PROPOSED REMEDIAL ACTION PLAN
Former Sciore's Dry Cleaners
Watkins Glen, Schuyler County, New York
Site No. 8-49-003

March 2006

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

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Site No. 8-49-003
January 2006

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Former Sciore's Dry Cleaners site. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 5 of this document, improper disposal of dry cleaning solvent has resulted in the disposal of hazardous wastes, including tetrachloroethene (PCE). These wastes have contaminated the groundwater at the site, and have resulted in:

- a significant threat to human health associated with current and potential exposure to PCE vapors impacting indoor air quality.
- a significant environmental threat associated with the impacts of contaminants to the groundwater.

To eliminate or mitigate these threats, the NYSDEC proposes the following remedy:

- A remedial design program would be implemented to provide the details necessary for the operation, maintenance, and monitoring of the remedial program.
- Install Sub Slab Depressurization (SSD) systems in existing on-site building and one adjacent off-site building. Conduct additional indoor air sampling in residences in close proximity to the site. Install additional SSD systems as warranted.
- Conduct groundwater monitoring.
- Development of a site management plan to address residual contamination and any access and use restrictions.
- Imposition of an environmental easement.
- Periodic certification of the institutional controls.

The proposed 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.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the March 2006 "Remedial Investigation (RI) Report," the March 2006 "Feasibility Study" (FS), and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Watkins Glen Public Library
610 Decatur Street,
Watkins Glen, NY 14891
(607) 535-2346
Hours: Monday - Friday
11am -5pm & 7pm-9pm
Saturday 10am-2pm
Sunday 2pm-4pm

NYSDEC
Central Office
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7013
Toll Free (888) 459-8667
Hours: Monday - Friday
8:30 a.m. - 4:30 p.m.
[Contact the Project Manager -
Jeffrey McCullough for an appointment]

NYSDEC
Region 8 Office
6274 E Avon-Lima Rd.
Avon, NY 14414 - 519
(585) 226-5326
Hours: Monday - Friday
8:30 a.m. - 4:30 p.m.
(Contact Lisa LoMaestro Silvestri for an appointment)

Additional information pertaining to the Department's Environmental Remediation program can be found on the NYSDEC website: www.dec.state.ny.us

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from March 1, 2006 to March 31, 2006 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 16, 2006 at the Watkins Glen Middle School, 200 10th Street, Watkins Glen beginning at 6:30 p.m..

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. McCullough at the above address through March 31, 2006.

The NYSDEC may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public

comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located at 129-135 East Fourth Street (New York State Route 414), at the intersection with Decatur Street, in the Village of Watkins Glen, Schuyler County, New York. (Figure 1) The property, consisting of approximately 0.34 acres, is located in a commercial / residential area, and consists of a paved and gravel parking lot, a small grassy yard, and a building that contain a former restaurant/bakery, retail space, and residential apartments. The site is serviced by public water and sanitary sewer and is located approximately 0.25 miles from the North Franklin Street site (# 849002).

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The site came to the attention of the NYSDEC in September 1999 after PCE was detected in on-site groundwater samples collected during an investigation for a pending sale of the property. According to the Preliminary Site Assessment (PSA), conducted in March 2002, a dry cleaner operated from the early 1950's to the late 1970's in a store located at the center of the building. The dry cleaning operation also utilized a shed at the rear of the building. The shed was removed in 1981. According to the former manager of the restaurant, the shed was used to store dry cleaning solvents. PCE was used and stored at the location over this time period, during which an unknown quantity was purportedly released to the soil. Local soil and groundwater appear to have been impacted by these historical releases.

3.2: Remedial History

The site came to the attention of the NYSDEC after PCE was detected in on-site groundwater samples collected during an investigation for a pending sale of the property. A limited site assessment was conducted for the potential purchase of the property in September 1999. During this work, four geoprobe borings were completed and one soil sample and three water samples were collected. PCE concentrations for the three groundwater samples were 15, 89 and 530 parts per billion (ppb), respectively. The NYSDEC was notified of the results and in October 2001 a Preliminary Site Assessment (PSA) was conducted by the NYSDEC. The PSA field work included a geophysical survey, direct push groundwater and soil sampling, micro well installation, indoor air sampling and a land survey. A total of 15 soil borings were completed which included the installation of six micro wells. A total of 22 groundwater samples, 11 soil samples and one indoor air sample were collected. The results indicated PCE was detected in five groundwater samples at concentrations ranging from 28 to 100 ppb. PCE was detected in on site soils at concentrations up to 0.6 parts per million (ppm) and in the indoor air sample at 25 micrograms per cubic meter (μg/m3).

In 2003, the NYSDEC 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. In November 2003, a RI / FS was initiated by the NYSDEC for this site and completed in December 2005.

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: Mr. Gerald Tobey, current owner of the building which was the location of the former dry cleaner. To our knowledge, Mr. Tobey was not involved with the former dry cleaning business. The prior owner of the property was Ettore and Mary Sciore, Jr. who operated the dry cleaners. Mr. Tobey purchased the building in 1982 from the Estate of Virginia Sciore.

The PRPs declined to implement the RI/FS at the site when requested by the NYSDEC. 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 NYSDEC 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 2004 and December 2005. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the RI:

- Research of historical information;
- Installation of 12 soil borings and 3 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydro geologic conditions;
- Collection of one surface water sample from the storm water sewer manhole.
- Sampling of 9 new and existing monitoring wells;
- Collection of 36 discrete groundwater samples using a direct push technique;
- Collection of 3 sub-slab vapor samples. Collection of 4 indoor air samples. Collection of 2 outdoor air samples.

To determine whether the air, soil and 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 NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels."

- Concentrations of PCE in air were evaluated using the NYSDOH guidance document titled "Evaluating Soil Vapor Intrusion in the State of New York" dated February 2005.

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 below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

The site, situated at the southern end of the Seneca Lake Valley, is topographically relatively flat. The elevation of the site and surrounding neighborhood is approximately 460 feet above mean sea level (msl). Site soil consists primarily of the Chenango gravelly loam. The water table beneath this site occurs at a depth of approximately 15' below ground surface (bgs). Regional groundwater flow direction is northward, toward Seneca Lake. The depth to bedrock is unknown, but is likely greater than 100' bgs. Surface drainage generally follows the topography, and flow is north toward Seneca Lake. Storm water drains are present along Decatur and East Fourth Street. Surface run off collects in these drains and then flows directly into Seneca Lake.

5.1.2: Nature of Contamination

As described in the RI report, soil, groundwater and air samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the category of contaminants that exceed their SCGs is one volatile organic compound (VOC), which is PCE.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated. Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for soil and micrograms per cubic meter ($\mu g/m^3$) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in 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 / Subsurface Soil

During the RI, soil samples were collected from eight (8) shallow soil borings and the dry well in the site building basement (Figure 2). There were no obvious signs of impacted soil (i.e., stained soil, strong odor, or elevated instrument readings). The sample from the dry well in the basement was collected from the upper six inches of soil in the dry well. The other shallow soil samples were collected at a range from zero to 2' bgs and again at just above the elevation of the ground water table, approximately 15' bgs. A total of 17 soil samples was collected from the shallow soil zone and analyzed. Comparison of the laboratory analytical data to the NYSDEC TAGM No. 4046 reveals no exceedances of VOCs or semivolatile organic compounds (SVOCs) concentrations. The highest detected PCE concentration in site soils was 0.6 ppm at SB-05 in the zero to 2' range, which is less than the recommended cleanup objective of 1.4 ppm for PCE. The soil sample from the dry well in the basement of the site building (SB-09) contained PCE at a concentration of 0.016 ppm, which is less than the cleanup criteria of 1.4 ppm. No concentrated source of soil contamination exceeding the cleanup criteria was discovered during the investigations.

Groundwater

Groundwater at the site is encountered at approximately 10' to 15' bgs and generally flows to the north toward Seneca Lake. The water table is flat with a hydraulic gradient of 0.0014' /ft. Groundwater velocity is estimated at 17' /year. Groundwater samples were taken while performing the vertical profiling (VP) borings, the samples were collected at 10' intervals starting at the top elevation of groundwater. For VP-02 through VP-04 groundwater sampling started at a depth of 15', and samples were collected to a depth of 98' bgs. In VP-01, groundwater was encountered at 20' bgs, and samples were collected to a depth of 103' bgs. Four samples collected, from two VP borings, exhibited concentrations of PCE above the New York State Class GA Groundwater Quality Standard (GWQS) of 5 ppb. For samples collected in VP-02, PCE was detected above the GWQS at sample depths 15' to18' bgs and 35' to 38' bgs, at concentrations of 120 ppb and 7 ppb, respectively. VP-02 is located just down gradient of the site. PCE was also detected in VP-03 at 15' to18' and 35' to 38' with concentrations of 30 ppb and 8 ppb respectively. VP-03 is located about 600' north (down gradient) of the site. The presence of PCE in the upper 20' to 30' of the saturated zone is consistent with the soil boring logs. The logs show the presence of more fine sand and silt at a depth of approximately 45' bgs. Above that point, soils are predominantly coarse sand and gravel. Therefore, we conclude that PCE remained in the upper zone due to the greater permeability, and was prevented from migrating deeper into the formation by the fine-grained material. VP-04 is located approximately 600' north (down gradient) of the site, and approximately 240' east of VP-03. PCE was detected at depths of 15' to18', 25' to 28', and 35' to 38' bgs, but at concentrations less than the GWQS of 5 ppb. PCE was not detected in VP-01, which was located adjacent to the concrete pad where it was suspected that past discharge of liquid occurred. Sampling of the existing groundwater monitoring wells was also performed during the RI. Data from the June 2004 sampling showed three of the monitoring wells, MWs - 2, 3 and 6, contained PCE above the GWQS of 5 ppb at concentrations of 98 ppb,

34 ppb and 11 ppb respectively. In December 2005, three new monitoring wells were installed (Figure 3) and another round of groundwater samples was taken from all the wells. Results showed four monitoring wells, MWs - 2, 3, 6 and 9 contained PCE above the GWQS of 5 ppb at levels of 59 ppb, 28 ppb, 7 ppb and 7 ppb respectively. Other than PCE, no VOCs were detected in groundwater above the GWQS concentration.

Surface Water

No surface water samples were taken from the two closest surface water bodies, which are Glen Creek and Seneca Lake. Glen Creek is located approximately 0.4 miles to the south of the site. This area is hydrogeologically up gradient of the site and there are no migration pathways for site-related groundwater to impact the creek. Seneca Lake is located approximately 0.20 miles to the north of the site. Groundwater samples taken from MW- 9, two blocks to the south of the lake showed low levels of PCE (7 ppb), not a sufficient concentration to impact Seneca Lake.

Soil Gas/Sub-Slab Vapor/Air

A total of nine air samples was collected from one on-site and one off-site building as part of the RI, three sub-slab, four indoor ambient air samples, and two outside ambient air samples. PCE was detected in all sub-slab samples. Four indoor air samples were collected during the RI. No measurable PCE concentration was detected from the first floor samples; however, PCE was detected at a concentration of 42 $\mu g/m^3$ and 41$\mu g/m^3$ in the samples collected from the basements. Two outdoor ambient air samples were collected during the RI, one from the site building parking lot and the other from an upwind location outside the off-site location. PCE was not detected in either sample. Additional indoor air sampling of residences down gradient of the site was performed in late February 2006.

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. The IRM taken at this site consisted of mitigation measures taken at the on-site building and one off-site building to address current human exposures (via inhalation) to VOCs associated with soil vapor intrusion into buildings. The following tasks were completed in an IRM conducted in December 2005: placement of SSD systems in the on-site building and one off-site building, sealing a basement floor drain in the on-site building, and placing a vapor barrier over the bare soil in the off-site building. In February 2006, additional indoor air and sub slab sampling of structures adjacent and down gradient of the site was performed. If data indicates contravention of NYSDOH air quality guidance values, SSD systems will be offered to those building owners as part of the remedy.

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 3.3 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.

Potential pathways of exposure to site-related contaminants include:

Ingestion of contaminated groundwater and;
Inhalation of contaminated indoor air resulting from soil vapor intrusion.

Based on discussions with the Village of Watkins Glen, public water serves the area. There are no public water supply wells in the Village, the water supply is from a surface water intake located along the west shore of Seneca Lake, therefore, ingestion of contaminated groundwater is unlikely. The implemented IRM of SSD systems in the on-site building and the one adjacent building has eliminated the potential for inhalation exposures to contaminated air via soil vapor intrusion in these two structures. Soil vapor intrusion investigation of additional structures was conducted in February 2006. It is anticipated that should any other structure be significantly impacted via contaminated soil vapor, similar mitigation methods as described above would be implemented; therefore, exposures via soil vapor intrusion would be eliminated.

5.4: Summary of Environmental Impacts

This section summarizes the 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 Fish and Wildlife Impact Analysis (FWRIA), which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. Site investigations revealed no ecological habitats on, or immediately adjacent to the site, which is characterized as a terrestrial cultural (upland) community type. Land use of the site and surrounding area is primarily residential and commercial. Contamination at the site is related to point source PCE contamination of groundwater from past dry cleaning operations. There is no widespread soil contamination present, but limited residual soil contamination in the form of PCE appears to exist at the site. The PCE

impacted soils are located under the active parking lot, covered by pavement and gravel. Because of the location of impacted soils, and the fact that there are no ecological habitats on, or immediately adjacent to the site, there are no direct exposure pathways from these soils to wildlife populations. Therefore, soils are not addressed further in the FWRIA. The only contaminant migration pathway identified for the site is the potential for groundwater to discharge to surface water. Groundwater flows north and likely discharges to Seneca Lake approximately 0.2 miles north of the site. Glen Creek is located approximately 0.4 miles to the south of the site. This area is hydrogeologically up gradient of the site; therefore, there are no migration pathways for site-related groundwater to reach Glen Creek. Likewise, there are no migration pathways to the Chemung Barge Canal and Catharine Creek Marsh Wildlife Management Area (Bad Indian Swamp), which are located to the east and southeast of Watkins Glen. Therefore, these areas are not addressed any further in the FWRIA. The results show that groundwater discharge to surface water would not result in constituent VOC concentrations in surface water in excess of the available screening benchmarks. Therefore, potential impacts to fish and wildlife resources in Seneca Lake as a result of groundwater discharge to surface water are not expected. Based upon the fish and wildlife resources and exposure pathways identified in this assessment, and the results of the groundwater screening analysis, no adverse impacts to fish and wildlife resources have occurred or are expected to occur on, adjacent to, or within a 0.5-mile radius of the Former Sciore's Dry Cleaners site.

Site contamination has impacted the groundwater resource in the shallow aquifer. There are currently no groundwater uses at the site itself or in the immediate vicinity (e.g., domestic or industrial wells), and no expected future uses of groundwater at the site.

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 375-1.10. 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:

- exposures of persons at or around the site to PCE in groundwater and indoor air;

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 Sciore's Dry Cleaners site were identified, screened and evaluated in the FS report which is

available at the document repositories identified in Section 1.

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 indoor air 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 un remediated 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: Groundwater Monitoring and Vapor Intrusion Abatement

Present Worth: . . . . . *$ 238,000*
Capital Cost: . . . . . *$ 51,000*
Total Present Worth of Annual OM&M:
. . . . . *$ 187,000*

In this alternative, the remedial action objective (RAO) for site ground water is addressed through vapor intrusion abatement and ground water monitoring. Vapor intrusion abatement required the placement of SSD systems in both the site building and one off-site building as an IRM. This was completed in December 2005. The IRM included installation of SSD systems in the on-site building and one off site building. This common action, i.e., the mitigation of contaminated soil gas from below existing on-site buildings, includes installation of vertical suction points through the basement slabs of the site building and the off-site building. The suction points are piped to an externally mounted fan that draws soil gas from beneath the building to an exhaust point above the eave of each building. The recently completed IRM work also included sealing a floor drain in the on-site building, and placing a vapor barrier over the bare soil in the off-site building basement.

The proposed alternative also includes: access and use restrictions and groundwater monitoring. Access and use restrictions would include the provision that a SSD system would be required for any new building construction at the site and the currently installed IRM would need to be maintained. In addition, no potable wells could be installed on-site without the necessary groundwater treatments as approved by the NYSDOH.

PCE is present in the upper 20' to 30' of the groundwater flow system and appears to be prevented from migrating deeper into the formation by fine-grained material. Under this remedial action, periodic groundwater monitoring would be conducted in each of the existing groundwater monitoring wells and

additional new up-gradient, down-gradient, and cross-gradient wells. Samples would be analyzed for tetrachloroethene and its break down products.

Currently, mitigation of soil gas impacts to the on-site building and the off-site building has been completed as an IRM. Further, based on the results of the groundwater monitoring component of this alternative, if increases in PCE concentrations above the preestablished limit of 5 ppb are observed in down gradient wells, and it is has been confirmed through NYSDOH guidance values that indoor air quality has been compromised by site contaminants, SSD systems would be installed in other buildings to meet the RAO.

Alternative 3: Groundwater Treatment via Zero Valent Iron (ZVI) and In-situ Chemical Oxidation (ISCO) and Vapor Intrusion Abatement

Present Worth: . . . . . *$ 6,281,000*
Capital Cost: . . . . . *$ 5,824,000*
Total Present Worth of Annual OM&M:
. . . . . *$ 457,000*

This alternative would consist of: installation of a ZVI wall on the down gradient side of the site building, and ISCO further down gradient of the site building to treat and control the further migration of PCE contaminated groundwater. Chemical oxidant injections will be strategically placed to treat the down gradient portion of the contamination plume and the ZVI wall would address the more up gradient portions of the plume. Inherent in the use of any of these technologies is the assumption that the site is the source of PCE contaminating the ground water.

This alternative would include the following remedial tasks and incorporate the following: access and use restrictions, site preparation and mobilization, installation of a ZVI wall, installation of ISCO injection wells, site restoration, groundwater monitoring and installation of SSD systems beneath existing site building and adjacent buildings. This alternative would take up to four years for treatment dose applications and an additional six years of monitoring.

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 State. 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 NYSDEC 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 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 are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NYSDEC will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The NYSDEC is proposing Alternative 2, Groundwater Monitoring and Vapor Intrusion Abatement as the remedy for this site. The elements of this remedy are described at the end of this section.

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

Alternative 2 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria. It would achieve the remediation goals for the site by eliminating human exposure from migrating vapors.

The media of interest at the site is groundwater, and the contaminant of primary concern (COPC) identified for this media is PCE. Being that currently the groundwater is not a source of drinking water, the potential for exposure solely exists via PCE volatilization from shallow groundwater to overlying indoor or outdoor air. This exposure pathway will be addressed via the remedial action alternatives. The remedial action alternatives can be categorized by their effectiveness to minimize VOC vapor migration. Alternative 2 would be a first tier approach in that it provides a vapor barrier in the off-site building to prevent VOC vapor migration into the site building and by maintaining a pressure differential. Alternative 3 provides a two-tier approach whereby a permeable reactive barrier is installed in addition to ISCO injections to treat down gradient contamination. Both alternatives will have varying degrees of VOC minimization/ elimination.

The remedial action alternatives also address the compliance of SCGs. All the alternatives, with the exception of Alternative 1 No Action, meet the applicable SCG requirements. However, Alternative 2 would prevent vapor intrusion into indoor air and comply with guidance values associated with air. It does not comply with chemical specific SCGs for groundwater or restore the site to pre disposal conditions. Nevertheless, groundwater concentrations would be monitored and are expected to decrease over time.

Because the vapor intrusion pathway is of primary concern at the site, the long-term effectiveness is assessed based on the ability of the remedial action alternative to minimize or eliminate human exposure to VOCs. As a result, Alternative 1 does not provide an effective or permanent long-term solution, while Alternatives 2 and 3 have varying levels of effectiveness. In essence, the installation of a SSD system would limit sub slab vapors from entering indoor air, but a significant reduction of the toxicity, mobility, and volume is not expected, beyond natural decrease in ground water concentrations (Alternative 2). However, a ZVI wall and ISCO injections (Alternative 3) would serve to reduce chemical concentrations and/or toxicity.

Other than the natural breakdown of PCE, there would be no reduction of toxicity, mobility, or volume by using either no action or monitoring (Alternatives 1 and 2). However, the installation of a ZVI wall and injection of oxidants would result in a reduction of the toxicity, mobility, and volume in groundwater (Alternative 3). The time frame for implementation varies depending on the techniques used. The No Action Alternative 1 and Alternative 2 are immediate, though Alternative 2 would also have continued groundwater monitoring. Alternative 3 would take up to four years for treatment dose applications and an additional six years of monitoring. All the activities associated with these alternatives are readily implementable.

The elements of the proposed remedy are as follows:

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

(2.) Continued operation of the Sub Slab Depressurization (SSD) systems in the on-site building and one off-site building. These systems were installed in December 2005. In February 2006, additional indoor air sampling of structures adjacent and down gradient of the site was performed. If data indicate contravention of NYSDOH indoor air quality guidance values, SSD systems will be offered to those building owners as part of the remedy.

(3.) Conduct groundwater monitoring.

(4.) Development of a site management plan to: (a) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (b) identify any use restrictions; and (c) provide for the operation and maintenance of the components of the remedy.

(5.) Imposition of an institutional control in the form of an environmental easement that would (a) require compliance with the approved site management plan; (b) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) require the property owner to complete and submit to the NYSDEC a periodic certification.

(6.) The property owner would provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls and engineering controls, are still in place, allow the NYSDEC access to the site, and that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

(7.) The operation of the sub slab depressurization systems would continue until the remedial objectives have been achieved.

The estimated present worth cost to implement the remedy is $238,000. The cost to construct the remedy is estimated to be $51,000. The estimated total present worth of annual operation, maintenance, and monitoring costs are $187,000.

TABLE 1
Nature and Extent of Contamination
Range of sampling dates: June 2004 - December 2005

SURFACE SOILS	Contaminant of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compound (VOC)	tetrachloroethene	0.006 - 0.6	1.4	0 - 9
SUBSURFACE SOIL	**Contaminants of Concern**	**Concentration Range Detected (ppm)[a]**	**SCG[b] (ppm)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compound (VOC)	tetrachloroethene	0.002 - 0.46	1.4	0 - 8
GROUNDWATER	**Contaminant of Concern**	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compound (VOC)	tetrachloroethene	0.3 - 120	5	11 - 51
AIR	**Contaminant of Concern**	**Concentration Range Detected ($\mu g/m^3$)[a]**	**SCG[b] ($\mu g/m^3$)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compound (VOC)	tetrachloroethene	41- 42 (indoor)	N/A	N/A
Volatile Organic Compound (VOC)	tetrachloroethene	1,715 - 4,143 (sub slab)	N/A	N/A

[a] ppb = parts per billion, which is equivalent to micrograms per liter, µg/l, in water; $\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
[b] SCG = standards, criteria, and guidance values;

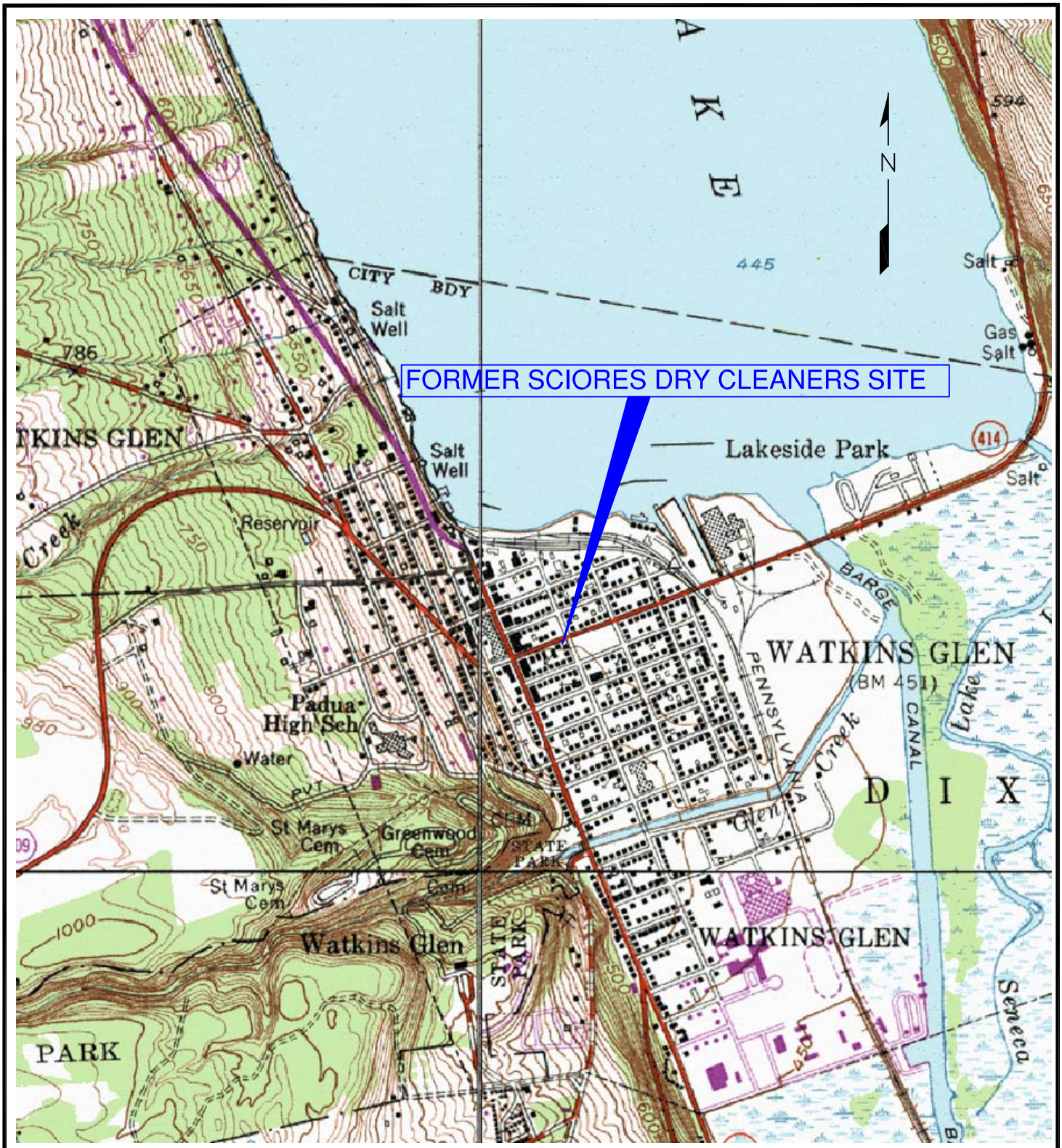
Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels."

There are no current cleanup SCGs applicable to VOCs in sub slab soil gas, indoor air or ambient outdoor air. Concentrations of PCE in air were evaluated using the NYSDOH guidance document titled "Evaluating Soil Vapor Intrusion in the State of New York" dated February 2005.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	OM&M	Total Present Worth
No Action	$0	$0	$0
Groundwater Monitoring / SSD	$51,000	$187,000	$238,000
ZVI - ISCO	$5,824,000	$457,000	$6,281,000



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APPROXIMATE SCALE IN MILES

MAP LOCATION

SOURCE: USGS MAP, BURDETT, NY
DATED 1950, PHOTOINSPECTED 1976

TITLE

SITE LOCATION MAP

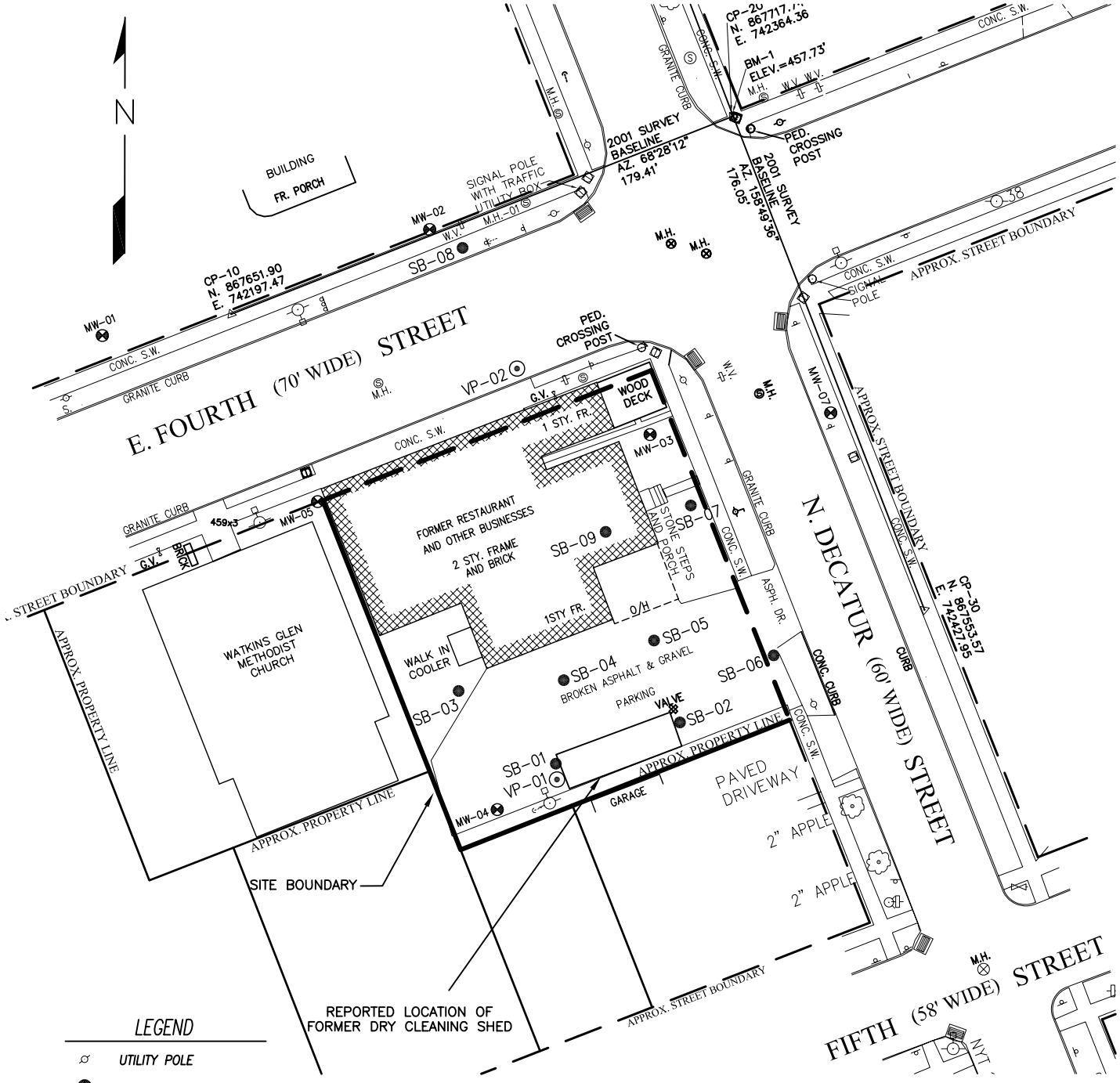
FORMER SCIORE'S DRY CLEANERS SITE

WATKINS GLEN, NEW YORK

PREPARED FOR

NYSDEC WA No. D003970-15

Environmental Resources Management (ERM)			SCALE: GRAPHIC	FIGURE: 1
DRAWN: EMF	JOB NO.: 00136190.03	FILE NAME: 0013619-03-015	DATE: 3/1/05	



LEGEND

- UTILITY POLE
- SOIL BORING (SB)
- VERTICAL PROFILE (VP)
- MONITORING WELL
- LIGHTPOLE
- CATCH BASIN
- SANITARY SEWER MAN HOLE
- WATER VALVE
- FIRE HYDRANT
- GAS VALVE
- SURVEY CONTROL POINT
- STREET SIGN
- GUY WIRE
- APPROXIMATE PROPERTY LINE
- APPROXIMATE STREET BOUNDARY

Source: Popli Consulting Engineers & Surveyors
Dwg No: TBHHAZ.

TITLE

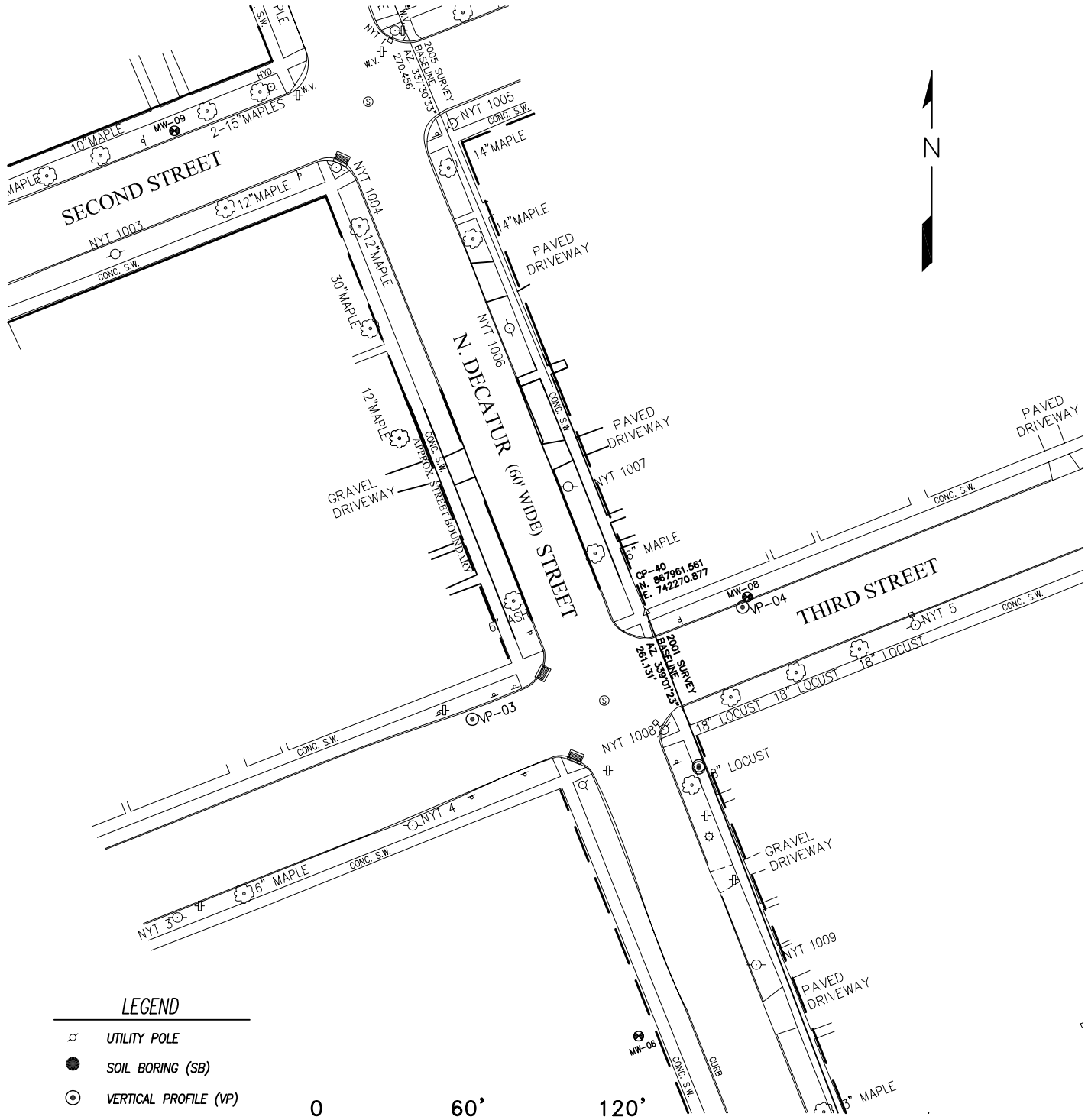
SITE PLAN

FORMER SCIORE'S DRY CLEANERS SITE
WATKINS GLEN, NEW YORK

PREPARED FOR

NYSDEC

ERM Environmental Resources Management			SCALE: GRAPHIC	FIGURE: 2
DRAWN: EMF	JOB NO.: 0013619	FILE NAME: 0013619-03-011	DATE: 1/13/06	



LEGEND

- UTILITY POLE
- SOIL BORING (SB)
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Source: Popli Consulting Engineers & Surveyors
Dwg No: TBHHAZ.

TITLE

DOWNGRADIENT SAMPLE LOCATIONS
FORMER SCIORE'S DRY CLEANERS SITE
WATKINS GLEN, NEW YORK

PREPARED FOR

NYSDEC

ERM Environmental Resources Management

SCALE	FIGURE
GRAPHIC	3

DRAWN:	JOB NO.:	FILE NAME:	DATE
EMF	0013619	0013619-03-011	1/13/06