Former Cavalier Gage and Electronics Site
Now known as the
Rainbows End Child Development Center
VILLAGE OF SALT POINT, DUTCHESS COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 3-14-902

Prepared for:
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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revisions	DEC Approval Date

DECEMBER 2013

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION.

This document is required as an element of the remedial program at the Former Cavalier and Gage Electronics Site, now known as the Rainbow's End Child Development Center (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The remedial program was implemented at the site in accordance with Order on Consent Index # W3-0774-96-08 which was executed on February 7, 1997.

1.1.1 General

Dominic Cavalieri entered into an **Order on Consent** with the NYSDEC to implement a remedial program on a 23 acre property located in the Village of Salt Point, Dutchess County, Pleasant Valley, New York. This Order on Consent requires Mr. Cavalieri to investigate and, if necessary, remediate contaminated media at the site. As a result of that program, A Record of Decision (ROD) was approved and signed on May 21, 1998. Although the original site was 23.3 acres in size, the focus of the remedial program is on the 16.087 acre parcel. A surveyed map showing the site location and boundaries of the 16.087 -acre site is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that accompanies the Deed Restriction (Appendix A).

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was

prepared to manage remaining contamination at the site in perpetuity or until extinguishment of the Deed Restriction in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Groundwater Sciences Corporation (GSC), on behalf of Rainbows End Child Development Center, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Deed Restriction for the site.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to provide proper management of remaining contamination in the future to ensure protection of public health and the environment. A Deed Restriction will be granted to the NYSDEC, and recorded with the Dutchess County Clerk, that provides an enforceable legal instrument to ensure compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Deed Restriction for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Deed Restriction and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports and Semi-Annual Compliance Monitoring Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems); and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Deed Restriction. Failure to properly implement the SMP is a violation of the Deed Restriction, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent, (Index #W3-0774-96-08; Site #314092) for the site, and thereby subject to applicable penalties.
- At the time the SMP was prepared, the SMP and all site documents related to Remedial Investigation and Remedial Action are maintained at the NYSDEC office in New Paltz. At this time, January 2014, site documents can also be found in the repositories established for this project, including:

Pleasant Valley Free Library

1584 Main Street, Pleasant Valley, NY 12569

845-635-8460

Monday, Tuesday, Wednesday, Thursday: 10:00 AM to 8:30 PM

Friday: 1:00 PM to 6:00 PM

Saturday: 10:00 AM to 4:00 PM

Sunday: Closed

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Deed Restriction for the site, the NYSDEC will provide

a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The site is located in the Village of Salt Point County of Dutchess, New York and is identified as Block 02_and Lot 995821 on the Pleasant Valley Tax Map. The site is a total of 23.3 acres in size, but the remedial program focused only on an approximately 16.09-acre area bounded by a property line to the north, Hibernia Road to the south, property line near Wappinger Creek to the east, and property line approximately coincident with a tributary to Wappinger Creek to the west (see Figure 1). The boundaries of the site are more fully described in Appendix A - Metes and Bounds.

The site is currently a child day-care center and has two buildings. The southernmost, larger main building is used for classrooms and administrative offices. This one-story building consists of what was originally a domestic dwelling which has been added to periodically over time. The eastern side of the building is the original and oldest part of the building. The northwestern portion of the original building (north-central portion of the existing building) is underlain by a full basement. The remainder of the original building (eastern and southern portion of the existing building) is underlain by a crawl space. The non-rectangular portion of the building was constructed circa 1980 and consisted of both slab-on-grade and crawl space construction. The smaller, northern one-story building currently contains a nursery school classroom in the southern portion and an unheated shed in the northern portion. This slab-on-grade building is a converted garage/shed.

Public water and sewer service are not available to the site and so the site's water is provided by an on-site water supply well, and sanitary sewer needs are handled via a septic infiltration system. The site has had three water supply wells. The oldest and original water supply well (WSW-1) is located beneath the newer northwestern portion of the main building (Figure 2). This portion of the building was constructed as a slab-on-grade over WSW-1 and so the exact position of the well is unknown and the well is inaccessible. The depth and other construction details regarding this well are unknown. In 1980, a backup water supply well was drilled to the south of the main building. This well, WSW-2, was drilled by air rotary methods by Frank Sabarese, Inc. of Clintondale, NY. This well is a six-inch diameter well with an open-hole completion. The total depth

is 515 feet and 50 feet of six-inch diameter steel casing with a drive shoe was set. The initial well yield was reportedly 2 gallons per minute (gpm). In 1992, a third water supply well, WSW-3, was drilled approximately 300 feet to the north of the main building. Bedrock was encountered at a depth of 3.5 feet and competent dolostone bedrock was encountered at a depth of 12 feet. The total depth is 500 feet and 40 feet of six-inch diameter steel casing was set in a 12-inch borehole. A drive shoe was used and the casing was grouted in place with bentonite/Portland grout. No discrete, high-yield water bearing zones were encountered and the well yield was approximately 1 gpm at a depth of 180 feet, and 2 gpm at a depth of 320 feet. The final estimated yield for WSW-3 is approximately 2 gpm.

As Figure 2 shows, the site has two septic tanks. The easternmost tank is constructed of pre-formed concrete and was installed in 1987 to replace an older tank of unknown age and construction. The older, western tank appears to be of bituminous-impregnated felt construction. The infiltration mechanism for the 1987 new septic tank was believed to be two large dry wells located in a generally northerly direction from the tank and under the parking lot. The location for the infiltration field of the former old septic tank is not known.

1.2.2 Site History

The 7.5-Minute Topographic Map (Figure 3) for the site is attached. This map shows the main building to be present as well as the pond to the west of the building. This pond appears to be a man-made feature. It is adjacent to, but not connected with, a perennial tributary to Wappinger Creek. The eastern side of the pond consists of steeply sloping land. This pond may be the result of a sand and gravel quarry operation conducted on the site prior to 1963.

Aerial photographs taken in 1959, 1966, 1967, 1970 and 1980 were reviewed, and copies were submitted to NYSDEC previously. The 1959 and 1967 photographs were obtained from the United States Department of Agriculture. The 1966, 1970 and 1980 photographs are from the Dutchess County Planning Commission. All of these photographs show the main site building with the same general configuration. This configuration is one which shows the building very similar to its current plan, except that the northern and western portions which were added circa 1980 are not shown. The site driveways and parking areas are similar to the current configuration, except that the main parking area has been expanded since the photographs were taken. All of the photographs show the building to the north of the main building, which was expanded

northward by the addition of a shed after the 1980 photograph was taken. In the 1970 and 1980 photographs, trailers are shown to the southeast of the northern building. According to Cavalier employees familiar with operations in the 1970's and 1980's, these trailers were used for the storage of mechanical parts and no chemicals were stored in them. In the 1980 air photo, two features, which appear to be vertically oriented cylinders, are shown adjacent to the northwestern edge of the parking lot between the north building and the main building. These features were picnic tables with umbrellas used for employee breaks.

Based on interviews with Cavalier employees who are familiar with the site, the main building was originally constructed in the 1950's and was occupied as a residence from the 1950's to 1967. From 1967 to 1985, light manufacturing of electronic and electrical components was conducted within the building. This operation consisted primarily of electrical-mechanical/electronic component assembly.

The principal solvents used on site were halogenated solvents, particularly 1,1,1-trichloroethane (TCA) and 1,1,2-trichloro- 1,2,2-trifluoroethane (Freon 113). Attempts have been made to contact people with responsibility or knowledge of chemical use and operations at the site. The current president of Cavalier started with the company in 1978 as a purchasing clerk and then served as the purchasing manager. From the period 1978 through 1985, no TCA was purchased. The only TCA used on-site from that period forward would have been that which may have remained from previous purchases. From 1978 through 1985, the only solvent purchased was Freon 113. This solvent was purchased and used in small quantities in order to clean parts during soldering operations.

Waste solvents were placed in a drum for off-site disposal. Freon 113 has not been detected in site groundwater. These interviews did not reveal any incidents or practices which would have caused the site groundwater contamination.

For all but three years during this period (1967 - 1985), the site was operated by Cavalier. For a three-year period in the mid-1970's, the same types of site activities were conducted by a different operator (Micri Corporation).

The building was unoccupied and there were no operations on-site from 1985 to 1988. In 1988, the site was occupied by RE, and RE has occupied the site continuously from 1988 to the present. The only chemicals on-site during RE's tenure would be those associated with housekeeping and children's arts and crafts supplies.

Currently, well WSW-1 contains mechanical equipment associated with an inoperable jet pump and is inaccessible beneath a concrete slab floor of the main building. WSW-2 contains an electric submersible pump with associated discharge line and power cables and is available for water quality monitoring. WSW-3 contains an electric submersible pump and is the current water supply well for the site.

Chronology

- 1950's to 1967: Residence.
- 1967 – 1985: Operated by Cavalier Gage and Electronics Co., small electronics parts assembled, solvents used.
- Mid – 1970's: Operated by Micri Corporation.
- 1978 – 1985: No TCA purchased (TCA principal groundwater contaminant).
- 1985 – 1988: Site not occupied.
- 1988 – Present: Occupied by Rainbows End Daycare Center.
- 1992: VOCs sampled for first time and detected in water supply.
- 1992: Carbon treatment system installed on water supply well.
- 1995 - present: Semi-annual and Annual groundwater sampling and reporting to NYSDEC and New York Stated Department of Health (NYSDOH).
- 1996: The NYSDEC issues Order on Consent Index #W3-0774-96-08 to Dominic Cavalieri ("Respondent"), owner of Former Cavalier Gage and Electronics Co.
- 1998: The NYSDEC issues Record on Decision.
- 1998: Groundwater Recovery System Operation & Maintenance Manual prepared for Dominic Cavalieri by GSC.
- 2005: Indoor air sampling conducted, indoor air sampling results report submitted to the NYSDEC and the NYSDOH.
- 2005: Subslab depressurization system installed beneath site building.
- 2009: Indoor air sampling conducted, indoor air sampling results report submitted to the NYSDEC and the NYSDOH.

1.2.3 Geologic Conditions

- Lithology: site is underlain by carbonate bedrock of the Wappinger Group. This group consists of several formations which, in aggregate, are up to approximately 3,000-feet thick and consist primarily of dolostone. The bedrock encountered during the installation of WSW-3 consisted primarily of medium to dark gray dolostone to slightly quartzose dolostone, with quartz and calcite-healed fractures. The specific yield of WSW-2 and WSW-3 are both approximately 0.005 gallons per foot. Based on these low specific yields, it can be inferred that the Wappinger Group beneath the site does not have well-developed primary or secondary porosity and has a low hydraulic conductivity. The soil thickness beneath the site is quite variable, ranging from 3 to 16 feet, and consisting of sand with fine gravel.
- Hydrogeology: In developing a conceptual site hydrogeologic model, it is assumed that both Wappinger Creek and the tributary to Wappinger Creek along the western property boundary are gaining streams and, therefore, are groundwater flow discharge boundaries. Based on general recharge/discharge relationships, groundwater is recharged in the topographically high areas such as those occupied by the site buildings and is discharged (in the vicinity of the site) to perennial streams (Wappinger Creek and tributaries). Groundwater is, therefore, presumed to flow from the vicinity of the site's buildings toward Wappinger Creek and the tributary to Wappinger Creek in a sub-basin bounded by the two perennial water bodies and the hill to the north of Rainbows End Child Development Center. That is, groundwater beneath the eastern portion of the site, would be expected to flow in a southerly direction toward Wappinger Creek, groundwater beneath the central portion of the site is a southwesterly direction toward Wappinger Creek and the lower reach of the tributary, and groundwater beneath the western portion of the site is a westerly direction toward the pond and tributary. As noted previously, the site relies on wells for its water supply Groundwater is withdrawn at a rate of approximately 1,100 gallons per day, which is roughly the usage associated with four single-family homes. These pumping stresses will induce groundwater flow toward the pumping center.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports: Remedial Investigation/Feasibility Study Report, January 1998.

Record of Decision, June 1998

Generally, the RI determined that the only significantly impacted media is bedrock groundwater. This groundwater lies at a depth of at least 10 feet beneath the developed portion of the site. Well WSW-3 is the water supply for the site. The site water supply system is equipped with a granulated activated carbon (GAC) treatment system which is operated under Dutchess County Department of Health approval. Well WSW-3 was sampled in February 1998 with total VOCs less than 5 ppb. It is sampled and maintained regularly. During indoor air sampling a detectable level of TCA was found in the basement of the building. The basement is not occupied, and therefore the occupants of the building are not exposed to the TCA.

The closest resident is 550 ft. from the site and the resident's water supply well has been monitored since 1992. No VOC contamination has been detected in this well above the NYS drinking water standard.

Below is a summary of site conditions when the RI was performed in 1998:

<u>Soil</u>

- Methylene Chloride and chloroform (common laboratory contaminants) were detected at concentrations well below SCGs in one surface soil sample collected at the site. TCA, TCE, and PCE were detected at concentrations at least 100 times below SCGs in subsurface soils.

<u>On-Site and Off-Site Groundwater</u>

- Three VOCs have been detected in site groundwater above SCGs: TCA, 1,1-DCE, and 1,1-DCA. The NYS groundwater standard is 5 ppb for the three VOCs detected. There are three wells on site that are all bedrock wells. Well WSW-1 was the first water supply well for the site and was abandoned in 1992. There is no information on the construction or depth of this well. Well WSW-2 is an open borehole bedrock well with approximate depth of 500 ft. Well WSW-3 is an open

borehole bedrock well with approximate depth of 475 ft. The highest concentration detected on site was in the former water supply well, WSW-2 at 130 ppb of TCA, 220 ppb of 1,1-DCA, and 18 ppb of 1,1-DCE in 1992. These VOCs were generally detected at a concentration of 100 ppb or less in WSW-3, the current water supply well. The sources of these impacts are likely associated with the chlorinated solvents used by at the site while operated by Cavalier Gage and Electronics. Tables showing the groundwater concentrations in WSW-2 and WSW-3 are included in Appendix B.

- The nearby residential well at 30 Hibernia Rd. has had no detections of VOCs since 1992. The one apparent exception took place when 0.5 ppb of TCA was detected during the sampling event in May 1997. The result, however, was due to a laboratory error.

On-Site Soil Vapor

- Air samples collected in July 1996 and April 1998 contained concentrations of TCA that were determined at the time to pose no unacceptable risk.
- A soil gas survey, conducted in the area of the original leach field under the parking lot revealed no soil gas detections.
- Sub-slab sampling performed in 2005 showed elevated levels of TCE and 1,1,1-Trichloroethane. NYSDOH recommended that a Sub-Slab Depressurization System (SSDS) be installed at the facility, which was installed in the summer of 2005.
- Since the installation of the Sub-Slab Depressurization System, no unacceptable indoor air concentrations have been detected.

Underground Storage Tanks

- No Underground Storage Tanks are known to have existed at the site

Septic Tanks

- The Old Septic Tank (abandoned in 1994 during a system upgrade) historically contained concentrations of 1,2,4-trimethyl benzene and toluene (chemicals associated with septic tank cleaners). The last sampling, conducted in 1992, detected 1,2,4-TMB at 89 ppb and toluene at 49 ppb in the supernate of the 1987

Septic Tank. The system had been pumped on: December 1992, April 1994, and December 1997. VOCs have not been used on site for over 20 years.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Record of Decision dated June 1998.

The following is a summary of the Remedial Actions performed at the site:

As stated in the January 1998 proposed Record of Decision , The NYSDEC in consultation with the NYSDOH proposed no further action for the Cavalier Gage and Electronic Site. The findings of the investigation of the site indicate that the site does not pose a threat to human health or the environment. Based on VOC detections (TCA, 1,1-DCE, and 1,1-DCA) in bedrock groundwater above SCGs, the proposed remedy at the site is a combination of institutional and engineering controls.

1. Execution and recording of a Deed Restriction to restrict land use and prevent future exposure to any contamination remaining at the site.
2. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Deed Restriction, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;
3. Installation of a granular activated carbon system on the property water supply well.
4. Installation of a subslab depressurization system to mitigate volatile organic compounds from groundwater.

1.4.1 On-Site Treatment Systems

- A granulated activated carbon (GAC) system was installed in 1992 and is currently in operation. The system as presently configured consists of a single

submersible well feed from WSW-3 through a multiple stage treatment process. The system is a pressure tank based system which operates on demand when water is required at the facility. The piping from WSW-2 is also piped into the system but is locked out and is only actuated for sampling purposes. The key to the locked valve is controlled by the site manager. From the tank, water is pressurized through a staged series of water treatment devices. Initially after passing through the tank, the water is first directed through a cartridge filter intended for sediment removal. After passing through the sediment filter, the water is first metered by a positive displacement flow meter and then is routed through 4 pressure type liquid phase granular activated carbon filters for adsorption of the VOCs. The carbon units are piped in series (2), and parallel (2) for a total of four units. After the water is passed through the carbon units, it is treated by two additional traditional water treatment devices. Immediately after carbon treatment, the water passes through a Culligan water softener. The water softener is equipped with a small brine tank and with an integral backwash capability for automatic regeneration of the softener bed. A backflow prevention valve was also installed on the backwash lop to prevent any back flow of softener backwash waste. After the softener the water passes through a two stage ultraviolet light unit for destruction of any bacterial growth. The carbon units are equipped with a built-in by-pass valves which are locked out. The water softener and the ultraviolet light unit are also equipped with built-in by-pass valves which are only used for servicing the components. The location of the GAC system is shown on Figure 2.

- A subslab depressurization system was installed at the Site in 2005 to eliminate the infiltration of soil gas into the Site building. The negative pressure radon mitigation system consists of two sealed suction fans mounted outside of the Site building. The location of the subslab depressurization system is shown on Figure 2.

1.4.2 Remaining Contamination

- No known soil contamination remains at the site.

- Low dissolved-phase groundwater concentrations remain at the site. Historic concentrations in groundwater are shown in Appendix B.
- Low soil vapor concentrations remain below the concrete slab of the site building.

1.4.3 Engineering and Institutional Controls

Since remaining contamination is present at this site, Engineering Controls and Institutional Controls have been implemented to protect public health and the environment for the applicable future use. The Controlled Property has the following Engineering Controls

1. A granular activated carbon treatment system is installed on the site water supply well.
2. The SSDS consists of two sealed suction fans, mounted outside of the site building, connected to 3" diameter PVC piping that enters the building through the crawlspace.
3. A series of Institutional Controls are required to implement, maintain and monitor these Engineering Controls. The Deed Restriction requires compliance with these Institutional Controls, to ensure that:

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Site must be inspected and certified at a frequency and in a manner defined in this SMP;
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- On-site environmental monitoring devices, including but not limited to, groundwater monitoring wells and soil vapor probes, must be protected and replaced as necessary to ensure continued functioning in the manner specified in this SMP.

In addition, the Deed Restriction places the following restrictions on the property:

- Use of groundwater underlying the property is prohibited without treatment rendering it safe for the intended use
- The property may be used for restricted residential use, provided that the long-term Engineering and Institutional Controls described in the SMP remain in use.

These EC/ICs are designed to:

- Prevent ingestion of groundwater with contaminant levels that exceed drinking water standards;
- Prevent contact with or inhalation of volatiles from impacted soil vapor.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Remedial activities completed at the site were conducted in accordance with the NYSDEC-approved ROD. A summary of the remedial strategies and EC/ICs implemented at the site are as follows:

- Engineering Controls
    - Granular Activated Carbon Treatment System
    - Sub-Slab Depressurization System
- Institutional Controls
    - Deed Restriction

Since remaining contaminated groundwater and soil vapor exists beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

The purpose of this Plan is to provide:

- A description of all EC/ICs on the site;
- The basic operation and intended role of each implemented EC/IC;
- A description of the key components of the ICs created as stated in the Deed Restriction;

- A description of the features that should be evaluated during each periodic inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the safe handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Granular Activated Carbon Treatment System

Exposure to remaining contamination in groundwater at the site is prevented by a granular activated carbon (GAC) treatment system. The components, materials, layout, and location of the GAC system are detailed in Section 1.4.1. Procedures for operating and maintaining the GAC system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.1.2 Sub-slab Depressurization System

Exposure to soil vapor at the site is prevented by a sub-slab depressurization (SSD) system. The components, materials, layout, and location of the GAC system are detailed in Section 1.4.1. Procedures for operating and maintaining the SSD system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Sub-slab Depressurization System (SSDS)

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system is no longer required, a proposal to discontinue the SSD system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.2 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems and (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination. Adherence to these Institutional Controls on the site is required by the Deed Restriction and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Deed Restriction by the Grantor and the Grantor's successors and assigns with all elements of this SMP;

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP.
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls may not be discontinued without an amendment to or extinguishment of the Deed Restriction.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Deed Restriction. Site restrictions that apply to the Controlled Property are:

- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the property that will disturb remaining contaminated material are prohibited unless they are conducted in accordance with this SMP;
- The potential for vapor intrusion must be evaluated for any buildings developed on the site, and any potential impacts that are identified must be mitigated;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that

NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination, a soil vapor intrusion (SVI) evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system will be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Deed Restriction;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the site Management Reporting Plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6NYCRR Part 375, and/or Environmental Conservation Law.

- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Order on Consent and ROD, and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to Groundwater Sciences Corporation. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 1: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 2: Other Contact Numbers

Groundwater Sciences Corporation	717-652-6832

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: Rainbows End Child Development Center

Nearest Hospital Name: St. Francis Hospital

Hospital Location: 1 Webster Avenue, Poughkeepsie, NY

Hospital Telephone: 845-431-8294

Directions to the Hospital:

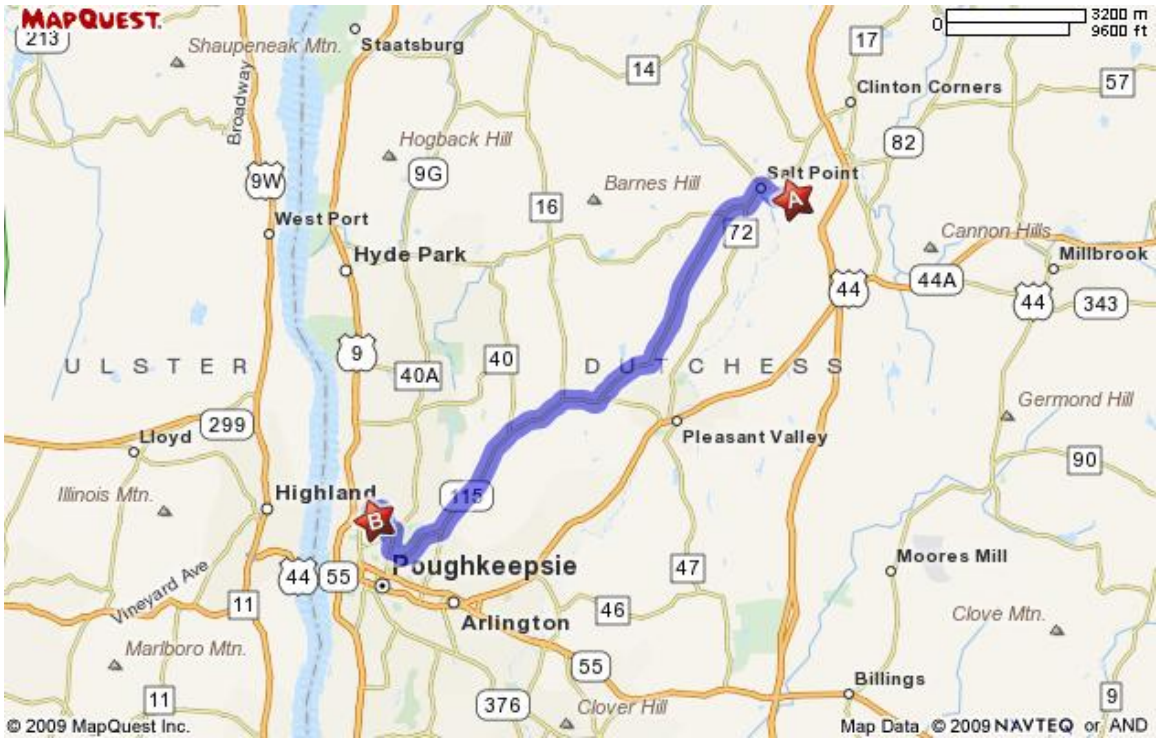
1. West on Hibernia Rd to NY 115
2. NY 115 to Salt Point Turnpike
3. South on Salt Point Turnpike to Smith Street
4. Smith Street to Oakley Street
5. Right on Oakley Street to North Clinton Street
6. North Clinton Street to Morton Street
7. Left on Morton Street to Fairview Avenue
8. Right on Fairview Avenue to West Cedar Street
9. Left on West Cedar Street to Garden Street
10. Left on Garden Street to Webster Avenue

11. Right on Webster Avenue to St. Francis Hospital

Total Distance: 11 miles

Total Estimated Time: 22 minutes

Map Showing Route from the site to the Hospital:



2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 1. The list will also be posted prominently at the site and made readily available to all personnel at all times.

Evacuation Plans are posted throughout the facility.

3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, including all engineering controls (ECs) and all affected site media. ECs at the site include: Granular Activated Carbon Water Supply Well Treatment System and Sub-slab Depressurization System. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor);
- Assessing compliance with NYSDEC groundwater standards and;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and

- Annual inspection and periodic certification.

Monitoring of the performance of the remedy and overall reduction in contamination will be conducted until the approval to discontinue monitoring is received from the NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3 and outlined in detail in Sections 3.2 and 3.3 below.

Table 3: Monitoring/Inspection Schedule

Monitoring Program	Sampling Location	Frequency*	Matrix	Analysis
Groundwater	New WSW (untreated)	February, May, August, October, November	Groundwater	524.2, Freon 113
Groundwater	New WSW, Midpoint S1	February, May, August, November	Groundwater	524.2, Freon 113
Groundwater	New WSW, Midpoint S2	February, May, August, November	Groundwater	524.2, Freon 113
Groundwater	New WSW (treated, kitchen sink)	February, May, August, November	Groundwater	524.2, Freon 113, MTBE, Pb,Cu
Groundwater	Old WSW	Once every 5 Quarters (February 2013, 2017 etc., May 2014, 2018, etc., August 2015, 2019. etc., November 2016, 2020, etc.)	Groundwater	524.2, Freon 113
Groundwater	30 Hibernia Road	February, August	Groundwater	524.2, Freon 113
Groundwater	Trip Blank	February, May, August, November	Groundwater	524.2, Freon 113
SSDS	Manometer	February, May, August, November	Soil Vapor	Visual Inspection

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 ENGINEERING CONTROL SYSTEM MONITORING

- Granular Activated Carbon Treatment System
- Sub-slab Depressurization Monitoring

The Granular Activated Carbon Treatment System was installed in spring 1992 to mitigate the groundwater exposure pathway. System is described in the Engineering and Institutional Control Plan. As-built drawings are located in the Groundwater recovery System Operation and Maintenance Manual included in Appendix C.

The Sub-slab Depressurization System was installed in summer 2005 to mitigate possible soil vapor intrusion into occupied buildings. System designs are described in the Engineering and Institutional Control Plan. As-built drawings are located in Appendix D.

3.2.1 Monitoring Schedule

- Granular Activated Carbon Treatment System
    - Baseline sampling occurred prior to the system startup in 1992.
    - System inspections occur during the schedule sampling detailed in Table 3
- Sub-slab Depressurization System
    - Baseline sampling occurred prior to the system startup in 2005. The results of the baseline and post SSD system installation sampling are included in Appendix E.
    - System inspections occur during the Granular Activated Carbon Treatment System sampling detailed on Table 3.

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of either EC has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the EC systems are specified later in this Plan.

3.2.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monitoring event.

- Granular Activated Carbon Treatment system components to be monitored include, but are not limited to, the following:
    - Piping
    - Valves
    - Filters
    - Ultraviolet Light
    - Pressure Gauges
- Sub-slab Depressurization System
    - Vacuum blower
    - Visible System Piping
    - Manometer

A complete list of components to be checked is provided on the Field Data Sheet, presented in Appendix F. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the EC restarted.

3.2.3 System Monitoring Devices and Alarms

There are no engineering control alarms. However, there is a manometer vacuum gauge which would indicate if the sealed suction fans are operating properly.

3.2.3 Sampling Event Protocol

The sampling protocol for groundwater is included in Appendix G.

3.3 MEDIA MONITORING PROGRAM

3.3.1 Groundwater Monitoring

Groundwater monitoring of the existing on site drinking water wells will be performed on a periodic basis to assess the performance of the remedy.

- The location of the water supply wells are shown on Figure 2;
- The sampling schedule, analytes to be tested, and methods for analysis is included in the Sampling Schedule included on Table 3.

Monitoring well construction logs are not available for WSW-2. Well construction logs for WSW-3 are included in the Groundwater Recovery System Operation and Maintenance Manual included in Appendix C.

The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

All well sampling activities will be recorded in a field sampling log presented in Appendix F. Other observations (e.g., well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the groundwater monitoring well network, the granular activated carbon treatment system, and the Sub-Slab Depressurization System.

A sampling protocol for the site is included in Appendix G.

3.3.1.2 Monitoring Well Repairs, Replacement and Decommissioning

There are no monitoring wells on site. Should an on site groundwater drinking well be abandoned, it will be done so in accordance with all applicable regulatory guidelines.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix F). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the objectives prepared for the site as discussed below.

- All data will be provided with sufficient accuracy and precision to show compliance with the monitored natural attenuation schedule detailed in the ROD and drinking water quality criteria;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with United States Environmental Protection Agency (USEPA) drinking water method requirements.

  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.

- Sample Tracking and Custody will be accomplished through the use of Chain-of-Custody procedures;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA drinking water method 524.2 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
  - All samples will be analyzed by USEPA drinking water methods by a laboratory approved by the NYSDOH ;
- Internal QC and Checks will be performed as required by USEPA and NYSDOH drinking water methods;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on an annual basis in the Periodic Review Report. A letter report will also be prepared [if required by NYSDEC], subsequent to each semi-annual sampling event. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.); Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations.
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points;
- Any observations, conclusions, or recommendations; and
- In the Periodic Review Report, a determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Individuals unfamiliar with the site are not permitted to operate and maintain the Granular Activated Carbon (GAC) Water Supply Treatment System or the Sub-slab Depressurization (SSD) System because the site is a day care center with sensitive receptors;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the GAC and/or SSD systems are operated and maintained.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 Sub-slab Depressurization System;

The SSD consists of two sealed suction fans, mounted outside of the site building, connected to 3" diameter PVC piping that enters the building through the crawlspace.

4.2.1.1 Scope

The only mechanical devices associated with the SSD system are the sealed suction fans. Each sealed suction fan is maintenance free. The sealed suction fans each have a manometer vacuum gauge associated with it to observe system operation. If the manometer indicates that one or both sealed suction fans are not working, the installer should be contacted immediately for service.

4.2.1.2 Testing

Subslab vacuum measurements will be collected annually to determine SSD system performance.

4.2.2 Granular Activated Carbon Treatment System

4.2.2.1 Scope

The operation and maintenance manual for the GAC system is included in Appendix C.

4.3 MAINTENANCE REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

4.3.1 Routine Maintenance Reports

Checklists or forms (see Appendices E will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name and company of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.3.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, and company of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5.0 SITE MANAGEMENT REPORTING PLAN

5.1 INTRODUCTION

Periodic Review Reports will be submitted to NYSDEC every [leave blank for annual or insert second, third, fifth, etc., as appropriate] year, beginning eighteen months after the Certificate of Completion is issued. These Periodic Review Report will be prepared in accordance with NYSDEC DER-10 "Technical Guidance for site Investigation and Remediation" requirements. The frequency of submittal of the Periodic Review Report may be modified with the approval of the NYSDEC.

These reports will include the following:

- Identification of all EC/ICs required by the Remedial Action Work Plan for the site;
- An assessment of the effectiveness of all Institutional and Engineering Controls for the site;
- An evaluation of the Engineering and Institutional Control Plan and the Monitoring Plan for adequacy in meeting remedial goals;
- Results of the required annual site inspections and severe condition inspections, if any;
- A compilation of all deliverables generated during the reporting period, as specified in Section 2 EC/IC Plan, Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan; and
- Certification of the EC/ICs.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

Information of EC/ICs can be found in the Engineering and Institutional Control Plan portion of the SMP. Inspection of the EC/ICs will occur at a frequency described in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan. After the last

inspection of the reporting period, a qualified environmental professional will sign and certify the document. The document will certify that:

- On-site ECs/ICs are unchanged from the previous certification;
- Site use is compliant with the Deed Restriction;
- They remain in-place and are effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;
- Access is available to the site by NYSDEC and NYSDOH to evaluate continued maintenance of such controls;
- the inspection of the site to confirm the effectiveness of the IC/ECs was performed under the direction of the individual making this certification;
- to the best of their knowledge and belief, the work and conclusions described in the certification are in accordance with the requirements of the site remedial program; and
- the information presented is accurate and complete.

The signed certification will be included in the Periodic Review Report (see Section 5.4).

5.3 SITE INSPECTIONS

5.3.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the Groundwater Monitoring Schedule included on Table 3. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.3.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the form included in Appendix F. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be included in the Periodic Review Report.

5.3.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as detailed in the ROD.

5.4 PERIODIC REVIEW REPORT

Periodic Review Reports will be submitted every year, beginning eighteen months after the [Certificate of Completion or equivalent document eg., Satisfactory Completion Letter, No Further Action Letter, etc.] is issued. The report will be submitted within 45 days of the end of each certification period. Other reports, such as the semi-annual groundwater sampling data report, will be submitted within ninety (90) days of the sample event, in the form of a letter report. Media sampling results will be incorporated into these Periodic Review Reports. The report will include:

- EC/IC certification;
- All applicable inspection forms and other records generated for the site during the reporting period;

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data sufficient for the Department to evaluate contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A performance summary for all treatment systems at the site during the calendar year, including information such as:
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A description of the resolution of performance problems;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.

The Periodic Review Reports will be submitted only in electronic format to the NYSDEC Central Office and NYSDOH BEEI project managers.

5.5 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

Figures

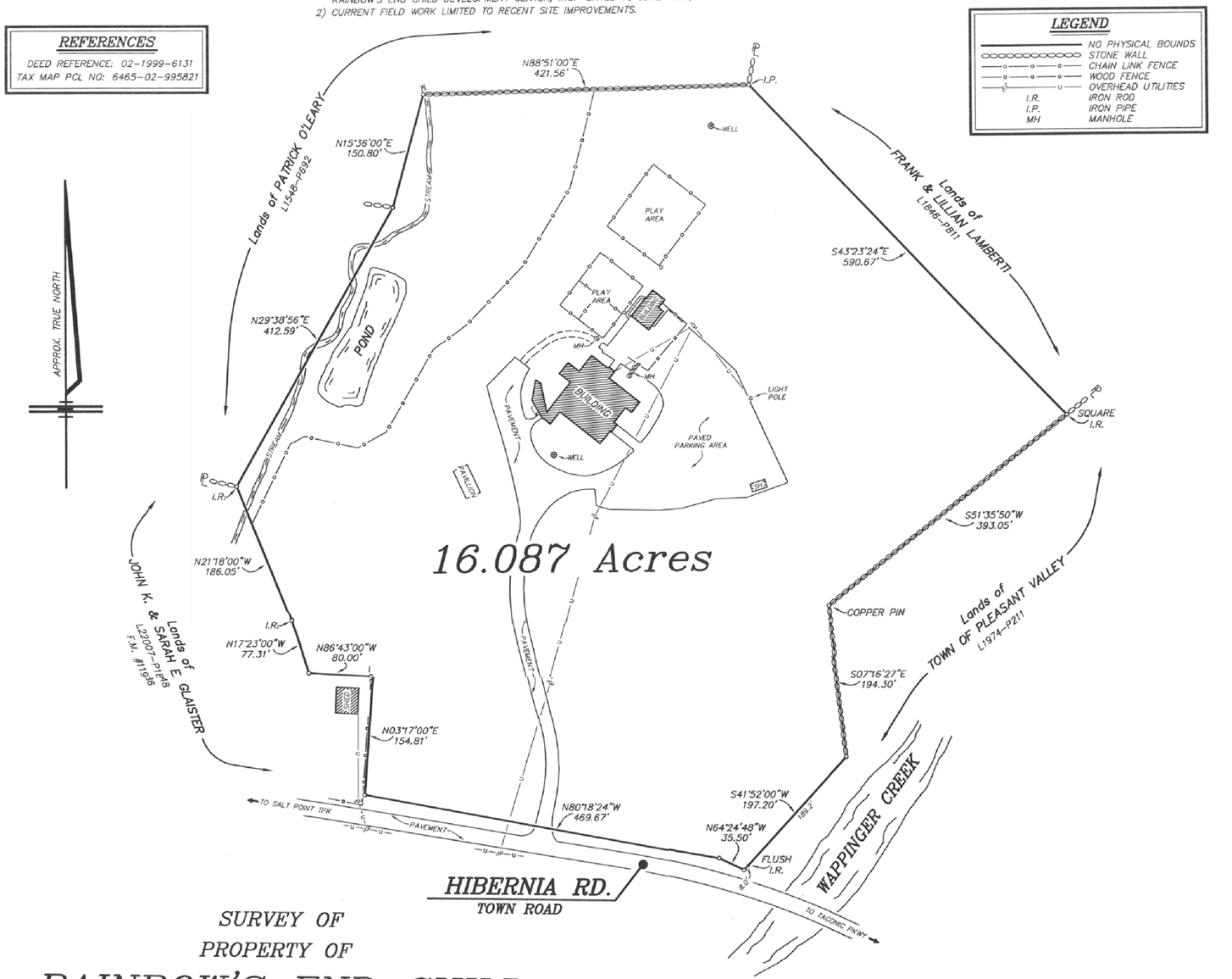
NOTES: 1) BOUNDARY LINES PER SURVEY MAP ENTITLED, "PROPERTY OF DOMINIC A. CAVALIERI TO BE CONVEYED TO RAINBOW'S END CHILD DEVELOPMENT CENTER, INC." DATED 18 JUNE 1999, AND FILED MAP NO. 11986.
2) CURRENT FIELD WORK LIMITED TO RECENT SITE IMPROVEMENTS.

REFERENCES

DEED REFERENCE: 02-1999-6131
TAX MAP PCL NO: 6465-02-995821

LEGEND

	NO PHYSICAL BOUNDS
	STONE WALL
	CHAIN LINK FENCE
	WOOD FENCE
	OVERHEAD UTILITIES
I.R.	IRON ROD
I.P.	IRON PIPE
MH	MANHOLE



SURVEY OF
PROPERTY OF

RAINBOW'S END CHILD DEVELOPMENT CENTER, INC.

TOWN OF PLEASANT VALLEY, DUTCHESS COUNTY, NEW YORK

CERTIFIED TO RAINBOW'S END CHILD DEVELOPMENT CENTER, INC., TICOR TITLE INSURANCE COMPANY AND RHINEBECK SAVINGS BANK IN ACCORDANCE WITH THE CODE OF PRACTICE FOR LAND SURVEYS OF THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.

PLASS, ROCKEFELLER & NUCCI, LLC
PROFESSIONAL LAND SURVEYORS
NYS RTE 23B @ WEBB RD
P.O. BOX 520
CLAVERACK, N.Y. 12513
TEL: (518) 851-7121 FAX: (518) 851-6564
plass@mhcable.com

N.Y.S. LIC. NO. 049794 L.S.

Drawing Not to Scale

Figure 1

Rainbow's End Child Development Center
123 Hibernia Road, Salt Point, New York

Tax Map

DRAWN BY: JPB	DATE: 1/4/10	DRAWING NO. 92004-015-A1
CHECKED & APPROVED BY: SRM		

GROUNDWATER SCIENCES CORPORATION

LEGEND

- ▲ - Existing Well (approx.)
- 230 - Topographic Contour (approx.)
- Property Line (approx.)
- SSDS Piping (Basement & Crawlspace) (approx.)
- ★ - Granular Activated Carbon Treatment System in Basement (approx.)

Approximate N

Source: *Lawrence J. Paggi, Consulting Engineer (Fishkill, NY; "As-Built of Sewage Disposal System Improvements", file no. 91-040, dated February 15, 1993.)*

Scale 0 60' 120'

WSW-1
DAY CARE BLDG
GAC
SSDS SUCTION FANS (APPROX.)
WSW-3
FENCED ACTIVITY AREAS
NURSERY SCHOOL
POND
SEPTIC TANK
FORMER SEPTIC TANK
SEPTIC TANK
1,000 GAL. GREASE TRAP
WSW-1
DAY CARE BLDG
PARKING
WSW-2
(APPROX. LOCATION)
30 HIBERNIA ROAD
Hibernia Road
WAPPINGER CREEK
240
250
300
290
280
270
260
250
240
230
230
230
230

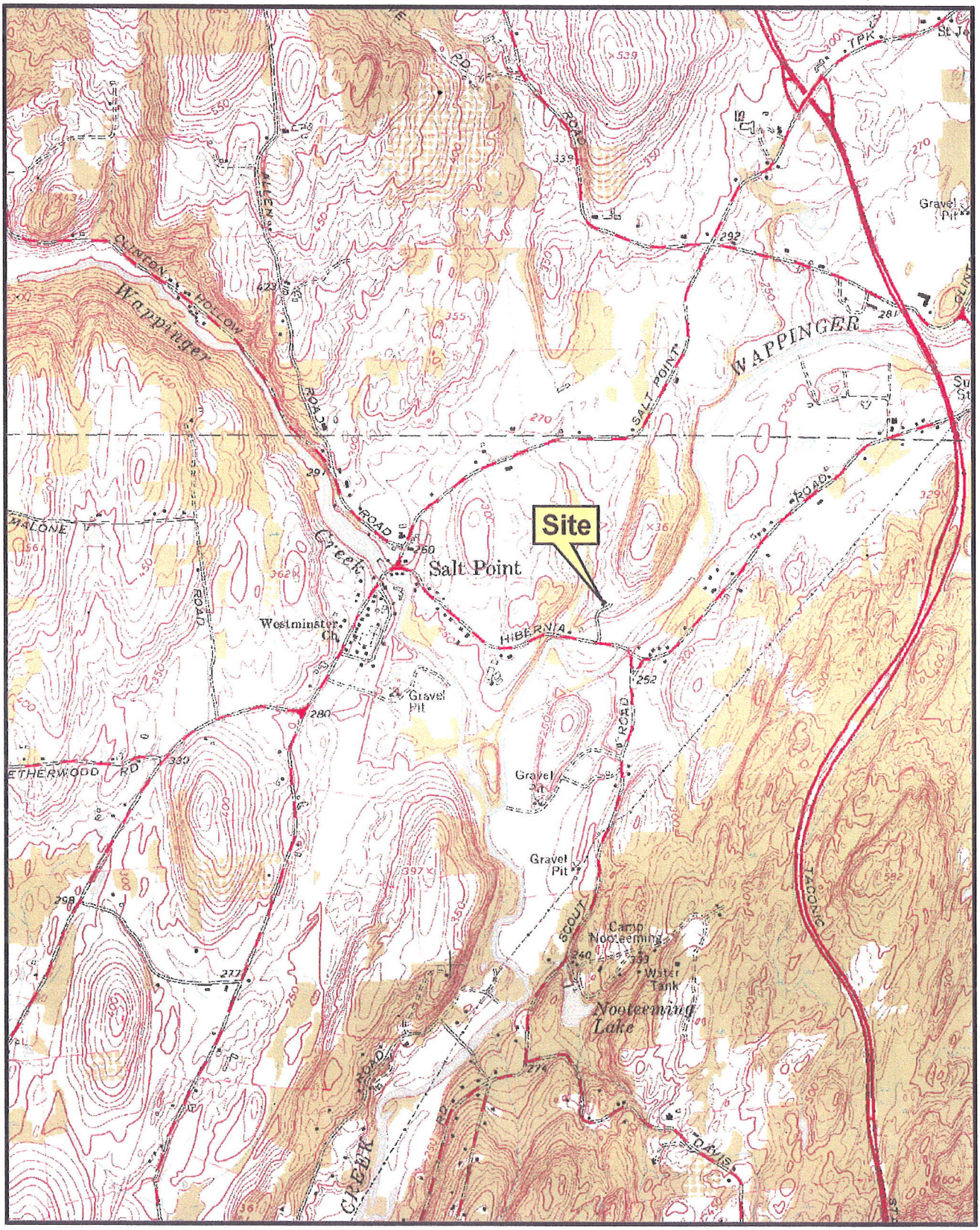
Figure 2

Rainbow's End Child Development Center
123 Hibernia Road, Salt Point, New York

Site Map

DRAWN BY: JPB/MHM	DATE: 7/26/13	DRAWING NO. 92004-006-D1
CHECKED & APPROVED BY: SRM		

GROUNDWATER SCIENCES CORPORATION



Portion of the Salt Point, NY
7.5-minute USGS Quadrangle
(2000)

Approximate N

Scale
0 1000' 2000'

Figure 3

Rainbow's End Child Development Center

123 Hibernia Road, Salt Point, New York

Site Location Map

GROUNDWATER SCIENCES CORPORATION

92004-014-A1 / 01-04-2010

APPENDIX A

Deed Restriction and Metes and Bounds Description

Dutchess County Clerk

[redacted]

DUTCHESS COUNTY CLERK RECORDING PAGE

RECORD & RETURN TO:

FRED W SCHAEFFER
2 JEFFERSON PLAZA
SUITE 202
POUGHKEEPSIE NY 12601

RECORDED: 07/16/1999
AT: 16:15:30
DOCUMENT #: 02 1999 6131

RECEIVED FROM: POUGHKEEPSIE ABSTRACT CO INC

GRANTOR: CAVALIERY DOMINIC A
GRANTEE: RAINBOW'S END CHILD DEVELOPMENT CENTER

RECORDED IN: DEED
INSTRUMENT TYPE:

TAX DISTRICT: PLEASANT VALLEY

EXAMINED AND CHARGED AS FOLLOWS:

RECORDING CHARGE: 57.00
NUMBER OF PAGES: 5

TRANSFER TAX AMOUNT: 984.00

TRANSFER TAX NUMBER: #008693

E & A FORM: Y

TP-584: Y

*** DO NOT DETACH THIS PAGE
*** THIS IS NOT A BILL

COUNTY CLERK BY: LBT /____
RECEIPT NO: R41449
BATCH RECORD: C00075

WILLIAM L. PAROLI, JR.
County Clerk

0 2 1 9 9 9 6 1 3 1

10

KBN Doc# 021999 6131 Page 1

REC: 7/16/99

2/5/2006 12

Closing

(HT1)
37
25
5
084
101

BARGAIN AND SALE DEED
WITH COVENANT AGAINST GRANTOR'S ACTS

THIS INDENTURE, made the 29th day of June, nineteen hundred and ninety-nine,

BETWEEN DOMINIC A. CAVALIERI, residing at 28 Gables Boulevard, Poughkeepsie, New York 12603, by BETTY J. WAGNER, his attorney-in-fact,

party of the first part, and RAINBOW'S END CHILD DEVELOPMENT CENTER, INC., having an office at Hibernia Road, Salt Point, New York 12578,

party of the second part,

WITNESSETH, that the party of the first part, in consideration of Ten Dollars ($10.00), lawful money of the United States, and other good and valuable consideration, paid by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or successors and assigns of the party of the second part forever, the premises set forth in Schedule A annexed hereto and made a part hereof.

SUBJECT TO the following restriction which shall run with the land:

THE GROUNDWATER AND SOIL at the Site are contaminated with chlorinated solvents released by a former industrial facility on the property. Unless otherwise notified by the New York State Department of Health (NYSDOH), installation of any new well will require a NYSDOH approved treatment system to render the water potable.

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above described premises in the center lines thereof,

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything whereby the said premises have been encumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the

right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

THE word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this Deed the day and year first above written.

IN PRESENCE OF:

Dominic A. Cavalieri
By: Betty J. Wagner
His Attorney-In-Fact

DOMINIC A. CAVALIERI
By: BETTY J. WAGNER
his Attorney-In-Fact

STATE OF NEW YORK, COUNTY OF DUTCHESS, ss:

On the 29th day of June, 1999, before me, the undersigned, a notary public in and for said state, personally appeared BETTY J. WAGNER, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

CRAIG T. DIGILIO
Notary Public, State of New York
Qualified in Ulster County
Commission Expires May 31, 20 01

RECORD AND RETURN TO:

Fred W. Schaeffer, Esq.
2 Jefferson Plaza
Suite 202
Poughkeepsie, New York 12601

Metes and Bounds Description

ALL that piece or parcel of vacant land, situate in the Town of Pleasant Valley, Dutchess County, New York, bounded and described as follows:

BEGINNING in the southerly line of the Town Highway known as Hibernia Road, on the division line between lands of Holland S. & Carroll P. Reisner on the west and lands of Dominic A. Cavalieri on the east; from said point of beginning a concrete monument across Hibernia Road bears the following two courses and distances (1) N 28 degrees -02'E, 38.32 feet and (2) N 4 degrees -22' -40"E, 13.69 feet to said concrete monument; thence from said point of beginning and along the southerly line of Hibernia Road (1) S 80 degrees -18'-24"E, 519.96 feet and (2) S 64 degrees -24'-48"E, 151.76 feet, crossing the Wappinger Creek; thence down along same and with lands of Fox Meadows Realty Development Inc. (1) S 41 degrees -08'W, 210.24 feet; (2) S 47 degrees -55'W, 197.10 feet; (3) S 75 degrees -38'W, 185.9 feet; (4) N 86 degrees -41'W, 274.42 feet and (5) N 37 degrees -59'W, 157.6 feet; thence N 28 degrees -02'E, 396.05 feet, re-crossing the Wappinger Creek and along lands of Reisner above mentioned to the point of beginning.

BEING all that portion of "Proposed Parcel 2" lying southerly of Hibernia Road as shown on Filed Map No. 8837, which map was recorded on 13 September 1989 in the Dutchess County Clerk's Office, and is entitled "Proposed Subdivision-Property Of-Domini A. Cavalieri".

APPENDIX B

Historic Groundwater Chemistry Data

WSW-2 (South of Building) Historical Sampling Results

Date	111-TCA	11-DCA	11-DCE	Total VOCs
25-Jan-92	130	200	18	348
2-Jun-92	110	220	13	343
31-Jan-95	2.6	81	7.7	91
27-Mar-95	3.8	67	8.0	79
23-May-95	3.3	85	6.6	95
27-Jul-95	2.7	72	6.6	81
26-Sep-95	5.7	83	8.3	97
28-Nov-95	3.3	62	9.2	75
29-Jan-96	3.6	86	12	102
29-May-96	5.2	79	10	94
25-Jul-96	4.5	87	7.6	99
26-Sep-96	6.7	96	11	114
21-Nov-96	6.4	80	8.4	95
30-Jan-97	7.0	100	8.6	116
29-May-97	4.6	82	5.1	92
10-Jul-97	5.0	81	6.8	93
30-Oct-97	5.0	78	8.1	91
3-Mar-98	3.4	84	5.6	93
19-Aug-98	3.0	89	6.6	99
4-Mar-99	1.7	76	8.0	86
22-Sep-99	1.5	66	6.1	74
16-Mar-00	1.6	50	5.7	57
19-Sep-00	0.9	50	6.8	58
29-Mar-01	0.5	42	6.0	49
17-Sep-01	0.6	39	5.0	45
25-Mar-02	0.6	33	4.4	38
25-Sep-02	<0.5	46	5.4	51
26-Mar-03	<0.5	43	5.5	49
23-Sep-03	<0.5	38	5.5	44
11-Mar-04	<0.5	40	5.0	45
22-Sep-04	<0.5	41	5.5	47
21-Mar-05	<0.5	45	6.8	52
29-Sep-05	<0.5	45	6.8	52
22-Feb-06	1.1	63	9.3	73
21-Nov-06	<1.0	48	6.1	54
9-Mar-07	<0.5	45	7.4	52
29-Aug-07	<0.5	35	3.4	38
27-Feb-08	<0.5	25	6.8	32
26-Sep-08	<0.5	32	3.1	35
27-Feb-09	<0.5	1.1	<0.5	1.1
27-May-10	<0.5	35	4.7	40
11-Aug-11	<0.5	28	<0.5	28
NYSDEC Groundwater Standard	***5***	***5***	***5***	

WSW -3 (New Water Supply Well) Sampling Results

Date	111-TCA	11-DCA	11-DCE	Total VOCs
16-Jul-92	<0.5	<0.5	<0.5	0.0
16-Nov-92	<0.5	<0.5	<0.5	0.0
10-Mar-93	<0.5	<0.5	<0.5	0.0
8-Sep-93	7.3	<0.5	<0.5	7.3
8-Oct-93	37	<0.5	<0.5	37.0
16-Dec-93	5.3	<0.5	<0.5	5.3
6-Apr-94	1.6	<0.5	<0.5	1.6
31-Jan-95	2.3	0.5	<0.5	2.8
22-Feb-95	1.8	0.6	<0.5	2.4
27-Mar-95	<0.5	<0.5	<0.5	0.0
21-Apr-95	1.9	<0.5	<0.5	1.9
23-May-95	<0.5	<0.5	<0.5	0.0
7-Jun-95	<0.5	<0.5	<0.5	0.0
27-Jul-95	4.5	0.5	<0.5	0.0
1-Sep-95	12	1.9	<0.5	13.9
26-Sep-95	34	4.4	<0.5	38.4
11-Oct-95	40	4.2	<0.5	44.2
28-Nov-95	5.5	2.1	<0.5	7.6
11-Dec-95	9.6	3.7	1.3	14.6
29-Jan-96	3.6	2.0	<0.5	5.6
28-Feb-96	2.2	1.3	<0.5	3.5
30-Apr-96	1.6	1.1	<0.5	2.7
29-May-96	1.4	1.2	<0.5	2.6
28-Jun-96	0.8	0.6	<0.5	1.4
25-Jul-96	1.8	1.0	<0.5	2.8
26-Sep-96	4.1	2.7	<0.5	6.8
21-Nov-96	0.9	1.1	<0.5	2.0
30-Jan-97	<0.5	<0.5	<0.5	0.0
5-Mar-97	<0.5	<0.5	<0.5	0.0
29-May-97	0.8	<0.5	<0.5	0.8
10-Jul-97	0.6	0.6	<0.5	1.2
30-Oct-97	68.0	7.7	0.8	76.5
13-Feb-98	2.5	1.3	<0.5	3.8
16-Apr-98	1.3	1.0	<0.5	2.3
18-Aug-98	2.1	1.1	<0.5	3.2
21-Sep-98	6.2	1.9	<0.5	8.1
20-Oct-98	19.0	3.7	<0.5	22.7
12-Nov-98	9.7	2.7	<0.5	12.4
4-Mar-99	3.8	2.2	<0.5	6
22-Jun-99	1.9	1.6	<0.5	3.5
22-Sep-99	22.0	6.3	<0.5	28.3
29-Oct-99	3.9	2.4	<1	6.3
17-Nov-99	3.5	3.1	<0.5	6.6
16-Mar-00	0.9	1.1	<0.5	2
14-Jun-00	0.6	0.7	<0.5	1.3

WSW -3 (New Water Supply Well) Sampling Results

Date	111-TCA	11-DCA	11-DCE	Total VOCs
19-Sep-00	0.6	<0.5	0.8	1.4
19-Oct-00	<0.5	<0.5	<0.5	0
10-Nov-00	2.3	1.3	<0.5	3.6
29-Mar-01	<0.5	0.9	<0.5	0.9
20-Jun-01	<0.5	1.4	<0.5	1.4
17-Sep-01	2.0	0.7	<0.5	2.7
30-Oct-01	16.0	3.4	<0.5	19.4
27-Nov-01	19.0	4.1	<0.5	23.1
25-Mar-02	9.6	3.0	<0.5	12.6
21-Jun-02	2.9	2.2	<0.5	5.1
26-Sep-02	15.0	5.9	<0.5	20.9
18-Oct-02	14.0	5.7	<0.5	22.7*
7-Nov-02	7.2	4.2	<0.5	11.4
26-Mar-03	0.9	2.2	<0.5	3.1
2-Jun-03	0.6	1.3	<0.5	1.9
23-Sep-03	0.5	1.5	<0.5	2.0
9-Oct-03	<0.5	1.3	<0.5	1.3
18-Nov-03	<0.5	0.7	<0.5	0.7
11-Mar-04	<0.5	1.5	<0.5	1.5
23-Jun-04	<0.5	1.3	<0.5	1.3
22-Sep-04	<0.5	0.7	<0.5	0.7
4-Oct-04	NS	NS	NS	NA
17-Nov-04	0.6	1.3	<0.5	1.9
21-Mar-05	<0.5	1.1	<0.5	1.1
11-May-05	<0.5	1.1	<0.5	1.1
29-Sep-05	4.0	1.8	<0.5	5.8
18-Oct-05	4.5	1.8	<0.5	6.3
23-Nov-05	1.4	1.7	<0.5	3.1
22-Feb-06	0.87	1.5	<0.5	2.4
27-Jun-06	2.4	2.4	<0.5	4.8
21-Nov-06	3.0	2.9	<0.5	5.9
9-Mar-07	0.6	1.9	<0.5	2.5
29-Aug-07	2.6	2.1	<0.5	4.7
30-Oct-07	<0.5	<0.5	<0.5	<0.5
28-Nov-07	7.6	4.6	<1	12.2
27-Feb-08	2.4	3.0	0.4	5.8
23-Jun-08	0.6	1.9	<0.5	2.5
26-Sep-08	2.3	3.0	<0.5	5.3
17-Nov-08	2.1	2.4	<0.5	4.5
27-Feb-09	<0.5	0.94	<0.5	0.9
28-May-09	<0.5	1.2	<0.5	1.2
27-Aug-09	0.6	1.9	<0.5	2.5
19-Nov-09	<0.5	1.7	<0.5	1.7
18-Feb-10	<0.5	1.3	<0.5	1.3
27-May-10	<0.5	0.96	<0.5	0.96
19-Aug-10	1.2	1.3	<0.5	2.5
27-Oct-10	1.8	1.7	<0.5	3.5
10-Nov-10	1.7	1.8	<0.5	3.5
17-Feb-11	1.2	1.6	<0.5	2.8
19-May-11	<0.5	1.5	<0.5	1.5
11-Aug-11	<0.5	1.4	<0.5	1.4
27-Oct-11	<0.5	1.0	<0.5	1.0
18-Nov-11	<0.5	1.1	<0.5	1.1
27-Feb-12	<0.5	1.0	<0.5	1.0
25-Jul-12	<0.5	0.72	<0.5	0.72
6-Dec-12	<0.5	0.80	<0.5	0.80
NYSDEC Groundwater Standard	***5***	***5***	***5***	

* includes PCE @ 3.0 ug/l later determined to be a laboratory error

NS - Not sampled

NA - Not applicable

APPENDIX C

Groundwater Recovery System Operation and Maintenance Manual

Former Cavalier Gage & Electronic

Site # 314092
Village of Salt point
Dutchess County, NY

Groundwater Recovery System
Operation & Maintenance Manual

October 1998

Prepared for:
Dominic Cavalieri
Salt Point, New York

Prepared by:

Groundwater Sciences Corporation
2601 Market Place Street
Suite 310
Harrisburg, PA 17110

Groundwater Sciences Corporation
2 Summit Court
Suite 204
Fishkill, NY 12524

Table of Contents

1 INTRODUCTION

This manual has been prepared by Groundwater Sciences Corporation (GSC) at the request of NYDEC. As such, it is intended to satisfy the requirement for an Operation and Maintenance Manual (O&M Manual) for the treatment system installed at the Former Cavalier Gage & Electronic .

2 OVERVIEW OF GROUNDWATER TREATMENT SYSTEM

2.1 Site Location

The Former Cavalier Gage & Electronic site is located in a rural part of central Dutchess County, approximately 12 miles northeast of the city of Poughkeepsie. The site lies adjacent to Hibernia Road, approximately one-half mile east of Salt Point. Wappinger Creek passes within one quarter of a mile of the site to the southeast and southwest. Topography in the area is hilly, with approximately 200 feet of relief. The site consists of an approximately 15-acre parcel bounded to the south by Hibernia Road, to the east by a property line near Wappinger Creek, to the west by a property line approximately coincident with a tributary to Wappinger Creek, and to the north by a property line which runs across the south slope of an undeveloped hill.

2.2 Site History

The site is currently a child day-care center and has two buildings. The southernmost, larger main building is used for classrooms and administrative offices. This one-story building consists of what was originally a domestic dwelling which has been added to periodically over time. The eastern side of the building is the original and oldest part of the building. The northwestern portion of the original building (north-central portion of the existing building) is underlain by a full basement. The remainder of the original building (eastern and southern portion of the existing building) is underlain by a crawl space. The smaller, northern one-story building currently contains a nursery school classroom in the southern portion and an unheated shed in the northern portion. This slab-on-grade building is a converted garage/shed.

Public water and sewer service are not available to the site and so the site's water is provided by an

on-site water supply well, and sanitary sewer needs are handled via a septic infiltration system. The site has had three water supply wells. The oldest and original water supply well (WSW-1) is located beneath the newer northwestern portion of the main building. This portion of the building was constructed as slab-on-grade over WSW-1 and so the exact position of the well is unknown and the well is inaccessible. The depth and other construction details regarding this well are unknown. In 1980, a backup water supply well (WSW-2) was drilled to the south of the main building. This well is a six-inch diameter well with an open-hole completion. The total depth is 515 feet and 50 feet of six-inch diameter steel casing with a drive shoe was set. The initial well yield was reportedly 2 gallons per minute (gpm). In 1992, a third water supply well, WSW-3, was drilled approximately 300 feet to the north of the main building. Bedrock was encountered at a depth of 3.5 feet and competent dolostone bedrock was encountered at a depth of 12 feet. The total depth is 500 feet and 40 feet of six-inch diameter steel casing was set in a 12-inch borehole. No discrete, high-yield water-bearing zones were encountered and the well yield was approximately 1 gpm at a depth of 180 feet, and 2 gpm at a depth of 320 feet. The final estimated yield for WSW-3 is approximately 2 gpm.

Currently, well WSW-1 contains mechanical equipment associated with an inoperable jet pump and is inaccessible beneath a concrete slab floor of the main building. WSW-2 contains an electric submersible pump with associated discharge line and power cables and is available for water quality monitoring. WSW-3 contains an electric submersible pump and is the current water supply well for the site.

In 1988, a drinking water sample was collected as part of the DCDOH approval process to develop the site as a day-care center. This sample was analyzed for inorganic parameters, pesticides, and herbicides. A VOC sample was collected in January 1992 to meet DCDOH routine water analyses requirements, and VOCs were detected. In an effort to address health and safety concerns as well as environmental impacts, a number of other drinking water VOC samples were collected on site and off site in 1992.

In early 1992, the site water supply plumbing was configured such that groundwater produced by WSW-1 or WSW-2 was conveyed to a junction so that either well could provide the water supply for the building. Valves and sampling ports were provided in the plumbing such that water produced by one well could not enter the other well and water produced by either well could be sampled discretely with an appropriate purge of piping.

A carbon treatment system was installed downstream from the pressure tank and water softener by Culligan Water and operation began on February 14, 1992. In May, mechanical problems developed in WSW-1 and this well was no longer operable. WSW-2 then became the water supply source for the site. Well WSW-3 was installed in July 1992 and is the current water supply well. In WSW-3, VOCs were not detected in 1992 and early 1993, but began to be detected later in 1993. The initial detection in 1993 appears to be part of a seasonal pattern where concentrations increase for a brief time around October. This pattern was repeated in 1995, 1996 and 1997. Samples were not collected in late 1994. Despite this seasonal spike in concentrations, VOCs decrease to values below NYSDEC groundwater standards and remain at these low levels throughout most of the year. The off-site, downgradient well at 30 Hibernia Road continues to be free of VOCs.

2.3 System Overview

As described in section 2.2, a carbon treatment system was installed in 1992. The system was installed within 24 hours in response to the detection of trace levels of VOCs at the facility. The system as presently configured consists of a single submersible well feed from WSW-3 through a multiple stage treatment process. The system is a pressure tank based system which operates on demand when water is required at the facility. The piping from WSW-2 is also piped into the system but is locked out and is only actuated for sampling purposes. The key to the locked valve is controlled by the site manager.

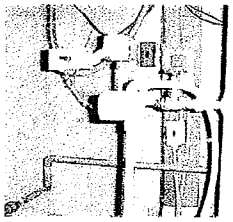
The typical operation of the water system is similar to a domestic well system. The submersible pump is operated by a pressure switch which is actuated if water pressure in a pressure tank drops below a preset pressure point. This pressure change occurs when water is used by the facility and the water storage level in the tank drops. When the pressure change occurs, the pump pressure switch is actuated and 230 VAC single phase power is supplied to the submersible pump motor. The submersible pump is started and water is passed through the pump stages, past an inline check valve, and on to the pressure tank. The pump flow may be manually throttled or shut off by a valve on the WSW-3 line prior to the tank.

From the tank, water is pressurized through a staged series of water treatment devices. Initially after passing through the tank, the water is first directed through a cartridge filter intended for sediment removal. After passing through the sediment filter, the water is first metered by a positive displacement flow meter and then is routed through 4 pressure type liquid phase granular activated carbon filters for adsorption of the VOCs. The carbon units are piped in series (2), and parallel (2) for a total of four units. After the water is passed through the carbon units, it is treated by two additional traditional water treatment devices. Immediately after carbon treatment, the water passes through a Culligan water softener. The water softener is equipped a small brine tank and with an integral backwash capability for automatic regeneration of the softener bed. A backflow prevention valve was also installed on the backwash loop to prevent any backflow of softener backwash waste. After the softener the water, the water passes through a two stage ultraviolet light unit for destruction of any bacteria growth. The carbon units are equipped with built-in by-pass valves which are locked out. The water softener and the ultraviolet light unit are also equipped with built-in by-pass valves which are only used for servicing of these components.

3 SYSTEM COMPONENTS

3.1 WSW-2 Well Pump

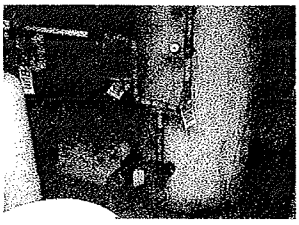
The submersible pump installed in WSW-2 is a typical homeowner style submersible which operates on 230 VAC, single phase power and is believed to be 1 horsepower. Although connected to the pressure tank, the WSW-2 pump is locked out and is not used as part of the water supply system for the facility.



Well Pump Pressure Switch

3.2 WSW-3 Well Pump

The submersible pump installed in WSW-3 is also a homeowner style multiple stage submersible pump which operates on 230 vac, single phase and is also believed to be approximately 1 horsepower. The on/off function for the WSW-3 pump is accomplished by the differential pressure switch which senses the pressure in the hydro-pneumatic water tank.



Pressure Tank & WSW-2 and WSW-3 Inlet Valves

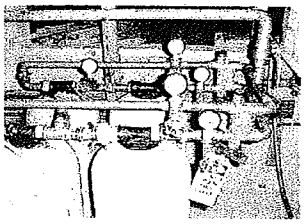
3.3 Pressure Tank

The system is equipped with a 200 gallon hydro-pneumatic galvanized steel pressure tank which is used for water storage and pressure retention.

Cartridge Filter

3.4 Cartridge Filter

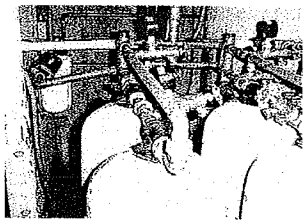
The cartridge filter used for sediment removal is a typical homeowner style filter which uses wound mesh cotton filter cartridges which typically require replacement once to twice per year.



4 Liquid Carbon Units, Gauges, Sample Ports

3.5 Carbon Filters

The four (4) liquid phase carbon units are Park International brand pressure rated units constructed of reinforced fiberglass. The carbon filters were installed in 1992 and have typically required change out on a four quarter to eight quarter period. The Park model RT-1054-8 carbon units are the primary method of VOC control and removal for this site and are monitored on a quarterly basis. Carbon replacement is accomplished with virgin granular activated carbon. The units are fitted with pressure gauges and sample ports at the mid and carbon ports for water quality sampling. If VOC breakthrough is detected above the NYSDEC standard at the mid sampling port location, then the carbon in all four units is replaced with new virgin carbon.



Carbon Filters & Cartridge Filter

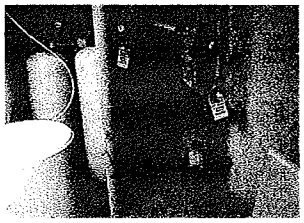
Softener
& Brine Tank

3.6 Water Softener

The water softener was installed prior to the installation of the VOC treatment equipment and is solely used for water conditioning purposes.

3.6.1 Water Softener Backflow Preventer

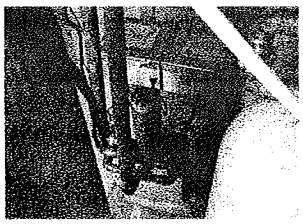
The backwash portion of the water softener system is equipped with a Watts Regulator brand backflow preventer valve.



Softener

3.7 UV Lights

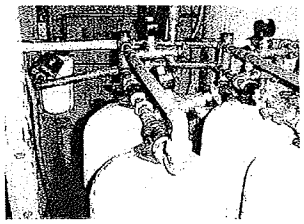
The water supply system is also equipped with a small ultraviolet light system for destruction of any bacteria in the water supply. This unit is also not required or used as part of the VOC removal process. Replacement of the UV lamps is factory recommended on a once per year basis. The system uses Atlantic Ultraviolet Corporation Ster-L-Ray germicidal lamps model number GPH436T5L4.



UV Lamp Unit

3.8 Flow & Pressure Measurement

The system is equipped with a 3/4" Neptune bronze fitted positive displacement flow meter which is installed between the cartridge filter and carbon filter inlet. Pressure monitoring of the supply pump and system is accomplished with pressure gauges which are installed on the WSW-2 & WSW-3 feeds and the carbon units.



Flow Meter &
Gauges

SECTION 4 MAINTENANCE REQUIREMENTS

Monthly Maintenance Requirements

- Check WSW-3 flow rate
- Check WSW-3 pressure
- Check general system and piping condition

Quarterly Maintenance Requirements

- Check sediment filter cartridge condition
- Sample system at following locations
  a. Pre liquid phase carbon units
  b. Carbon units mid sample port (S-1, S-2)
  c. Post liquid carbon unit sample (service kitchen)

  Replace carbon as required. (Traditionally 4 to 8 monitoring quarters)

Annual Maintenance Requirements

- Replace UV lamps

Other

- Service water softener based on historical usage and demand

SECTION 5

SYSTEM COMPONENT CUT SHEETS

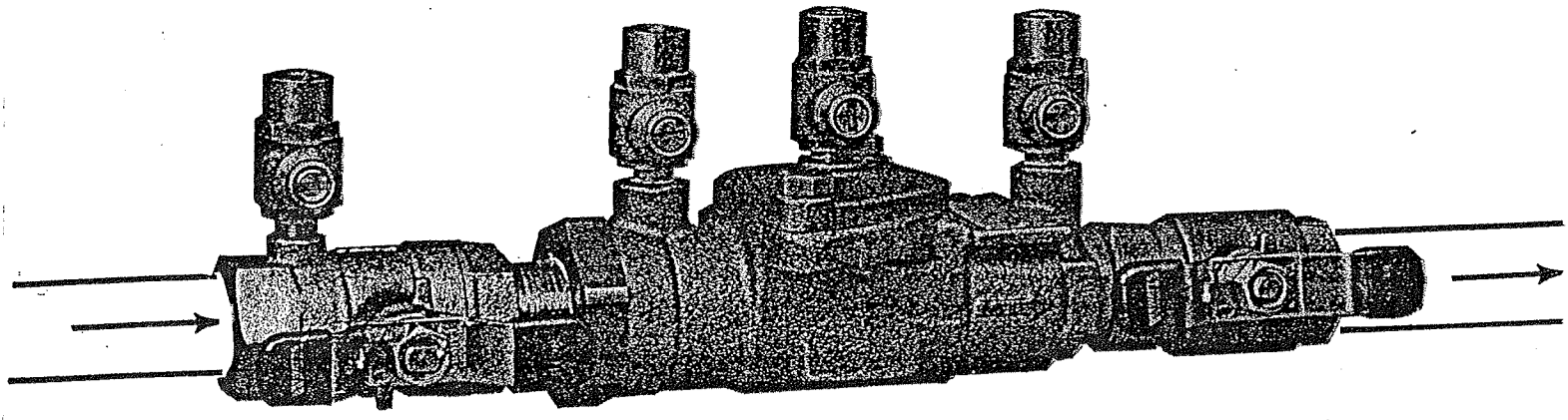
Series 007

Reduced Pressure Zone Backflow Preventers

Sizes: ½" through 3"

- Installation
- Service
- Repair Kits
- Maintenance

For field testing procedure, send for IS-TK-DP/DL, IS-TK-9A, IS-TK-99E AND IS-TK-99D.
For other repair kits and service parts, send for PL-RP-BPD.
For technical assistance, contact your local Watts representative on back page.



Watts 007M2QT Size: ¾"

CALIFORNIA PROPOSITION 65 WARNING

This product contains lead, a chemical known to the State of California to cause birth defects or other reproductive harm.

(Plumber: California law requires that this warning be given to the consumer.)

CONSUMER INFORMATION ABOUT CALIFORNIA PROPOSITION 65 WARNING

All faucets and products made of leaded brass alloys, even those that comply with U.S. Environmental Protection Agency regulations, contribute small amounts of lead to water that is allowed to stand in contact with the brass. This product complies with all E.P.A. regulations regarding the amount of lead used in plumbing brass and solder. The amount of lead contributed by any faucet/product is highest when the faucet/product is new.

The following steps will reduce potential exposure to lead from faucets and other parts of the plumbing system:

- Always run the water for a few seconds prior to use for drinking or cooking.
- Use only cold water for drinking or cooking.
- If you wish to flush the entire plumbing system of water that has been standing in the pipes or other fittings, run the cold water until the temperature of the water drops, indicating water coming from the outside main.
- If you are concerned about lead in your water, have your water tested by an EPA-certified laboratory in your area.

"**ATTN. INSTALLER:** After installation, please leave this instruction sheet for occupant's information."

IMPORTANT: Inquire with governing authorities for local installation requirements.

NOTE: For *Australia* and *New Zealand:* Pipeline strainers should be installed between the upstream shutoff valve and the inlet of the backflow preventer.

A LEADER IN VALVE TECHNOLOGY
WATTS® REGULATOR
Since 1874 — Watts Industries, Inc.
Water Products Division • Safety & Control Valves

Installation Instructions

Installation - Indoors, Figure 1

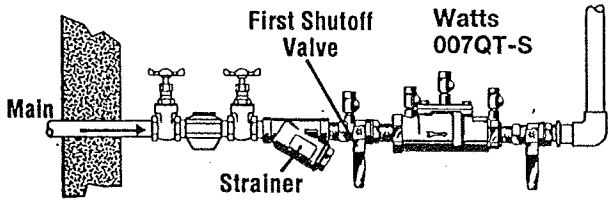
WATTS Series 007 Double Check Valve

Check local codes for installation requirements. Pipe lines should be thoroughly flushed to remove foreign material before installing the unit. A strainer should be installed as shown, ahead of backflow preventer to prevent disc from unnecessary fouling. Install valve in the line with arrow on valve body pointing in the direction of flow.

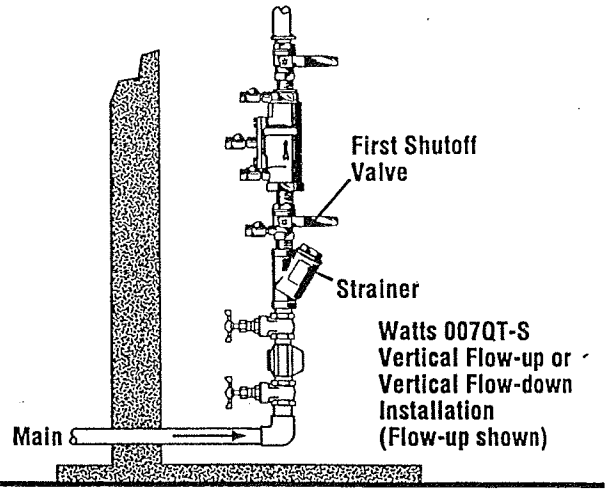
For indoor installations, it is important that the valve be easily accessible to facilitate testing and servicing. Do not install in a concealed location.

CAUTION: Do not install with strainer when backflow preventer is used on seldom-used water lines which are called upon during emergencies, such as fire sprinkler lines, etc.

It is important that Series 007 be tested periodically in compliance with local codes, but at least once a year or more often depending upon system conditions. Regular inspection, testing and cleaning assures maximum life and proper product function.



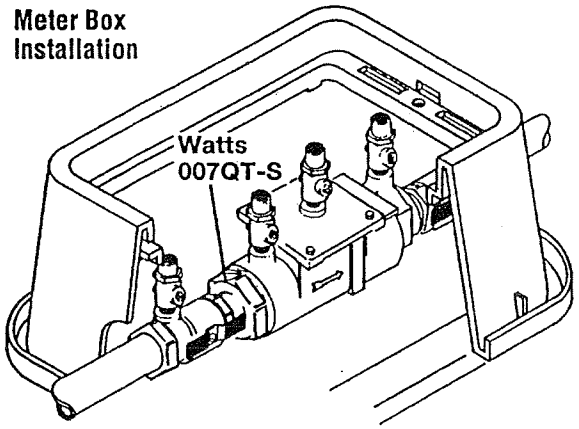
NOTE: Fire Protection System Installations:
The National Fire Protection Agency (NFPA) Guidelines require a confirming flow test to be conducted whenever a "main line" valve such as the shut-off valves or a backflow assembly have been operated. Certified testers of backflow assemblies must conduct this test. The trim valves of the confirming flow test. When the test is completed the trim valves must be returned to a fully open position.

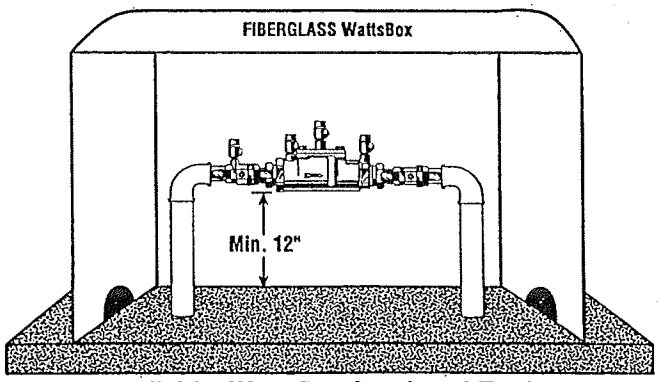


Installation - Outside

Figure 2

CONSULT LOCAL CODES FOR APPROVAL





Now available, WattsBox Insulated Enclosures,
for more information, send for ES-WB or ES-WB-T.

Installation - Parallel

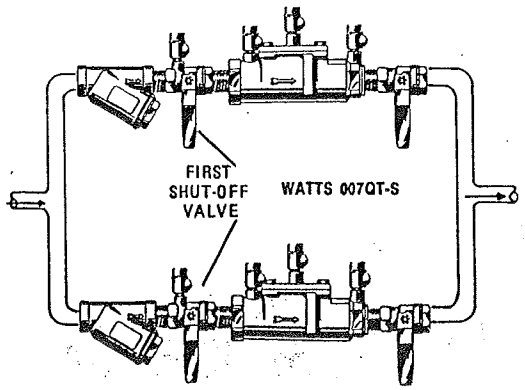
Figure 3

CONSULT LOCAL CODES FOR APPROVAL

Two or more Series 007 smaller size valves may be piped in parallel (where approved) to serve a larger supply pipe main. This type of installation is employed whenever it is vital to maintain a continuous supply of water/where interruptions for testing and servicing would be unacceptable. It also has the advantage of providing increased capacity where needed beyond that provided by a single valve and permits testing or servicing of an individual valve without shutting down the complete line.

For two valve installations the total capacity of the devices should equal or exceed that required by the system.

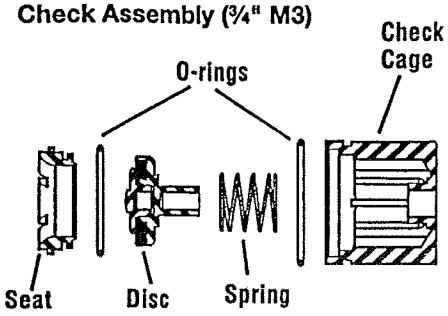
The quantity of valves used in parallel should be determined by the engineer's judgement based on the operating conditions of a specific installation.

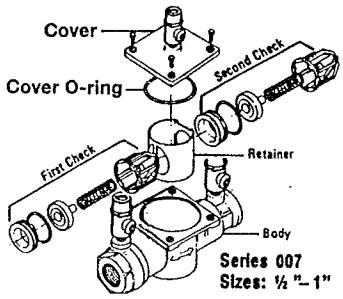


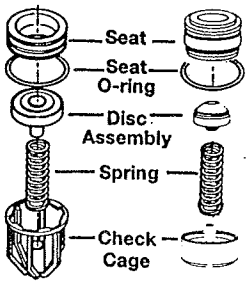
Service, Replacement Parts and Maintenance

(Before servicing be certain water is turned off or shut-off valves are closed)

Check Assembly (¾" M3)

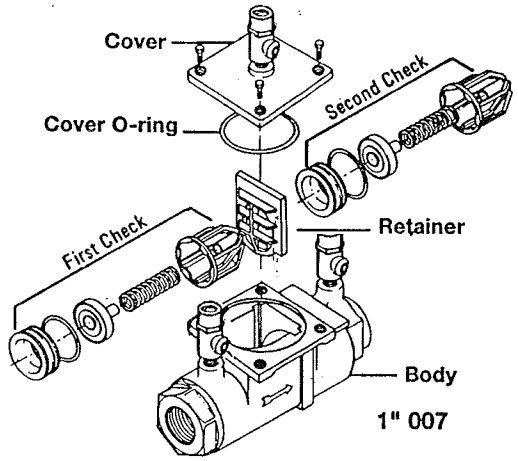






Servicing the first and Second Check Valves:

1. After removing the cover, remove the retainer for the body bore. The check valve modules can now be removed from the valve by hand or with a screwdriver. **Note:** For Series 007 sizes ½" - 2", the seats and springs of the first and second check modules are **not** interchangeable. The heavier spring and smaller diameter seat belong with the first check module. Series 007M1 sizes ¾" - 1" and Series 007M2 ¾" have interchangeable seats and springs.
2. The check seats are attached to the cage with a bayonet type locking arrangement. Holding the cage in one hand, push the seat inward and rotate couterclockwise against the cage, for ¾" Series 007M2 pull apart seat and cage. The seat, cage, spring and disc assembly are now individual components.
3. The disc assemb ly may now be cleaned and reassembled or, depending on its condition, it may be discarded and replace with a new assembly from the repair kit. O-rings should be cleaned or replaced as necessary.
4. Reassemble the check valve module in the reverse order. Check modules are installed in the valve body with the seats facing the valve inlet. The modules must be securely in place before the retainer can be replaced. On the ¾" - 1" size, this retainer may have to be tilted slightly into place. Replace cover.



½" - 2" Replacement Parts

When ordering, specify Ordering Code Number, Kit Number and Valve Size

Check Kits: 1st or 2nd Check

EDP No.	Kit No.	Size
887193	RK 007 CK4	½"
887026	RK 007M1 CK4	¾" - 1"
887377	*RK SS007 CK4	½"
887393	*RK SS007M2 CK1	¾"
887397	*RK SS007M2 CK2	¾"
887373	*RK SS007M1 CK4	1"

*SS prefix denotes stainless steel body

1st Check

887023	RK 007 CK1	¾" - 1"
887045	RK 007M2 CK1	¾"
888550	RK 007M3 CK1	¾"
887025	RK 007 CK1	1½" - 2"
887186	RK 007M1 CK1	1½" - 2"
887719	RK 007M2 CK1	1¼" - 1½"

2nd Check

887024	RK 007 CK2	¾" - 1"
887046	RK 007M2 CK2	¾"
888551	RK 007M3 CK2	¾"
887028	RK 007 CK2	1½" - 2"
887187	RK 007M1 CK2	1½" - 2"
887720	RK 007M2 CK2	1¼" - 1½"

Stainless Steel 1st or 2nd Check

887022	RK 007 CK1 SS	¾" - 1"
887030	RK 007 CK2 SS	¾" - 1"
887032	RK 007M1 CK4 SS	¾" - 1"
887031	RK 007 CK1 SS	1½" - 2"
887035	RK 007 CK2 SS	1½" - 2"
887189	RK 007M1 CK1 SS	1½" - 2"
887190	RK 007M1 CK2 SS	1½" - 2"

Kit includes: **Seat, Seat o-ring, Disc assembly, Spring, Check cage, Cover o-ring.**

Cover Kit

EDP No.	Kit No.	Size
887195	RK 007 C	½"
887036	RK 007 C	¾" - 1"
887038	RK 007M1 C	¾" - 1"
887039	RK 007M2 C	¾"
888553	RK 007M3 C	¾"
887037	RK 007 C	1½" - 2"
887191	RK 007M1 C	1½" - 2"
887722	RK 007M2 C	1¼" - 1½"
887379	*RK SS007 C	½"
887380	*RK SS007M2 C	¾"
887381	*RK SS007M1 C	1"

Kit includes: **Cover and Cover o-ring** *SS prefix denotes stainless steel body

Complete Rubber Parts

887194	RK 007 RT	½"
887040	RK 007 RT	¾" - 1"
887042	RK 007M1 RT	¾" - 1"
887043	RK 007M2 RT	¾"
888552	RK 007M3 RT	¾"
887041	RK 007 RT	1½" - 2"
887188	RK 007M1 RT	1½" - 2"
887721	RK 007M2 RT	1¼" - 1½"
887378	*RK SS007 RT	½"
887394	*RK SS07M2 RT	¾"
887374	*RK SS007M1 RT	1"

Kit includes: **Cover o-ring, Two seat discs and Two seat o-rings.**

*SS prefix denotes stainless steel body

Installation Instructions - 2½" - 3" 007

Watts Series 007 may be installed in either a vertical or horizontal position. Pipe lines should be thoroughly flushed to remove foreign material before installing the unit. A strainer should be installed as shown, ahead of backflow preventer to prevent disc from unnecessary fouling. Install valve in the line with arrow on valve body pointing in the direction of flow.

For indoor installations, it is important that the valve be easily accessible to facilitate testing and servicing. Do not install in a concealed location.

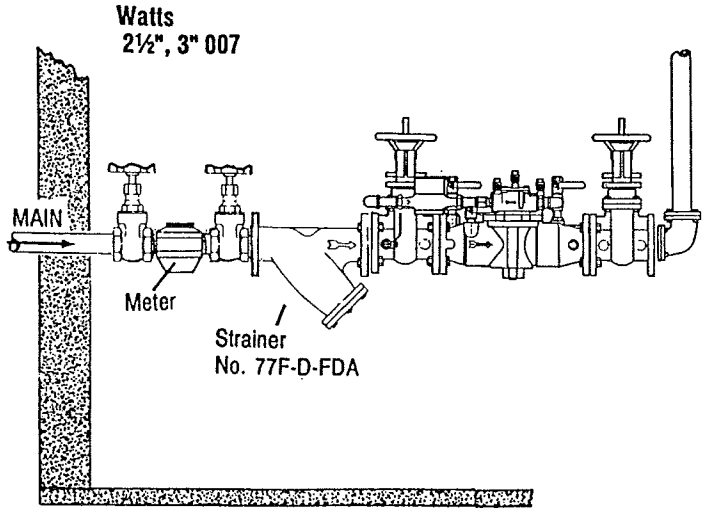
CAUTION: Do not install with strainer when backflow preventer is used on seldom-used water lines which are called upon during emergencies, such as fire sprinkler lines, etc.

It is important that Series 007 be tested periodically in compliance with local codes, but at least once a year or more often depending upon system conditions.

Note Fire Protection System Installations:

The National Fire Protection Agency (NFPA) Guidelines require a confirming flow test to be conducted whenever a "main line" valve such as the shutoff valves or a backflow assembly have been operated. Certified testers of backflow assemblies must conduct this test. The trim valves of the detector meter bypass line, on assemblies so equipped, should be shut off during the confirming flow test. When the test is completed the trim valves must be retuned to a fully open position.

Installation - Indoors - *Figure 1*

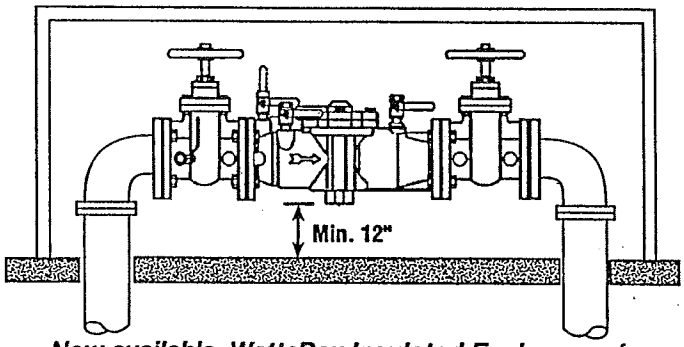


Installation - Outside Building Above Ground - *Figure 2*

In an area where freezing conditions **do not occur**, Series 007 can be installed outside of a building. The most satisfactory installation is above ground and should be installed in this manner whenever possible.

In an area where freezing conditions **can occur**, Series 007 should be installed above ground in an insulated enclosure.

Annual inspection of all water system safety and control valves is required and necessary. Regular inspection, testing and cleaning assures maximum life and proper product function.



Now available, WattsBox Insulated Enclosures, for more information, send for ES-WB or ES-WB-T.

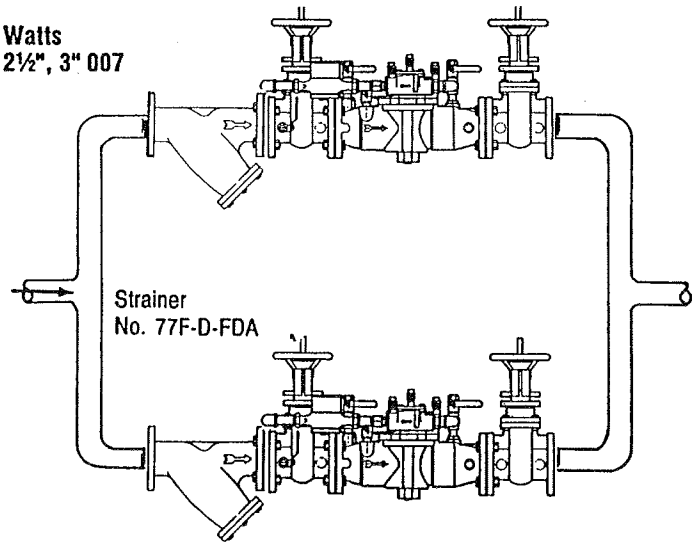
Installation Parallel - *Figure 3 - Consult Local codes for Approval*

Two or more Series 007 smaller size valves may be piped in parallel (where approved) to serve a larger supply pipe main. This type of installation is employed whenever it is vital to maintain a c continuous supply of water/where interruptions for testing and servicing would be unacceptable. It also has the advantage of providing increase capacity where needed beyond that provided by a single valve and permits testing or servicing of an individual valve without shutting down the complete line. For two valve installations the total capacity should equal or exceed that required by the system.

The quantity of valves used in parallel should be determined by the engineer's judgement based on the operating conditions of a specific installation. (See F-FC regarding flow curves)

Installation Note:

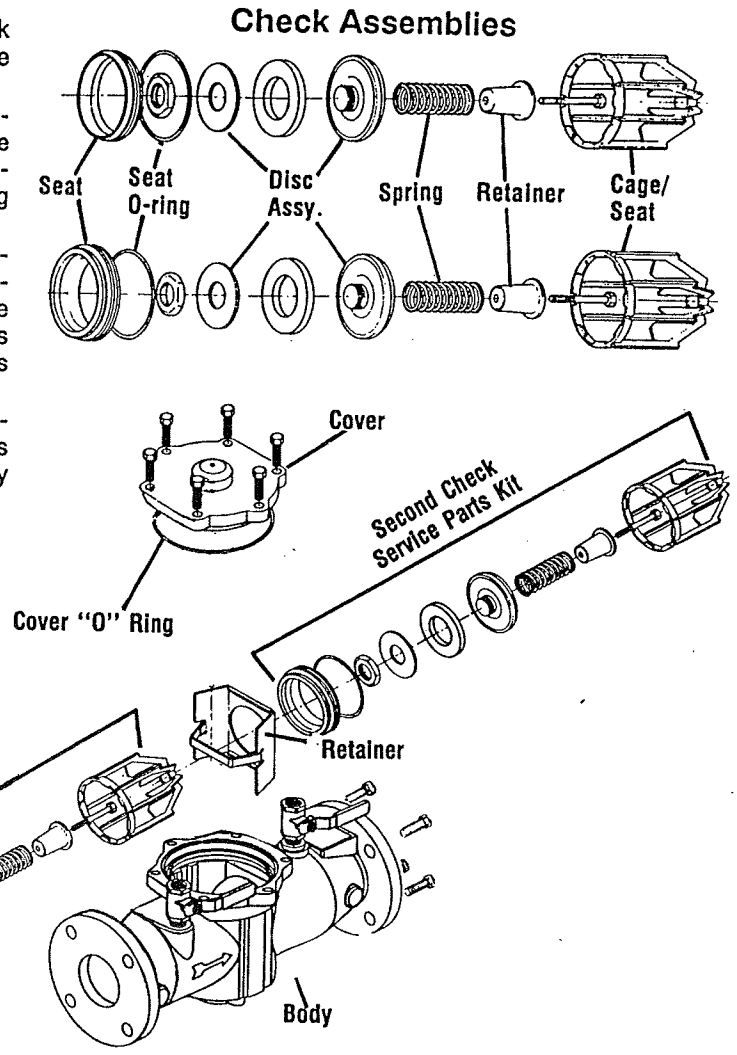
The flange gasket bolts for the gate valves should be retightened during installation as the bolts may have loosened due to storage and shipping.



Servicing First and Second Check Valves - 2½" - 3" 007

1. Remove cover bolts and cover.
2. Remove the retainer from the body bore. The check valve modules can now be removed from the valve by hand or with a screwdriver.
3. The check seats are attached to the cage with a bayonet type locking arrangement. Holding the cage in one hand, push the seat inward and rotate counterclockwise against the cage. The seat, spring cage, spring and disc assembly are now individual components.
4. The disc assembly may now be cleaned and reassemble or depending on its condition, may be discarded and replaced with a new assembly from the repair kit. O-rings should be cleaned or replaced as necessary. For more information, refer to repair parts price list PL-RP-BPD.
5. Reassemble the Check valve modules. Check modules are installed in the valve body with the seats facing the valve inlet. The modules must be securely in place before the retainer can be replace.

NOTE: No special tools required to service Series 007.



Replacement Parts for 2½" and 3" 007

When ordering, specify Ordering Code Number, Kit Number and Valve Size.

First Check Kit

EDP No	Kit No.	Size
887285	RK 007 CK1	2½", 3"

Kit includes: Seat, Seat o-ring, Disc assembly, Spring, Spring retainer, Check Cage and Cover o-ring.

Second Check Kit

887286	RK 007 CK2	2½", 3"

Kit includes: Seat, Seat o-ring, Disc assembly, spring, Spring retainer, Check cage and Cover o-ring.

First and Second Check Rubber Parts

887287	RK 007 RT	2½", 3

Kit includes; Two seat discs, Two seat o-rings, Two Cover o-rings.

Cover Kit

EDP No.	Kit No.	Size
887288	RK 007 C	2½", 3"

Kit includes: Cover, Cover o-ring.

Seat Kit

887289	RK 007 S	2½", 3"

Kit includes: Seat, Seat o-ring.

"Use only original equipment manufactured parts to protect the validated warranty."

SECTION 6

WSW-3 WELL LOG

Project Rainbow's End Job No. 92004 ROCK CLASSIFICATION SHEET WSW-3 Sheet 1 of 2

Site Area Rainbow's End Child development Hibernia Road Drill Hole No. RE#3

Contractor Groundwater Sciences Driller T.J. Philipbar Classified by T. McCollum Date 7/9/92 Elevation

Coordinates N/S ~N 45°E E/W

Depth	Drilling History: Run No.	Core Rec.	Remarks	Well Constr.	Geologic Characteristics: Graphic Log	Description	Engineering Characteristics: Description	Discont.	Groundwater: Static Water Level Time & Date
3'6"			Over burden/ soil	6" steel protective casing (concrete bentonite grout to surface)		lt.-med. Red/Brown Silt, little clay, trace vf sand and f-m gr gravel, trace little organics and mottling	moist - held ribboning when tested		using an 8" hammer w/a 10" bit (~12" hole)
5.0'	—		Competant Dolostone *			DK gr-blk, Dolostone, little blk. shale interlayering, trace white Qtz., little iron staining.	Dry, Hard Drilling (using enough water to cut down dust)		
6'2"			Fractured/Weathered Zone			iron staining with light tan weathered Dolostone, tr. wh. Qtz	Dry,		
8.0'			Competant Dolostone			DK gr-blk Dolostone, some white-clear Quartz, trace iron staining	Dry		
10.0'			Fractured/Weathered Zone			Iron staining with light tan-brown weathered Dolostone,	Dry		
12.0'			Competant Dolostone/ Quartzose			med. gr. Dolostone little clear-white Qtz, trace dk. gray shale	Dry		
15.0	—					13'0 med.-lt. gray f-m grained Quartzose layering trace dk gray shale.			
19'						15'0 Clear-white Quartz veins/filled fract. prominent			
20.0	—		Competant Quartzose/Dolostone			19'0' Increase lt.-med gray f. grained Quartzose Dolostone, also increase in Milky White Quartz thinly laminated with black shale.	Dry		
25.0	—					22' Grades to Med. Gr. Dolostone lt. Gray Quartzy			
						27' trace pyrite			
30.0						29' trace-little Gray blk Shale.	Picked up a little water (enough to make soupy cuttings)		

* Note: Possibly either Pine Plains or Briarcliff member of the Wappingers Group

ROCK CLASSIFICATION SHEET

Project: Rainbows End Job No.: 92009 Sheet 2 of 2
Site Area: Hibernia Road Drill Hole No.: RE#3
Contractor: Groundwater Sciences Driller: T.J. Philipbar Classified by: T. McCollum Date: 7/9/92 Elevation: Coordinates: N/S N 45° E E/W

Drilling History					Geologic Characteristics		Engineering Characteristics		Groundwater
Depth	Run No.	Core Rec.	Remarks	Well Constr.	Graphic Log	Description	Description	Discont.	Static Water Level Time & Date
33.0			Competant Dolostone	12" borehole; 6" steel casing		same as above	wet, still have a little water present		
35.0'	—		Competant Dolostone			33' Vry dk gr - blk dolostone trace wh. Qtz. & bk shale	wet.	—	
40.0									
	—			6" Drive shoe w/ Cement Plug				—	
	—		Installed 40' of 6" threaded steel casing, used a cement plugged drive shoe and grouted the annular space w/ a cement / bentonite mixture (let set for +24 hrs before continuing drilling)					—	
	—							—	

Project Rainbows End Child Dev. Job No. 9206 ROCK CLASSIFICATION SHEET Sheet 2 of

Site Area Hibernia Rd. Drill Hole No. RE-3

Contractor T.J. Philipbar Driller Mike's Time Classified by TLH Date 7/13 Elevation

Coordinates N/S N45°E E/W

Depth	Drilling History: Run No.	Core Rec.	Remarks	Well Constr.	Geologic Characteristics: Graphic Log	Description	Engineering Characteristics: Description	Discont.	Groundwater: Static Water Level Time & Date
180'			Had to move in T. Andrews Rig Broke a Compressor Coupling at ~12:35 on Sat. down 160'	6" bit		Med-lt Gray Dolostone Trace Qtz. (white-Gray) lt small scale veining	water present.		~16GPM down 160' from Sat.
207'						DkGr/Black Dolostone trace wh. Qtz veining trace Pyrite, trace black shale			
210'									
216'						Med Gray Dolostone Intbd Quartzose Dolostone trace white Qtz			
220'						Blk-DGr. Quartzose Dol Shale trace Blk Shale Partings veining			
			Not Logged 220'-320'			From 220's Sampled ~every 10-15' No drastic variation of rock change Dolostone/Quartzose ratio varied.	No Increase in Water		~26gpm down 320' Ran out of water to continue drilling

Project Jamboree Ind / Hibernia Rd / Pleasant Valley — Job No. 92004 — ROCK CLASSIFICATION SHEET — Sheet 4 of ____

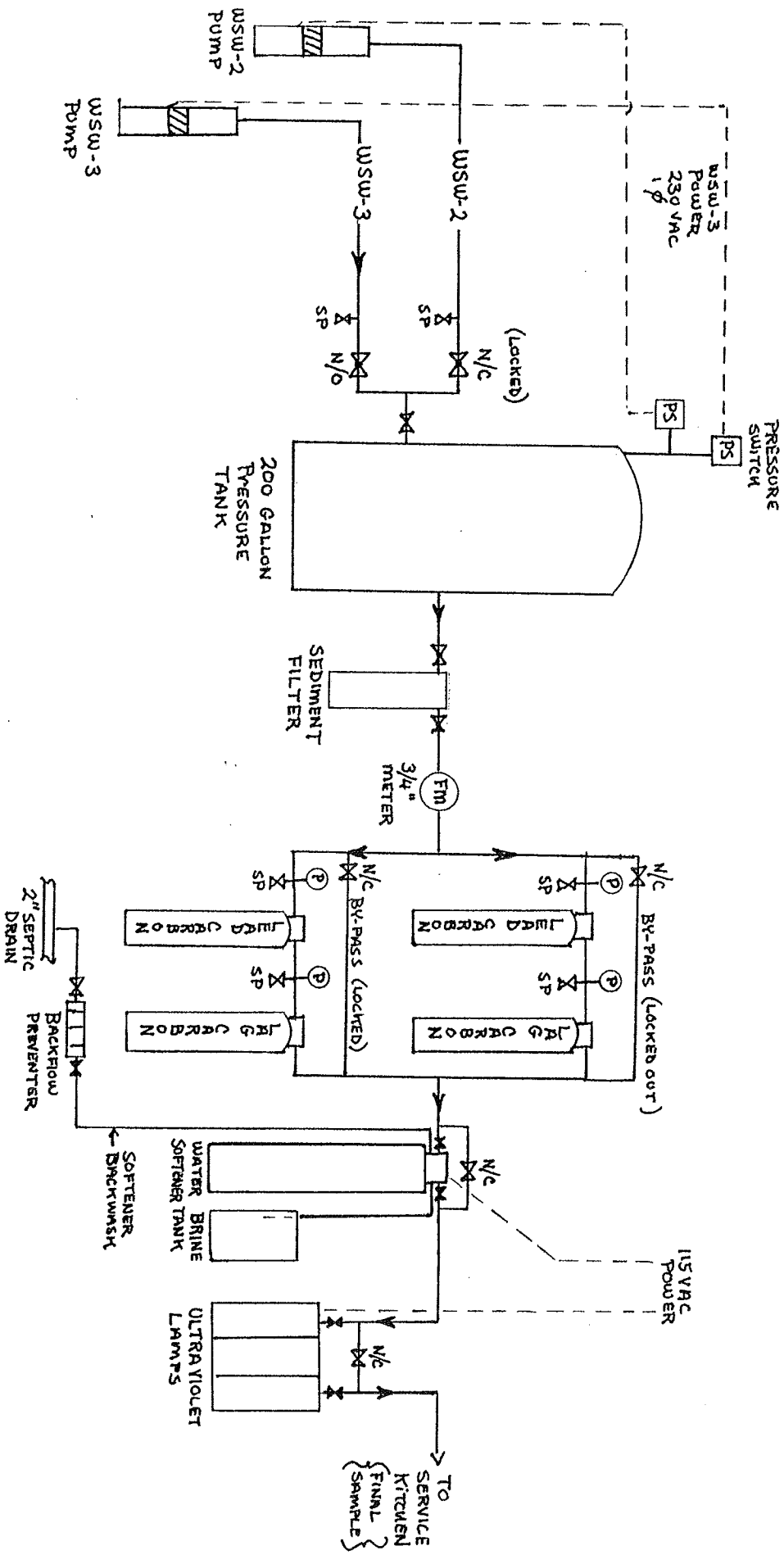
Site Area ____ — Drill Hole No. PG #3

Contractor GSC — Driller TJ. Phillipsen — Classified by TLM — Date 7/14 — Elevation ____ — Coordinates N/S ____ E/W ____

Depth	Drilling History: Run No.	Core Rec.	Remarks	Well Constr.	Geologic Characteristics: Graphic Log	Description	Engineering Characteristics: Description	Discont.	Groundwater: Static Water Level Time & Date
320'						DK-M Gray Slightly Quartzose Dolostone, trace white Qtz. veining			No Increase in Water
350'	—					Increase Quartzose content	Concoidal fracturing evident.		
360'									
380'						Color change to H Gray			
420'	—					Color change dk gr - blk small grained dolostone trace white Quartz	—		
425'						SAA, trace Gray Quartz			
470'	—					Increase in Quartzose ratio, Also increase in Clear - White Quartz veining.	—		
490'						trace Pyrite, Increase in White Qtz & Blk Shale			
500'	—		Stopped at 500'			DK gray - med Gray little White Qtz, little Quartz - Black flecking trace pyrite 495' Pattern	—		35 spc for one gal.
EOB									

SECTION 7

SYSTEM PID DRAWING



APPENDIX D

As Built Drawings for Sub-Slab Depressurization System

Proposal

INSTALLATION DATE _____ CONTRACT NO. 17645

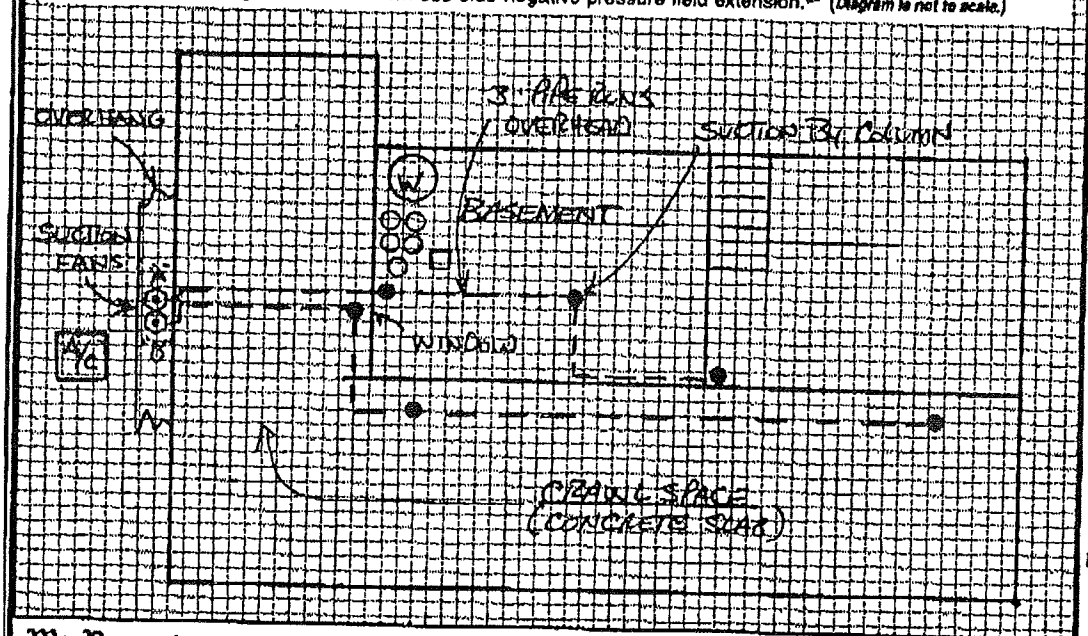
Connecticut Basement Systems Radon Inc.

RADON & WATER TREATMENT TECHNOLOGIES
The Most Experienced In New England
720 Woodend Road • Stratford, CT 06615
(203) 381-9633 • 1-800-319-8867 • FAX (203) 386-9907
www.connecticutradon.com

RADON LEVEL BEFORE WORK _____
DATE BID 6/8/05

PROPOSAL SUBMITTED TO: MITCHELL RUCHIN	PHONE (H)	PHONE (W) 845-896-0258
STREET: 2 SUMMIT COURT, SUITE 204	CELL 914 456 1400	FAX 845 896 7428 x 13
CITY, STATE AND ZIP CODE: FISHKILL, NY 12524	AGENT	OFFICE #
	FAX # / CELL #	HOME #
	JOB LOCATION: RAINBOW'S END CHILD DEVELOPMENT CENTER, HIBERNIA RD, MILLBROOK NY	

INSTALL SUB-SLAB DEPRESSURIZATION SYSTEM. PVC pipe runs vertically through slab with sealed fan unit to draw radon bearing air from sub-slab soil and exhaust outdoors above roof line. Included with the installation of the system are the following procedures:
- ☑ A manometer vacuum gauge is mounted on pipe for visual inspection of system's pressure.
- ☑ Pre-mitigation diagnostics to confirm suction point location(s) and fan size.
- ☑ Post-mitigation diagnostics to confirm sub-slab negative pressure field extension.



We hereby submit specifications and estimates
Type of System to be Installed:
☑ Sub-Slab Depressurization ☐ Sub-Membrane
With fan size to be determined by soil conditions and diagnostic evaluation
To be supplemented with:
- ☑ Urethane sealing of all floor & wall cracks, joints & penetrations where accessible & necessary to systems installation
- ☐ Seal lid over sump hole _____'dia. or (____'x____')
- ☐ Installation of check valve in floor drain
- ☐ Seal cross-laminated poly over exposed soil _____ sq. ft. (approximate)
- ☑ Other POST INSTALL SCHEMATIC IS SYNCHED W/ SUB SLAB PRESSURE READINGS NOTED AS RECORDED W/ A DIGITAL MICRO MANOMETER.

Piping:
- ☑ 3" PVC 140 - 180 Ft.
- ☑ Roof Boot (2) 3"
- ☐ Other _____

Retest:
☐ Supply (____) Charcoal Test Kit(s)
☐ E-Perm Electret ☐ By Others

We Propose hereby to furnish material and labor – complete in accordance with above specifications, for the sum of:
SIX THOUSAND TWO HUNDRED FORTY _____ dollars $ 6,240

Payment of balance is due upon completion of install, based upon deposit of $_____ Received ___/___/___

Notes: SEALED SUCTION FANS ARE MOUNTED OUTSIDE IN VICINITY OF A/C CONDENSOR W/ 3" EXHAUST UP THROUGH OVERHANG, W/ ROOF BOOT. 3" PIPE ENTERS CRAWL SPACE FROM FANS. PIPE FROM FAN "A" ENTERS BASEMENT OVERHEAD & RUNS TO MINIMUM (3) SUCTION POINTS. PIPE FROM FAN "B" CONTINUES THROUGH CRAWL SPACE TO MINIMUM (3) SUCTION POINTS. N/C FOR ADDITIONAL POINTS.

~~We guarantee active systems (systems with fans) to reduce radon levels below the EPA action level of 4PCi/l. Radon test must be conducted according to EPA protocol. See your written guarantee (this sheet is not your guarantee) on a separate sheet. Installation of system does not include painting and finished carpentry or replacement of floor tile or carpeting. All warranties apply from date of installation and become enforceable upon payment in full.~~ D/N/A

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to the standard practices of the industry. Any alteration or deviation from above specifications involving extra costs will be executed only upon verbal or written orders, and will become an extra charge over and above the estimate. Connecticut Basement Systems assumes no liability for any water damage resulting from the installation of, or defect, or abuse of any installed equipment. Connecticut Basement Systems liability is limited to the replacement of the defective part or equipment if failure of equipment falls within specified warranty period. All warranties apply from date of installation and become enforceable upon payment in full. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workman's Compensation Insurance.

Authorized Signature Matthew A. Bachmann
HIC # WC.0626.H97 NEHA RESEARCH

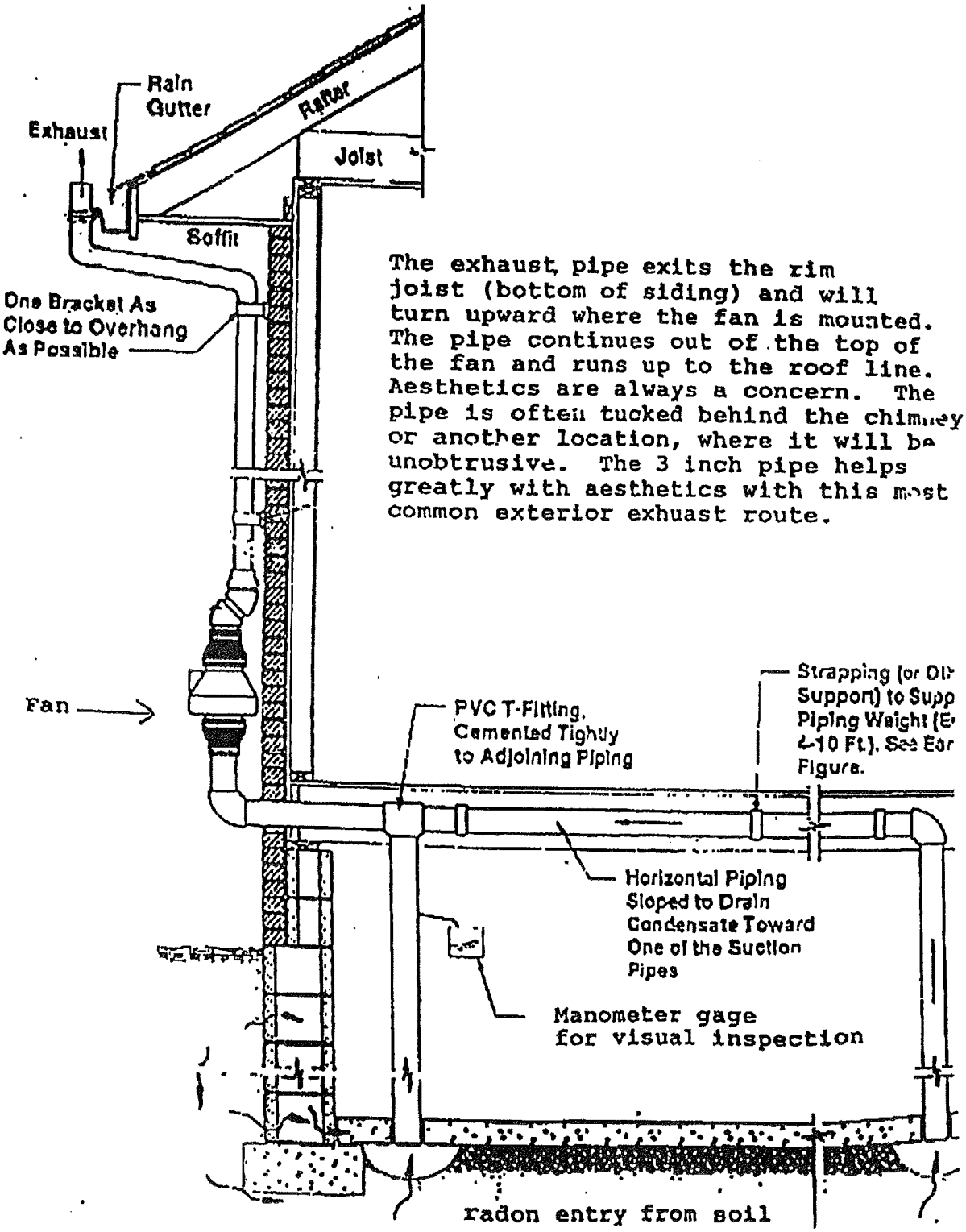
Note: This proposal may be modified or withdrawn by us if not accepted within 90 days.

Acceptance of Propose – The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Date of Acceptance: _____ Signature _____

Signature _____

Exterior Route



The exhaust pipe exits the rim joist (bottom of siding) and will turn upward where the fan is mounted. The pipe continues out of the top of the fan and runs up to the roof line. Aesthetics are always a concern. The pipe is often tucked behind the chimney or another location, where it will be unobtrusive. The 3 inch pipe helps greatly with aesthetics with this most common exterior exhuast route.

RadonAway™
The world's leading radon fan manufacturer

GP Series

Radon Mitigation Fan

All RadonAway™ fans are specifically designed for radon mitigation. GP Series Fans offer a wide range of performance options that make them ideal for most sub-slab radon mitigation systems.

Features

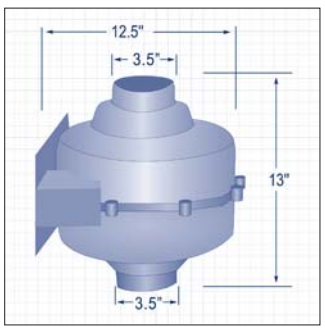
- Quiet operation
- Water-hardened motor
- Seams sealed under negative pressure (to inhibit radon leakage)
- Mounts on duct pipe or with integral flange
- 3″ diameter ducts for use with 3″ or 4″ pipe
- Electrical box for hard wire or plug in
- ETL Listed - for indoor or outdoor use
- 4 interchangeable GP models

MODEL	P/N	FAN DUCT DIAMETER	WATTS	MAX. PRESSURE"WC	TYPICAL CFM vs. STATIC PRESSURE WC						
					1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP201	23007-1	3"	40-60	2.0	82	58	5	-	-	-	-
GP301	23006-1	3"	55-90	2.6	92	77	45	10	-	-	-
GP401	23009-1	3"	60-110	3.4	93	82	60	40	15	-	-
GP501	23005-1	3"	70-140	4.2	95	87	80	70	57	30	10

Made in USA with US and imported parts

ETL Listed

All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty



For Further Information Contact

9/12
P/N 02002

APPENDIX E

Baseline and Post SSD System Installation Soil Gas Sampling Data

SUMMARY OF ANALYTICAL LABORATORY RESULTS (ug/m^3)

2005

Rainbows End Child Development Center

Salt Point, New York

Sample Description	Sample Designation	Sample type	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene (cDCE)	trans-1,2-Dichloroethene (tDCE)	Vinyl Chloride	1,1,1-Trichloroethane (TCA)	1,1-Dichloroethene (1,1-DCE)	1,1-Dichloroethane (1,1-DCA)	1,2-Dichloroethane (1,2-DCA)	Chloroethane	Chloromethane	Chloroform	Methylene Chloride
Outdoor Air - Playground Area	0123HIBEB1S6F050423	Ambient Air	< 0.24	< 0.19	< 0.14	< 0.71	< 0.05	< 0.20	< 0.07	< 0.14	< 0.14	< 0.24	**1.1**	< 0.17	< 1.2
First Floor Indoor Air - Room #4	0123HIBEB1S4E050423	Indoor Air	**3.3**	< 0.18	< 0.14	< 0.68	< 0.04	**0.88**	< 0.07	< 0.14	< 0.14	< 0.22	**1.2**	**2.7**	< 1.2
First Floor Indoor Air - Room #6	0123HIBEB1S5E050423	Indoor Air	**2.8**	< 0.18	< 0.14	< 0.68	< 0.04	**0.50**	< 0.07	< 0.14	< 0.14	< 0.22	**1.2**	**1.5**	< 1.2
First Floor Indoor Air - Room #6	0123HIBEB1S5E050423	Indoor Air - Lab Dup	**2.8**	< 0.18	< 0.14	< 0.68	< 0.04	**0.50**	< 0.07	< 0.14	< 0.14	< 0.22	**1.1**	**1.5**	< 1.2
Basement Indoor Air - Near POET Tanks	0123HIBEB1S6F050423	Indoor Air	**2.7**	**6.3**	< 0.13	< 0.64	< 0.04	**15**	**0.95**	**0.72**	< 0.13	< 0.21	**0.96**	**1.4**	**2.2**
Basement Indoor Air - Near Substructure Sample	0123HIBEB1S6F050423	Indoor Air	**2.8**	**5.8**	< 0.14	< 0.71	< 0.05	**13**	**0.88**	**0.66**	< 0.14	< 0.24	**1.0**	**1.6**	**2.2**
Substructure Soil Vapor	0123HIBEB1S6F050423	Soil Vapor	**52**	**120**	**0.77**	< 0.61	< 0.04	**170**	**15**	**8.4**	**0.16**	< 0.20	< 0.16	**76**	**2.0**
1/alpha - Subslab to First Floor Indoor Air			*16*	*> 667*	*> 6*	-	-	*193*	*> 214*	*> 60*	*> 1*	-	-	*28*	*> 2*
1/alpha - Subslab to Basement Indoor Air			*19*	*21*	*> 6*	-	-	*13*	*17*	*13*	*> 1*	-	-	*48*	*1*

NOTES:

1. This tables summarizes the results of substructure soil vapor, indoor air, and ambient (outdoor) air sampling performed by Groundwater Sciences Corporation (GSC) personnel on April 23 and 24, 2005. The samples were collected using laboratory-provided, pre-evacuated 6 liter stainless steel SUMMA cansiters equipped with 24-hour flow restriction valves. As such, the samples represent 24-hour time intergrated samples. The samples were submitted to Air Toxics LTD. of Folsom, California and analyzed for volatile organic compounds (VOCs) using gas chromatography and mass spectrometry in accordance with USEPA Compendium Method TO-15. Samples exhibiting low levels of VOCs were analyzed via Selective Ion Monitoring (SIM) methods. The analytical results are presented in units of micrograms per cubic meter (ug/m3). Emboldened values indicate concentrations greater than the laboratory reporting limit. "<" denotes that the compound was not detected. The sample and compound-specific laboratory reporting limit is posted for comparison between samples.

2. The Attenuation Factors (*1/alpha*) shown on this table represent the ratio of substructure soil vapor concentration to basement indoor air or first floor indoor air rounded to two significant figures.

SUMMARY OF ANALYTICAL LABORATORY RESULTS (ug/m^3)

2009

Rainbows End Child Development Center

Salt Point, New York

Sample Description	Sample Designation	Sample type	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene (cDCE)	trans-1,2-Dichloroethene (tDCE)	Vinyl Chloride	1,1,1-Trichloroethane (TCA)	1,1-Dichloroethene (1,1-DCE)	1,1-Dichloroethane (1,1-DCA)	1,2-Dichloroethane (1,2-DCA)	Chloroethane	Chloromethane	Chloroform	Methylene Chloride
First Floor Sub Slab - Room #4	Sample 1 Room 4 Sub Slab Grab Air Sample	Sub Slab Air	< 2.58	< 2.15	< 1.11	< 0.793	< 0.46	**2.18 J**	< 0.476	< 0.729	< 0.729	< 0.739	**0.43 J**	**37.1**	**1.51 J**
First Floor Indoor Air - Room #4	Sample 2 Room 4 Grab Air Sample	Indoor Air	**0.289 J**	< 0.107	< 0.0555	< 0.0396	< 0.0230	< 0.0709	< 0.0238	< 0.0364	**0.966**	**0.446**	**1.2 J**	**2.35**	**0.762**
First Floor Sub Slab - Room #8	Sample 3 Room 8 Sub Slab Grab Air Sample	Sub Slab Air	**0.167 J**	**0.144 J**	< 0.0555	< 0.0396	< 0.0230	**1.94**	< 0.0238	< 0.0364	< 0.0364	**0.0704 J**	< 0.41	**1.08**	**0.433**
First Floor Indoor Air - Room #8	Sample 4 Room 8 Grab Air Sample	Indoor Air	**0.289 J**	< 0.107	< 0.0555	< 0.0396	< 0.0230	< 0.0709	< 0.0238	< 0.0364	**0.364**	**0.152**	**0.99 J**	**1.76**	**0.498**
Basement Indoor Air	Sample 5 Basement Grab Air Sample	Indoor Air	**0.217 J**	< 0.107	< 0.0555	< 0.0396	< 0.0230	**1.07**	< 0.0238	**0.0420 J**	**0.293**	**1.17**	**1.5 J**	**1.35**	**1.31**
Outdoor Air - Playground Area	Sample 6 Outside Grab Air Sample	Ambient Air	< 0.129	< 0.107	< 0.0555	< 0.0396	< 0.0230	< 0.0709	< 0.0238	< 0.0364	**0.0603 J**	**0.127 J**	**1.2 J**	< 0.146	**0.314**
1/alpha - First Floor Subslab to First Floor Indoor Air															
1/alpha - Subslab to Basement Indoor Air															

NOTES:

1. This tables summarizes the results of substructure soil vapor, indoor air, and ambient (outdoor) air sampling performed by Groundwater Sciences Corporation (GSC) personnel on March 28, 2009. The samples were collected using laboratory-provided, pre-evacuated 6 liter stainless steel SUMMA cansiters equipped with 24-hour flow restriction valves. As such, the samples represent 24-hour time intergrated samples. The samples were submitted to Lancaster laboratories of Lacaster, PA and analyzed for volatile organic compounds (VOCs) using gas chromatography and mass spectrometry in accordance with USEPA Compendium Method TO-15. Samples exhibiting low levels of VOCs were analyzed via Selective Ion Monitoring (SIM) methods. The analytical results are presented in units of micrograms per cubic meter (ug/m3). Emboldened values indicate concentrations greater than the laboratory reporting limit. "<" denotes that the compound was not detected. The sample and compound-specific laboratory reporting limit is posted for comparison between samples.

2. The Attenuation Factors (*1/alpha*) shown on this table represent the ratio of substructure soil vapor concentration to basement indoor air or first floor indoor air rounded to two significant figures.

Comparison of Indoor Air Sampling Data
2005 to 2009

Rainbows End Child Development Center
Salt Point, New York

Sample Description	Sample Year	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene (cDCE)	trans-1,2-Dichloroethene (tDCE)	Vinyl Chloride	1,1,1-Trichloroethane (TCA)	1,1-Dichloroethene (1,1-DCE)	1,1-Dichloroethane (1,1-DCA)	1,2-Dichloroethane (1,2-DCA)	Chloroethane	Chloromethane	Chloroform	Methylene Chloride
First Floor Indoor Air - Room #4	2005	**3.3**	< 0.18	< 0.14	< 0.68	< 0.04	**0.88**	< 0.07	< 0.14	< 0.14	< 0.22	**1.2**	**2.7**	< 1.2
First Floor Indoor Air - Room #4	2009	**0.289 J**	< 0.107	< 0.0555	< 0.0396	< 0.0230	< 0.0709	< 0.0238	< 0.0364	**0.966**	**0.446**	**1.2 J**	**2.35**	**0.762**
Reduction Factor*		**11**	**NA**	**NA**	NA	NA	> **12**	NA	NA	NA	NA	NA	**1.1**	NA
Basement Indoor Air - Near POET Tanks	2005	**2.7**	**6.3**	< 0.13	< 0.64	< 0.04	**15**	**0.95**	**0.72**	< 0.13	< 0.21	**0.96**	**1.4**	**2.2**
Basement Indoor Air - Near Substructure Sample	2005	**2.8**	**5.8**	< 0.14	< 0.71	< 0.05	**13**	**0.88**	**0.66**	< 0.14	< 0.24	**1.0**	**1.6**	**2.2**
Basement Indoor Air	2009	**0.217 J**	< 0.107	< 0.0555	< 0.0396	< 0.0230	**1.07**	< 0.0238	**0.0420 J**	**0.293**	**1.17**	**1.5 J**	**1.35**	**1.31**
Reduction Factor*		**12**	**54**	**12**	NA	NA	**12**	> **37**	**16**	NA	NA	NA	**1.0**	**1.7**

*Ratio of 2005 Air Sampling Concentrations to 2009 Air Sampling Concentrations

APPENDIX F

Field Sampling and Engineering Control Inspection Log

Rainbow's End Chilld Development Center

Sampling Field Data Sheet

General Information

Samplers Name / Company _____

Date _____ Arrival Time _____ Departure Time _____

Atmospheric Conditions

Temp _____ Approx Wind Speed/Direction _____

Sampling Information

Sample Location	Circle One	If Yes, Sample Time
Old Water Supply (WSW-2)Sampled	Yes No	_____
New Water Supply Well (WSW-3) Sampling		
Untreated Water Sampled	Yes No	_____
Midpoint S1 Sampled	Yes No	_____
Midpoint S2 Sampled	Yes No	_____
Kitchen Sink Sampled	Yes No	_____
115 Hibernia Road Sampled	Yes No	_____

Engineering Control Inspection

New Water Supply Well (WSW-3) Treatment System Inspection

Inspect visible wiring, piping, fittings, valves, gauges, filters, UV lights, and carbon units associated with the water supply weel treatment system and note any deficiencies.

Deficiencies? Yes No (circle one)

If Yes, alert facility staff immediately and explain below

_____

_____

_____

_____

Sub-Slab Depressurization System Inspection

Inspect all visible piping and wiring associated with the sub-slab depressurization system.

Are the two suction fans running? Yes No (circle one)

If No, alert facility staff immediately and explain below

_____

_____

_____

_____

_____

APPENDIX G

Sampling Protocol

Rainbows End Child Development Center
Water Supply Well Sampling Protocol

Collect Samples in laboratory provided glassware in the following order:

New Water Supply Well (WSW-3)

- Collect the kitchen sink sample following a 3 – 5 minute purge without the aerator
- Collect midpoint S1 sample from between the first set carbon units
- Collect midpoint S2 sample from between the second set of carbon units
- Collect untreated sample from sample port before pressure tank

Old Water Supply Well (WSW-2)

- Unlock valve between WSW-2 and water treatment system
- Turn on WSW-2 well pump and purge WSW-2 for approximately 90 minutes
- Sample WSW-2 untreated water from sample port before pressure tank

115 Hibernia Road

- Collect the kitchen sink sample following a 3 – 5 minute purge without the aerator

All samples should be chilled on ice and delivered to laboratory under chain-of-custody procedures within 24 hours of sampled collected. See the Groundwater Monitoring Schedule in Appendix B for sample frequency and analysis.