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Final Engineering Report
Revonak Dry Cleaners
New Paltz, New York
NYSDEC Site No. 356021

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1.0 INTRODUCTION

Alpha Geoscience (Alpha) and Alpine Environmental Services, Inc. (Alpine) have prepared this Final Engineering Report on behalf of New Paltz Plaza Properties, L.P. and New Paltz Plaza, Inc. for the Revonak Dry Cleaner site located on Route 299 in New Paltz, Ulster County, New York (the site). The location of the site is shown in Figure 1. The site currently is listed as a Class 2 site in the New York State Department of Environmental Conservation (NYSDEC) registry of Inactive Hazardous Waste Sites (Site No. 356021). Investigations, remedial actions, and monitoring have been conducted under the NYSDEC Voluntary Agreement Program (Agreement Index No. W3-0782-97-10). The Agreement was executed in 1997 by and between the NYSDEC, and New Paltz Plaza, Inc. and New Paltz Plaza Properties, L.P.

This Final Engineering Report has been prepared and submitted in accordance with the requirements of the Voluntary Agreement for a final engineering report following site remediation. This report also satisfies the requirements for an engineering analysis and remedy selection, as specified in the NYSDEC Voluntary Cleanup Guide (Section 7). The objective of this Final Engineering Report is to describe the activities that have been completed to address the presence of volatile organic compounds (VOCs) in soil and ground water and to describe how the selected remedy is protective of public health and the environment for the contemplated use of the site (i.e., Restricted Commercial; shopping center).

2.0 BACKGROUND

2.1 Site Description and History

The site consists of a retail shopping plaza located in the New Paltz Plaza, approximately 0.3 miles west of the New York State Thruway on Route 299 in New Paltz, N.Y. The New Paltz Plaza lies within an area of commercial business within the Town of New Paltz. Several commercial establishments are present south of the plaza. A medical office building and the New York State Thruway are located east of the plaza. Residential portions of the Village of New Paltz are present to the west and an apartment complex is located adjacent to the plaza to the north. The Plaza consists of single story concrete block buildings and adjacent asphalt covered parking areas. Most of the area beyond the site buildings is paved asphalt parking, access roads and delivery areas for the plaza.

Figure 2 is a map of the eastern portion of the site where volatile organic compounds (VOCs) associated with the former Revonak dry cleaners were detected in soil and ground water. The Revonak dry cleaner was located in the space now occupied by Royal Cleaners. The site and most of the surrounding area are serviced by municipal water and sanitary sewers.

Overhead utility service runs along the eastern and northern boundary of the Plaza property, with overhead connections to the Plaza. The Plaza is served by municipal water lines, which are located under the asphalt pavement on the east and north sides of the Plaza. The sewer is located under the asphalt pavement generally on the east and north sides of the Plaza, with connections to the individual Plaza tenants.

2.2 Site Geology

Numerous soil borings, geoprobe borings, and monitoring wells have been installed to obtain subsurface information. Additionally, there have been numerous test pits excavated for both investigative and remedial purposes. The remediation program conducted in December 1997 consisted of removing impacted soil from an excavation measuring approximately 60 feet by 25 feet. Most of the excavation extended to bedrock and allowed detailed inspection of subsurface conditions.

The soil at the site consists of man-emplaced fill overlying natural soil. The thickness of the fill ranges from approximately 5 to 8 feet and consists of various layers of silty clay, clayey silt, and fine sand. The different soil types comprising the fill occur in separate layers and lenses. The underlying natural soil consists of glacial till comprised of dense to very dense, clayey silt to silt, with varying percentages of sand and gravel.

Bedrock consists of medium crystalline limestone interbedded with a slightly calcareous to non-calcareous shale. The depth to bedrock is relatively shallow and ranges from approximately 8 feet (BR-2) to 27 feet (BR-4) below surface. The surface of the bedrock slopes gently toward the northern end of the site. The relatively slow ground water recharge to bedrock wells at the site indicates that the bedrock posses a relatively low permeability.

2.3 Site Hydrogeology

The permeability of most of the soil at the site is generally low, as evidence by the relatively slow seepage of ground water into test pits and the December 1997 remedial excavation, and the moderate to slow recharge to monitoring wells. Ground water seepage was observed from lenses of sandy soil in the remedial excavation, suggesting that preferential flow paths are likely present through the coarse-grained fill materials. The natural glacial till underlying the fill possess a very low permeability as evidenced by the high density, relatively fine-grained matrix, and low moisture content.

Hydraulic conductivity values were measured in wells MW-2, MW-9, and MW-10 in February 2005. These wells are completed in the relatively coarser-grained materials encountered at each location. Most of the material in the vicinity of well MW-2 is sandy fill placed after the December 1997 remedial excavation was completed. Ground water flow velocities calculated from hydraulic conductivity values indicate that the ground water flow rate ranges from approximately 33 to 105 feet per year using average values for hydraulic gradient and porosity.

Ground water measurements completed by Alpha since January 1998 indicate that the direction of ground water flow in both the overburden and bedrock is north to northwest. Figures 3 and 4 are ground water contour maps for water levels measured on March 7, 2008 and are representative of the ground water flow direction for all dates measured since January 1998.

Measurement and calculation of the vertical hydraulic gradient at the overburden and bedrock well pairs indicates that the overburden and bedrock are hydraulically connected, and that the bedrock has a substantially lower hydraulic conductivity than the overburden. The direction of the vertical hydraulic gradient measured at the three well pairs has varied with time and location. This variation appears to be primarily associated with ground water levels that fluctuate more rapidly in the overburden than in the bedrock due to the higher hydraulic conductivity of the overburden. The change in ground water elevations and the vertical hydraulic gradient for the well pairs are shown on hydrographs in Appendix A. The hydraulic connection between the overburden and the bedrock is indicated by the similar rise and fall of the water levels in the well pairs.

2.4 Ground Water Use

The Plaza is served by the Town of New Paltz Water Department, which obtains its water from the Village of New Paltz water system. The Village water system is supplied by surface water reservoirs more than five miles from the site. Measurements of ground water levels on site since 1998 confirm that the ground water flow direction is to the northwest. The nearest downgradient discharge point for ground water from the site is the unnamed tributary to the Wallkill River, approximately 1500 feet (0.3 mi) north to northwest of the site where the stream crosses Old Mill Road (Figure 5).

NPPP agreed to conduct a survey of downgradient, off-site wells. Alpha performed a field reconnaissance on behalf of NPPP on February 26, 2002 to identify off-site wells downgradient of the site. The results of the field survey of homes to the north east and west of the site are shown on Figure 5. The only residences that are located downgradient in the flow path of ground water derived from the site are the apartment complex immediately north of the site, the residences on Old Mill Road and the residence located at 101 Henry W. Dubois Road.

Alpha observed fire hydrants and residential water meters along Old Mill Road and Henry W. Dubois Road indicating that the residences on these roads are served by public water. Alpha confirmed with the Town of New Paltz that residents at the apartment complex and at Nos. 1, 2, 3, 4, 5, 9, 10, 12, 13 and 15 Old Mill Road and 101 Henry Dubois Road (Figure 5) are served by public water. The residences on Old Mill Road north of the unnamed tributary to the Wallkill River (No.s 25, 26 and 27) appear to have private wells. The Town of New Paltz confirmed that these residents are not supplied with water by the Town. Ground water from the site is expected to eventually discharge to the stream at Old Mill Road (Figure 5) before it would reach wells on the north side of the stream.

A well survey consisting of a review of a USGS well database and interviews with public works officials previously was performed by other consultants as part of a focused site remedial investigation. The survey indicated that four ground water wells are located within one mile of the site. One of the wells is downgradient of the site and the remaining wells are upgradient or cross-gradient from the site. The downgradient well reportedly is a domestic well approximately one-half mile northeast of the site. The well is 111 feet deep and the depth to water is approximately 15 feet below grade. The depth of the well suggests that it is completed in bedrock. The precise location of the well identified during this early well survey is unknown. It is Alpha's opinion that ground water from the site would not reach this well because of its depth and distance from the site.

The NYSDEC and New York State Department of Health (NYSDOH) previously investigated the location of off-site wells and collected samples from selected wells for laboratory analysis of VOCs. The NYSDEC initially identified 23 wells along North Putt Corners Road. Information obtained by the NYSDEC regarding these wells is presented in Table 1. North Putt Corners Road is cross-gradient (east) of the site and is not downgradient based on measurements of ground water levels to define flow directions on numerous dates since 1998 (Figure 5). No tetrachloroethylene (PCE) or related compounds were detected in the samples collected by the NYSDOH. The NYSDOH subsequently collected ten samples from nine off-site, residential wells in March and June 2000. A summary of the wells that were sampled by the NYSDOH is presented in Table 2.

The wells sampled on Pine Crest Drive are not downgradient of the site, as indicated on Figure 5. The specific name and address of two of the three wells sampled by the NYSDOH on North Putt Corners Road were omitted by the NYSDOH for confidentiality purposes during the freedom-of-information process. Regardless, the three wells located on North Putt Corners Road are cross-gradient (west) of the site (Figure 5) and are not downgradient. One sample collected by the NYSDOH was identified as Dubois Lane (Table 2). The residence number was omitted on the sampling report provided by NYSDOH; therefore, the exact sampling location is unknown. Nonetheless, no PCE or related compounds were detected in the samples collected by the NYSDOH.

The results of the off-site well survey indicate that there are no ground water users between the site and the location where ground water in the unconsolidated materials likely discharges to the unnamed tributary to the Wallkill River. The absence of ground water users downgradient of the site confirms that there is no human exposure to contaminants in the ground water.

2.5 Contemplated Site Use

The property was developed for commercial use in the late 1960s and has been used as a commercial shopping plaza since that time. The property is zoned for commercial use by the Town of New Paltz and development on the property is consistent with the zoning and long-term use of the property as a commercial shopping plaza. There are no plans to use the site for purposes other than the current use.

3.0 PREVIOUS INVESTIGATIONS AND REPORTS

Available information and documents indicate that the NYSDEC initially became involved with this site in early 1991 when a ground water monitoring program was initiated as a result of the discovery of a petroleum product discharge. The petroleum was released from an underground storage tank and piping associated with a former supermarket on the shopping center premises. December 1991 ground water sampling results indicated that chlorinated VOCs were present, in addition to petroleum constituents. Specifically, PCE and trichloroethylene (TCE) were identified and attributed to the dry cleaning tenant within the shopping center. A 0.05 acre area associated with the dry cleaning tenant was subsequently listed as Site No. 356021 in the New York State Registry of Inactive Hazardous Waste sites as a Class 2 site, priority 3 (low priority).

New Paltz Plaza Associates, LLC became involved with the site investigation circa 1995. Numerous investigations have been completed on behalf of both the former and current owners. Investigation, remediation and monitoring on behalf of the current owner was performed pursuant to a NYSDEC Order on Consent (Index No. W3-0667-93-11). Investigations included a soil gas survey, soil borings and soil sampling, test pits, temporary well installation, ground water sampling and analysis, floor drain survey, sewer line investigation and a soil probe investigation of soil and ground water. These investigations did not identify a discrete, continuing source area of contaminated soil. The following table lists the environmental investigations, remediation, monitoring, and reporting that has been completed.

Chronology of Investigations, Remediation and Monitoring
Revonak Dry Cleaner Site

DATE	EVENT/DESCRIPTION
December 1991	PCE and TCE detected in groundwater monitoring wells.
April 1994	Focused Remedial Investigation (FRI) Plan prepared
November 1994	Phase I Environmental Site Assessment for New Paltz Plaza
April 1995	Soil gas survey, floor drain investigation, soil and ground water sampling
August 1995	Additional source investigation (geoprobe); soil and ground water sampling
March 1996	Additional source investigation results
February 1997	Test Pit Investigation
October 1997	Remediation Plan for New Paltz Plaza
June 1998	Petroleum Remediation Report

June 1998	Remediation Report
Aug. 1998 – Feb. 1999	Quarterly Ground Water Monitoring Reports
April 1999	Soil Gas Investigation Report
March 2001	Monitoring Well Installation Plan
May 2001	Revised Ground Water Monitoring Plan
September 2001	Geoprobe Wells Installation and Sampling Results
January 2001	Petroleum Investigation Report
January 2002	Supplemental Report; well pair installation and ground water sampling
April 2002	Contingency Plan; identifying potential remedial measures
June 2002	Ground Water Monitoring Report; May 15, 2002 sampling event
October 2002	Annual Ground Water Monitoring Report; August 15, 2002 monitoring event
October 2002	Contingency Plan Addendum
March 2003	Source Investigation Report
November 2003	Annual Ground Water Monitoring Report; August 21, 2003 sampling event
February 2004	HRC Injection Report
August 2004	Ground Water Sampling Report; May 2004 sampling event
November 2004	Annual Ground Water Monitoring Report; August 2004 sampling event
January 2005	Sub-Slab Depressurization System Design
June 2005	Ground Water Sampling Report; November 2004 & February 2005 events
August 2005	Sub-Slab Depressurization System Installation Report
November 2005	Annual Ground Water Monitoring Report; August 2005 sampling event
December 2005	Sub-Slab Vapor Sampling Report (December 21, 2005)
December 2005	Expanded HRC Injection Plan and Ground Water Monitoring Plan
January 2007	Expanded HRC Injection Report
January 2007	Ground Water and Soil Vapor Monitoring Report (August – December 2006)
April 2007	Quarterly Ground Water Monitoring and Soil Vapor Monitoring Report (Jan-Mar 2007)
June 2007	Phytoremdiation Completion Report
October 2007	Annual Ground Water and Soil Vapor Monitoring Report (August 2007)

Remedial measures were performed to address contamination associated with the historical disposal of dry cleaning fluids at the site. A source removal action (i.e., soil excavation) was performed in December 1997. A pilot program of HRC injection was performed in November 2003 in the area of highest ground water contamination followed by an expanded HRC injection program in September 2006. A sub-slab depressurization system was installed in June 2005 to address concerns raised by the New York State Department of Health (NYSDOH).

A phytoremediation program, consisting of planting hybrid poplar trees, was completed during the spring of 2007. The objective of the phytoremediation is for the poplar trees to remove residual VOCs from the ground water at the downgradient boundary of the property. Ground water monitoring has been performed to assess the effectiveness of the source removal. The effect of these remedial actions has been to minimize or eliminate exposure pathways or significant risks to the public or the environment under the conditions of the contemplated use of the site (i.e. Restricted Commercial; shopping plaza).

4.0 REMEDIAL MEASURES

4.1 Remedial Action Objective

The remedial action objective is to minimize or eliminate identified exposure pathways or significant risks to the public or the environment, to the extent they exist, under the conditions of the contemplated use of the site (i.e. Restricted Commercial; shopping center). This objective was met by implementing remedial measures that reduce the toxicity, mobility or volume of contaminants, monitoring the environmental media after implementing the remedial measures, and continuing to operate the sub-slab depressurization system.

4.2 Soil Excavating and Removal

A soil investigation program was completed in February 1997 to evaluate the nature and extent of impacted soil. Soil excavated during this program was analyzed and placed in rolloff containers for offsite disposal in conjunction with the soil removal action described below. A comprehensive report of the test pit investigation program was submitted to the NYSDEC in February 1997.

Contaminated soil was excavated in the area of highest VOC concentrations as a source removal remedial action after completing the test pit investigation program. The objective of this remedial action was to remove and dispose soil which may have been a continuing source of ground water contamination. The criteria for soil remediation were the levels specified in NYSDEC DHWR TAGM 94-4046, Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994. Remedial excavating of the areas outlined in the Remediation Plan for New Paltz Plaza, dated

October 27, 1997, was performed during the period from December 2 through December 12, 1997. The results and conclusions of this remedial action were submitted to, and approved by, the NYSDEC in the June 1998 Remediation Report.

The remedial excavation covered an area approximately 900 square feet and extended to the top of bedrock, approximately seven to nine feet below ground surface. Figure 2 depicts the outline of the excavated area relative to other surface features. The extent of the excavation was limited to the west by the building and to the northwest by a water main. Some soil was necessarily left in place to support utilities that transected the excavation area.

Approximately 223 tons of soil from the February 1997 test pit investigation and the December 1997 soil removal action were transported and disposed at ESMI of New York. Analysis of soil samples collected from the remedial excavation by both portable GC and the laboratory demonstrated that concentrations of solvent-related VOCs were below the NYSDEC TAGM 4046 soil cleanup objectives and are below the more recent 6NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives. A map showing the locations of post-excavation soil samples and a summary table of the soil analytical results from the June 1998 Remediation Report are presented in Appendix B.

Approximately 10,000 gallons of water was generated from excavation dewatering, and well development and purging activities. The water was evacuated into a vacuum truck and transported by MC Environmental Services, Inc. to Mobil Oil Corporation, Glens Falls Wastewater Treatment Plant, Ira Conklin & Sons, Inc., or Paradise Oil for disposal.

The results of ground water monitoring following the soil removal action in December 1997 indicated that concentrations of VOCs had decreased, but remained at levels greater than the New York State Ground Water Standards in some wells.

4.3 Evaluation of Remedial Alternatives

An evaluation of remedial alternatives was performed to identify remedial measures that would be most appropriate to further reduce VOC concentrations in ground water if concentrations did not continue to decrease after the source removal action. The objective of the evaluation was to identify the most appropriate technologies to effectively reduce the toxicity, mobility or volume of contaminants based on the known site conditions. The evaluation also was performed to select the most cost-effective remedy that would provide the greatest environmental benefit within a reasonable timeframe. The analysis focused on active technologies with the potential of achieving the remedial objectives within a period of five to ten years. Passive technologies that would not achieve the remedial objectives within a reasonable period of time were not evaluated. A range of available technologies that are applicable to the remediation of tetrachloroethylene (PCE) and related chlorinated compounds were reviewed and evaluated as described below.

Remedial technologies are generally distinguished as either ex-situ or in-situ methods. Ex-situ methods involve physical removal of the contaminants from the ground followed by chemical, biological, or physical treatment to reduce or destroy the contaminants. In-situ methods involve treatment of the contaminants without removal from the ground by injecting chemical or biological materials into the subsurface. The effectiveness of ex-situ versus in-situ methods is largely dependant on the physical conditions of the site.

It is Alpha's opinion that ex-situ methods could not be effectively implemented at the site because of the difficulty in removing the contaminants and the contaminated media (i.e., ground water) from the subsurface. A residual source of PCE was not identified in the soil during the soil investigation and removal action, indicating that the contamination primarily resides in the ground water. The contaminant levels in the ground water decreased in the area where the soil was removed, but elsewhere onsite did not decrease significantly or as expected after the soil removal action and remained above the New York State Ground Water Standards. Observations during various site activities, such as well sampling and soil excavating, indicate that ground water and dissolved contaminants cannot be easily extracted from the soil and that the depth to ground water is relatively shallow (i.e., a few feet). Several in-situ technologies were identified and evaluated for the remediation of organic solvents (PCE) in ground water for these reasons, including:

- Surfactant/Steam flushing,
- Electrical Heating,
- Air Sparging,
- Chemical Oxidation, and
- Bioremediation.

Surfactant/steam flushing technologies and electrical heating were judged likely to be too difficult to implement given the variable nature of the fill and geologic materials, and the presence of numerous underground utilities at the site that may reduce the effectiveness or safety of these methods. Air sparging is a potentially applicable method; however, the many subsurface utilities and variations in the physical characteristics of the subsurface materials create preferential pathways that would greatly diminish the effectiveness of these remedies. A negative aspect of air sparging, that is not necessary with bioremediation and chemical oxidation techniques, is the need to install and operate equipment on a long-term basis. Research also has shown that introduction of air by the sparge system is not as effective or efficient in volatilizing and stimulating bacterial activity as other remedial technologies.

Chemical oxidation methods rely on a series of chemical reactions in the subsurface resulting from the addition of oxidizing materials such as Fenton's Reagent, hydrogen peroxide, ozone, or permanganate. The chemical reactions result in dechlorination and destruction of organic solvents in the ground water. The efficiency of the desired chemical reaction can be substantially reduced by natural geochemical conditions. Although geochemical analyses were not conducted, the type and nature of fill material and the geologic conditions on site are known to vary considerably.

Physical contact between the oxidizing agents and the contaminants is critical to the success of chemical oxidation. The known variability in the physical nature of the subsurface materials was considered to be a substantial obstacle to using chemical oxidation. Variations in the geochemical conditions of the subsurface materials also would create difficulties in implementing a chemical oxidation remedy. Chemical oxidation methods also require additional health and safety measures, special material handling requirements, and may be incompatible with subsurface utilities due to the use of strong oxidizing agents. Bioremediation methods were determined to have distinct advantages over chemical oxidation on the basis of these factors.

Bioremediation and chemical oxidation methods are currently the most widely utilized remediation methods because of the ease of application, effectiveness, and the advantage of not requiring operation and maintenance of equipment. Bioremediation can be achieved by the addition of a variety of agents to the subsurface to augment, or stimulate and enhance the metabolic activity of microbes that degrade organic solvents such as PCE. Hydrogen releasing compounds (HRC) is a leading product that is used to bioremediate PCE-contaminated sites, according to statistics maintained by the State Coalition for Remediation of Drycleaners.

HRCs were injected in the area immediately east of the former dry cleaner in November 2003 to stimulate the growth and activity of naturally occurring microbes that degrade PCE and related organic solvents. Injecting the product HRC-X (an extended release HRC formulation) proved to be effective at reducing the concentration of VOCs in the ground water in an area of approximately 2,500 square feet that contained the highest ground water contamination.

Phytoremediation is a passive remedial method that uses vegetation for in situ treatment of contaminated soil and ground water. It is not considered appropriate or adequate for remediation of this site unless it is used in conjunction with other remedial methods. Phytoremediation is a proven technology that is suitable for use where the contamination is relatively shallow and contaminant concentrations are relatively low to moderate; however, the vehicle traffic and parking areas preclude its use except at the downgradient site boundary. Certain varieties of plants have the capacity to withstand concentrations of VOCs without experiencing toxic effects. These plants have the ability to uptake and convert chemicals to less toxic metabolites, while stimulating the degradation of organic chemicals in the subsurface by the release of enzymes and the build up of organic carbon in the soil. Phytoremediation has been successfully used at numerous test sites and for full-scale remediation and is gaining in popularity. Studies indicate that hybrid poplar trees may be the most effective vegetation for uptake and degradation of PCE and TCE, which are the primary contaminants in the ground water at the Revonak Dry Cleaner Site.

Phytoremediation was considered for use at the downgradient portion of the property to intercept and remediate ground water. The site is well suited to use of phytoremediation as a secondary or supplemental remedial measure due to the shallow depth of contamination and the relatively low levels of PCE and related compounds in the ground water.

The types of phytoremediation that are expected to occur at the site include 1) phytotransformation, which is the degradation of contaminants by plant metabolism, and 2) phytostimulation, which is the stimulation of indigenous microbes to biodegrade contaminants by the release of exudates (fluids released from plant roots) and enzymes into the root zone. Additionally, uptake of ground water by the tree roots reduces the volume of water and may retard ground water migration.

4.4 Contingency Plan

A Contingency Plan dated April 22, 2002, was submitted to, and approved by, the NYSDEC. The Contingency Plan defined the remedial activities that would be implemented for the Revonak Dry Cleaners inactive hazardous waste site (Site No. 356021), depending on the results of continued ground water monitoring. The identified remedial activities included injection of HRC in the area immediately east of the dry cleaner and phytoremediation at the downgradient property boundary. The Contingency Plan also presented the results of an off-site well survey, which are reiterated in section 2.4 of this report, and included a scope of work for a PCE source investigation to determine whether a source of PCE was present beneath the floor of the dry cleaner.

The results of the source investigation were submitted to the NYSDEC in the March 2003 Source Investigation Report. The report concluded that the concentrations of VOCs detected during the source investigation indicate that there is no "source" of PCE beneath the dry cleaner and that no further investigation is necessary beneath the dry cleaning facility foundation. The report also recommended that the injection of hydrogen releasing compounds and phytoremediation presented in the April 2002 Contingency Plan be implemented, based on the results of the source investigation.

4.5 Initial HRC Remediation

New Paltz Properties, LLC proactively and voluntarily implemented the additional remedial measures specified in the NYSDEC-approved Contingency Plan in 2003 to accelerate ground water remediation. HRC injection was performed on November 13 and 14, 2003, to reduce concentrations of VOCs immediately east of the dry cleaner facility. The phytoremdiation was deferred to 2007 due to planned development in the planting area. The results of this HRC remediation were submitted to the NYSDEC in the February 2004 HRC Injection Report.

HRCs were injected into the subsurface to stimulate the degradation of chlorinated solvents in soil and ground water. Alpha Geoscience (Alpha) personnel directed and documented the injection of HRC into the subsurface and collected ground water samples from selected wells to monitor parameters that indicate the process of reductive dechlorination promoted by the HRC.

The locations of the twenty seven (27) injection points for this pilot study are shown on Figure 6. Ground water monitoring performed after the HRC pilot study indicated that reducing conditions were established in the area of injection, resulting in a decrease in VOC concentrations in ground water, particularly at well MW-2. These results suggested that HRC could be applied as a successful remedial measure.

4.6 Expanded HRC Remediation

New Paltz Properties, LLC voluntarily implemented the additional remedial measures with the goal of further reducing the concentrations of VOCs in ground water in an expeditious manner. A work plan for expanded HRC injection and soil vapor and ground water monitoring was submitted to, and approved by the NYSDEC in December 2005. The plan was based on ground water monitoring results submitted to NYSDEC indicating that the November 2003 HRC injection effectively and substantially reduced concentrations of PCE in the ground water in the area of application.

The work specified in the NYSDEC-approved work plan was performed September 5 through 8, 2006, and September 11, 2006. The work included injecting HRC throughout the entire area of the contaminant plume and installing downgradient soil vapor monitoring points and additional downgradient ground water monitoring wells. The results of the work were submitted to the NYSDEC in January 2007 in the Expanded HRC Injection Report and the Ground Water and Soil Vapor Monitoring Report.

A total of 3,343 pounds of HRC-Advanced (HRC-A) was injected into the target area and a total of 1,710 pounds of HRC-X was installed in the barrier rows. The location of the injection points are shown on Figure 7. Ground water and soil vapor samples were collected before the expanded HRC injection to establish baseline concentrations and after the HRC remediation in accordance with the schedule in the NYSDEC-approved Expanded HRC Injection and Ground Water Monitoring Plan.

4.7 Phytoremediation

Phytoremediation was implemented at the downgradient (northern) portion of the site by planting multiple rows of poplars. An estimated 50 to 60 trees were planted in the spring of 2007 in the currently vacant, unpaved land between the plaza buildings and the northern site property boundary. Figure 8 is a map showing the area in which the trees were planted.

4.8 Subslab Depressurization System

New Paltz Properties, LLC opted to install a sub-slab depressurization (SSD) system after the NYSDEC and NYSDOH required either a soil vapor investigation or installation of an SSD system. The purpose of the SSD system is to eliminate the potential for soil vapor intrusion into buildings. The SSD system was designed by Alpine Environmental Services, Inc (AES) and installed in June 2005 after receiving comments on the system design from the NYSDOH. A Sub-slab Depressurization System Installation Report was submitted to the NYSDEC and NYSDOH in August 2005. A copy of this report is included in Appendix C. The report documents the conditions encountered beneath the foundation slab, and contains as-built drawings, results of diagnostic testing, post-installation testing, and the data collected to confirm the pressure field extension beneath the foundation slab.

The sub-slab vapor sampling data presented in the SSD system installation report documents the effectiveness of the system. The samples collected immediately before and immediately after the start of the SSD system exhibited a dramatic decrease from 1,400 to 51 ug/m^3 of PCE in the soil vapor in the first few hours of operation.

The sub-slab depressurization systems were inspected by AES in March 2008. The inspection included observation of exposed system piping, caulk seals at the suction points, fan units, alarms, system pressure, and magnehelic gages on the eight separate systems for indications of maintenance or repair. One of the systems (No. 6) could not be accessed at the time of the inspection. The inspected systems were found to be in good working condition, with the exception that a power cord was replaced on one of the system fans (No. 8). A copy of the inspection report prepared by AES is provided in Appendix C.

4.9 Ground Water Monitoring

Ground water samples have been collected since 1991 to characterize the quality of the ground water on site. Ground water monitoring reports have been submitted to the NYSDEC after each monitoring event. Routine monitoring was conducted on an annual basis until the September 2006 expanded HRC remediation, after which sampling occurred quarterly for one year (through August 2007). Sampling will occur semi-annually for one year (March and August 2008) before reverting to annual sampling, in accordance with sampling schedule specified in the NYSDEC-approved November 30, 2005 Expanded HRC Injection Plan. The most recent sampling event included wells MW-2, MW-6, MW-9, MW-10, MW-11 and MW-12 in March 2008. The ground water samples were analyzed for VOCs and HRC indicator parameters. The results of this sampling event are summarized and discussed below and in Section 5.3 of this report.

The results of the ground water monitoring are presented herein to demonstrate the improvements in the ground water quality attributable to the remedial actions implemented by the owner. Ground water samples have routinely been analyzed for VOCs. Samples also have been analyzed for a suite of "indicator parameters" to monitor the effects of the HRC remediation beginning in September 2006. The volatile organic analytical results for the ground water samples are summarized on Tables 3 through 15. The results of the analysis of the HRC indicator parameters are summarized on Tables 16 through 22 with the VOC results. The analytical results from several previous sampling events also are shown on Tables 16 through 22 for purposes of comparison.

The analytical results from the March 2008 sampling event indicate that the concentrations of total VOCs have decreased significantly in well MW-2 in the source area, and in downgradient wells MW-10, and MW-12. A moderate decrease in VOCs was measured well MW-9. The concentration of VOCs increased slightly in wells MW-6 and MW-11. These increases are an indication that dissolution of the VOCs is occurring in the subsurface and that the HRC continues to be effective. A decrease in the concentration of total VOCs is expected following the increase.

The analytical results indicate that no VOCs have been detected in the bedrock ground water at downgradient well BR-4 since the well was installed in 2001. Ground water samples collected at bedrock well BR-1 in the vicinity of the source area have been less than 10 ppb since February 1999. VOC concentrations in bedrock well BR-2 typically have ranged from 200 to 300 ppb. These results indicate that there is not a plume of contamination in bedrock. It is Alpha's opinion that the VOCs detected in BR-2 are very localized and the result of VOCs in the overburden ground water infiltrating into the bedrock at this well. The concentration of VOCs in BR-2 is expected to decrease in response to the decreasing concentrations in the overburden ground water.

The results of the ground water samples indicate that the HRC is actively degrading the contaminants detected in the ground water, resulting in lower concentrations of VOCs in the ground water. The effects of the HRC on the ground water quality are discussed further in Section 5.3. The HRC is expected to continue to enhance the dechlorination process, resulting in reduced contaminant concentrations in the ground water. The continued effect of HRC is expected to be apparent in the analytical results of samples collected during future sampling events.

4.10 Soil Vapor Monitoring

Soil vapor monitoring points SV-1 and SV-2 were installed near the downgradient end of the property on August 21, 2006, prior to the September 2006 expanded HRC injection event. The location of these soil vapor sampling points is shown on Figure 2. The analytical results for samples collected from these points and previously submitted to the NYSDEC are summarized in Table 23. The most recent soil vapor samples from SV-1 and SV-2 were collected in March 2008. The soil vapor samples were analyzed for VOCs by EPA Method TO-15A.

The analytical results indicate that most of the compounds detected in the samples are related to either petroleum or solvents. Concentrations of PCE, TCE, cis-1,2-dichlorothene (DCE) and vinyl chloride (VC) increased between March 2007 and August 2007 reflecting the transfer from dissolved phase to vapor phase as VOCs in the ground water are decholrinated and degraded by the HRC Concentrations of these compounds are expected to decrease as the VOC concentrations in ground water decrease.

The presence of petroleum-related compounds is not unusual based on the location of the soil vapor monitoring wells near a parking, loading, and delivery area of the plaza where there is frequent truck and vehicle traffic. Petroleum-related and other volatile organic compounds were not detected in the ground water samples from wells MW-10, MW-11, and MW-12 near soil vapor wells SV-1 and SV-2. The operation of a sub-slab depressurization system beneath the shopping plaza buildings eliminates the potential for vapor intrusion into the plaza buildings.

5.0 ENGINEERING ANALYSIS OF SELECTED REMEDIES

This section provides an engineering analysis of the remedies that have been applied. The purpose of the analysis is to evaluate the extent to which the implemented remedies meet the remedial objective to minimize or eliminate exposure pathways or significant risks to the public or the environment under the conditions of the contemplated use of the site (i.e. Restricted Commercial; shopping center). The implemented remedial actions include:

- soil excavation and removal,
- initial injection of hydrogen releasing compounds,
- installing of a sub-slab depressurization system,
- expanded injection of hydrogen releasing compounds,
- phytoremediation, and
- soil vapor and ground water monitoring.

The engineering analysis consists of evaluating the remedial actions for a variety of criteria to determine whether the remedial objectives have been met. These criteria include 1) protection of human health and the environment; 2) standards, criteria and guidance; 3) short-term effectiveness and impacts; 4) long-term effectiveness and permanence; 5) reduction of toxicity mobility and volume; and 6) implementability. The following sections provide a discussion of these evaluation criteria for the implemented remedial actions.

5.1 Protection of Human Health and the Environment

The implemented remedies achieve the remedial action objective to protect human health and the environment. The concentrations of VOCs in the subsurface have been reduced by the soil removal action and the injection of HRC. The sub-slab depressurization system eliminates the potential for intrusion of vapors into the existing buildings. The objective of the phytoremediation is to remove residual VOCs from ground water at the downgradient property boundary. Ground water and soil vapor sampling and analysis will monitor the effectiveness of the implemented remedial measures.

Ground water sampling and analysis has been, and will continue to be performed on site to monitor the concentration of VOCs in ground water. The results of the sampling and analysis have defined the area of on-site contamination and indicate that ground water quality has improved as a result of the implemented remedial measures. Continued ground water and soil vapor sampling and analysis will protect human health and the environment by monitoring the environmental conditions. Concentrations of VOCs are expected to continue to decrease because of the long-acting nature of the HRC, as described in greater detail in Section 5.3.

The sub-slab depressurization system creates a negative pressure beneath the slab of the plaza buildings. The SSD system removes the vapors from the environment beneath the slab and prevents potential intrusion of the vapors into the buildings. The vapors are vented to the atmosphere in an acceptable manner that avoids human exposure to elevated concentrations of VOCs.

Other potential remedial measures were determined not to be practicable or feasible, based on the evaluation of remedial alternatives (Section 4.3). It is unlikely that other remedial measures could be cost-effectively implemented at this site that would provide a greater level of protection of human health and the environment than the completed remedial measures, based on the evaluation of remedial alternatives.

Human exposure is not an issue because there is no pathway for human contact with, or use of, the impacted ground water under the conditions of the contemplated restricted commercial use of the site. The site buildings and paved surfaces preclude the general population from contacting soil. The operation of the sub-slab depressurization system eliminates human contact due to potential vapor intrusion into the buildings. The issue of protecting human health and the environment also was addressed by an off site well survey that indicated there are no site-related contaminants in any nearby residential wells. It is Alpha's opinion that the only likely exposures to site-related contaminants might occur during on-site remedial work or construction, none of which is scheduled. There are no significant exposures expected, on the basis of the lack of exposure pathways.

5.2 Standards, Criteria and Guidance

The applicable standards, criteria, and guidance (SCGs) for the site are those that apply to remediation of soil, ground water, and soil vapor. These include 6NYCRR Subpart 375-6: Remedial Program Soil Cleanup Objectives, 6NYCRR Subpart 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, NYSDEC Division of Water TOGS 1.1.1, the NYSDEC Division of Environmental Remediation (DER) Vapor Intrusion Guidance, and the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

As described in Section 4.0, remedial actions were implemented to remove or reduce contaminant concentrations consistent with the contemplated use of the site as restricted commercial property. The analytical results of post-excavation soil samples collected during the soil removal action indicate that the soil quality meets the applicable SCGs. The majority of the compounds analyzed in ground water samples meet the applicable ground water SCGs. The area of ground water that exceeds the SCGs is relatively well defined by nearly 10 years of ground water quality data. Elevated concentrations of VOCs were present in soil gas samples beneath the southern buildings of the plaza; however, operating the sub-slab depressurization system prevents human exposure to the VOC vapors and is expected to reduce the concentrations over time.

5.3 Short-Term Effectiveness and Impacts

The second HRC application was completed in November 2006. Products HRC-A and HRC-X were used at different parts of the site to address chlorinated solvent contamination. HRC-Advanced was used in the vicinity of MW-2, MW-3, MW-6 and MW-7. HRC-X was used to create treatment barriers in the downgradient area of the plume. Alpha has worked closely with the technical support group at Regenesis, Inc., the manufacturer of the HRC products, to develop and implement the HRC remediation program. Alpha requested that Regenesis technical staff review the site ground water chemistry data to evaluate the effectiveness of HRC injection. A copy of the analysis provided by Regenesis is provided in Appendix D. The following is excerpted from Regenesis' analysis.

> *The results of ground water analyses subsequent to the November 2006 HRC injection were reviewed to:*
>
> 1. *identify evidence that conditions are present that support biodegradation (i.e., establish anaerobic conditions),*
> 2. *identify evidence of biodegradation (presence of biodegradation products) and,*
> 3. *identify data trends indicating the effectiveness of the HRC remediation (e.g., decrease in total VOCs and/or parent products and an increase in biodegradation products).*

Anaerobic conditions required to support biodegradation of chlorinated solvents are represented by changes in subsurface conditions that indicate a more reducing environment. Reducing conditions are indicated when any of the following are observed: an increase in dissolved iron or manganese, reduction in the concentration of sulfate, decrease in dissolved oxygen (DO) and oxidation-reduction potential (ORP) readings, and detection of methane. Reductive dechlorination is a methanogenic process; therefore, the presence of methane is a clear indication that reductive dechlorination is occurring.

Reductive dechlorination is the primary mechanism responsible for the biodegradation of chlorinated solvents such as PCE and DCE. PCE is degrades progressively to TCE, DCE, VC, and finally, ethene. Chlorinated ethanes such as TCA follow a similar degradation pattern with 1,1,1-TCA degrading progressively to 1,1-DCA, chloroethane, and finally, ethane. The presence of compounds such as DCE and/or VC in environmental samples is typically an indication that dechlorination is occurring. The concentration of DCE in a sample may be higher than the original concentration of PCE or TCE.

PCE and TCE tend to sorb to the soil, particularly if there is a high concentration of organic matter. Typically, only the dissolved PCE and TCE will be detected in environmental samples, not the sorbed phase. DCE is more soluble in the environment than PCE or TCE. As biodegradation proceeds and DCE is formed, the concentration of DCE may be greater than the concentration of PCE or TCE because the DCE dissolves more readily than the parent products (i.e., the DCE does not sorb as readily to the soil). The apparent increase in the DCE concentration often corresponds to an increase in total VOC levels during a bioremediation program.

Evaluation of the biodegradation process includes a review of both individual volatile organic compounds and total VOCs. Review of the trend of the concentration of individual compounds often explains why total VOC concentrations increase during dechlorination, as described above.

The following table describes the observations for the data for each monitoring well and conclusions based on the observations. This analysis of the data identifies trends/decreases in individual or total VOCs, and indicates whether conditions support dechlorination and whether there is evidence of biodegradation.

Well No.	***Observation/Analysis***	***Conclusion***
MW-1	*Reduction in VOCs is evident.*	*Effects of HRC application are evident based on the reduction of VOCs to ND. Reductions in VOC levels suggest the plume size is decreasing*
MW-2	*Methane and an increase in sulfate and CO_2 are detected in MW-2. The concentration of dissolved iron increased in the past.* *The presence of cis-DCE, VC and chloroethane are detected. PCE, Cis-DCE, and VC levels decreased substantially in the March 2008 sample.*	*Conditions that support biodegradation appear to be present near MW-2. Data suggest biodegradation based on the presence of cis-DCE and an increase in VC.* *Evidence of biodegradation is present based on the presence of dechlorination products.*
MW-3	*VOC levels were very low at the onset of the remedial program. The well has contained HRC since the 2006 injection event and cannot be sampled.*	
MW-4	*An increase in PCE, TCE, cis-DCE and VC is evident between August 2006 and August 2007. The well was not sampled in March 2008 when decreases were observed in many wells.*	*Biodegradation is taking place in the vicinity of MW4 based on the increase in biodegradation products and dissolution of PCE and TCE. Reductions in VOCs are expected.*
MW-6	*VOC concentrations are very low or ND and decreased substantially after August 2005. Only VC was detected in the March 2008 sample. VC had not been detected since August 2005. Methane and CO_2 are detected.*	*The reduction in VOCs indicates the effectiveness of the HRC. The detection of VC, methane and CO_2 in the March 2008 sample indicates that dechlorination and biodegradation is continuing.*
MW-7	*A decrease in PCE and TCE and an increase in cis-DCE is evident. VC was detected until the March 2008 sample. CO_2 concentrations have increased and*	*The increase in degradation compounds and decrease in PCE and TCE suggests that dechlorination and biodegradation are occurring.*

	methane was detected until the March 2008 sample	*Detections of CO_2 and methane are evidence of dechlorination.*
MW-9	*Methane and dissolved manganese have been detected; however, no reduction in sulfate is evident. This may suggest that reducing conditions may not yet be established in the vicinity of MW9.* *An increase in VC was observed and cis-DCE is present. No change in TCE and PCE levels is evident.*	*Biodegradation appears to be occurring based on the presence of cis-DCE and an increase in VC. No change in TCE and PCE levels is evident.*
MW-10	*Elevated levels of dissolved iron, manganese, an increase in methane, and a reduction in sulfate levels are evident.* *Concentrations of PCE and cis-DCE have been substantially reduced.* *Concentrations of TCE and VC have been reduced to ND.* *Methane, ethene and ethane were detected during previous sampling events.*	*Reducing conditions appear to be well established. There is evidence of biodegradation based on an the previous increase in cis-DCE, VC, ethene and ethane. The detection of end-products indicates that complete degradation of VOCs is occurring.*
MW-11	*Elevated concentrations of dissolved iron, manganese, and methane were present in samples in 2006 and 2007.* *Concentrations of PCE, TCE, cis-DCE, and VC increased in March 2008.*	*Reducing conditions have been established based on the indicator parameter concentrations.* *The recent increase in VOCs indicates dissolution and degradation is occurring. Reductions in VOCs are expected in future samples.*
MW-12	*Elevated concentrations of dissolved iron, manganese, and methane were present in samples in 2006 and 2007.* *Concentrations of PCE, TCE, cis-DCE, and VC decreased in March 2008.*	*Reducing conditions have been established based on the indicator parameter concentrations and VOCs concentrations substantially decreased.*

The trends in the data clearly indicate that reducing conditions have been established at most well locations and that there is evidence that biodegradation is occurring. The evidence for decholorination by biodegradation includes the presence of, and increases in, *concentrations of dechlorination products cis-DCE and VC. Concentrations of total VOC have decreased as a direct result of HRC remediation at wells MW-1, MW-2, MW-6, MW-7, MW-9, MW-10, and MW-12. Increased concentrations of total VOCs are recently evident in wells MW-4 and MW-11 as a result of dissolution of the VOCs in the subsurface. These increases are considered to be a precursor to decreases in VOC concentrations based on indications that reducing conditions have been established. The HRC–A and HRC-X are designed to persist for several years. The biodegradation process is expected to continue and progress based on the indications that reductive dechlorination is occurring.*

The soil removal action, injection of HRCs, and installation of the sub-slab depressurization system, are effective short-term remedial measures. These measures immediately remove or degrade contaminants in the environment and reduce or eliminate the potential for human exposure. Soil vapor and ground water sampling and analysis monitor the effectiveness of the remedial measures and impacts from residual contaminants. There are no known risks to workers, the community, or the environment from the implemented remedies. These remedies have effectively achieved the remedial action objective of protecting human health and the environment under the conditions of the contemplated restricted commercial use of the site.

5.4 Long-Term Effectiveness and Permanence

The soil removal action, injection of HRCs, installation of the sub-slab depressurization system, phytoremediation, and ground water monitoring are effective long-term remedial measures. The soil removal action permanently removed contaminants from the environment. HRC is a long term remedy that is designed to remain active and continue to degrade chlorinated compounds throughout a period of several years. The long-term effect of the HRC is to eliminate or reduce the concentration of VOCs in the ground water. Ground water monitoring is an accepted method of monitoring the long-term effectiveness of remediation. Phytoremdiation is a long term, relatively permanent remedy. The processes of phytotransformation, phytostimulation, and the uptake of ground water will continue to occur as long as the hybrid poplar trees exist.

The sub-slab depressurization system also is a permanent remedy for as long as it continues to operate. The SSD system is subject to a Site Management Plan that specifies continued operation of the system and the criteria under which operation may be discontinued. The continued operation of the SSD system eliminates the only identified potential exposure pathway. There are no significant threats, exposure pathways, or risks to the public or environment from remaining VOCs in the ground water on this basis.

5.5 Reduction of Toxicity, Mobility or Volume

The soil removal action, injection of HRCs, phytoremediation, and operation of the SSD system meet the remedial objectives by directly reducing the volume and concentration of the VOCs on site. These remedial measures do not reduce the toxicity or mobility of the VOCs; however, the SSD system controls the mobility of potential vapors and the objective of the phytoremediation is to remove residual VOCs from the ground water at the down gradient property boundary. Ground water sampling and analysis is a method of monitoring the effectiveness of remediation and does not reduce the toxicity, mobility or volume of contaminants.

5.6 Implementability

The soil removal action, HRC injections, phytoremdiation, and the installation and operation of the SSD system have been successfully implemented. Ground water sampling and analysis is an easily implemented measure that has been performed at the site on many occasions. There is data to support that residual VOCs will continue to be degraded by the HRCs and the phytoremediation under the known site conditions. The HRCs and phytoremediation do not require operation or maintenance other than replacement of trees that do not survive. There is no reason to suspect that the SSD system will not continue to operate and that continued ground water monitoring cannot be easily performed. The SSD system requires only periodic inspection, and possibly minor maintenance, to confirm that it is operating. An alarm sounds if the system vacuum decreases below a set level indicating that maintenance may be required. Fans are the only mechanical part of the system and can be readily obtained and replaced, if necessary.

The involved agencies that potentially affect the environmental activities and operations at the site include the NYSDEC and the NYSDOH. The involvement of other agencies that might delay or complicate the continued environmental monitoring and operations is not anticipated.

6.0 SUMMARY

The implemented remedies for the Revonak dry cleaner site include a soil removal action, multiple injections of HRC, phytoremediation, and installation and operation of a sub-slab depressurization system. Ground water monitoring has been, and will continue to be performed to assess the effectiveness of the implemented remedies. These remedies have achieved the remedial objective of minimizing or eliminating exposure pathways or significant risks to the public or the environment under the conditions of the contemplated use of the site (i.e. Restricted Commercial; shopping center).

The ground water analytical results indicate that the HRC has successfully established reducing conditions in the subsurface that are necessary for dechlorination. A decrease in the concentration of total VOCs is evident in many of the wells as a direct result of the HRC remediation. Substantial decreases in VOCs were observed in the most recent ground water samples collected in March 2008. Increases in total VOCs or degradation compounds are apparent in a few wells and is evidence of the continuing dechlorination process. The HRC is expected to maintain the reducing conditions for a period of several years thereby allowing the attenuation processes of diffusion, dechlorination, and dispersion to continue to positively affect the ground water quality. Improvements in the ground water quality are expected based on the current indicators. Phytoremediation has been implemented to remove residual VOCs at the downgradient property boundary. The sub-slab depressurization system prevents potential intrusion of the vapors into the buildings and vents to the atmosphere in an acceptable manner that avoids human exposure.

An engineering analysis of the selected remedies indicates that the soil removal action, injection of HRCs, phytoremediation, operation of the sub-slab depressurization system, and ground water monitoring have, and will continue to meet the remedial action objective of protecting the public health and the environment for the conditions of the contemplated restricted commercial use of the site as a shopping center.

It is the opinion of Alpha and Alpine that no further investigation or remediation by the Volunteer (New Paltz Properties, LLC) is necessary. Ground water will continue to be monitored, and the sub-slab depressurization system will continue to operate, as part of, and in accordance with, a Site Management Plan. The reduction of VOCs observed in the ground water samples collected in March 2008 is expected to continue.

7.0 CERTIFICATION

Alpha Geoscience and Alpine Environmental Services, Inc. certify that the work described herein was completed in accordance with the applicable work plans, Department-approved modifications to those work plans, and Department-approved details, documents, or specifications prepared by, or on behalf of, the Volunteer pursuant thereto, and Agreement Index No. W3-0782-97-10.

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TABLES

Please note the following tables, No. 1 and No. 2 have been removed from the Final Engineering Report (FER) because they include information on adjacent/affected property owners and resident portion of the list is maintained confidentially in project files, not in the FER or repositories.

TABLE 3

Well MW-1
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	12/91	9/94	2/21/1996	3/7/1996	3/19/1996	2/7/1997	1/20/1998	5/14/1998	8/27/1998	12/4/1998	2/26/1999	8/2/2001
Vinyl Chloride	<10.0	U	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.81J
cis-1,2-Dichloroethene	<5.0	5.5	<1.0	<1.0	<1.0	7.7	4.0	5.0	6.1	2.5	1.7	0.92J
Trichloroethene	16.0	7.1	<1.0	<1.0	<1.0	9.3	5.0	7.1	15	3.9	2.8	4.3
Tetrachloroethene	65	39	<1.0	1.1	2.6	57	28	38	62	23	19	12
Methylene Chloride	<5.0	NR	<1.0	U	U	<1.0	<1.0	<1.0	2	<1.0	<1.0	<1.0
TOTAL VOCs	**81.0**	**51.6**	**ND**	**1.1**	**2.6**	**74.0**	**37.0**	**50.1**	**85.1**	**29.4**	**23.5**	**18.0**

Halogenated Volatile Organics	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003	8/18/2004	8/30/2005	8/31/2006	8/30/2007
Vinyl Chloride	0.99J	0.60J	1.8	2.5	2.8	<1.0	1.4	<1.0	<5.0
cis-1,2-Dichloroethene	<1.0	1.1	4	1.0J	2.8	2	2.7	5.0J	<5.0
Trichloroethene	1.9	2.2	8.7	2.8	6.9	4.6	5.3	5.0	<5.0
Tetrachloroethene	3.2	7.6	21	1	10	9.9	14	18	<5.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<9.0	<5.0
TOTAL VOCs	**5.1**	**10.9**	**35.5**	**7.3**	**22.5**	**16.5**	**23.4**	**28.0**	**ND**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. U = Indicates the compound was analyzed, but not detected.
3. J = Indicates an estimated value less than the lowest standard.
4. NR = result not reported for indicated compound.
5. All results are in micrograms per liter (ug/l, ppb).
6. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 4

Well MW-2
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	12/91	9/94	2/5/1996	3/7/1996	3/19/1996	3/19/1996	3/22/1996	4/26/1996	2/7/1997	1/20/1998	5/14/1998	8/27/1998	12/4/1998	2/26/1999	2/26/1999	2/26/1999
Vinyl Chloride	<1000	U	<500	<500	<200	<2,000	<500	<1,000	21	20	<10	10	13	<10	<10	11
cis-1,2-Dichloroethene	<500	600	<500	<500	420	<1,000	260	280	160	200	100	150	150	120	120	130
1,1,1-Trichloroethane	<500	<500	550	750	590	<1,000	270	300	160	130	20	47	30	18	18	20
Trichloroethene	1,400	<500	<500	<500	<200	<1,000	160	<200	120	140	53	150	150	87	87	86
Tetrachloroethene	3,100	7,600	21,000	31,000	21,000	21,000	13,000	15,000	9,100	5,600	2,100	4,500	3,600	2,700	2,700	2,700
1, 1-Dichloroethane	<500	U	<500	U	U	U	<100	<200	6	4.0	<10	5.1J	<10	<10	<10	2.3
1, 1-Dichloroethene	<500	U	<500	U	U	U	<100	<200	12	7.0	<10	<10	<10	<10	<10	1.5
trans-1, 2-Dichloroethene	<500	U	<500	U	U	U	<100	<200	<1.0	2.0	<10	<10	<10	<10	<10	1.0
1,1,1,2-Tetrachloroethane	NA	U	NA	U	U	U	NA	NA	4.1	<1.0	<10	<10	<10	<10	<10	<1.0
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	≤1.0	≤1.0
TOTAL VOCs	**4500**	**8200**	**21550**	**31750**	**22010**	**21000**	**13690**	**15580**	**9583.1**	**6103**	**2273**	**4862.1**	**3943**	**2925**	**2925**	**2951.8**

Halogenated Volatile Organics	8/2/2001	(Dup) 8/2/2001	11/6/2001	(Dup) 11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003	HRC Injection; November 2003	5/19/2004	11/16/2004	2/21/2005	8/30/2005	8/31/2006	HRC Injection; September 2006	12/14/2006	3/28/2007
Vinyl Chloride	31	25	<10	<10	<10	5.5	<10	5.6		60	19	37	110	620		40	37
cis-1,2-Dichloroethene	440	370	260	240	140	110	500	290		5200	53	87	370	1400		130	110
1,1,1-Trichloroethane	26	29	7.8J	7.1J	5.2J	20	13	29		20	<1.0	2.0	1.0	<1.0		1.0J	<5.0
Trichloroethene	320	340	130	120	67	34	180	170		170	8.9	13	19	24		23	12
Tetrachloroethene	4,700	5,500	2,300	2,300	1,300	670	2,500	3,900		58	33	84	100	110		220	270
1, 1-Dichloroethane	<10	3.6	<10	<10	<10	1.2J	<10	<10		14	5.6	7.9	9.4	9		6	<5.0
1, 1-Dichloroethene	<10	3.5	<10	<10	<10	<2.0	<10	<10		7.0	<1.0	<1.0	0.51J	<1.0		<5.0	<5.0
trans-1, 2-Dichloroethene	<10	3.5	<10	<10	<10	<2.0	<10	<10		34	8.6	8.2	14	24		9	6
1,1,1,2-Tetrachloroethane	<10	<10	<10	<10	<10	<2.0	<10	<10		<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	<5
Chloroethane	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0		≤1.0	24	20	14	2.0J		7	7
TOTAL VOCs	**5517**	**6274.6**	**2697.8**	**2667.1**	**1512.2**	**840.7**	**3193**	**4394.6**		**5563**	**152.1**	**259.1**	**637.9**	**2189**		**436**	**442**

Halogenated Volatile Organics	6/21/2007	8/30/2007	3/7/2008
Vinyl Chloride	67	56	20
cis-1,2-Dichloroethene	210	250	60
1,1,1-Trichloroethane	<5.0	<5.0	<5.0
Trichloroethene	20	31	9
Tetrachloroethene	270	330	84
1, 1-Dichloroethane	5	10	<5.0
1, 1-Dichloroethene	<5.0	<5.0	<5.0
trans-1, 2-Dichloroethene	7	10	<5.0
1,1,1,2-Tetrachloroethane	<5.0	<5.0	<5.0
Chloroethane	18	16	13
TOTAL VOCs	**597**	**703**	**186**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. U = Indicates the compound was analyzed, but not detected.
3. J = Indicates an estimated value less than the lowest standard.
4. NA = Sample not analyzed for indicated compound.
5. All results are in micrograms per liter (ug/l, ppb).
6. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 5

Well MW-3
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

	12/91	9/94	2/5/1996	3/7/1996	3/19/1996	2/7/1997	1/20/1998	5/14/1998	8/27/1998	12/4/1998	2/26/1999	8/2/2001	11/6/2001
Halogenated Volatile Organics													
Vinyl Chloride	<10.0	U	1.8	1.4	2.2	<1.0	1	<1.0	<1.0	<1.0	<1.0	<1.0	0.69J
cis-1,2-Dichloroethene	<5.0	10	7.0	7.9	12	3.8	7.0	7.2	11	10	6.4	12	9.3
1,1,1-Trichloroethane	<5.0	U	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	3.0	<5.0	<1.0	<1.0	<1.0	<1.0	0.8J	0.8J	1.2	1.2	0.7J	1.1	1.1
Tetrachloroethene	15	<5.0	2.9	<1.0	8.6	0.5	0.7J	0.6J	1J	0.7J	0.5J	0.77J	<1.0
Aromatic Volatile Organics													
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	<1.0	1.0	<1.0	<1.0	0.7J	<1.0	<1.0
Benzene	≤5.0	U	≤0.5	NA	NA	NA	≤1.0	≤1.0	≤1.0	0.5J	≤1.0	≤1.0	≤1.0
TOTAL VOCs	**18**	**10**	**11.7**	**9.3**	**22.8**	**4.3**	**9.5**	**9.6**	**13.2**	**11.9**	**8.3**	**0.8**	**11.09**

	2/19/2002	5/15/2002	8/15/2002	8/21/2003	HRC Injection; November 2003	5/19/2004	8/18/2004	11/16/2004	2/21/2005	8/30/2005	(DUP) 8/30/2005	8/31/2006	HRC Injection; September 2006
Halogenated Volatile Organics													
Vinyl Chloride	<1.0	1.2	<1.0	1.7		1.8	2.9	3.0	2.0	2	1.4	1.0J	
cis-1,2-Dichloroethene	6.1	6.4	17	12		7.9	12	7.2	4.5	9.8	9.6	5.0	
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene	0.78J	0.7J	1.2	1.2		1.4	1.3	1.0	0.56J	1.0	0.97J	<1.0	
Tetrachloroethene	<1.0	<1.0	0.7J	<1.0		0.6J	0.6J	0.6J	<1.0	<1.0	<1.0	<1.0	
Aromatic Volatile Organics													
sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene	≤1.0	0.6J	0.9J	≤1.0		0.6J,B	≤1.0	≤1.0	≤1.0	≤1.0	0.53J	≤1.0	
TOTAL VOCs	**6.9**	**8.3**	**19.8**	**14.9**		**12.3**	**16.8**	**11.8**	**7.06**	**12.8**	**12.5**	**6.0**	

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. U = Indicates the compound was analyzed, but not detected.
3. J = Indicates an estimated value less than the lowest standard.
4. NA = Sample not analyzed for the indicated compound.
5. All results are in micrograms per liter (ug/l, ppb).
6. B = Indicates the compound was detected in the field blank sample.
7. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).
8. MW-3 was not sampled on 12/14/06 due to the presence of HRC in the well.

TABLE 6

Well MW-4
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	12/91	9/94	02/05/96	03/07/96	03/19/96	02/07/97	01/20/98	05/14/98	(Dup) 05/14/98	08/27/98	12/04/98	02/26/99	8/2/2001
Vinyl Chloride	<10.0	U	10	<2.0	<5.0	2.2	39	5.5	5.7	70	43	17	14
cis-1,2-Dichloroethene	<5.0	36	240	46	220	120	120E	88	87	310	220	120	130
1,1,1-Trichloroethane	<5.0	U	<10.0	<2.0	<5.0	6.8	0.8J	<1.0	<1.0	2.6	1.1	<1.0	0.84J
Trichloroethene	8.0	18	32	10	26	24	35	30	31	48	46	25	27
Tetrachloroethene	178	200	310	110	290	88	210	190	180	230	210	130	130
Chloroethane	<10.0	U	<10.0	U	U	<1	2.0	<1.0	<1.0	2.6	6.3	2.0	<1.0
1, 1-Dichloroethene	<5.0	U	<10.0	U	U	<1	<1.0	<1.0	<1.0	0.6J	<1.0	<1.0	<1.0
trans 1,2-Dichloroethene	<5.0	U	<10.0	U	U	<1	<1.0	<1.0	<1.0	0.9J	0.8J	0.5J	0.83J
Chloroform	<5.0	U	<10.0	U	U	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.6J	0.94J
TOTAL VOCs	**186.0**	**254**	**592**	**166**	**536**	**241.0**	**286.8**	**313.5**	**303.7**	**663.2**	**527.2**	**295.1**	**303.6**

	11/6/2001	2/19/2002	(Dup) 2/19/2002	5/15/2002	(Dup) 5/15/2002	8/15/2002	8/21/2003	(Dup) 8/21/2003	8/18/2004	(Dup) 8/18/2004	8/30/2005	8/31/2006	8/30/2007
Vinyl Chloride	31	28	28	5.5	5.1	36	6.1	6.5	8.0	6.3	24	1.0J	27
cis-1,2-Dichloroethene	140	88	80	28	28	150	55	61	66	60	140	23	110
1,1,1-Trichloroethane	1.4	0.79J	0.71J	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene	39	25	23	14	14	40	29	31	29	25	23	8.0	23.0
Tetrachloroethene	180	110	120	86	88	170	130	160	170	170	90	67	110
Chloroethane	4.4	6.7	6.2	1.7	1.6	9.9	<1.0	1.4	<1.0	1.4	4.5	<1.0	<5.0
1, 1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans 1,2-Dichloroethene	1.2	0.68J	0.65J	<1.0	<1.0	1.4	0.7J	0.8J	0.7J	0.6J	<1.0	<1.0	<5.0
Chloroform	1.1	0.78J	0.69J	0.9J	0.9J	1.2	1.0J	1.1	0.9J	<1.0	<1.0	<1.0	<5.0
TOTAL VOCs	**398.1**	**260.0**	**259.3**	**136.1**	**137.6**	**409.7**	**221.8**	**261.8**	**274.6**	**263.3**	**281.5**	**99.0**	**270.0**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. U = Indicates the compound was analyzed, but not detected.
3. J = Indicates an estimated value less than the lowest standard.
4. E = Indicates an estimated value greater than the highest standard.
5. All results are in micrograms per liter (ug/l, ppb).
6. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 7

Well MW-6
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

	1/20/1998	5/14/1998	8/26/1998	12/3/1998	2/25/1999	8/2/2001	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003	HRC Injection; November 2003	5/19/2004
Halogenated Volatile Organics													
Vinyl Chloride	5.0	1.4	12	3.6	12	13	24	2.5	<1.0	7.9	1.2		13
cis-1,2-Dichloroethene	35	24	91	76	66	85	460	89	21	83	19		75
Trichloroethene	14	7.9	24	20	8.4	12	96	34	8.9	13	5.6		2.9
Tetrachloroethene	41	46	53	42	23	26	56	29	19	24	20		4.5
Chloroethane	<1.0	<1.0	3.4	1.2	<1.0	<1.0	5.3	<1.0	<1.0	<1.0	<1.0		<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	1.1	1.0	1.0	0.94J	3.6	<1.0	<1.0	<1.0	<1.0		1.6
1,1 Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0		<1.0
Aromatic Volatile Organics													
Benzene	<1.0	<1.0	0.6J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0
sec-Butylbenzene	<1.0	<1.0	1.3	<1.0	<1.0	0.7J	1.1	<1.0	<1.0	1.0	<1.0		<1.0
TOTAL VOCs	**95**	**79.3**	**186.4**	**143.8**	**110.4**	**1.6**	**647.2**	**154.5**	**48.9**	**128.9**	**45.8**		**97.0**

	8/18/2004	11/16/2004	2/21/2005	8/30/2005	8/31/2006	HRC Injection; September 2006	12/14/2006	3/28/2007	6/21/2007	8/30/2007	3/7/2008
Halogenated Volatile Organics											
Vinyl Chloride	8.8	17	23	84	<1.0		1.0J	<5.0	<5.0	<5.0	6
cis-1,2-Dichloroethene	11	25	37	470	7.0		2.0J	<5.0	<5.0	<5.0	<5.0
Trichloroethene	1.9	1.3	1.3	3.7	1.0J		<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	4.9	1.1	1.0	2.3	2.0J		<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<1.0	1.3	0.55J	3.8	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<1.0	0.88J	0.77J	3.7	<1.0		NA	<5.0	<5.0	<5.0	<5.0
1,1 Dichloroethene	<1.0	<1.0	<1.0	0.77J	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
Aromatic Volatile Organics											
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
sec-Butylbenzene	<1.0	<1.0	0.51J	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
TOTAL VOCs	**26.6**	**46.6**	**64.1**	**568.3**	**10.0**		**3.0**	**ND**	**ND**	**ND**	**6**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. J= Indicates an estimated value less than the lowest standard.
3. All results are in micrograms per liter (ug/l, ppb).
4. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 8

Well MW-7
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	1/20/1998	5/14/1998	8/26/1998	12/4/1998	2/26/1999	8/2/2001	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003
Vinyl Chloride	4.0	1.4	4.3	3.6	<1.0	1.6	2.2	0.69J	0.6J	1.3	1.2
cis-1,2-Dichloroethene	32	28	58	43	24	18	22	13	8.2	16	12
Trichloroethene	18	20	27	23	17	16	17	11	11	14	15
Tetrachloroethene	93	110	160	130	98	88	98	72	48	68	57
TOTAL VOCs	**147**	**159.4**	**249.3**	**199.6**	**139**	**123.6**	**139.2**	**96.7**	**67.8**	**99.3**	**85.2**

Halogenated Volatile Organics	8/18/2004	8/30/2005	8/31/2006	8/30/2007
Vinyl Chloride	0.9J	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene	12	12	4.0J	27
Trichloroethene	13	10	4.0J	6
Tetrachloroethene	63	63	18	10
TOTAL VOCs	**88.9**	**85**	**26.0**	**43.0**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. All results are in micrograms per liter (ug/l, ppb).
3. J= Indicates an estimated value less than the lowest standard.
4. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 9

Well MW-9
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	1/20/1998	5/13/1998	8/26/1998	(Dup) 8/26/1998	12/3/1998	2/25/1999	8/2/2001	11/6/2001	2/19/2002	5/15/2002	8/15/2002
Vinyl Chloride	41	9.1	3.8	4.2	51	18	<1.0	13	6.1	4.8	5.1
trans-1,2-Dichloroethene	3.0	2.9	3.2	3.2	2.3	2.4	2.3	2.0	1.1	1.1	1.9
cis-1,2-Dichloroethene	700	420	340	360	410	480	220	160	89	130	140
1,1,1-Trichloroethane	1.0	<1.0	0.6J	<1.0	1.0J	0.7J	<1.0	0.71J	<1.0	<1.0	<1.0
Trichloroethene	150	130	140	150	110	110	120	99	59	58	62
Tetrachloroethene	1,000	1,100	980	1100	870	870	830	890	460	400	350
Methylene Chloride	<1.0	<1.0	<1.0	1.0J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	0.8J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL VOCs	**1895.8**	**1662**	**1467.6**	**1618.4**	**1446.4**	**1481.1**	**1172.3**	**1164.7**	**615.2**	**593.9**	**559.0**

Halogenated Volatile Organics	8/21/2003	8/18/2004	2/21/2005	8/30/2005	8/31/2006	HRC Injection; September 2006	12/14/2006	3/28/2007	6/21/2007	8/30/2007	3/7/2008
Vinyl Chloride	6.4	1.7	3.3	1.0	2.0J		16	5.0	8	12	<5.0
trans-1,2-Dichloroethene	2.2	1.2	0.65J	0.76	2.0J		2.0J	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	260	99	70	74	200		180	140	110	120	110
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	98	62	36	51	48		47	30	28	42	24
Tetrachloroethene	630	430	220	210	280		210	230	210	300	180
Methylene Chloride	<1.0	<1.0	1.2	<1.0	<5.0		2.0JB	<5.0	<5.0	<5.0	<5.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<5.0
TOTAL VOCs	**997**	**594**	**331**	**337**	**532**		**457**	**405**	**356**	**474**	**314**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. J = Indicates an estimated value less than the lowest standard.
3. All results are in micrograms per liter (ug/l, ppb).
4. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 10

Well MW-10
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003	8/18/2004	2/21/2005	8/30/2005	8/31/2006		12/14/2006	3/28/2007	6/21/2007	8/30/2007	8/30/2007 (duplicate)	3/7/2008
Halogenated Volatile Organics										HRC Injection; September 2006						
Vinyl Chloride	2	1.5	0.9J	<1.0	0.8J	1.2	1.9	1.7	<1.0		31	24	29	53	56	<5.0
trans-1,2-Dichloroethene	2.4	1.8	1.6	3.5	2.3	2.8	2.7	2.3	<1.0		6	<5.0	<5.0	<5.0	<25	<5.0
cis-1,2-Dichloroethene	410	250	370	500	370	490	360	420	140		690	220	330	550	580	35
1,1,1-Trichloroethane	0.93 J	0.91J	0.7J	<1.0	<1.0	0.6J	<1.0	0.59J	<1.0		<5.0	<5.0	<5.0	<5.0	<25	<5.0
Trichloroethene	63	57	53	64	70	61	55	66	13		23	13	23	<5.0	<25	<5.0
Tetrachloroethene	620	420	450	470	460	600	350	380	97		70	66	67	80	75	11
1,1-Dichloroethene	0.63 J	<1.0	<1.0	<1.0	<1.0	0.6J	0.53J	<1.0	<1.0		<5.0	<5.0	<5.0	<5.0	<25	<5.0
Chloroethane	<1.0	<1.0	0.5J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<5.0	7	29	<5.0	<25	<5.0
Aromatic Volatile Organics																
MTBE	NA	NA	1.1	<1.0	<1.0	<1.0	<1.0	NA	<1.0		<5.0	<5.0	<5.0	<5.0	<25	<5.0
TOTAL VOCs	**1099.0**	**731.2**	**877.8**	**1037.5**	**903.1**	**1156.2**	**770.1**	**870.6**	**250**		**820**	**330**	**478**	**683**	**711**	**46**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. J = Indicates an estimated value less than the lowest standard.
3. All results are in micrograms per liter (ug/l, ppb).
4. NA = Compound not analyzed.
5. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 11

Well MW-11
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	8/31/2006	HRC Injection; September 2006	12/14/2006	3/28/2007	6/21/2007	8/30/2007	3/7/2008
Vinyl Chloride	8.0		3.0J	8	<5.0	5	16
trans-1,2-Dichloroethene	NA		1.0J	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	140		35	54	16	17	84
Trichloroethene	6		3.0J	<5.0	<5.0	<5.0	5
Tetrachloroethene	37		7	14	6	<5.0	18
Methylene Chloride	<14		2JB	<5.0	<5.0	<5.0	<5.0
TOTAL VOCs	**191**		**51**	**76**	**22**	**22**	**123**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
3. All results are in micrograms per liter (ug/l, ppb).
4. NA = Compound not analyzed.
5. B = Indicates the compound was detected in the field blank sample.

TABLE 12

Well MW-12
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	8/31/2006	HRC Injection; September 2006	12/14/2006	3/28/2007	6/21/2007	8/30/2007	3/7/2008
Vinyl Chloride	5.0 J		5.0	<5.0	<5.0	56	5
trans-1,2-Dichloroethene	1.0 J		3.0 J	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	230		580	400	670	850	24
Trichloroethene	80		81	34	43	48	21
Tetrachloroethene	510		170	120	140	140	65
Methylene Chloride	<14		2JB	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0		1.0J	<5.0	<5.0	<5.0	<5.0
TOTAL VOCs	**826**		**840**	**554**	**853**	**1,038**	**110**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
3. All results are in micrograms per liter (ug/l, ppb).

TABLE 13

Well BR-1
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	1/20/1998	5/14/1998	8/26/1998	12/3/1998	2/26/1999	8/2/2001	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003
Vinyl Chloride	4.0	1.5	0.9J	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	20	11	9.6	11	6.6	3.4	3.9	2.5	3.4	3.8	3.5
Trichloroethene	2.0	0.8J	<1.0	0.7J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	12	5.0	1.9	4.0	2.6	1.2	0.90J	0.74J	1.5	1.7	1.8
TOTAL VOCs	**38**	**18.3**	**12.4**	**16.8**	**9.2**	**4.6**	**4.8**	**3.2**	**4.9**	**5.5**	**5.3**

Halogenated Volatile Organics	8/18/2004	8/30/2005	8/31/2006	8/30/2007
Vinyl Chloride	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene	2.5	3.2	1.0 J	6
Trichloroethene	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene	1.4	2.2	1.0 J	<5.0
TOTAL VOCs	**3.9**	**5.4**	**2.0**	**6.0**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. J = Indicates an estimated value less than the lowest standard.
3. All results are in micrograms per liter (ug/l, ppb).
4. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 14

Well BR-2
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

Halogenated Volatile Organics	1/20/1998	5/13/1998	8/26/1998	12/3/1998	2/25/1999	8/2/2001	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003
Vinyl Chloride	13	6.1	10	12	5.2	3.8	6.6	5	3.4	4.1	2.3
cis-1,2-Dichloroethene	65	64	100	100	63	55	71	57	48	63	43
Trichloroethene	19	21	27	26	20	20	24	18	17	20	21
Tetrachloroethene	130E	200	210	230	180	200	230	170	170	200	150
Chloroethane	<1.0	<1.0	0.9J	1.0	<1.0	<1.0	1.2	0.97J	0.5J	<1.0	<1.0
trans-1,2-Dichloroethylene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.37J	<1.0
TOTAL VOCs	**97**	**291.1**	**347.9**	**369**	**268.2**	**278.8**	**332.8**	**251.0**	**238.9**	**287.5**	**216.3**

Halogenated Volatile Organics	8/18/2004	8/30/2005	8/31/2006	8/30/2007
Vinyl Chloride	4.1	4.1	4.0J	<5.0
cis-1,2-Dichloroethene	48	66	56	62
Trichloroethene	20	22	18	14
Tetrachloroethene	220	170	160	140
Chloroethane	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethylene	<1.0	<1.0	<1.0	<5.0
TOTAL VOCs	**292.1**	**262.1**	**238.0**	**216.0**

Notes:
1. Results shown only for compounds which were historically detected at or above the laboratory practical quantitation limit (PQL).
2. J = Indicates an estimated value less than the lowest standard.
3. E = Indicates an estimated value greater than the highest standard.
4. All results are in micrograms per liter (ug/l, ppb).
5. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

TABLE 15

Well BR-4
Summary of Ground Water Sampling Analytical Results
Volatile Organic Compounds
Revonak Dry Cleaners Site No. 356021

	11/6/2001	2/19/2002	5/15/2002	8/15/2002	8/21/2003	8/18/2004	2/21/2005	8/30/2005	8/31/2006	8/30/2007
Halogenated Volatile Organics										
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Aromatic Volatile Organics										
MTBE	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.0	<5.0
TOTAL VOCs	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. J = Indicates an estimated value less than the lowest standard.
2. All results are in micrograms per liter (ug/l, ppb).
3. NA = Compound not analyzed.
4. The Sample Blank from August 18, 2004 sampling displayed an elevated level of Tetrachloroethane (2.1 ppb).

Table 16

Summary of MW-2 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-2		DATE							
Analyte	**Units**	**08/30/05**	**8/31/06**	**09/07/06**	**12/14/06**	**03/28/07**	**06/21/07**	**8/30/07**	**3/7/08**
Sulfate	mg/L	NM	NM	31.6	2.6	9.2	9.2	18.6	23.1
Nitrate	mg/L	NM	NM	<0.05	<0.05	0.050	<0.05	0.15	<0.05
Total Iron	ug/L	NM	NM	3,020	3,350	4,490	2,770	2,040	5.39
Dissolved Iron	ug/L	NM	NM	82	158	2,550	2,230	928	4.18
Total Manganese	ug/L	NM	NM	5,680	NM	8,700	3,730	3,540	9.17
Dissolved Manganese	ug/L	NM	NM	5,650	NM	8,190	3,500	3,040	8.67
Carbon Dioxide	mg/L	NM	NM	19	NM	23	62	43.1	53.9
Ethene	ug/L	NM	NM	57.8	NM	113.0	<100	<100	<500
Ethane	ug/L	NM	NM	<10.0	NM	33	106	<100	<500
Methane	ug/L	NM	NM	368	NM	2,600	4,100	2,600	2,400
Total Organic Carbon	mg/L	NM	NM	4.7	100.0	22.0	8.5	5.4	14.0
VOCs									
Vinyl Chloride	ug/l	110	620	NM	40	37	67	56	20
cis-1,2-Dichloroethene	ug/l	370	1400	NM	130	110	210	250	60
1,1,1-Trichloroethane	ug/l	1.0	<5.0	NM	1.0J	<5.0	<5.0	<5.0	<5.0
Trichloroethene	ug/l	19	24	NM	23	12	20	31	9
Tetrachloroethene	ug/l	100	110	NM	220	270	270	330	84
1, 1-Dichloroethane	ug/l	9.4	9	NM	6	<5.0	5	10	<5.0
1, 1-Dichloroethene	ug/l	0.51J	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1, 2-Dichloroethene	ug/l	14	24	NM	9	6	7	10	<5.0
1,1,1,2-Tetrachloroethane	ug/l	<1.0	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	ug/l	14	2.0J	NM	7	7	18	16	13
Total VOCs		**637.91**	**2189**		**436**	**442**	**597**	**703**	**186**

Table 17

Summary of MW-3 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-3		DATE						
Analyte	**Units**	**08/30/05**	**8/31/06**	**09/07/06**	**12/14/06**	**03/28/07**	**06/21/07**	**08/30/07**
Sulfate	mg/L	NM	NM	30.4	NM	NM	NM	NM
Nitrate	mg/L	NM	NM	<0.05	NM	NM	NM	NM
Total Iron	ug/L	NM	NM	1,830	NM	NM	NM	NM
Dissolved Iron	ug/L	NM	NM	38	NM	NM	NM	NM
Total Manganese	ug/L	NM	NM	5,150	NM	NM	NM	NM
Dissolved Manganese	ug/L	NM	NM	3,370	NM	NM	NM	NM
Carbon Dioxide	mg/L	NM	NM	14.5	NM	NM	NM	NM
Ethene	ug/L	NM	NM	<10.0	NM	NM	NM	NM
Ethane	ug/L	NM	NM	<10.0	NM	NM	NM	NM
Methane	ug/L	NM	NM	21	NM	NM	NM	NM
Total Organic Carbon	mg/L	NM	NM	4.60	NM	NM	NM	NM
VOCs								
Vinyl Chloride	ug/l	2.0	1.0J	NM	NM	NM	NM	NM
cis-1,2-Dichloroethene	ug/l	9.6	5	NM	NM	NM	NM	NM
1,1,1-Trichloroethane	ug/l	<1.0	<5.0	NM	NM	NM	NM	NM
Trichloroethene	ug/l	0.97J	<5.0	NM	NM	NM	NM	NM
Tetrachloroethene	ug/l	<1.0	<5.0	NM	NM	NM	NM	NM
Total VOCs		**12.6**	**6**					

MW-3 was not sampled during the December 14, 2006, March 28, 2007, June 21, 2007, August 30, 2007, or March 10, 2008 sampling events because the liquid in the well appeared to be primarily HRC.

Table 18

Summary of MW-6 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-6		DATE							
Analyte	**Units**	**08/30/05**	**8/31/06**	**09/07/06**	**12/14/06**	**03/28/07**	**06/21/07**	**8/30/07**	**3/7/08**
Sulfate	mg/L	NM	NM	13.5	11.8	5.2	4.6	2.52	10.80
Nitrate	mg/L	NM	NM	0.270	<0.05	0.120	<0.05	<0.05	<0.05
Total Iron	ug/L	NM	NM	2,000	3,560	502	902	1,320	2.06
Dissolved Iron	ug/L	NM	NM	65	209	301	436	639	1.45
Total Manganese	ug/L	NM	NM	846	NM	4390	3930	4,690	3.16
Dissolved Manganese	ug/L	NM	NM	13	NM	3780	3110	3,270	2.95
Carbon Dioxide	mg/L	NM	NM	18.6	NM	14	62	86.2	53.9
Ethene	ug/L	NM	NM	<10.0	NM	<10.0	<200	<100	<10
Ethane	ug/L	NM	NM	<10.0	NM	11	<200	<100	<10
Methane	ug/L	NM	NM	83	NM	4400	6400	4,400	936
Total Organic Carbon	mg/L	NM	NM	2.1	4.3	2.9	5.9	6.4	5.2
VOCs									
Vinyl Chloride	ug/l	84	1.0J	NM	1.0J	<5.0	<5.0	<5.0	6
cis-1,2-Dichloroethene	ug/l	470	7	NM	2.0J	<5.0	<5.0	<5.0	<5.0
Trichloroethene	ug/l	3.7	8	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	ug/l	2.3	67	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	ug/l	3.8	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	ug/l	3.7	NM	NM	NM	<5.0	<5.0	<5.0	<5.0
1,1 Dichloroethene	ug/l	0.77J	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Total VOCs		**568.3**	**83**		**3**	**ND**	**ND**	**ND**	**6**

Table 19

Summary of MW-9 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-9		DATE							
Analyte	**Units**	**08/30/05**	**8/31/06**	**9/7/06**	**12/14/06**	**3/28/07**	**6/21/07**	**8/30/07**	**3/7/08**
Sulfate	mg/L	NM	NM	35.0	31.7	48.3	46.9	54.5	45.3
Nitrate	mg/L	NM	NM	0.56	0.78	0.53	0.34	0.30	0.34
Total Iron	ug/L	NM	NM	11,500	4,590	328	3,440	447	0.465
Dissolved Iron	ug/L	NM	NM	34	9	9	10	<5.0	0.009
Total Manganese	ug/L	NM	NM	2,970	NM	492	675	205	0.913
Dissolved Manganese	ug/L	NM	NM	11	NM	470	152	163	0.871
Carbon Dioxide	mg/L	NM	NM	18.6	NM	10.3	62	34.5	64.7
Ethene	ug/L	NM	NM	<10.0	NM	<10.0	<10.0	<10	<10
Ethane	ug/L	NM	NM	<10.0	NM	<10.0	<10.0	<10	<10
Methane	ug/L	NM	NM	15.0	NM	47.1	10.2	44.8	<10
Total Organic Carbon	mg/L	NM	NM	1.8	2.2	1.1	2.4	2.6	7.2
VOCs									
Vinyl Chloride	ug/l	1	2.0J	NM	16	5	8	12	<5.0
trans-1,2-Dichloroethene	ug/l	0.76	2.0J	NM	2.0J	<5.0	<5.0	<5	<5.0
cis-1,2-Dichloroethene	ug/l	74.0	200	NM	180	140	110	120	110
1,1,1-Trichloroethane	ug/l	<1.0	<5.0	NM	<5.0	<5.0	<5.0	<5	<5.0
Trichloroethene	ug/l	51	48	NM	47	30	28	42	24
Tetrachloroethene	ug/l	210	280	NM	210	230	210	300	180
Methylene Chloride	ug/l	<1.0	<5.0	NM	2.0JB	<5.0	<5.0	<5	<5.0
Chloroethane	ug/l	<1.0	<5.0	NM	<5.0	<5.0	<5.0	<5	<5.0
1,1-Dichloroethene	ug/l	<1.0	<5.0	NM	<5.0	<5.0	<5.0	<5	<5.0
Total VOCs		**336.8**	**532**		**457**	**405**	**356**	**474**	**314**

Table 20

Summary of MW-10 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-10		DATE								
Analyte	**Units**	**08/30/05**	**8/31/06**	**9/11/06**	**12/14/06**	**3/28/07**	**6/21/07**	**8/30/07**	**8/30/2007 (duplicate)**	**3/7/08**
Sulfate	mg/L	NM	NM	136	8.17	192	30.9	40.2	NA	410
Nitrate	mg/L	NM	NM	0.48	<0.05	0.41	<0.05	0.08	NA	1.22
Total Iron	ug/L	NM	NM	5,690	9,550	1,630	2,450	11,800	NA	1.39
Dissolved Iron	ug/L	NM	NM	7	24	39	157	268	NA	0.006
Total Manganese	ug/L	NM	NM	382	NM	3,510	6,370	13,400	NA	0.617
Dissolved Manganese	ug/L	NM	NM	<5.0	NM	2,690	5,480	5,390	NA	0.607
Carbon Dioxide	mg/L	NM	NM	18.6	NM	22.7	51.7	86.2	NA	64.7
Ethene	ug/L	NM	NM	<10.0	NM	16.2	10.6	14.6	NA	<10
Ethane	ug/L	NM	NM	<10.0	NM	<10.0	<10.0	10.8	NA	<10
Methane	ug/L	NM	NM	50.2	NM	142	134	109	NA	<10
Total Organic Carbon	mg/L	NM	NM	<1.0	9.1	2.5	4.9	4.6	NA	11
VOCs										
Vinyl Chloride	ug/l	1.7	<5.0	NM	31	24	29	53	56	<5.0
trans-1,2-Dichloroethene	ug/l	2.3	NM	NM	6J	<5.0	<5.0	<5	<25	<5.0
cis-1,2-Dichloroethene	ug/l	420	140	NM	690	220	330	550	580	35
1,1,1-Trichloroethane	ug/l	0.59J	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<25	<5.0
Trichloroethene	ug/l	66	13	NM	23	13	23	<5	<25	<5.0
Tetrachloroethene	ug/l	380	97	NM	70	66	67	80	75	11
1,1-Dichloroethene	ug/l	<1.0	<5.0	NM	<5.0	<5.0	<5.0	<5	<25	<5.0
Chloroethane	ug/l	<1.0	<5.0	NM	<5.0	7	29	<5	<25	<5.0
Total VOCs		**870.6**	**250**		**820**	**330**	**478**	**683**	**711**	**46**

Table 21

Summary of MW-11 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

WELL MW-11		DATE						
Analyte	**Units**	**8/31/06**	**9/7/06**	**12/14/06**	**3/28/07**	**6/21/07**	**8/30/07**	**3/7/08**
Sulfate	mg/L	NM	45.6	8.27	34.1	44.8	188	47.7
Nitrate	mg/L	NM	0.12	<0.05	<0.05	<0.05	28	<0.05
Total Iron	ug/L	NM	16,100	7,590	2,100	819	543	4.17
Dissolved Iron	ug/L	NM	75	24	1360	692	354	0.035
Total Manganese	ug/L	NM	3,480	NM	7,790	6,990	8,430	7.3
Dissolved Manganese	ug/L	NM	896	NM	7750	6770	8,210	5.96
Carbon Dioxide	mg/L	NM	18.6	NM	22.7	72.4	103	53.9
Ethene	ug/L	NM	<10.0	NM	12.8	<10.0	<10	<10
Ethane	ug/L	NM	<10.0	NM	30	<10.0	<10	<10
Methane	ug/L	NM	360	NM	984	131	124	34.9
Total Organic Carbon	mg/L	NM	4.6	3.9	2.6	3.9	5.8	5.5
VOCs								
Vinyl Chloride	ug/l	8	NM	3.0J	8	<5.0	5	16
trans-1,2-Dichloroethene	ug/l	NM	NM	1.0J	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	ug/l	140	NM	35	54	16	17	84
1,1,1-Trichloroethane	ug/l	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	ug/l	6	NM	3.0J	<5.0	<5.0	<5.0	5
Tetrachloroethene	ug/l	37	NM	7	14	6	<5.0	18
1,1-Dichloroethene	ug/l	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	ug/l	<5.0	NM	2.0J	<5.0	<5.0	<5.0	<5.0
Total VOCs		**191**		**51**	**76**	**22**	**22**	**123**

Table 22

Summary of MW-12 Ground Water Sampling Analytical Results
HRC Indicator Parameters & VOCs
Revonak Dry Cleaners Site No. 356021

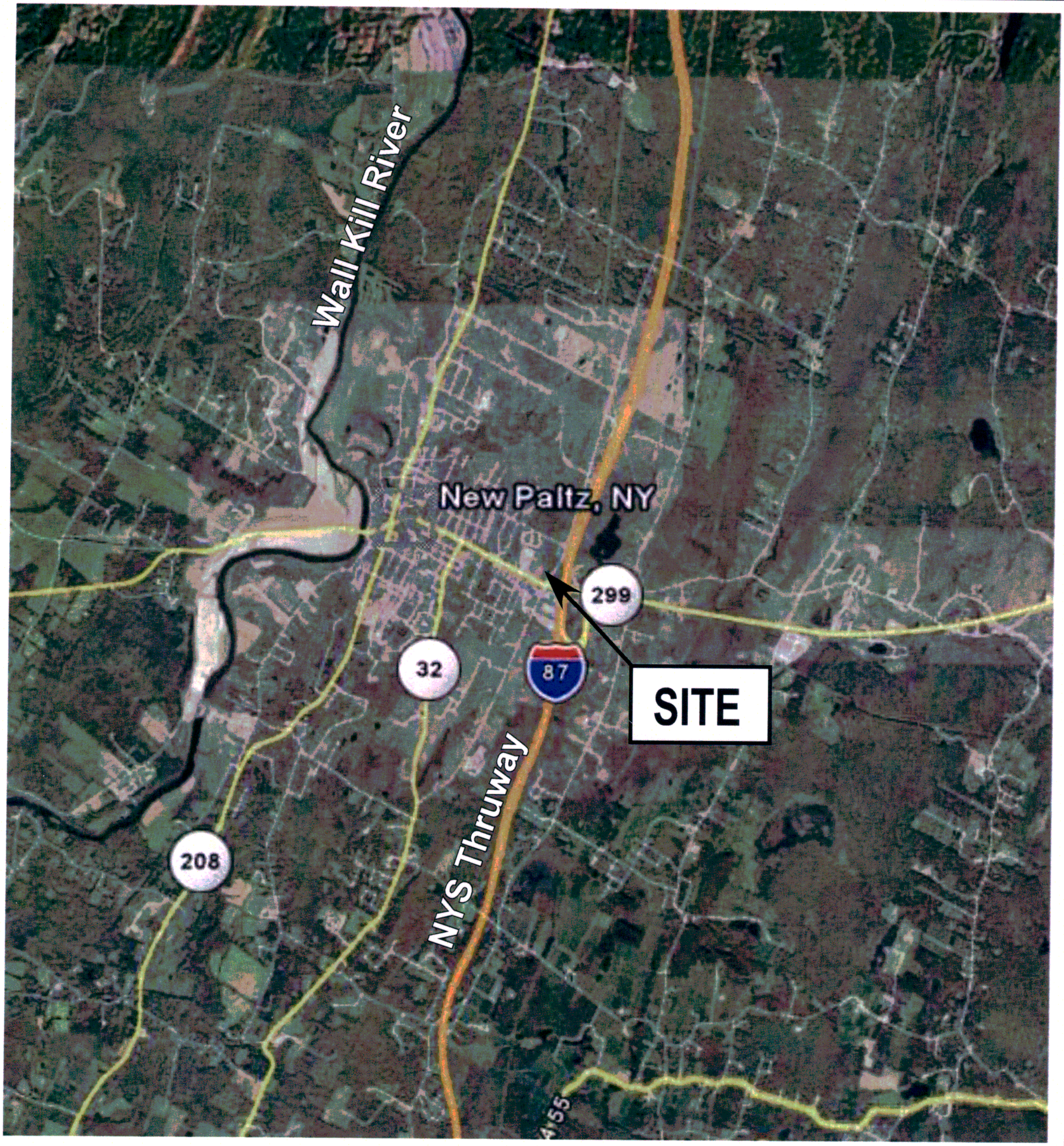
WELL MW-12		DATE						
Analyte	**Units**	**8/31/06**	**9/7/06**	**12/14/06**	**3/28/07**	**6/21/07**	**8/30/07**	**3/7/08**
Sulfate	mg/L	NM	42.6	21.0	28.8	36.7	43.7	47.1
Nitrate	mg/L	NM	<0.05	<0.05	0.52	<0.05	0.31	1.36
Total Iron	ug/L	NM	24,800	7490	464	1200	3,380	0.449
Dissolved Iron	ug/L	NM	455	27	45	166	121	<0.005
Total Manganese	ug/L	NM	6,290	NM	1230	2490	4,270	1.89
Dissolved Manganese	ug/L	NM	2,710	NM	1030	2360	3,990	1.91
Carbon Dioxide	mg/L	NM	10.3	NM	10.3	41.4	86.2	64.7
Ethene	ug/L	NM	<10.0	NM	<10.0	<10.0	<10	<10
Ethane	ug/L	NM	<10.0	NM	<10.0	<10.0	<10	<10
Methane	ug/L	NM	19.6	NM	19.1	78.6	15.1	<10
Total Organic Carbon	mg/L	NM	3.0	2.9	2.4	5.1	3.6	11
VOCs								
Vinyl Chloride	ug/l	5.0J	NM	5	<5.0	<5.0	56	5
trans-1,2-Dichloroethene	ug/l	1.0J	NM	3.0J	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	ug/l	230	NM	580	400	670	850	24
1,1,1-Trichloroethane	ug/l	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	ug/l	80	NM	81	34	43	48	21
Tetrachloroethene	ug/l	510	NM	170	120	140	140	65
1,1-Dichloroethene	ug/l	<5.0	NM	1.0J	<5.0	<5.0	<5.0	<5.0
Chloroethane	ug/l	<5.0	NM	<5.0	<5.0	<5.0	<5.0	<5.0
Total VOCs		**826**		**840**	**554**	**853**	**1,094**	**110**

Table 23

Summary of Soil Gas Sampling Analytical Results
Revonak Dry Cleaners Site No. 356021

	9/11/2006				3/28/2007				8/30/2007			
	SV-1		SV-2		SV-1		SV-2		SV-1		SV-2	
PARAMETER	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3
1,2,4-Trimethylbenzene	ND<6.9	ND<25.9	ND<6.98	ND<26.2	2	10	2	10	ND<8.2	ND<41.0	ND<3.8	ND<19.2
1,3,5-Trimethylbenzene	ND<6.9	ND<25.9	ND<6.98	ND<26.2	ND<0.96	ND<3.59	0.5	2.5	ND<8.2	ND<41.0	ND<3.8	ND<19.2
2,2,4-Trimethylpentane	900	4,280	540	2,570	170	808	45	214	330	1570	ND<3.8	ND<18.2
4-Ethyltoluene	ND<6.9	ND<25.9	ND<6.98	ND<26.2	2.6	13	2.6	13	ND<8.2	ND<41.0	ND<3.8	ND<19.2
Acetone	ND<6.9	ND<12.4	63	152	25	60.4	54	131	84	203	41	99.1
Benzene	ND<6.9	ND<16.9	14	45.5	1.7	5.52	2.8	9.1	ND<8.2	ND<26.6	ND<3.8	ND<12.5
Carbon Disulfide	ND<6.9	ND<16.6	700	2,220	ND<0.96	ND<2.29	3	9.5	ND<8.2	ND<25.8	11	34.8
cis-1,2-Dichloroethylene	95	383	89	359	29	117	ND<0.39	117	250	1010	25	101
n-Hexane	68	243	ND<6.98	ND<18.8	ND<0.96	ND<2.58	ND<0.39	ND<1.06	44	157	ND<3.8	ND<13.8
o-Xylene	ND<6.9	ND<22.8	ND<6.98	ND<23	ND<0.96	ND<3.15	0.7	3.09	ND<8.2	ND<36.1	ND<3.8	ND<16.9
p- & m-Xylenes	ND<6.9	ND<22.8	ND<6.98	ND<23	ND<0.96	ND<3.15	0.7	3.09	ND<8.2	ND<36.1	ND<3.8	ND<16.9
Propylene	1300	2270	770	1,350	ND<0.96	ND<1.24	ND<0.39	ND<0.512	ND<8.2	ND<14.3	ND<3.8	ND<6.71
Styrene	ND<6.9	ND<22.4	ND<6.98	ND<22.7	1.1	4.77	0.9	3.9	ND<8.2	ND<35.7	ND<3.8	ND<16.7
Tetrachloroethylene	31	214	540	3,720	4.1	28.3	67	462	28	193	580	4000
Toluene	13	49.8	410	1,570	1.7	6.52	1.9	7.28	ND<8.2	ND<31.6	ND<3.8	ND<14.8
Trichloroethylene	14	76.5	87	476	2.5	13.7	5.9	32.3	36	200	80	437
Trichlorofluoromethane	ND<6.9	ND<39.4	ND<6.98	ND<39.8	ND<0.96	ND<5.45	1.7	9.71	ND<8.2	ND<46.7	15	85.7
Vinyl Chloride	98	255	ND<6.98	ND<18.1	180	468	ND<0.39	ND<1.02	1100	2860	ND<3.8	ND<9.96
Total VOCs	***2,519***	*7,771*	***3,213***	*12,463*	***420***	*1,535*	***189***	*1,027*	***1,872***	*6,193*	***752***	*4,758*

FIGURES

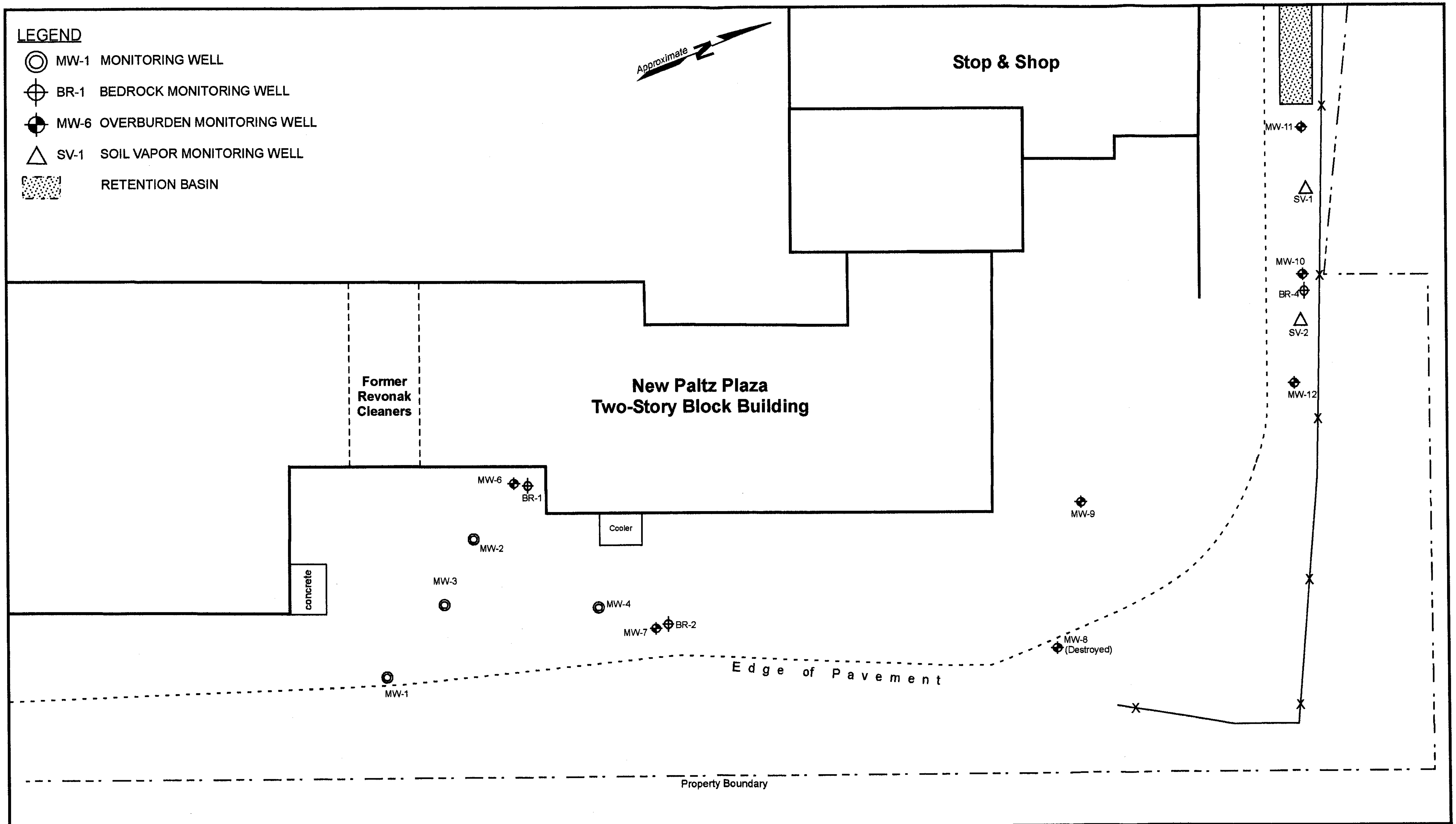


ALPHA GEOSCIENCE

FIGURE 1
Site Location Map

Revonak Dry Cleaners

Project No. 95141 **New Paltz, NY**



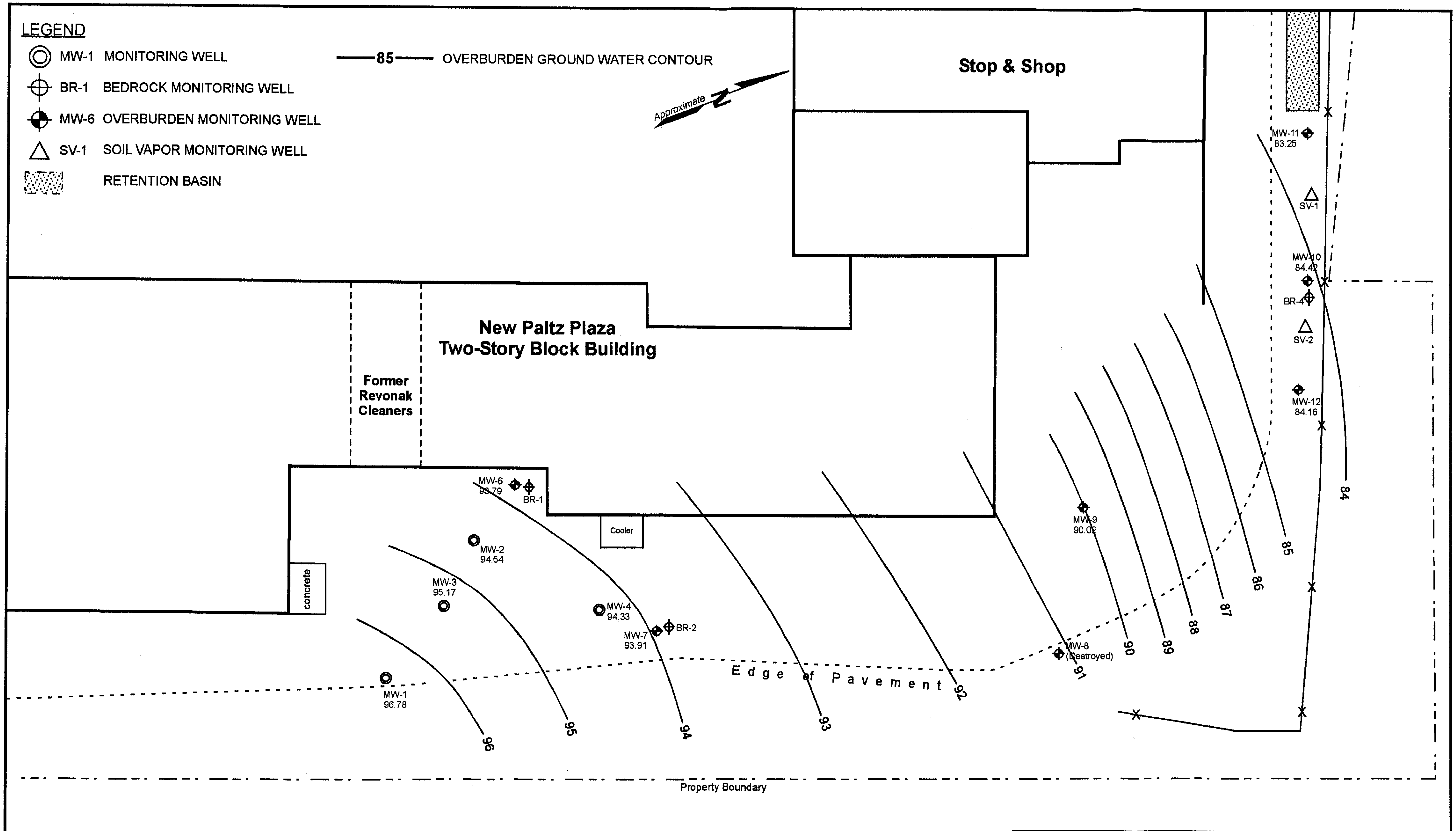
Source: "Survey prepared for New Paltz Plaza Associates" Dated 4/17/86 by John H. Dippel and "Groundwater Contour Map" dated 9/91 by Environmental Products & Services, Inc.

ALPHA GEOSCIENCE

FIGURE 2
Monitoring Well Locations Map

PROJECT 95141

NEW PALTZ, NY

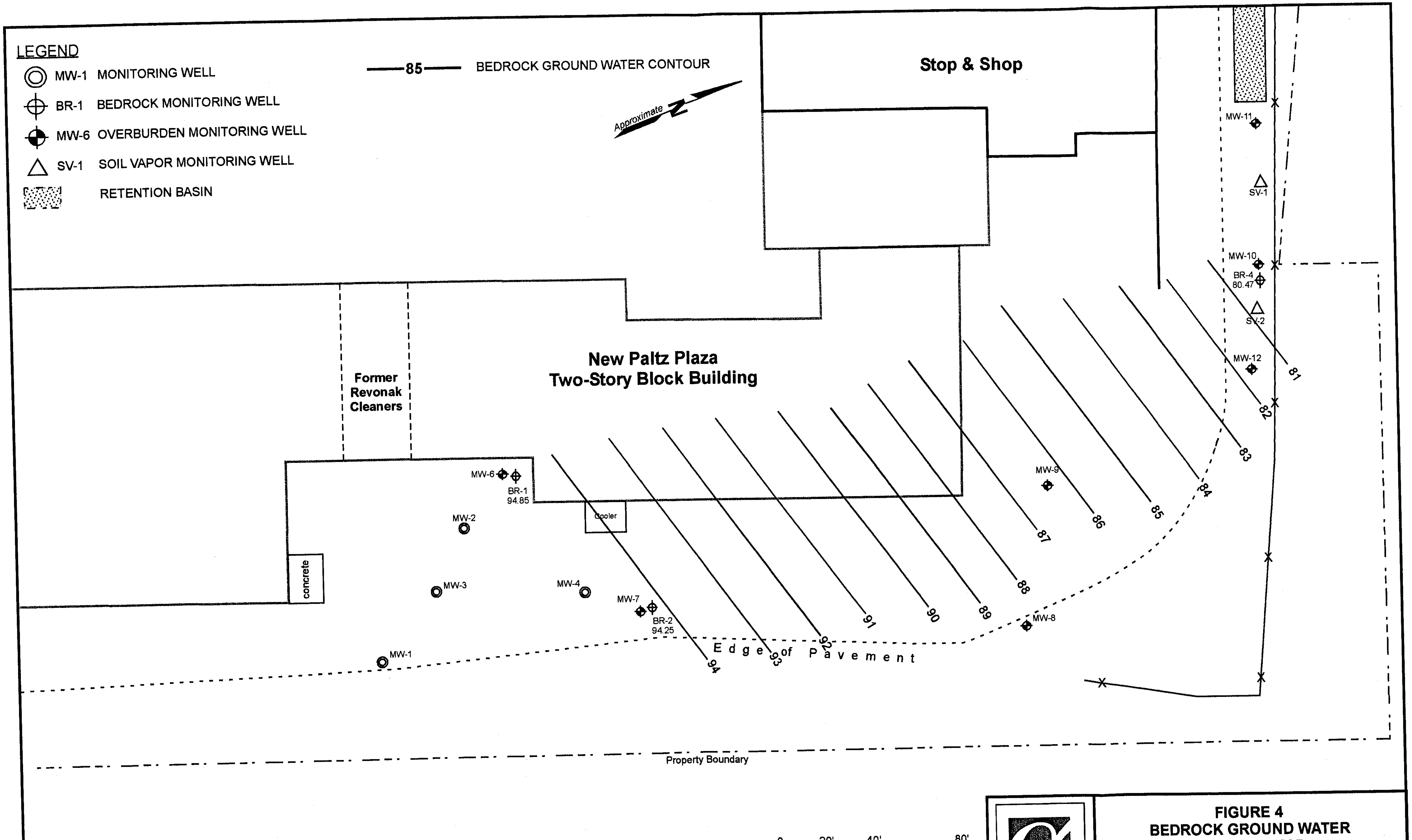


Source: "Survey prepared for New Paltz Plaza Associates" Dated 4/17/86 by John H. Dippel and "Groundwater Contour Map" dated 9/91 by Environmental Products & Services, Inc.

FIGURE 3
OVERBURDEN GROUND WATER CONTOUR MAP
MARCH 7, 2008

PROJECT 95141 NEW PALTZ, NY

95141\Figures\GW Contours\03-07-08 Over.cvx



Source: "Survey prepared for New Paltz Plaza Associates" Dated 4/17/86 by John H. Dippel and "Groundwater Contour Map" dated 9/91 by Environmental Products & Services, Inc.

FIGURE 4
BEDROCK GROUND WATER CONTOUR MAP
MARCH 7, 2008

PROJECT 95141 NEW PALTZ, NY

95141/Figures/GW Contours/03-07-08 Bdrk.cvx

LEGEND

● 4 Residence and House Number

● 10 Residence Sampled by NYSDOH

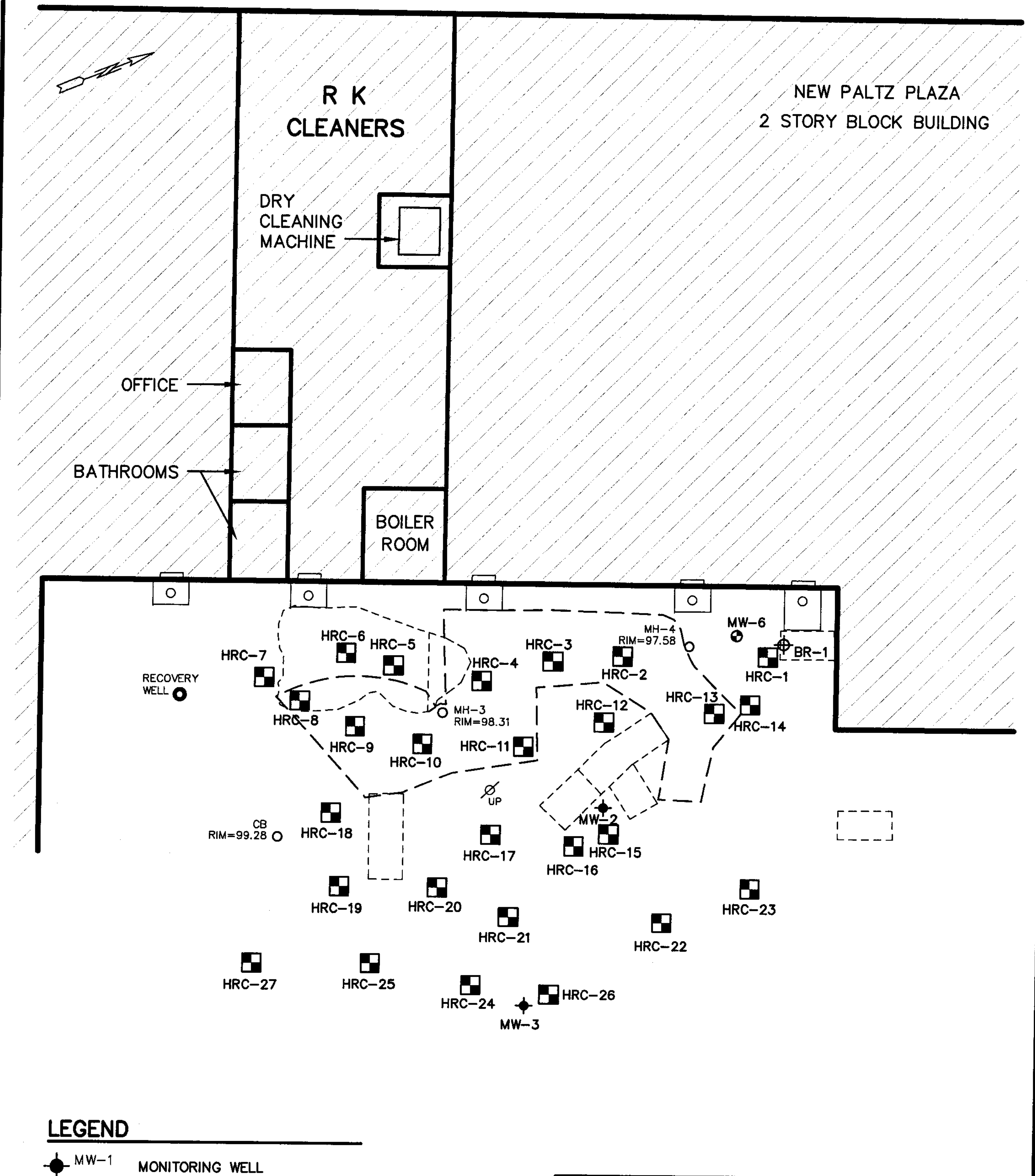
ALPHA GEOSCIENCE

FIGURE 5
Well Survey and Ground Water Flow Map

Revonak Dry Cleaners

Project No. 95141

New Paltz, NY

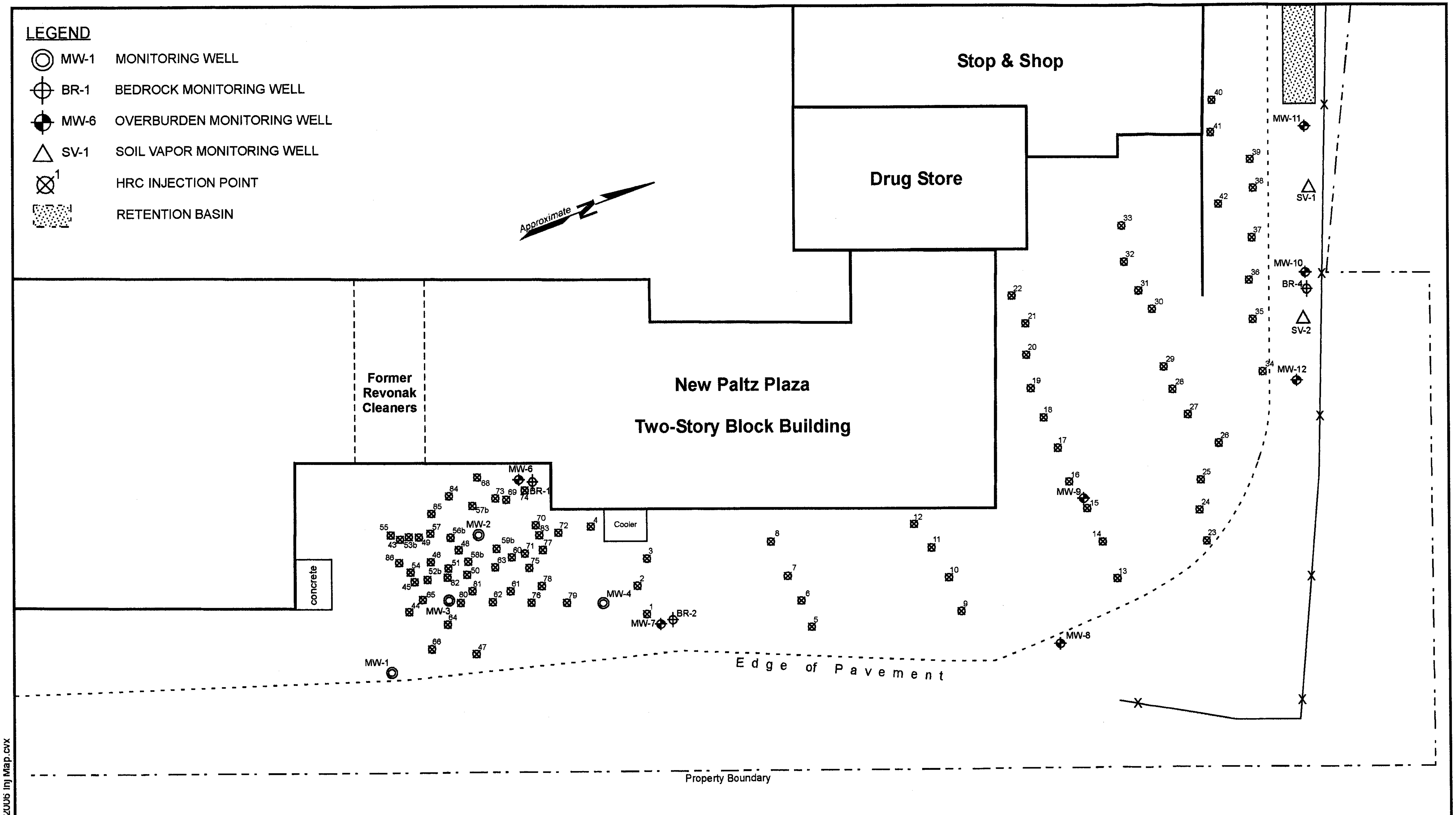


ALPHA GEOSCIENCE

FIGURE 6
HYDROGEN RELEASING COMPOUNDS
INJECTION LOCATION MAP
Nov. 2003

PROJECT 95141 NEW PALTZ, NY

11-13-03 HRC.DWG

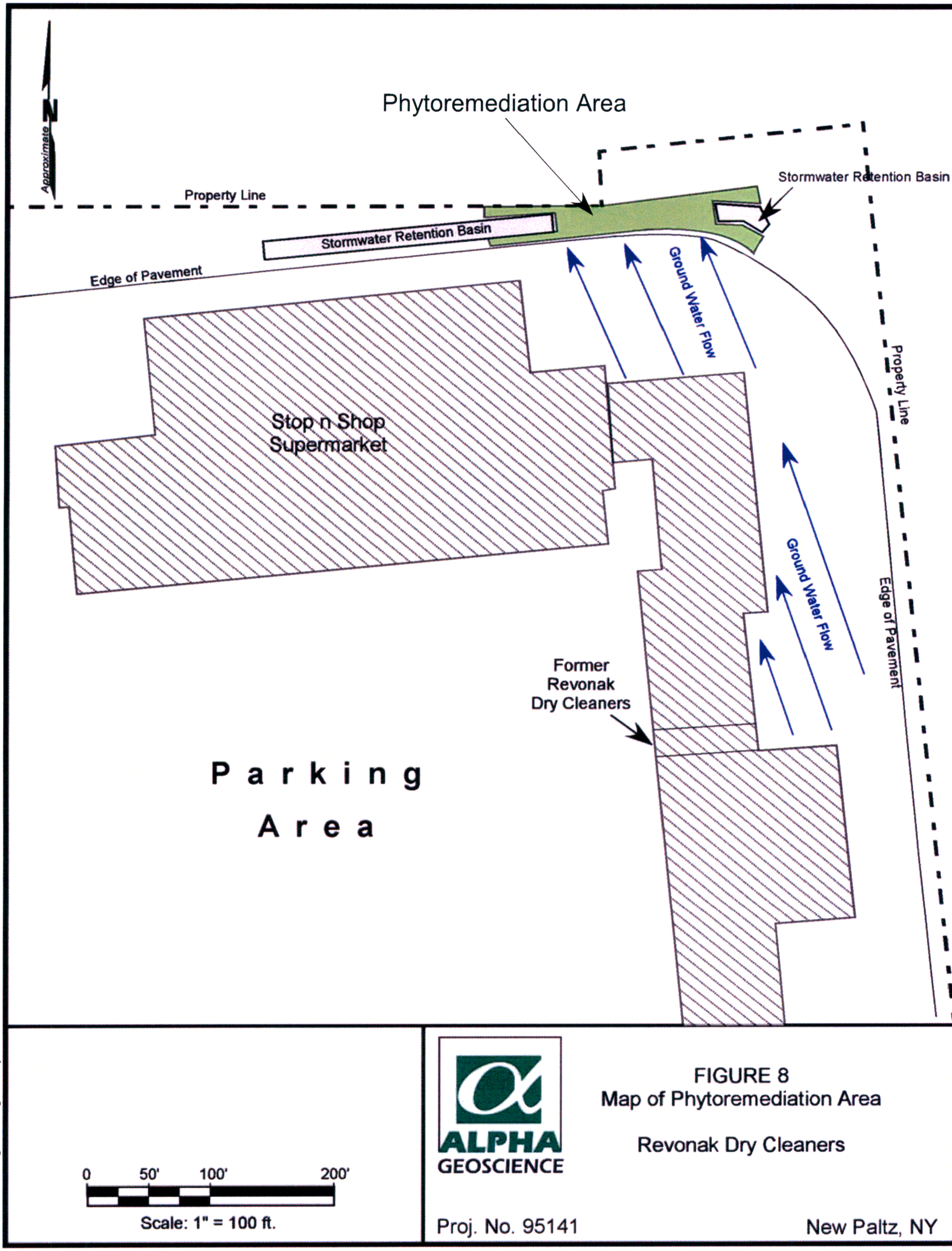


Source: "Survey prepared for New Paltz Plaza Associates" Dated 4/17/86 by John H. Dippel and "Groundwater Contour Map" dated 9/91 by Environmental Products & Services, Inc.

ALPHA GEOSCIENCE

FIGURE 7
HRC INJECTION MAP
September, 2006

PROJECT 95141 NEW PALTZ, NY



ALPHA GEOSCIENCE

FIGURE 8
Map of Phytoremediation Area

Revonak Dry Cleaners

Proj. No. 95141

New Paltz, NY

95141/Figures/Fig. 8 Phytorem. Area

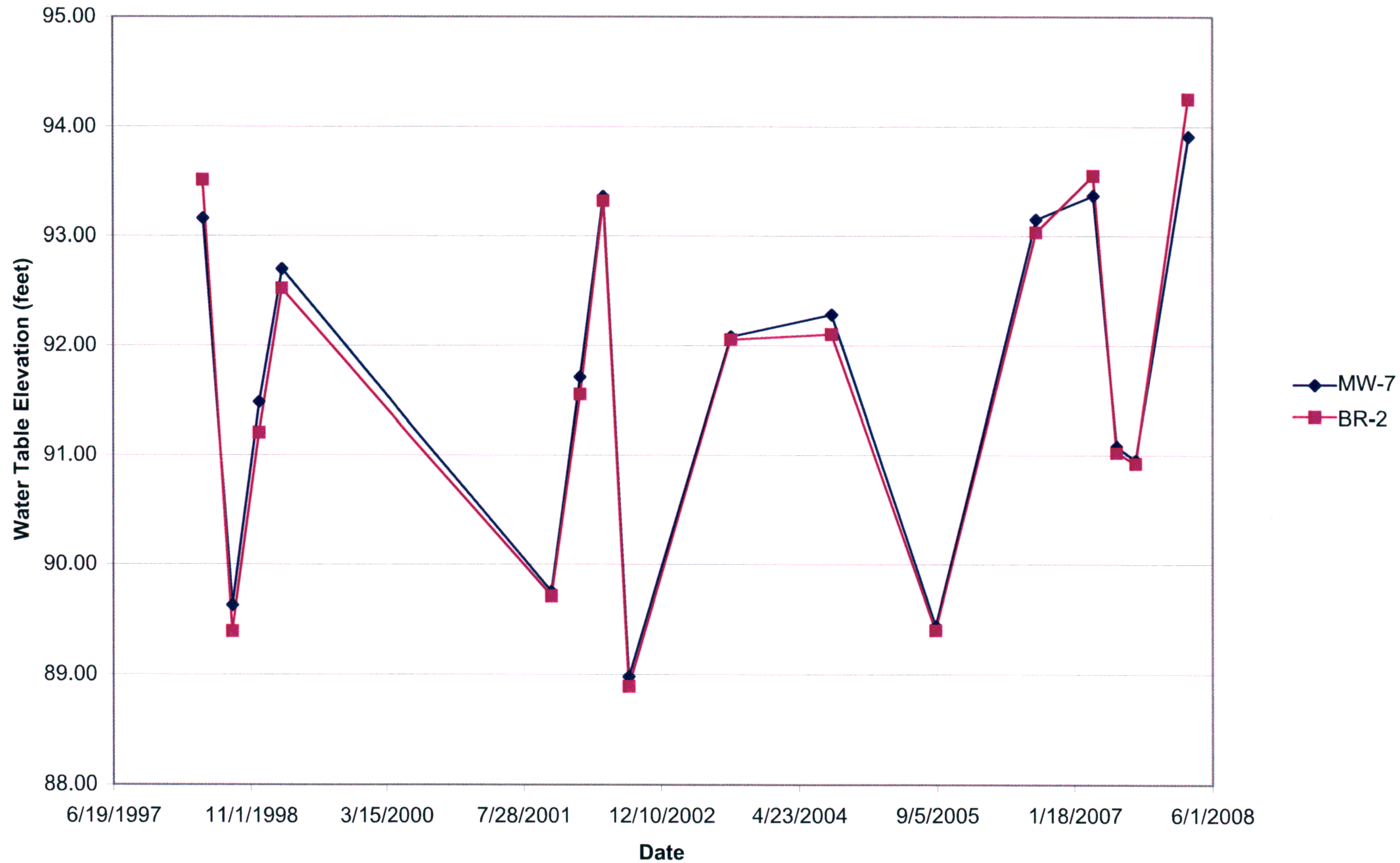
APPENDIX A

Ground Water Hydrographs

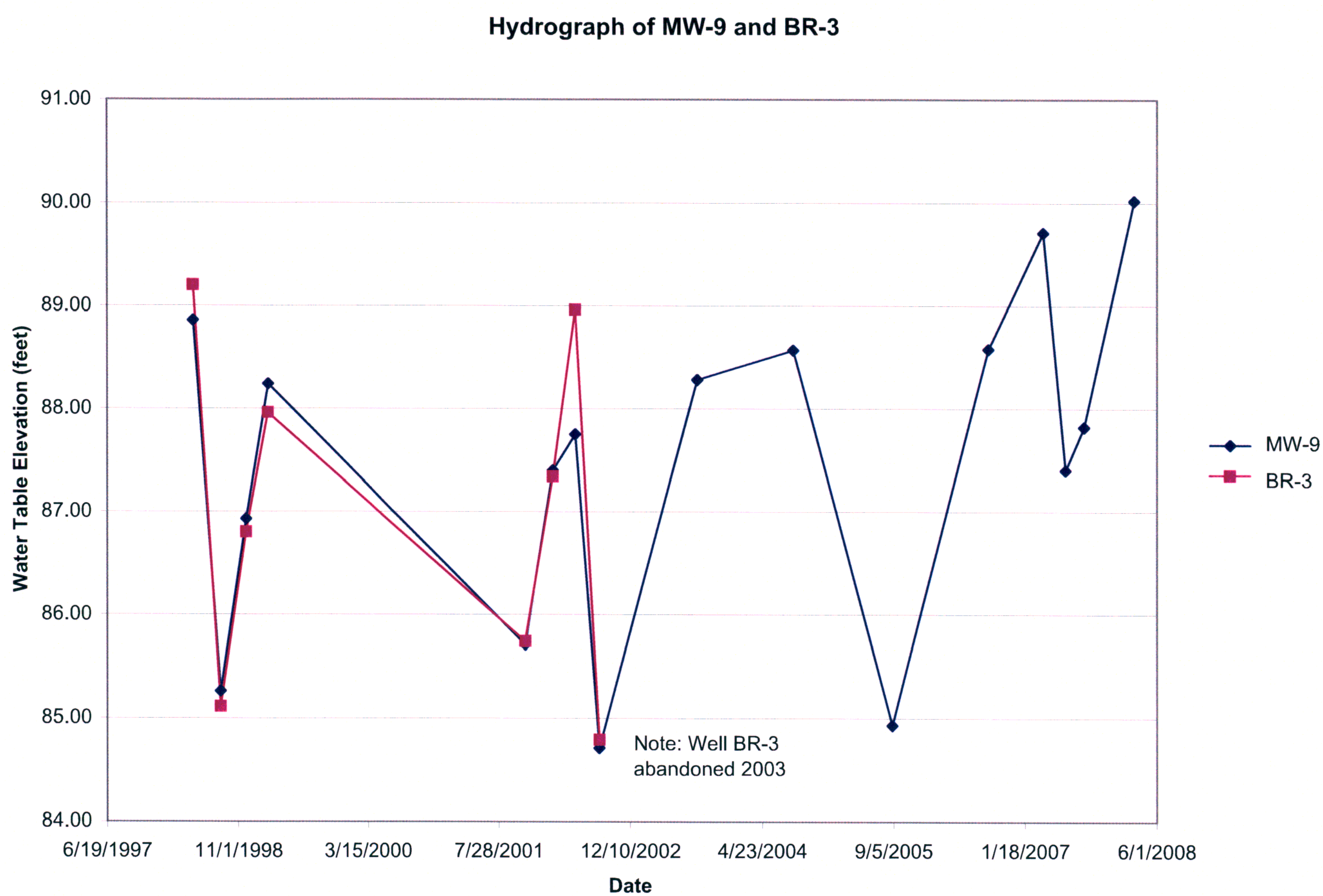
Hydrograph of MW-6 and BR-1

...Main Station\projects\1995\95141\Tables\Vert Hyd. Grad.\Hydrograph of MW-6 and BR-1

Hydrograph of MW-7 and BR-2



...Main Station\projects\1995\95141\Tables\Vert Hyd. Grad.\Hydrograph of MW-7 and BR-2



...Main Station\projects\1995\95141\Tables\Vert Hyd. Grad.\Hydrograph of MW-9 and BR-3

Hydrograph of MW-10 and BR-4

1995\95141\Tables\Vert Hyd. Grad.\Hydrograph of MW-10 and BR-4

APPENDIX B

Soil Removal Action:

Post-excavation Soil Sampling Locations and Analytical Results

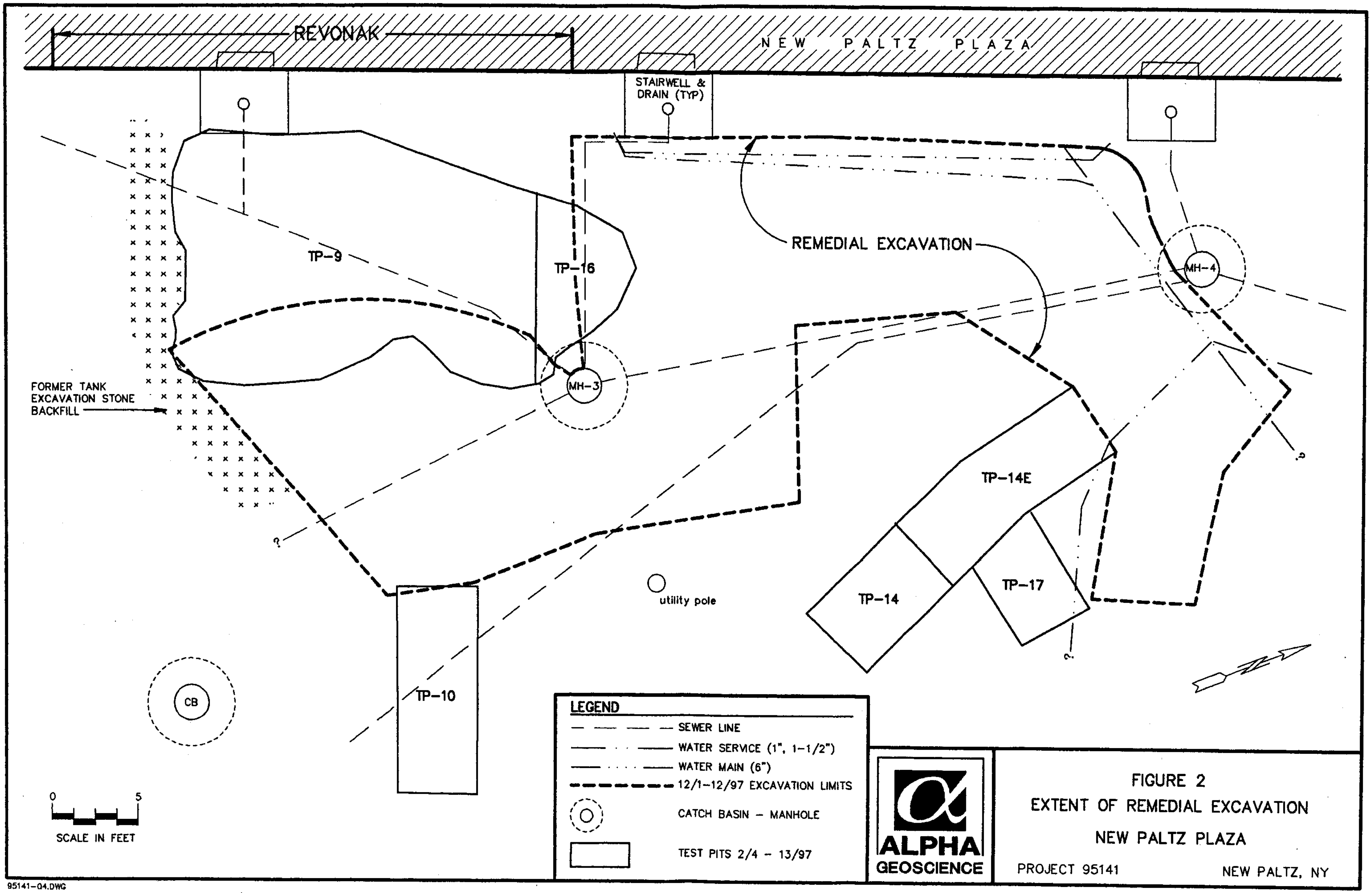


FIGURE 2
EXTENT OF REMEDIAL EXCAVATION
NEW PALTZ PLAZA

PROJECT 95141 NEW PALTZ, NY

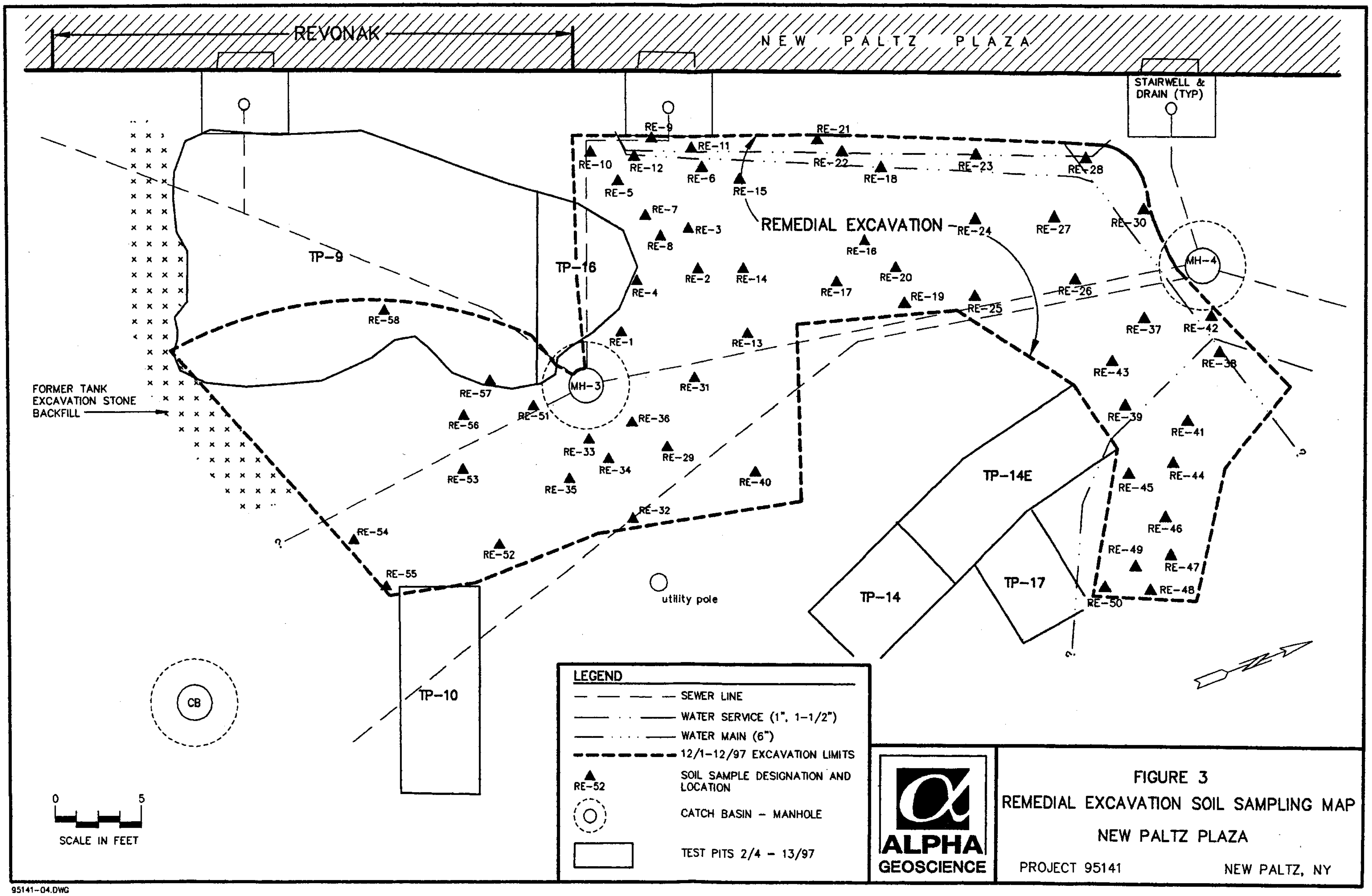


FIGURE 3
REMEDIAL EXCAVATION SOIL SAMPLING MAP
NEW PALTZ PLAZA
PROJECT 95141 NEW PALTZ, NY

95141-04.DWG

Table 4
Summary of GC and Laboratory Soil Analytical Results
Remedial Excavation Program
New Paltz Plaza

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/2/97	RE-1B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-2B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-3B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-4B	Lab	***13***	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
		GC	**93**	<50	<50	<50	<50	<50	<50
12/2/97	RE-5B	GC	**94**	<50	<50	<50	<50	<50	<50
12/2/97	RE-6B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-7B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-8B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-9B	Lab	*<140*	*<140*	*<140*	*<140*	***260***	***170***	***100***
		GC	<50	<50	<50	**58**	**147**	**348**	<50
12/3/97	RE-9B Dup	Lab	*<140*	*<140*	*<140*	*<140*	***260***	***170***	***130***
		GC	**64**	<50	<50	<50	**230**	**457**	<50
12/3/97	RE-10B	GC	**85**	<50	<50	**57**	**102**	**302**	<50
12/3/97	RE-11B	GC	**96**	<50	<50	<50	<50	**547**	<50
12/3/97	RE-12B	GC	**415**	<50	<50	**53**	<50	**161**	<50
12/3/97	RE-13B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-14B	Lab	***3.4***	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
		GC	**451**	<50	<50	<50	<50	<50	<50
12/3/97	RE-15B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/3/97	RE-16B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-17B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-17B Dup	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-18B	GC	**94**	<50	<50	<50	<50	<50	<50
12/3/97	RE-19B	GC	**57**	<50	<50	**61**	**78**	**329**	<50
12/3/97	RE-20B	GC	**166**	<50	<50	**63**	**151**	**417**	**70**
12/3/97	RE-21B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-22B	Lab	***23***	***4.9***	*<5.7*	*<5.7*	***48***	***49***	***10***
		GC	**597**	**116**	<50	<50	<50	**73**	<50
12/4/97	RE-23B	GC	**70**	<50	<50	<50	<50	<50	<50
12/4/97	RE-24B	GC	**67**	<50	<50	<50	<50	<50	<50
12/4/97	RE-25B	Lab	***2.3***	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
		GC	**75**	<50	<50	<50	<50	<50	<50
12/4/97	RE-26B	GC	**69**	<50	<50	<50	**65**	**303**	<50
12/4/97	RE-27B	GC	**54**	<50	<50	<50	<50	**350**	<50
12/4/97	RE-28B	GC	<50	<50	<50	<50	<50	**114**	<50
12/5/97	RE-29B	GC	<50	<50	<50	<50	<50	<50	<50
12/5/97	RE-29E Dup	GC	<50	<50	<50	<50	<50	<50	<50
12/5/97	RE-30B	Lab	*<1.2*	*<1.2*	*<1.2*	*<1.2*	*<1.2*	*<1.2*	*<1.2*
		GC	<50	<50	<50	<50	<50	<50	<50
12/5/97	RE-31B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/5/97	RE-32B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97	RE-33B	Lab	2.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
		GC	**95**	<50	<50	<50	<50	<50	<50
12/8/97	RE-34B	GC	<50	<50	<50	<50	<50	**177**	<50
12/8/97	RE-35B	GC	<50	<50	<50	<50	**672**	**499**	<50
12/8/97	RE-36B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97	RE-37B	GC	**59**	<50	<50	<50	<50	<50	<50
12/8/97	RE-38B	GC	**112**	<50	<50	<50	<50	<50	<50
12/8/97	RE-39B	GC	**60**	<50	<50	<50	<50	**97**	<50
12/8/97	RE-39B Dup	GC	**91**	<50	<50	<50	<50	**199**	<50
12/8/97	RE-40B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97	RE-41B	Lab	100	<5.6	<5.6	<5.6	10	23	<5.6
		GC	**158**	<50	<50	<50	**53**	<50	<50
12/8/97	RE-42B	GC	**59**	<50	<50	**85**	**980**	**1043**	<50
12/8/97	RE-43B	Lab	50	12	<5.7	<5.7	11	8.7	<5.7
		GC	**501**	<50	<50	**63**	<50	**123**	<50
12/9/97	RE-44B	GC	<50	<50	<50	<50	<50	<50	<50
12/9/97	RE-45B	GC	<50	<50	<50	<50	<50	<50	<50
12/9/97	RE-46B	GC	<50	<50	<50	<50	<50	**86**	<50
12/9/97	RE-47B	Lab	49	14	<1.2	<1.2	0.8	0.8	1.2
		GC	**68**	<50	<50	<50	<50	<50	<50
12/9/97	RE-48B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/9/97	RE-49B	Lab	*120*	*10*	<5.7	<5.7	<5.7	<5.7	<5.7
		GC	**137**	<50	<50	<50	<50	**57**	<50
12/9/97	RE-49Dup	GC	**218**	<50	<50	<50	<50	<50	<50
12/9/97	RE-50B	GC	**200**	<50	<50	<50	<50	<50	<50
12/10/97	RE-51B	GC	**58**	<50	<50	<50	<50	<50	<50
12/10/97	RE-52B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97	RE-53B	GC	<50	<50	<50	<50	**78**	**154**	<50
12/11/97	RE-54B	Lab	*16*	*1.6*	<1.2	<1.2	<1.2	<1.2	<1.2
		GC	<50	<50	<50	<50	<50	<50	<50
12/11/97	RE-55B	Lab	*1.8*	*1.1*	<1.1	<1.1	<1.1	<1.1	<1.1
		GC	**66**	<50	<50	<50	<50	<50	<50
12/11/97	RE-56B	GC	<50	<50	<50	<50	**143**	**274**	<50
12/11/97	RE-57B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97	RE-58B	Lab	*8.3*	*2.6*	<1.2	<1.2	<1.2	*0.8*	<1.2
		GC	<50	<50	<50	<50	<50	<50	<50
12/11/97	RE-58B Dup	Lab	*8.4*	*3.1*	<1.2	<1.2	<1.2	<1.2	<1.2
		GC	<50	<50	<50	<50	<50	<50	<50
12/12/97	RW-1	GC	**2.1**	**0.9**	**1.7**	**7.1**	**4**	**13.6**	**3.3**

Notes:
1. All results are in micrograms per kilogram (parts per billion)
2. Laboratory analytical resuls shown for GC-target parameters only. Appendix H contains copies of the full laboratory analytical results.

d:/.../npplaza/gcresult/gctable.xls

TABLE 5

Summary of Soil Boring Samples
Laboratory Analytical Results
New Paltz Plaza

Compound	MW-7 S-4 (6'-8')	MW-8 S-5 (8'-10')	MW-9 S-4 (8'-10')	MW-9 Dup (S-4 (8'-10')
cis-1,2-Dichloroethene	1.1J	ND	73	66
Trichloroethene	4.3	ND	25	21
Tetrachloroethene	17.0	5.0	150	140

Notes:
1. All results are in micrograms per kilogram.
2. ND = Not detected at or above laboratory practical quantitation limit.
3. J = estimated value.

APPENDIX C

Sub-slab Depressurization System Installation Report

Alpine
Environmental Services, Inc.
(518) 453-0146

March 17, 2008

Operations and Maintenance
Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

Alpine Environmental Services, Inc (ALPINE). performed an inspection of the Sub Slab Depressurization system installed in 2005 at the above-mentioned site. The inspection was performed on March 17, 2008 and consisted of the following:

- Inspect the exposed system piping for any breach or damage.
- Inspect the caulk seal at each of the suction points (a breach in the seal should produce an air leak noise). If breech is observed, caulk with polyurethane caulk.
- Disconnect power from the fan unit and verify the system alarm sounds when the static system pressure falls below the alarm set point.
- Observe the static system pressure in each system on the magnehelic manometer. Record the system pressure in the chart provided. Compare the static system pressure to the acceptable static pressure range. Verify static pressure is within the acceptable range.

Results of the inspection were as follows:

- System #1, Liquor Store (Former Baxter Pharmacy): System seals were inspected. The alarm was tested and performed as designed.
- System #2, Laundromat: System seals were inspected. The alarm was tested and performed as designed. System static pressure could not be recorded due to the magnehelic manometer being located in a locked office. The attendant had no key.
- System #3, Dry Cleaner: System seals were inspected. The alarm was tested and performed as designed. System static pressure was below the "normal" range. A more thorough inspection of the system was performed to identify any possible issues affecting the pressure of the system. No concrete breech or any other construction related issue was found that might cause a

drop in system pressure. A system pressure drop not related to fan malfunction, poor suction point seal, or a breech in the concrete floor slab is most likely due to the removal of moisture from the sub slab over time. The earth below the slab becomes drier, creating less resistance, causing a lower static pressure and a higher airflow.

- System #4, Peter Harris: System seals were inspected. The alarm was tested and performed as designed. System static pressure was below the "normal" range. A more thorough inspection of the system was performed to identify any possible issues affecting the pressure of the system. No concrete breech or any other construction related issue was found that might cause a drop in system pressure. A system pressure drop not related to fan malfunction, poor suction point seal, or a breech in the concrete floor slab is most likely due to the removal of moisture from the sub slab over time. The earth below the slab becomes drier, creating less resistance, causing a lower static pressure and a higher airflow.

- System #5, PDQ Print: System seals were inspected. The alarm was tested and performed as designed.

- System #6, Jewelry Store: Store was closed. No inspection performed.

- System #7, Bagel Shop: System seals were inspected. The alarm was tested and performed as designed.

- System #8, Dollar Store (Former Hair Salon): System seals were inspected. The power cord for the system low-pressure alarm had been removed. A replacement power cord was added to the system. The alarm was tested and performed as designed.

Sincerely,
ALPINE ENVIRONMENTAL SERVICES, INC.

Mark W. Schnitzer, PE
Environmental Engineer

	2005 Initial Pressure Reading (Inches Water) / Acceptable Range (+/- 25% Initial Read)	2008 Pressure Reading (Inches Water)
SYSTEM #1 LIQUOR STORE (FORMER BAXTER PHARMACY)	18″	20″ (Normal)
	13.5″ to 22.5″	
COMMENTS		
SYSTEM #2 LAUNDROMAT	5 "	No Reading, Office portion locked, attendant had no key.
	3.5″ to 6″	
COMMENTS		
SYSTEM #3 DRY CLEANER	34 "	19″ (Low)
	25.5″ to 40″	
COMMENTS		A more thorough inspection of the system was performed to identify any possible issues affecting the pressure of the system. No concrete breech or any other construction related issue was found that might cause a drop in system pressure. A system pressure drop not related to fan malfunction, poor suction point seal, or a breech in the concrete floor slab is most likely due to the removal of moisture from the sub slab over time. The earth below the slab becomes drier, creating less resistance and a higher airflow.
SYSTEM #4 PETER HARRIS/ ADVANCED AUTO	29″	20″ (Low)
	22″ to 36″	
COMMENTS		A more thorough inspection of the system was performed to identify any possible issues affecting the pressure of the system. No concrete breech or any other construction related issue was found that might cause a drop in system pressure. A system pressure drop not related to fan malfunction, poor suction point seal, or a breech in the concrete floor slab is most likely due to the removal of moisture from the sub slab over time. The earth below the slab becomes drier, creating less resistance and a higher airflow.
SYSTEM #5 PDQ PRINT	33″	39″ (Normal)
	25″ to 40″	
COMMENTS		
SYSTEM #6 JEWELRY STORE	30″	No Reading, Store Closed.
	22.5″ to 37.5″	
COMMENTS		
SYSTEM #7 BAGEL SHOP	40 "	40″ (Normal)
	30″ to 40″	
COMMENTS		
SYSTEM #8 DOLLAR STORE (FORMER SALON)	0.5 "	0.6″ (Normal)
	0.3″ to 0.7″	
COMMENTS		Alarm power cable was missing. Replaced missing power cable and activated system and tested alarm. Alarm operated as designed.

Alpine Environmental Services, Inc.

Sub-Slab Venting System Installation Report
New Paltz Plaza, Route 299
New Paltz, New York

June & July 2005

Designed and Installed by:

Alpine Environmental Services, Inc.
1146 Central Avenue
Albany, New York 12205
Phone (518) 453-0146
Fax (518) 453-0175

Alpine
Environmental Services, Inc.
(518) 453-0146

July 28, 2005

Sub-slab Depressurization System Installation Report
New Paltz Plaza, Route 299, New Paltz, New York

General Installation Conditions

- Very tight, compacted sub-slab soils exist at the New Paltz Plaza. High suction fans, capable of a static operating pressure up to 40 inches of water, were necessary to adequately extend the pressure field throughout the building footprint.

- A series of concrete footings were determined to run in a north-south direction through the entire strip mall, apparently running along bearing lines, in line with support columns. Interior footings were estimated to be approximately 12 inches below the cement floor, "shallow footings". Testing demonstrated that the high suction fans were capable of drawing under these footings, extending influence outside each footing confined area. Footings on outside walls, or interior divisions where floor elevations changed were determined to be "deep footings", estimated to be below the frost line (approximately 48 inches below grade).

- The system includes eight distinct trunk lines in eight separate tenant spaces (See drawing). Each trunk line exits through the rear of the respective tenant space, with a fan mounted above the suspended ceiling (where a ceiling exists). The trunk lines extend forward, above the suspended ceiling in the tenant space, with a series of two to twelve suction stacks dropping into the tenant space, entering a penetration through the cement floor. The planned number and location of suction points was modified from the preliminary design based on installation diagnostic testing. The eight-depressurization systems are located in the following tenant spaces.

1. Baxter Pharmacy (Former Game Shop) (Active)
2. Laundromat (Active)
3. Dry Cleaner (Active)
4. Advance Auto Parts / Peter Harris Clothing Store (Active)
5. PDQ Print Shop (Active)
6. Jewelers (Active)
7. Bagel Shop (Active)
8. Former Hair Studio (Vacant)

- It was not feasible to depressurize the Cinema. There was no reasonable location to run pipes and equipment without disrupting occupant views of the movie screens and no clear path to place trunk lines (rear to front), as would be required. Further evaluation of this space for soil gas intrusion as requested by the NYS DOH is being handled by Alpha-Geoscience.

Construction Materials and "As Built" Conditions

All trunk lines and suction risers were constructed of Schedule 20 PVC piping and schedule 20 PVC pipe fittings, with the exception of the 3 inch PVC piping entering each fan and the 2 inch PVC exiting each fan which was schedule 40. All connections were cemented, with the exception of the fan connections, which were secured with flexible PVC, screw tightened couplings. Suction points were sealed into the cement floor slab with a floor flange, sealed air tight, with polyurethane caulk.

- 2-inch and 3-inch ball valves were installed as needed for system balancing and control of the pressure field.

- Exhaust pipes were installed in the rear of the structure, a minimum of 10 feet above grade, away from any intakes or openings.

- Each trunk line was fitted with a Mahnehelic Manometer (pressure meter) (U-Tube Manometer in the case of the Former Hair Salon, System # 8). These devices maintain a real-time analog pressure reading on the system. Periodic monitoring of the system pressure has been incorporated into the building maintenance. Any significant change in the pressure will be cause for service on the system.

- A pressure sensor with status indicator light and system alarm was installed on each system. The alarm will sound if pressure in the system drops below the alarm set point. Each alarm was tested as part of the installation.

- A sticker was placed on each of the trunk lines, near the alarm. The sticker reads:

SUB-SLAB VENTING SYSTEM
If Alarm Sounds or Pressure
Guage Falls to Zero.
This is not an Emergency
Unplug Alarm and Call For Service

Call Alpine Environmental Services, Inc.
At (518) 453-0146 (M-F, 8AM to 5PM) Or
Building Owner At (914) 946-3030

Installation Balancing And Evaluation of Effectiveness:

Post installation testing and balancing was performed following the installation. The system was balanced utilizing ball valves to control the Pressure Field Extension (PFE). PFE was verified by drilling numerous, 3/8" test holes, distributed throughout the floor slab. A micro manometer was used to verify negative pressure extension and adjust valves for a complete PFE distribution. Test holes were sealed with polyurethane caulk following completion of test data collection. Test locations and results are documented in this report.

System airflow and pressures were checked in each of the trunk lines following installation to verify each system was operating within the fan manufacturers operating requirements. Readings were documented in the "Post SSD Installation Testing" section of the report.

References

Radon Mitigation Standards, US Environmental Protection Agency 402-R-93-078 April 1994

DESIGN, EFFECTIVENESS, AND RELIABILITY OF SUB-SLAB DEPRESSURIZATION SYSTEMS FOR MITIGATION OF CHLORINATED SOLVENT VAPOR INTRUSION, presented at the US EPA Seminar on Indoor Air Vapor Intrusion, December 4, 2002 [Folkes].

Guidance for Evaluating Soil Vapor Intrusion in the State of New York, New York State Department of Health, February 2005

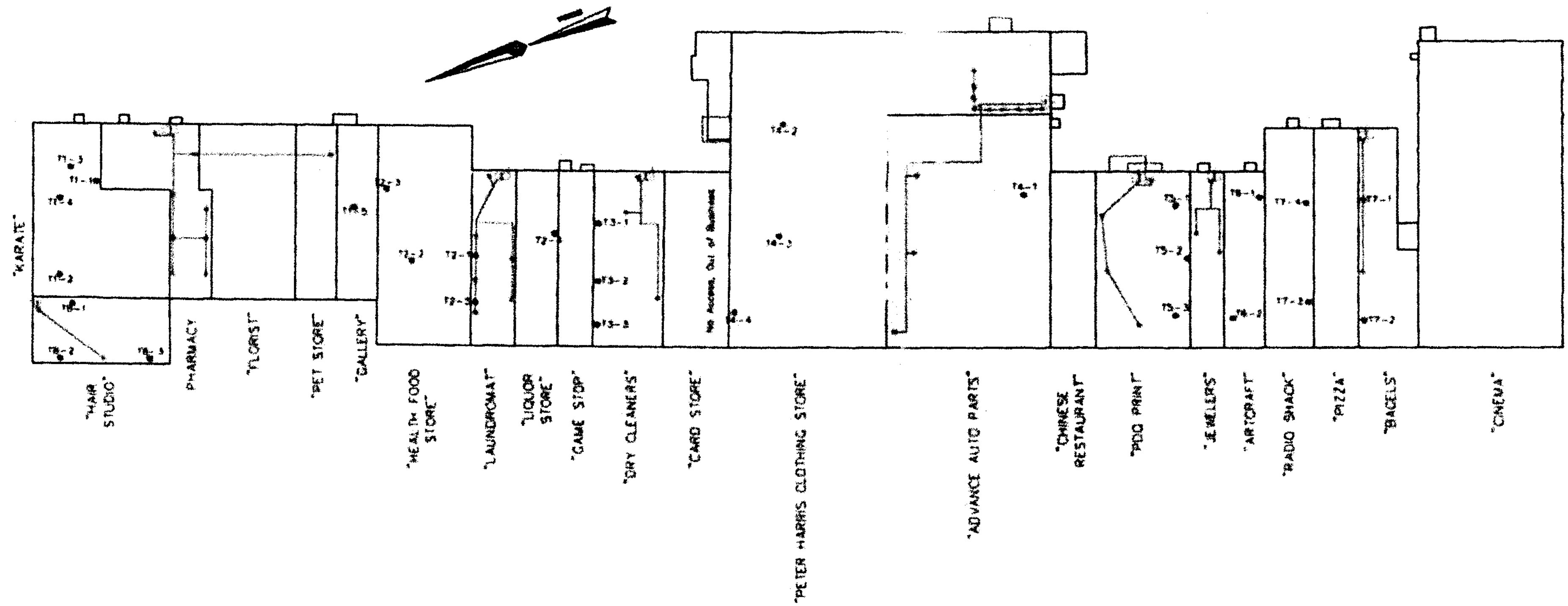
If you have any questions concerning this design or need additional information, please do not hesitate to contact me (518) 453-0146.

Sincerely,
ALPINE ENVIRONMENTAL SERVICES, INC.

Mark W. Schnitzer, PE
Environmental Engineer

Included:

- Post SSD Installation Test Data (PID Results and Pressure Test Results)
- Drawing of Installed System Layout
- Dynavac HS-5000 Fan Installation Instructions
- Radonaway GP-501 Fan Installation Instructions
- Operations and Maintenance Procedures and Checklist



Alpine Environmental Services, Inc.
1146 Central Avenue
Albany, New York 12206
PH: (518) 453-0146; FX: (518) 453-0175
Email: aesinc@nycap.rr.com

KEY:
- •Test Point
- *Suction Point
- Fan
- Horizontal Pipe Run

Alpine
Environmental
Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #1: Baxter Pharmacy

Fan Installed: RadonAway HS5000

Static Pressure in System: 18 inches of water

Air Flow In System: 44 cubic feet per minute

Number of Suction Points: 9

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches Water)
Suction Points		
S1-1	< 0.1 ppm	N/A
S1-2	< 0.1 ppm	N/A
S1-3	< 0.1 ppm	N/A
S1-4	< 0.1 ppm	N/A
S1-5	< 0.1 ppm	N/A
S1-6	< 0.1 ppm	N/A
S1-7	< 0.1 ppm	N/A
S1-8	< 0.1 ppm	N/A
S1-9	< 0.1 ppm	N/A
Test Points		
T1-1	< 0.1 ppm	- 0.140
T1-2	< 0.1 ppm	- 0.002
T1-3	< 0.1 ppm	- 0.002
T1-4	< 0.1 ppm	- 0.002
T1-5	< 0.1 ppm	- 0.009

ppm - parts per million
N/A - Not Applicable

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Alpine Environmental Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #2: Laundromat

Fan Installed: RadonAway HS5000

Static Pressure in System: 5 inches of water

Air Flow In System: 50 cubic feet per minute

Number of Suction Points: 6

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S2-1	< 0.1 ppm	N/A
S2-2	< 0.1 ppm	N/A
S2-3	< 0.1 ppm	N/A
S2-4	< 0.1 ppm	N/A
S2-5	< 0.1 ppm	N/A
S2-6	< 0.1 ppm	N/A
Test Points		
T2-1	< 0.1 ppm	- 0.010
T2-2	< 0.1 ppm	- 0.003
T2-3	< 0.1 ppm	- 0.002
T2-4	< 0.1 ppm	- 0.003
T2-5	< 0.1 ppm	- 0.006

ppm - parts per million
N/A - Not Applicable

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Alpine Environmental Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #3: Dry Cleaner

Fan Installed: RadonAway HS5000

Static Pressure in System: 34 inches of water

Air Flow In System: 25 cubic feet per minute

Number of Suction Points: 3

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S3-1	< 0.1 ppm	N/A
S3-2	< 0.1 ppm	N/A
S3-3	< 0.1 ppm	N/A
Test Points		
T3-1	< 0.1 ppm	- 0.141
T3-2	< 0.1 ppm	- 0.011
T3-3	< 0.1 ppm	- 0.020

ppm - parts per million
N/A - Not Applicable

Alpine
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Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #4: Advanced Auto Parts/ Peter Harris Clothing

Fan Installed: RadonAway HS5000

Static Pressure in System: 29 inches of water

Air Flow In System: 30 cubic feet per minute

Number of Suction Points: 12

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S4-1	< 0.1 ppm	N/A
S4-2	< 0.1 ppm	N/A
S4-3	< 0.1 ppm	N/A
S4-4	< 0.1 ppm	N/A
S4-5	< 0.1 ppm	N/A
S4-6	< 0.1 ppm	N/A
S4-7	< 0.1 ppm	N/A
S4-8	< 0.1 ppm	N/A
S4-9	< 0.1 ppm	N/A
S4-10	< 0.1 ppm	N/A
S4-11	< 0.1 ppm	N/A
S4-12	< 0.1 ppm	N/A
Test Points		
T4-1	< 0.1 ppm	- 0.015
T4-2	< 0.1 ppm	- 0.004
T4-3	< 0.1 ppm	- 0.048
T4-4	< 0.1 ppm	- 0.004

ppm - parts per million
N/A - Not Applicable

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Alpine
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Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #5: PDQ Print

Fan Installed: RadonAway HS5000

Static Pressure in System: 33 inches of water

Air Flow In System: 26 cubic feet per minute

Number of Suction Points: 4

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S5-1	< 0.1 ppm	N/A
S5-2	< 0.1 ppm	N/A
S5-3	< 0.1 ppm	N/A
S5-4	< 0.1 ppm	N/A
Test Points		
T5-1	< 0.1 ppm	- 0.119
T5-2	< 0.1 ppm	- 0.036
T5-3	< 0.1 ppm	- 0.136

ppm - parts per million
N/A - Not Applicable

Alpine
Environmental
Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #6: Jewelry Store

Fan Installed: RadonAway HS5000

Static Pressure in System: 30 inches of water

Air Flow In System: 29 cubic feet per minute

Number of Suction Points: 3

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S6-1	< 0.1 ppm	N/A
S6-2	< 0.1 ppm	N/A
S6-3	< 0.1 ppm	N/A
Test Points		
T6-1	< 0.1 ppm	- 0.022
T6-2	< 0.1 ppm	- 0.056

ppm - parts per million
N/A - Not Applicable

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Alpine
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Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #7: Bagel Shop

Fan Installed: RadonAway HS5000

Static Pressure in System: 40 inches of water

Air Flow In System: 19 cubic feet per minute

Number of Suction Points: 2

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S7-1	< 0.1 ppm	N/A
S7-2	< 0.1 ppm	N/A
Test Points		
T7-1	< 0.1 ppm	- 0.012
T7-2	< 0.1 ppm	- 0.015
T7-3	< 0.1 ppm	- 0.005
T7-4	< 0.1 ppm	- 0.017
T7-5	< 0.1 ppm	- 0.002

ppm - parts per million
N/A - Not Applicable

Alpine Environmental Services, Inc.

Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

System #8: Vacant (Former Hair Salon)

Fan Installed: RadonAway GP-501

Static Pressure in System: 0.5 inches of water

Air Flow In System: 103 cubic feet per minute

Number of Suction Points: 2

Test Results:

System #1	PID Result (ppm)	Pressure Test (Inches WC)
Suction Points		
S8-1	< 0.1 ppm	N/A
S8-2	< 0.1 ppm	N/A
Test Points		
T8-1	< 0.1 ppm	- 0.004
T8-2	< 0.1 ppm	- 0.009
T8-3	< 0.1 ppm	- 0.005

ppm - parts per million
N/A - Not Applicable

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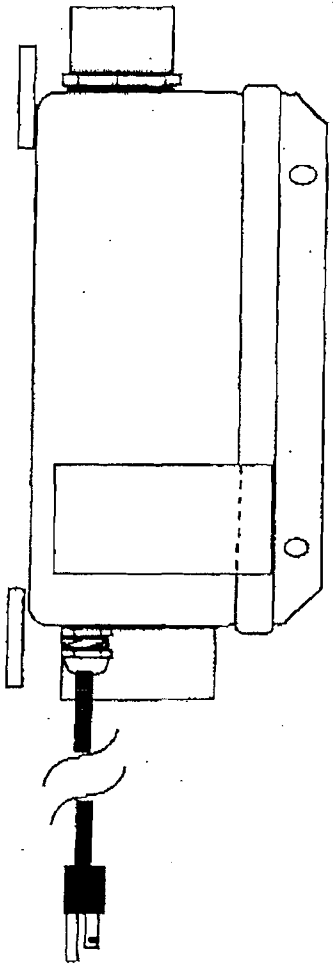
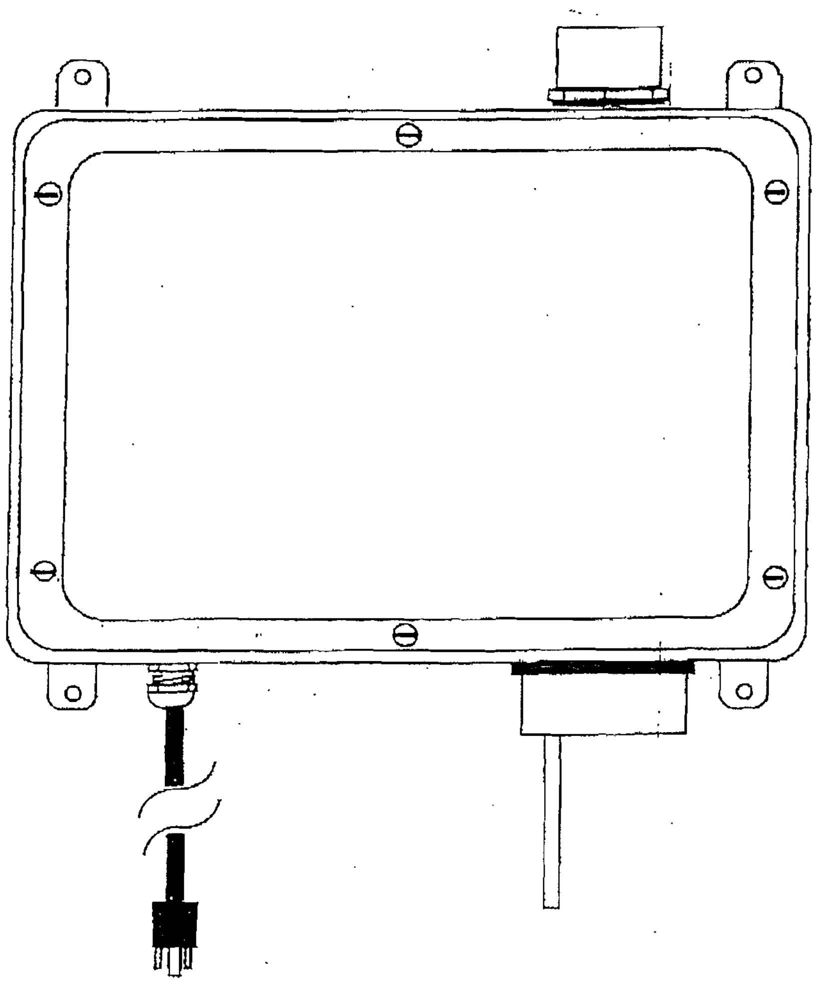
HS SERIES INSTALLATION INSTRUCTIONS

BY RadonAway™





RadonAway™
Your Full Service Radon Specialists

INSTALLATION INSTRUCTIONS (Rev D)
for DynaVac High Suction Series
HS2000 p/n 23004-1
HS3000 p/n 23004-2
HS5000 p/n 23004-3

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The DynaVac is intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of the DynaVac. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The DynaVac is designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the DynaVac should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F. The DynaVac is thermally protected such that it will shut off when the internal temperature is above 104 degrees F. Thus if the DynaVac is idle in an area where the ambient temperature exceeds this shut off, it will not restart until the internal temperature falls below 104 degrees F.

1.3 ACOUSTICS

The DynaVac, when installed properly, operates with little or no noticable noise to the building occupants. There are, however, some considerations to be taken into account in the system design and installation. When installing the DynaVac above sleeping areas, select a location for mounting which is as far away as possible from those areas. Avoid mounting near doors, fold-down stairs or other uninsulated structures which may transmit sound. Insure a solid mounting for the DynaVac to avoid structure-borne vibration or noise.

The velocity of the outgoing air must also be considered in the overall system design. With small diameter piping, the "rushing" sound of the outlet air can be disturbing. The system design should incorporate a means to slow and quiet the outlet air. The use of the RadonAway Exhaust Muffler, p/n 24001, is strongly recommended.

1.4 GROUND WATER

Under no circumstances should water be allowed to be drawn into the inlet of the DynaVac as this may result in damage to the unit. The DynaVac should be mounted at least 5 feet above the slab penetration to minimize the risk of filling the DynaVac with water in installations with occasional high water tables.

In the event that a temporary high water table results in water at or above slab level, water will be drawn into the riser pipes thus blocking air flow to the DynaVac. The lack of cooling air will result in the DynaVac cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the DynaVac be disconnected until the water recedes allowing for return to normal operation.

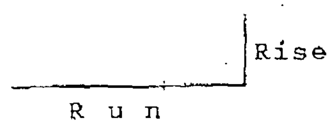
1.5 CONDENSATION & DRAINAGE

(***WARNING!***: Failure to provide adequate drainage for condensation can result in system failure and damage the DynaVac).

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation.

The use of small diameter piping in a system increases the speed at which the air moves. The speed of the air can pull water uphill and at sufficient velocity it can actually move water vertically up the side walls of the pipe. This has the potential of creating a problem in the negative pressure (inlet) side piping. For DynaVac inlet piping, the following table provides the minimum recommended pipe diameters as well as minimum pitch under several system condition. Use this chart to size piping for a system.

Pipe Diam.	Minimum Rise per Foot* @ 25 CFM	@ 50 CFM	@ 100 CFM
4"	1/32"	3/32"	3/8"
3"	1/8"	3/8"	1 1/2"



*Typical operational flow rates:

HS3000, or HS5000	20 - 40 CFM
HS2000	50 - 90 CFM

(For more precision, determine actual depressurization in the inlet pipe using a Magnehelic or other pressure differential device and determine flow rate by using chart in addendum.)

All exhaust piping should be 2" PVC.

1.6 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A Magnehelic pressure gauge is recommended for this purpose. The indicator should be mounted at least 5 feet above the slab penetration to minimize the risk of filling the gauge with water in installations with occasional high water tables.

1.7 SLAB COVERAGE

The DynaVac can provide coverage of well over 1000 sq. ft. per slab penetration. This will, of course, depend on the sub-slab aggregate in any particular installation and the diagnostic results. In general, sand and gravel are much looser aggregates than dirt and clay. Additional suction points can be added as required. It is recommended that a small pit (2 to 10 gallons in size) be created below the slab at each suction hole.

1.8 ELECTRICAL WIRING

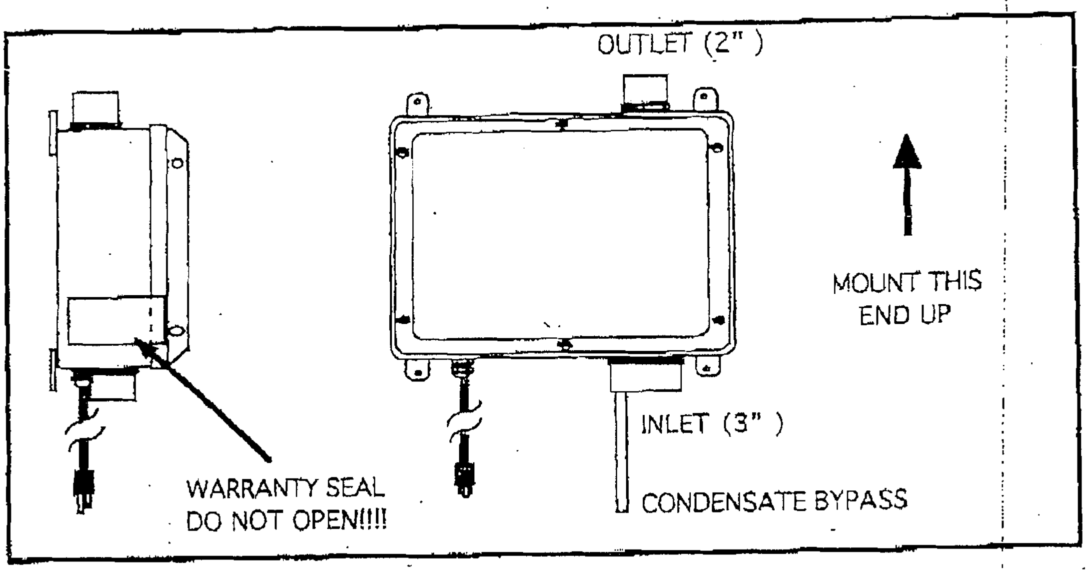
The DynaVac plugs into a standard 120V outlet. All wiring must be performed in accordance with the National Electrical Code and state and local building codes.

1.8a ELECTRICAL BOX (optional)

The optional Electrical Box (p/n 20003) provides a weathertight box with switch for outdoor hardwire connection. All wiring must be performed in accordance with the National Electrical Code and state and local building codes. All electrical work should be performed by a qualified electrician. Outdoor installations require the use of a U.L. listed watertight conduit.

1.9 SPEED CONTROLS

Electronic speed controls can NOT be used on HS series units.



2.0 INSTALLATION

2.1 MOUNTING

Mount the DynaVac to the wall studs, or similar structure, in the selected location with (4) 1/4" x 1 1/2" lag screws (not provided). Insure the DynaVac is both plumb and level.

2.2 DUCTING CONNECTIONS

Make final ducting connection to DynaVac with flexible couplings. Insure all connections are tight. Do not twist or torque inlet and outlet piping on DynaVac or leaks may result.

2.3 VENT MUFFLER INSTALLATION

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed above the roofline at the end of the vent pipe.

2.5 OPERATION CHECKS

_____ Make final operation checks by verifying all connections are tight and leak-free.

_____ Insure the DynaVac and all ducting is secure and vibration-free.

_____ Verify system vacuum pressure with Magnehelic. Insure vacuum pressure is less than the maximum recommended as shown below:

DynaVac	HS2000	14" WC
DynaVac	HS3000	21" WC
DynaVac	HS5000	40" WC

(Above are based on sea-level operation, at higher altitudes reduce above by about 4% per 1000 Feet.)
If these are exceeded, increase number of suction points.

_____ Verify Radon levels by testing to EPA protocol.

3.0 IMPORTANT INSTRUCTIONS TO INSTALLER

3.1 Inspect DynaVac for shipping damage within 15 days of receipt. Notify carrier of any damages immediately. RadonAway is not responsible for damages incurred during shipping.

3.2 There are no user servicable parts inside the DynaVac. Do not attempt to open. Return unit to the factory for service.

3.3 Install the DynaVac in accordance with all EPA standard practices, and state and local building codes and state regulations.

3.4 In the event the DynaVac is immersed in water, return unit to factory for service before operating.

3.5 Do not twist or torque inlet and outlet piping on the DynaVac. Leakage can result.

4.0 WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway, Inc. warrants that the DynaVac will be free from defective materials and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway, Inc. To make a claim under these limited warranties, you must return the defective item to RadonAway, Inc. with a copy of the purchase receipt. All other warranties, expressed or written, are not valid. RadonAway, Inc. is not responsible for installation or removal cost associated with this warranty.

5.0 OPTIONAL THREE YEAR EXTENDED WARRANTY

Under this option all warranty terms and conditions are extended to (3) years from date of purchase. Purchase receipt provides proof of purchase of this option and Serial Number of DynaVac covered.

Record the following for your records:

Serial No.________________________

Receipt Date________________________

ADDENDUM

PRODUCT SPECIFICATIONS

Model	Maximum Static Suction	Typical CFM vs Static Suction WC (Recommended Operating Range) 0"	10"	15"	20"	25"	35"	Power* Watts @ 115 VAC
HS2000	18"	110	72	40	--	--	--	150-270
HS3000	27"	40	33	30	23	18	--	105-195
HS5000	50"	53	47	42	38	34	24	180-320

*Power consumption varies with actual load conditions

Inlet: 3.0" PVC

Outlet: 2.0" PVC

Mounting: Brackets for vertical mount

Weight: Approximately 18 lbs.

Size: Approximately 15"W x 13"H x 8"D

Minimum recommended inlet ducting (greater diameter may always be used):

Main line of 3.0" or greater PVC Pipe
Any branch lines may be 2.0" or greater PVC Pipe

Outlet ducting: 2.0" PVC

Storage temperature range: 32 - 100 degrees F.

Thermally protected

Locked rotor protection

Internal Condensate Bypass

RadonAway Ward Hill, MA IN014 Rev D

XP/GP/XR Series Fan Installation Instructions

Please Read And Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible of flammable materials.

2. **WARNING!** Do not use fan to pump explosive or corrosive gases.

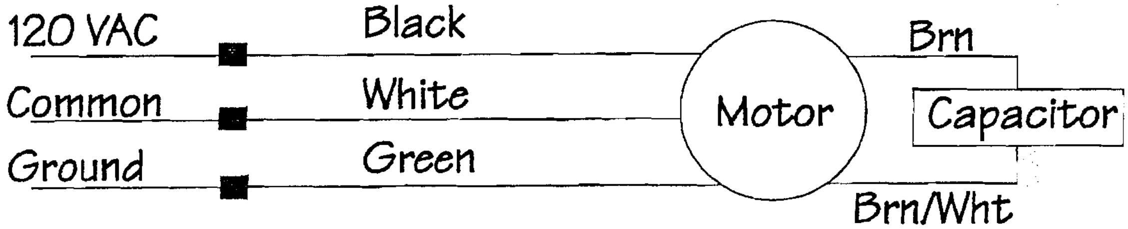
3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.

6. All wiring must be in accordance with local and national electrical codes.

DynaVac GP/XP/XR Series Fan Wiring Diagram



RadonAway™

INSTALLATION INSTRUCTION IN014 Rev D

DynaVac - XP/XR Series		DynaVac - GP Series	
XP101	p/n 23008-1,-2	GP201	p/n 23007-1
XP151	p/n 23010-1,-2	GP301	p/n 23006-1,-2
XP201	p/n 23011-1,-2	GP401	p/n 23009-1
XR161	p/n 23018-1,-2	GP501	p/n 23005-1,-2
XR261	p/n 23019-1,-2		

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The DynaVac GP/XP/XR Series Radon Fans are intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of a DynaVac Fan. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The GP/XP/XR Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F.

1.3 ACOUSTICS

The GP/XP/XR Series Fan, when installed properly, operates with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

1.4 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes thus blocking air flow to the GP/XP/XR Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes allowing for return to normal operation.

1.5 SLAB COVERAGE

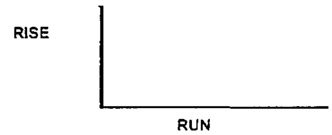
The GP/XP/XR Series Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the GP/XP/XR Series Fan best suited for the sub-slab material can improve the slab coverage. The GP & XP series have a wide range of models to choose from to cover a wide range of subslab material. The higher static suction fans are generally used for tighter subslab materials. The XR Series is specifically designed for high flow applications such as stone/gravel and drain tile. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.6 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The GP/XP/XR Series Fan **MUST** be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The GP/XP/XR Series Fans are **NOT** suitable for underground burial.

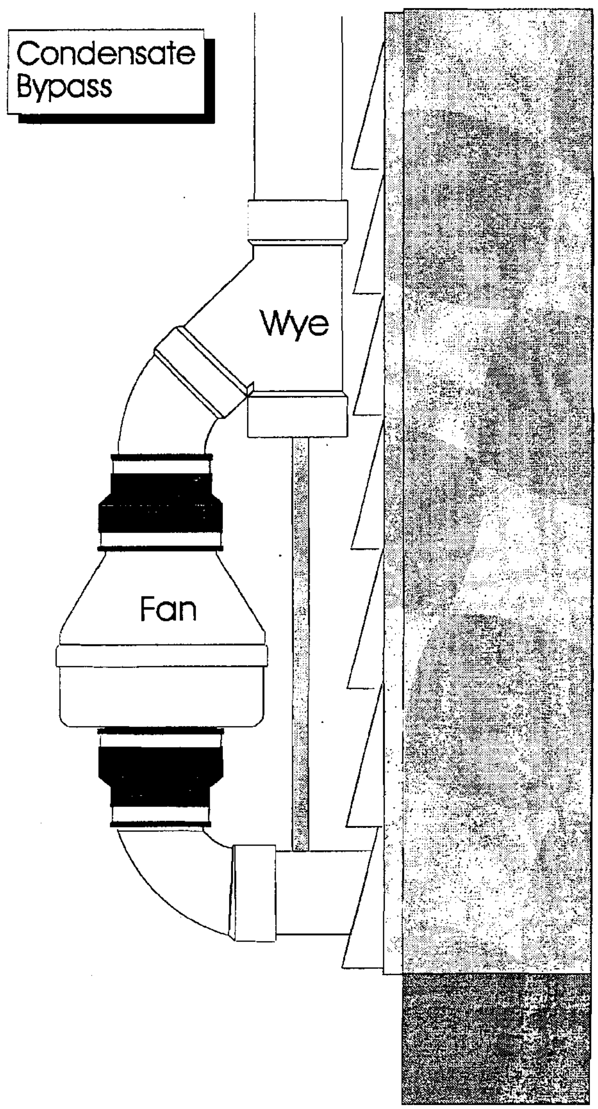
For GP/XP/XR Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe	Minimum Rise per Foot of Run*		
Dia.	@25 CFM	@50 CFM	@100 CFM
4"	1/8"	1/4"	3/8"
3"	1/4"	3/8"	1 1/2"



*Typical GP/XP/XR Series Fan operational flow rate is 25 - 90 CFM. (For more precision, determine flow rate by using the chart in the addendum.)

Under some circumstances in an outdoor installation a condensate bypass should be installed in the outlet ducting as shown. This may be particularly true in cold climate installations which require long lengths of outlet ducting or where the outlet ducting is likely to produce large amounts of condensation because of high soil moisture or outlet duct material. Schedule 20 piping and other thin-walled plastic ducting and Aluminum downspout will normally produce much more condensation than Schedule 40 piping.



The bypass is constructed with a 45 degree Wye fitting at the bottom of the outlet stack. The bottom of the Wye is capped and fitted with a tube that connects to the inlet piping or other drain. The condensation produced in the outlet stack is collected in the Wye fitting and drained through the bypass tube. The bypass tubing may be insulated to prevent freezing.

1.7 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A manometer, such as a U-Tube, or a vacuum alarm is recommended for this purpose.

1.8 ELECTRICAL WIRING

The GP/XP/XR Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Electrical Code and state and local building codes. All electrical work should be performed by a qualified electrician. Outdoor installations require the use of a U.L. listed watertight conduit.

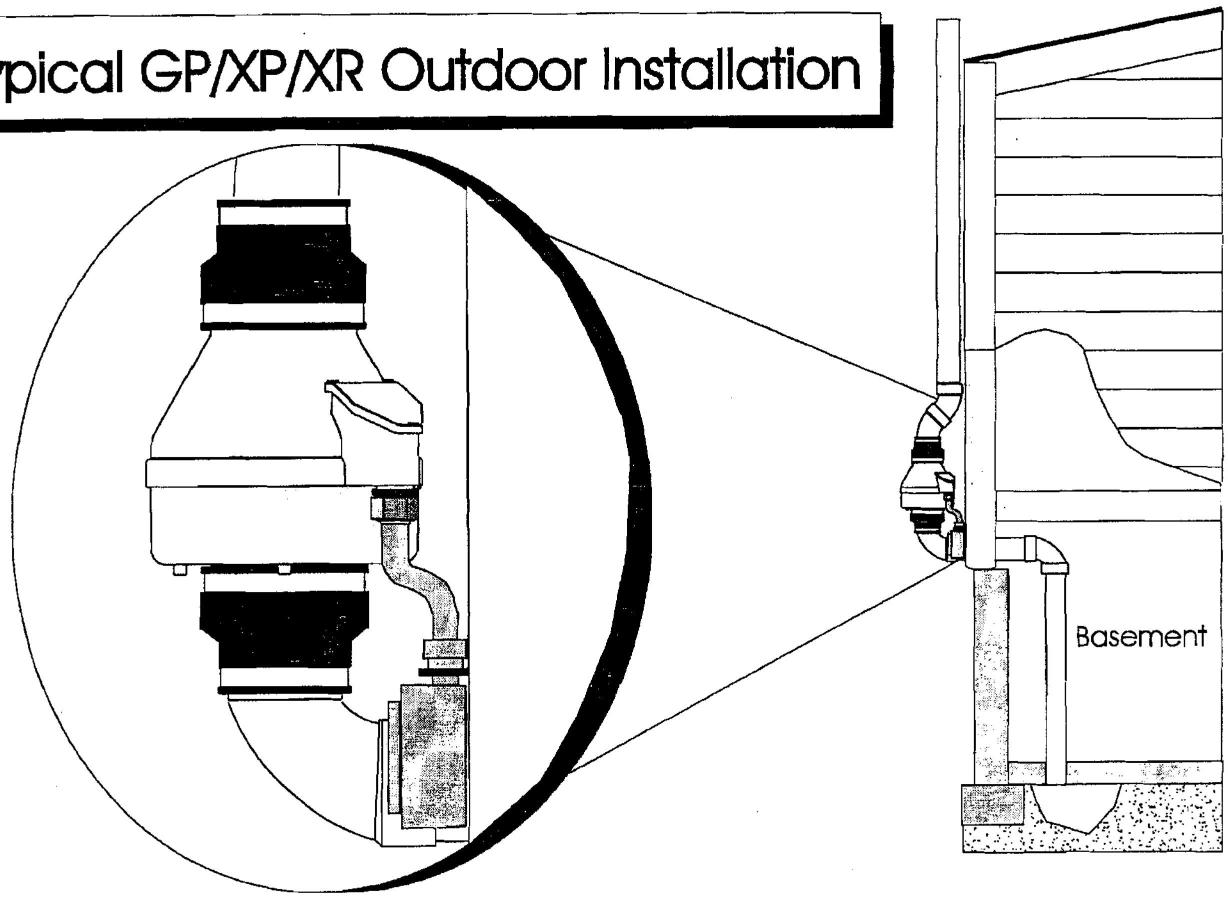
1.9 SPEED CONTROLS

The GP/XP/XR Series Fans are rated for use with electronic speed controls ,however, they are generally not recommended.

2.0 INSTALLATION

The GP/XP/XR Series Fan can be mounted indoors or outdoors. (It is suggested that EPA recommendations be followed in choosing the fan location.) The GP/XP/XR Series Fan may be mounted directly on the system piping or fastened to a supporting structure by means of optional mounting bracket.

Typical GP/XP/XR Outdoor Installation



2.1 MOUNTING

Mount the GP/XP/XR Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

2.2 MOUNTING BRACKET (optional)

The GP/XP/XR Series fan may be optionally secured with the integral mounting bracket on the GP Series fan or with RadonAway P/N 25007-2 mounting bracket for an XP/XR Series fan. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

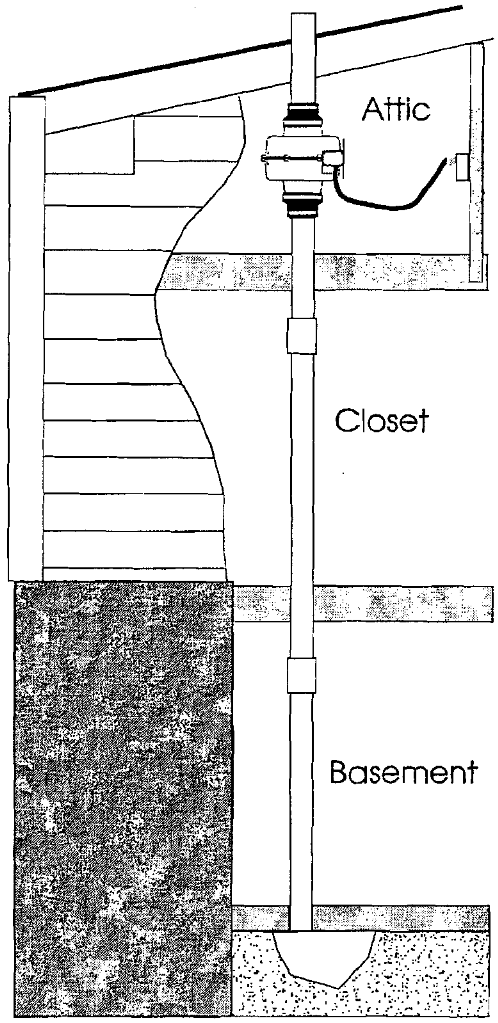
Complete piping run, using flexible couplings as means of disconnect for servicing the unit and vibration isolation.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections:

Fan Wire	Connection
Green	Ground
Black	AC Hot
White	AC Common

Typical GP/XP/XR Indoor Installation



2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS

_____ **Verify** all connections are tight and **leak-free.**

_____ **Insure** the GP/XP/XR Series Fan and all ducting is secure and vibration-free.

_____ **Verify** system vacuum pressure with manometer. **Insure** vacuum pressure is **less than** maximum recommended operating pressure
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels by testing to EPA protocol.**

XP/XR SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the XP & XR Series Fan:

Typical CFM Vs Static Suction "WC	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
XP101	125	118	90	56	5	-	-	-	-
XP151	180	162	140	117	78	46	10	-	-
XP201	150	130	110	93	74	57	38	20	-
XR161	215	175	145	105	75	45	15	-	-
XR261	250	215	185	150	115	80	50	20	-

Maximum Recommended Operating Pressure*		
XP101	0.9" W.C.	(Sea Level Operation)**
XP151	1.3" W.C.	(Sea Level Operation)**
XP201	1.7" W.C.	(Sea Level Operation)**
XR161	1.3" W.C.	(Sea Level Operation)**
XR261	1.6" W.C.	(Sea Level Operation)**

**Reduce by 10% for High Temperature Operation*
***Reduce by 4% per 1000 feet of altitude*

Power Consumption @ 120 VAC	
XP101	40 - 49 watts
XP151	45 - 60 watts
XP201	45 - 66 watts
XR161	48 - 75 watts
XR261	65 - 105 watts

XP Series Inlet/Outlet: 4.5" OD (4.0" PVC Sched 40 size compatible)
XR Series Inlet/Outlet: 5.875" OD
Mounting: Mount on the duct pipe or with optional mounting bracket.
Recommended ducting: 3" or 4" Schedule 20/40 PVC Pipe
Storage temperature range: 32 - 100 degrees F.
Normal operating temperature range: -20 - 120 degrees F.
Maximum inlet air temperature: 80 degrees F.
Size: 9.5H" x 8.5" Dia.
Weight: 6 lbs. (XR261 - 7 lbs)
Continuous Duty
Thermally protected
Class B Insulation
3000 RPM
Residential Use Only
Rated for Indoor or Outdoor use

LISTED Electric Fan ETL® Tested to UL Std. 507
77728

GP SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the GPx01 Series Fan:

Typical CFM Vs Static Suction "WC	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP501	95	87	80	70	57	30	5
GP401	93	82	60	38	12	-	-
GP301	92	77	45	10	-	-	-
GP201	82	58	5	-	-	-	-

Maximum Recommended Operating Pressure*		
GP501	3.8" W.C.	(Sea Level Operation)**
GP401	3.0" W.C.	(Sea Level Operation)**
GP301	2.4" W.C.	(Sea Level Operation)**
GP201	1.8" W.C.	(Sea Level Operation)**

**Reduce by 10% for High Temperature Operation*
***Reduce by 4% per 1000 feet of altitude*

Power Consumption @ 120 VAC	
GP501	70 - 140 watts
GP401	60 - 110 watts
GP301	55 - 90 watts
GP201	40 - 60 watts

Inlet/Outlet: 3.5" OD (3.0" PVC Sched 40 size compatible)

Mounting: Fan may be mounted on the duct pipe or with integral flanges.

Weight: 12 lbs.

Size: 13H" x 12.5" x 12.5"

Recommended ducting: 3" or 4" Schedule 20/40 PVC Pipe

Storage temperature range: 32 - 100 degrees F.

Normal operating temperature range: -20 - 120 degrees F.

Maximum inlet air temperature: 80 degrees F.

Continuous Duty

Class B Insulation

3000 RPM

Thermally protected

Rated for Indoor or Outdoor Use

GP301C / GP501C Rated for Commercial Use

LISTED
Electric Fan

Tested to
UL
Std. 507

77728

WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the GPx01/XP/XR Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of five (5) years from the date of manufacture (the "Warranty Term").

Warranty claims made during the first thirty days after installation:

RadonAway will replace any Fan which fails due to defects in materials or workmanship. The Fan may be returned (at owner's cost) to either the point of purchase or the factory. The point of purchase may require proof of purchase or a bill of sales for replacement.

Warranty claims made after the first thirty days after installation through the end of the Warranty Term:

RadonAway will (at its option) either recondition or replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at owner's cost) to the factory.

This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway.

RadonAway is not responsible for installation, removal or delivery costs associated with this Warranty.

EXCEPT AS STATED ABOVE, THE GPx01/XP/XR SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

RadonAway
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

Record the following information for your records:

Serial No.____________________________________

Purchase Date________________________________

Operations and Maintenance
Sub-Slab Venting System
New Paltz Plaza, Route 299, New Paltz, New York

SYSTEM MAINTENANCE

The sub-slab venting system is designed to be maintenance free, for the life of the fan. All moving parts of the system are sealed in the fan-housing unit. The fan-housing unit should only be opened by the fan manufacturer. Any attempt to open the fan-housing unit will destroy the factory installed seals and void any warranty, parts and labor, on the entire venting system.

ANNUAL SYSTEM INSPECTION
(INSPECT EACH TRUNK LINE INDEPENDENTLY)

- Inspect the exposed system piping for any breach or damage.

- Inspect the caulk seal at each of the suction points (a breach in the seal should produce an air leak noise). If breech is observed, caulk with polyurethane caulk.

- Disconnect power from the fan unit and verify the system alarm sounds when the static system pressure falls below the alarm set point. If alarm does not operate as designed, call for service.

- Observe the static system pressure in each system on the magnehelic manometer. Record the system pressure in the chart provided. Compare the static system pressure to the acceptable static pressure range. If static pressure is outside the acceptable range, call for service.

	2005 Initial Pressure Reading (Inches Water) / Acceptable Range (+/- 25% Initial Read)	2006 Pressure Reading (Inches Water)	2007 Pressure Reading (Inches Water)	2008 Pressure Reading (Inches Water)	2009 Pressure Reading (Inches Water)	2010 Pressure Reading (Inches Water)
SYSTEM #1 BAXTER PHARMACY	18″ / 13.5″ to 22.5″					
SYSTEM #2 LAUNDROMAT	5 " / 3.5″ to 6″					
SYSTEM #3 DRY CLEANER	34 " / 25.5″ to 40″					
SYSTEM #4 PETER HARRIS/ ADVANCED AUTO	29″ / 22″ to 36″					
SYSTEM #5 PDQ PRINT	33″ / 25″ to 40″					
SYSTEM #6 JEWELRY STORE	30″ / 22.5″ to 37.5″					
SYSTEM #7 BAGEL SHOP	40 " / 30″ to 40″					
SYSTEM #8 FORMER HAIR SALON	0.5 " / 0.3″ to 0.7″					

	2005 Initial Pressure Reading (Inches Water) / Acceptable Range (+/- 25% Initial Read)	2011 Pressure Reading (Inches Water)	2012 Pressure Reading (Inches Water)	2013 Pressure Reading (Inches Water)	2014 Pressure Reading (Inches Water)	2015 Pressure Reading (Inches Water)
SYSTEM #1 BAXTER PHARMACY	18″ / 13.5″ to 22.5″					
SYSTEM #2 LAUNDROMAT	5 " / 3.5″ to 6″					
SYSTEM #3 DRY CLEANER	34 " / 25.5″ to 40″					
SYSTEM #4 PETER HARRIS/ ADVANCED AUTO	29″ / 22″ to 36″					
SYSTEM #5 PDQ PRINT	33″ / 25″ to 40″					
SYSTEM #6 JEWELRY STORE	30″ / 22.5″ to 37.5″					
SYSTEM #7 BAGEL SHOP	40 " / 30″ to 40″					
SYSTEM #8 FORMER HAIR SALON	0.5 " / 0.3″ to 0.7″					

APPENDIX D

Regenesis Evaluation of HRC Effectiveness

REGENESIS

April 21, 2008

Mr. Thomas M. Johnson
Alpha Geoscience
679 Plank Road
Clifton Park, NY 12065

Re: HRC Remediation Evaluation
Revonak Dry Cleaner Site
New Paltz Plaza

Dear Tom:

Regenesis technical staff have received and reviewed the ground water quality information that you provided for the above-referenced site. The results of ground water analyses subsequent to the November 2006 HRC injection were reviewed to:

1. identify evidence that conditions are present that support biodegradation (i.e., establish anaerobic conditions),
2. identify evidence of biodegradation (presence of biodegradation products) and,
3. identify data trends indicating the effectiveness of the HRC remediation (e.g., decrease in total VOCs and/or parent products and an increase in biodegradation products).

Anaerobic conditions required to support biodegradation of chlorinated solvents are represented by changes in subsurface conditions that indicate a more reducing environment. Reducing conditions are indicated when any of the following are observed: an increase in dissolved iron or manganese, reduction in the concentration of sulfate, decrease in dissolved oxygen (DO) and oxidation-reduction potential (ORP) readings, and detection of methane. Reductive dechlorination is a methanogenic process; therefore, the presence of methane is a clear indication that reductive dechlorination is occurring.

Reductive dechlorination is the primary mechanism responsible for the biodegradation of chlorinated solvents such as PCE and DCE. PCE is degrades progressively to TCE, DCE, VC, and finally, ethene. Chlorinated ethanes such as TCA follow a similar degradation pattern with 1,1,1-TCA degrading progressively to 1,1-DCA, chloroethane, and finally, ethane. The presence of compounds such as DCE and/or VC in environmental samples is typically an indication that dechlorination is occurring. The concentration of DCE in a sample may be higher than the original concentration of PCE or TCE.

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mdooley@regenesis.com ~ www.regenesis.com

PCE and TCE tend to sorb to the soil, particularly if there is a high concentration of organic matter. Typically, only the dissolved PCE and TCE will be detected in environmental samples, not the sorbed phase. DCE is more soluble in the environment than PCE or TCE. As biodegradation proceeds and DCE is formed, the concentration of DCE may be greater than the concentration of PCE or TCE because the DCE dissolves more readily than the parent products (i.e., the DCE does not sorb as readily to the soil). The apparent increase in the DCE concentration often corresponds to an increase in total VOC levels during a bioremediation program.

Evaluation of the biodegradation process includes a review of both individual volatile organic compounds and total VOCs. Review of the trend of the concentration of individual compounds often explains why total VOC concentrations increase during dechlorination, as described above.

The following table describes the observations for the data for each monitoring well and conclusions based on the observations. This analysis of the data identifies trends/decreases in individual or total VOCs, and indicates whether conditions support dechlorination and whether there is evidence of biodegradation.

Well No.	Observation/Analysis	Conclusion
MW-1	Reduction in VOCs is evident.	Effects of HRC application are evident based on the reduction of VOCs to ND. Reductions in VOC levels suggest the plume size is decreasing
MW-2	Methane and an increase in sulfate and CO_2 are detected in MW-2. The concentration of dissolved iron increased in the past. The presence of cis-DCE, VC and chloroethane are detected. PCE, Cis-DCE, and VC levels decreased substantially in the March 2008 sample.	Conditions that support biodegradation appear to be present near MW-2. Data suggest biodegradation based on the presence of cis-DCE and an increase in VC. Evidence of biodegradation is present based on the presence of dechlorination products.
MW-3	VOC levels were very low at the onset of the remedial program. The well has contained HRC since the 2006 injection event and cannot be sampled.	
MW-4	An increase in PCE, TCE, cis-DCE and VC is evident between August 2006 and August 2007. The well was not sampled in March 2008 when decreases were observed in many wells.	Biodegradation is taking place in the vicinity of MW4 based on the increase in biodegradation products and dissolution of PCE and TCE. Reductions in VOCs are expected.

MW-6	VOC concentrations are very low or ND and decreased substantially after August 2005. Only VC was detected in the March 2008 sample. VC had not been detected since August 2005. Methane and CO_2 are detected.	The reduction in VOCs indicates the effectiveness of the HRC. The detection of VC, methane and CO_2 in the March 2008 sample indicates that dechlorination and biodegradation is continuing.
MW-7	A decrease in PCE and TCE and an increase in cis-DCE is evident. VC was detected until the March 2008 sample. CO_2 concentrations have increased and methane was detected until the March 2008 sample	The increase in degradation compounds and decrease in PCE and TCE suggests that dechlorination and biodegradation are occurring. Detections of CO_2 and methane are evidence of dechlorination.
MW-9	Methane and dissolved manganese have been detected; however, no reduction in sulfate is evident. This may suggest that reducing conditions may not yet be established in the vicinity of MW9. An increase in VC was observed and cis-DCE is present. No change in TCE and PCE levels is evident.	Biodegradation appears to be occurring based on the presence of cis-DCE and an increase in VC. No change in TCE and PCE levels is evident.
MW-10	Elevated levels of dissolved iron, manganese, an increase in methane, and a reduction in sulfate levels are evident. Concentrations of PCE and cis-DCE have been substantially reduced. Concentrations of TCE and VC have been reduced to ND. Methane, ethene and ethane were detected during previous sampling events.	Reducing conditions appear to be well established. There is evidence of biodegradation based on the previous increase in cis-DCE, VC, ethene and ethane. The detection of end-products indicates that complete degradation of VOCs is occurring.
MW-11	Elevated concentrations of dissolved iron, manganese, and methane were present in samples in 2006 and 2007. Concentrations of PCE, TCE, cis-DCE, and VC increased in March 2008.	Reducing conditions have been established based on the indicator parameter concentrations. The recent increase in VOCs indicates dissolution and degradation is occurring. Reductions in VOCs are expected in future samples.
MW-12	Elevated concentrations of dissolved iron, manganese, and methane were present in samples in 2006 and 2007. Concentrations of PCE, TCE, cis-DCE, and VC decreased in March 2008.	Reducing conditions have been established based on the indicator parameter concentrations and VOCs concentrations substantially decreased.

The trends in the data clearly indicate that reducing conditions have been established at most well locations and that there is evidence that biodegradation is occurring. The evidence for decholorination by biodegradation includes the presence of, and increases in, concentrations of dechlorination products cis-DCE and VC. Concentrations of total VOC have decreased as a direct result of HRC remediation at wells MW-1, MW-2, MW-6, MW-7, MW-9, MW-10, and MW-12. Increased concentrations of total VOCs are recently evident in wells MW-4 and MW-11 as a result of dissolution of the VOCs in the subsurface. These increases are considered to be a precursor to decreases in VOC concentrations based on indications that reducing conditions have been established. The HRC–A and HRC-X are designed to persist for several years. The biodegradation process is expected to continue and progress based on the indications that reductive dechlorination is occurring.

The application of HRC products has directly resulted in reductions in the concentrations of VOCs in ground water. Regenesis is confident that continued reductions will occur as the dechlorination process continues.

Please feel free to contact me with any questions you have regarding this matter.

Sincerely,

Maureen Dooley

REGENESIS
Maureen Dooley

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