SITE MANAGEMENT PLAN
FORMER DIAMOND CLEANERS SITE
NYSDEC SITE NO. 808030

WORK ASSIGNMENT NO. D007619-03

Prepared for:

New York State Department of Environmental Conservation

Division of Environmental Remediation
Albany, New York

Prepared by:
MACTEC Engineering and Consulting, P.C.
Portland, Maine

MACTEC Project No. 3612112209

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ATRS	Associated Textile Rental Services
bgs	below ground surface
CAMP	Community Air Monitoring Plan
cis-1,2-DCE	cis-1,2-dichloroethene
COC	contaminant of concern
DC	Former Diamond Cleaners
EC	engineering control
EWP	Excavation Work Plan
FER	Final Engineering Report
FS	feasibility study
HASP	Health and Safety Plan
IC	institutional control
ISCO	in-situ chemical oxidation
MACTEC	MACTEC Engineering and Consulting, P.C.
msl	mean sea level
MWs	monitoring wells
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	operable unit

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

PCE	tetrachloroethene
PM	project manager
ppb	parts per billion
PRR	Periodic Review Report
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QEP	qualified environmental professional
RA	remedial action
RI	remedial investigation
ROD	Record of Decision
SCGs	soil cleanup goals
Site	Former Diamond Cleaners site
SM	site management
SMP	Site Management Plan
SSDS	sub-slab depressurization system
SSF	State Superfund
TCL	Target Compound List
µg/kg	microgram per kilogram
$\mu g/m^3$	microgram(s) per cubic meter
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

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 Diamond Cleaners (DC) (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 site was remediated in accordance with two Records of Decision (ROD), dated March 2008 (NYSDEC, 2008) and March 2010 (NYSDEC, 2010a).

1.1.1 General

In November 2002, the former owner of the Site submitted an application to enter into the Voluntary Cleanup Program. The applicant terminated the agreement before it was signed in August 2003.

The documented potentially responsible parties for the Site as identified in the RODs, Daniel S. Hoffman and Earl D. Coleman, declined to assume responsibility for the remedial action (RA) at the Site, so the NYSDEC has pursued remediation of the one-acre property located in Elmira, Chemung County, New York through the State Superfund (SSF) program. A map showing the site location is provided in Figure 1.1. The boundaries of the site are more fully described in the property description and deeded description map reference (Appendix A).

After completion of the RA described in the Final Engineering Report (FER) (MACTEC Engineering and Consulting, P.C. [MACTEC] 2013a), some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." Although identified contaminants in soil exceeding applicable standards were removed during the RA, groundwater quality – which has been observed to be improving - continues to be impacted above ambient water quality standards. This Site Management (SM) Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Notice is extinguished 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 NYS.

This SMP was prepared by MACTEC, on behalf of the NYSDEC for the DC Site, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, 2010b), 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 Environmental Notice for the site.

1.1.2 Purpose

Groundwater and soil vapor contamination remains at the site after completion of the RA. ECs have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Notice will be obtained by NYSDEC and recorded with the Chemung County Clerk to provide an enforceable legal instrument ensuring compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate 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 Environmental Notice for contamination that remains at the site. This SMP has been approved by the NYSDEC, and its compliance is required. 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 RA, including: (1) implementation and management of all ECs and ICs; (2) media monitoring; and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRRs).

To address these needs, this SMP includes: (1) an EC/IC Plan for implementation and management of EC/ICs; and (2) a Monitoring Plan for implementation of site monitoring.

This SMP also includes a description of PRRs for the periodic 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 Environmental Notice. Failure to properly implement the SMP is a violation of Environmental Conservation Law and the Environmental Notice.
- Failure to comply with this SMP is also a violation of, Title 6 of the New York Codes, Rules, and Regulations (NYCRR) Part 375 and the RODs dated March 2008 and March 2010 for Site #808030 and thereby subject to applicable penalties.

1.1.3 Revisions

It is anticipated that revisions to the SMP will be completed by the NYSDEC. If the Site owner desires to make revisions to the SMP, the revisions will be proposed in writing to the NYSDEC's project manager (PM). In accordance with the Environmental Notice 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 DC site is located at 717 Lake St. in the north-central section of the City of Elmira in Chemung County, New York (Figure 1.1). The Site consists of a 1 acre lot in a commercial and residential area. The lot formerly contained a one story building with a grassy area in the rear (west) of the building along with a gravel parking area south of the building and a paved parking area north of the building. The building was constructed in the 1950's, and prior to the RA was unoccupied and in disrepair. The building was demolished by the NYSDEC in February 2012, prior to the RA. The site has undergone RA and is now covered with gravel and used as a vehicle parking lot.

The office and storage yard for a former construction company lies to the west of the Site across Benjamin Street, and the Associated Textile Rental Services (ATRS) site (NYSDEC Class 2 site number 808041) lies west of the former construction company across Dickinson Street, approximately 300 feet west of the Site. West of the ATRS site lies Clemens Center Parkway, which was formerly a railroad right of way and round house, as well as the reported historic location of Elmira Canal. The boundaries of the site are more fully described in Appendix A.

1.2.2 Site History

1.2.2.1 Operational/Disposal History

The Site was used as a laundry and dry-cleaning operation by multiple operators between 1950 and 2001. It was reported that Stoddard Solvent was used as a dry-cleaning agent in the early years. Tetrachloroethene (PCE) was used for the dry-cleaning operations at the site from 1974 until 2001.

1.2.2.2 Remedial History

In November 2002, the former owner of the Site submitted an application to enter the Voluntary Cleanup Program. The applicant terminated the agreement before it was signed in August 2003.

In 2004, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

The NYSDEC issued the ROD for operable unit 1 (OU-1) on 31 March 2008 (NYSDEC, 2008). The OU-1 ROD selected demolition of the Site building, excavation of contaminated soils exceeding remediation goals, and transportation and off-site disposal of contaminated soil and building debris as the remedy for source area soils. These remedial activities were conducted during the period February 2012 through June 2012.

The NYSDEC issued the ROD for OU-2 in March 2010 (NYSDEC, 2010a). The OU-2 ROD selected in-situ chemical oxidation (ISCO) and in-situ enhanced biodegradation as the remedy for Site groundwater. Sodium permanganate would oxidize contaminants in the source area. When source area groundwater stabilizes, enhanced biodegradation reagents could be injected if necessary pending results of groundwater monitoring. RA activities consisting of the installation of additional groundwater monitoring wells (MWs) and ISCO injection were conducted during the period July through September 2012.

The OU-1 and OU-2 RODs are included in Appendix B.

1.2.3 Geologic Conditions

Overburden at the Site is greater than 33 feet thick according to data collected during the field investigations. Overburden consists of dark brown sand, silt, and gravel associated with a glacial outwash depositional environment. Based on regional geologic mapping (Rickard and Fisher, 1970) bedrock is expected to consist of shale and siltstones associated with the Upper Devonian West Falls Group, specifically the Beers Hill Shale; Grimes Siltstone; Dunn Hill, Millport, and Moreland Shales (Rickard and Fisher, 1970).

Based on regional groundwater flow and topography, the Chemung River and, to a lesser extent Newtown Creek, are local groundwater discharge areas. Groundwater has been encountered at 5 to 15 ft. below ground surface (bgs) beneath, and in the vicinity of, the Site and is interpreted to flow west to south-west. The groundwater table appears to be relatively flat in the vicinity of the Site, with slight fluctuations in groundwater flow direction.

Based on previous groundwater measurements taken at onsite monitoring wells and microwells, local groundwater flows in a generally westerly direction under the Site. Groundwater gradients are relatively flat across most of the Site, varying by a maximum of 1.7 feet over 400 feet of distance, or a groundwater elevation of 842.65 feet above mean sea level (msl) to 844.45 feet above msl (May 2006), for a gradient of 0.004 feet per feet. Water elevations varied by only 0.68 feet over 400 feet of distance as measured in November 2005, or a gradient of 0.002 feet per feet. Local groundwater flow direction and gradients appear to be affected by the varying silt layers encountered beneath the Site, and may also be affected by the presence of underground utilities. The May 2014 groundwater elevation contours are shown on Figure 1.2. During the preparation of this SMP, a typographical error was noted in the original 2012 well survey for MW-21. Based on field measurements, the well riser elevation for MW-21 has been corrected to 854.66 feet above msl (this change does not alter any previous assumptions/findings).

1.3 SUMMARY OF PREVIOUS INVESTIGATION FINDINGS

Several investigations have been completed at the Site. Results of the investigations are documented in the following reports:

- The report documenting the limited subsurface investigation conducted in 2001 by Teeter Environmental Services
- Remedial Investigation/Feasibility Study (RI/FS) Report prepared by MACTEC for OU-1 (MACTEC, 2007)
- RI/FS Report prepared by MACTEC for OU-2 (MACTEC, 2009)
- Pre-Design Site Investigation Report prepared by MACTEC (MACTEC, 2012)

Generally, the investigations determined that the source of the chlorinated solvent contamination was spills to soils below the Site building as well as discharge to soils to the west side of the Site building. Chlorinated solvent contamination in the source area has migrated to groundwater via percolation and infiltration with rainwater. Analytical data indicated that chlorinated solvents are migrating off-site in groundwater at concentrations above applicable groundwater quality standards. The Site and surrounding residential and commercial properties located within the groundwater plume path are serviced by public water. Therefore, it was determined that there is no direct exposure to groundwater associated with the Site through domestic or other uses.

1.3.1 Surface Soil Contamination

Ten on-site surface soil samples and five off-site surface soil samples were collected during the OU-1 RI Phase 1 field work in June 2005. The five off-site surface soil locations were chosen to represent background concentrations and were all collected in the vicinity of the Diamond Cleaners site. Three of the ten on-site samples had detected concentrations of PCE above the SCGs. Also, three of the on-site samples had detected concentrations of copper and one on-site sample had lead concentrations above the SCGs.

1.3.2 Subsurface Soil Contamination

The highest concentration of volatile organic compound (VOC) contaminants in subsurface soil was detected during the OU-1 RI at boring GS-19 located inside the former site building cleaning room at a concentration of PCE at 540,000 micrograms per kilogram (µg/kg). Borings GS-6 and MW-5 also had high detections of PCE with detected concentrations of 17,000 µg/kg and 4,800 µg/kg, respectively. Both of these locations are in the vicinity of the former site building cleaning room. GS-4 had a detected concentration of cis-1,2-dichloroethene (cis-1,2 DCE) at 6,300 µg/kg. GS-4 is located on the northwest corner of the former dry cleaning building.

1.3.3 Site-Related Groundwater

Numerous groundwater samples were collected on-site during the investigation for OU-1 and OU-2. On-site groundwater has been impacted by PCE and its breakdown products related to the former dry cleaner. This groundwater contamination is also contributing to the soil vapor contamination (and indoor air impact) identified in OU-1. The highest concentrations of contamination were found on the west side of the former Diamond Cleaner building near the former cleaning room. On-site PCE was detected at 730 parts per billion (ppb) (GW-4), trichloroethene at 120 ppb (GW-4), cis-1,2DCE at 20,000 ppb (GW-6) and vinyl chloride at 3,400 ppb (GW-9). Off-site PCE was detected at 3,900 ppb (MW-4) to the west and across the street from the Diamond Cleaners Site.

1.3.4 Site-Related Soil Vapor Intrusion

Six soil gas samples (GV-001 to GV-006) were collected on and around the Diamond Cleaners site in June 2005 during the OU-1 RI. PCE detected in the soil gas at GV-001 at a concentration of 6,800 micrograms per cubic meter ($\mu g/m^3$) resulted in the sub-slab and indoor air sampling of neighboring properties. Indoor air, sub-slab air and ambient air sample results were compared to the background concentration for indoor air and the air guideline values presented in the Guidance for Evaluating Soil Vapor Intrusion (SVI) in the State of New York. PCE values were compared to Matrix 2 of the Guidance for Evaluating SVI in the State of New York.

Four air samples were collected in 2006 from Location 1; two sub slab vapor samples and two indoor air samples. Neither sub slab vapor sample location had exceedances of the State's Guidance on Evaluating Soil Vapor; the highest detection of PCE in the sub slab samples was 110 $\mu g/m^3$. In indoor air, one sample contained PCE at a concentration of 200 $\mu g/m^3$ which exceeded the Air Guideline Value of 100 $\mu g/m^3$ at LOC- 1B. The owner of Location 1 was subsequently given the opportunity for installation of a soil vapor mitigation system/sub slab depressurization system (SSDS) at the property building; the owner declined the offer.

Two samples were collected in 2006 at Location 2; one sub slab vapor sample and one indoor air sample. There were no exceedances of the State's Guidance on Evaluating Soil Vapor in the sub

slab vapor sample, where PCE was detected at 6.6 µg/m^3. The indoor air sample had exceedances of background concentrations for 1,3,5-Trimethylbenzene, PCE (detected at 37 µg/m^3), toluene, and xylenes. No parameters exceeded the Air Guideline Values criteria in effect at the time of sampling for Location 2.

Three samples were collected in 2006 at Location 3; one sub slab vapor sample, one basement air sample, and one first floor air sample. There were no exceedances of the State's Guidance on Evaluating Soil Vapor in the sub slab vapor sample (PCE was detected at 1.6 µg/m^3) nor were there exceedances of the Background Concentrations or Air Guideline Values for the basement air sample (PCE was detected at 1.1 µg/m^3) or the first floor air sample where PCE was detected at 0.5 µg/m^3.

Location 4 was the Diamond Cleaners main site building. Three samples were collected inside the building; two sub slab vapor samples and one indoor air sample. Both sub slab vapor samples exceeded the State's Guidance on Evaluating Soil Vapor for PCE. PCE was also detected in the indoor air sample at a concentration exceeding the Indoor Air Guideline Value. One ambient air sample was collected outside of the Diamond Cleaners main site building. This sample had exceedances of the background concentrations for 1,3,5-trimethylbenzene, ethylbenzene, o-xylene, PCE and xylene.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved RODs, dated March 2008 for OU-1 (NYSDEC, 2008) and March 2010 for OU-2 (NYSDEC, 2010a), as documented in the FER (MACTEC, 2013a).

The following is a summary of the RAs performed at the site:

- excavation of contaminated soils exceeding remediation goals, and transportation and off-Site disposal of contaminated soil and building debris
- injection of sodium permanganate to oxidize groundwater contaminants in the source area
- installation of 12 groundwater monitoring wells (MW-12 through MW-23), both on-Site and off-Site, to provide means for long term groundwater monitoring.

Remedial construction and injection activities for the Site were completed in 2012, and SM is ongoing.

1.4.1 Removal of Contaminated Materials from the Site

During the RA the on-site building was demolished and soil was excavated at the Site in accordance with the OU-1 ROD dated March 2008. Soil with PCE concentrations of 1.3 ppm or greater were excavated from two different areas: Cell 1, the contamination source area, and Cell 2, an area containing contaminated soil at lower concentrations than those reported within Cell 1 during previous investigations. Approximately 605 tons of hazardous soils were removed from Cell 1 and disposed of at Chemical Services located in Model City, NY, and BioGenie, located in Quebec, Canada. Approximately 850 tons of clay that were excavated from Cell 1 were deemed unsuitable for reuse but were characterized for beneficial reuse at the Mill Seat landfill in Bergen, New York. Approximately 1,992 tons of non-hazardous soils were excavated from Cell 2.

1.4.2 Site-Related Treatment Systems

Although no long-term treatment systems were installed as part of the site remedy, subsurface injection piping placed into the backfill of the soil excavation during the RA is available should the need arise for additional oxidant placement.

1.4.3 Remaining Contamination

Because the remedy results in contamination remaining at the Site that does not allow for unrestricted use, the SM includes a monitoring plan to assess the performance and effectiveness of the remedy. SM activities are ongoing. Sampling results from 2013 and 2014 show that groundwater contamination exceeding ambient water quality standards covers a significant portion of the on-site area, although contaminant concentrations appear to be diminishing (MACTEC, 2013b) and (MACTEC, 2014). In 2014, two temporary soil vapor sampling points were installed and sampled at subsurface locations immediately north of the Site. Results from the soil vapor samples show detections of various VOC compounds, including PCE which was detected at 1,300 and at 5,000 $\mu g/m^3$. The NYSDEC has made attempts to access the building adjacent to the vapor sampling points to conduct indoor air sampling. The owner of the building,

which is occupied only intermittently reflecting its use as a social club, has not granted access for the sampling. Should the building owner (who previously declined an offer from NYSDEC to install a SSDS) decide he would like a SSDS installed, or if a change in ownership of the building occurs, a SSDS will be offered and/or installed.

1.4.4 Engineering and Institutional Controls

Because contamination is present in the groundwater and in the soil vapor at this Site, ECs and ICs have been implemented to protect public health and the environment for the applicable future use. The Controlled Property has the following EC:

- A site cover which consists of a minimum of nine feet of clean backfill (based on May 2015 groundwater level measurements; backfill above the water table is considered clean) consisting of crushed stone and common borrow soil meeting Unrestricted Use Soil Cleanup Objectives as described in NYSDEC 6 NYCRR Part 375 Table 375-6.8(a) and either a topsoil with vegetation, gravel, or an asphalt pavement surface to eliminate current and potential exposures of persons at or around the Site to VOC compounds in groundwater

A series of ICs are required to implement, maintain and monitor the EC. Currently, the NYSDEC is responsible for implementing, maintaining, and monitoring the EC under the SSF program. The Environmental Notice requires compliance with these ICs, to ensure that:

- All ECs are operated and maintained as specified in this SMP
- All ECs on the Site are inspected and certified at a frequency and in a manner defined in this SMP
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP
- Data and information pertinent to SM for the Controlled Property are 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, are protected and replaced as necessary to ensure continued functioning in the manner specified in this SMP.

In addition, the Environmental Notice places the following restrictions on the property:

- Required compliance with the approved SMP
- Restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the NYS Department of Health (NYSDOH) and/or the NYSDEC

- If requested upon, the owner of the Property shall provide information to the NYSDEC to assist the NYSDEC in providing a periodic certification, prepared and submitted by a professional engineer or environmental professional. The periodic certification will certify that the IC/ECs put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.
- The owner of the Property shall assist the NYSDEC to continue in full force and effect any IC/ECs required for the Remedy and shall not, through any act or omission, interfere with the NYSDEC's maintenance and monitoring of such controls. Limit the use and development of the property to commercial or industrial only.

These EC/ICs are designed to:

- Prevent ingestion of groundwater with contaminant levels that exceed drinking water standards

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Because remaining contaminated groundwater and soil vapor exists beneath the site, EC/ICs are required to protect human health and the environment. This EC/IC 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

This plan provides:

- A description of all EC/ICs on the site
- The basic implementation and intended role of each EC/IC
- A description of the key components of the ICs set forth in the Environmental Notice
- A description of the features to be evaluated during each required inspection and periodic review
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan (EWP) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC
- A description of the reporting requirements for these controls.

2.2 ENGINEERING CONTROLS

This section describes the ECs at the Site.

2.2.1 Engineering Control Systems

A site cover which consists of a minimum of nine feet of clean backfill (based on May 2015 groundwater level measurements; backfill above the water table is considered clean) consisting of crushed stone and common borrow soil meeting Unrestricted Use Soil Cleanup Objectives as described in NYSDEC 6 NYCRR Part 375 Table 375-6.8(a) and either a topsoil with vegetation, gravel, or asphalt pavement surface exists to eliminate current and potential exposures of persons at or around the Site to VOC compounds in groundwater.

2.3 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD to: (1) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (2) limit the use of groundwater as a source of potable water. Adherence to these ICs on the site is required by the Environmental Notice and will be implemented under this SMP. These ICs are:

- Compliance with the Environmental Notice and all elements of this SMP by the Grantor and the Grantor's successors and assigns
- All ECs must be maintained as specified in this SMP. The NYSDEC is currently responsible for ECs under the SSF program.
- All ECs must be inspected and certified at a frequency and in a manner defined in the SMP. The NYSDEC is currently responsible for EC inspection and certification under the SSF program.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP. The NYSDEC is currently responsible for groundwater and other environmental or public health monitoring under the SSF program.
- Data and information pertinent to SM of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.
- On- and off-site environmental monitoring devices, including but not limited to groundwater monitoring wells, will be protected and replaced as necessary by the NYSDEC to ensure the devices function in the manner specified in this SMP.

ICs identified in the Environmental Notice may not be discontinued without an amendment to or extinguishment of the Environmental Notice.

The Site has a series of ICs in the form of site restrictions. Adherence to these ICs is required by the Environmental Notice. 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 encounter remaining contaminated groundwater are prohibited unless they are conducted in accordance with this SMP; because the remedy results in contamination remaining at the Site that does not allow for unrestricted use, the SM includes a monitoring plan to assess the performance and effectiveness of the remedy
- 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 property may only be used for commercial or industrial uses provided that the long-term ECs and ICs included in this SMP are employed
- The property may not be used for a less restrictive use, such as unrestricted residential, without additional remediation and amendment of the Environmental Notice by the Commissioner of the NYSDEC
- Upon request, the owner of the Property shall provide information to the NYSDEC to assist the NYSDEC in providing a periodic certification, prepared and submitted by a professional engineer or environmental professional. The periodic report certifies that, 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. The 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 the 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 at the Site, an 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 may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive SSDS 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. Validated SVI data will be transmitted to the property owner within 30 days of validation. SVI sampling results, evaluations, and follow-up actions will also be summarized in the next PRR.

2.4 EXCAVATION WORK PLAN

The site remedy allows for commercial or industrial use. Any future intrusive work that will encounter the remaining groundwater contamination will be performed in compliance with this EWP. Intrusive construction work must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared by the contractor. The HASP must be in compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations.

Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided below. Any intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP, and will be included in the periodic inspection and certification reports submitted under the SM Reporting Plan (See Section 2.6).

The parties preparing the remedial documents submitted to the NYSDEC, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the ECs described in this SMP.

2.4.1 Notification

At least 10 days prior to the start of any activity that is reasonably anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC.

Currently, this notification will be made to:

Mr. Matthew Dunham, Project Manager

NYSDEC

Remediation Bureau E, Section A

Division of Environmental Remediation

625 Broadway

Albany, NY 12233-7017

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities, if any, to be installed below the nine feet of clean fill, estimated volumes of soil to be excavated, and any work that may impact an EC
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern (COCs), potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120
- A copy of the contractor's HASP, in electronic format
- Identification of disposal facilities for potential waste streams
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2.4.2 Screening Methods

Visual, olfactory, and instrument-based screening will be performed by a qualified environmental professional (QEP) during all remedial and development excavations into known or potentially contaminated material in contact with contaminated groundwater (remaining contamination). Screening will be performed regardless of when the invasive work is done and will include all

excavation and invasive work performed during development, such as excavations for foundations and utility work.

Soils observed to be in contact with remaining contaminated groundwater will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

2.4.3 Stockpile Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC.

2.4.4 Materials Excavation and Disposal

A QEP or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the QEP. Prior to excavation work, the QEP will determine whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYS Department of Transportation requirements (and all other applicable transportation requirements). Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

2.4.5 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) use city-mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; and (e) promote safety in access to highways. Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

Due to limited available space at the Site, some off-site queuing of trucks may be necessary. The number and duration of trucks lined up outside the Site entrance will be minimized through efficient scheduling and staging at a remote location.

2.4.6 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a

formal request with an associated plan will be made to the NYSDEC. Unregulated off-SM of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the PRR. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste pursuant to 6 NYCRR Part 360-1.2. Material that does not meet the lower of the SCGs for residential use or groundwater protection will not be taken to a NYS recycling facility (6 NYCRR Part 360-16 Registration Facility) without a beneficial use determination issued by the NYSDEC. The United States Environmental Protection Agency (USEPA) generator identification number for this Site is NYD981082225.

2.4.7 Materials Reuse On-Site

A QEP will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-site.

2.4.8 Fluids Management

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in

accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-site.

2.4.9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the QEP and will be in compliance with provisions in this SMP, applicable regulations (6 NYCRR 375-6.7(d)) and guidance (DER-10) prior to receipt at the Site. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the Site without prior approval by the NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

2.4.10 Storm Water Pollution Prevention

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant

impacts to receiving waters. Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

2.4.11 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (target analyte list metals; target compound list [TCL] volatiles and semi-volatiles, TCL pesticides and polychlorinated biphenyls), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to the NYSDEC's PM. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 4 of the SMP.

2.4.12 Community Air Monitoring Plan

The contractor will prepare a CAMP, in accordance with Appendices 1A and 1B of DER-10 (see Appendix C), showing the location of air sampling stations based on generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the Site, a fixed monitoring station should be located at that site perimeter, regardless of wind direction, and discussed in the text.

Exceedances of action levels listed in the CAMP will be reported to the NYSDEC and NYSDOH PMs.

2.4.13 Odor Control Plan

If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. The NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

2.4.14 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of dedicated on-site water supply for spraying water directly onto on and off-road areas including excavations and stockpiles. Fugitive dust and particulate monitoring shall be conducted in accordance with Appendix 1B of DER-10 (see Appendix C).

2.5 INSPECTIONS AND NOTIFICATIONS

2.5.1 Periodic Inspections

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

- Whether ECs 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 Environmental Notice
- Achievement of remedial performance criteria
- Sampling and analysis of appropriate media during monitoring events
- If site records are complete and up to date
- 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 SM Reporting Plan (Section 2.6).

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 calendar days of the event to verify the effectiveness of the EC/ICs implemented at the Site by a QEP as determined by the NYSDEC.

2.5.2 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 ROD, 6 NYCRR Part 375, and/or Environmental Conservation Law
- 10-day advance notice of any proposed ground-intrusive activities
- 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 ECs 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 ECs 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 calendar days and shall describe and document actions taken to restore the effectiveness of the ECs.

Notifications will be made to:

Mr. Matthew Dunham, Project Manager

NYSDEC

Remediation Bureau E, Section A

Division of Environmental Remediation

625 Broadway

Albany, NY 12233-7017

In the event that the NYSDEC develops a centralized notification system, that system will be used instead.

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 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.

2.6 REPORTING PLAN

2.6.1 Introduction

A PRR will be prepared by the NYSDEC every three years, or at an alternate frequency as may be determined by the NYSDEC. The PRR will be prepared in accordance with the NYSDEC DER-10 "Technical Guidance for Site Investigation and Remediation".

The PRR will include the following:

- Identification of all EC/ICs required by the ROD for the Site
- An assessment of the effectiveness of all EC/ICs for the Site
- An evaluation of the EC/IC Plan and the Monitoring Plan for adequacy in meeting remedial goals and being protective of public health and the environment
- Results of the required annual site inspections
- A compilation of all deliverables generated during the reporting period, as specified in Section 3 Monitoring Plan
- Certification of the EC/ICs.

2.6.2 Certification of Engineering and Institutional Controls

Inspection of the EC/ICs will occur by the NYSDEC at the frequency described in Section 3 (Monitoring Plan). After the last inspection of the reporting period, a Professional Engineer licensed to practice in NYS will prepare a PRR which certifies that:

- On-site ECs/ICs are unchanged from the previous certification
- They remain in-place and are effective
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment
- Access is available to the Site for the NYSDEC and NYSDOH to evaluate continued maintenance of such controls
- Site use is compliant with the Environmental Notice.

2.6.3 Periodic Review Report

A PRR will be submitted every three years by the NYSDEC, or at an alternate frequency as may be determined by the NYSDEC. The report will be submitted within 45 calendar days of the end of each certification period. Other reports, such as groundwater monitoring data, will be included as part of the PRR, and may also be submitted separately as determined by the NYSDEC. Media sampling results will also be incorporated into the PRR. 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 COC by media (e.g., groundwater), 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 NYSDEC 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 site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific ROD
    - 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
    - The overall performance and effectiveness of the remedy.

The PRR will be submitted by the NYSDEC Central Office in electronic format to the NYSDEC Regional Office located closest to the Site, and in electronic format to the NYSDOH Bureau of Environmental Exposure Investigation.

If requested, the owner of the Property shall provide information to the NYSDEC to assist the NYSDEC in carrying out its obligation of providing a periodic certification, which will certify that the IC/ECs put in place are unchanged from the previous certification, are in compliance with the SMP, and have not been impaired.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The SMP describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site. The SMP may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This SMP describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater)
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards
- 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
- 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., monitoring well logs)
- Analytical sampling program requirements
- Reporting requirements
- Quality Assurance/Quality Control (QA/QC) requirements
- Inspection and maintenance requirements for monitoring wells
- Annual inspection and periodic certification.

Monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site will be conducted every two years, or at a frequency determined by the NYSDEC. Trends in contaminant levels in groundwater in the affected area will be evaluated to determine if

the remedy continues to be effective in achieving remedial goals. The monitoring program is summarized below and described in detail in Subsection 3.2.

Schedule of Monitoring/Inspection Program for Former Diamond Cleaners

Monitoring Program	Frequency*	Matrix	Analysis
Groundwater Monitoring Wells	Every Two Years	Water	SW8260C

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

3.2 GROUNDWATER MONITORING PROGRAM

Groundwater monitoring well sampling will be performed every two years to assess the performance of the RA.

3.2.1 Monitoring System Design

The network of 25 MWs has been installed to monitor conditions at the Site. Details pertaining to the network of wells include the following:

- The MW well locations in the sampling network are shown on Figure 3.1
- Monitoring well details are presented in Table 3.1, and available MW construction details for wells included in the groundwater monitoring network are provided in Appendix D.
- Shallow groundwater monitoring wells are screened from approximately 12 to 22 feet bgs (Table 3.1)
- Deep groundwater monitoring wells are screened from approximately 24 to 29 feet bgs (Table 3.1)
- Boring logs and well completion logs for monitoring wells are included in Appendix D.

Based on findings from the May 2014 groundwater and soil vapor sampling program conducted at the Site, and in accordance with the telephone discussion between MACTEC and NYSDEC on September 3, 2014, monitoring wells GW-013, GW-014, MW-011, and MW-015, which had been included in previous sampling events, will be excluded from future sampling events based

on low to non-detectable concentrations of Site contaminants historically reported (MACTEC, 2014). The remaining 21 monitoring wells shown on Table 3.1 will be sampled every two years as directed by NYSDEC subsequent to its review of the May 2015 groundwater sampling results.

Reported detections of PCE, TCE and cis-1,2-DCE, in Site groundwater monitoring wells based on sampling conducted in May 2015 and during prior sampling rounds are shown on Figure 3.2.

3.2.2 Monitoring Schedule

Groundwater monitoring wells will be monitored every two years. Groundwater sampling will include:

- a synoptic round of water level measurements at locations listed on Table 3.1. Measurements shall be completed within one day and recorded in a weather-resistant field logbook.
- low-flow groundwater sampling of monitoring locations identified in Table 3.1 in accordance with Subsection 2.0 of the QA Project Plan (QAPP) prepared for the site (Appendix E). Samples will be collected for VOC analysis by USEPA Method 8260C.

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

3.2.3 Sampling Protocol

Monitoring and sampling activities completed for each monitoring event will be recorded in a field book and a daily log. Groundwater sampling will be completed following the Low Flow Sampling Procedures and the field data record (Appendix E), unless otherwise approved by the NYSDEC.

3.3 WELL REPAIRS, REPLACEMENT AND DECOMMISSIONING

Repairs and/or replacement of wells in the groundwater monitoring well network will be performed by the NYSDEC based on assessments of structural integrity and overall performance. The NYSDEC shall approve any repair, replacement or decommissioning of groundwater monitoring wells. Well decommissioning without replacement will be done only by the NYSDEC. Well abandonment will be performed in accordance with the NYSDEC's CP-43:

"Groundwater Monitoring Well Decommissioning Policy" dated November 3, 2009. Wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

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 ECs or monitoring devices. Inspection information shall be presented in an annual report to include:

- Compliance with all ICs, including site usage
- General site conditions at the time of the inspection
- 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 QAPP (Appendix E). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- 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 the NYSDEC Analytical Services Protocols 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 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 SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report, which will present the results of data validation, including a summary assessment of laboratory data packages, sample

preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

- Internal QC and Checks;
- 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 and sampling events are compiled and included in a report submitted to the NYSDEC. If requested, the owner of the Property shall provide information to the NYSDEC, as necessary, to assist it in carrying out its obligation of providing a Monitoring Plan. 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 PRR, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the PRR. The report will include, at a minimum:

- Date of event
- Personnel conducting sampling
- Description of the activities performed
- Type of samples collected (e.g., soil vapor, groundwater, 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 sampled (to be submitted electronically in the NYSDEC-identified format)
- Any observations, conclusions, or recommendations
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in digital format.

Task	Reporting Frequency*
Groundwater Monitoring Well Sampling	Every two years

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

4.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

4.1 SITE INSPECTIONS

All inspections will be conducted by the NYSDEC at the frequency specified in the schedules provided in "Section 3: Site Monitoring Plan" of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted whenever a severe condition, such as an erosion or flooding event that may affect the ECs, has taken place.

4.1.1 Forms, Sampling Data, and Maintenance Reports

All monitoring events will be recorded on the appropriate forms for their respective systems which are contained in Appendix E. These forms are subject to NYSDEC revision.

All applicable forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the PRR.

4.1.2 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;
- The site remedy continues to be protective of public health and the environment and is performing as designed in the ROD and FER (MACTEC, 2013a).

4.2 CERTIFICATION OF INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a QEP will prepare the following certification for the NYSDEC:

For each IC/EC identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the IC/ECs required by the remedial program was performed under my direction
- The IC and/or EC employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC
- Nothing has occurred that would impair the ability of the control to protect the public health and environment
- Nothing has occurred that would constitute a violation or failure to comply with any SMP for this control
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document
- Use of the Site is compliant with the Environmental Notice
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices
- No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid
- The information presented in this report is accurate and complete
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the Site.

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

The signed certification will be included in the PRR described below.

4.3 PERIODIC REVIEW REPORT

A PRR will be prepared by the NYSDEC every three years, or at an alternate frequency as may be determined by the NYSDEC. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site identified by the Metes and Bounds description in Appendix A. The report will be prepared in accordance with the

NYSDEC DER-10 guidance and submitted within 45 days of the end of each certification period.

Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site
- Results of the required annual site inspections and severe condition inspections, if applicable
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format
- Data summary tables and graphical representations of COCs by media (e.g., groundwater), 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 as part of an evaluation of 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 site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific ROD
    - 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
    - The overall performance and effectiveness of the remedy.

The PRR will be submitted in electronic format to the NYSDEC Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

4.4 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 EC, 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.

5.0 REFERENCES

MACTEC Engineering and Consulting, Inc. P.C. (MACTEC), 2007. Diamond Cleaners Remedial Investigation/Feasibility Study Report (OU-1). Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 2007.

MACTEC, 2009. Diamond Cleaners Remedial Investigation/Feasibility Study Report (OU-2). Prepared for the New York State Department of Environmental Conservation, Albany, New York. December 2009.

MACTEC, 2012. Pre-Design Site Investigation Report, Former Diamond Cleaners Site. Prepared for the New York State Department of Environmental Conservation. August 2012.

MACTEC, 2013a. *Final Engineering Report – Diamond Cleaners – Site No. 808030.* Prepared for the New York State Department of Environmental Conservation. February 2013.

MACTEC, 2013b. *Field Activity Report – Groundwater and Soil Sampling Results – Diamond Cleaners – Site No. 808030.* Prepared for the New York State Department of Environmental Conservation. August 2013.

MACTEC, 2014. *Field Activity Report – Groundwater and Soil Vapor Sampling Results – Diamond Cleaners – Site No. 808030.* Prepared for the New York State Department of Environmental Conservation. September 2014.

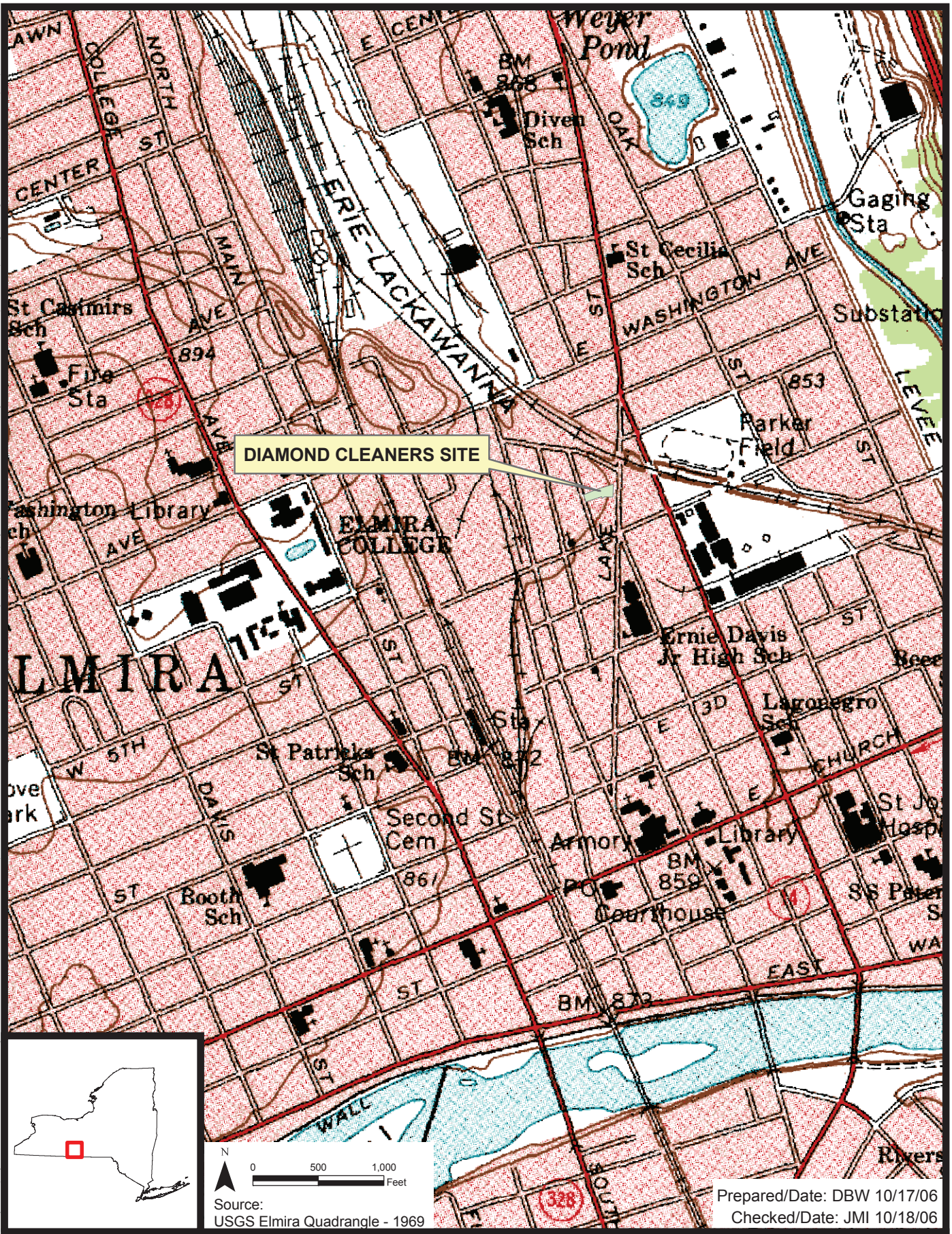
NYSDEC, 2008. *Record of Decision, Diamond Cleaners Site Operable Unit No. 1, Elmira, Chemung County, New York, Site No. 808030.* March 2008.

NYSDEC, 2010a. *Record of Decision, Diamond Cleaners Site Operable Unit No. 2, Elmira, Chemung County, New York, Site No. 808030.* March 2010.

NYSDEC, 2010b. *DER-10, Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation.* May 3, 2010.

Rickard and Fisher, 1970. Geologic Map of New York, Finger Lakes Sheet, New York State Map and Chart Series 15. by L.V. Rickard and D.W. Fisher. March, 1970. (Rickard and Fisher, 1970).

FIGURES

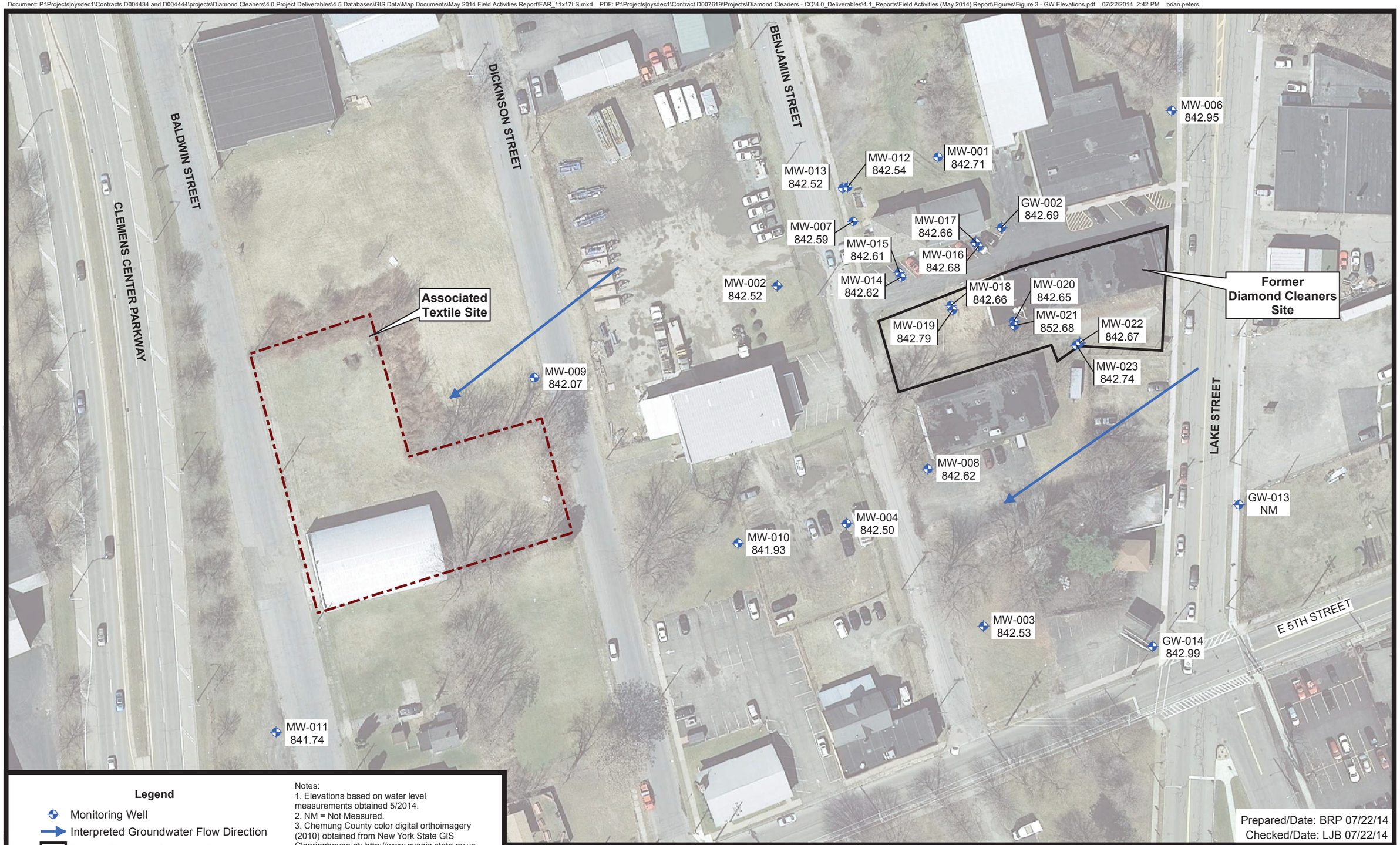


Prepared/Date: DBW 10/17/06
Checked/Date: JMI 10/18/06

NYSDEC
FORMER DIAMOND CLEANERS
Elmira, New York

MACTEC

Site Location
Project No. 3612112209
Figure 1.1



Legend

- Monitoring Well
- Interpreted Groundwater Flow Direction
- Former Diamond Cleaners Property
- Former ATRS Property

Notes:
1. Elevations based on water level measurements obtained 5/2014.
2. NM = Not Measured.
3. Chemung County color digital orthoimagery (2010) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

N

0 35 70 Feet

Prepared/Date: BRP 07/22/14
Checked/Date: LJB 07/22/14

NYSDEC
FORMER DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC

Diamond Cleaners
Groundwater Elevations
Project 3612112209 Figure 1.2

Legend

- Monitoring Well
- Soil Vapor Sampling Location
- Former Diamond Cleaners Property
- Former ATRS Property

Note: Chemung County color digital orthoimagery (2010) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

N

0 35 70 Feet

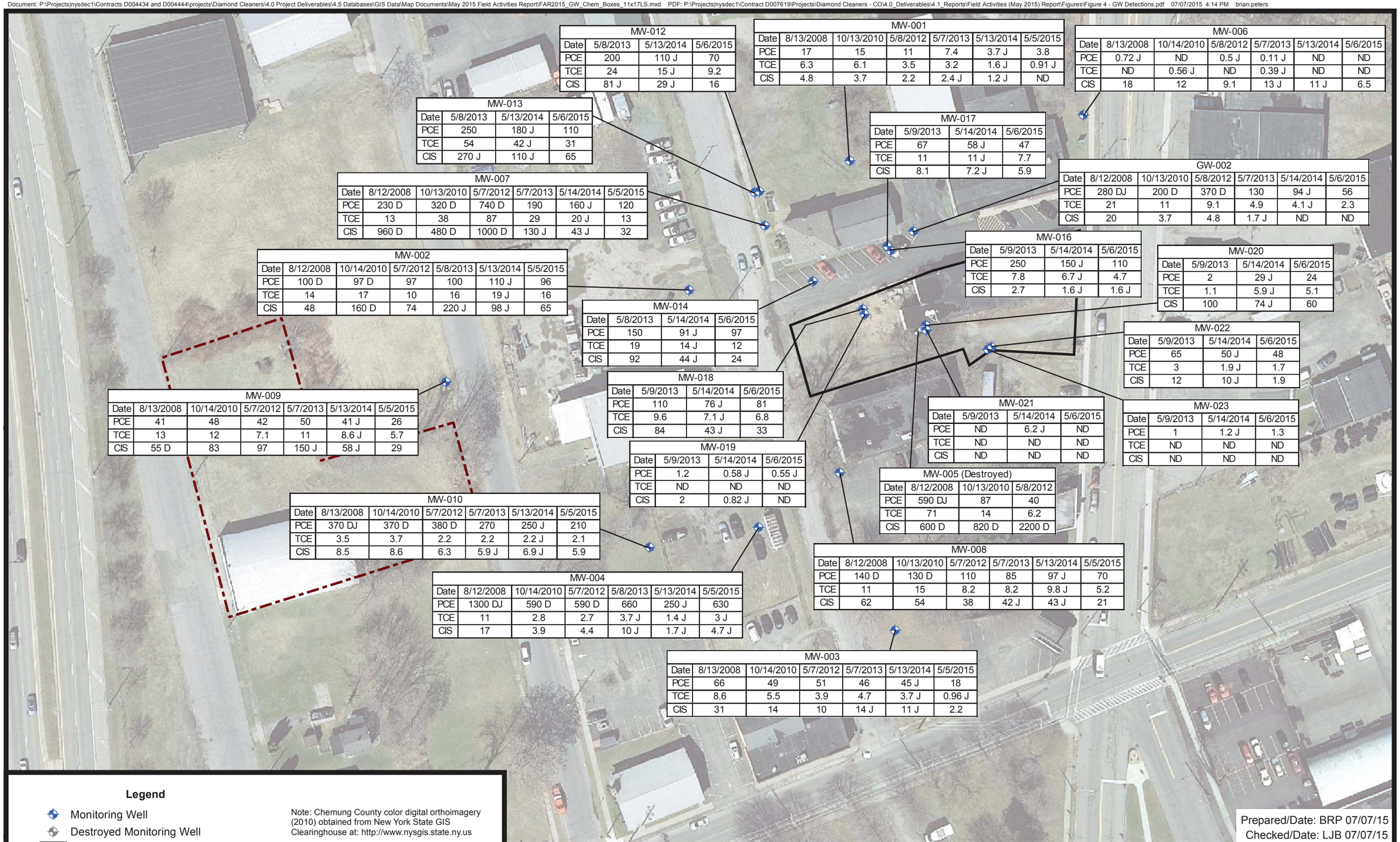
Prepared/Date: BRP 07/22/14
Checked/Date: LJB 07/22/14

NYSDEC
FORMER DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC

Diamond Cleaners - Groundwater Sampling Locations
Project 3612112209 Figure 3.1

Document: P:\Projects|nysdec1\Contracts D004434 and D004444\projects\Diamond Cleaners\4.0 Project Deliverables\4.5 Databases\GIS Data\Map Documents\May 2015 Field Activities Report\FAR2015_GW_Chem_Boxes_11x17LS.mxd PDF: P:\Projects|nysdec1\Contract D007619\Projects\Diamond Cleaners - CO\4.0_Deliverables\4.1_Reports\Field Activities (May 2015) Report\Figures\Figure 4 - GW Detections.pdf 07/07/2015 4:14 PM brian.peters



MW-012

Date	5/8/2013	5/13/2014	5/6/2015
PCE	200	110 J	70
TCE	24	15 J	9.2
CIS	81 J	29 J	16

MW-001

Date	8/13/2008	10/13/2010	5/8/2012	5/7/2013	5/13/2014	5/5/2015
PCE	17	15	11	7.4	3.7 J	3.8
TCE	6.3	6.1	3.5	3.2	1.6 J	0.91 J
CIS	4.8	3.7	2.2	2.4 J	1.2 J	ND

MW-006

Date	8/13/2008	10/14/2010	5/8/2012	5/7/2013	5/13/2014	5/6/2015
PCE	0.72 J	ND	0.5 J	0.11 J	ND	ND
TCE	ND	0.56 J	ND	0.39 J	ND	ND
CIS	18	12	9.1	13 J	11 J	6.5

MW-013

Date	5/8/2013	5/13/2014	5/6/2015
PCE	250	180 J	110
TCE	54	42 J	31
CIS	270 J	110 J	65

MW-017

Date	5/9/2013	5/14/2014	5/6/2015
PCE	67	58 J	47
TCE	11	11 J	7.7
CIS	8.1	7.2 J	5.9

MW-007

Date	8/12/2008	10/13/2010	5/7/2012	5/7/2013	5/14/2014	5/5/2015
PCE	230 D	320 D	740 D	190	160 J	120
TCE	13	38	87	29	20 J	13
CIS	960 D	480 D	1000 D	130 J	43 J	32

GW-002

Date	8/12/2008	10/13/2010	5/8/2012	5/7/2013	5/14/2014	5/6/2015
PCE	280 DJ	200 D	370 D	130	94 J	56
TCE	21	11	9.1	4.9	4.1 J	2.3
CIS	20	3.7	4.8	1.7 J	ND	ND

MW-002

Date	8/12/2008	10/14/2010	5/7/2012	5/8/2013	5/13/2014	5/5/2015
PCE	100 D	97 D	97	100	110 J	96
TCE	14	17	10	16	19 J	16
CIS	48	160 D	74	220 J	98 J	65

MW-016

Date	5/9/2013	5/14/2014	5/6/2015
PCE	250	150 J	110
TCE	7.8	6.7 J	4.7
CIS	2.7	1.6 J	1.6 J

MW-020

Date	5/9/2013	5/14/2014	5/6/2015
PCE	2	29 J	24
TCE	1.1	5.9 J	5.1
CIS	100	74 J	60

MW-014

Date	5/8/2013	5/14/2014	5/6/2015
PCE	150	91 J	97
TCE	19	14 J	12
CIS	92	44 J	24

MW-022

Date	5/9/2013	5/14/2014	5/6/2015
PCE	65	50 J	48
TCE	3	1.9 J	1.7
CIS	12	10 J	1.9

MW-018

Date	5/9/2013	5/14/2014	5/6/2015
PCE	110	76 J	81
TCE	9.6	7.1 J	6.8
CIS	84	43 J	33

MW-021

Date	5/9/2013	5/14/2014	5/6/2015
PCE	ND	6.2 J	ND
TCE	ND	ND	ND
CIS	ND	ND	ND

MW-023

Date	5/9/2013	5/14/2014	5/6/2015
PCE	1	1.2 J	1.3
TCE	ND	ND	ND
CIS	ND	ND	ND

MW-009

Date	8/13/2008	10/14/2010	5/7/2012	5/7/2013	5/13/2014	5/5/2015
PCE	41	48	42	50	41 J	26
TCE	13	12	7.1	11	8.6 J	5.7
CIS	55 D	83	97	150 J	58 J	29

MW-019

Date	5/9/2013	5/14/2014	5/6/2015
PCE	1.2	0.58 J	0.55 J
TCE	ND	ND	ND
CIS	2	0.82 J	ND

MW-005 (Destroyed)

Date	8/12/2008	10/13/2010	5/8/2012
PCE	590 DJ	87	40
TCE	71	14	6.2
CIS	600 D	820 D	2200 D

MW-010

Date	8/13/2008	10/14/2010	5/7/2012	5/7/2013	5/13/2014	5/5/2015
PCE	370 DJ	370 D	380 D	270	250 J	210
TCE	3.5	3.7	2.2	2.2	2.2 J	2.1
CIS	8.5	8.6	6.3	5.9 J	6.9 J	5.9

MW-008

Date	8/12/2008	10/13/2010	5/7/2012	5/7/2013	5/13/2014	5/5/2015
PCE	140 D	130 D	110	85	97 J	70
TCE	11	15	8.2	8.2	9.8 J	5.2
CIS	62	54	38	42 J	43 J	21

MW-004

Date	8/12/2008	10/14/2010	5/7/2012	5/8/2013	5/13/2014	5/5/2015
PCE	1300 DJ	590 D	590 D	660	250 J	630
TCE	11	2.8	2.7	3.7 J	1.4 J	3 J
CIS	17	3.9	4.4	10 J	1.7 J	4.7 J

MW-003

Date	8/13/2008	10/14/2010	5/7/2012	5/7/2013	5/13/2014	5/5/2015
PCE	66	49	51	46	45 J	18
TCE	8.6	5.5	3.9	4.7	3.7 J	0.96 J
CIS	31	14	10	14 J	11 J	2.2

Legend

- Monitoring Well
- Destroyed Monitoring Well
- Former Diamond Cleaners Property
- Former ATRS Property

Note: Chemung County color digital orthoimagery (2010) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

N

0 35 70 Feet

Prepared/Date: BRP 07/07/15
Checked/Date: LJB 07/07/15

NYSDEC
FORMER DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC

Maximum PCE, TCE and Cis-1,2-DCE Detections in Groundwater – 2008 to 2015
Project 3612112209 Figure 3.2

TABLES

Table 3.1: Groundwater Monitoring Well Details

Location ID	Sample ID	QC Code	Screen Length (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Media	Measure Water Level	Analysis Method
Groundwater Samples								
MW-001	DCMW001_____14XX	FS	10	14.5	24.5	GW	X	SW8260C
MW-002	DCMW002_____14XX	FS	10	14.5	24.5	GW	X	SW8260C
MW-003	DCMW003_____14XX	FS	10	14.5	24.5	GW	X	SW8260C
MW-004	DCMW004_____14XX	FS	10	12	22	GW	X	SW8260C
MW-004	DCMW004_____14XD	FD	10	12	22	GW	X	SW8260C
MW-004	DCMW004_____14MS	MS	10	12	22	GW	X	SW8260C
MW-004	DCMW004_____14MD	MSD	10	12	22	GW	X	SW8260C
MW-006	DCMW006_____14XX	FS	10	9.8	19.8	GW	X	SW8260C
MW-007	DCMW007_____14XX	FS	10	12	22	GW	X	SW8260C
MW-008	DCMW008_____14XX	FS	10	12	22	GW	X	SW8260C
MW-009	DCMW009_____14XX	FS	10	11.7	21.7	GW	X	SW8260C
MW-010	DCMW010_____14XX	FS	10	12	22	GW	X	SW8260C
MW-012	DCMW012_____14XX	FS	10	12	22	GW	X	SW8260C
MW-013	DCMW013_____14XX	FS	5	24	29	GW	X	SW8260C
MW-014	DCMW014_____14XX	FS	10	12	22	GW	X	SW8260C
MW-016	DCMW016_____14XX	FS	10	12	22	GW	X	SW8260C
MW-017	DCMW017_____14XX	FS	5	24	29	GW	X	SW8260C
MW-018	DCMW018_____14XX	FS	10	12	22	GW	X	SW8260C
MW-019	DCMW019_____14XX	FS	5	24	29	GW	X	SW8260C
MW-020	DCMW020_____14XX	FS	10	12	22	GW	X	SW8260C
MW-021	DCMW021_____14XX	FS	5	24	29	GW	X	SW8260C
MW-022	DCMW022_____14XX	FS	10	12	22	GW	X	SW8260C
MW-023	DCMW023_____14XX	FS	5	24	29	GW	X	SW8260C
GW-002	DCGW002_____14XX	FS	10	9.3	19.3	GW	X	SW8260C
QC	DCQT05_____2014XX	TB	-	-	-	BW	X	SW8260C
								25
Soil Vapor Samples								
TBD	DCGV101_____14XX	FS				SV	X	TO-15
TBD	DCGV102_____14XX	FS				SV	X	TO-15

Notes: **2**

ft bgs = feet below ground surface

QC Code: FS = Field Sample; FD = Field Duplicate; MS = Matrix Spike; MSD = Matrix Spike Duplicate; TB = Trip Blank

Media: GW = Groundwater; BW = Blank water; SV = Soil Vapor

APPENDIX A

PROPERTY DESCRIPTION WITH DEEDED DESCRIPTION MAP REFERENCE

Property Description Report For: 717 Lake St, Municipality of City of Elmira

Diamond Cleaners Site

No Photo Available

		Status:	Active
		Roll Section:	Taxable
		Swis:	070400
		Tax Map ID #:	89.11-3-83
		Property Class:	484 - 1 use sm bld
		Site:	COM 1
		In Ag. District:	No
		Site Property Class:	484 - 1 use sm bld
		Zoning Code:	IA
		Neighborhood Code:	00005
Land Assessment:	2009 - $33,000	**Total Assessment:**	2009 - $135,000
Total Acreage/Size:	98.23 x 124.7	**School District:**	Elmira City
Full Market Value:	2009 - $150,000	**Legal Property Desc:**	
Deed Book:	5021	**Deed Page:**	60030
Grid East:	760096	**Grid North:**	764723

Owners

Owner Information Not Available

County of Chemung.

Sales

Sale Date	Price	Property Class	Sale Type	Prior Owner	Value Usable	Arms Length	Addl. Parcels	Deed Book	Deed Page
2/15/2005	$1	000 - 000	Land & Building		No	No	Yes	5021	60030
11/17/1998	$36,934	484 - 1 use sm bld	Land & Building	Coleman, Earl D	No	No	No	00943	00065 micro film
1/16/1995	$135,000	484 - 1 use sm bld	Land & Building	C & K Laundry Inc	Yes	Yes	No	443	52

Utilities

Sewer Type:	Comm/public	**Water Supply:**	Comm/public
Utilities:	Gas & elec		

Inventory

Overall Eff Year Built:	0	**Overall Condition:**	Normal
Overall Grade:	Average	**Overall Desirability:**	3

Buildings

AC%	Sprinkler%	Alarm%	Elevators	Basement Type	Year Built	Condition	Quality	Gross Floor Area (sqft)	Stories
0	0	0	0	0	1940	Normal	Average	4964	1.00

96

DO NOT DETACH

(PLEASE TYPE OR PRINT - MUST BE LEGIBLE FOR MICROFILMING)
COVER SHEET (Prepared for all documents to be recorded.)

1. **Return to:**

Mr. Earl D. Coleman

P.O. Box 338

Hornell, New York 14843

CATHERINE K. HUGHES
Chemung County Clerk's Office
210 Lake St., PO Box 588
Elmira, New York 14902-0588

2. Type of Document - Quit-Claim Deed

3. No. of Pages - 2

Fiche 943 Page 65 Code D

12. Location of Property-717 Lake Street

City: of Elmira

Village: N/A

Town: N/A

* 5. Receipt No. 196392

13. Consideration $ 36,934.55

6. Parties to Transaction

County of Chemung

and

Earl D. Coleman

* 14. Trans. Tax Amt.$ 148.00

* 15. Trans. Tax # 945

* 16. Recording Information:

7. Mortgage Amt. $ N/A

* 8. Mtg. Serial No.

* 9. Basic Mtg. Tax 1/2% $

* 10. Spec. Add. Mtg. Tax 1/4% $

* 11. Total Mtg. Tax

I hereby certify that I have received the above imposed tax paid at the time of recording.

BY _____
Recording Officer Chemung County

MAY 17 10 20 AM '96
COUNTY OF CHEMUNG
COUNTY CLERK'S OFFICE

***To be completed by County Clerk.**

This sheet constitutes the Clerk endorsement required by section 316-A (5) for the real Property Law of the State of New York DO NOT DETACH

97

QUIT-CLAIM DEED. Fiche 943 Page 66 Code D

This Indenture,

Made the 17th day of November in the year One thousand nine hundred and ninety-eight

Between County of Chemung, a municipal corporation of the State of New York, *party* of the first part, and

Mr. Earl D. Coleman
P.O. Box 338
Hornell, New York 14843

party of the second part

Witnesseth, That the said *party* of the first part, in consideration of the sum of thirty-six thousand nine hundred thirty-four dollars and fifty-five cents ($36934.55)

to it in hand paid by the said *party* of the second part, the receipt whereof is herby confessed and acknowledged, *has* bargained, sold, remised and Quit-Claimed and by these Presents *does* bargain, sell, remise and Quit-Claim unto the said *part y* of the second *part*, and to his heirs and assigns forever,

All that Tract, Piece or Parcel of Land, situate in the City of Elmira, County of Chemung, and State of New York, bounded and described as follows: Beginning at an iron pin in the westerly line of Lake Street 242.00 feet north from the intersection of said westerly line of Lake Street with the north line of East Fifth Street, running thence North 82° 2' 20" West 66 feet to an iron pin, running thence south 85° 40' 20" West 23.79 feet to an iron pin, running thence north 16° 6' 30" West 13.77 feet to an iron pin, running thence south 73° 48' 30" West 127.45 feet to an iron pin in the east line of Benjamin Street, running thence north 9° 24' west along the easterly line of Benjamin Street 61 feet to an iron pin, running thence north 73° 48' 30" east 120.33 feet to an iron pin, running thence north 81° 27' 50" east 124.70 feet to a drill hole in the westerly 120.1 line of Lake Street, running thence south 7° 57' 40" West 50 feet to an iron pin and continuing on the 120.1 same course a distance of 48.23 feet to the point of beginning.

The foregoing description is based upon a map of a survey by Weller Associates dated November 27, 1974 and entitled "Map of land of Mary Wich and Anne Pona". A copy of such map is to be filed as case map #1817 in the Chemung County Clerk's Office.

Being the same premises conveyed to Earl D. Coleman by Warranty Deed from Custard and Kistler Laundry, Inc. dated January 16, 1995 and filed January 17, 1995 in Chemung County Fiche of Deeds 443 at Page 52.

The premises hereby conveyed are known as 715 Lake Street and 717 Lake Street, and 712 benjamin Street, and for prior title reference is made to the following deeds:

1) Pona and Wich to Custard and Kistler Laundry, Inc. by Warranty Deed dated and filed December 13, 1974 in Chemung County Liber of Deeds 636 at Page 113.

2) Elmira Association for the Blind, Inc. to Anne Pona and Mary Wich as joint tenants dated February 5, 1954 and recorded February 18, 1954 in Liber 423 of Chemung County Deeds at page 137.

3) Silvia Cicci to Mary Wich and Anne Pona dated July 3, 1950, recorded July 7, 1950 in Liber 384 of Chemung County Deeds at page 128.

Subject to all prior restrictions, covenants, and easements as previously recorded.

No prior liens, encumbrances, or judgments are to be extinguished by this conveyance.

The lands herein described being Parcel No. 249-1995 on the Lis Pendens filed in an action brought by Chemung County on October 1, 1996 to foreclose certain tax liens under *Title 3 of Article Eleven of the Real Property Tax Law;* said lands being part of the premises conveyed to the County of Chemung by deed of the County Treasurer dated January 9, 1998 which deed was executed in accordance with the final judgment of the county Court in said action dated Jan. 6, 1998 and said deed being recorded in the Chemung County Clerk's Office in Fiche 797 of Deeds at page 36 on January 9, 1998

This conveyance is made pursuant to a resolution of the County Legislature of Chemung County, New York, adopted the 9th day of March , 1998 , as resolution number 98-068

Together with all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and all the estate right, title, interest, claim and demand whatsoever of the said *party* of the first part either in law or equity, of, in, or to the above bargained premises, with the said hereditaments and appurtenances, **To Have and to Hold** the said described lands and premises to the said *party* of the second part, heirs and assigns, to the sole and only proper benefit and behoof of the said *party* of the second part, his heirs and assigns forever.

In Witness Whereof, The said *party* of the first part *has* hereunto set its *hand* and *seal* the day and year first above written.

In presence of:

County of Chemung

By ..... [L.S.]
Deputy Chemung County Executive

Fiche 943 Page 67 Code D

STATE OF NEW YORK, }
COUNTY OF CHEMUNG } ss.

On this 17 day of November, in the year one thousand nine hundred and ninety-eight, before me personally came Thomas J. Santulli, to me personally known, who being by me duly sworn did depose and say that he resides in the Town of ELMIRA Chemung County, New York, that he is the **County Executive of** the County of Chemung, New York, the corporation described in and which executed the within Instrument; that he knows the seal of the said County of Chemung; that the seal affixed to said Instrument is the seal of the County of Chemung; that it was so affixed by resolution of the County Legislature of the County of Chemung; and that he signed his name thereto by like order.

Jane L.D. White

Notary Public.
JANE L.D. WHITE
Notary Public, State of New York
No. 4909853 Reg. in Chemung County
My Commission Expires Nov. 9, 1999

Deed
Quit-Claim.

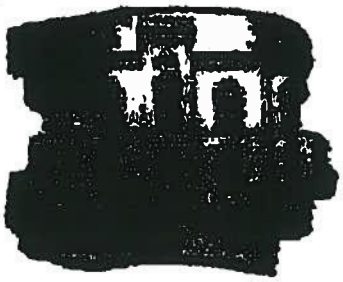
COUNTY OF CHEMUNG
TO
Earl D. Coleman
P.O. Box 338
Hornell, New York 14901

Date November 17, 1998

State of New York
Chemung County, ss.

Recorded on the ..... day of ....., 19 , at ..... o'clock ..... M., in Book ..... No. ..... of Deeds, at page ..... and examined.

..... Clerk.



Chemung County Clerk's Office

210 Lake St., P.O. Box 588
Elmira, NY 14902-0588
Phone: 607-737-2920
Fax: 607-737-2897
Catharine K. Hughes - County Clerk

Jane L. Dietterich
Acting Deputy

Lori J. Kline
Acting Deputy

FAX TRANSMISSION COVER SHEET

TO Cliff

FAX NUMBER 1-585-377-1266

DATE 4-23-10

NUMBER OF PAGES 1

ATTN:

FROM: Mary

SPECIAL INSTRUCTIONS:

*******PLEASE VERIFY RECEIPT OF THIS FAX******

YES ____ NO ____ TELEPHONE 607-737-2920

APPENDIX B

OU-1 AND OU-2 RECORDS OF DECISION

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Diamond Cleaners Site
Operable Unit No. 1
Elmira, Chemung County, New York
Site Number 808030

March 2008

New York State Department of Environmental Conservation
DAVID A. PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Diamond Cleaners Inactive Hazardous Waste Disposal Site
Operable Unit No. 1
Elmira, Chemung County, New York
Site No. 808030

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit 1 of the Diamond Cleaners Site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit 1 of the Diamond Cleaners inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Diamond Cleaners site and the criteria identified for evaluation of alternatives, the Department has selected Excavation/Off-site Disposal. The components of the remedy are as follows:

- A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

- Demolition of the Diamond Cleaners building, excavation of tetrachloroethene contaminated soils at concentrations greater than 1.3 ppm, backfilling of the excavation, and transportation of debris and contaminated soils to an off-site treatment and/or disposal facility.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 3 1 2008

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION

Diamond Cleaners Site
Operable Unit No. 1
Elmira, Chemung County, New York
Site No. 808030
March, 2008

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the former Diamond Cleaners site, Operable Unit # 1 (OU-1) - Source Area. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, improper disposal of dry cleaning solvents has resulted in the disposal of hazardous wastes, including volatile organic compounds (VOCs). These wastes have contaminated the soils and groundwater at the site, and have resulted in:

- a significant environmental threat associated with the current and potential impacts of contaminants to soil and groundwater at the site.

- a significant threat to human health associated with current and potential exposure to PCE vapors impacting indoor air quality.

To eliminate or mitigate these threats, the Department has selected:

- Demolition of the existing on-site building,

- Excavation of contaminated soils exceeding remediation goals and transportation and off-site disposal of contaminated soil and building debris.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located at 717 Lake Street, in the City of Elmira, Chemung County, New York. (Figure 1 and 2) The site is situated on a one acre lot in a commercial and residential area and consists of a paved/gravel parking lot, a one story building constructed in the 1950's with a grassy area at the rear of the property. The building is currently unoccupied and is in a state of disrepair. The site is situated in a relatively flat flood plain, formed by the confluence of the Chemung River to the south and the Newtown Creek to the east, at approximately 859 feet above mean sea level (msl). The topography is relatively flat for approximately one mile to the east of the site, before rising sharply up a ridge to an elevation more than 1600 feet above msl. The topography is also relatively flat to the west of the site before similarly rising up a ridge to more than 1600 feet above msl. It is presumed, based on regional groundwater flow (Figures 6 and 7) and topography, that the Chemung River and, to a lesser extent Newtown Creek, are local groundwater discharge areas. Groundwater was encountered at 12 to 14 feet beneath ground surface (bgs) at the site. The site is located within a primary aquifer which supplies drinking water to the local population. The closest operational public water supply wells are located along the shore of the Chemung River, approximately 1.2 miles southwest of the site.

Operable Unit (OU) No.1, which is the subject of this document, consists of the on-site source area at the former Diamond Cleaners property. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site is OU-2, on-site/off-site contaminated groundwater. The remedy for the OU-2, groundwater contamination, will be addressed in a decision document to be issued in the future.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

This site was used as a laundry and dry-cleaning operation by multiple operators between 1950 and 2001. It was reported that Stoddard Solvent was used as a dry-cleaning agent in the early years. Tetrachloroethene (PCE) was used for the dry-cleaning operations at the site from 1974 until 2001.

3.2: Remedial History

In 2001, the former property owner contracted Teeter Environmental Services to perform a limited sub surface investigation of the property at 717 Lake St. and an adjacent property at 706-710 Benjamin St., owned by the same party (Figure 3). Potential contaminants of concern included chlorinated and non chlorinated solvents (Stoddard Solvent) used in the dry cleaning industry as well as petroleum contaminants potentially related to a decommissioned gasoline UST formerly located at the site. Results indicate that the soil and groundwater have been impacted by both chlorinated solvents and petroleum compounds. Chlorinated solvents were detected at concentrations in excess of the NYS Class GA groundwater standards in all 6 boring locations where groundwater was sampled. Fifteen soil borings to depth ranging from 14 to 20

feet bgs were performed using a direct-push soil probing rig. Five soil samples from separate borings and six groundwater samples from selected borings were submitted to the laboratory for VOCs and aliphatic hydrocarbon analysis. No permanent groundwater monitoring wells were installed. The results indicated soil and groundwater contamination with chlorinated solvents and petroleum compounds exceeding NYS standards and/or guidance values. Petroleum compounds were mainly detected near the former UST location. Similar chlorinated solvents exceeding NYS standards were also detected in groundwater samples collected from the soil borings performed at the adjacent property at 706-710 Benjamin St. This contaminated adjacent property is also owned by the site owner, however, no dry-cleaning operations were conducted there.

In 2004, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. Existing records indicate that the property was owned by Daniel S. Hoffman until 1995 when it was sold to Earl D. Coleman. Subsequently, it was seized by Chemung County and purchased back from the county by Mr. Coleman in 1998. According to the Chemung County Real Property Office, the property has again been seized by the county and remains in the possession of Chemung County.

The PRPs for the site, documented to date, include: Daniel S. Hoffman and Earl D. Coleman. The PRPs declined to implement the RI/FS at the site when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between June 2005 and January 2006. The field activities and findings of the investigation are described in the RI report.

Phase one of the field program included a detailed evaluation of the area surrounding and within the site building, as well as the area immediately downgradient from the site. It included:

- Direct-push soil sampling at 11 locations based on field screening and groundwater sampling at 18 locations to evaluate potential and known source areas and characterize the vertical distribution of contaminants in soil and ground water.

- Surface soil sampling at 5 background locations to evaluate background conditions related to potential health risk at the site.

- Installation of 4 micro wells to evaluate site groundwater flow.

- Direct push soil gas sampling at 6 locations selected based on field screening of soils collected during Phase 1 field activities to evaluate the potential vapor migration at the site.

Upon completion of phase one, phase two was initiated. Phase two included:

- Installation of five monitoring wells to provide additional groundwater analytical data and permanent groundwater monitoring points.

- Groundwater sampling of new wells to evaluate groundwater conditions and provide data for evaluating the potential for natural attenuation.

- Sub-slab vapor and indoor air sampling at the subject property and three additional neighboring properties, to evaluate the potential for vapor migration.

- Additional direct push soil sampling to delineate the extent of potential chlorinated solvent contaminants in soils.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and indoor air contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Soil SCGs are based on 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives.

- Concentrations of VOCs in air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

As described in the RI report, many soil, groundwater and air samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main category of contaminant that exceed their SCGs are VOCs. For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per million (ppm) for soil. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

Table 1 summarizes the degree of contamination for the contaminants of concern in soils and air, and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil

Ten on-site surface soil samples and five off-site surface soil samples were collected during the Phase I field work in June 2005 (Figure 4). The five off-site surface soil locations were chosen to represent background concentrations and were all collected in the vicinity of the Diamond Cleaners site. Three of the ten on-site samples had detected concentrations of PCE above the SCOs. Also, three of the on-site samples had detected concentrations of copper and one on-site sample had lead concentrations above the SCOs. Surface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Subsurface Soil

Four VOCs exceeded the SCOs in the sample collected at a depth of 13 to 15 ft. bgs from GS-004. Cis-1,2-DCE was detected in GS-005 at a depth of 15 to 17 ft. bgs at a concentration exceeding the SCOs. Detected concentrations of PCE, total xylenes and methylene chloride exceeded SCOs in boring MW-005 at a depth of 10 to 12 ft. bgs. PCE was the only VOC detected at a concentration exceeding SCOs in samples from borings GS-006 at-5-7 ft. bgs, GS-019 at 9-11 ft. bgs and GS-043 at 10-12 ft. bgs. PCE and acetone were was the only VOCs detected at a concentration exceeding the SCOs in samples from borings GS-008 and GS-016. PCE and methylene chloride were detected at concentrations exceeding SCOs in a sample collected from GS-017. Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor/Sub-Slab Vapor/Air

Six soil gas samples (GV-001 to GV-006) were collected on and around the Diamond Cleaners site in June 2005. See Figure 5 for soil gas locations. PCE detected in the soil gas at GV-001 resulted in the sub-slab and indoor air sampling of neighboring properties. Detected VOCs are reported in Table 1. Indoor air, sub-slab air and ambient air sample results were all compared to the background concentration for indoor air and the air guideline values presented in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York. PCE values were compared to Matrix 2 of the Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

Four air samples were collected from Location 1; two sub slab vapor samples and two indoor air samples. Neither sub slab vapor sample location had exceedances of the State's Guidance on Evaluating Soil Vapor. PCE exceeded the Air Guideline Value of 100 ug/m^3 at LOC-1B. Two samples were collected at Location 2; one soil vapor sample and one indoor air sample. There were no exceedances of the State's Guidance on Evaluating Soil Vapor in the soil vapor sample and the indoor air sample had exceedances of background concentrations for 1,3,5-Trimethylbenzene, PCE, toluene and xylenes. No parameters exceeded the Air Guideline Values criteria for Location 2. Three samples were collected at Location 3; one soil vapor sample, one basement air sample, and one first floor air sample. There were no exceedances of the State's Guidance on Evaluating Soil Vapor in the soil vapor sample nor were there exceedances of the Background Concentrations or Air Guideline Values for the basement air sample or the first floor air sample. Location 4 was the Diamond Cleaners main site building. Three samples were collected inside the building; two sub slab samples and one indoor air sample. Both sub slab samples exceeded the State's Guidance on Evaluating Soil Vapor for PCE. PCE was also detected in the indoor air sample at a concentration exceeding the Indoor Air Guideline Value. One ambient air sample was collected outside of the Diamond Cleaners main site building. This sample had exceedances of the background concentrations for 1,3,5-trimethylbenzene, ethyl benzene, o-xylene, PCE and xylene.

Soil vapor and indoor air contamination identified during the RI/FS was addressed during the IRM described in Section 5.2.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. As a result of soil vapor intrusion sampling a vapor mitigation system was offered to the owner of an adjacent property, however, the owner declined the Department's offer to install the vapor mitigation system.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 5 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment. Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Under the current and future use scenarios, there exists the potential for exposure to volatile organic compounds via inhalation of vapor or incidental ingestion or dermal contact with on-site contaminated surface and subsurface soil. There could also be exposure via soil vapor intrusion into the former Diamond Cleaners building and a nearby business. Groundwater in the vicinity of the project site is not utilized as a source of drinking water. Therefore, exposure via ingestion of contaminated groundwater is not expected.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands. The site is located in a residential/commercial area of the City of Elmira. There are no fish or wildlife receptors present.

Site contamination has impacted the site's soils and groundwater resource. Groundwater will be addressed in the future under Operable Unit 2.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- the release of contaminates from the soil into groundwater that may create exceedances of groundwater standards;
- soil vapor intrusion and exposures to building occupants;

Further, the remediation goals for the site include attaining to the extent practicable:

- implementation of the soil clean up objectives based on 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, Table 375-6.8(b), Protection of Public Health, Protection of Groundwater for VOC contamination.
- implementation of the soil clean up objectives based on the current zoning of the property per 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, Table 375-6.8(b), Protection of Public Health, Commercial for compounds other that VOCs.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Former Diamond Cleaners site were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soils at the site.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Limited Action

Present Worth: *$1,082,000*
Capital Cost: *$132,000*
Annual Costs:
(Years 1-5): *$85,000*
(Years 6-10): *$50,000*
(Years 11-30): *$35,000*

In this alternative, institutional controls would be implemented to restrict future use of the site as part of an environmental easement. Implementation of the environmental easement would include the development of a Site Management Plan which would set forth the institutional controls necessary to manage exposure to contamination remaining at the site. Institutional controls would likely include implementation of land-use restrictions prohibiting subsurface activity in the area of contamination, and would prohibit changes in zoning of the site (e.g., change from commercial to residential use). Land-use restrictions would be implemented through legal instruments such as environmental easements and/or permitting processes. Long-term maintenance of fencing and warning signs are included in this alternative.

Alternative 3: Soil Vapor Extraction

Present Worth: *$1,334,000*
Capital Cost: *$247,000*
Annual Costs:
(Years 1-5): *$155,000*
(Years 5-10): *$108,000*

Alternative 3 would protect human health and the environment by limiting access to site contaminants through institutional controls while removing the contaminant mass. This alternative includes long-term environmental monitoring and soil-vapor extraction. A pre-design investigation would be conducted to refine the extent of contaminated soil to be addressed by this alternative prior to implementation. Institutional controls would be implemented as described for Alternative 2. Soil vapor extraction (SVE) would be implemented to address soil contamination. SVE would also address soil vapor contamination contributing to on-site soil vapor and indoor air contamination. System monitoring would be conducted to establish baseline concentrations of VOC vapors extracted by the SVE system, and to allow for monitoring of system performance over time. The effectiveness and performance of the SVE system would be evaluated over time, including preparation of periodic reports presenting concentration trends and discussion of system performance.

Alternative 4: Excavation/Off-site Disposal

Present Worth: *$1,315,000*
Capital Cost: *$1,315,000*

This alternative is a more aggressive approach to remediating the site aimed at eliminating the contaminated soils at the site. A pre-design investigation would be conducted to refine the extent of contaminated soil to be addressed by this alternative prior to implementation. This alternative includes demolition of the Diamond Cleaners building, excavation of approximately 2,000 cubic yards of contaminated soils at the site, backfilling of the excavation, and transportation of debris and contaminated soils to an off-site treatment and/or disposal facility. A demolition survey would be conducted prior to the demolition of the building to identify possible hazardous materials (i.e., asbestos, lead paint) in the building. Utility lines would be capped prior to the demolition. All building debris would be transported off site for disposal. Confirmation sampling for VOCs and PAHs would be conducted during excavation activities, with analytical results verifying attainment of remediation goals. Following contaminated soil removal, excavated areas would be backfilled with clean fill and vegetated or paved as appropriate. Excavated soil would be sampled for characterization prior to transportation for off-site treatment and/or disposal.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

(1.) Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

(2.) Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

(3.) Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

(4.) Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

(5.) Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

(6.) Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

(7.) Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

(8.) Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department will addressed the concerns raised.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department is proposing has selected Alternative 4 as the remedy for this site. The elements of this remedy are described at the end of this section. The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 4 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It would achieve the remediation goals for the site by removing the soils that create the most significant threat to public health and the environment, it would greatly reduce the source of contamination to groundwater, and it would create the conditions needed to restore groundwater quality to the extent practicable.

Alternative 2 does not include any remedial actions to remove contamination or to prevent the leaching of contamination to the groundwater, therefore Alternative 2 will not be in compliance with New York State Standards, Criteria, and Guidance (SCGs). Because Alternative 2 does not satisfy the threshold criteria it will not be selected as a final remedy for this site.

Alternative 3 does satisfy the threshold criteria, therefore the five balancing criteria are particularly important in selecting a final remedy for the site.

Alternatives 3 (Soil Vapor Extraction) and 4 (Excavation/Off-site Disposal) both have short-term impacts which can easily be controlled. The time needed to achieve the remediation goals would be longest for Alternative 3 and would require deed restrictions and long term monitoring.

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated soils (Alternative 4). Alternative 4 is favorable because it would result in the removal of all of the contaminated soil at the site. Since most of the contamination is located under and adjacent to the on-site building, Alternative 4 would result in removal of almost all of the chemical contamination at the site and attains cleanup concentrations consistent with current zoning.

Alternative 4 would remove the volume of waste on-site and thereby greatly reduce the mobility and toxicity of contaminants. Approximately 2000 cubic yards of material would be removed with Alternative 4.

Alternative 3 would help to reduce the mobility of contaminants but this reduction is dependent upon the long-term operation, maintenance and monitoring of the treatment system. Only Alternative 3 would reduce the toxicity of contaminants by chemical/physical treatment.

Alternative 4 is favorable in that it is readily implementable. Additional sampling and testing will be required to gauge the implementability of Alternative 3.
The cost of Alternatives 3 and 4 are similar. The Department is proposing Alternative 4 because it is

less expensive than Alternative 3. Alternative 4 is a more aggressive approach to remediation of the site aimed at eliminating the contaminated soils at the site. Alternative 4 is a permanent remedy that will eliminate most of a continuing source of groundwater contamination at the site. Because this alternative includes removal of source wastes at the site, it is expected to result in a shorter time frame to achieve remedial action objectives and provide long-term protection of human health and the environment.

The estimated present worth cost to implement the remedy is $1,315,000. The cost to construct the remedy is estimated to be $1,315,000 and the estimated average annual costs for 30 years is $0.

The elements of the selected remedy are as follows:

(1.) A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

(2.) Demolition of the Diamond Cleaners building, excavation of tetrachloroethene contaminated soils at concentrations greater than 1.3 ppm, backfilling of the excavation, and transportation of debris and contaminated soils to an off-site treatment and/or disposal facility.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A public meeting was held on March 10, 2008 to present and receive comments on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination
June 2005 - January 2006

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic	Tetrachloroethene	0.008 - 17	1.3	3/10
Semivolatile Organic	Benzo(a)pyrene	0.15 - 1.4	1	2/10
PCB/Pesticides	4-4'-DDD	0.005 - 0.270	62	0/10
	4-4'-DDE	0.006 - 2.3	47	0/10
	4-4'DDT	0.016 - 2.5	92	0/10
Inorganic Compounds	Copper	33.6 - 3870	270	3/10
	Lead	73.2 - 2020	1000	1/10

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Cis-1,2-Dichloroethene	0.001 - 6.3	0.25	2/60
	Tetrachloroethene	0.002 - 540	1.3	6/60
	Vinyl chloride	0.34 - 0.34	0.02	1/60
	Xylenes, Total	0.001 - 28	1.6	4/60
	Methylene chloride	0.03-0.269	0.05	3/60
PCB/Pesticides	4-4'-DDD	0.005 - 4.1	62	0/3
	4-4'-DDE	0.006- 0.610	47	0/3
	4-4'DDT	0.021 - 14	92	0/3
Inorganic Compounds	Copper	35.5 - 67.1	270	0/3
	Lead	16.2 - 61.3	1000	0/3

SOIL VAPOR	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	14 - 6800	NA	NA
	Trichloroethene	48 - 48	NA	NA

SOIL VAPOR SUB-SLAB	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	6-2,000,000	NA	-

AIR	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	0.1 - 0.49	NA	0
	Tetrachloroethene	0.5 - 390	100	2/6
	Trichloroethene	0.17 - 0.64	5	0

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter;

[b] SCG = standards, criteria, and guidance values;
soil clean up objectives based on 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, Table 375-6.8(b), Protection of Public Health, Protection of Groundwater for VOC's contamination and;
soil clean up objectives based on the current zoning of the property per 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, Table 375-6.8(b), Protection of Public Health, Commercial for compounds other that VOCs.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 - No Action	$0	$0	$0
Alternative 2 - Limited Action	$132,000	Years 1-5 - $85,000 Years 6-10 - $50,000 Years 11-30 - $35,000	$1,082,000
Alternative 3 - Soil Vapor Extraction	$247,000	Years 1-5 - $155,000 Years 5-10 - $108,000	$1,334,000
Alternative 4 - Excavation/ Off-site Disposal	$1,315,000	$0	$1,315,000

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Former Diamond Cleaners Site
Operable Unit No. 02
State Superfund Project
Elmira, Chemung County, New York
Site Number 808030

March 2010

New York State Department of Environmental Conservation
DAVID A. PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Former Diamond Cleaners
Operable Unit No. 2
State Superfund Project
Elmira, Chemung County, New York
Site No. 808030

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit # 2 of the Former Diamond Cleaners site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law, 6 NYCRR Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit # 2 the Former Diamond Cleaners site and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

Based on the results of the remedial investigation/feasibility study (RI/FS) for the Former Diamond Cleaners site and the criteria identified for evaluation of alternatives, the Department has selected Combined In-Situ Chemical Oxidation and Enhanced Biodegradation. The components of the remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. The addition of the chosen oxidant to the source area and the chosen biodegradation reagent to the remaining remedial area. The addition of the oxidant in the source area will be conducted concurrently with the OU-1 soil removal and will include allowing the open excavation to fill with groundwater, adding and mixing the oxidant with the groundwater in the open excavation prior to backfilling.

3. The source area groundwater will be allowed to equilibrate and when monitoring indicates that contaminate concentrations have stabilized, the chosen enhanced biodegradation reagent then will be injected into the groundwater with in the remaining remedial area to treat residual contamination outside the source area.

4. Monitoring wells will be installed within the treatment area to provide the means for long-

term groundwater monitoring. Long-term groundwater monitoring will begin following the injection of the enhanced biodegradation reagent and will occur on a periodic basis. The need for additional injections of a biodegradation reagent will be determined during periodic reviews of the Site.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

   (a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3).
   (b) restricts the use of groundwater as a source of potable water, until groundwater standards are achieved, without the necessary water quality treatment as determined by the Department, NYSDOH or County DOH.
   (c) requires compliance with Department approved Site Management Plan;

6. Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan is required, which includes the following:

   (a) Institutional and Engineer Control Plan that identifies all the use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional controls remain in place.

   Institutional Controls: The Environmental Easements discussed in Paragraph 5 above.

   This plan includes, but may not be limited to:

   (i) Descriptions of the provisions of the environmental easement including any groundwater use restrictions;
   (ii) maintaining site access controls and Department notification; and
   (iii) steps necessary for the periodic reviews and certification of the institutional controls;

   (b) Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but not be limited to:

   (i) monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy and to evaluate the need for additional sampling to assess exposures related to soil vapor intrusion in adjacent and on-site buildings;
   (ii) a schedule of monitoring and frequency of submittals to the Department; a provision to complete a soil vapor intrusion evaluation and to implement action necessary to address exposures should any building be developed on the site.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 31 2010

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION
Former Diamond Cleaners
Operable Unit No. 2
State Superfund Project
Elmira, Chemung County, New York
Site No. 808030
March 2010

SECTION 1: SUMMARY AND PURPOSE OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Former Diamond Cleaners, Operable Unit #2 (OU-2) – Groundwater and Soil Vapor. The presence of hazardous waste has created significant threats to human health and the environment that are addressed by this remedy presented in this Record of Decision (ROD). As more fully described in Sections 3 and 5 of this document, improper handling of dry cleaning solvents has resulted in the disposal of hazardous wastes, including volatile organic compounds (VOCs). These wastes have contaminated the soil, groundwater and soil vapor at the site, and have resulted in:

- a significant threat to human health associated with current and potential exposure to volatile organic compounds in soil, groundwater and soil vapor;

- a significant environmental threat associated with the current and potential impacts of contaminants to groundwater and soil vapor.

To eliminate or mitigate the threats to groundwater and soil vapor, the Department has selected Combined In-Situ Chemical Oxidation and Enhanced Biodegradation.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located at 717 Lake Street, in the City of Elmira, Chemung County, New York. (Figures 1 and 2) The site is situated on a one acre lot in a commercial and residential area and consists of a paved/gravel parking lot, a one story building constructed in the 1950's and a grassy area at the rear of the property. The building is currently unoccupied and is in a state of disrepair. The site is situated in a relatively flat flood plain, formed by the confluence of the Chemung River to the south and the Newtown Creek to the east. It is presumed, based on regional groundwater flow and topography, that the Chemung River and, to a lesser extent Newtown Creek, are local groundwater discharge areas. Groundwater was encountered at 12 to 14 feet beneath ground surface (bgs) at the site. Groundwater flow direction at the site is estimated to be

to the west (Figures 3 and 6). The site is located within a primary aquifer which supplies drinking water to the local population. The closest operational public water supply wells are located along the shore of the Chemung River, approximately 1.2 miles southwest of the site.

Operable Unit (OU) No. 2, which is the subject of this document, consists of groundwater and soil vapor. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

This site was used as a laundry and dry-cleaning operation by multiple operators between 1950 and 2001. PCE was used for the dry-cleaning operations at the site from 1974 until 2001.

3.2: Remedial History

In November 2002, the former owner of the Site submitted an application to enter the Voluntary Cleanup Program. The applicant terminated the agreement before it was signed in August 2003.

In 2004, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

A Record of Decision for OU No. 1 (Source Area) was issued in March 2008. The components of the remedy are the demolition of the Diamond Cleaners building, excavation of tetrachloroethene contaminated soils at concentrations greater than 1.3 ppm, backfilling of the excavation and the transportation of debris and contaminated soils to an off-site treatment and/or disposal facility. As a result of soil vapor intrusion sampling conducted during OU No.1 a vapor mitigation system was offered to the owner of an adjacent property. The owner declined the offer to install the system.

OU No. 1 is currently in the Remedial Design/Remedial Action phase. Implementation of the selected remedy for OU No. 2 will occur concurrently with the OU No. 1 remedy for soil remediation.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include: Daniel S. Hoffman and Earl D. Coleman.

The PRPs declined to implement the RI/FS at the site when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between July 2008 and April 2009. The field activities and findings of the investigation are described in the RI report.

The OU-2 investigation included a detailed evaluation of the area surrounding the site buildings, as well as the areas upgradient and downgradient from the site. It included:

- Direct-push investigation including groundwater sampling and on-site analysis of 13 microwell locations to further evaluate the physical and chemical conditions downgradient of the Site to allow for better placement of additional wells to augment the existing wells at the Site;

- Installation of six monitoring wells (one upgradient and five downgradient) to provide for additional groundwater analytical data and grounderwater monitoring points;

- Groundwater sampling of new and existing wells to evaluate groundwater conditions.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the groundwater contains contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the RI report, many groundwater samples were collected to characterize the nature and extent of contamination. As seen in Figures 4 and 5 and summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water.

Figures 4 and 5 and Table 1 summarizes the degree of contamination for the contaminants of concern in groundwater and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Groundwater

Numerous groundwater samples have been collected both on-site and off-site during the investigation for OU-1 and OU-2. An additional six groundwater monitoring wells were installed off-site during OU-2.

On-site and off-site groundwater has been impacted by PCE and its breakdown products related to the former dry cleaner. This groundwater contamination is also contributing to the soil vapor contamination (and indoor air impact) identified in OU-1. The highest concentrations of contamination were found on the west side of the former Diamond Cleaner building near the former cleaning room. On-site PCE was detected at 730 ppb (GW-4), TCE at 120 ppb (GW-4), cis-1,2-DCE at 20,000 ppb (GW-6) and VC at 3,400 ppb (GW-9). Off-site PCE was detected at 3900 ppb (MW-4) to the west and across the street from the Diamond Cleaners Site.

Groundwater has also been impacted by volatile organic compounds at another location downgradient of the Former Diamond Cleaners Site. Contamination at the 714 Baldwin Street Site, Site No. 808041 will be addressed in a separate decision document in the future.

Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6.0 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

There is a potential for people to come into contact with contaminated surface and subsurface soil if they trespass or conduct ground-intrusive activities on the site. People are not currently being exposed to the contaminated groundwater because groundwater in the vicinity of the site is not used as a source of drinking water and the contamination does not extend to the public water supply wells. Volatile organic compounds in the groundwater have moved into the soil vapor (air between soil particles), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon from the subsurface into buildings, is referred to as soil vapor intrusion. Exposures related to soil vapor intrusion are likely to be occurring in a nearby building and may occur in new buildings constructed on-site.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands. The site is located in a residential/commercial area in the City of Elmira. There are no fish or wildlife receptors present. Site contamination has impacted the Elmira-Horseheads-Big Flats Primary Water Supply Aquifer beneath and downgradient of the site. Contaminant concentrations exceed groundwater quality standards.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- Current and potential exposures of persons at or around the site to volatile organic compounds in groundwater and soil vapor.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Former Diamond Cleaners were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated groundwater and soil vapor at the site.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Site Management

Present Worth:.....*$767,000*
Capital Cost:.....*$0*
Annual Costs:
(Years 1-30):.....*$23,000*

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Alternative 3: In-Situ Enhanced Biodegradation

Present Worth:.....*$1,259,000*
Capital Cost:.....*$492,000*
Annual Costs:
(Years 1-30):.....*$23,000*

This approach is designed to enhance the natural biodegradation process for a more rapid and complete degradation of the organic contaminants to non-toxic compounds. In-situ enhanced biodegradation involves inoculation of micro-organisms (i.e., fungi or bacteria, and other microbes) and/or the addition of carbon sources (reagents) to the subsurface for use by indigenous micro-organisms capable of degrading organic contaminants found in the soil and/or groundwater. The process injects a reagent into the subsurface via injection wells or an infiltration gallery. The method of injection and depth of injection is determined by the location of the contamination. Several reagents are commercially available. Implementation of in-situ enhanced biodegradation would consist of both adding the chosen reagent into the open excavation during the implementation of the OU-1 soil remedy and injecting the chosen reagent into the groundwater in the remaining treatment area. Prior to the full implementation of this technology, laboratory and on-site pilot scale studies would be conducted to more clearly define design parameters. Long-term monitoring would be conducted to evaluate the effectiveness of the enhanced biodegradation remedy as well as the effects of natural attenuation in untreated areas. Long- term monitoring would begin following the first injection and would occur on a periodic basis. The need for additional injections would be evaluated during periodic reviews of the Site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Alternative 4: In-Situ Chemical Oxidation

Present Worth: *$2,527,000*
Capital Cost: *$1,760,000*
Annual Costs:
(Years 1-30): *$23,000*

In-situ chemical oxidation is a technology used to treat chlorinated compounds in soil and groundwater. The process injects a chemical oxidant into the subsurface via injection wells or an infiltration gallery. The method of injection and depth of injection is determined by location of the contamination. As the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Several chemical oxidants are commercially available. Implementation of in-situ chemical oxidation would consist of both adding the chosen oxidant to the open excavation during the implementation of the OU-1 soil remedy and injecting the chosen oxidant into the groundwater in the remaining treatment area. Prior to the full implementation of this technology, laboratory and on-site pilot scale studies would be conducted to more clearly define design parameters. Long- term monitoring would begin following the first injection and would occur on a periodic basis. The need for additional injections would be evaluated during periodic reviews of the Site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Alternative 5: Combined In-Situ Chemical Oxidation and Enhanced Biodegradation

Present Worth: *$1,407,000*
Capital Cost: *$640,000*
Annual Costs:
(Years 1-30): *$23,000*

This alternative includes a combination of in-situ chemical oxidation and in-situ enhanced biodegradation. Implementation of this alternative would consist of treating the source area with the chemical oxidant only and treat the remaining area with the enhanced biodegradation reagent. This would be accomplished by adding the chosen chemical oxidant to the open excavation after the implementation of OU-1 (source removal). Once the source removal is completed and groundwater contamination stabilizes the enhanced biodegradation reagent would be introduced into the remaining remedial area to treat any contamination outside the source area and to promote natural attenuation. Prior to the full implementation of this alternative, laboratory and on-site pilot scale studies would be conducted to more clearly define design parameters. Long- term monitoring would begin following the injection of the enhanced biodegradation reagent and would occur on a periodic basis. The need for additional injections of a biodegradation reagent would be evaluated during periodic reviews of the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Alternative 6: Groundwater Extraction and Treatment

Present Worth:.....*$3,746,000*
Capital Cost:.....*$628,000*
Annual Costs:
(Years 1-30):.....*$66,000*

This ex-situ remedy creates a depression of the water table so that contaminated groundwater is directed toward pumping wells within the plume area. The groundwater extraction system is designed so that the capture zone is sufficient to cover the lateral extent of the area of concern. The total number of extraction wells would be determined during the pilot test and the design. Both free product (if present) and groundwater are collected during recovery operations. A variety of methods may be used to treat the extracted groundwater which includes, but is not limited to air stripping, granular activated carbon and chemical/UV oxidation. Long-term monitoring would begin following start up of the groundwater extraction system and would occur on a periodic basis. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals

remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table #2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative #5, Combined In-Situ Chemical Oxidation and In-Situ Enhanced Biodegradation as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 5 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by creating the conditions needed to attain ambient groundwater standards.

Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Because Alternatives 2, 3, 4, 5 and 6 do satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

Alternatives 2 through 6 all have short-term impacts which can easily be controlled, however Alternative 2 would have the smallest impact. The time needed to achieve the remediation goals would be shortest for Alternative 2 and longest for Alternative 6. Alternative 6 would require long term operation maintenance and monitoring of the treatment system.

Achieving the best long-term effectiveness and permanence is accomplished by treating the contaminated groundwater at the source area. Alternatives 3, 4 and 5 would introduce chemical oxidants and/or biological reagents to the open excavation during the source removal under OU-1. Alternative 6 would take the most time to implement, and would rely upon long-term operation, maintenance and monitoring to achieve contaminant reduction.

Alternative 6 is favorable in that it relies upon technology and construction methods that are well developed and accepted and are relatively easy to implement. The technologies used for implementation of Alternatives 3, 4 and 5 are becoming more widely used and accepted, and would not be difficult to implement after on-site pilot studies are conducted to more clearly define design parameters.

Alternatives 3, 4 and 5 include treatment to reduce the toxicity, mobility, and volume of groundwater contamination. Chemical oxidation destroys contaminants upon contact, but site-specific conditions may limit the ability to achieve adequate distribution of chemical-oxidants. Enhanced biodegradation involves the enhancement of natural biological processes to destroy the target contaminants. Alternative 6 would greatly reduce the mobility of contaminants but this reduction is dependent upon the long-term operation, maintenance and monitoring of the treatment system.

Among Alternatives 3, 4 and 5, Alternative 3 is the least expensive, but due to the nature of the treatment process this alternative would result in a longer time frame to achieve remedial action objectives. Alternative 4 is cost restrictive due to the amount of chemical oxidants required to treat the entire remediation area. Combining Alternatives 3 and 4 (Alternative 5) would limit the use of the more aggressive chemical oxidant to the source area. Then once the source area treatment is completed, any residual groundwater contamination will be treated using enhanced biodegradation reagents. This is expected to result in a shorter time frame to achieve remedial action objectives and provide long-term protection of human health and the environment.

The estimated present worth cost to implement the remedy is $1,407,000. The cost to construct the remedy is estimated to be $640,000 and the estimated average annual costs for 30 years is $23,000.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. The addition of the chosen oxidant to the source area and the chosen biodegradation reagent to the remaining remedial area. The addition of the oxidant in the source area will be conducted concurrently with the OU-1 soil removal and will include allowing the open excavation to fill with groundwater, adding and mixing the oxidant with the groundwater in the open excavation prior to backfilling.

3. The source area groundwater will be allowed to equilibrate and when monitoring indicates that contaminate concentrations have stabilized, the chosen enhanced biodegradation reagent then will be injected into the groundwater with in the remaining remedial area to treat residual contamination outside the source area.

4. Monitoring wells will be installed within the treatment area to provide the means for long-term groundwater monitoring. Long-term groundwater monitoring will begin following the injection of the enhanced biodegradation reagent and will occur on a periodic basis. The need for additional injections of a biodegradation reagent will be determined during periodic reviews of the site.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

   (a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3).
   (b) restricts the use of groundwater as a source of potable water, until groundwater standards are achieved, without the necessary water quality treatment as determined by the Department, NYSDOH or County DOH.
   (c) requires compliance with Department approved Site Management Plan;

6. Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan is required, which includes the following:

   (a) Institutional and Engineer Control Plan that identifies all the use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional controls remain in place

   Institutional Controls: The Environmental Easements discussed in Paragraph 5 above.

   This plan includes, but may not be limited to:

      (i) Descriptions of the provisions of the environmental easement including any groundwater use restrictions;
      (ii) maintaining site access controls and Department notification; and
      (iii) steps necessary for the periodic reviews and certification of the institutional controls;

(a) Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but not be limited to:

(i) monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy and to evaluate the need for additional sampling to assess exposures related to soil vapor intrusion in adjacent and on-site buildings;
(ii) a schedule of monitoring and frequency of submittals to the Department;
(iii) a provision to complete a soil vapor intrusion evaluation and to implement action necessary to address exposures should any building be developed on the site.

TABLE 1
Nature and Extent of Contamination

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	0.72 - 3900	5.0	61/94
	Trichloroethene	0.66 - 120	5.0	46/94
	cis-1,2 Dichloroethene	0.58-20000	5.0	66/94
	trans-1,2 Dichloroethene	1.0-22	5.0	4/94
	Vinyl Chloride	0.88 -3400	2.0	26/94

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
[b] SCG = standards, criteria, and guidance values; Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code
ND = Non Detect

TABLE 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	$0	$0	$0
Site Management	$0	$23,000	$767,000
In-Situ Enhanced Biodegradation	$492,000	$23,000	$1,259,000
In-Situ Chemical Oxidation	$1,760,000	$23,000	$2,527,000
Combined In-Situ Enhanced Biodegradation & Chemical Oxidation	$640,000	$23,000	$1,407,000
Groundwater Extraction & Treatment	$628,000	$66,000	$3,746,000

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Former Diamond Cleaners
Operable Unit No. 02
State Superfund Project
Elmira, Chemung County, New York
Site No. 808030

The Proposed Remedial Action Plan (PRAP) for the Former Diamond Cleaners site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on March 01, 2010. The PRAP outlined the remedial measure proposed for the contaminated groundwater at the Former Diamond Cleaners site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 15, 2010, which included a presentation of the remedial investigation/feasibility study (RI/FS) for the Former Diamond Cleaners site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 31, 2010.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Do projects costs include repair of adjacent property owner's pavement?

RESPONSE 1: Before we work on any adjoining properties we will obtain permission of the property owner and anything we remove or disturb will be replaced in kind.

COMMENT 2: Can all adjacent property owners receive letters two weeks in advance of remedial activities at the site?

RESPONSE2: We can notify adjacent property owners before any work starts.

COMMENT 3: Will there be another public meeting?

RESPONSE 3: When the remedial design is finalized, a fact sheet describing the remedial action will be distributed to the community and other interested people.

COMMENT 4: When will the on-site building be demolished?

RESPONSE 4: Build demolition is part of OU-1. OU-1 is currently in the design phase and once the design is finalized the project will be advertised for bidders.

COMMENT 5: How soon can this site be remediated?

RESPONSE 5: After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under State Superfund. The PRPs are subject to legal action by the state for recovery of all response cost the state has incurred.

COMMENT 6: Will the state funding be there to remediate this site?

RESPONSE 6: Once the ROD is approved the next step is to start the design. After the design is finalized the project will be advertised for bidders. At that time the money will be committed for this site.

Bill Dawson, owner of 711, 713, 714, 718 Lake Street, Elmira, New York, submitted an email on March 31, 2010 which included the following comment:

COMMENT 7: My concern is for the potential contamination of my properties. What can I expect from this remedy? Will I get a certification that my property has not been affected by this contamination? If not I believe my property should also be in the scope of this clean up.

RESPONSE 7: During construction steps will be taken to minimize any disturbances to nearby properties and to make sure no one can enter the site during the work. The site will have a community monitoring program and steps will also be taken to monitor and control any dust caused by the work at the site. We can provide a letter stating that the Diamond Cleaners Property (717 Lake Street) is currently the property under investigation. However, we do not provide certifications of other properties.

APPENDIX B

Administrative Record

Administrative Record

Former Diamond Cleaners
Operable Unit No. 02
State Superfund Project
Elmira, Chemung County, New York
Site No. 808030

Proposed Remedial Action Plan for the Diamond Cleaners site, Operable Unit No. 02, dated March 2010, prepared by the Department.

Final Remedial Investigation/Feasibility Study Report, dated December 2009, prepared by MACTEC Engineering and Consulting, P.C.

Fact Sheet – Remedy Proposed for the Diamond Cleaners Site, dated March 2010, prepared by the Department.

Diamond Cleaner Site Listing, dated November 10, 2003, prepared by the Department.

APPENDIX C

DER-10 APPENDICES 1A AND 1B

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX D

GROUNDWATER MONITORING WELL BORING AND WELL INSTALLATION LOGS

TEST BORING LOG

Project: NYSDEC Elmira, NY	Boring/Well: MW-1	Project No.: 3612052028	
Client: NYSDEC	Site: Diamond Cleaners	Sheet No.: 1 of 2	
Logged By: JMI	Ground Elevation:	Start Date: 10/3/05 1130	Finish Date: 10/3/05
Drilling Contractor: NothNagle	Driller's Name: Jay + Russ	Rig Type: CME55	
Drilling Method: HSA	Protection Level: D	P.I.D. (eV):	Casing Size: Auger Size: 4.25'
Soil Drilled:	Rock Drilled: NA	Total Depth: 24.5'	Depth to Groundwater/Date: 14' Piez ☐ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm): PI Meter Field Scan	PI Meter Head Space		Lab Tests
	0.0/2.0		5/9/11/17			Dark Brown silty SAND. FINE SAND/ Organic debris, Rock caught.			—			
2	0.8/2.0		7/10/10/8			Light Brown medium to course SAND.			0			
4	0.8/2.0		2/4/5/10			Light Brown medium to course SAND.			1.5/0.7			
6	0.5/2.0		20/18/2/4			Rock caught Light Brown medium to course SAND.			0			
8	0.5/2.0		10/11/10/11			Rock caught - medium Brown medium to course SAND			0			
10	0.8/2.0		12/13/8/4			Brown SAND, Course Gravel, Trace silt.			0			
12												

Collected soil sample @ ~~6-8'~~ 8-10'

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TEST BORING LOG

Project	Boring/We...	Project No.
NYSDEC	MW-1	

Client	Site	Sheet No.
	Diamond Cl	2 of 2

Logged By	Ground Elevation	Start Date	Finish Date
		10/3/05	10/3/05

Drilling Contractor	Driller's Name	Rig Type
NothNagle	Jayt Russ	

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25'

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	NA	24'	14'	☐	☐	☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
14	0.8/2.0		4/2/3/5			0.1→0.2 = Dark Black gravelly SAND layer. Slightly SAT. 0.2→0.8" Medium Brown SILTY SAND, MOIST			0			
	2.0/2.0		17/19/22/30			Very saturated – medium Brown SAND, Some gravel.			0			
16	1.0/2.0		16/32/24/22			Very saturated – Gray, SILTY SAND. Trace clay. Some course + medium gravel.						
18												
20												
22												
24						EOB @ 24'						

Collected Soil Sample @ 14-16'.

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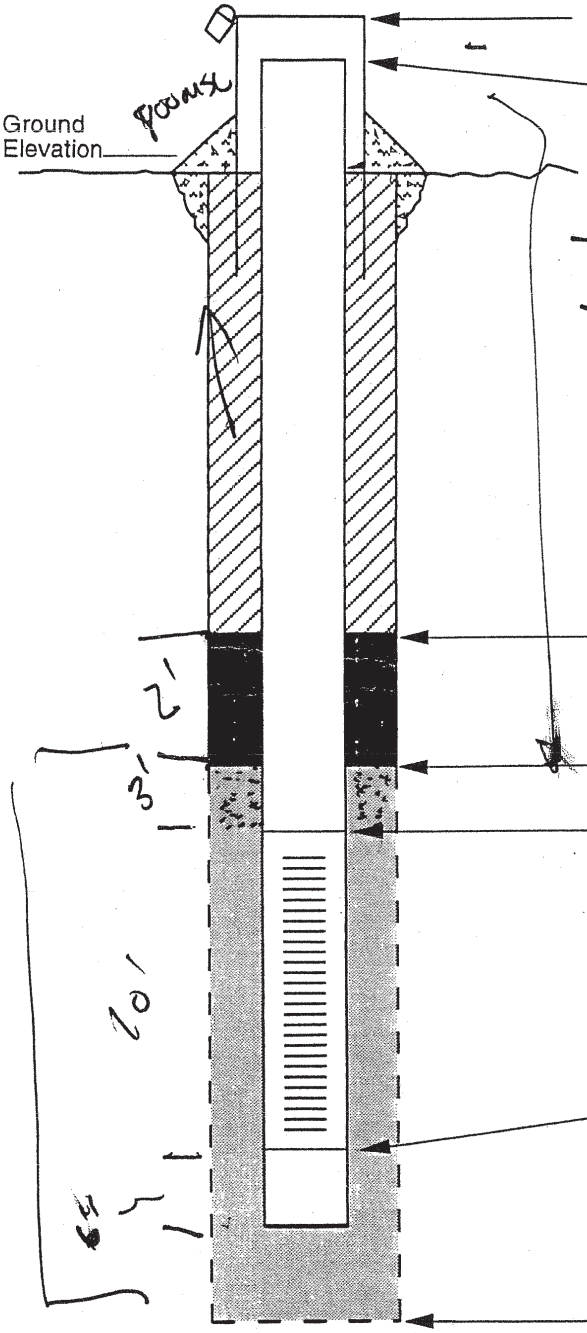
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM

Project: NYSDEC Site: Diamond Ct, Elmira Driller: North Eagle

Project No.: 361205 2028 Boring No.: MW-1 ~~Coring Method:~~

Date Installed: 10/3/05 Development Method:

Field Geologist: Dave Bufo



Elevation of Top of Surface Casing: —

Stick-up of Casing Above Ground Surface: —

Elevation of Top of Riser Pipe: —

Type of Surface Seal: Concrete — Concrete

Type of Surface Casing: Flush mount — FLUSH MOUNT

~~ID of Surface Casing:~~ —

~~Diameter of Corehole:~~ —

Riser Pipe ID: —

Type of Riser Pipe: 2" PVC SCH 40 — 2" PVC SCH 40

Type of Backfill: Cement Bentonite Grout

~~Bedrock Elevation/Depth:~~ —

Elevation of Top of Seal: —

Depth of Top of Seal: — 9.0'

Type of Seal: — Bentonite chips

Elevation of Top of Sand: —

Depth of Top of Sand: — 11.0'

Elevation of Top of Screen: —

Depth of Top of Screen: — 14.0

Type of Screen: PVC — PVC

Slot Size x Length: 10 X 10' — 10 x 10'

ID of Screen: 2" — 2"

Type of Sandpack: #1 10 — SILICA QUARTZ, OON CAS 14808-60-7

Elevation of Bottom of Screen: —

Depth of Bottom of Screen: — 23.5'

Depth of Sediment Sump with Plug: — 24'

Elevation of Bottom of Corehole: —

Depth of Bottom of Corehole: — 24.5'

FIGURE 4-6
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

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TEST BORING LOG

Project	Boring/We.	Project No.
NYSDEC	MW-2	361205.2028

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	1 of 2

Logged By	Ground Elevation	Start Date	Finish Date
JM1		~~10/3/05~~ 10/4/05	10/4/05

Drilling Contractor	Driller's Name	Rig Type
NothNagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—	24.5	12'	☐	☐	☑

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
2	0.2/2.0		6/6/12/9			Dark Black Soil			11.7			
4	1.0/2.0		5/9/11/15			0-0.5= Light Brown medium SAND 0.5-1.0= Dark Brown SAND, Some fines			9.0			
6	1.0/2.0		7/9/8/9			0-0.8= Large gravel. 0.8-1.0= Dark Brown Silty SAND.						
8	0.8/2.0		7/6/6/9			0-0.8= Dark Brown Silty SAND. MOIST. Trace organics.						
10	1.0/2.0		7/7/6/7			Dark Gray clayey layer. Course gravel		Collected DCBS002008 05xx (VOC)				
12	0.8/2.0		7/6/5/5			Medium Brown Silt + clay layer. Course Gravel. Moderately Dense.						

TEST BORING LOG

Project	Boring/We	Project No.
Diamond Cleaners	MW-2	361205.2028

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	2 of 2

Logged By	Ground Elevation	Start Date	Finish Date
JMI		~~10/3/05~~ 10/4/05	10/4/05

Drilling Contractor	Driller's Name	Rig Type
NothNagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—			☐	☐	☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests
14	1.0/2.0		2/3/4/5			~~FILL~~ 0-1.0 = Brown Sand + gravel. – very Saturated.		Collected DCBS002201205 XX (TOC)			
16	~~1.5~~/2.0		~~53/73~~/100 per 3"			Brown Silty Sand + gravel. ~~Oversaturated.~~					
18											
20	1.5/2.0		53/73/100 per 3"			Brown Silty SAND + gravel - Oversaturated.		Collected DCBS002201805 XX	1.1 ppm (Grain Size)		
22	2.0/2.0		23/29/33/18			Gray medium SAND. Saturated. Poorly Graded.			1.1 ppm		
24						EOB @ 24.5'					

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9910003(e) L 33

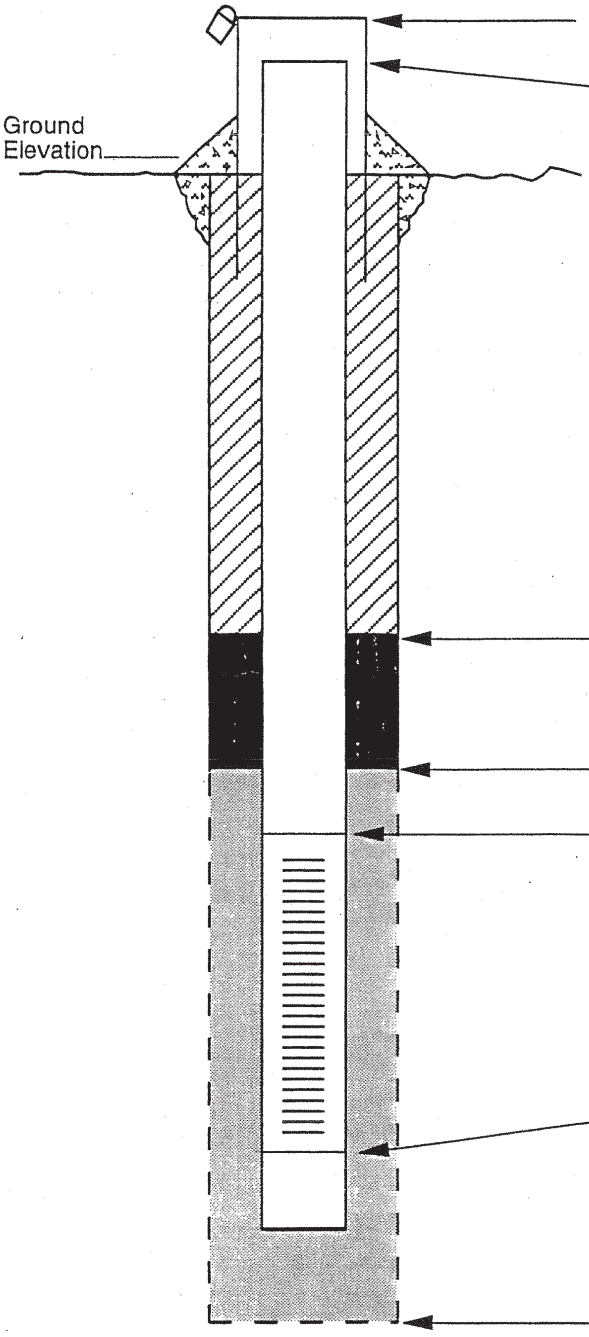
BEDRO MONITORING WELL CONSTRUCTI DIAGRAM

Project: NYSDEC Site: Diamond Cleaners Driller: Jay

Project No.: 361205 2028 Boring No.: MW-7 Coring Method: HSA

Date Installed: 10/4/05 Development Method:

Field Geologist: Jill M. Inmas



Elevation of Top of Surface Casing:

Stick-up of Casing Above Ground Surface:

Elevation of Top of Riser Pipe:

Type of Surface Seal: Concrete

Type of Surface Casing: Flush mount

ID of Surface Casing:

Diameter of Corehole:

Riser Pipe ID:

Type of Riser Pipe: 2" PVC SCH 40

Type of Backfill: Cement Bentonite Grout

Bedrock Elevation/Depth:

Elevation of Top of Seal: 9.0'

Depth of Top of Seal:

Type of Seal: Bentonite chips

Elevation of Top of Sand:

Depth of Top of Sand: 11.0'

Elevation of Top of Screen:

Depth of Top of Screen: 14'

Type of Screen: PVC

Slot Size x Length: 10 x 10'

ID of Screen: 2"

Type of Sandpack: Silica Quartz, OOO CAS 14808-60-7

Elevation of Bottom of Screen:

Depth of Bottom of Screen: 23.5'

Depth of Sediment Sump with Plug: 24.00'

Elevation of Bottom of Corehole:

Depth of Bottom of Corehole: 24.5'

FIGURE 4-6
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

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9910003(e) L 16a

TEST BORING LOG

Project	Boring/Well	Project No.
	MW-3	361205.2028

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	1 of 2

Logged By	Ground Elevation	Start Date	Finish Date
J. INSTASI		10/4/05	10/4/05

Drilling Contractor	Driller's Name	Rig Type
NothNagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—	12		☐	☐	☑

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
2	1.0/2.0		9/19/24/36			0-1.0= Gray DIRT. Course gravel.			0			
4	0.8/2.0		5/15/7/5			0-0.5= Tar laye, Black 0.5-0.8= Brown fine SAND. Course gravel.			0			
6	1.0/2.0		1/6/7/8			0-1.0= Brown, Dense, clayey SAND.			0			
8	1.0/2.0		10/12/11/10			0-1.0= Brown, clayey SAND. Some course Gravel.			0			
10	1.0/2.0		7/7/8/6			0-0.3= Tar laye. 0.3-1.0= Brown Course SAND + gravel			0			
12	0.8/2.0		8/8/7/3			0.0→0.8= Saturated, Brown Silty SAND. Collected DCBS003010065X (VOCs)			0			

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TEST BORING LOG

Project	Boring/Well	Project No.
	MW-3	

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	2 of 2

Logged By	Ground Elevation	Start Date	Finish Date
JMI		10/4/05	10/4/05

Drilling Contractor	Driller's Name	Rig Type
Nothnagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			9.25"

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—			☐	☐	☐

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
14	1.0/2.0		5/4/10/6			Brown, Gravelly SAND, Very saturated. Collected DGS003012005XX (TOC)			0			
16	~~1.0/2.0~~		~~26/27/25~~ AET			~~Gray~~						
18	1.0/2.0					Gray, Gravelly SAND. Course gravel. Saturated. Collected DGS003018005XX (Grain size)			0			
20						HIT Hard Rock/Boulder. Finally got through.						
22												
24						EOB @ 24.5'						

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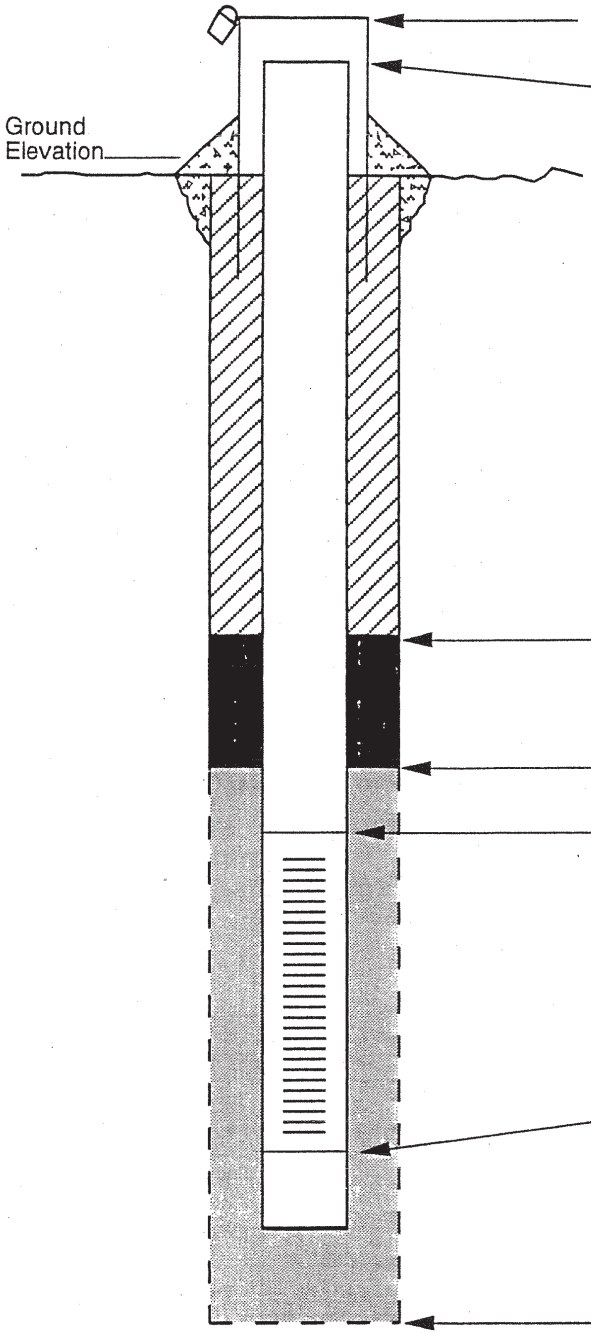
BEDRO[illegible]MONITORING WELL CONSTRUCT[illegible]DIAGRAM

Project: NYSDEC
Site: Diamond Cleaners
Driller: Jay
Project No.:
Boring No.: MW-3
Coring Method: HSA
Date Installed: 10/4/05
Development Method:
Field Geologist: J. INSTASI



Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal: Concrete
Type of Surface Casing: Flush mount

ID of Surface Casing:

Diameter of Corehole:

Riser Pipe ID:
Type of Riser Pipe: 2" PVC SCH 40

Type of Backfill: Cement Bentonite Grout

Bedrock Elevation/Depth:

Elevation of Top of Seal:
Depth of Top of Seal: 9.0'
Type of Seal: Bentonite Chips

Elevation of Top of Sand:
Depth of Top of Sand: 11.0'

Elevation of Top of Screen:
Depth of Top of Screen: 14.0

Type of Screen: PVC
Slot Size x Length: 10 x 10'
ID of Screen: 2"

Type of Sandpack: Silica Quartz, ODM CAS - 14808-60-7

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 23.5'
Depth of Sediment Sump with Plug: 24'

Elevation of Bottom of Corehole:
Depth of Bottom of Corehole: 24.5'

FIGURE 4-6
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

TEST BORING LOG

Project	Boring/Well	Project No.
NYSDEC	MW-4	

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	1 of 2

Logged By	Ground Elevation	Start Date	Finish Date
JMI		10/4/05	10/5/05

Drilling Contractor	Driller's Name	Rig Type
NothNagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25'

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—	22'	10'	☐	☐	☑

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
2	1.5/2.0		4/6/7/5			Dark Gray Silty SAND + SOIL. Some Coarse gravel			0			
4	1.5/2.0		3/4/4/4			Brown, Clay, Dense. Trace fines.			0			
6	1.0/2.0		3/5/7/7			Same as Above			0			
8	1.0/2.0		6/10/9/8			Brown, SAND + gravel. Rocks. well graded.			0			
10	0.8/2.0		6/6/7/5			Brown + Gray, Silty SAND. Trace fines. MOIST. Collected DCBSC04008 05		XX (VOCs)	0			
12	0.3/1.0		4/8/8/5			Gray Silty SAND. Saturated.			0			

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TEST BORING LOG

Project	Boring/We...	Project No.
NYSDEC	MW-4	

Client	Site	Sheet No.
NYSDEC	Diamond Cleaners	2 of 2

Logged By	Ground Elevation	Start Date	Finish Date
JMI		10/4/05	10/5/05

Drilling Contractor	Driller's Name	Rig Type
North Nagle	Jay	CME 55

Drilling Method	Protection Level	P.I.D. (eV)	Casing Size	Auger Size
HSA	D			4.25

Soil Drilled	Rock Drilled	Total Depth	Depth to Groundwater/Date	Piez	Well	Boring
	—	22'	10'	☐	☐	☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Monitoring (ppm)	Lab Tests
14	1.0/2.0		3/3/4/5			Grayish Brown Silty SAND + Gravel. Over Saturated. Collected DCBS004 01205 XX (TOC)						
16	0.5/2.0					Soupy mud mix.						
18	1.0/2.0		17/44/3/4			Gray, gravely SANDS. Course gravel. Trace Clay. ~~Soupy~~. Saturated.		Collated DCBS 004 0805 XX (Grain Size)				
20												
22						EOBO 22'						
24												

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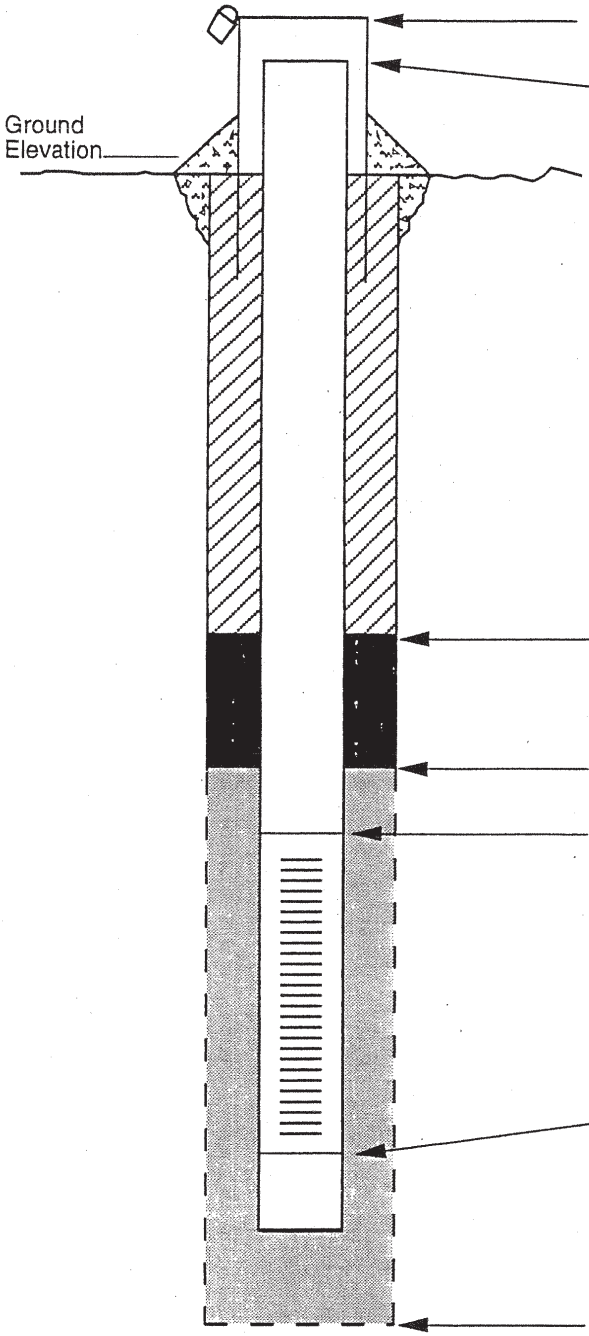
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM

Project: NYSDEC
Project No.: 361205.2028
Site: Diamond Cleaners
Boring No.: MW-4
Date Installed: 10/5/05
Driller: Jay
Coring Method: HSA
Development Method:
Field Geologist:



Elevation of Top of Surface Casing:
Stick-up of Casing Above Ground Surface:
Elevation of Top of Riser Pipe:
Type of Surface Seal: Concrete
Type of Surface Casing: Flush mount

ID of Surface Casing: —

Diameter of Corehole: —

Riser Pipe ID:
Type of Riser Pipe: 2" PVC Sch 40

Type of Backfill: Cement Bentonite Grout

Bedrock Elevation/Depth:

Elevation of Top of Seal:
Depth of Top of Seal: 6.5'
Type of Seal: Bentonite chips

Elevation of Top of Sand:
Depth of Top of Sand: 8.5
Elevation of Top of Screen:
Depth of Top of Screen: 11.5

Type of Screen: PVC
Slot Size x Length: 10 x 10'
ID of Screen: 2"
Type of Sandpack: SILICA QUARTZ, CON CAS 14808-60-7

Elevation of Bottom of Screen:
Depth of Bottom of Screen: 21.0
Depth of Sediment Sump with Plug: 21.5

Elevation of Bottom of Corehole:
Depth of Bottom of Corehole: 22'

FIGURE 4-6
BEDROCK MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

Project: Diamond Cleaners Site		Boring/Well No.: MW-6	Proiect No.: 361205207[illegible]
Client: NYSDEC	Site:	Sheet No.: 1 of 1	
Logged By: T. Longley	Ground Elevation:	Start Date: 7-22-08	Finish Date: 7-22-08
Drilling Contractor: Nothnagle	Driller's Name: KEVIN BUSH	Rig Type: BK-81	
Drilling Method: HSA	Protection Level: D	P.I.D. (eV): 580B	Casing Size: —	Auger Size: 4.25"
Soil Drilled: 20'	Rock Drilled: —	Total Depth: 20'	Depth to Groundwater/Date: 8.20' B.T.O.R. / 7-24-08	Piez ☐ Well ☐ Boring ☐

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
9				DRILL W/ OUT SAMPLING to 10'; USE MACRO CORE SAMPLER				
10–14	S-1 No Recovery	20 Blows	—	No Recovery due to stones/gravel stuck in lead end. Pushed very easily through 4'				
15–18	S-2 15"/48"	119 Blows	—	Gray to brownish gray to olive gray SAND & SILT; gravel ~5%, sand ~40%, silt(& clay) ~55% TILL - dense, saturated —	ML/SM	0	0	—
19–22	S-3 24"/48"	?	—	Very dense resistance to sampler; Medium gray SILT; sandy & clayey; w/ gravel; TILL - V. dense, non-plastic, moist	ML	0	0	—

MACTEC
511 Congress Steet
Portland, ME 04101

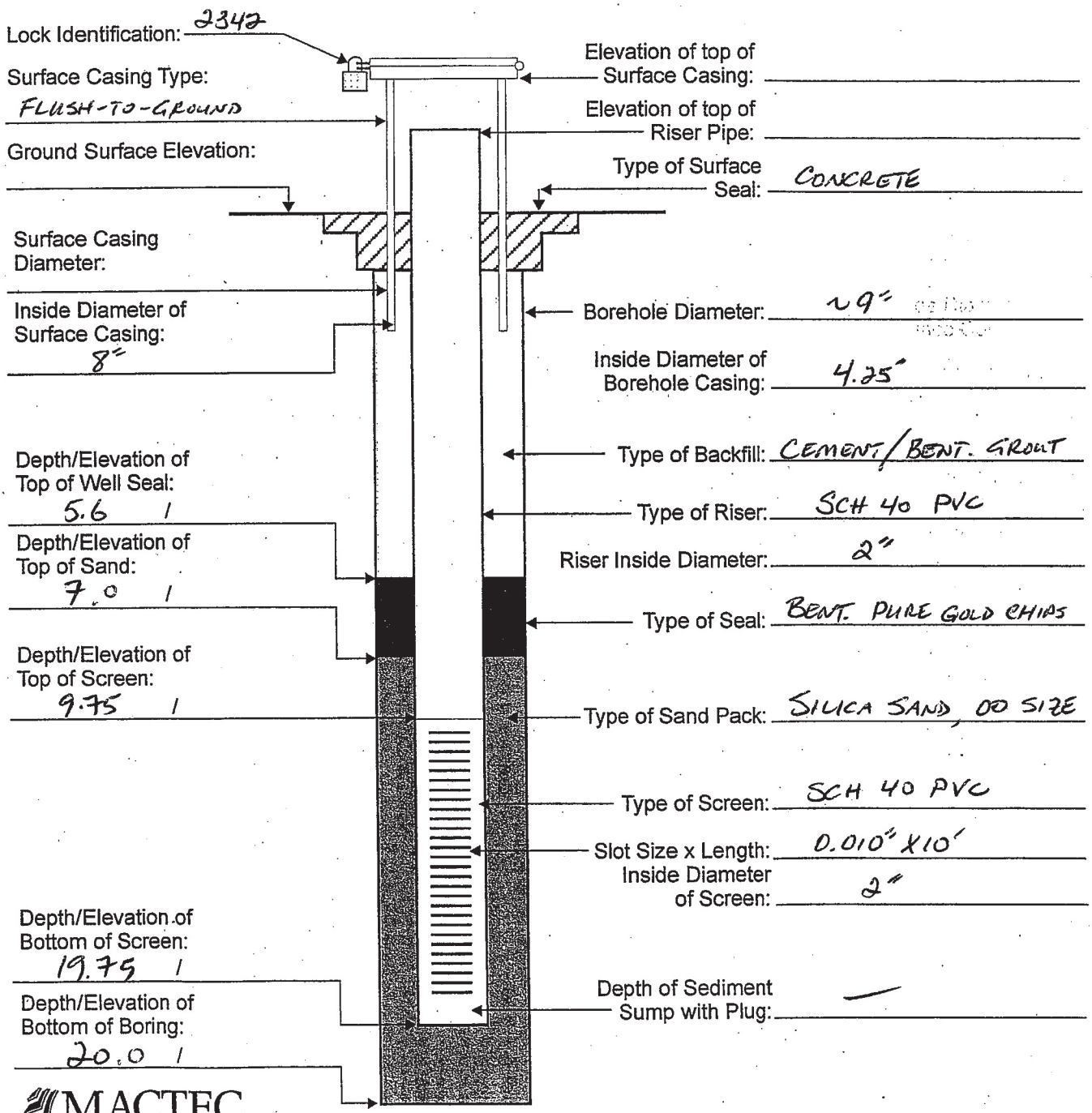
Checked by CRJ

Overburden Well Construction Diagram

Well No.: MW-6

Project No.: 3612062070	Project Name: Diamond Cleaners Site		
	Project Area:		
Contractor: Nothnagle	Driller: KEVIN BUSH	Method: Hollow Stem Auger	
Logged By: T. Longley		Date Started: 7-22-08	Completed: 7-22-08
Checked By: CRS	Date: 8/1/08	Well Development Date:	7-25-08

Not To Scale



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511 Congress Street
Portland, ME 04101

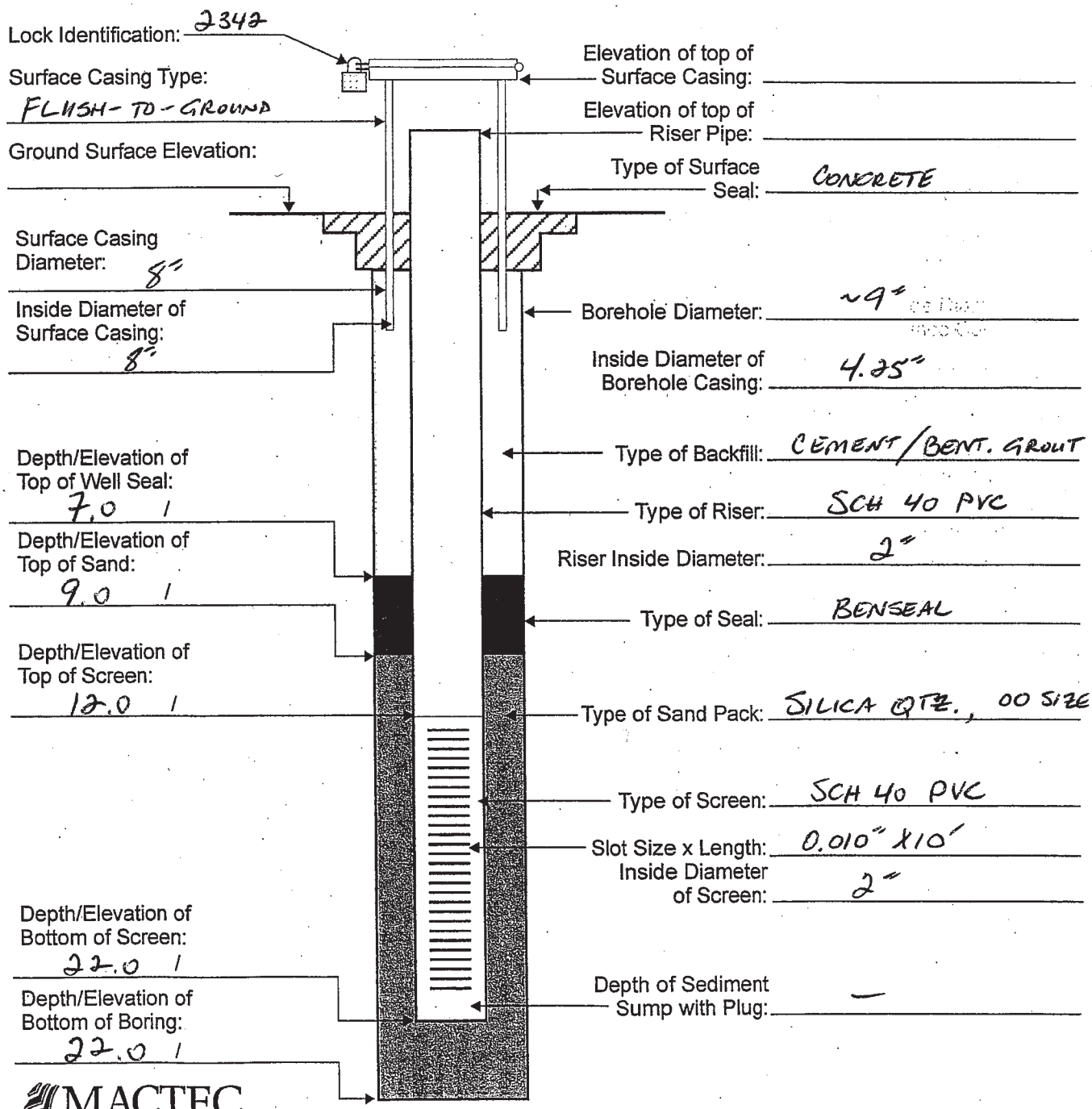
PORT2007022f.cdr

Overburden Well Construction Diagram

Well No.: MW-7

Project No.: 3612062070	Project Name: Diamond Cleaners Site		
	Project Area:		
Contractor: Nothnagle	Driller: KEVIN BUSH	Method: Hollow Stem Auger	
Logged By: T. Longley		Date Started: 7-23-08	Completed: 7-23-08
Checked By: CPS	Date: 8/1/08	Well Development Date:	7-24-08

Not To Scale



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Portland, ME 04101

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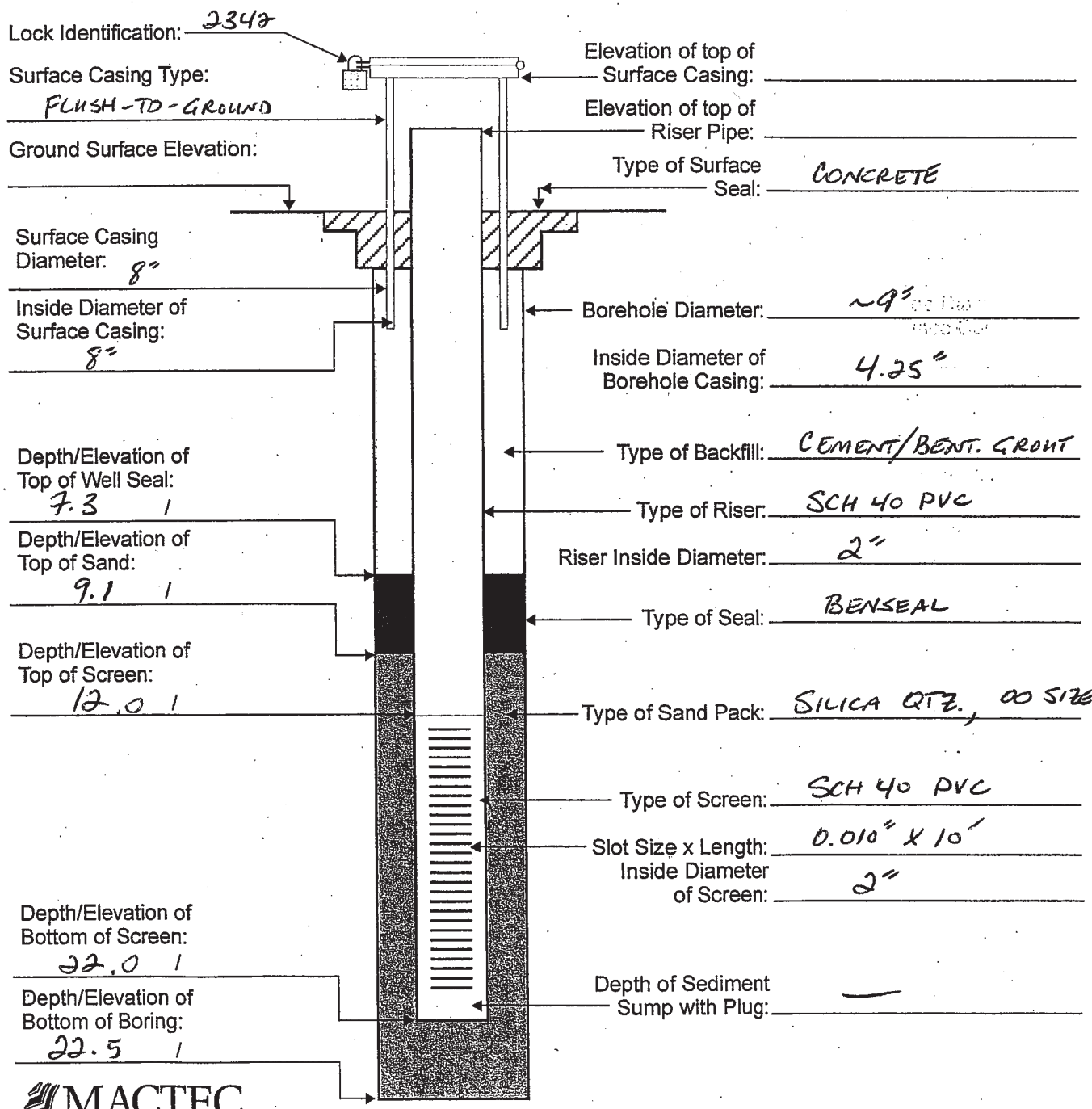
Overburden Well Construction Diagram

Well No.: MW-8

Project No.: 3612062070	Project Name: Diamond Cleaners Site		
	Project Area:		
Contractor: Nothnagle	Driller: KEVIN BUSH	Method: Hollow Stem Auger	
Logged By: T. Longley		Date Started: 7-23-08	Completed: 7-23-08
Checked By: CBS	Date: 8/1/08	Well Development Date: 7-25-08	

Not To Scale



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511 Congress Street
Portland, ME 04101

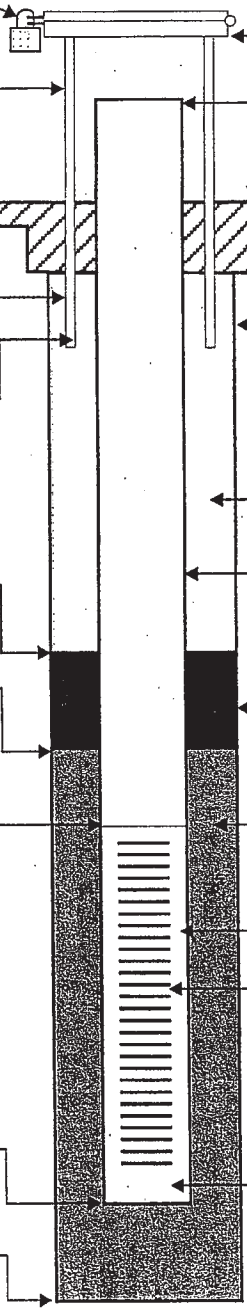
PORT2007022f.cdr

Overburden Well Construction Diagram

Well No.: MW-9

Project No.: 3612062070	Project Name: Diamond Cleaners Site		
	Project Area:		
Contractor: Nothnagle	Driller: KEVIN BUSH	Method: Hollow Stem Auger	
Logged By: T. Longley		Date Started: 7-21-08	Completed: 7-21-08
Checked By: CRT	Date: 8/1/08	Well Development Date:	

Not To Scale



Lock Identification: 2342

Surface Casing Type: FLUSH-TO-GROUND

Ground Surface Elevation:

Surface Casing Diameter: 8"

Inside Diameter of Surface Casing: 8"

Depth/Elevation of Top of Well Seal: 6.8 /

Depth/Elevation of Top of Sand: 8.6 /

Depth/Elevation of Top of Screen: 11.7 /

Depth/Elevation of Bottom of Screen: 21.7 /

Depth/Elevation of Bottom of Boring: 22.0 /

Elevation of top of Surface Casing: _____

Elevation of top of Riser Pipe: _____

Type of Surface Seal: CONCRETE

Borehole Diameter: 12"

Inside Diameter of Borehole Casing: 4.25"

Type of Backfill: CEMENT/BENT. GROUT

Type of Riser: SCH 40 PVC

Riser Inside Diameter: 2"

Type of Seal: BENSEAL

Type of Sand Pack: SILICA QTZ., OO SIZE

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

Inside Diameter of Screen: 2"

Depth of Sediment Sump with Plug: —

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Portland, ME 04101

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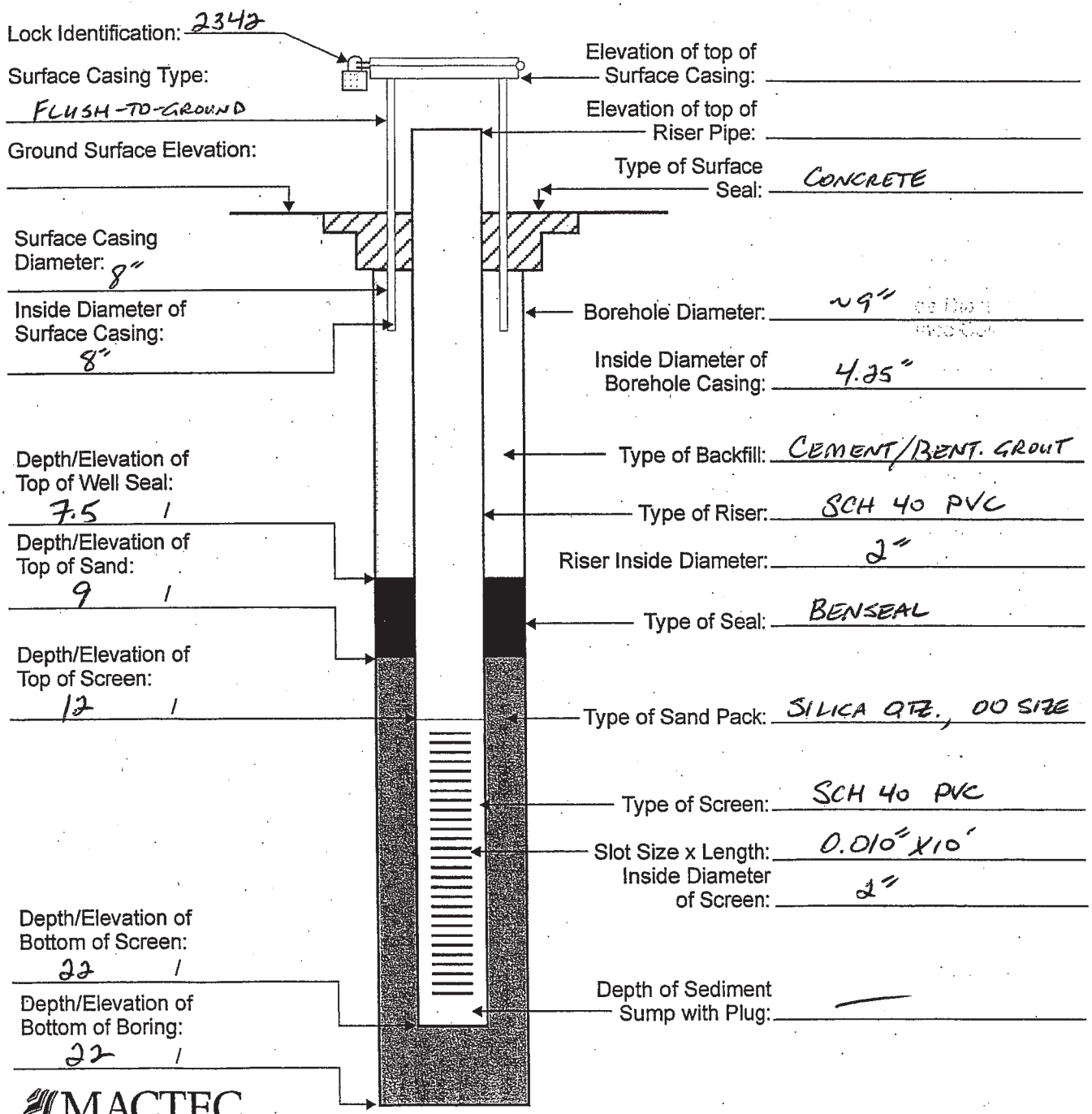
Overburden Well Construction Diagram

Well No.: MW-10

Project No.: 3612062070	Project Name: Diamond Cleaners Site		
	Project Area:		
Contractor: Nothnagle	Driller: KEVIN BUSH	Method: Hollow Stem Auger	
Logged By: T. Longley		Date Started: 7-22-08	Completed: 7-22-08
Checked By: CRS	Date: 8/1/08	Well Development Date: 7-24-08	

Not To Scale



MACTEC
511 Congress Street
Portland, ME 04101

PORT2007022f.cdr

NOTHNAGLE DRILLING, INC.
1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-12
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 8/29/12 Completed 8/29/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 11'6"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist (saturated soils noted @ 12'0")
15										Brown saturated
20										Brown saturated
										22'0"
25										Boring terminated at 22'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
30										
35										
40										

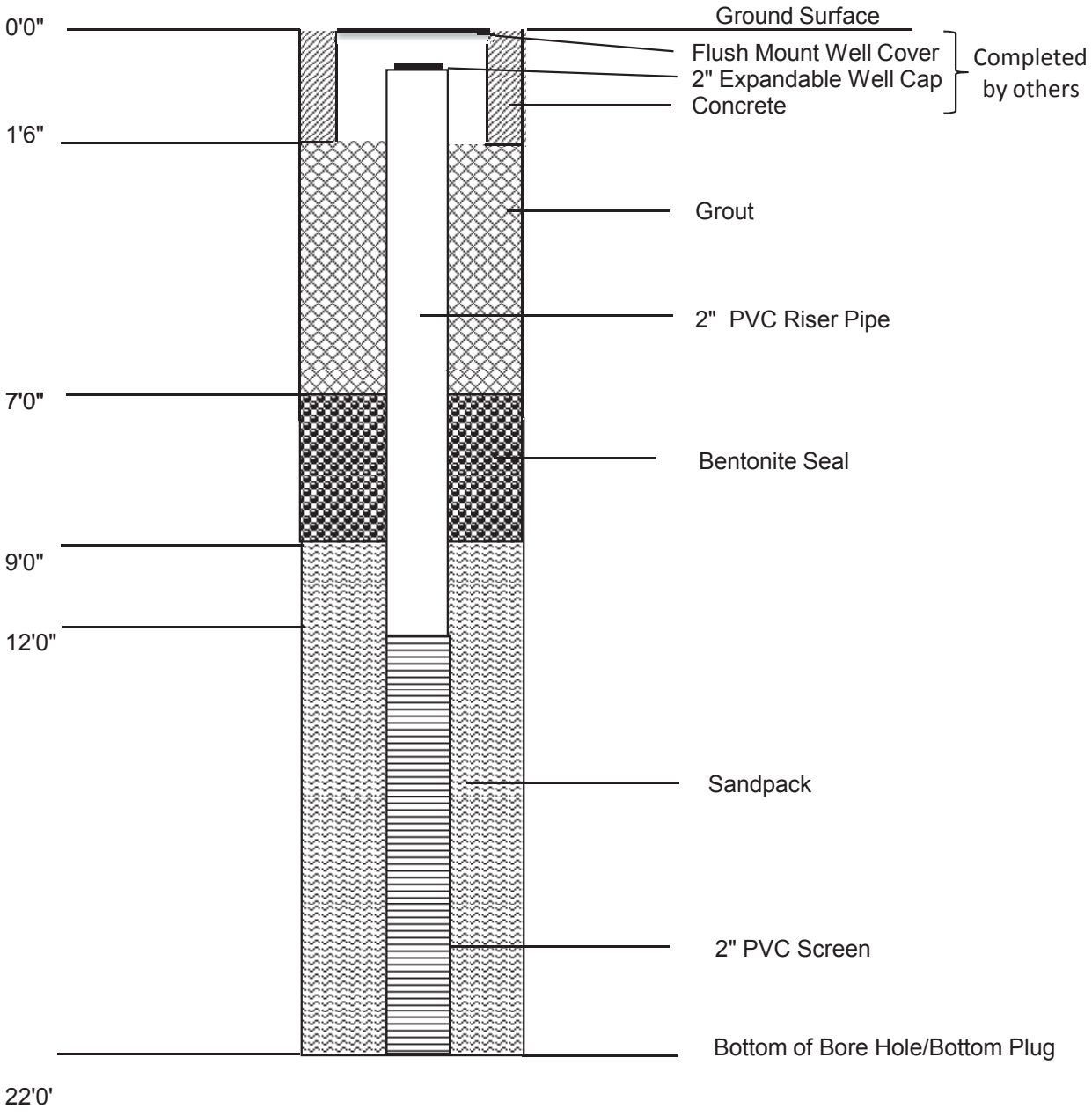
N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

NOTHNAGLE *DRILLING, INC.*

1821 Scottsville-Mumford Road
Scottsville, New York 14546
(585) 538-2328
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-12
Well Construction Detail



Note: Drawing Not To Scale

NOTHNAGLE DRILLING, INC.
1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-13
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation ____ Start 8/29/12 Completed 8/29/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector ____
Water Level - At Completion 11'6"
Seasonal and climate changes may alter observed water levels.

	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
0										
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist
15										Brown saturated
20										Brown saturated
										22'0"
25										Gray wet clay and silt
										Gray wet
										Gray wet 29'0"
30										
35										Boring terminated at 29'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
40										

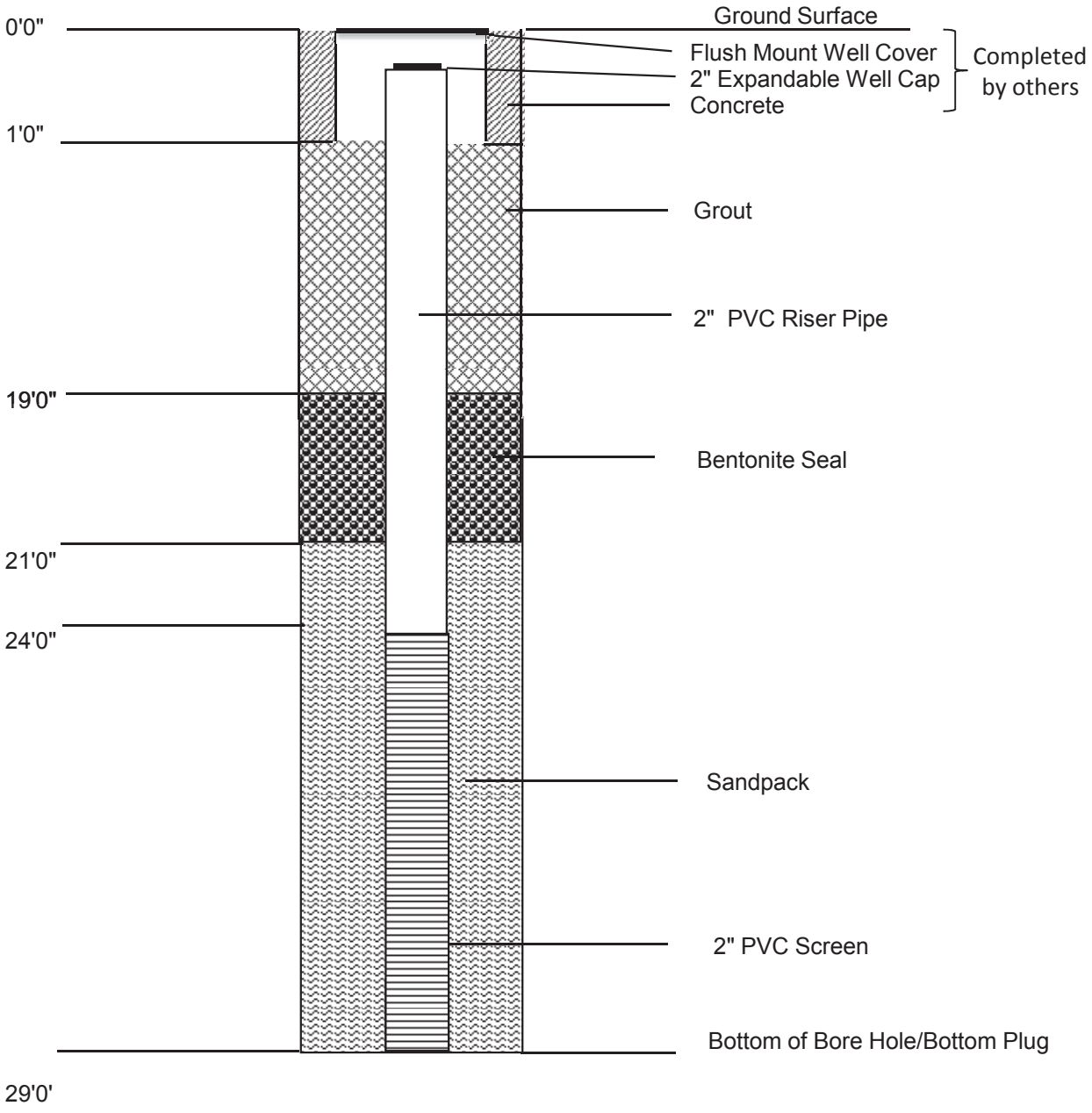
N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

NOTHNAGLE *DRILLING, INC.*

1821 Scottsville-Mumford Road
Scottsville, New York 14546
(585) 538-2328
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-13
Well Construction Detail



Note: Drawing Not To Scale

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1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-14
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 8/29/12 Completed 8/29/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 12'3"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
5										Misc. (fill)
										8'0"
10										Brown moist coarse to fine sand and coarse to fine gravel, some silt
										Brown saturated
15										Brown saturated
20										Brown saturated
										Brown saturated 22'0"
25										Boring terminated at 22'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
30										
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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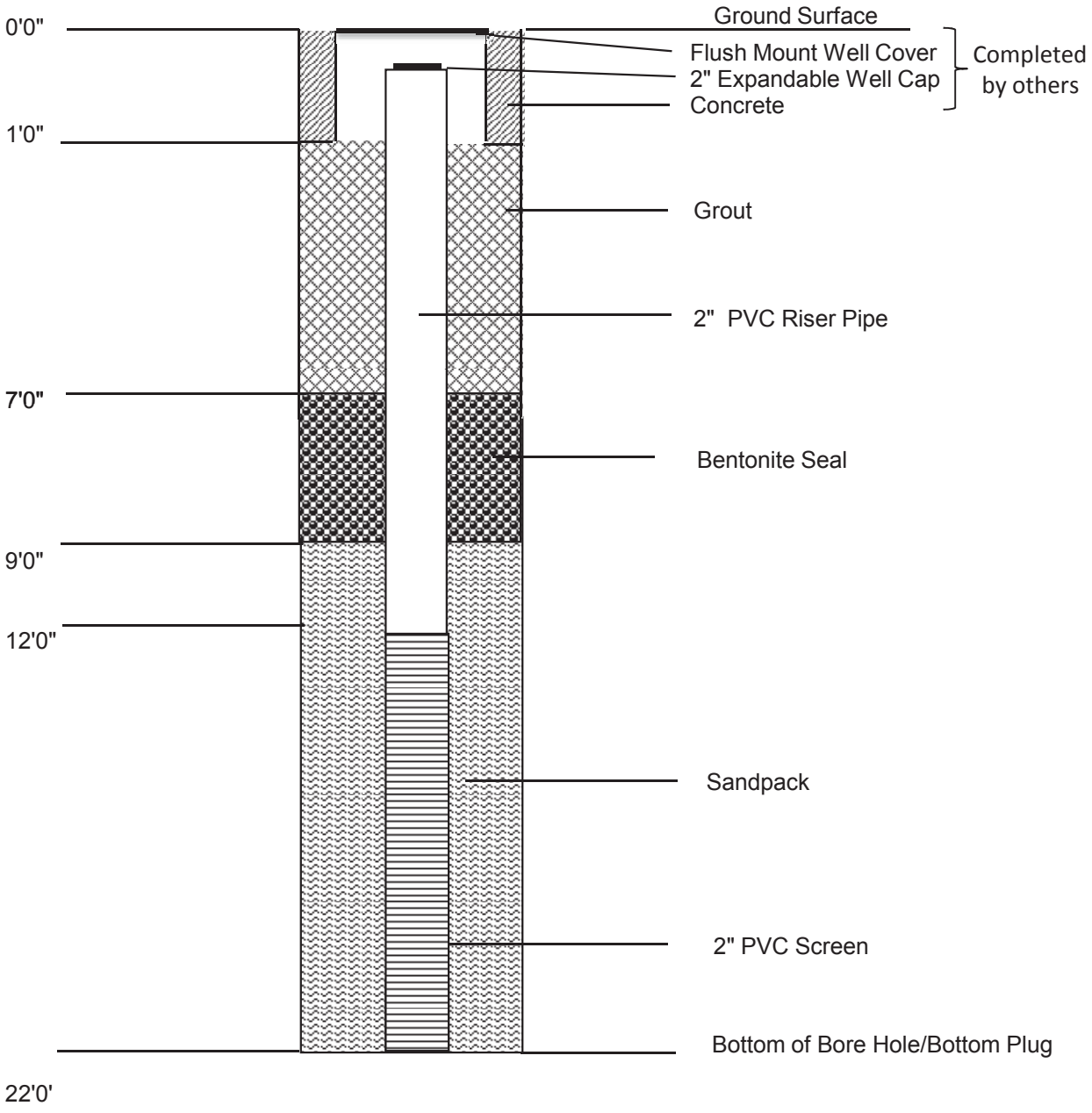
Scottsville, New York 14546
(585) 538-2328
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-14
Well Construction Detail



Note: Drawing Not To Scale

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Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-16
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 8/30/12 Completed 8/30/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 11'9"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
5										Misc. (fill)
										8'0"
10										Brown moist coarse to fine sand and coarse to fine gravel, some silt
										Brown saturated
15										Brown saturated
20										Brown saturated
										Brown saturated 22'0"
25										Boring terminated at 22'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
30										
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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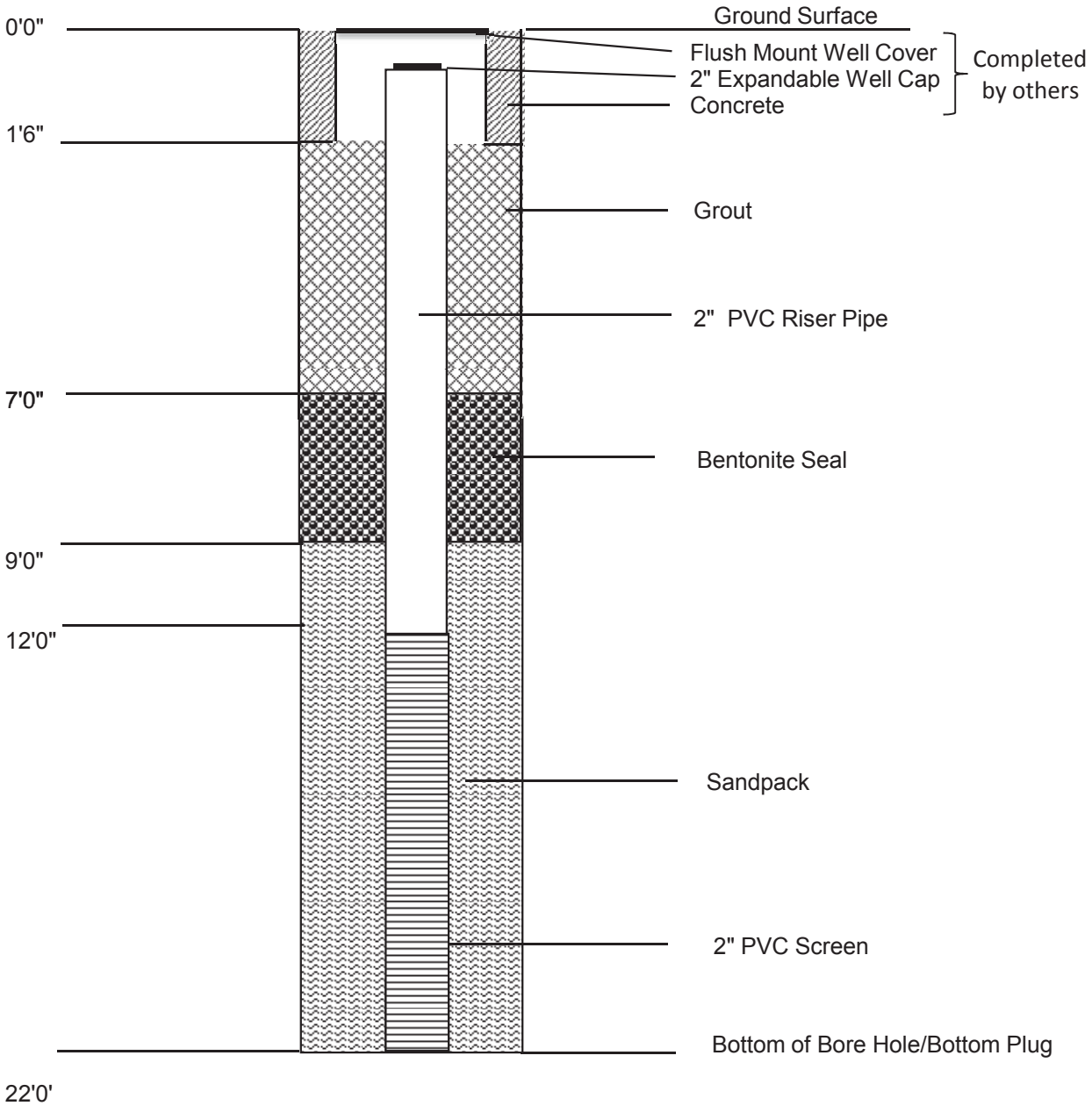
Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-16
Well Construction Detail



Note: Drawing Not To Scale

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Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-17
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 8/30/12 Completed 8/30/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 11'9"
Seasonal and climate changes may alter observed water levels.

	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
0										
5										Misc. (fill)
										8'0"
10										Brown moist coarse to fine sand and coarse to fine gravel, some silt
										Brown saturated
15										Brown saturated
20										Brown saturated
25										25'0"
										Gray wet clay and silt
30										Gray wet 29'0"
35										Boring terminated at 29'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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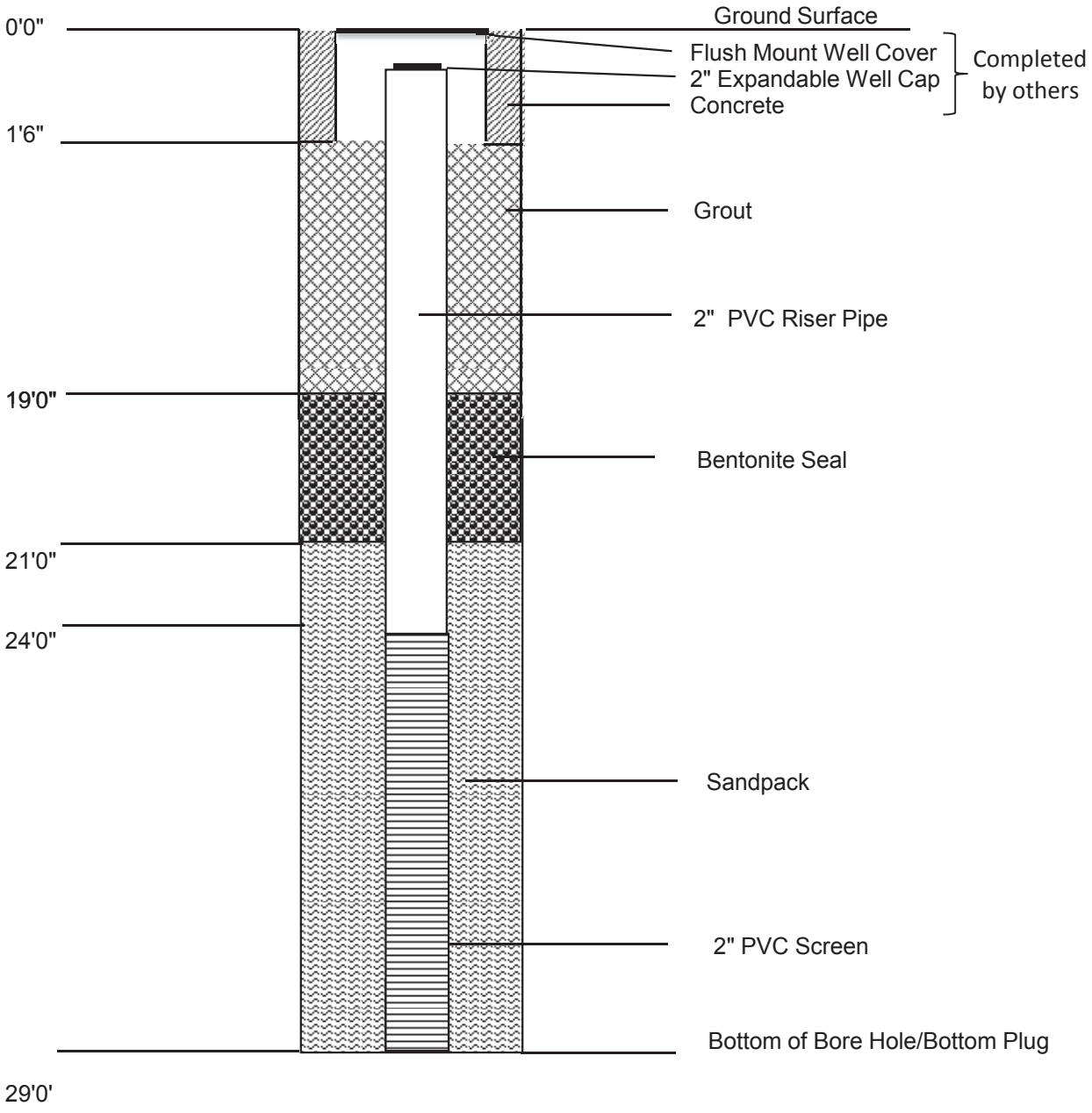
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-17
Well Construction Detail



Note: Drawing Not To Scale

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Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-18
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 9/5/12 Completed 9/5/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 12'0"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist
										Brown saturated
15										Brown saturated
20										Brown saturated
										Brown saturated 22'0"
25										Boring terminated at 22'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
30										
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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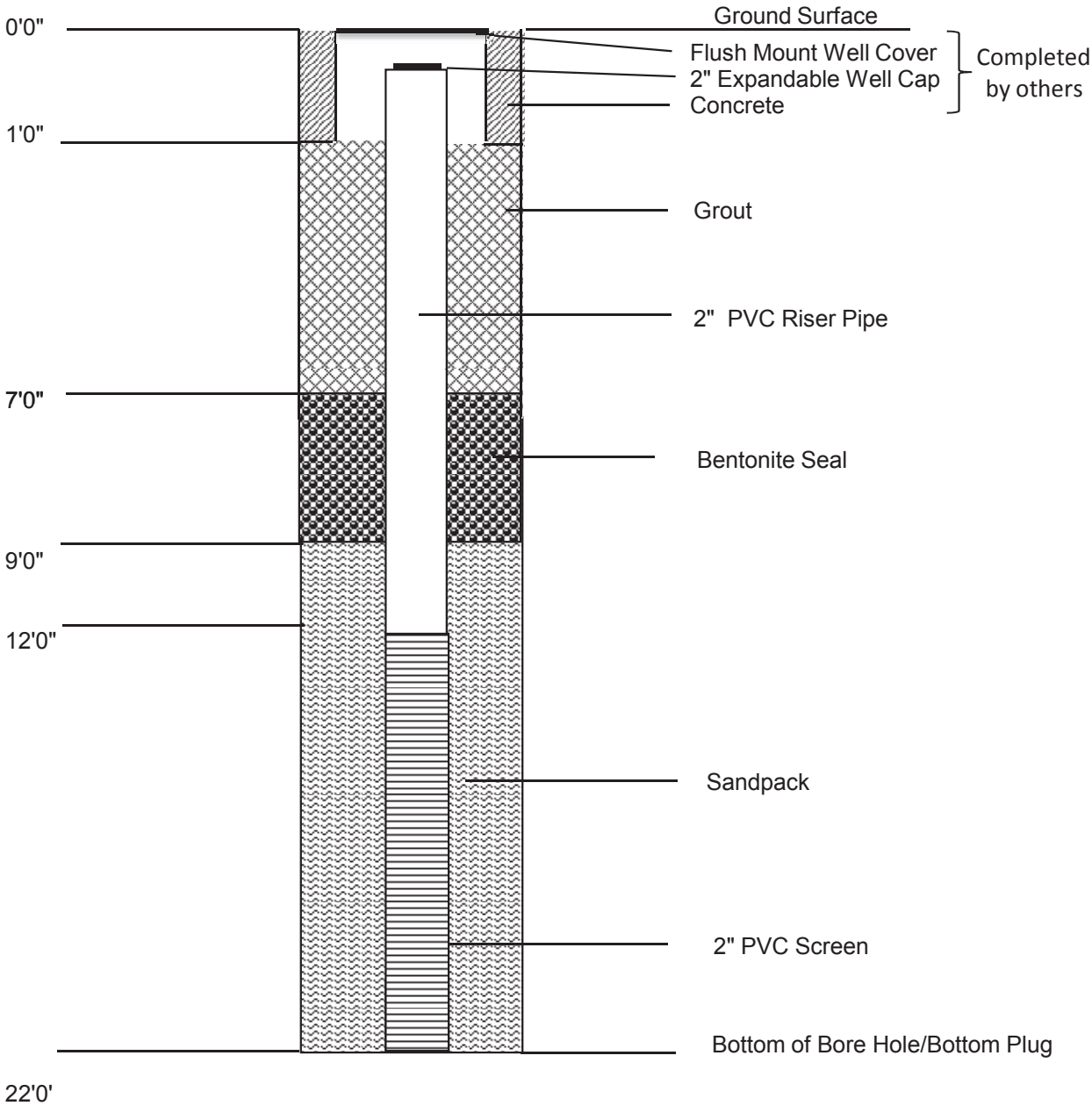
(585) 538-2328
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-18
Well Construction Detail



Note: Drawing Not To Scale

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1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-19
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 9/5/12 Completed 9/5/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 12'0"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0" / 6"	6" / 12"	12" / 18"	18" / 24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
										Brown moist coarse to fine sand and coarse to fine gravel, some silt
5										
10										Brown moist
										Brown saturated
15										Brown saturated
20										Brown saturated
										24'0"
25										Gray wet fine sand and silt, some clay
										Gray wet 29'0"
30										Boring terminated at 29'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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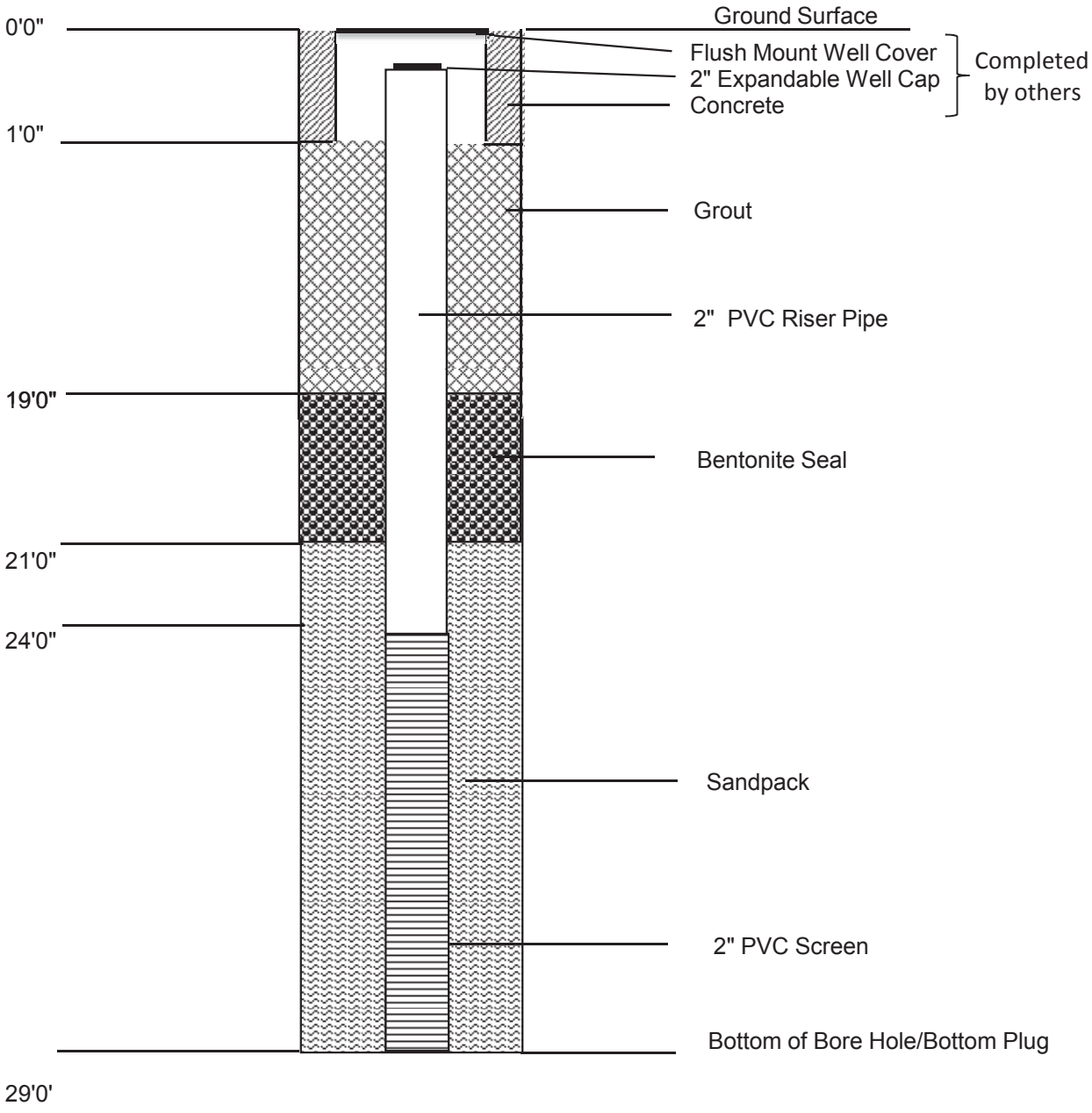
Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-19
Well Construction Detail



Note: Drawing Not To Scale

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Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-20
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 9/5/12 Completed 9/5/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 11'5"
Seasonal and climate changes may alter observed water levels.

	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
0										
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist
										12'0"
										Gray saturated pea gravel
15										Gray saturated
20										Gray saturated
										Gray saturated 22'0"
25										
30										Boring terminated at 22'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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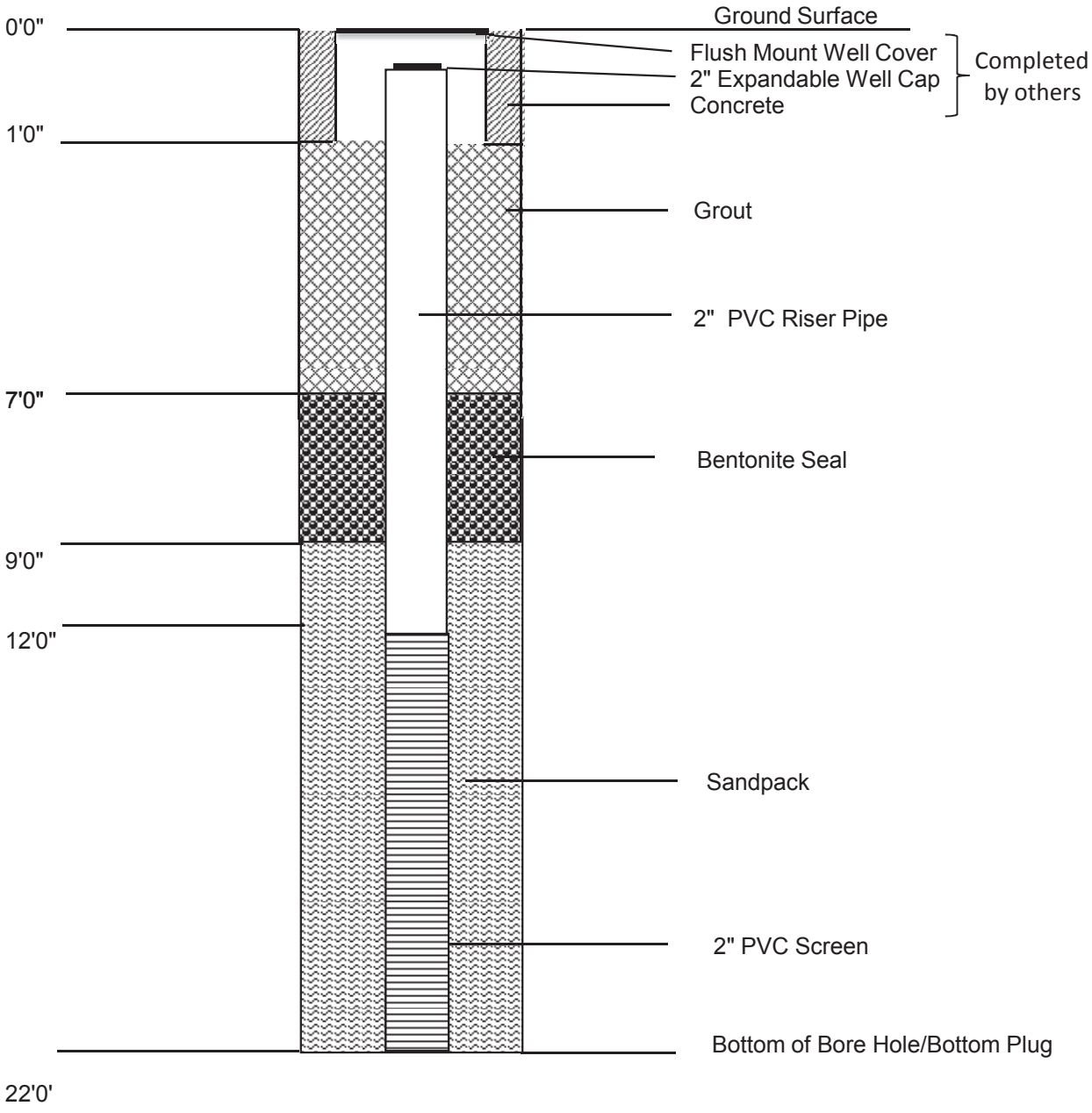
Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-20
Well Construction Detail



Note: Drawing Not To Scale

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1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-21
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 9/6/12 Completed 9/6/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 11'5"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0" / 6"	6" / 12"	12" / 18"	18" / 24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist
										12'0"
										Gray saturated pea gravel
15										Gray saturated
20										Gray saturated
25										Gray saturated
										Gray saturated 29'0"
30										Boring terminated at 29'0"
35										Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

NOTHNAGLE *DRILLING, INC.*

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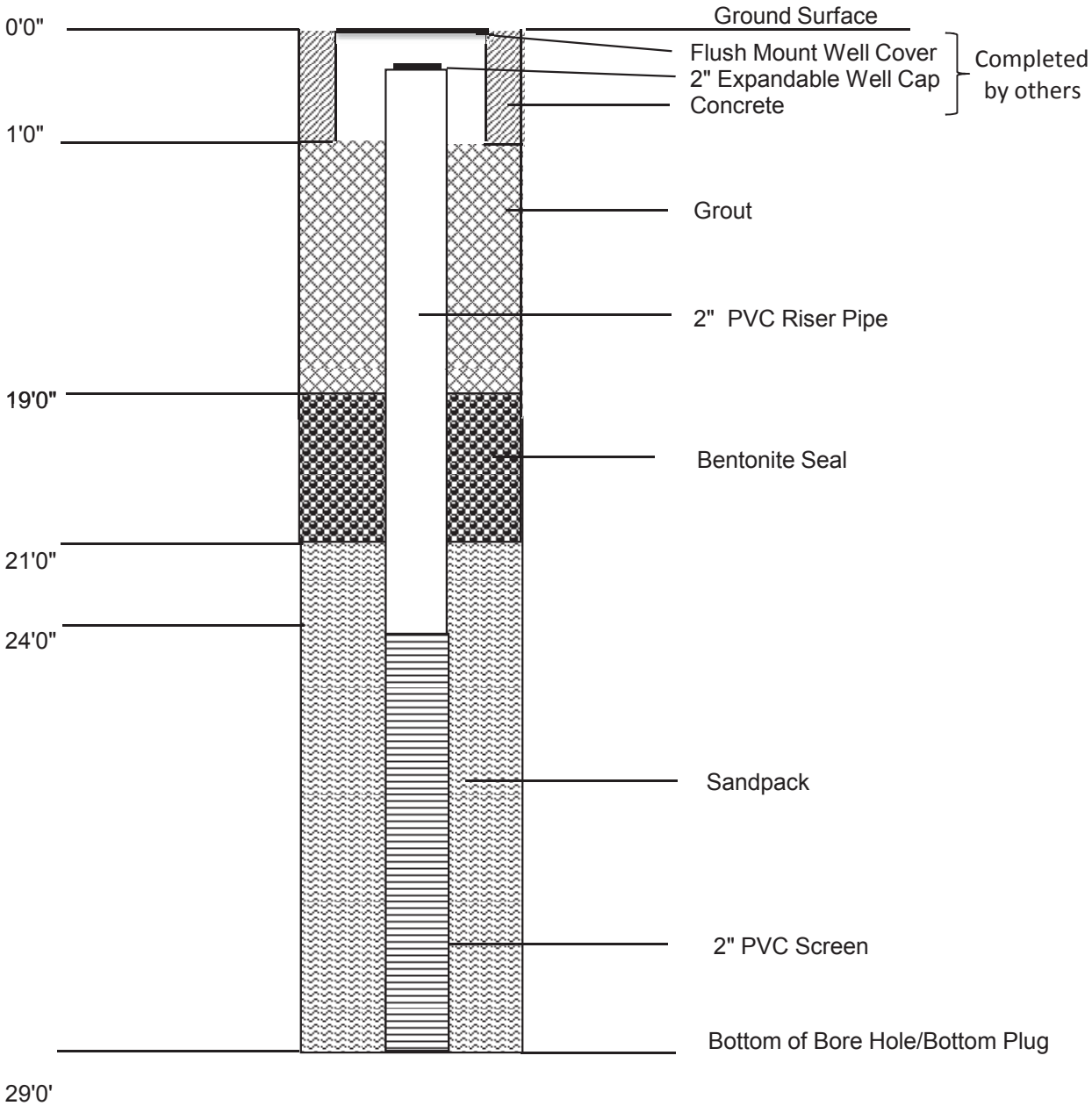
Scottsville, New York 14546
(585) 538-2328
Fax (585) 538-2357

Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-21
Well Construction Detail



Note: Drawing Not To Scale

NOTHNAGLE DRILLING, INC.
1821 Scottsville-Mumford Road
Scottsville, New York 14546
Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-22
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation ____ Start 9/6/12 Completed 9/6/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector ____
Water Level - At Completion 12'6"
Seasonal and climate changes may alter observed water levels.

	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
0										
5										Brown moist coarse to fine sand and coarse to fine gravel, some silt
10										Brown moist
										12'0"
										Brown saturated
15										Brown saturated
										18'0"
										Gray wet fine sand and silt,
20										some clay
										Gray wet 22'0"
25										
										Boring terminated at 22'0"
										Advanced test boring with 4 1/4" H.S.A.
										well installed in completed
30										bore hole. See attached well detail.
										Soil classifications made visually from
										auger cuttings only.
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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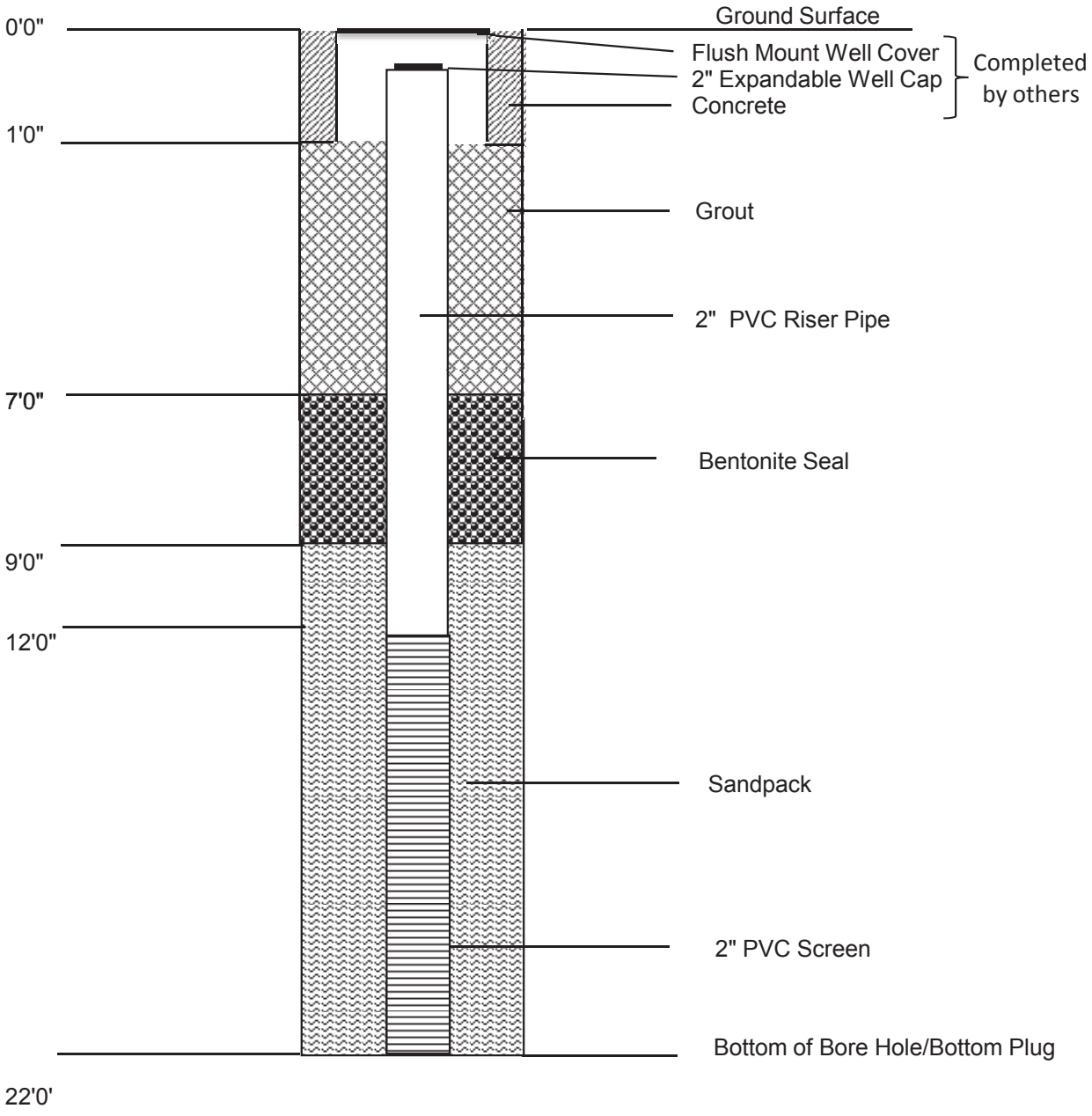
Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-22
Well Construction Detail



Note: Drawing Not To Scale

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1821 Scottsville-Mumford Road
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Phone (585) 538-2328
Fax (585) 538-2357

Test Boring No. MW-23
Page 1 of 1
ND Job # 123892
OP-TECH Job # RD80044
Site # 808030

Project Former Diamond Cleaners, 717 Lake Street, Elmira, New York
Client OP-TECH, 3255 Brighton Henrietta Townline Road, Suite 102 Back, Rochester, New York 14623
Elevation _____ Start 9/6/12 Completed 9/6/12 Driller N. Short
Water Level - During Drilling 12'0" Inspector _____
Water Level - At Completion 12'6"
Seasonal and climate changes may alter observed water levels.

0	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No.	Depth	Visual Soil and Rock Information Remarks
										Brown moist coarse to fine sand and coarse to fine gravel, some silt
5										
10										Brown moist
										Brown saturated 12'0"
15										Brown saturated
										18'0"
20										Gray wet fine sand and silt, some clay
25										Gray wet
										Gray wet 29'0"
30										Boring terminated at 29'0" Advanced test boring with 4 1/4" H.S.A. well installed in completed bore hole. See attached well detail. Soil classifications made visually from auger cuttings only.
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow
C=No. of Blows to Drive ___ Casing ___ with ___ lb. Wt. ___ Ea. Blow
Transitional Depths are Estimated Based on Field Observations

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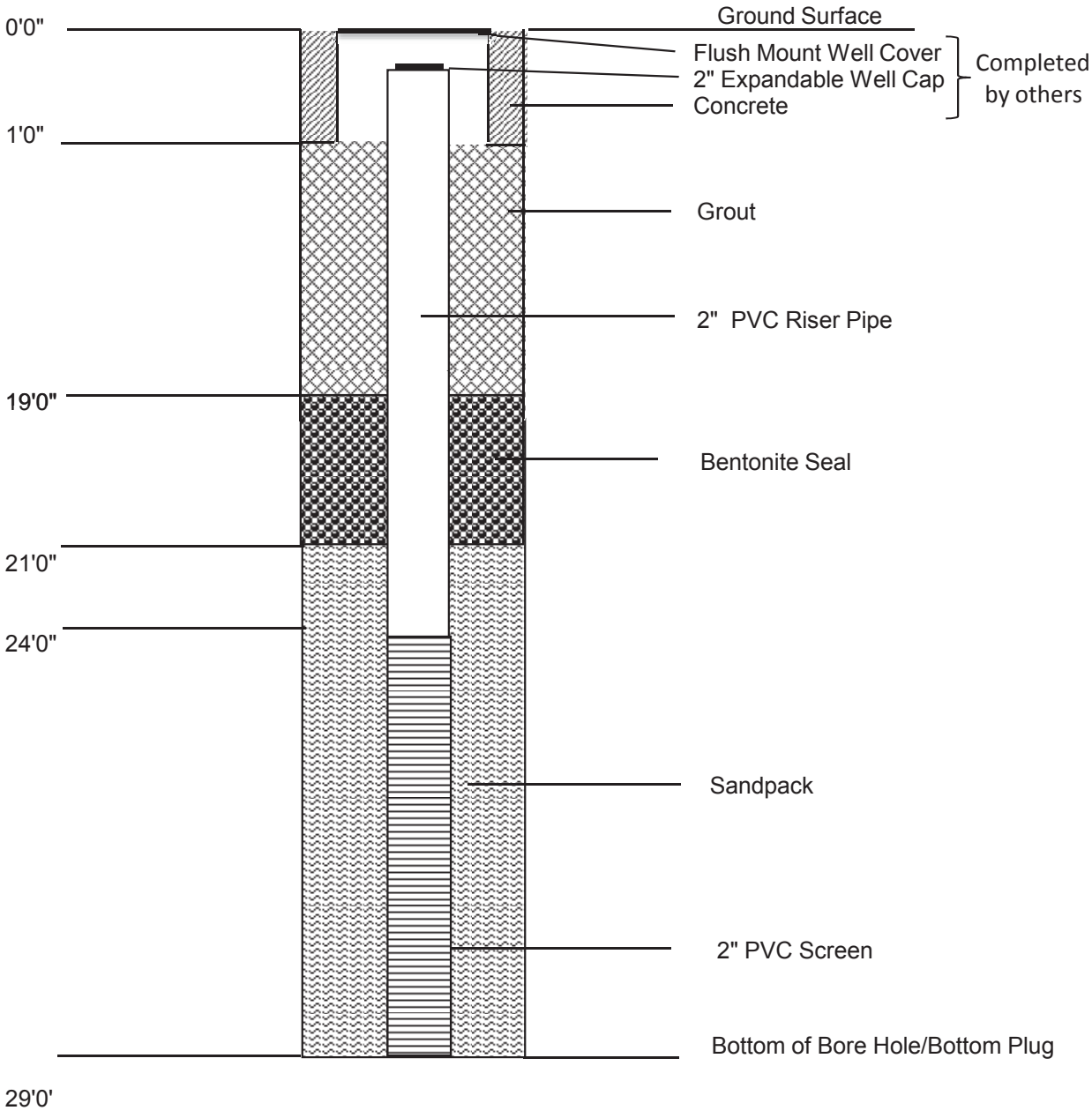
Former Diamond Cleaner's
717 Lake Street
Elmira, New York
Site No.: 808030
Op-Tech Job # RD80044
ND Job #123892

MW-23
Well Construction Detail



Note: Drawing Not To Scale

TEST BORING LOG

Project: Diamond Cleaners Phase I		Boring/Well No.: GW-002	Project No.: 36120520.28/2.1
Client: NYSDEC	Site: Diamond Cleaners, ELMIRA NY		Sheet No. 1 of 1
Logged By: J. INSTA SI	Ground Elevation	Start Date: 6/27/05	Finish Date: 6/27/05
Drilling Contractor: Noth Nagle	Driller's Name: Steve		Rig Type: Geoprobe 6610 DT
Drilling Method: Direct Push	Protection Level: D	P.I.D. (eV)	Casing Size / Auger Size
Soil Drilled / Rock Drilled	Total Depth: 24'	Depth to Groundwater/Date	Piez ☐ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	Sample Type	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Graphic Log	Sample Description	USCS Group Symbol	Notes on Drilling	Monitoring (ppm): PI Meter Field Scan	PI Meter Head Space		Lab Tests
2	0-3'					0-1' = Dark Black, SILTY SAND. (TAR) 1-2" = Brown SAND + SILT. Some Course gravel.			NA			
4												
6	4-5'					4-5' = Grayish Brown, SILTY SAND. Some Course gravel.						
8												
10	8-9'					8-9' = Brown, Fine SAND + SILT. Some large gravel + rocks. Slightly Saturated.			NA			
12												
14	12-15'					12-15' = Brown, Fine SAND + SILT. Some Black Stain layers. Slightly Saturated. Some Course gravel.			NA			
16												
18												
20												
22												
24		DCGW00202405XX										

NOTE: PID was in "Background" mode. Had to disregard PID results. Recalibrated PID and is now working fine.

Harding Lawson Associates

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

This site specific quality assurance project plan (QAPP) was created to ensure that field events conducted at the Diamond Cleaners Site in Elmira, NY produce reliable data that meets the overall project objectives. Quality assurance and quality control (QA/QC) procedures outlined in this QAPP relate to chemical sampling and laboratory analysis as required under the Site Management Plan (SMP).

1.0 General Procedures and Practices.

The general procedures and practices used to conduct the long term monitoring (LTM) scope of work at the Diamond Cleaners are outlined below:

Data Quality Objectives

Site activities will be completed in accordance with New York State Department of Environmental Conservation (NYSDEC) regulations and guidelines. Regulations and guidelines provided by the United States Environmental Protection Agency (USEPA) may also be applied. When planning field programs and reporting, requirements and procedures described in the following documents will be used:

- DER-10 "Technical Guidance for Site Investigation and Remediation"; New York Department of Environmental Conservation; Division of Environmental Remediation; May 2010.
- 6 NYCRR PART 375 "Environmental Remediation Program"; New York Department of Environmental Conservation; Division of Environmental Remediation; October 2006.
- Title 6, Part 371 "Identification and Listing of Hazardous Wastes"; New York Codes, Rules, and Regulations; September 2006.
- Title 6, Part 700-705 "Water Quality Regulations Surface Water and Groundwater Classifications and Standards"; New York Codes, Rules, and Regulations; August 1999.
- Technical and Operational Guidance Series (TOGs) 1.1.1. "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations"; New York Department of Environmental Conservation; Division of Water; June 1998.
- USEPA 542-S-02-001 "Ground-Water Sampling Guidelines for Superfund and Resource Conservation and Recovery Act (RCRA) project Managers"; United State Environmental Protection Agency (USEPA); Office of Solid Waste and Emergency Response; May 2002.

- "Analytical Services Protocols (ASP)"; New York Department of Environmental Conservation; June 2000; revised July 2005.

The data quality objectives for the groundwater sampling are for laboratory analytical detection limits to meet the groundwater standards and guidance values as presented in TOGs 1.1.1.

Field Quality Control

QC procedures have been established for the planned field activities. Field QC activities include the use of calibration standards for pH, specific conductance, temperature, and photoionization detectors (PIDs), which are described in subsequent sections.

A routine process of collecting field QC samples will be incorporated into the field sampling program unless otherwise directed by the NYSDEC project manager. Field QC samples to be submitted to the laboratory may include:

- trip blanks
- equipment blanks
- field duplicates
- matrix spikes

These samples provide a quantitative basis for evaluating the data reported.

Trip Blanks. Trip blanks are required for assessing the potential for contaminating aqueous volatile organic compound (VOC) samples during sample shipment. The trip blank consists of a VOC sample container filled by the laboratory with reagent water and is shipped to the site with other VOC sample containers. A trip blank is included with each shipment of water samples scheduled for VOC analysis and will be analyzed with the other VOC samples.

Field Duplicates. Field duplicates of water samples will be submitted for analysis of all project-specific parameters at a rate of 5 percent of the samples collected. These duplicates are intended to assess the homogeneity of the sampled media and the precision of the sampling protocol.

Equipment Blanks. Equipment blanks (i.e., rinsate blanks) for the bailer, sampling pump, and/or tubing assembly are scheduled during monitoring well sampling at a rate of 5 percent of the samples collected. VOCs (and semi-volatile organic compounds or inorganics if analyzed) present within the bailer, pump apparatus, or discharge tubing are assessed by collecting a sample of reagent water passed through the sampling apparatus after washing with the decontamination solution followed by at least one rinse with reagent water. If dedicated equipment is used at a site, the need for equipment blanks may be dropped from the sampling program.

Matrix Spike/Matrix Spike Duplicates (MS/MSD). The NYSDEC ASP requires the laboratory to analyze MS/MSDs for organic analyses at a frequency of 5 percent. To meet this requirement select samples will be chosen for MS/MSD analyses based on historic low level detections and additional sample volume will be provided to the laboratory.

Analytical Data Quality Levels and QA/QC Procedures

For this program, the following two data levels will be used:

Level I - Field Screening. This level is characterized by the use of portable instrumentation that can provide real time data to assist in the optimization of sampling point locations and for health and safety monitoring. Data can be generated indicating the presence or absence of certain contaminants, especially volatiles, at sampling locations. These measurements may include hand held PID for volatile organic compounds VOC monitoring, and instruments used for measuring temperature, pH, specific conductance, dissolved oxygen (DO), and turbidity during water sampling.

Level III - Laboratory Analysis. Subcontract laboratory-generated data obtained using USEPA or NYSDEC-approved procedures. Laboratory services will be completed in accordance with the NYSDEC ASP. Analytical methods may include USEPA SW-846 (USEPA, 1996), USEPA drinking water (500 series) methods and waste water methods (600 series) [40 CFR Part 136], Methods for the Chemical Analysis of Waters and Wastes (USEPA, 1993b), ASTM International procedures, or other approved testing procedures. Analyses will be completed by a with the NYSDOH Environmental Laboratory Approval Program (ELAP) certification. If requested by the NYSDEC, a Data Usability Summary Report will be generated as described in DER-10 (NYSDEC, 2010).

The current LTM sampling program consists of the collection of samples for VOC analysis following USEPA SW-846 Method 8260C. Additional analysis may be requested by the NYSDEC project manager.

In addition to hard copy data packages, the sample results will be submitted to the NYSDEC in an acceptable electronic data deliverable format for uploading to the NYSDEC database.

The use of subcontract laboratories that have NYSDOH ELAP certification is a QA step designed to ensure that laboratories will produce chemical data that meet standards for testing for work within New York. Use of USEPA and other standard analytical methods used in the environmental testing industry provides another level of QA that results will be comparable to industry standards.

Sample Preservation

Sample preservation for water samples will be completed in accordance with requirements described in the ASP Exhibit I (NYSDEC, 2005). Steps to maintain the in situ characteristics required for analysis may include storage of samples at 4 degrees Celsius, pH adjustment, and chemical fixation.

2.0 Field and Sampling Procedures.

This section describes field and sampling procedures to be followed at the Diamond Cleaners Site.

Water Level Measurements

Groundwater level measurements can be made in monitoring wells, private or public drinking water wells, piezometers, or open boreholes. Water level measurements in monitoring wells should be made before purging and evacuation for groundwater sampling.

The procedures for water level measurements are:

1. Check the well for proper identification and location.
2. Measure and record the height of protective casing from ground surface to check for settlement or heave.
3. After unlocking the well and removing any well caps, measure and record the ambient and well-mouth organic vapor levels using a PID. This level will be recorded in the field

notebook and the appropriate health and safety actions taken, in accordance with the project-specific HASP.

4. Measure and record the distance between the top of the well riser and the top of the protective casing to check for heave or settling.
5. Using an electronic water level meter (or similar measuring device), measure and record the static water level in the well and the depth to the well bottom to the nearest 0.01 ft. Measurements will be referenced from the top of the well riser, as opposed to the protective casing, when feasible. The water level meter should be decontaminated after use.

All well measurements will be recorded, along with the date and time of measurement, in the field notebook. Every well will have a clearly established reference point of known elevation, normally a painted mark on the upper edge of the riser pipe.

General Groundwater Sampling

Sampling of groundwater monitoring wells will proceed from the upgradient or background wells to the downgradient or potentially contaminated wells, as best as can be determined. The following activities shall be performed immediately prior to purging each well:

1. Check the well for proper identification and location.
2. Measure and record the height of the protective casing above ground surface.
3. After unlocking the well and removing any well caps, measure and record the ambient and well-mouth organic vapor levels using a PID.
4. Measure and record the distance between the top of the well and the top of the protective casing.
5. Using the electronic water level meter, measure and record the static water level in the well and the depth to the well bottom to the nearest 0.01 ft. Measurements will be referenced from the top of the well riser as opposed to the protective casing, when feasible. The point of measurement and the depth to water will be recorded in the logbook and Groundwater Sample Data Records (Figure 1). The water level meter is decontaminated upon removal.
6. Calculate the volume of water in the well. Volume in gallons for a well equals 0.041 times the square of the ID of the well riser, in inches, times the depth of water, in ft. Volume calculations are detailed on the Groundwater Sample Data Record.

Samples are anticipated to be completed using the low flow sampling procedures outlined below. However, if the NYSDEC determines in the future that aqueous diffusion samplers should be used, procedures are outlined under Alternative 1. Although not a preferred sampling alternative, sampling using three purge volumes is also described under Alternative 2.

Low Flow Groundwater Sampling. The following steps outline the purging and sample collection activities for low-flow sampling. Data will be recorded on the Low flow Groundwater Sampling Record (Figure 1). Pumps and probes may differ depending on the well diameter, groundwater constituents and depth to groundwater, but generally, sampling will require the following equipment:

- Peristaltic, bladder or inertial pump capable of a flow rate between 50 and 500 ml/minute and appropriate power supply. The pump type will principally depend on the depth to water and well diameter. Bladder pumps are preferred; peristaltic pumps are acceptable only for wells where the depth to water is less than about 25 ft; Inertail pumps are only recommended for narrow diameter wells that cannot be sampled using a bladder or peristaltic pump.
- Field probe and flow-through cell (e.g., YSI) for measuring pH, temperature, conductance (and/or specific conductance), DO and oxidation-reduction potential (ORP) of groundwater, and a standalone turbidity meter (e.g. Hach).
- Calibration solutions for the field probes
- Water level tape
- Tubing, connections and tools as appropriate
- Graduated cylinder and stopwatch
- Ring stand setup
- 5-gallon bucket and funnel for purge water
- Low flow groundwater field data record (FDR)
- PPE
- Decontamination supplies (e.g., DI water, Liquinox soap, paper towels)
- Sample containers and cooler (provided by the laboratory)
- Ice for sample preservation
- Clean plastic sheeting, paper towels and miscellaneous supplies

Field parameter measurements shall be made using instrumentation and a commercially manufactured flow through cell. Dedicated high density polyethylene (HDPE) tubing shall be used. Sample collection information shall be recorded on the Low Flow Groundwater Sampling Record (Figure 1).

Sampling will be conducted using the following procedure:

1. Determine target depth for location of the pump intake. Target depth should be the portion of the screened interval that intersects the zone of highest hydraulic conductivity (K). If the zone of highest K is unknown, or if the screen is placed within homogenous material, then the target depth shall be the midpoint of the saturated screen length. Primary flow zones should be identified in wells with screen lengths longer than 10 ft.
2. Measure and record the depth to water. Care should be taken to minimize disturbance of the water column within the well during pre-sample measurements.
3. Decontaminate pump prior to use (if pumps are dedicated then this applies to the initial effort only). Attach appropriate length of dedicated HDPE tubing or mark the tubing at the appropriate point so that when the pump and tubing are lowered into the well, and the mark is at the top of the well riser, the pump shall be located at the target depth within the screened interval.
4. Carefully lower the pump to the predetermined target depth. Start the pump at a purge rate low enough to achieve 0.3 ft of drawdown or less based on historical data. If sampling the well for the first time, start the pump at the lowest possible setting (or approximately 100-ml per minute) and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little or no drawdown (less than 0.3 ft) if possible. If stabilized drawdown cannot be achieved, use the no-purge method described later in this section.
5. Monitor and record pumping rate and water levels every 3 to 5 minutes (or as appropriate) during purging. Record any adjustments to pumping rates.
6. During purging, monitor field parameters using a flow through cell (the flow through cell cannot be used for turbidity measurements and the sample for turbidity measurement must be collected prior to entering the flow through cell). Purging is considered complete and sampling may begin when the field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken at 3 to 5 minute intervals, are within the following limits:
    - Turbidity (+/- 10% for values >10 NTUs if turbidity is greater than 10 and well is not stable, continue purging well for up to two hours, collect sample and document on field data record and in log book (collection of a filtered sample for metals analysis may be necessary if turbidity is greater than 50 NTUs).)
    - DO (+/- 10% for values greater than 0.5 milligram per liter (mg/L). If three dissolved oxygen values are < 0.5 mg/L, consider the values stabilized)
    - Specific conductivity (+/- 3%)
    - Temperature (+/- 3%)
    - pH (± 0.1 unit)
    - ORP (± 10 millivolts)
7. The final purge volume must be greater than the stabilized drawdown volume plus the tubing extraction volume.
8. During purging and sampling the tubing should remain filled with water.
9. Disconnect the tubing from the flow through cell to collect the analytical samples. Water samples for laboratory analyses must not be collected after water has passed through the

flow through assembly. Fill sample containers directly from the tubing without alterations to the pumping rate.

10. The VOC fraction shall be collected first. The VOC sample container shall be completely filled without air space within the container. The remaining samples shall than be collected.
11. For subsequent sampling efforts, duplicate the pump intake depth and final purge rate from the initial sampling event (use final pump dial setting information).
12. Obtain and record a depth to bottom of well measurement before closing the well.
13. Complete the Low flow Groundwater Sampling Record (Figure 1) after each well is sampled. Include any observations made during sampling such as color, odor, etc., in the field logbook and field sample data record.
14. Secure the well cap and lock.

Alternative Method 1- Groundwater sampling using aqueous diffusion samplers. This procedure is designed to permit the collection of representative groundwater samples for analysis of VOCs. Groundwater sampling using aqueous diffusion samplers will be conducted using the procedures described below and in accordance with the User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells (Vroblesky, 2001).

Aqueous diffusion samplers are constructed by sealing de-ionized water in polyethylene tubing (1-millimeter thickness is typical). Tubing sizes vary, but can be up to 2-feet long. Samplers can be acquired pre-filled with laboratory de-ionized water, or assembled by the sampler. If assembled by the sampler, care is taken to ensure that no headspace or air bubbles are present in the tube prior to sealing the top end. The samplers are weighted with stainless steel weights, and a stainless steel or poly-braid line is attached to the top of the sampler for placement and retrieval.

The sampling generally uses the following equipment/items:

- Well construction data, location map, and field data from the previous sampling event,
- Diffusion sampler filled with de-ionized water and weight attached to bottom,
- Stainless steel/poly-braid cable of the required length for setting and attaching the sampler,
- Field probe and flow-through cell (e.g., YSI) for measuring pH, temperature, conductance (and/or specific conductance), DO and ORP of groundwater, and a standalone turbidity meter (e.g. Hach),
- Calibration solutions for the field probes,
- Water level tape (0.01-ft accuracy),

- Field Data Record,
- PPE,
- Decontamination supplies (e.g., DI water, Liquinox soap, paper towels),
- Sample containers and cooler (provided by the laboratory),
- Ice for sample preservation, and
- Clean plastic sheeting, and miscellaneous supplies.

Sampling will be conducted using the following procedures:

1. Enter the following information in the field logbook and FDR, as appropriate, prior to installation of the diffusion sampler: date and time of sampler installation, depth of sampler, and total depth of well.
2. Attaching weight to the base of the sampler and stainless steel line to the top of the sampler.
3. Install the sampler at the predetermined depth, attaching the top of the line to a secure location at the ground surface and the well cap should be replaced to ensure surface water does not enter the well. The depth of the sampler will be determined prior to installation, based on previous sampling data or previously collected aqueous diffusion samplers.
4. Allow the sampler to equilibrate for approximately 14 days. Return after no less than 14 days to retrieve the sampler. Samplers can remain in the well for longer than 14 days, if necessary.
5. Enter the following information in the field logbook and FDR, as appropriate, during retrieval of diffusion sampler: date and time of sampler retrieval, analytical method, and quality assurance/quality control data as necessary.
6. Retrieve the diffusion sampler from the well and note any observations on the FDR (possible tears, iron build up, etc.).
7. After retrieving sampler, install an in-well water quality parameter meter such as a YSI 556 or equivalent. Remove the line and weight, and make a diagonal cut toward the top of the sampler. The diagonal cut allows easier filling of the sample containers. A dealer supplied discharge device may also be used.
8. Begin filling the volatile organic compound sample containers from the diagonal cut or discharge device by allowing the water to flow gently down the inside of the container with as little agitation or minimal aeration as possible.
9. Label each sample container upon filling. Placed sample containers into a cooler with ice.
10. After sample collection is complete, record water quality parameter readings and then remove the water quality meter from the well. Cap and lock the well.

Complete remaining portions of the FDR after each well is sampled, including sample date and time (time of retrieval from the well), well sampling sequence, types of sample bottles used, sample identification numbers, preservatives used, parameters requested for analysis, and field observations of the sampling event.

Alternative Method 2-Groundwater Sampling Using Three Purged Well Volumes. The following steps outline the purging and sample collection activities for purged well volume sampling.

Upon completion of the measurements and calculations described in the General Groundwater Sampling, sampling will commence in the sequence listed below, utilizing the appropriate purging technique (1a, 1b, or 1c):

1. Lower the pump intake into the well. For shallow groundwater situations, the pump intake will be lowered to the top of the well screen to begin purging (see Step No. 2). Modifications to this setup may be used in certain situations:
    a. If the well screen is very large, and pumping from the top is impractical, the pump intake will be lowered to the approximate mid-point of the screened portion of the well.
    b. If the well is situated in tight formations such as tills, clays or rock, the purging of the well will be performed from near the top of the well screen. As the water level in the well is lowered by purging, the pump is also lowered.
    c. If the well is in a highly productive aquifer, purging will progress by purging at intervals in the well screen, from the top of the water column downward, to avoid leaving stagnant water in the well.

       To avoid aeration of the sandpack, the water level will not be allowed, to the extent feasible, to fall below the top of the filter pack during purging except possibly in tight formations (see 1b above), where purging the well (and sandpack) dry can be unavoidable. The selection of the pump to be used for well purging will be presented in project-specific FAP, and approved in advance by NYSDEC.

Considerations in pump selection are depth to water, the level of contamination anticipated, site access, and cost. Readily available choices include peristaltic pumps (good for shallow groundwater depths), disposable submersible pumps, such as a Whale® pump (good for moderate groundwater depths and contamination), and stainless steel/Teflon® submersible pumps, such as the Redi-Flow® (good for most applications). Teflon bailers may also be used (good for shorter water columns).

1. Purge the well. Monitor the field parameters, pH, temperature, turbidity, and specific conductivity, and measure the volume of groundwater being pumped. In situ parameters may be monitored in a beaker filled from the pump discharge or in-line with the pump discharge. Purging of the standing well water is considered complete when any of the following is achieved:
    - a minimum of three well volumes has been purged,
    - the well has been pumped dry and allowed to recharge.
2. Record the in situ parameters, temperature, pH, specific conductivity, and turbidity in the field logbook and Low flow Groundwater Sampling Record (Figure 1).
3. After purging, the pump intake or the bailer will be lowered to the middle of the screened interval or mid-point of the static water level.
4. Collect the sample(s). VOC samples are filled directly from a bailer or pump discharge with as little agitation as possible. Other samples can be placed directly into the appropriate container from the bailer or pump discharge.
5. Remove the pump or bailer from the well and decontaminate the pump, tubing or bailer by flushing with the decontamination fluid, or dispose.
6. Complete the Low flow Groundwater Sampling Record (Figure 1) after each well is sampled. Include any observations made during sampling such as color, odor, etc., in the field logbook and field sample data record.
7. Secure the well cap and lock.

Calibration

Each piece of equipment will be calibrated daily prior to use or as specified by the manufacturer. In addition, field instruments will be calibrated at the end of the day to monitor instrumental drift subsequent to field activities. Field instruments used to measure water quality parameters for groundwater should be calibrated following procedures outlined in the USEPA Region 1 Calibration of Field Instruments SOP, Revision 2, dated January 19, 2010 (USEPA, 2010). Calibration data are recorded on a Field Instrumentation QA Record (Figure 2). The manufacturer and lot number of all standards will be noted on the field instrument QA record. The types of field measurements that may be made include but are not limited to the following:

- pH;
- specific conductance;
- temperature;
- DO;
- organic vapors; and
- turbidity.

Decontamination

Contaminated tools and sampling equipment will be dropped into a plastic pail, tub or other container. The tools will be brushed off, rinsed, and transferred into a second pail to be carried to further decontamination stations where they will be washed with a Liquinox ®, or equivalent soap and water solution, rinsed with clean potable water, and finally rinsed with deionized water. Sampling equipment, such as bailers, will be wrapped in aluminum foil after cleaning to prevent contamination before next use.

When monitoring equipment is being used under conditions where it may become contaminated, the equipment will be protected as much as possible from contamination by draping, masking or otherwise covering as much of the instrument as possible with plastic without hindering the operation of the unit. For example, the PID can be placed in a clear plastic bag which allows reading of the scale and operation of the knobs. The sensor on the PID can be partially wrapped, keeping the sensor tip and discharge port clear.

Any contaminated equipment will be taken from the drop area and the protective coverings removed and disposed of in the appropriate containers. Any direct or obvious contamination will be brushed or wiped with a disposable paper wipe. The units will then be wiped off with damp disposable wipes and dried. The units will be checked, standardized, and recharged, as necessary, for the next day's operation. They will then be prepared with new protective coverings.

3.0 Investigation Derived Waste.

Investigation generated water/fluid (i.e. well purge water) is to be containerized upon production. Containerized water is to be managed and discharged/disposed of as outlined in DER-10, and pursuant to applicable guidance and regulations. Containers shall be labeled and securely staged on-site in an area with secondary containment.

Treatment or disposal will be at 1) an off-site permitted facility, or 2) at an on-site treatment unit brought to the site, properly designed to handle the water/fluids, where a permit waiver has been granted by the NYSDEC.

4.0 Chain of Custody (COC) and Shipping.

Chain of Custody. The COC record is used to document sample-handling information (i.e., sample location, sample identification, and number of containers corresponding to each sample number). The following information is recorded on the COC record:

- project reference;
- the site location name, sample identification number, date of collection, time of collection, sample bottle number, preservation, and sample type, number of containers, sample matrix;
- the names of the sampler(s) and the person shipping the samples;
- serial number of custody seals and shipping cases;
- the date and time that the samples were delivered for shipping;
- analyses required; and
- the names of those responsible for receiving the samples at the laboratory.

An example of a COC is shown in Figure 3. This type of COC is completed in triplicate. Two copies accompany the analytical samples to the laboratory; another is kept by the sample crew leader and maintained in the project file. The third copy is sent back with the analytical data package. In the case of computer generated COCs, the original COC is shipped with the samples to the laboratory. When this shipment is received by the laboratory, the COC is signed by the laboratory and returned with the test results as part of the data package submittal.

Shipping. Sample containers are generally packed in hard plastic, insulated coolers for shipment. Bottles are packed tightly to minimize motion. Styrofoam, vermiculite, and "bubble pack" are suitable packing material for most instances. Ice is placed in double Ziploc® bags and added to the cooler along with all paperwork which is sealed in a separate Ziploc® bag. The cooler top is then taped shut. The samples are shipped to the laboratory together with the COC documents.

The standard procedure for shipping environmental samples to the analytical laboratory is as follows:

1. All shipping of environmental samples collected must be done through FedEx, or equivalent overnight delivery service. Receipts are retained as part of the COC documentation. Samples will be shipped to the laboratory within 24 to 48 hours of sampling unless other arrangements are made with the laboratory.
2. If prompt shipping and laboratory receipt of the samples cannot be guaranteed, (e.g., Sunday arrival), the samplers will be responsible for proper storage and custody of the samples until adequate shipping arrangements can be made.

The site leader keeps the laboratory informed of all field sampling activities. This communication is critical to allow the laboratory enough time to prepare for the sample shipment arrival.

REFERENCE

New York State Department of Environmental Conservation (NYSDEC), 2010. DER-10 "Technical Guidance for Site Investigation and Remediation"; New York Department of Environmental Conservation; Division of Environmental Remediation; May 2010.

New York State Department of Environmental Conservation (NYSDEC), 2005. *"Analytical Services Protocols"*; 7/05Edition; July 2005.

USEPA, 2010. "*Standard Operating Procedure, Calibration of Field Instruments*," Revision 2, January 19, 2010.

Vroblesky, D. 2001. "User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells".