two (2) processes that occur naturally in nature. These naturally occurring biological processes are known as anaerobic (absence of oxygen) and aerobic (oxygen present) biodegradation. Initial field parameters such as pH will be measured prior to the application process to assure that pH levels are within the optimal range of 5-9. Additional baseline field parameters measured will include: dissolved oxygen (D.O), ORP, temperature and conductivity.

Anaerobic degradation is the process of adding hydrogen (an electron donor) to soil or groundwater to increase the number and vitality of microorganisms that perform reductive dechlorination on chlorinated contaminants. The most common chlorinated contaminants found in groundwater are PCE, TCE, DCE, and VC. During this process anaerobic microbes substitute hydrogen (H) for chlorine (Cl) on chlorinated contaminant molecules, thus dechlorinating the compound. The illustration below exhibits the chemical breakdown process that is undergone during dechlorination.



As seen in this illustration the ending result of the degradation process leaves only ethene behind which is a non-toxic substance.

Aerobic degradation is the process in which oxygen (an electron acceptor) is added to soil or groundwater to increase the number of natural micro organisms performing biodegradation. Oxygen is widely considered by many to be the primary growth limiting factor for hydrocarbon degrading bacteria, however, it is normally depleted in zones that possess petroleum hydrocarbon contamination. During this process oxygen is used as a receptor for electrons in aerobic respiration, as it makes for a good receptor for electrons. Once the oxygen receives the electrons, it then converts them into water.

Each of these naturally occurring processes discussed above will be greatly enhanced by the addition of the proposed micro bacteria and nutrients. JVS has used Micro®Bac products on multiple projects and has been largely successful with the use of microbes for aerobic applications to petroleum contaminated environments. After only one (1) or two (2) applications of bac-t and nutrients, JVS has observed concentration levels significantly decline at sites where hydrocarbon levels far exceed the levels we are presented with at this site.

Micro®Bac International has had an enormous amount of success at sites where environmental conditions exhibited petroleum and chlorinated contamination. In a laboratory study conducted by Micro®Bac scientists groundwater samples were collected in order to conduct a four (4) week biodegradation study. This study concluded that at the end of four (4) short weeks PCE contamination was reduced from 49,000 ppb to less than 5 ppb through the use of the M1000H bacteria strand. Please see the case study as Attachment-B.

4.2 Quantitative Calculations

The proposed bac-t and nutrients are proposed to be applied in the source area of the former dry-cleaning equipment room. Since this work plan is being proposed on a pilot scale, this is the only area that will currently receive treatment.

Approximately one (1) gallon of M1000H is required to treat <10,000 ppb of petroleum hydrocarbons and two (2) gallons of M1000H is used to treat every <10,000 ppb of chlorinated VOC per four (4) cubic yards (yd³). Each gallon of bac-t installed requires a nutrient chaser subsequent to the bac-t install. Nutrients are provided in one (1) gallon containers for which each one gallon container gets pre-mixed with 55 gallons of water (H₂O). Four (4) gallons of this H₂O/nutrient mixture will be applied for each one (1) gallon of bac-t applied.(i.e. 10,000 ppb of total PVOCs occupied in an area that measures 10 yd³ would require; 2.5 gallons bac-t, 10 gallons nutrient/H₂O mix).

Based upon closely estimated concentration values in the pilot study area (MW-3 PCE at 18,000ppb, TCE 810 ppb, DCE at 1,400 ppb), the table below illustrates the application dosage required in the source area:

Treatment Area	M1000H (bac-t)	Nutrient/H ₂ O Mix	Number of Applications
Former Dry Cleaning Equipment Room (MW-3)	5 gallons M1000H	20 gallon nut./h ₂ O	1 application event

During the initial application event JVS will closely observe the manner in which the sub-surface takes to the application. The information gained from the first application event will aid in determining the vadose and saturated zones load capacity.

4.3 Application Procedure

In order to apply the bac-t and nutrient mix to the contaminated source area, JVS will utilize existing well MW-3 as the application well for the pilot test. Current site conditions are not conducive to installing additional wells in the former dry cleaning equipment room at this time. The former cleaner room is now a fully operational business with fully renovated office space and wall to wall

carpeting throughout. Considering the location of MW-3 and the fact that it is a fully viable well, this makes for ideal conditions to perform this pilot study. If the pilot study is a success, then future plans will have to be made in order to install additional application wells.

Baseline groundwater data for MW-3 has indicated elevated chlorinated VOCs (approximately 20,000 ppb) and small amounts of Benzene breakdown products (xylenes, ethylbenzenes), which we expect to fully degrade through one application event.

Before, during and post application of the bacteria and nutrient installment, nearby newly installed monitoring wells (see section 4.4) in the vicinity of the treatment zone will be gauged for depth to groundwater (DTW). Off-site bedrock wells will also be monitored before, during and post application in order to evaluate the potential for on-site contamination to migrate off-site. Before treatment, static water level measurements will be recorded to establish baseline readings. During the installment process nearby monitoring wells in the vicinity of MW-3 will be gauged for DTW (every five (5) minutes) to ensure that the water level does not rise too quickly. If a substantial increase in the water table elevation is observed the application process will cease. The application procedure will only continue when water level readings have returned or are close to pre-application water table levels.

The actual installation of the bacteria and nutrients is very simple. A small submersible pump is connected to a clean 1/4" piece of poly-tubing which is used to draw the bacteria solution from a small 5 gallon container. Poly-tube is then lowered to the bottom of the well and the pump is turned on, dispersing the bacteria into the groundwater at a very low flow rate. The minimal pressure generated from the pump allows for the solution to disperse vertically and laterally throughout the contaminated aquifer. The nutrient mix is prepared separately as discussed in section 4.2 and applied in the same manner as the bacteria at a low flow rate. Please see Figure-5 pilot study area.

During the application event in the source area the SSDS/SVE system will be temporarily shut-down. Special monitoring requirements will be adhered to during this time as discussed in section 7.0, specifically the last paragraph.

4.4 Supplemental Monitoring Wells

Due to the limited access available at the site and the fact that the site has active residences occupying the building, additional monitoring well installations will be minimal. Since MW-3 is going to be utilized as a temporary application well, two (2) monitoring wells (Figure-6a) will be installed in the area exterior to the rear of the building in order to monitor water levels in the former dry-well area. The well specifications include: 10' of (1") PVC riser pipe and 5' of (1") PVC 0.02" slot screen. Each well will have a 2' bentonite seal above the screened interval and finished at grade surface with a 5" stainless steel manhole cover, cement sealed to prevent surface water infiltration. Two (2) additional monitoring wells will be installed near the western wall of the southern basement section and downgradient of the treatment area in the direction of groundwater flow. The well specs include: 2' of 2" PVC 0.02" slot screen, 2' of 2" PVC riser to grade, sealed and finished at grade (basement floor approximately 8' below ground surface) with a flush mounted, 5" stainless steel manhole cover. (Figure-6b). These wells will be utilized to monitor the former dry-cleaning equipment room located directly adjacent to the western wall and downgradient of the treatment area. Please refer to Figure-4 for the proposed locations and current locations of the monitoring wells. Note that the anticipated depths of the proposed wells will depend on the depth to bedrock in select areas. All efforts will be made to attain these depths unless bedrock refusal is encountered before reaching the anticipated depth. If bedrock refusal is encountered, wells will be installed to the top of the bedrock formation.

4.5 Chemical Handling, Staging and Storage

The M1000H will be stored off-site, at our facility, prior to the application event. M1000H is a natural, non-pathogenic, non-engineered biological product that meets Environmental Protection Agency (EPA) requirements for release into the environment. Special clothing or equipment is not required for handling M1000H.

5.0 MONITORING EFFECTIVENESS

Prior to the conduct of the pilot injection event, a groundwater sample will be collected from the newly installed monitoring wells and MW-3. These samples will be analyzed for VOC's plus ethene with the purpose of establishing baseline concentrations in order to gauge the level of effectiveness of the pilot plan, versus the ongoing vapor extraction remedy. Monitoring wells BW-2 and BW-4 will also be sampled in order confirm contamination does not migrate to off-site locations.

Monitoring the post-injection effectiveness of the treatment will be a key factor in determining the need for additional treatment. If necessary, supplemental applications of bac-t and nutrients will be conducted in order to reduce groundwater contamination levels to the extent practicable with regard to acceptable TOGs standards. Routine sampling of the new monitoring wells, MW-3, BW-2 and BW-4 will be conducted on a monthly basis. Analyzation of the following parameters will be conducted on a monthly basis: dissolved oxygen, oxygen reduction potential, total organic carbon, pH, temperature, iron, methane and sulfate. The new monitoring wells, MW-3, BW-2 and BW-4 will also be sampled by EPA method 8260 (VOCs) with ethene, in order to analyze chlorinated and petroleum related VOC levels. The first sampling event will take place one (1) month after the last treatment event and a second sampling event will be conducted two (2) months after the last treatment event. The lab data results will be used to determine the need for additional bacteria applications. If additional treatments are required the same procedure will follow the supplemental applications with regard to the well sampling. If contamination levels after the first treatment event show a decline in contaminant concentrations, sampling events should be adjusted and performed on a quarterly basis. Moving from monthly sampling to quarterly sampling will require approval from the Department.

6.0 HEALTH AND SAFETY

All Micro-Bac® products are natural, non pathogenic, and are not genetically engineered. They were developed by Micro® Bac's research and development laboratories and are manufactured under strict quality guidelines with batch and lot control. No special clothing or equipment is necessary to

handle the product. Micro-Bac® products meet United States Environmental Protection Agency (USEPA) requirements for release into the environment.

In order to ensure the safety of our workers and staff involved with the treatment procedure JVS will adhere to the Occupational Safety and Health Administration (OSHA) guidelines. During the installment procedure JVS field technicians and staff will be equipped with Level D personal protective equipment (PPE). Level D OSHA guidelines require the following PPE:

- Eye protection- wear goggles or face shield (splash prevention)
- Head- hard hat when required
- Respiratory- Use dust respirator approved by NIOSH/MSA
- Hands- Wear neoprene gloves
- Feet- Wear steel-toe boots with chemical resistant soles or neoprene covers
- Clothing- Long sleeve shirts and long pant legs. Consider using Tyvek body suit or coveralls

Please refer to Attachment-E for M1000H material safety and data information.

7.0 COMMUNITY AIR MONITORING PLAN (CAMP)

A generic CAMP has been developed and is included as Attachment-F. The CAMP discusses established monitoring requirements that are employed during all ground intrusive activities in order to protect off-site receptors including: residences and businesses, and on-site workers not directly involved with the subject work activities.

As part of the PSWP involves work located within 20' of potentially exposed individuals or structures, special requirements will be followed in order to monitor and prevent this exposure. These special requirements are discussed below:

Special Requirements for Work Within 20 feet of Potentially Exposed Individuals or Structures

Since work areas will be within 20 feet of potentially exposed populations in adjacent occupied rooms within the building, the continuous monitoring locations for VOCs and particulates will reflect the nearest potentially exposed individuals and the location of ventilation system intakes for

nearby adjacent occupied rooms. The use of engineering controls such as vapor/dust barriers, temporary negative pressure enclosures, or special ventilation devices will be prepared and readily available to prevent exposures related to the work activities and to control dust and odors. Consideration will be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or off-work hours in non-residential settings. The following requirements will be adhered to during the indoor portion of the planned work:

-If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring will occur within the occupied structure(s). Background readings in the occupied spaces will be taken prior to the commencement of the planned work and any unusual background readings will be discussed with the NYSDOH prior to the commencement of the work.

-If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceeds 75 mcg/m³, work activities will be suspended until controls are implemented and are successful in reducing the total particulate concentration to 75 mcg/m³ or less at the monitoring point.

During indoor work activities all individuals not directly involved with the planned work will be absent from the former dry-cleaning equipment room where the work is to take place. Dust/Vapor barriers will be installed at all openings/archways/doorways within the work area that connect adjoining/occupied rooms. Monitoring points will be established on the opposite sides of the Dust/Vapor barriers to ensure compliance with the above mentioned concentration thresholds for VOCs and particulates. If necessary, engineering controls will be readily available if concentration values for VOCs and particulates are in exceedance of the applicable thresholds mentioned above.

Readily available engineering controls will include a vent fan, which would be exhausted to the outside air in order to remove VOCs and particulates from the indoor work area. The outside exhaust

point would then be monitored to comply with the regulations set forth in the generic CAMP included as Attachment-F.

Additional Monitoring Requirements

Due to the fact that the building is occupied and direct receptors to potential exposures exist, indoor air sampling will be performed while the SSDS/SVE combo system is shutdown during the application procedure. Air sampling will be conducted with the use of a six (6) liter stainless steel summa canister affixed with a flow control set to collect air at a rate not exceeding 0.2 liters per minute. The sample container will be placed near the CAMP monitoring points opposite the wall where the treatment is being performed. Sample analysis will be conducted by a New York State ELAP certified laboratory for testing by EPA method TO-15, volatile organic compounds with category-B deliverables. All lab data will be validated by a New York State certified third-party lab validator. To ensure the SSDS/SVE system is operating properly, confirmatory air sampling will be conducted thirty (30) days after the system has been re-started. The same testing protocol will be followed as mentioned above.

8.0 PROJECT SCHEDULE AND REPORTING

Upon the NYSDEC's approval of this PS WP JVS will prepare to mobilize to the site within four (4) to six (6) weeks of the approval date. This will allow time for materials to be ordered and shipped directly to JVS. The NYSDEC will be given at least seven (7) days notice prior to the initial start date. The remedial work is anticipated to take between 2-4 working days.

A comprehensive report detailing the events that took place during the conduct of the PS WP will be issued to the Department within 6 weeks after the final monitoring well sampling event. The comprehensive report will include but not limited to the following items:

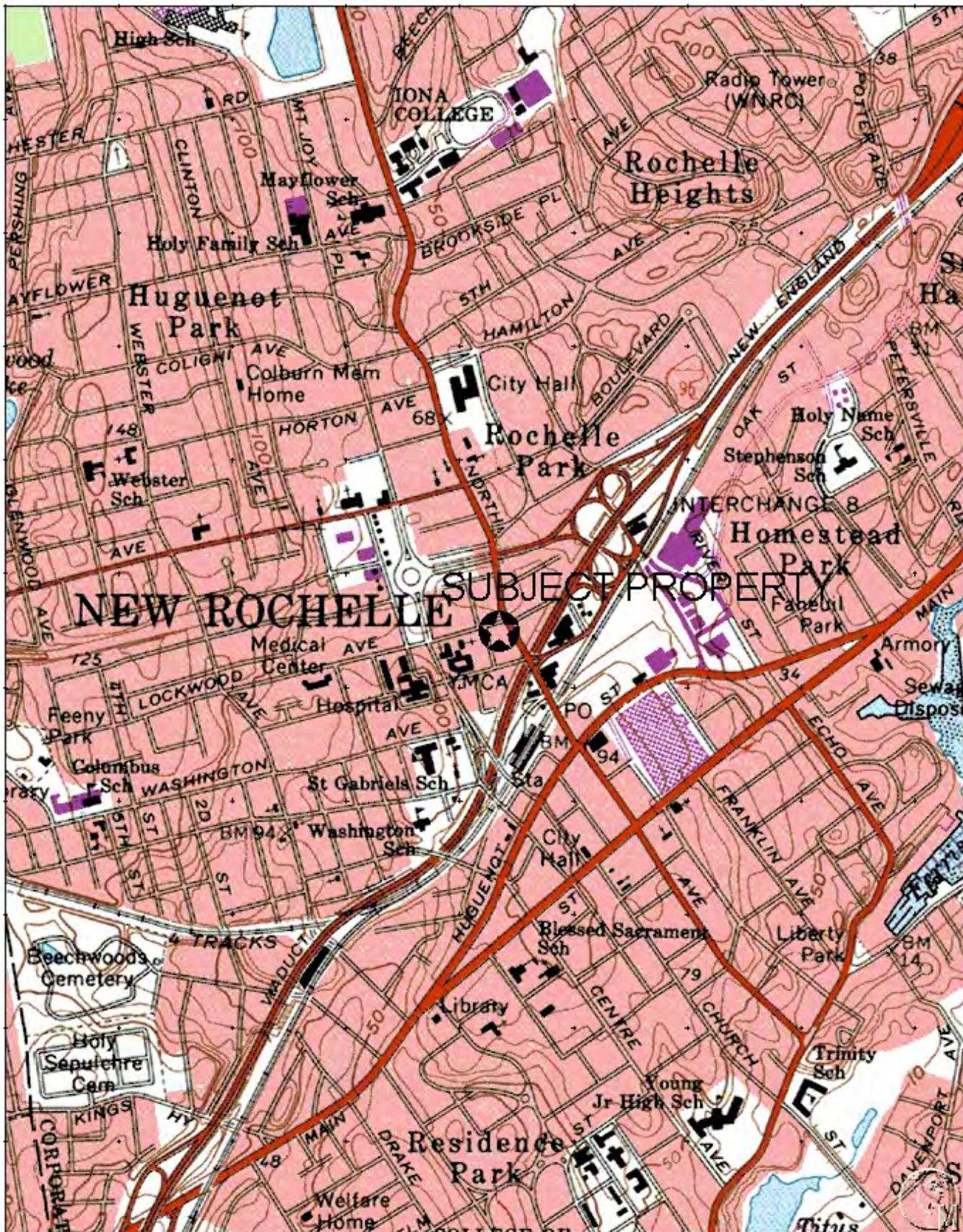
- Precise dosing amounts of bac-t and nutrients installed
- DTW readings recorded during the treatment event

- Laboratory data results from monitoring wells associated with the pilot study
- Graphs, tables, spreadsheets and charts depicting lab data
- A comparative discussion which outlines pre and post application conditions
- A discussion on the effectiveness of the pilot study and whether or not a full-scale treatment plan will be proposed or an alternative pilot study using a different product will be proposed

9.0 CONCLUSION

In conclusion, JVS believes that this particular site is a great candidate for biological treatment due to the relatively shallow water table and underlying bedrock . These geological features should provide an ideal set of circumstances for achieving rapid success. The use of monitoring well MW-3 to apply the microbes will prove to be a major asset based on the current site conditions, access and the fact that it resides in the heart of the source area.

FIGURES



Copyright © 1997, Maptech, Inc.

Remedial Investigation Report November 2007

Figure 1- Site Location

Schmuklers Cleaners
358 - 364 North Avenue
New Rochelle, NY
Site #C360088
Index# A3-0542-0306

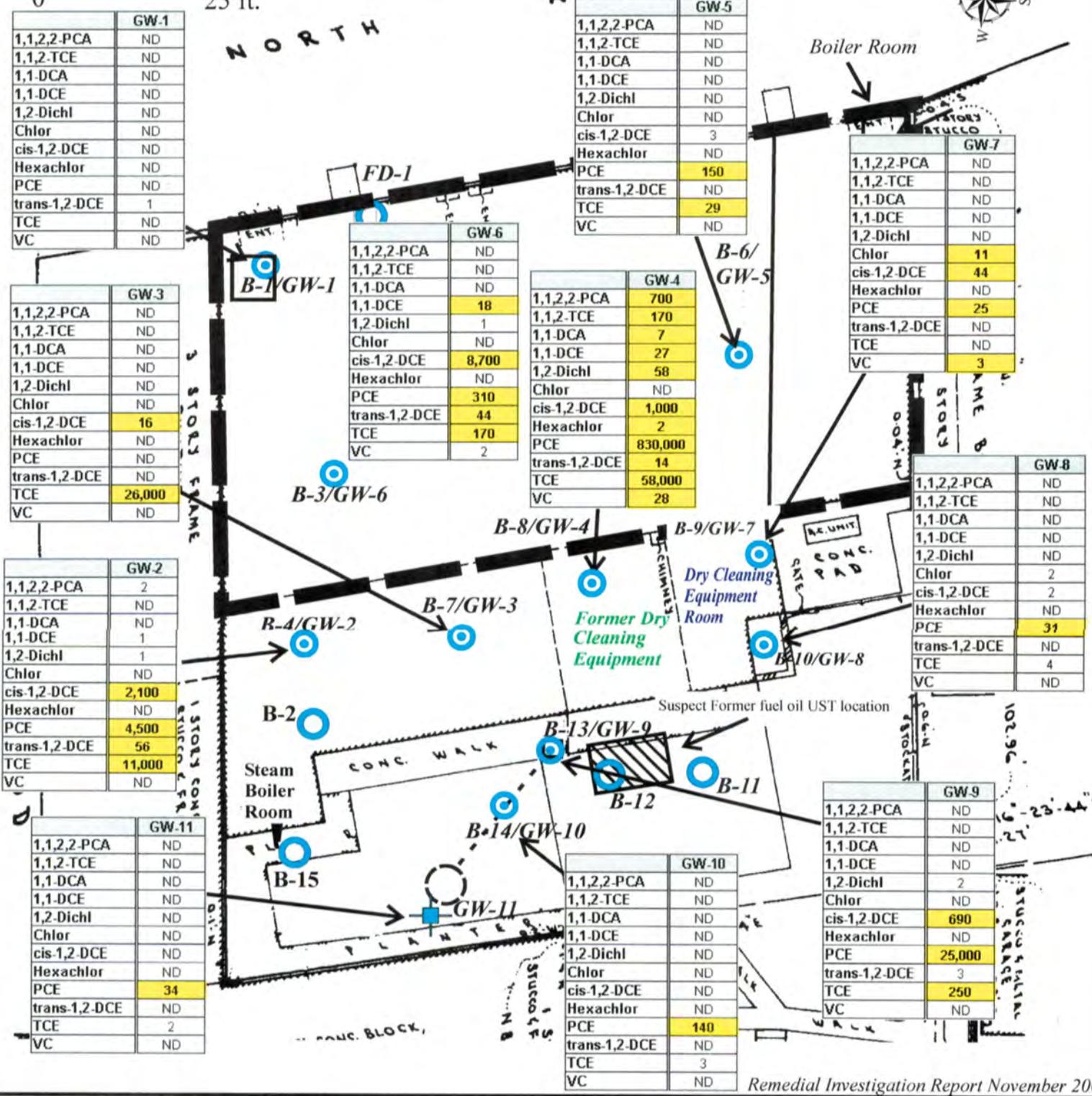


BERNINGER ENVIRONMENTAL INC.

groundwater consultants and geologists
 90 B Knickerbocker Avenue Phone # (631) 589-6521
 Bohemia, New York 11716 Fax # (631) 589-6528

Scale: 0 25 ft.

NORTH AVENUE



1,1,2,2-PCA- 1,1,2,2-Tetrachloroethane; 1,1,2-TCE- 1,1,2-Trichloroethene; 1,1 - DCA - 1,1-Dichloroethane; 1,1-DCE- 1,1-Dichloroethene; 1,2-Dichl- 1,2-Dichlorobenzene; Chlor - Chloroethene; cis-1,2-DCE - cis-1,2-Dichloroethene; Hexachlor- Hexachlorobutadine; PCE- Tetrachloroethene; TCE - Trichloroethene; VC - Vinyl chloride

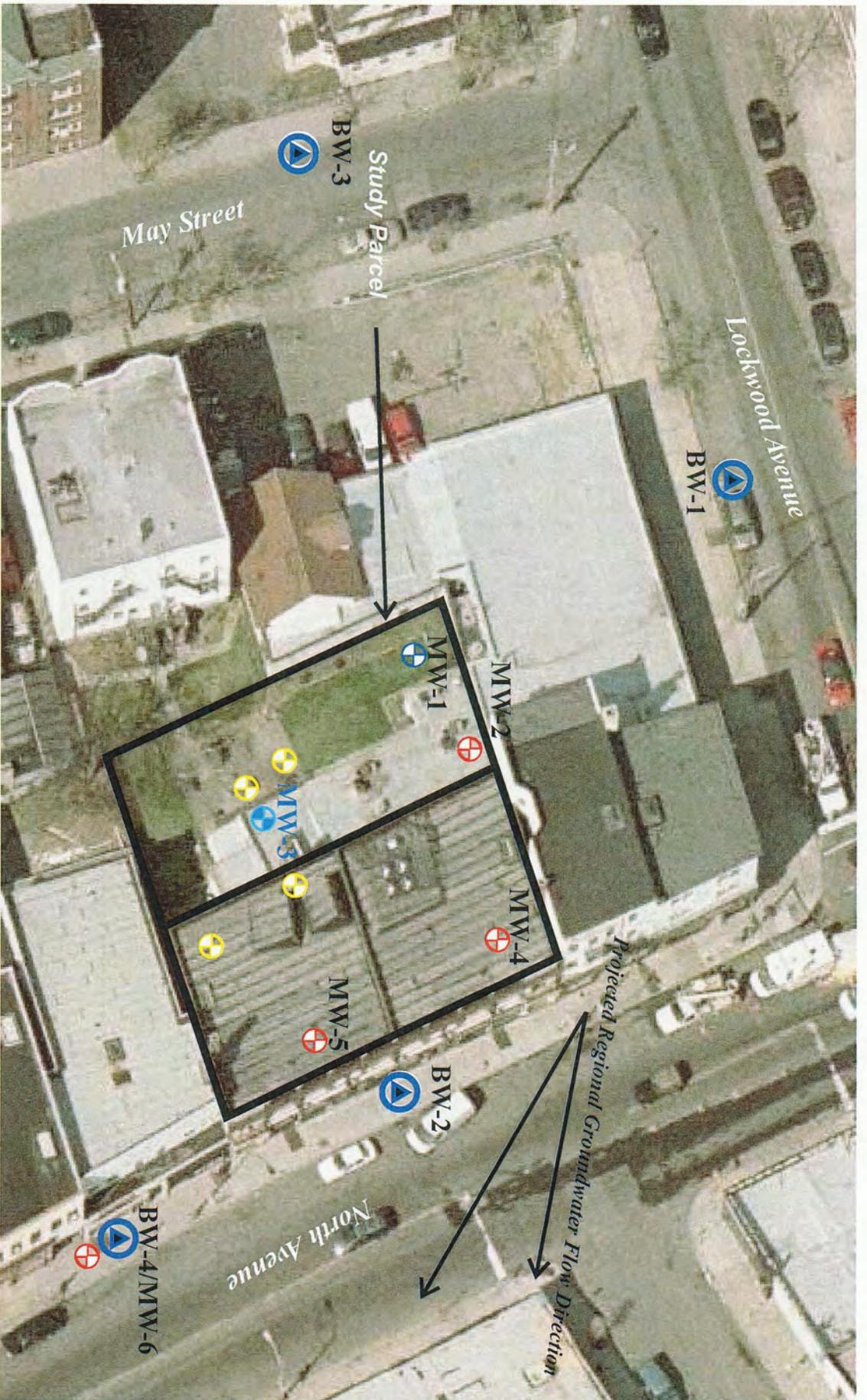
Bolded and highlighted concentrations are indicative of VOC detected at concentration exceeding applicable NYSDEC Class GA Groundwater Standards and/or Guidance Values

- Basement Portion of the Building - Soil Only Sampling Location - Soil and groundwater sampling locations - Groundwater Only Sample Location

Figure 3 - Halogenated VOCs detected in Groundwater Samples in micrograms per liter (ug/L)

Schmuklers Cleaners
358 - 364 North Avenue
New Rochelle, NY
Site #C360088
Index# A3-0542-0306

John V. Soderberg P.E.
P.O Box 263
Stony Brook, NY



⊕ -Proposed Application Well Location MW-3

⊕ -Proposed Monitoring Well Locations

⊕ -Viable Existing Monitoring Well

⊕ -Non-Viable Existing Monitoring Well

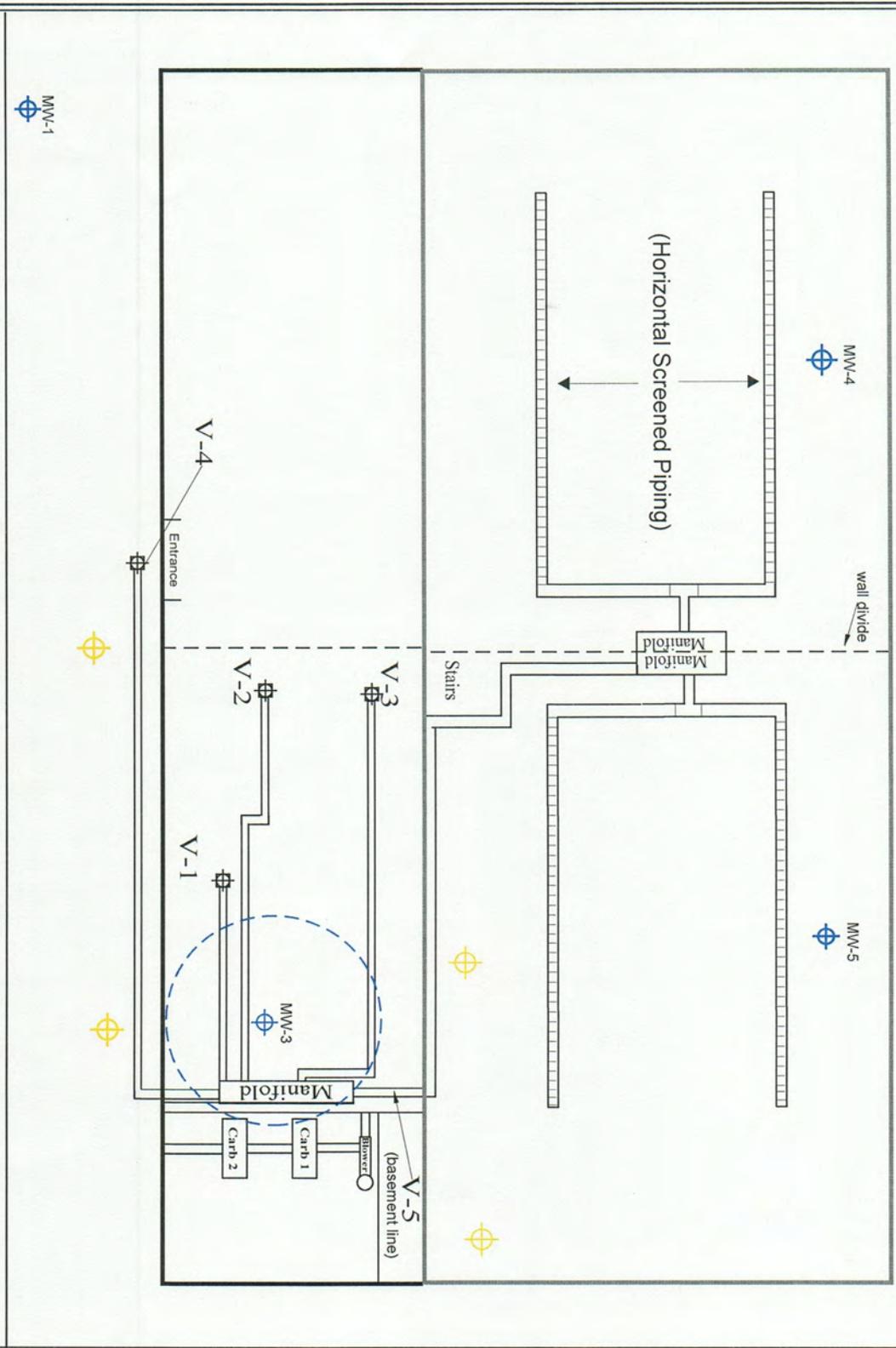
⊕ -Bedrock Monitoring Well

Proposed Monitoring Existing Well Locations

Figure-4

Schmuklers Cleaners
 358 - 364 North Avenue
 New Rochelle, NY
 Site #C360088
 Index# A3-0542-0306

John V. Soderberg P.E.
 P.O Box 263
 Stony Brook, NY



John V. Soderberg P.E

P.O Box 263

Stony Brook, NY

Schmuklers Cleaners

358-364 North Ave.

New Rochelle, NY

Site# C360088

Figure-5

Key

- Basement Area
- ⊕ Vapor Extraction Well
- ⊕ Existing Monitoring Well
- ⊕ Proposed Monitoring Well
- Area of Proposed Pilot Study

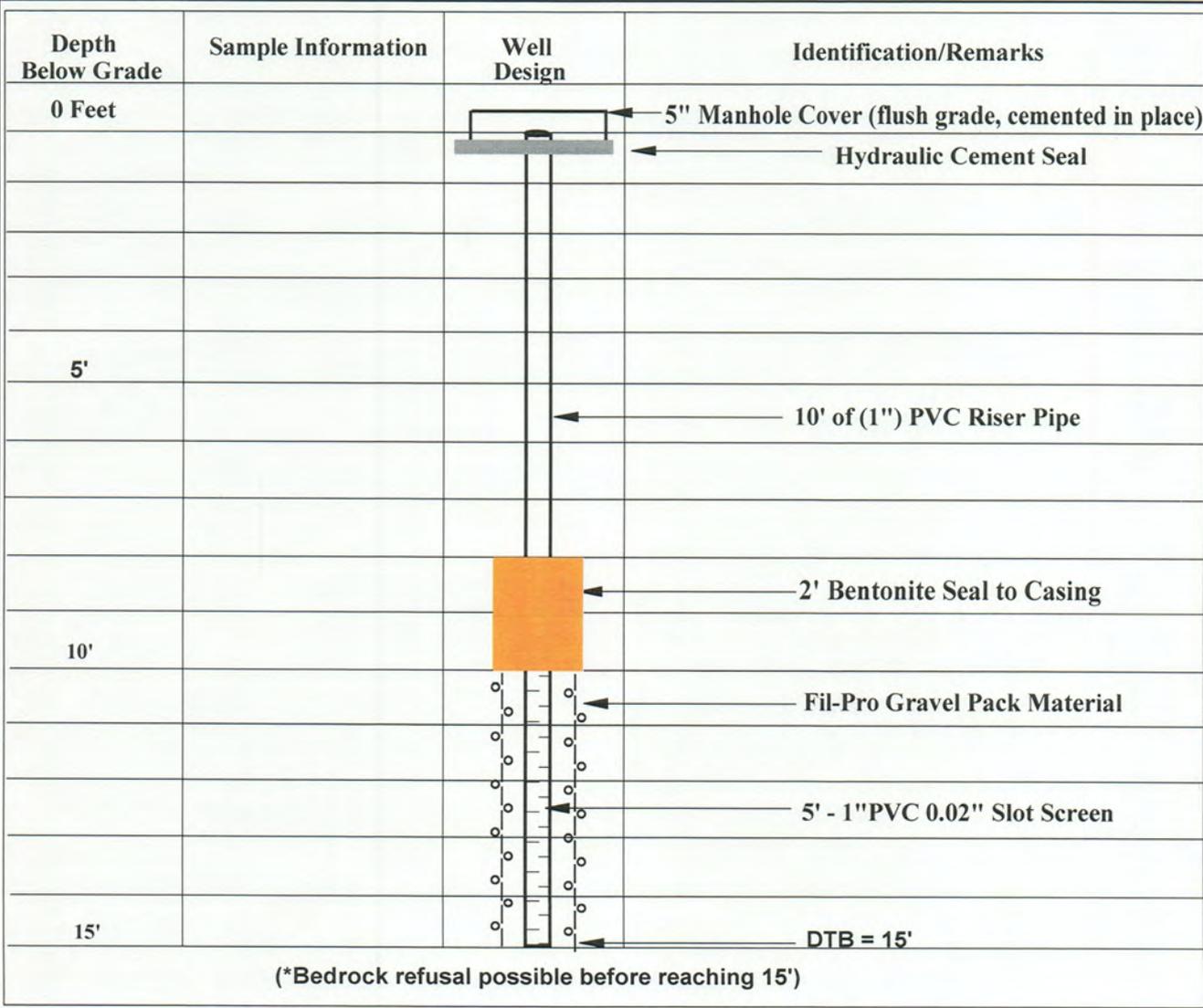
John V. Soderberg P.E
 PO BOX 263
 Stony Brook, NY

Figure - 6a

Drawn By: JHG

Specs for MWs

Project: Schmuclers Dry Cleaners	Date: June 2015
Client: HNJ Realty LLC. 358-364 North Ave. New Rochelle, NY	Be Job No.: _____
Location: Rear of building	Operator: Butch
Well No.: TBD Use: Monitoring	Bore Hole Dia: 2.25"
Install Method: Geoprobe direct push	Sample Method: n/a
Casing Type: PVC Casing Dia: 1" Casing Length: 10'	Depth to Water: n/a
Screen Type: PVC Screen Dia: 1" Screen Length: 5'	Total Depth: 15'
Screen Slot: 0.02" Gravel Pack: #2 Fil-pro	Security: 5" Manhole
Casing Seal: Cement Finish: Cement flush	



John V. Soderberg P.E
 PO BOX 263
 Stony Brook, NY

Figure -6b

Drawn By: JHG

Specs for MWs

Project: Schmuklers Dry Cleaners	Date: June 2015
Client: HNJ Realty LLC. 358-364 North Ave. New Rochelle, NY	Be Job No.:
Location: Rear of building	Operator: Butch
Well No.: TBD Use: Monitoring	Bore Hole Dia.: 2.25"
Install Method: Manual Hand Auger	Sample Method: n/a
Casing Type: PVC Casing Dia.: 2" Casing Length: 2'	Depth to Water: n/a
Screen Type: PVC Screen Dia.: 2" Screen Length: 2'	Total Depth: 4'
Screen Slot: 0.02" Gravel Pack: #2 Fil-pro	Security: 5" Manhole
Casing Seal: Cement Finish: Cement flush	

Depth Below Grade	Sample Information	Well Design	Identification/Remarks
0 Feet			<p>5" Manhole Cover (flush grade, cemented in place)</p> <p>Hydraulic Cement Seal</p>
			2' of (2") PVC Riser Pipe
			1' Bentonite Seal to Casing
			Fil-Pro Gravel Pack Material
			2' - 2" PVC 0.02" Slot Screen
4'			DTB = 4'

(*Wells to be installed in basement)

Bedrock refusal may be encountered before anticipated depth

ATTACHMENT

Attachment-A

Micro Bac International Brochure

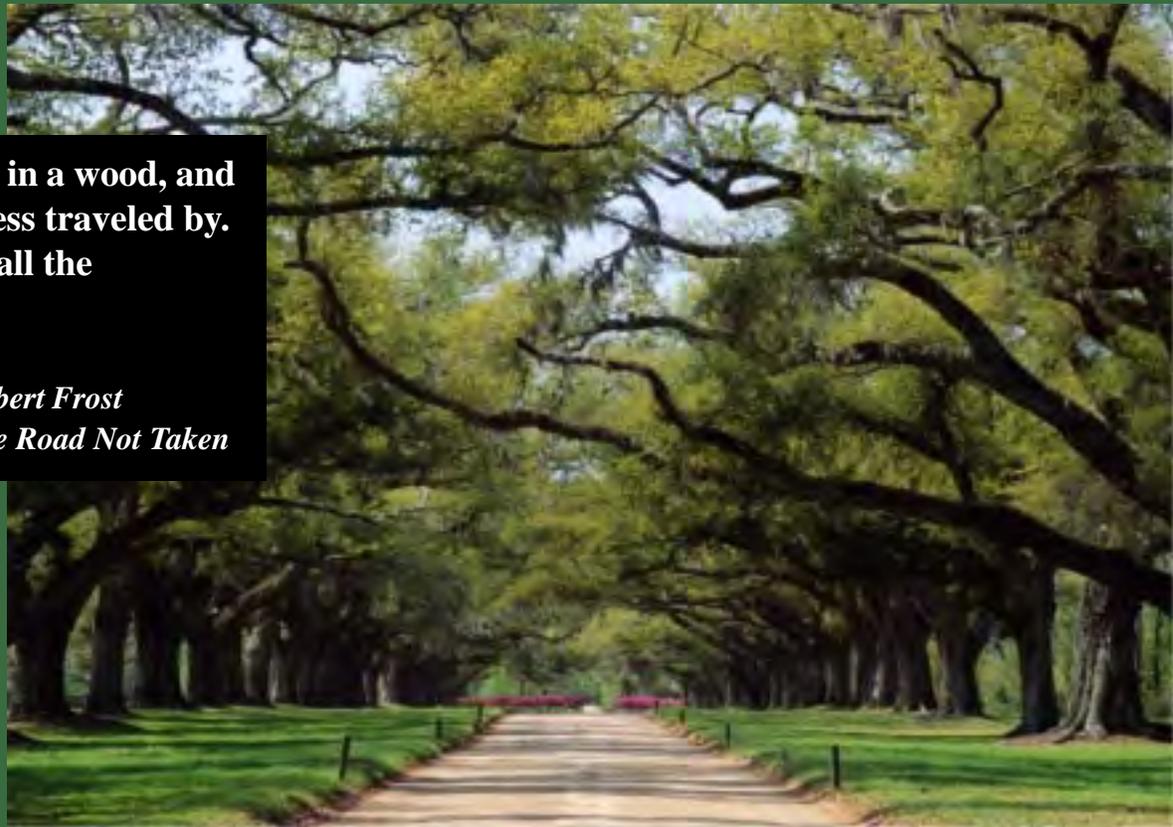
Leading
The New Direction



Micro-Bac International Inc.®

**“Two roads diverged in a wood, and
I -- I took the one less traveled by.
And that has made all the
difference.”**

*Robert Frost
The Road Not Taken*



When Micro-Bac International Inc.® set out in 1979 to improve the environment and enhance the accessibility to the world’s energy reserves, they had little more than a conscience and a vision. Today, Micro-Bac continues to create global solutions for our resource-strapped planet. From the critical issues with water and wastewater, to the detrimental effects of environmental contamination, to the challenges of efficient petroleum production, Micro-Bac is committed to solving these problems with innovative and environmentally friendly solutions. And that first step has made all the difference.

A Commitment to Innovation

Developing solutions for a marketplace that is fast approaching \$1 trillion requires not only constant innovation, but a dedication to a new way of thinking. Toward this goal, Micro-Bac R & D teams are firmly committed to new ideas such as Green Integrated Technologies. By recognizing the value of integrating other key technologies, Micro-Bac ensures that new product development creates compatible and synergistic solutions for us all.



Unlocking the Secrets of the Universe

The key to solving the world's environmental and energy problems is apparent to those researchers who truly understand the dynamics of environmental biotechnology. Micro-Bac has spent decades compiling and maintaining one of the most extensive environmental culture collections in the world. Micro-Bac scientists continue to discover new biological solutions from the myriad that can be expressed under the diverse conditions that exist in the environment.



“The secrets to environmental solutions are ours for the taking.”



Biotechnologies

Micro-Bac technologies are successfully being used in the following markets:*

- ◆ Oil Production
- ◆ Reservoir Stimulation
- ◆ Refinery and Terminal Services
- ◆ Paraffin and Scale Control
- ◆ Fracture Damage Repair
- ◆ Tank Cleaning
- ◆ Bioremediation
- ◆ Municipal Wastewater Treatment
- ◆ Industrial Wastewater Treatment
- ◆ Grease Trap Maintenance
- ◆ Food Processing Waste
- ◆ Waste Odor Control
- ◆ Animal Waste Degradation
- ◆ Animal Health

* Box color represents product line color

SOLUTIONS WITH A CONSCIENCE

Oil Production



Paraffin & Scale Control



Tank Cleaning



Terminal Services

Frac Damage Repair



NASA Commercial Technology Spinoff



Soil & Groundwater Clean-up



Bioremediation



Wastewater Remedies

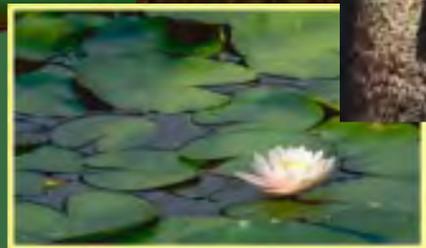


Grease Digestion and Trap Maintenance



Degradation of Food Processing Wastes

Animal Waste Solutions



A Global Marketplace



Strategically located business interests throughout the world.

Micro-Bac has developed an impressive list of partnerships around the world that share our vision. It is the mission of the business development group to seek out those individuals which exemplify the entrepreneurial spirit and those businesses that realize the value in sharing strategies, time and resources.

Information

As advances in Information Technology rapidly unfold, Micro-Bac will continue to develop its seamless business and distribution channels. Using both internet and intranet capabilities, our goal is to link partners, distributors, industries and customers with the latest information, the best products and the most innovative platform from which to build business.

A Formula for Success



Today more than ever, businesses need to build strong relationships to stay competitive.

From distributors to joint ventures to strategic alliances, Micro-Bac continues to refine its business models for success. All Micro-Bac distributors are trained both technically and in business development to ensure long term success and greater market growth.

A Full Service Company



Leading the New Direction

The new direction requires us to address the Earth's diminishing resources with a dynamic consortium of science, business and vision. Micro-Bac is at the forefront of this revolution by combining biological innovation and information technology to develop safe, alternative solutions for cleaning up the environment.

The new direction has just begun and Micro-Bac is leading the way.



Micro-Bac International Inc.
3200 N. IH 35 • Round Rock, TX 78681
Ph: 512-310-9000 • Fax: 512-310-8800
Email: mail@micro-bac.com • Web: www.micro-bac.com

Attachment-B

Lab Case Study



M-1000H★ Biodegradation Lab Study

SUBSTANCE: PCE Contaminated water

TESTING: Groundwater samples were obtained to perform a four week biodegradation study. The study was conducted such that each sampling point had a sterilized sample, a control sample, and test samples with bacteria only, with nutrients only, and with bacteria and nutrients.

The samples were incubated at 35°C in containers sealed to minimize any volatilization. Samples were analyzed by U.S. EPA method 8260 for volatile organics.

RESULTS: The following compounds were found in the samples: 2-butanone, acetone, benzene, ethylbenzene, m,p xylenes, methylene chloride, o-xylenes, t1,2 dichloroethene, tetrachloroethene (PCE), toluene, and trichloroethene. No vinyl chloride was detected in any sample prior to treatment.

The principal contaminants found were 2-butanone (methyl ethyl ketone) at 12,000 micrograms per liter and tetrachloroethene (PCE) at 49,000 micrograms per liter. All other contaminants were in the in the 200 micrograms per liter or less range. Volatilization appeared to be minimal as levels of 2-butanone and methylene chloride in the control were maintained throughout the incubation period.

Good evidence for biodegradation of the various pollutants was found. The M-1000H★ treated samples consistently produced levels lower than the uninoculated controls. The level of biodegradation ranged from >99% for 2-butanone to >97% for tetrachloroethene by week four. (see table below)

		<u>2-butanone</u>	<u>tetrachloroethene</u>
	Starting concentrations	12,000	49,000
Day 7	Control	10,000	17,000
	Bacteria	<100	4,000
Day 14	Control	14,000	270
	Bacteria	<100	11
Day 21	Control	9,200	27
	Bacteria	<100	<5
Day 28	Control	12,000	210
	Bacteria	<100	<5

Methylene chloride exhibited the least amount of biodegradation (19% decline), and by week four was the only pollutant out of eleven still detected in the samples. Vinyl chloride was not detected in any of the samples following treatment.

Attachment-C

M-1000H Product Information

MICRO-BAC INTERNATIONAL, INC.
3200 N. IH-35
ROUND ROCK, TX 78681-2410
(512) 310-9000 fax (512)310-8800

MATERIAL SAFETY DATA SHEET

Section 1. Identification

Tri-Phasic Nutrient #12

Section 2. Identity Information / Composition

Hazardous Components

Phosphates, Potassium, Nitrogen Compounds

Common Name

Same

Section 3. Physical Characteristics

Specific Gravity

1.35-1.50

Boiling Point

>100°C

Melting Point

N/A

Solubility in Water

Water Soluble

Appearance and Odor

Rich chocolate brown liquid when suspended.
Product settled in three phases after prolonged storage, faint chemical odor

Section 4. Fire and Explosion Hazard

Flash Point

N/A

Flammable Limits

N/A

Extinguishing Media

N/A

Special Fire Fighting Procedures

N/A

Unusual Fire and Explosion Hazards

None

Section 5. Reactivity Data

Stability

Stable

Incompatibility

Reducing Agents

Conditions to Avoid

Extreme Conditions

Hazardous Decomposition or Byproducts

Nitrogen Oxides

Section 6. Health Hazard Data

Routes of Entry

Skin, Ingestion

Carcinogenicity (NTP or IARC)

N/A

Signs and Symptoms of Exposure

If ingested, may cause gastric and/or intestinal upset, may cause irritation to skin or eyes

Emergency and First Aid Procedures

Eye or Skin Contact: Flush with clean water for 10 minutes

Ingestion: Do not induce vomiting; Drink plenty of water

Section 7. Precautions for Safe Handling

Material Release or Spillage

Clean with soap and water

Waste Disposal Method

Flush with clean water

Handling and Storage Precautions

Avoid contact with skin and eyes

Ventilation Required

None

Respiratory Protection

None

Personal Protection

Rubber, plastic, or cloth gloves

Work/Hygienic Practices

Routine

MICRO-BAC INTERNATIONAL, INC.
3200 N. IH-35
ROUND ROCK, TX 78681-2410
(512) 310-9000 FAX (512)310-8800

MATERIAL SAFETY DATA SHEET

Section 1. Identification

M-1000H★

Section 2. Identity Information / Composition

Hazardous Components

None (TSCA 40 CFR 710.4 b)

Common Name

Microbial Product: Naturally occurring microorganisms

Section 3. Physical Characteristics

Specific Gravity

1.02

Boiling Point

100°C

Melting Point

0°C

Solubility in Water

Water Soluble

Appearance and Odor

Light Pink to Tan Liquid with Moderate Odor

Section 4. Fire and Explosion Hazard

Flash Point

NA

Flammable Limits

NA

Extinguishing Media

NA

Special Fire Fighting Procedures

None

Unusual Fire and Explosion Hazards

None

Section 5. Reactivity Data

Stability

Stable

Incompatibility

None

Conditions to Avoid

Extreme Conditions

Hazardous Decomposition or Byproducts

None

Section 6. Health Hazard Data

Routes of Entry

Ingestion; Eye Contact

Carcinogenicity (NTP or IARC)

None

Signs and Symptoms of Exposure

May Cause Gastric and/or Intestinal Upset

Emergency and First Aid Procedures

Ingestion: Do Not Induce Vomiting; Drink plenty of water

Eye Contact: Flush with clean water for 10 minutes

Section 7. Precautions for Safe Handling

Material Release or Spillage

Clean up with soap and water or with disinfectant

Waste Disposal Method

Flush with clean water

Handling and Storage Precautions

Store in tightly closed original container at temperatures between 13°C to 32°C

Ventilation Required

None Required

Respiratory Protection

None Required

Personal Protection

None required; use of gloves and safety glasses suggested

Work/Hygienic Practices

Routine

Attachment-D

Tri-Phasic-12(Nutrients)



● TECHNICAL DATA TRI-PHASIC 12™ BIOLOGICAL STIMULANT

General Description

TRI-PHASIC 12™ is a proprietary blend of vitamins, minerals and organic nutrients used to stimulate microbial activity in product applications for Micro-Bac® International biological products where indigenous nutrients are insufficient to support optimal microbial activity. Such applications include bioremediation of contaminated soil and water. TRI-PHASIC 12™ may also be used in the remediation of oligotrophic waters and tank bottoms. By lowering the carbon/nitrogen ratio, biodegradation is enhanced and mineralization is promoted. TRI-PHASIC 12™ is supplied in an easy-to-use colloidal liquid form that flows and is freely soluble in water. It is designed to be used in conjunction with Micro-Bac® International products such as M-1000H*™.

Product Formula

TRI-PHASIC 12™ contains all the major and minor mineral compounds as well as defined vitamins required by the specific microorganisms used in the Micro-Bac® International products. It supports maximal activity of these microorganisms under both aerobic and anaerobic conditions.

Product Specifications

Color	dark brown layers
pH concentrated	circa 4.3
pH diluted	5-8
Shipping Size	1 gal. container
Odor	mild
Wt. per Gal.	11.4 lbs.
Specific Gravity	1.30
Solubility	> 2 gal. per 100 gal water

Dosage

Micro-Bac's® technical staff can provide dosage recommendations based on the design and volumes of the project site. For example one container of Tri-Phasic 12™ nutrient is generally used with 50 cubic yards of contaminated soil.

Application

TRI-PHASIC 12™ is generally dissolved in water at a rate of 1 container per 55 gallons. It is generally applied after and occasionally simultaneous with microbial treatments.

Handling & Safety

TRI-PHASIC 12™ is a natural product that meets EPA requirements for release into the environment. Special clothing and equipment are not required for handling TRI-PHASIC 12™ although contact by inhalation or touch should be avoided and the use of gloves and a dust respirator is suggested. Routine hygiene should be observed.

Shipping

TRI-PHASIC 12™ is shipped in a one gallon container, F.O.B. Round Rock, Texas

Service

When the use of TRI-PHASIC 12™ is indicated through testing, Micro-Bac® provides technical support and treatment design to its customers.

©Micro-Bac® International, Inc. • 3200 N IH 35 • Round Rock, TX 78681-2410

(512)310-9000 • Toll-Free (877)559-1800 • Fax (512)310-8800 • E-mail: mail@micro-bac.com • Website: <http://www.micro-bac.com>

Attachment-E

M-1000H MS/MSD



● TECHNICAL DATA

M-1000H★™

FOR THE DEGRADATION OF
CONTAMINATED SUBSTANCES

General Description

M-1000H★™ is a biological product designed and formulated for the broad spectrum degradation of a variety of compounds found in contaminated and/or hazardous wastes. These compounds include simple aromatics such as benzene, toluene, ethyl benzene, and xylenes, as well as more complex aromatics like naphthalene, chlorinated compounds, and benzo-a-pyrene. Alkane mixtures, including transport fluids (gasoline and diesel), are also degraded. A variety of chlorinated aliphatic and aromatic compounds such as trichlorethene and chlorinated benzenes and biphenyls (PCBs) are also degraded. This product has been used successfully in a variety of *in-situ* and *ex-situ* applications.

M-1000H★™ consists of live, specially selected, biologicals and biochemicals, along with a supply of balanced nutrients in a ready-to-use liquid medium.

These microorganisms thrive in a variety of site conditions with diverse soils and various water chemistries. They are capable of using many of the listed hazardous waste chemicals as a carbon source.

Specifications

Color	light pink to tan
pH	6.5-8
Weight per gallon	8.51 lbs.
Specific gravity	1.02
Freeze point	32°F
Viscosity	1.30 cps - 60°F
Odor	mild organic

Application

M-1000H★™ can be applied to contaminated or hazardous substances in numerous ways. For soil applications, the product can be sprayed, or the soil can be reduced to a slurry and circulated with added product. For vadose zone or groundwater applications, the product can be applied into wells or infiltration galleries. Often the addition of specially-formulated nutrients can be used to augment the activity of the product in conditions where macro nutrients such as carbon, nitrogen, or phosphate are limited. A good monitoring program is critical to the success of any bioremediation project.

Handling and Safety

M-1000H★™ is a natural, non-pathogenic, non-engineered biological product that meets EPA requirements for release into the environment. Special clothing or equipment are not required for handling M-1000H★™. Routine hygiene should be observed.

Shipping

M-1000H★™ is shipped in two sizes: in 5-gallon containers (45 lbs), and in 55-gallon containers (495 lbs), F.O.B. Round Rock, Texas.

Service

When the use of M-1000H★™ is indicated, Micro-Bac International provides technical support services to its customers.

Attachment-F
CAMP

BROWNFIELD CLEANUP PROGRAM

COMMUNITY AIR MONITORING PLAN

FOR

HNJ REALTY LLC.

FOR

FORMER SCHMUKLERS CLEANERS

358 - 364 North Avenue, New Rochelle, New York

Site No.: C360088

Index No.: A3-0542-0306

PREPARED BY

John V. Soderberg

P.O BOX 263

Stony Brook, NY

April 2015

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3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS.	Page 02
3.1 Potential Corrective Measures and VOC Suppression Techniques.....	Page 03
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1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for work activities to be performed under the Pilot Study Work Plan at the Former Schmuklers Cleaners site located at 358-364 North Avenue in New Rochelle, New York. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from investigative activities at the site.

Compliance with this CAMP is required during all ground intrusive activities that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include, but are not limited to; boring, remedial, soil and groundwater sampling activities. This CAMP has been prepared to ensure that the work activities do not adversely affect passers by, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of work-related contaminants to off-site areas.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air;
- New York State Department of Environmental Conservation Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

Chlorinated and Petroleum related volatile organic compounds (VOCs) are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during the investigation activities is through real-time VOC and air particulate (dust) monitoring. Since work areas will be within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. In order to rule out any potential exposures to nearby receptors, the immediate work area will be isolated and monitoring points will be established outside of the work area where the potential for exposure exists.

2.1 Meteorological Data

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

2.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. In this case, the work area is within 20 feet of potentially exposed populations and occupied structures, so perimeter monitoring points will be located to represent the nearest potentially exposed individuals within the building.

Fugitive respirable dust will be monitored using a MiniRae Model PDM-3 aerosol monitor (or equivalent). Air will be monitored for VOCs with a portable Mini Rae photoionization detector (PID), or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan.

3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment

appropriate to measure the types of contaminants known or suspected to be present.

The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report will be completed.

3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remediation activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- collection of purge water in covered containers ;
- storage of excess samples and soils in drums or covering with plastic;

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during boring activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM₁₀) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter (1 g/m³). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 1 g/m³ above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- If the downwind PM-10 particulate level is 100 1 g/m³ greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 1 g/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 1 g/m³ above the upwind level, work must be stopped and an evaluation of activities initiated. Work can resume provided that dust suppression measures (as described in Section 2.3.1 below) and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 1 g/m³ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report will be completed.

4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than $100 \mu\text{g}/\text{m}^3$ at any time during boring activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- Placement of soils in drums or covering stockpiles with plastic;
- Misting of the boring area with a fine water spray from a hand-held spray bottle

Work may continue with dust suppression techniques provided that downwind PM_{10} levels are not more than $150 \mu\text{g}/\text{m}^3$ greater than the upwind levels.

There may also be situations where the dust is generated by boring activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below $150 \mu\text{g}/\text{m}^3$, or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

5.0 DATA QUALITY ASSURANCE

5.1 Calibration

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

5.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

5.3 Data Review

The SSO will interpret all monitoring data based upon the established criteria and his/her professional judgment. The SSO shall review the data with the PM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the PM.

6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.