



Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
American Drive-In Cleaners Site
Operable Unit 2
Levittown, Nassau County
Site Number 1-30-049

August 2002

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

American Drive-In Cleaners Operable Unit 2 Inactive Hazardous Waste Site Levittown, Nassau County, New York Site No. 130049

Statement of Purpose and Basis

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

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the American Drive-In Cleaners Operable Unit 2 inactive hazardous waste disposal site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. 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 release 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 the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the American Drive-In Cleaners Operable Unit 2 site and the criteria identified for evaluation of alternatives, the NYSDEC has selected air sparging and soil vapor extraction. The components of the remedy are as follows:

- An in-situ air sparging system to treat contaminated groundwater. The air sparging system will consist of sparge wells installed to a depth of 50 to 80 feet.
- A soil vapor extraction (SVE) system to capture the air containing volatile organic contaminants once it rises above the water table. The SVE system will consist of vertical SVE wells, installed above the water table and screened at depths of approximately 20 to 30 feet.
- Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. The groundwater monitoring program will be implemented for a time period of up to 30 years. Air and groundwater at the Island Trees

High School irrigation well will also be monitored by the NYSDEC. Air data will be evaluated for compliance with Air Guide 1 requirements.

- If monitoring of the air and groundwater at the Island Trees High School irrigation well indicates that Air Guide 1 requirements are not being met, a new irrigation well will be installed on the Island Trees High School property.
- The PCE contamination in groundwater remaining after treatment will be allowed to naturally attenuate and will be monitored and evaluated to assure attenuation is occurring.

New York State Department of Health Acceptance

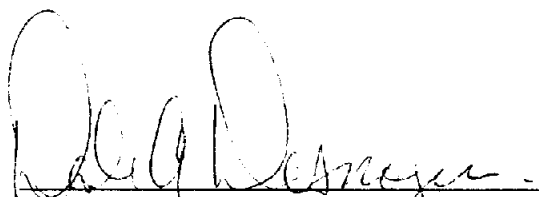
The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

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.

SEP 25 2002

Date



Dale A. Desnoyers, Acting Director
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RECORD OF DECISION

American Drive-In Cleaners Site
Operable Unit 2
Levittown, Nassau County
Site No. 1-30-049
August 2002

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at American Drive-In Cleaners Operable Unit 2, a Class 2 inactive hazardous waste disposal site. Operable Unit 2 (OU2) is the off-site groundwater plume beneath and south of Hempstead Turnpike. As more fully described in Sections 3 and 4 of this document, the discharge of dry cleaning solvent into on-site cesspools has resulted in the disposal of hazardous wastes, primarily tetrachloroethene (PCE), at the site, some of which have migrated from the site to surrounding areas including groundwater downgradient of the site. These disposal activities have resulted in the following significant threats in OU2 to the public health and/or the environment:

- A significant threat to human health associated with the presence of PCE in groundwater which has impacted an irrigation well at a nearby school. This could result in human exposures via dermal contact or inhalation if levels were to increase;
- A significant threat to the environment associated with the environmental damage to a groundwater resource. PCE contamination from the site affects groundwater beneath and hydraulically downgradient of the site, impacting its value as a sole source aquifer; and
- A potential threat to human health associated with the potential for human exposure to PCE vapors that may migrate into buildings or basements.

In order to eliminate or mitigate the significant threats to the public health that the hazardous wastes disposed at the American Drive-In Cleaners site have caused, the following remedy was selected:

- An in-situ air sparging system to treat contaminated groundwater in order to prevent the higher PCE contamination in the groundwater plume from migrating further. The air sparging system will consist of sparge wells installed to a depth of 50 to 80 feet.
- A soil vapor extraction (SVE) system to capture the air containing volatile contaminants once it rose above the water table. The SVE system will consist of vertical SVE wells, installed above the water table and screened at depths of approximately 20 to 30 feet. Piping will connect these wells to the treatment building. The need for effluent air treatment before release will be evaluated during the design phase.

- A long-term groundwater monitoring program will be instituted. The groundwater monitoring program will be implemented for a time period of up to 30 years;
- Monitoring of the air and groundwater at the Island Trees High School irrigation well. Air data will be evaluated to check for compliance with NYSDEC Air Guide 1 requirements. If these requirements are not met, the following contingency plan will go into effect: A new irrigation well will be installed on the Island Trees High School property as far from the groundwater contamination as possible; and
- Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as determined by the Nassau County Department of Health (NCDOH) from the affected areas.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The American Drive-in Cleaners site consists of approximately 16,000 square feet, or 0.37 acres, located at 3801 Hempstead Turnpike, Levittown, Nassau County, New York (see Figures 1 and 2). The site is located on the north side of Hempstead Turnpike, several hundred feet east of its intersection with Wantagh Avenue. The area around the site consists of commercial properties along Hempstead Turnpike, with Island Trees schools and residential areas on side streets nearby.

Operable Unit 2, which is the focus of this ROD, consists of the area of groundwater contamination beneath and south of Hempstead Turnpike. This area primarily consists of the area beneath the parking lot of the Target shopping plaza and the area beneath some of the athletic fields at the Island Trees High and Middle Schools (see Figure 2). An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site, Operable Unit 1, consists of the on-site contamination at 3801 Hempstead Turnpike and small portions of adjacent properties. A remedy for Operable Unit 1 was previously selected in a March 2001 Record of Decision as discussed in Section 3.2.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The site was developed and the current building constructed in the mid 1950's. American Drive-In Cleaners has occupied the building since it was constructed and was the sole occupant at one time. Prior to 1981, wastewater from the building drained into one of several cesspools located north and east of the building. PCE, or wastewater containing PCE, was apparently disposed of in drains leading to the two cesspools on the east side of the building at some time before 1981. PCE is a common solvent used in dry cleaning operations. The building was connected to the public sewer

system in 1981. In addition, a small area of soil contaminated by PCE is present near the northwest corner of the building at the surface. This area of contamination is likely due to a small PCE spill or improper disposal of PCE contaminated waste at an unknown time.

In late 1997, a 5,000 gallon fuel oil underground storage tank was removed from an unpaved area west of the site building.

3.2: Remedial History

In September of 1990, the Nassau County Department of Public Works (NCDPW) installed five monitoring wells on a then vacant piece of property directly across the street and hydraulically downgradient from the American Drive-In Cleaners site. Groundwater from some of these monitoring wells was found to be contaminated by PCE. NCDPW then asked the Nassau County Department of Health (NCDOH) to investigate American Drive-In Cleaners as a possible source of the contamination. In December 1990, NCDOH conducted a soil vapor survey and collected a surface soil sample near the northwest corner of the building on the American Drive-In Cleaners property. The vapor samples indicated PCE contamination and the soil sample was found to contain 1,500 parts per million (ppm) of PCE.

The site was then referred to NYSDEC and in December of 1991 was listed as a Class 2 inactive hazardous waste disposal site based on the NCDOH findings. A Class 2 site is one which presents a significant threat to the public health and/or the environment.

In January 2001 the site was split into two operable units. Operable Unit 1 is the area north of Hempstead Turnpike, and Operable Unit 2 is the area south of and beneath Hempstead Turnpike. The contamination of concern in Operable Unit 2 is the off-site groundwater PCE plume. The decision to divide the site into two operable units was made by NYSDEC and NYSDOH to enable the remediation of the on-site source areas and contaminated groundwater to proceed while the necessary additional data was being gathered concerning the off-site groundwater plume.

A Record of Decision for Operable Unit 1 was issued in March 2001 selecting in-situ chemical oxidation, soil vapor extraction, on-site groundwater extraction and treatment, and long term groundwater monitoring as the remedy for that operable unit. A soil vapor extraction system has been installed beneath the on-site building by the United States Environmental Protection Agency (USEPA) to address vapors in the building. Negotiations with the property owner to implement on-site remedial actions are underway.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: 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 September 1997 and January 2002. A report entitled "Remedial Investigation, American Drive-In Cleaners, November 2000 has been prepared which describes the field activities and findings of the RI in detail. Further investigation of Operable Unit 2 was subsequently conducted and the findings discussed in "Operable Unit 2 Off-Site Remedial Investigation, American Drive-In Cleaners Site, February 2002". These documents are available for review at the document repositories identified in Section 1.

The RI included the following activities:

- Research of historical information
- Assessment of previously installed monitoring wells
- Soil vapor survey
- Test boring program
- Soil Sampling
- Installation of monitoring wells
- Hydraulic conductivity testing
- Groundwater sampling
- Test pit excavations
- Survey of the site
- Groundwater well user survey
- Groundwater level measurements
- Baseline qualitative health assessment

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data were compared to environmental standards, criteria, and guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the American Drive-In Cleaners site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants.

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.

Chemical concentrations are reported in parts per billion (ppb), and parts per million (ppm). For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

Overburden deposits encountered at the site consist of glacial outwash, in some cases covered by 1 to 7 feet of sandy silt fill. The two deposits pertinent to the site are the upper glacial outwash deposit and the Magothy Formation.

From the surface to a depth of approximately 85 feet is the upper glacial outwash deposit. The upper glacial outwash consists of brown gravelly sand. The water bearing unit within this deposit, beginning at a depth of approximately 34 feet, is known as the upper glacial aquifer. In Nassau County the upper glacial aquifer is generally used only for irrigation. Groundwater flow in the Upper Glacial aquifer is generally to the south (see Figure 3) in the vicinity of the site.

Below 85 feet is the Magothy Formation. As the deepest borings at the site were completed to a maximum depth of 121 feet, this investigation did not determine the lower extent of the Magothy Formation. However, the Magothy Formation is typically at least several hundred feet thick on much of Long Island. The observed portion of the Magothy Formation consisted of brown, silty, fine to medium grained sand. The Magothy aquifer is a very productive groundwater source, and is the primary source of potable drinking water in Nassau County.

4.1.2: Nature of Contamination

As described in the RI report, many soil and groundwater samples were collected at the site to characterize the nature and extent of contamination. Since OU-2 deals only with off-site groundwater, only the groundwater results are summarized in this document. The main category of contaminants which exceed their SCGs are volatile organic compounds (VOCs). The primary contaminant of concern is tetrachloroethene, also known as perchloroethene, "perc" or PCE. Two related VOCs, trichloroethene (TCE) and dichloroethene (DCE), also exceeded SCGs in groundwater in several locations. TCE and DCE are breakdown products that are formed when PCE naturally degrades. At each location where they were found, PCE was found at greater concentrations.

4.1.3: Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in groundwater and compares the data with the SCGs for the site. The following is a summary of the findings of the investigation.

Groundwater

Groundwater samples were taken from 21 monitoring wells and an irrigation well at Island Trees High School (see Figure 4). Sixteen of these wells are within Operable Unit 2. Ten of the sixteen Operable Unit 2 monitoring wells were shallow, water table wells of about 40 feet in depth. Those wells are identified with an "S" after the well number. Five of the Operable Unit 2 monitoring wells

were of intermediate depth, approximately 80 feet deep, and are identified with an "I". The remaining monitoring well is a deep well, approximately 120 feet deep, and is identified with a "D".

The results of groundwater sampling and analysis indicate a plume of contamination from the site heading just east of due south. PCE was the primary contaminant found in all the impacted wells off-site, though in MW-8S and MW-10S breakdown products of PCE, TCE and/or DCE, were also found in concentrations above groundwater standards. The groundwater standard for all three of these compounds is 5 ppb. The highest concentrations of these contaminants were found in the shallow monitoring wells and concentrations decreased with depth. Acetone was also detected in monitoring well MW-9I at a concentration of 54 ppb, just above the groundwater standard of 50 ppb. Previous groundwater samples taken at this location did not contain acetone. This result is likely due to laboratory contamination as acetone is a common laboratory contaminant.

Shallow monitoring well MW-10S, located approximately 250 feet downgradient from the highly contaminated cesspool on-site, was the most contaminated well off-site. MW-10S was sampled twice since the well was installed in August of 2001. The results indicated PCE contamination of 1,900 ppb in August of 2001 and 5,100 ppb in October of 2001. TCE and DCE were also present at concentrations of up to 17 ppb.

Monitoring well MW-8S contained PCE at concentrations of 740 ppb in August 2001 and 190 ppb in October 2001. The maximum historical concentration in this well was 1,500 ppb of PCE in February of 1999 when the well was first sampled.

PCE concentrations in MW-4S were below 100 ppb when the well was sampled in 1990 and early 1998. PCE concentrations increased from April 1998 until February 1999, when they peaked at 580 ppb. In the most recent sampling results of this well in October 2001 PCE was present at a concentration of 200 ppb.

Monitoring well MW-1S contained PCE at concentrations of 95 ppb and 30 ppb respectively in the August and October 2001 sampling rounds. Prior to those rounds, the concentration of PCE in that well had always ranged between 180 ppb and 360 ppb in samples taken from 1990 through February 1999.

MW-9S and the Island Trees High School irrigation well were the only other shallow off-site wells found to contain PCE. All samples taken from these wells in the 2001 sampling rounds contained 13 ppb or less of PCE.

The greatest concentration of PCE in the off-site intermediate depth wells was found in the August 2001 sample taken from monitoring well MW-8I at 470 ppb. Monitoring well MW-10I contained a maximum of 29 ppb of PCE in the August 2001 sample. Samples from no other off-site intermediate well exceeded groundwater standards.

No volatile organic compounds were found in samples taken from the only off-site deep monitoring well, MW-9D.

Well Survey

A private well survey was conducted within a ½ mile radius of the site. No private wells were identified in the area surveyed.

The nearest public water supply well is located approximately 4,000 feet west of the site. The nearest downgradient public water supply wells are located approximately 4,200 feet southwest and 5,000 feet south-southwest of the site.

The Island Trees High School irrigation well is located approximately 1100 feet south of the site.

4.2: 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 health risks can be found in Section 6.0 of the RI report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

- Ingestion of contaminated groundwater. For ingestion of contaminated groundwater to occur, contaminated groundwater would have to reach a well being used for human consumption. A private well survey was conducted within one half-mile of the site, and no private drinking water supply wells were identified. Also, no public drinking water supply wells exist within one half-mile downgradient of the site. Public drinking water supply wells further downgradient of the site are tested regularly, so that only water meeting NYSDOH drinking water standards is distributed to the public. Therefore, exposures to contaminated drinking water via ingestion are unlikely, unless drinking water supply wells are installed within the contaminant plume. Installation of new water supply wells is regulated by the Nassau County Department of Health, which makes this unlikely to occur;
- The possible inhalation of vapors from or dermal contact with water from the irrigation well at the Island Trees High School. Due to the low concentrations of contaminants detected in the well the likelihood of significant exposure is low, however, the well should continue to be monitored; and
- The possible migration of volatile organic vapors into buildings, basements, foundations and utilities, which could result in the inhalation of these vapors. Given the depth to groundwater and the absence of buildings over the most concentrated portion of the off-site groundwater plume, the likelihood of this exposure is low.

4.3: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental or ecological exposures and ecological risks which may be presented by the site. The following pathways for environmental exposure and/or ecological risks have been identified:

- There is a significant threat to the environment associated with the environmental damage to a groundwater resource. PCE contamination from the site affects groundwater beneath and hydraulically downgradient of the site, impacting its value as a sole source aquifer.

SECTION 5: 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 Potential Responsible Parties (PRP) for the site, documented to date, include: the Kasper Irrevocable Trust, and Parviz Nezami.

The PRPs declined to implement the RI/FS at the site when requested by the NYSDEC. Therefore, the investigation was completed under the State Superfund program. 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 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. The overall remedial goal is to meet all standards, criteria and guidance (SCGs) and be protective of human health and the environment. 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 goals selected for this site are:

- *Eliminate the potential for ingestion of or contact with, groundwater affected by the site that does not attain NYSDOH Standards for public drinking water supplies.*
- *Eliminate, to the extent practicable, off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*
- *Eliminate the limited potential for migration of volatile organic vapors into buildings, basements, foundations and utilities.*

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 laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the American Drive-In Cleaners Operable Unit 2 site were identified, screened and evaluated in the report entitled Off-Site Focused Feasibility Study, Operable Unit 2, American Drive-In Cleaners Site, February 2002.

The Feasibility Study is focused due to widespread experience of NYSDEC and its consultants in remediating dry cleaner related inactive hazardous waste disposal sites. Two common, proven remedies at such sites, groundwater extraction and treatment, and air sparging, were evaluated. In-situ chemical oxidation was also evaluated as the innovative technology most likely to be successful at this site.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated groundwater at the site.

Alternative 1: No Action with Annual Groundwater Monitoring

<i>Present Worth:</i>	\$ 42,000
<i>Capital Cost:</i>	\$ 0
<i>Present Worth of O&M:</i>	\$ 42,000
<i>Time to Implement</i>	<i>not applicable</i>

This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. This alternative would include annual groundwater monitoring for a time period of 30 years. The Operable Unit 1 Record of Decision included quarterly sampling of eight monitoring and extraction wells and the Island Trees irrigation well for 2 years and annual sampling thereafter. This alternative would add annual sampling of two more monitoring wells, MW-11S and MW-12S, to this sampling program. Air at the Island Trees High School irrigation well would also be monitored by the NYSDEC for compliance with Air Guide 1 requirements. Details of this monitoring would be established during the design phase of the remedy.

Alternative 2: Extraction and Treatment of Groundwater with PCE Concentrations of greater than 5 ppb

<i>Present Worth:</i>	\$ 3,271,000
<i>Capital Cost:</i>	\$ 1,049,000
<i>Present Worth of O&M:</i>	\$ 2,222,000

This alternative would include groundwater extraction consisting of five extraction wells (Figure 5). Three of these wells would be installed along the centerline of the plume and screened from the top of the water table at approximately 37 feet to a depth of 80 feet. Two of these intermediate depth extraction wells would be installed on Island Trees School property, the third would be installed on Starwood property (Target retail store parking lot). The final two extraction wells would be screened at a shallow depth from approximately 37 feet to 58 feet and located at the northern Island Trees High School property boundary. The wells would be east and west of the plume centerline to address the width of the plume.

The total flow rate of extracted groundwater would be approximately 140 gallons per minute. Extracted groundwater would be pumped to a treatment system located in a small building on Island Trees High School property. The treatment system would include an air stripper with associated off-gas treatment. Treated water would be discharged to the stormwater treatment system. It is estimated that the extraction and treatment system would operate for approximately 10 to 15 years.

This alternative also includes air and groundwater monitoring as described in Alternative 1, with the monitoring continuing for an estimated 15 years.

If monitoring of the air at the Island Trees High School irrigation well indicates that Air Guide 1 requirements are not being met, the following contingency plan would go into effect:

A new irrigation well would be installed on the Island Trees High School property as far east or west of the groundwater contamination as possible. The well would be designed and constructed in a similar manner to the existing well. The well would consist of a six inch steel screen and riser, installed to a depth of 70 feet with a 20 foot screen length. A sand filter pack would be placed around the well screen and a bentonite seal would be installed on top of the filter pack. The remaining length of the riser would be surrounded by a cement grout mixture. A submersible pump with a capacity of approximately 100 gallons per minute would be installed in the well and piped to the existing irrigation system. The existing irrigation well would be properly abandoned according to NYSDEC procedures.

Alternative 3: Extraction and Treatment of Groundwater with PCE Concentrations of greater than 50 ppb

<i>Present Worth:</i>	\$ 2,689,000
<i>Capital Cost:</i>	\$ 1,023,000
<i>Present Worth of O&M:</i>	\$ 1,666,000

This alternative is similar to Alternative 2, however only groundwater with concentrations above 50 ppb would be extracted and treated. This alternative would include groundwater extraction consisting of four extraction wells (Figure 6). The wells would be screened from the top of the water table at approximately 37 feet to a depth of 80 feet. Three of these intermediate depth extraction wells would be installed on Island Trees School property, two along the northern property line and one directly upgradient of the Island Trees High School irrigation well. The fourth well would be installed on Starwood property (Target retail store parking lot).

The total flow rate of extracted groundwater would be approximately 140 gallons per minute. It is estimated that the extraction and treatment system would operate for approximately 5 to 10 years.

Under this alternative groundwater treatment and discharge, as well as the contingency plan to install a new irrigation well at Island Trees High School, if necessary, would be the same as in Alternative 2. An air and groundwater monitoring plan would be implemented as described in Alternative 1.

The PCE concentrations in groundwater remaining after treatment is completed would be 50 ppb or less. These concentrations would be allowed to naturally attenuate and would be monitored and evaluated to assure attenuation is occurring as projected.

Alternative 4: In-Situ Air Sparging of Groundwater near the southern property line of the Starwood Property, Soil Vapor Extraction and Monitored Natural Attenuation

<i>Present Worth:</i>	\$ 2,279,000
<i>Capital Cost:</i>	\$ 1,496,000
<i>Present Worth of O&M:</i>	\$ 783,000

Under this Alternative groundwater would be treated in-situ via air sparging. Sparging wells would be located in lines perpendicular to the direction of groundwater flow to treat contaminated groundwater preventing the higher PCE concentrations in the groundwater plume from further migration. These sparge wells would be located on the Starwood property (Target retail store parking lot), near the Island Trees Schools property line. The air sparging system would consist of sparge wells installed to a depth of 50 to 80 feet, or 15 to 45 feet below the water table (see Figure 7). Air would be injected into these wells and would enter the groundwater through screens at the bottom of these wells. Contaminants such as PCE are volatilized into the air as it rises up through the groundwater. The air containing volatile contaminants would then be captured by a soil vapor extraction (SVE) system once it rose above the water table. It is assumed that the air sparging system would need to be operated on a long term basis, estimated at 10 years.

The soil vapor extraction (SVE) system would consist of vertical SVE wells, installed above the water table and screened at depths of approximately 20 to 30 feet. Piping would connect these wells to the treatment building where a vacuum would be applied to the system to draw air contaminated by VOCs, primarily PCE in this case, from the subsurface soils. The contaminants in the air would be treated with activated carbon before release.

Pilot studies for the air sparging and SVE systems would be conducted prior to full scale implementation in order to evaluate full scale system design parameters such as well spacing, air injection/extraction rates and contaminant concentration and removal rates.

This alternative would include an air and groundwater monitoring plan as described in Alternative 1. The contingency plan to install a new irrigation well at Island Trees High School, if necessary, would be the same as in Alternative 2.

The PCE concentrations in groundwater remaining after treatment is completed would be allowed to naturally attenuate and would be monitored and evaluated to assure attenuation is occurring as projected.

This alternative is a NYSDEC modification of the Alternative 4 presented in the Feasibility Study. In the Feasibility Study the proposed locations for the air sparging/SVE points was in the current center of the groundwater plume. NYSDEC's modification moves these points further downgradient

to a location that would still allow the most concentrated portion of the plume to be treated if further migration occurs before the air sparging/SVE system is installed. NYSDEC believes this would be more effective in preventing higher groundwater concentrations of PCE from migrating beyond the Starwood Property. The number and location of air sparge and SVE points on Figure 7 should be considered conceptual only. Actual numbers and locations would be determined during the design of the remedial system.

Alternative 5: In-Situ Air Sparging of Groundwater with High PCE Concentrations, Soil Vapor Extraction and Monitored Natural Attenuation

<i>Present Worth:</i>	\$ 1,825,000
<i>Capital Cost:</i>	\$ 1,042,000
<i>Present Worth of O&M:</i>	\$ 783,000

This alternative is similar to Alternative 4; however, only groundwater with high concentrations of PCE would be treated via air sparging at its current location, rather than being intercepted at a slightly downgradient location as in Alternative 4. The air sparging system would consist of sparge wells installed to a depth of 50 to 80 feet ppb, or 15 to 45 feet below the water table (see Figure 8). The elements of the air sparging system would be the same as described in Alternative 4. It is assumed that the air sparging system would need to be operated on a long term basis, estimated at 10 years.

The soil vapor extraction (SVE) system would consist of vertical SVE wells, installed above the water table and screened at depths of approximately 20 to 30 feet. The other elements of the SVE system would be the same as described in Alternative 4.

Also as in Alternative 4, pilot studies for the air sparging and SVE systems would be conducted prior to full scale implementation in order to evaluate full scale system design parameters such as well spacing, air injection/extraction rates and contaminant concentration and removal rates.

This alternative would include an air and groundwater monitoring plan as described in Alternative 1. The contingency plan to install a new irrigation well at Island Trees High School, if necessary, would be the same as in Alternative 2.

The PCE concentrations in groundwater remaining after treatment is completed would be allowed to naturally attenuate and would be monitored and evaluated to assure attenuation is occurring as projected.

Alternative 6: In-Situ Chemical Oxidation of Groundwater with PCE Concentrations of greater than 500 ppb and Monitored Natural Attenuation

<i>Present Worth:</i>	\$ 4,050,000
<i>Capital Cost:</i>	\$ 3,495,000
<i>Present Worth of O&M:</i>	\$ 555,000

Under this alternative the area of off-site groundwater contamination greater than 500 ppb would be treated via in-situ chemical oxidation. The chemical oxidizers commonly used in this technology include Fenton's Reagent and potassium permanganate. For the purpose of this discussion Fenton's

Reagent, which consists of hydrogen peroxide with an iron catalyst, was the oxidizer evaluated. When this Reagent comes into contact with organic compounds such as PCE, a oxidation reaction occurs breaking down the organic compounds to relatively benign compounds such as carbon dioxide and water. This reaction is exothermic, meaning heat is generated.

Fenton's Reagent (or a similar chemical oxidizer) would be applied in the areas illustrated in Figure 9, through approximately 280 injection wells in saturated soils, where the concentration of PCE in the groundwater plume exceeds 500 ppb.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies would be conducted to more clearly define design. It is estimated that the chemical oxidant would be injected during two separate events approximate one year apart. During these implementations subsurface temperature would be monitored.

Air and groundwater monitoring would also be conducted as described in Alternative 1. The contingency plan to install a new irrigation well at Island Trees High School, if necessary, would be the same as in Alternative 2.

The PCE concentrations in groundwater remaining after treatment is completed would be 500 ppb or less. These concentrations would be allowed to naturally attenuate and would be monitored and evaluated to assure attenuation is occurring as projected.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

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 or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. For the American Drive-In Cleaners site the most pertinent SCGs are the groundwater standards identified in NYSDEC Technical and Operational Guidance 1.1.1, which sets the groundwater standards for PCE, TCE and DCE at 5 ppb.

Alternative 1 would not meet these SCGs within a reasonable timeframe and therefore does not meet the threshold criteria.

Alternative 2 would meet SCGs over the majority of the groundwater plume. However, some limited areas of the outermost extent of the plume may not be captured and remediated by the groundwater extraction system. These areas of relatively low concentration are expected to eventually meet SCGs through natural attenuation.

Alternative 3 would not initially meet groundwater SCGs as groundwater would only be treated to a PCE concentration of 50 ppb rather than to the groundwater standard of 5 ppb. However, under this alternative groundwater would eventually meet SCGs through natural attenuation, though not as quickly as Alternative 2.

Alternatives 4 and 5 would not initially meet groundwater SCGs as groundwater would not be treated to the groundwater standard of 5 ppb. However, under these alternatives groundwater would eventually meet SCGs through natural attenuation, though not as quickly as Alternative 2. Alternative 4 is anticipated to treat lower concentrations of PCE in groundwater than Alternative 5. Therefore, Alternative 5 would not meet SCGS as quickly as Alternatives 2, 3, and 4.

Alternative 6 would not meet SCGs initially since it is expected to only reduce PCE concentrations in groundwater to approximately 500 ppb. This alternative would eventually meet SCGs through natural attenuation, though not as quickly as Alternatives 2, 3, and 4.

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.

Alternative 1 would not be protective of human health and the environment since it would allow impacts on a natural resource, the groundwater aquifer, to continue. This alternative also presents some risk to human health due to the lack of a contingency plan for the Island Trees High School irrigation well were PCE concentrations in that well to increase.

Alternatives 2, 3, 4, 5 and 6 are considered to be largely protective of human health and the environment since no human exposures or impacts to habitat or vegetation are expected. However, damage to a natural resource, the groundwater aquifer, would continue until groundwater standards were met though natural attenuation under all these alternatives. Those standards would be reached most quickly by Alternative 2, followed by Alternatives 3 and 4, with Alternatives 5 and 6 attaining standards the most slowly.

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.

Alternative 1 would have no short term impacts since no action would be taken. It is anticipated that this alternative would take well in excess of 30 years to achieve remedial objectives through natural attenuation.

Alternative 2, 3, 4, and 5 would all present some minor short term impacts. During installation of the remedial systems each of these alternatives would result in some disruptions such as limited closure of the parking lot and athletic fields. Field personnel would be required to wear appropriate personal protective equipment to limit health risks due to exposure to contamination.

Alternative 2 is anticipated to take approximately 15 years to reach remediation goals of 5 ppb, which would also meet SCGs. Alternatives 3 and 4 are anticipated to take approximately 10 years to reach remediation goals, and another 20 years to meet SCGs through monitored natural attenuation. Alternative 5 would require an estimated 10 years to reach remediation goals and over 20 additional years to meet SCGs through monitored natural attenuation.

Alternative 6 would present a somewhat greater risk of short term impacts due to the use of an oxidizer such as hydrogen peroxide. Experienced personnel and special handling procedures would be required. Proper safety equipment would need to be used. This alternative might require the on-site storage of an oxidizer during applications.

Alternative 6 would be the most effective of the six alternatives at reducing off-site contamination in the short-term. However, even this alternative would require 2 to 3 years to meet its PCE groundwater concentration goal of 500 ppb. Groundwater standards would not be met until over 20 additional years.

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 controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 1 would not be effective in the long term.

Alternative 2 would effectively and permanently remediate off site groundwater.

Alternatives 3 and 4 would effectively and reliably remediate the high and moderately contaminated portions of the plume.

Alternatives 5 and 6 would effectively and reliably remediate highly contaminated portions of the plume.

Alternative 2 would permanently reduce the potential for human exposures through the capture of virtually all of the off-site groundwater above groundwater standards. Alternatives 3, 4, 5, and 6 would permanently reduce the potential for human exposures as they include the contingency plan for the Island Trees High School irrigation well.

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.

Alternative 1 would not reduce the toxicity, mobility or volume of contamination.

Alternative 2 would provide the greatest reduction of toxicity, mobility and volume of contaminants in off-site groundwater. Almost all of the mass of PCE contamination above groundwater standards would be removed under this alternative.

Alternatives 3 and 4 would greatly reduce the toxicity, mobility or volume of contamination in off-site groundwater, removing almost all of the high and moderate concentrations of PCE in groundwater.

Alternatives 5 and 6 would reduce the toxicity, mobility or volume of contamination in off-site groundwater, removing almost all of the PCE at high concentrations.

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

All 6 alternatives are technically implementable with readily-available methods, equipment, materials and services.

Alternatives 2, 3, 4, 5 and 6 are administratively implementable, although coordination with local and county governments, Island Trees School District and the owners/occupants of the Starwood property would be required. These alternatives would present some disruption of current site operations.

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

Alternative 1 would be the least expensive at \$42,000. Alternative 2 would be priced at \$3.3 million, Alternative 3 at \$2.7 million, Alternative 4 at \$2.3 million. Alternative 5 would be the least expensive alternative (other than no action) at \$1.8M, and Alternative 6 would be the most expensive at \$4.0M.

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 Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised.

In general the public comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 4 as the remedy for this site. Under this alternative groundwater will be treated in-situ via air sparging and soil vapor extraction. Sparging wells will be located in lines

perpendicular to the direction of groundwater flow to treat the off-site contaminated groundwater with moderate to high PCE concentrations.

This selection is based on a comparison of the alternatives. Alternative 1 was not as protective of human health as the other alternatives. Alternatives 2, 3, 4, 5 and 6 will all be effective at preventing high concentrations of contaminated groundwater from entering the Island Trees High School property and impacting the irrigation well located there. All five of these alternatives are considered to be protective. Alternative 4 was selected because it will treat both highly and moderately contaminated groundwater for an incremental increase in present worth cost (25%) compared to the least expensive effective alternative (Alternative 5).

The estimated present worth cost to implement the remedy is \$2,279,000. The capital cost to construct the remedy is estimated to be \$1,496,000 and the estimated present worth cost for operation and maintenance is \$783,000 for 30 years.

The elements of the selected remedy are as follows:

- 1) A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.
- 2) A pilot scale air sparging/SVE study will be conducted to evaluate full scale system design parameters such as well spacing, air injection/extraction rates and contaminant concentration and removal rates.
- 3) A full scale in-situ air sparging system to treat contaminated groundwater. Sparging wells will be located in lines perpendicular to the direction of groundwater flow to treat moderately contaminated groundwater near the southern Starwood property line. The air sparging system will consist of sparge wells installed to a depth of 50 to 80 feet.
- 4) A soil vapor extraction (SVE) system to capture the air containing volatile contaminants once it rose above the water table. The SVE system will consist of vertical SVE wells, installed above the water table and screened at depths of approximately 20 to 30 feet. Piping will connect these wells to the treatment building. The need for effluent air treatment before release will be evaluated during the design phase.
- 5) The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until NYSDEC determines that continued operation is technically impracticable or not feasible.
- 6) Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. The groundwater monitoring program will be implemented for a time period of up to 30 years. The Operable Unit 1 Record of Decision included quarterly sampling of eight monitoring and extraction wells and the Island Trees irrigation well for 2 years and annual sampling thereafter. This alternative will add sampling of two more monitoring wells, MW-11S and MW-12S, to this sampling program. This program will allow the effectiveness of the air sparging and SVE treatment systems and monitored natural attenuation to be monitored and will be a component of the operation and

maintenance for the site. Air at the Island Trees High School irrigation well will also be monitored by the NYSDEC for compliance with Air Guide 1 requirements. Details of this monitoring will be established during the design phase of the remedy.

- 7) If monitoring of the air at the Island Trees High School irrigation well indicates that Air Guide 1 requirements are not being met, the following contingency plan will go into effect: A new irrigation well will be installed on the Island Trees High School property as far from the groundwater contamination as possible. The well will be designed and constructed in a similar manner to the existing well. The well will consist of a six inch steel screen and riser, installed to a depth of 70 feet with a 20 foot screen length. A sand filter pack will be placed around the well screen and a bentonite seal will be installed on top of the filter pack. The remaining length of the riser will be surrounded by a cement grout mixture. A submersible pump with a capacity of approximately 100 gallons per minute will be installed in the well and piped to the existing irrigation system.
- 8) The PCE concentrations in groundwater remaining after treatment will be allowed to naturally attenuate and will be monitored and evaluated to assure attenuation is occurring.
- 9) Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as determined by the Nassau County Department of Health (NCDOH) from the affected off-site areas.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort 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:

- A repository for documents pertaining to the site was established;
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties;
- A fact sheet describing the work plan was mailed to the people and organizations on the mailing list in November, 1997;
- A public meeting was held at the Island Trees Middle School in Levittown on December 4, 1997;
- A fact sheet announcing a public meeting and describing the Remedial Investigation, Feasibility Study, and proposed remedy for Operable Unit 1 was mailed to the people and organizations on the mailing list in February, 2001;
- A public meeting was held at the Island Trees High School in Levittown on March 13, 2001;
- In March 2001 a Responsiveness Summary was prepared and made available to the public, to address the comments received on the Operable Unit 1 PRAP;

- A fact sheet announcing a public meeting and describing the Remedial Investigation, Feasibility Study, and proposed remedy for Operable Unit 2 was mailed to the people and organizations on the mailing list in June, 2002;
- A public meeting was held at the Island Trees High School in Levittown on June 17, 2002, and;
- In August 2002 a Responsiveness Summary was prepared and made available to the public, to address the comments received on the Operable Unit 2 PRAP.

Table 1

Nature and Extent of Contamination

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY of EXCEEDING SCGs	SCG
Groundwater (ppb)	Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 5,100	34 of 61	5
		Trichloroethene	ND to 26	7 of 61	5
		Dichloroethene (total)	ND to 27	3 of 61	5
		Acetone	ND to 54	1 of 61	50

SCGs - Standards, Criteria and Guidelines

ppb - parts per billion

ND - non-detect

TABLE 2

Summary of Estimated Costs for Off-Site Remedial Alternatives
 Off-Site Feasibility Study
 American Drive-In Cleaners Site
 Site No. 2-41-026
 Jamaica, New York


Off-Site Remedial Alternatives	Estimated Costs			Total Present Worth (Capital and O&M Costs)
	Capital Cost	Total Present Worth of O&M Costs	Total Present Worth	
1. No Action with Annual Groundwater Monitoring	\$ -	\$ 42,000	\$ 42,000	\$ 42,000
2. Groundwater Extraction and Treatment (Approach 1)	\$ 1,049,000	\$ 2,222,000	\$ 3,271,000	\$ 3,271,000
3. Groundwater Extraction and Treatment and Monitored Natural Attenuation (Approach 2)	\$ 1,023,000	\$ 1,666,000	\$ 2,689,000	\$ 2,689,000
4. In-Situ Air Sparging and Monitored Natural Attenuation (Approach 1)	\$ 1,496,000	\$ 783,000	\$ 2,279,000	\$ 2,279,000
5. In-Situ Air Sparging and Monitored Natural Attenuation (Approach 2)	\$ 1,042,000	\$ 783,000	\$ 1,825,000	\$ 1,825,000
6. In-Situ Chemical Oxidation and Monitored Natural Attenuation	\$ 3,495,000	\$ 555,000	\$ 4,050,000	\$ 4,050,000
<u>Island Trees High School Irrigation Well Contingency Approaches</u>				
Approach A: ITHS Well Relocation	\$ 28,000			
Approach B: Water Treatment	\$ 50,000			

Notes:

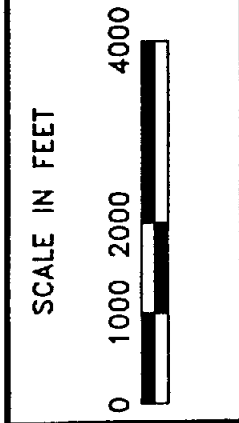
- (1) Cost estimate assumptions for Remedial Alternatives and ITHS Irrigation Well Contingency Approaches are presented herein in Section 3.4, Appendix A, and Appendix C.
- (2) Estimated costs are rounded to the nearest \$1,000.
- (3) Estimated Total Present Worth of O&M Costs are based on a 5% discount rate (i.e., interest rate = 9%, inflation rate = 4%), and durations that vary from 15 to 30 years.
- (4) Alternative No. 1 is the No Action alternative.



DRAWN BY: BWS
 DATE: FEBRUARY 2002



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AMERICAN DRIVE-IN CLEANERS
 LEVITTOWN, NEW YORK

OFF-SITE FOCUSED FEASIBILITY STUDY

LOCUS PLAN

NOTE:

BASE MAP ADAPTED FROM
 U.S.G.S. QUADRANGLE MAPS
 FREEPORT, N.Y. - 1969 &
 AMITYVILLE, N.Y. - 1969.



PROJECT No.
 55172

FIGURE No.
 1

NOTES:

SITE FEATURES (e.g., AOC SITE BUILDING, MONITORING WELLS, DIRECT PUSH BORINGS, AND ITHS IRRIGATION WELL) ARE BASED ON PLAN ENTITLED "AMERICAN DRIVE-IN CLEANERS; LEVITTOWN, LONG ISLAND, MASSACHUSETTS COUNTY, NEW YORK", PREPARED BY YEC, INC., DATED OCTOBER 2001.

COMMERCIAL DEVELOPMENT FEATURES SOUTH OF HEMPSTEAD TURNPIKE BASED ON PLAN ENTITLED "LEVITTOWN RETAIL SITUATED AT LEVITTOWN" - UTILITY PLAN, DATED 6/9/99, PREPARED BY RMS ENGINEERING.

2. DATES OF SURVEYS: JANUARY 29, 1998; MARCH 31, 1998; FEBRUARY 15, 1999; AND SEPTEMBER 19, 2001.

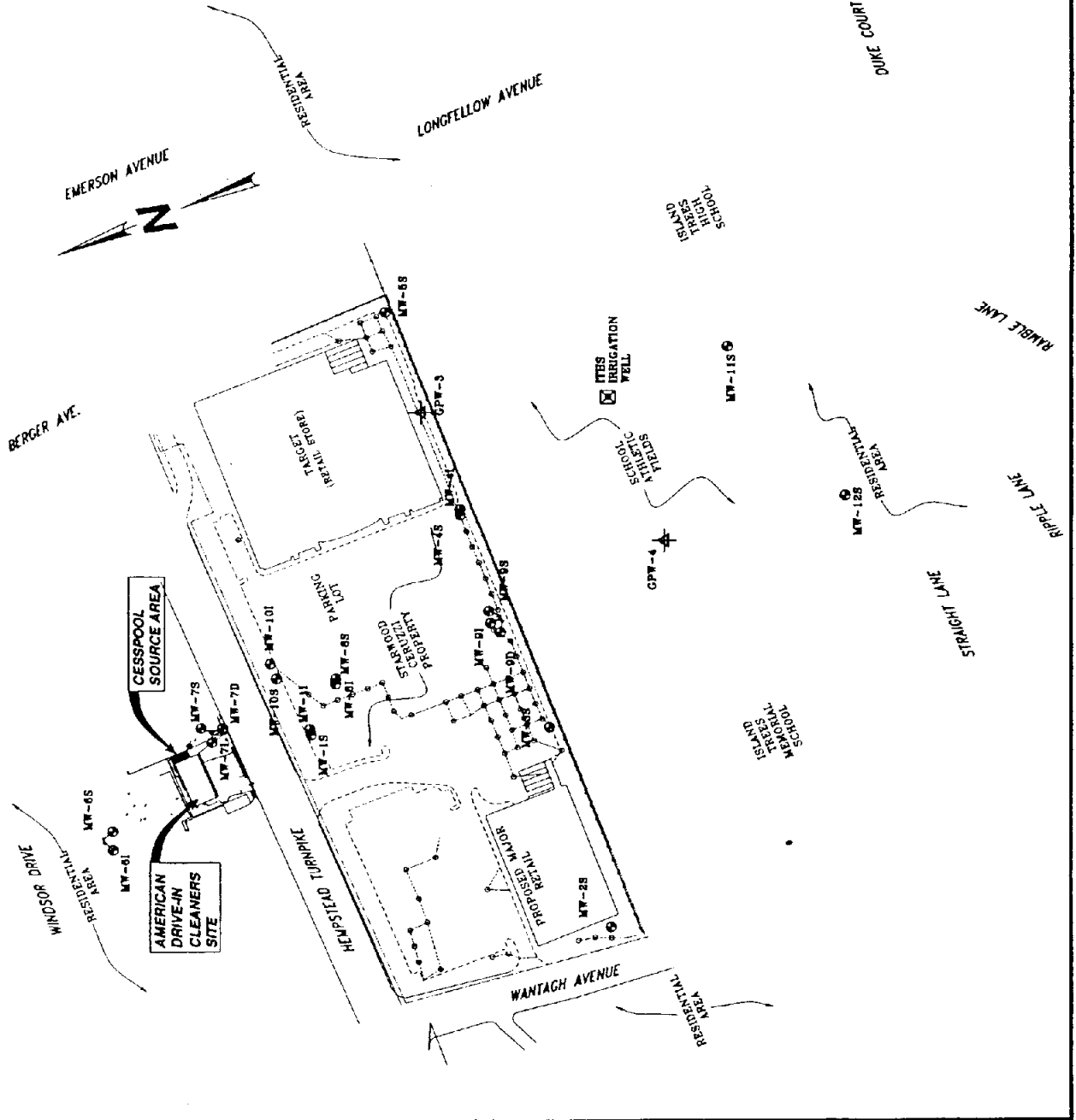
3. VERTICAL DATUM: NGVD 1929 FROM MASSACHUSETTS COUNTY MONUMENTS 15E12N AND 15E12W.

4. HORIZONTAL DATUM: NEW YORK STATE PLANE COORDINATE SYSTEM (LONG ISLAND) LAMBERT PROJECTION, N.A.D. 1927 FROM MASSACHUSETTS COUNTY MONUMENTS 15E12N AND 15E12W.

5. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

- GPW-3 LOCATION AND DESIGNATION OF DIRECT PUSH GROUNDWATER SAMPLING
- MT-01 LOCATION AND DESIGNATION OF EXISTING MONITORING WELL (S=SHALLOW, I=INTERMEDIATE, D=DEEP)
- ITHS IRRIGATION WELL
- STORMWATER CATCH BASIN/LEACH PIT NETWORK



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PROJECT No. 55172	AMERICAN DRIVE-IN CLEANERS LEVITTOWN, NEW YORK	REV No.	DESCRIPTION	BY	DATE
		SCALE IN FEET		DRAWN BY: BWS	
FIGURE No. 2	OFF-SITE FOCUSED FEASIBILITY STUDY	0 100 200 400		DATE: JANUARY 2002	
		OFF-SITE STUDY AREA AND SAMPLE LOCATION PLAN		GZA GZA GeoEnvironmental of New York	

NOTES:

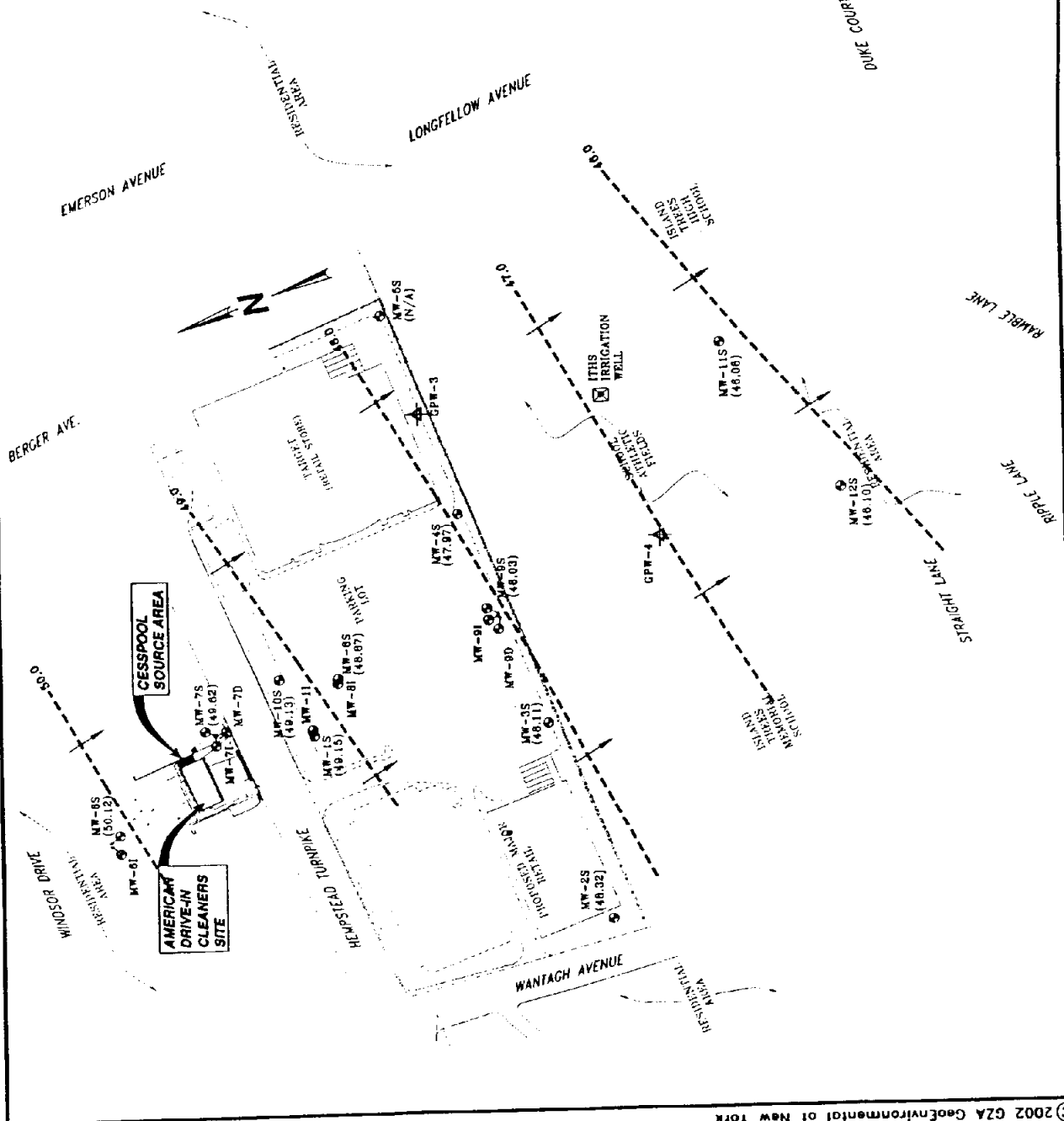
1. REFER TO NOTES ON FIGURE 2
2. GROUNDWATER CONTOURS WERE DEVELOPED BY INTERPOLATION USING WATER LEVEL MEASUREMENTS FROM THE DATE INDICATED IN WIDELY SPACED WELLS AND ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL WATER LEVELS MAY VARY FROM LOCATIONS SHOWN.

LEGEND:

47.0 - ISO-CONTOUR INDICATING GROUNDWATER ELEVATION AND FLOW DIRECTION BASED ON FIELD MEASUREMENTS

EXISTING MONITORING WELL (S=SHALLOW, I=INTERMEDIATE, D=DEEP) WITH GROUNDWATER ELEVATION ABOVE SEA LEVEL

ITHS IRRIGATION WELL

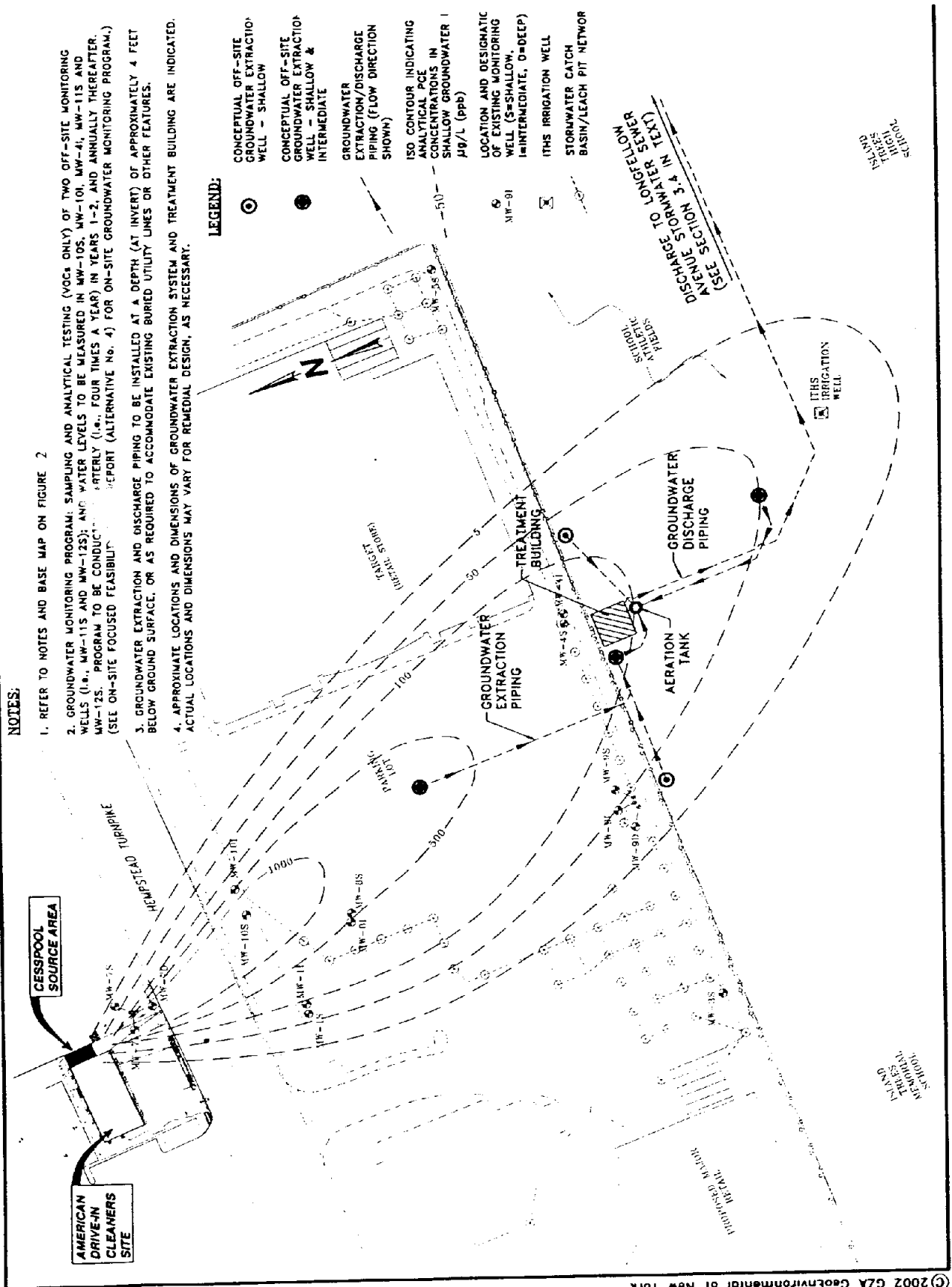


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FIGURE NO. 3	PROJECT NO. 55172	AMERICAN DRIVE-IN CLEANERS LEVITOWN, NEW YORK		REV No	DESCRIPTION	BY	DATE
		OFF-SITE FOCUSED FEASIBILITY STUDY		SCALE IN FEET		DRAWN BY: BWS	
GROUNDWATER CONTOUR PLAN SHALLOW MONITORING WELLS (10/2/01)		0 100 200 400		DATE: JANUARY 2002		GZA	
				GZA GeoEnvironmental of New York			

NOTES:

1. REFER TO NOTES AND BASE MAP ON FIGURE 2
2. GROUNDWATER MONITORING PROGRAM: SAMPLING AND ANALYTICAL TESTING (VOCs ONLY) OF TWO OFF-SITE MONITORING WELLS (I.e., MW-115 AND MW-116) AND WATER LEVELS TO BE MEASURED IN MW-105, MW-101, MW-41, MW-115 AND MW-123. PROGRAM TO BE CONDUCTED QUARTERLY (I.e., FOUR TIMES A YEAR) IN YEARS 1-2, AND ANNUALLY THEREAFTER. (SEE ON-SITE FOCUSED FEASIBILITY REPORT (ALTERNATIVE No. 4) FOR ON-SITE GROUNDWATER MONITORING PROGRAM.)
3. GROUNDWATER EXTRACTION AND DISCHARGE PIPING TO BE INSTALLED AT A DEPTH (AT INVERT) OF APPROXIMATELY 4 FEET BELOW GROUND SURFACE, OR AS REQUIRED TO ACCOMMODATE EXISTING BURIED UTILITY LINES OR OTHER FEATURES.
4. APPROXIMATE LOCATIONS AND DIMENSIONS OF GROUNDWATER EXTRACTION SYSTEM AND TREATMENT BUILDING ARE INDICATED. ACTUAL LOCATIONS AND DIMENSIONS MAY VARY FOR REMEDIAL DESIGN, AS NECESSARY.



PROJECT No. 55172
 AMERICAN DRIVE-IN CLEANERS
 LEVITOWN, NEW YORK
 OFF-SITE FOCUSED FEASIBILITY STUDY
 ALTERNATIVE No. 2
 GROUNDWATER EXTRACTION AND
 TREATMENT SYSTEMS LAYOUT
 (APPROACH 1)

REV No	DESCRIPTION	BY	DATE

SCALE IN FEET
 0 50 100 200

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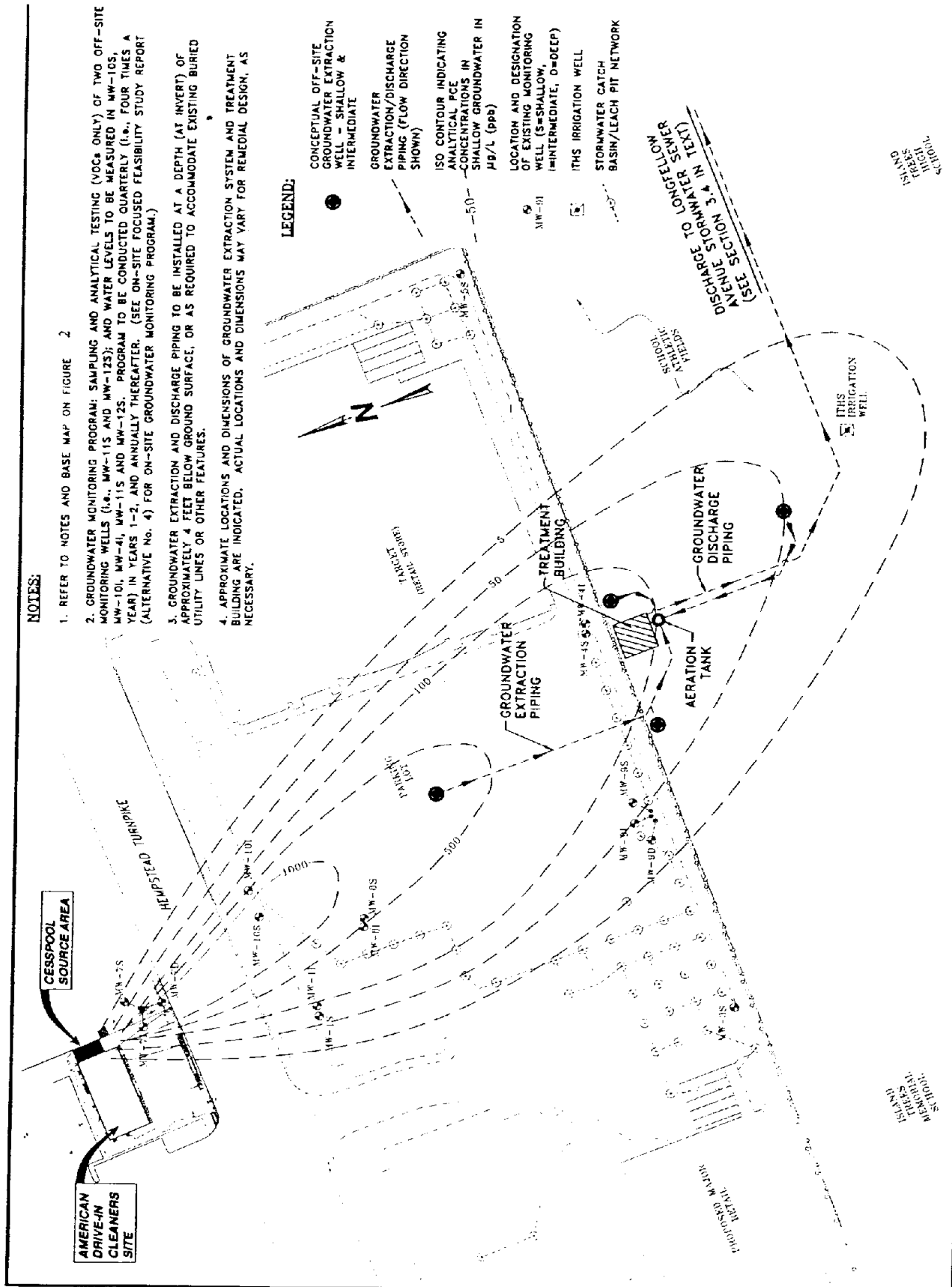
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 DATE: JANUARY 2002

NOTES:

1. REFER TO NOTES AND BASE MAP ON FIGURE 2
2. GROUNDWATER MONITORING PROGRAM: SAMPLING AND ANALYTICAL TESTING (VOCs ONLY) OF TWO OFF-SITE MONITORING WELLS (i.e., MW-115 AND MW-123); AND WATER LEVELS TO BE MEASURED IN MW-105, MW-101, MW-41, MW-115 AND MW-125. PROGRAM TO BE CONDUCTED QUARTERLY (i.e., FOUR TIMES A YEAR) IN YEARS 1-2, AND ANNUALLY THEREAFTER. (SEE ON-SITE FOCUSED FEASIBILITY STUDY REPORT (ALTERNATIVE No. 4) FOR ON-SITE GROUNDWATER MONITORING PROGRAM.)
3. GROUNDWATER EXTRACTION AND DISCHARGE PIPING TO BE INSTALLED AT A DEPTH (AT INVERT) OF APPROXIMATELY 4 FEET BELOW GROUND SURFACE, OR AS REQUIRED TO ACCOMMODATE EXISTING BURIED UTILITY LINES OR OTHER FEATURES.
4. APPROXIMATE LOCATIONS AND DIMENSIONS OF GROUNDWATER EXTRACTION SYSTEM AND TREATMENT BUILDING ARE INDICATED. ACTUAL LOCATIONS AND DIMENSIONS MAY VARY FOR REMEDIAL DESIGN, AS NECESSARY.

LEGEND:

- CONCEPTUAL OFF-SITE GROUNDWATER EXTRACTION WELL - SHALLOW & INTERMEDIATE
- GROUNDWATER EXTRACTION/DISCHARGE PIPING (FLOW DIRECTION SHOWN)
- ISO CONTOUR INDICATING ANALYTICAL PCE CONCENTRATIONS IN SHALLOW GROUNDWATER IN µg/L (ppb)
- LOCATION AND DESIGNATION OF EXISTING MONITORING WELL (S=SHALLOW, I=INTERMEDIATE, D=DEEP)
- ITHS IRRIGATION WELL
- STORMWATER CATCH BASIN/LEACH PIT NETWORK



PROJECT No. 55172
 FIGURE No. 6

AMERICAN DRIVE-IN CLEANERS
 LEVITTOWN, NEW YORK

OFF-SITE FOCUSED FEASIBILITY STUDY

ALTERNATIVE No. 3
GROUNDWATER EXTRACTION AND TREATMENT SYSTEMS LAYOUT
 (APPROACH 2)

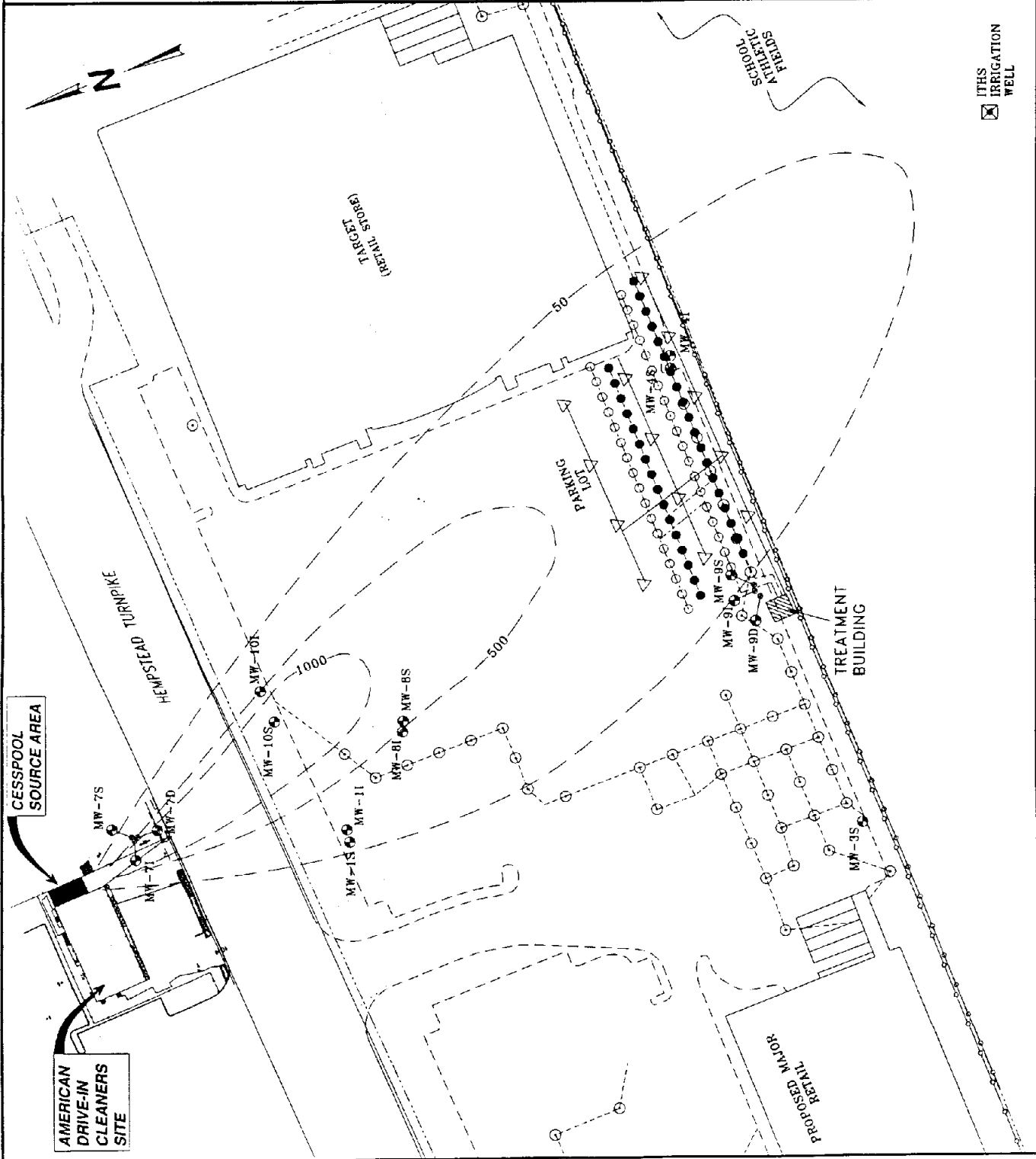
REV No.	DESCRIPTION	BY	DATE

SCALE IN FEET

0 50 100 200

DRAWN BY: BWS
 DATE: JANUARY 2002

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 GZA GeoEnvironmental of New York

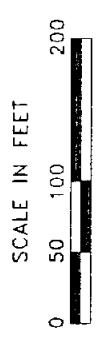


NOTES:

1. REFER TO NOTES AND BASE MAP ON FIGURE 1-2.
2. GROUNDWATER MONITORING PROGRAM: SAMPLING AND ANALYTICAL TESTING (VOCs ONLY) OF TWO OFF-SITE MONITORING WELLS (i.e., MW-11S AND MW-12S); AND WATER LEVELS TO BE MEASURED IN MW-10S, MW-10I, MW-11I, MW-11S AND MW-12S. PROGRAM TO BE CONDUCTED QUARTERLY (i.e., FOUR TIMES A YEAR) IN YEARS 1 & 2, AND ANNUALLY THEREAFTER. (SEE ON-SITE FOCUSED FEASIBILITY STUDY REPORT (ALTERNATIVE No. 4) FOR ON-SITE GROUNDWATER MONITORING PROGRAM.)
3. APPROXIMATE LOCATIONS AND DIMENSIONS OF AIR SPARGING AND SOIL VAPOR EXTRACTION SYSTEMS AND TREATMENT BUILDING ARE INDICATED. ACTUAL LOCATIONS AND DIMENSIONS MAY VARY FOR REMEDIAL DESIGN, AS NECESSARY.
4. IN-SITU AIR SPARGING AND SOIL VAPOR EXTRACTION SYSTEMS PIPING TO BE INSTALLED WITHIN A COMMON TRENCH WHERE APPROPRIATE.

LEGEND:

- ▽ SOIL VAPOR EXTRACTION WELL
- SOIL VAPOR EXTRACTION HEADER PIPING
- 50' DEEP AIR SPARGING WELL
- 80' DEEP AIR SPARGING WELL
- AIR SPARGING INJECTION PIPING
- ISO CONTOUR INDICATING ANALYTICAL PCE CONCENTRATIONS IN SHALLOW GROUNDWATER IN $\mu\text{g/L}$ (ppb)
- LOCATION AND DESIGNATION OF EXISTING MONITORING WELL (S=SHALLOW, I=INTERMEDIATE, D=DEEP)
- ☒ ITHS IRRIGATION WELL
- STORMWATER CATCH BASIN/LEACH PIT NETWORK



AMERICAN DRIVE-IN CLEANERS SITE
LEWISTOWN, NASSAU COUNTY, SITE No. 1-30-049
ALTERNATIVE NO. 4 IN-SITU AIR SPARGING SYSTEM



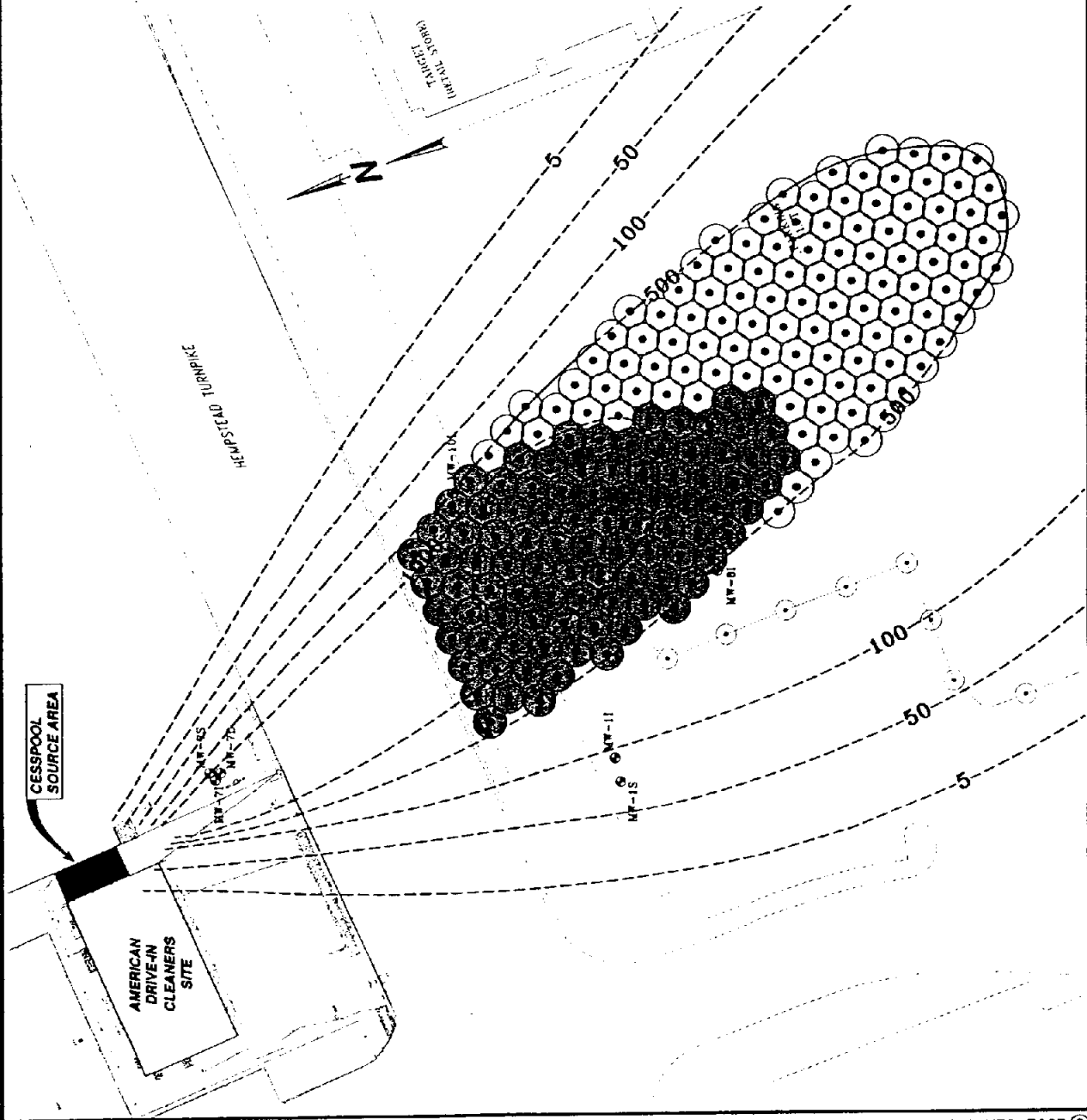
FIGURE 7

NOTES:

1. REFER TO NOTES AND BASE MAP ON FIGURE 2
2. GROUNDWATER MONITORING PROGRAM: SAMPLING AND ANALYTICAL TESTING (VOCs ONLY) OF TWO OFF-SITE MONITORING WELLS (I.E., MW-11S AND MW-12S); AND WATER LEVELS TO BE MEASURED IN MW-10S, MW-10I, MW-4I, MW-11S AND MW-12S. PROGRAM TO BE CONDUCTED QUARTERLY (I.E., FOUR TIMES A YEAR) IN YEARS 0 & 1, AND ANNUALLY THEREAFTER. (SEE ON-SITE FOCUSED FEASIBILITY STUDY REPORT (ALTERNATIVE No. 4) FOR ON-SITE GROUNDWATER MONITORING PROGRAM.)
3. WHERE BOTH INTERMEDIATE AND SHALLOW INJECTIONS ARE PLANNED, SUCH INJECTIONS WOULD BE PERFORMED IN THE SAME BORING.
4. INJECTION ZONES AND INTERVALS VARY BY LOCATION AND INJECTION EVENT. REFER TO SECTION 3.0 IN TEXT FOR MORE DETAIL.
5. APPROXIMATE LOCATIONS AND ASSOCIATED RADIUS OF OXIDANT DISTRIBUTION AT INJECTION LOCATIONS ARE INDICATED. ACTUAL LOCATIONS AND RADIUS MAY VARY FOR REMEDIAL DESIGN, AS NECESSARY.
6. RESURFACING OF ASPHALT PAVEMENT PARKING LOT TO BE CONDUCTED IN AREA OF INJECTION POINTS, FOLLOWING EVENT 7.

LEGEND:

- LOCATION OF SHALLOW AQUIFER INJECTION POINT AND RADIUS OF OXIDANT DISTRIBUTION (SEE NOTE 4)
- LOCATION OF INTERMEDIATE AND SHALLOW AQUIFER INJECTION POINT AND RADIUS OF OXIDANT DISTRIBUTION (SEE NOTES 3 AND 4)
- 1000 --- ISO CONTOUR INDICATING ANALYTICAL PCE CONCENTRATIONS IN SHALLOW GROUNDWATER IN µg/L (ppb)
- MW-RI ○ EXISTING MONITORING WELL (S=SHALLOW, I=INTERMEDIATE, D=DEEP)
- STORMWATER CATCH BASIN/LEACH PIT NETWORK



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PROJECT No. 55172
 AMERICAN DRIVE-IN CLEANERS
 LEVITTOWN, NEW YORK
 OFF-SITE FOCUSED FEASIBILITY STUDY
 ALTERNATIVE No. 6
 IN-SITU CHEMICAL OXIDATION
 INJECTION LOCATIONS LAYOUT

FIGURE No. 9

REV No	DESCRIPTION	BY	DATE

SCALE IN FEET
 0 25 50 100

DRAWN BY: BWS
 DATE: JANUARY 2002

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APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

**American Drive-In Cleaners Operable Unit 2
Proposed Remedial Action Plan
Levittown, Nassau County
Site No. 130049**

The Proposed Remedial Action Plan (PRAP) for the American Drive-In Cleaners Operable Unit 2 site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repositories on June 3, 2002. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated groundwater at the American Drive-In Cleaners Operable Unit 2 site. The preferred remedy is air sparging, soil vapor extraction, and long term groundwater monitoring.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on June 17, 2002 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) 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. Written comments were received from Theresa and Vincent DeGregorio, FPM Group, and Whiteford, Taylor & Preston L.L.P.

The public comment period for the PRAP ended on July 8, 2002

This Responsiveness Summary responds to all questions and comments raised at the June 17, 2002 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: I have heard rumors about this site being contaminated long before 2001. Nothing was done before this, why now? Many of my colleagues at school have died from cancer, including teachers and school secretaries. Where were you people before 2001?

RESPONSE 1: The Remedial Investigation and Feasibility Study have been ongoing since 1997. Data has to be collected over time to determine the extent of contamination and it's overall trend of movement. Prior to 1997, negotiations with the responsible parties took place. After responsible parties declined to implement the RI/FS, the site was then referred to the State Superfund.

In order for health effects to occur due to chemicals at a site, a person must be exposed to that chemical. In addition, that exposure must be at a concentration and of a duration that would cause health effects, based on that chemical's toxicity and other properties. Based on the data obtained for this site, potential exposures to site-related chemicals would be at levels below those likely to cause health effects. The remedy selected for the site will reduce the potential for exposures even further. If conditions changed such that significant exposures could occur, steps would be taken

immediately to reduce those exposures. Unfortunately, cancer is a common disease. Approximately one in three people will be diagnosed with cancer in their lifetimes.

COMMENT 2: How can we be assured that the soil vapor extraction system will capture all the contaminated air? 97 percent is 3 percent less than 100 percent, and that 3 percent worries me.

RESPONSE 2: The small amount of contaminated vapor remaining below the surface will dissipate and is not anticipated to present any exposure risk.

COMMENT 3: How many of these projects have you undertaken and how successful were these projects percentage-wise?

RESPONSE 3: Dozens of air sparge/SVE remedies have been implemented successfully throughout NY State. Due to the local geology, this type of remedy has been particularly successful on Long Island.

COMMENT 4: Would you follow the same procedure if you lived in this area?

RESPONSE 4: Yes. I would be confident that the measures being taken would be protective of the public.

COMMENT 5: Why wasn't the off-site groundwater contamination addressed prior to the construction of the Target shopping center? If the parking lot had not been paved, wouldn't rainwater have infiltrated and diffused the contamination to make it less concentrated?

RESPONSE 5: The runoff from the Target parking lot enters the groundwater through infiltration drywells beneath the parking lot. Therefore, the infiltration of rainwater to the aquifer has not been significantly changed by the paving of the parking lot.

COMMENT 6: Since the contaminated school irrigation well is being used to water the athletic fields, is it safe for the youngsters to be playing on those fields.

RESPONSE 6: The levels of PCE detected in the well are low and should not affect the use of the athletic fields, as significant exposures to contaminants are not expected. If monitoring of the air at the irrigation well indicates that NYSDEC's Air Guide 1 requirements are not being met, a new well will be installed at the school.

COMMENT 7: Who is responsible? Is it the operator of the dry cleaners or the owner of the site property?

RESPONSE 7: Either party can be held responsible under the law.

COMMENT 8: Would it be helpful for the local politicians and the residents of Island Trees to put pressure on the owner to solve this problem?

RESPONSE 8: We cannot advise you as to whether it would be appropriate to contact your local elected officials on this matter.

- COMMENT 9:** What would the total cost be for cleaning up the entire project?
- RESPONSE 9:** The estimated cost for the Operable Unit 2 remedy is \$2,279,000. The estimated cost of the remedy selected for Operable Unit 1 was \$2,721,000. Therefore the total cost to remediate both operable units is \$5,000,000.
- COMMENT 10:** Has the well that supplies the water to the water fountains at Target and Stop and Shop, and the showers and water fountains here at the school been contaminated?
- RESPONSE 10:** No, the public water supply wells that provide water for those uses have not been impacted and are regularly monitored to ensure that the water quality meets NYSDOH Standards for Public Drinking Water Supplies prior to distribution.
- COMMENT 11:** Is the movement of the groundwater plume being tracked?
- RESPONSE 11:** Yes. Two monitoring wells, MW-11S and MW-12S, have been installed south of the leading edge of the groundwater plume. These wells will allow us to determine if the plume migrates further.
- COMMENT 12:** You said this site was declared a Superfund site in 1997. What can we do to get Superfund money from the State or the federal government in order to treat this?
- RESPONSE 12:** The investigation of both operable units of the site, as well as interim remedial measures to remove contaminated soils from an on-site dry well and remedy indoor air contamination at the site, were funded by New York State Superfund monies. The Federal Superfund has funded a more permanent treatment system on-site. Once the New York State Superfund is reauthorized, those funds would be used to implement the selected remedy if an agreement with the responsible parties to fund the remedy cannot be reached.
- COMMENT 13:** In 1991 this site was listed as one which presented a significant threat to public health and the environment. Seven years were wasted in trying to attach blame, or in trying to get someone to pay for the cleanup. Eleven years have gone by since 1991 allowing the plume to spread further, and we still have done nothing. Or, we planned to do something but nothing is actually going to be done. What is going to happen here?
- RESPONSE 13:** Back in 1991 when this site was listed, there were hundreds of sites across the state just like this. We have a limited number of staff and resources that can work on these sites, so we have to prioritize them to work on the sites that present the greatest threat first. At the American Drive-In Cleaners site there were no public drinking water supplies being impacted, or any other immediate threats to human health or the environment, so this site was not one of the highest priorities.
- State Superfund law requires that NYSDEC must first conduct negotiations with the responsible parties in an attempt to get them to fund an investigation of the site. If the responsible party does not respond in good faith to our cleanup negotiations, State Superfund money can then be used to investigate and remediate a site. If the negotiations are successful, the responsible party will fund the remediation selected in this document. If negotiations are unsuccessful, then the site will be referred to the

State Superfund and the remedy will be implemented once the State Superfund program is reauthorized.

COMMENT 14: I'm having a lot of difficulty understanding that a responsible party can say they do not want to do it if they are clearly to blame.

RESPONSE 14: See response to comment 13. Responsible parties are subject to legal actions by the State for recovery of all response costs the State has incurred.

COMMENT 15: Now that a Stop and Shop supermarket is being built on a portion of the Target property, how will that impact the cleanup that is being proposed here?

RESPONSE 15: The new construction should not impact the selected remedy. The new construction is located west of the groundwater plume and should not interfere with remedial activities.

COMMENT 16: Why is the proposed remedy at the furthest point of the plume, and not impacting the direct source of the plume?

RESPONSE 16: The source of the plume is being addressed on-site by the remedy selected for Operable Unit 1. The objective of Operable Unit 2 is to remediate the groundwater contamination that has already left the site. Conducting the remediation near the downgradient edge of the plume maximizes the amount of contaminated groundwater that will be treated.

COMMENT 17: Is it correct that barring reauthorization of the State Superfund or funding by the responsible party, nothing is going to be done to clean this site up?

RESPONSE 17: If a responsible party did not agree to fund the remediation, and if the State Superfund is not reauthorized, there would not be any funding available to implement the remedies selected for this site. NYSDEC would then turn the case over to the State Attorney General's office for litigation. However, negotiations are currently underway with the property owner and NYSDEC is hopeful that these negotiations will lead to an agreement to fund the remediation.

COMMENT 18: Would federal money be available based on the higher concentration of breast cancer in Levittown? Has anyone looked into getting federal money in regard to this?

RESPONSE 18: The work done to date was funded by the State Superfund. No inquiries have been made by NYSDEC or NYSDOH regarding federal money for remedial activities based on breast cancer rates, as we are unaware of any such federal program.

COMMENT 19: Can the high breast cancer rates be attributable to this site?

RESPONSE 19: See response to comment 1.

COMMENT 20: Is perc (tetrachloroethene) a known carcinogen?

RESPONSE 20: Tetrachloroethene is a suspected carcinogen.

- COMMENT 21:** We are now pumping groundwater from the irrigation well and applying it to the fields. You said the concentration of PCE in that well has ranged from 4 ppb to 21 ppb, with 8 ppb being the concentration of the most recent sample in October, 2001. You mentioned the moderate concentration of PCE in the groundwater plume. This being a suspected carcinogen, I don't know of anyone who has ever gotten moderate cancer. Either you get it, or you don't. We're pumping this water out of the ground, onto a playing field, that children roll around on. They are playing sports. Their faces are being pushed into it, their bodies are being pushed into it, and we're spraying this water up onto the field.
- RESPONSE 21:** As previously mentioned, the levels of PCE in the irrigation well are below those that are likely to cause health effects. Also, due to its volatile properties, PCE will dissipate in the air rather than accumulate in surface soils. The water in the irrigation well and the air surrounding the areas being irrigated will continue be monitored. If air monitoring results showed that Air Guide 1 discharge requirements are not being met, a new irrigation well will be installed in an unimpacted area.
- COMMENT 22:** You said the concentrations of PCE in the irrigation well would be monitored and we would install a new irrigation well if PCE concentration were found to be unsafe. Who is "we"?
- RESPONSE 22:** The decision to install a new monitoring well would be made jointly by NYSDEC and NYSDOH, with input from the Nassau County Department of Health. The actual installation might be done by either the responsible party, if they were willing, or with State Superfund money. If NYSDOH determined that the current irrigation well should not be used due to contamination, it would immediately be shut down.
- COMMENT 23:** Since you have PCE concentrations in the irrigation well that are fluctuating, at what concentration do you determine it is unsafe and needs to be shut down?
- RESPONSE 23:** There is no set number, but the current concentrations are considered to be extremely low and not a health hazard. The decision to shut down the well would be made based on monitoring results and NYSDEC Air Guide 1 requirements, which are protective of public health.
- COMMENT 24:** So, does that mean you have been checking the grass?
- RESPONSE 24:** We have not sampled the grass, since volatile contaminants such as PCE would not accumulate in or on the grass. Instead we have sampled the air while the sprinklers are on, since that is the most likely route of exposure. No PCE was detected in the air samples taken over a 2 hour period with sprinklers running on June 17, 2002.
- COMMENT 25:** Has the air been checked before or is this the first time?
- RESPONSE 26:** June 17, 2002 is the only air sample taken on the athletic fields thus far.
- COMMENT 27:** Who and at what point does someone determine what PCE concentration in the irrigation well is unsafe?

- RESPONSE 27:** The NYSDOH and NYSDEC make that determination. See response to comment 23.
- COMMENT 28:** So there is no set number?
- RESPONSE 28:** Not at this point. The NYSDOH and NYSDEC will continue to gather data to correlate levels of PCE in the irrigation well with levels of PCE in the air during irrigation, and evaluate these with respect to Air Guide 1 requirements.
- COMMENT 29:** If a new irrigation well is needed, but the responsible party refuses to pay for it and there is no new State Superfund money, then the current well just gets shut down, correct?
- RESPONSE 29:** Yes, that is correct. If NYSDOH or NYSDEC determines that the well should not be used and needs to be shut down, then it will be shut down regardless of whether the funds to replace it are available.
- COMMENT 30:** In your negotiations with the responsible parties, what cards does the state hold to make the responsible party want to agree to conduct an investigation and/or cleanup?
- RESPONSE 30:** The state has the State Superfund Law and the Federal Superfund Law, both of which allow the state to recover its costs from the responsible party or parties. If the responsible party wishes to have any input on how the investigation and remediation, which they may ultimately be forced to pay for, is conducted, then they must sign a consent order to do the work.
- COMMENT 31:** Do you have any ability to seize their land and begin proceedings against them now? They are renting space there, they are making money.
- RESPONSE 31:** The responsible party would have to be taken to court to gain access to their assets. For that to happen, negotiations with NYSDEC attorneys would have to reach an impasse. At that point the matter is referred to the State Attorney General's Office, who will take the responsible party to court to force payment or to seize assets.
- COMMENT 32:** I think the people in this room would agree that this process has already taken a long time, way too long. When did negotiations start?
- RESPONSE 32:** The initial negotiations to do the Remedial investigation started in 1994.
- COMMENT 33:** If you had the money to implement the remedy for Operable Unit 2, how long would the cleanup take?
- RESPONSE 33:** If the responsible party agrees to fund the remediation, they would then have to retain a consultant, have that consultant develop plans, which would need to be revised based on NYSDEC and NYSDOH comments. Then they would have to hire the contractor to construct and operate the remedial system. These steps would mean that actual construction would not begin for 15 to 18 months. If negotiations with the responsible parties are unsuccessful and the site is referred to the State Superfund, it will likely take longer for construction to begin, due to state competitive bidding procedures.

Once installed, the system will have to continue to operate for an estimated 10 years. That time period is required to allow the contaminated groundwater to migrate from the downgradient edge of the site, beneath Hempstead Turnpike, to the area of active remediation near the northern property line of the school.

COMMENT 34: How much do you think it would cost to move the irrigation well?

RESPONSE 34: The cost to move the irrigation well, including necessary pumps and piping, is estimated to be \$28,000.

COMMENT 35: Why can't we consider moving the irrigation well now, rather than wait and worry that it may become a problem in the future?

RESPONSE 35: State Superfund money cannot be spent to replace the irrigation well unless the current well presents an unacceptable exposure risk. To date the well has not been an unacceptable exposure risk.

COMMENT 36: I would like to know how many State Superfund sites exist in Nassau and Suffolk Counties.

RESPONSE 36: There were 106 Class 2 inactive hazardous waste disposal sites in Nassau and Suffolk Counties as of April 2001, the most recent data available.

COMMENT 37: Out of that number, where would this site rank in terms of priority?

RESPONSE 37: There are three broad priority classes, Class I (highest priority), Class II, and Class III. The American Drive-In Cleaners site was classified as a Class I since the site threatened a sole source aquifer (an aquifer that is the sole source of drinking water for an area). However, for the same reason most hazardous waste sites in Nassau and Suffolk County were also classified as Class I.

COMMENT 38: How are the decisions made that prioritizes these cleanup? How do we know that we are not going to be at the very bottom of the list?

RESPONSE 38: NYSDEC has a broad prioritization system for hazardous waste sites that includes factors such as immediate human health or environmental impact, proximity to water supply wells, etc.

COMMENT 39: Is this prioritization system based on a defined set of standards with hard data, rather than being subject to political influence?

RESPONSE 39: The priority classification system is based on criteria from Title 6 of the New York State Compilation of Codes, Rules and Regulations, Part 375. When determining the priority of sites within the same class, factors such as the immediacy and severity of the threat to human health and/or the environment are considered. These decisions are not made at the political level.

COMMENT 40: I used to live in the area where the groundwater flow is heading. I was concerned about the water then because I got cancer in 1990. We have since moved to an area

just north of the school and I have cancer again. What danger are we facing if this never happens because of lack of funding, if the remediation never takes place?

RESPONSE 40: If left unremediated, this contaminated groundwater will continue to migrate and could impact other irrigation or water supply wells in the future. However, if levels of contaminants in the irrigation well become unacceptable, the well would be shut down regardless of the status of the remediation activities. Also, public drinking water supply wells must be monitored and treated, if necessary, to ensure that only water meeting NYSDOH Part 5 Drinking Water Standards is distributed. These actions will minimize the possibility for exposures and health effects resulting from exposure.

COMMENT 41: Which water supply well feeds just to the east of the Island Trees High School?

RESPONSE 41: The public water supply doesn't work that way. There isn't one well that feeds an area exclusively. The water supply piping is all interconnected, and the water authority runs some wells on and off depending on demand, so the water being supplied to your house may come from any or all of the water supply wells in the district.

COMMENT 42: I know of so many people in the area and that I worked with at the school that had cancer and passed away. I don't know how you prioritize, but I think we should be close to the top to take care of this.

RESPONSE 42: See responses to comments 1 and 37-39.

COMMENT 43: I remember reading when I first became aware of this site that in the late 1950's they already knew American Drive-In Cleaners was causing a problem. That is a heck of a long time to wait. If I knew, I never would have brought my baby here.

RESPONSE 43: The first indication that American Drive-In Cleaners may be an inactive hazardous waste disposal site was in 1990 when the Nassau County Department of Public Works installed monitoring wells on what is now the Target property. We did not know of the contamination in the late 1950's.

COMMENT 44: If a new irrigation well was installed, where would that be located?

RESPONSE 44: No exact location has yet been determined. Originally we had proposed locating the new irrigation well as far east on the school property as possible, but after discussions with school officials, it appears there may be more room to relocate the well on the west side of the school property. The final location would be selected, with input from the school district, in an area that is not threatened by the groundwater plume and does not interfere with school activities.

COMMENT 45: You said that the PCE in the irrigation water would dissipate into the air after it is sprayed on the fields. However, in your literature you say that inhalation of vapors, and mists is a potential route of exposure. Does the irrigation water present an exposure risk?

RESPONSE 45: At the current levels of contamination in the irrigation well, we do not expect significant exposures to occur, either by direct contact or inhalation. The air sample

collected from the fields during irrigation on June 17, 2002 did not contain any measurable levels of PCE. Monitoring of the air and water at the well will continue. If a potential for significant exposures exists, the well will be shut down.

COMMENT 46: What about the shops over by American Drive-In Cleaners? I read in the paper not terribly long ago that PCE levels in air were elevated.

RESPONSE 46: In 2001 a soil vapor extraction system was installed around the on-site building at the American Drive-In cleaners site to control elevated levels of PCE in indoor air at the on-site shops and the beverage store next door. This system has been effective at reducing PCE concentrations to acceptable levels and continues to be in operation.

COMMENT 47: Your discussions tonight indicate that implementing a remedy can be a very slow process. Can the community issue a class action suit against the owner of the property, and if so, do you help us do that?

RESPONSE 47: NYSDEC, NYSDOH and NCDOH are not able to offer you legal advice on this question. You should consult with an attorney. NYSDEC, NYSDOH and NCDOH would not become directly involved in such a suit, however, our data and records are available to anyone under the Freedom of Information Law.

COMMENT 48: Where exactly is the High School irrigation well?

RESPONSE 48: It is located next to the fence on the west side of the tennis courts at the school.

COMMENT 49: Is that well or the sprinkler system vented?

RESPONSE 49: NYSDEC has no first hand knowledge of the irrigation system construction. There is presumably a way for air to enter the well, otherwise when the pump ran and drew down the water level in the well it would be producing a partial vacuum in the well.

COMMENT 50: How many wells have been closed down in the plume?

RESPONSE 50: The high school irrigation well is the only supply well in the plume, and it has not been shut down.

COMMENT 51: How wide is the plume?

RESPONSE 51: The groundwater plume is roughly 400 feet wide at its widest point.

COMMENT 52: Is there any tests that can be done for to test the blood, etc., for long term exposure impacts? I've read in your literature about people who have been exposed to PCE for 9 to 12 years having lower test scores, blood in urine, etc.

RESPONSE 52: The following information regarding medical tests for PCE is available at the Agency for Toxic Substances and Disease Registry website,

<http://www.atsdr.cdc.gov/tfacts18.html>:

One way of testing for tetrachloroethylene (PCE) exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood. Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure. Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment. Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

It is important to note that the people discussed in the above-referenced fact sheet were exposed to levels of PCE many times higher than the levels present at the American Drive-In Cleaners site, over a long period of time. At this time, exposures to PCE are not occurring at the site at levels likely to cause health effects.

COMMENT 53: As that plume comes south should we start testing air quality in the school?

RESPONSE 53: Based on the depth and concentration of PCE in the plume, it is unlikely that indoor air at the school would be impacted, and testing is not warranted.

COMMENT 54: Who paid for the air quality cleanup in the on-site buildings?

RESPONSE 54: The initial work was paid for by the New York State Superfund, but due to the high cost of a larger, more long term system, NYSDEC asked the USEPA to install that system. USEPA then installed a larger system using Federal Superfund money.

COMMENT 55: In other words we improved the property of these deadbeat landlords, and we can not get a buck out of them.

RESPONSE 55: Both the State and the federal government are working to recover their costs from the responsible parties, as the law allows.

COMMENT 56: We were here a year ago, and now we are back, and nothings happened. Where do you see us another year from now, holding another meeting? Do you see any progress in this cleanup? If you are unsuccessful in getting the responsible parties to fund the cleanup and you have to go to court, what time frame do you see before some action could finally be taken to remedy this situation.

RESPONSE 56: If the responsible party immediately agreed to fund the cleanup, field work might begin in roughly a year for OU2, perhaps a little sooner for OU1. If NYSDEC reached an impasse with the responsible party, then under normal circumstances the cleanup would be referred to the State Superfund, which might result in field work beginning in 18 months to 2 years. But since the State Superfund has been exhausted, if is not reauthorized, then our only recourse would be to ask the attorney general to take the responsible party to court. That could take quite a few years before field work began.

COMMENT 57: Why did you wait until the day of the public meeting to test the irrigation well, when the last time it had been tested was October 2001? I would have sampled the well in time to have the results for tonight's meeting.

RESPONSE 57: The irrigation well can't be sampled in the winter, because the well is not run to irrigate the fields in the winter.

COMMENT 58: How many people are working on this project and why don't you get more people to speed it up?

RESPONSE 58: There is one primary person involved for each of the 3 agencies involved, NYSDEC, NYSDOH, and NCDOH. There are also other staff at each of these agencies with smaller roles. NYSDEC's consultant for this project had two people deeply involved, with several others in lesser roles. We have a limited number of staff available to work on these projects, but even if more staff were available some things, such as writing a report or analyzing laboratory samples, just take time.

COMMENT 59: But in the mean time people are getting cancer, and hopefully are surviving but maybe not.

RESPONSE 59: See response to comment 1.

COMMENT 60: When is the next public meeting you are going to hold on this site?

RESPONSE 60: There are no further public meetings planned. However, if a significant change were to occur a fact sheet would be distributed and/or a public meeting would be held at that time.

COMMENT 61: Wouldn't a good reason for a public meeting be that you either have or have not reached an agreement with the responsible party to fund the cleanup? I think in fairness to the people living here you should bring people up to date on the situation, at least on a yearly basis. The hardest part for the people in this room is lack of knowledge. If another year goes by, you would at least like to know whether you've reached any conclusions as to whether there will be funding available to implement this remedy, either through the responsible party or Superfund money.

RESPONSE 61: We keep the public informed on those kind of developments by a fact sheet mailing rather than a public meeting. We will distribute a fact sheet within a year to inform you of the funding status for the remedial measures at this site.

COMMENT 62: This pollution in the ground was known about in 1990. It took all this time to find out when we are going to clean up the site. But it didn't take any time to give a building permit to put a store up on the Target property when that property should have been cleaned up before it was sold. It shouldn't have been sold, and a building permit shouldn't have been issued by the Town of Hempstead. If they knew about the pollution it should have been stopped by the Building Department.

RESPONSE 62: NYSDEC, NYSDOH, and NCDOH have no control over how and when building permits are issued. However, it should be noted that the Target property was not the

source of the contamination, the property was impacted by an upgradient source much the same as the school district was. The construction of Target shopping center did not interfere with our investigation of the off-site groundwater plume, and the developers were very accommodating during construction in assuring that our monitoring wells were saved.

COMMENT 63: We understand that gathering data and making good decisions takes time, but we need to know that we will be kept informed on a regular basis because the concern levels are high. The fact sheet is an important piece. We need to know on a regular basis what you're finding and how this is progressing, because people who live in a community need to know that it makes a difference that they came here tonight, that they are giving you their thoughts, and that someone is really listening.

RESPONSE 63: We will continue to keep you informed via fact sheets and, as needed, public meetings. In the interim, if you have any questions you may contact Robert Filkins of NYSDEC at (518) 402-9622 for site related questions or Wendy Kuehner of NYSDOH at 1 (800) 458-1158 for health related questions.

A letter dated June 10, 2002 was received from Theresa and Vincent DeGregorio which included the following comments:

COMMENT 64: If they knew there was a problem at American Drive-In Cleaners, why did they let it go on so long?

RESPONSE 64: The releases to the on-site cesspools ended in 1981 when the building was connected to public sewers. The presence of the contamination was not known until 1990, long after the releases had ended.

COMMENT 65: There should be a lawsuit against American Drive-In Cleaners.

RESPONSE 65: The State will use every legal mechanism available to recover the costs of the investigation and remediation from the responsible party.

A letter dated July 2, 2002 was received from William F. Ryan, Jr. of Whiteford, Taylor and Preston, the attorneys for Sanderina Kasper, who was listed as a responsible party in the American Drive-In Cleaners Proposed Remedial Action Plan, which included the following comments:

COMMENT 66: On behalf of Kasper(1977) Irrevocable Trust, this is to comment on Section 5 of the May 2002 Proposed Remedial Action Plan (PRAP) regarding "Enforcement Status". Other comments and suggested revisions to the PRAP are being provided by FPM Group by separate letter on behalf of the Kasper (1977) Irrevocable Trust.

Section 5 of the PRAP (page 9) states that "The Responsible Parties (PRP) of the site, documented to date, include: The Kasper Irrevocable Trust, Sanderian Kasper, and Parviz Nezami." We request that Sanderina Kasper as a PRP be deleted. Mrs. Kasper is not a prior owner or operator of the property, but rather is simply the trustee of a trust to whom the property was bequeathed by Benjamin Kasper as part of his estate planning.

RESPONSE 66: Information recently provided to the Department, specifically a Title search report (search includes the period December 1950, to May 20, 2002) conducted by Abstracts, Incorporated, 585 Stewart Avenue, Garden City, New York on or about July 29, 2002, indicates that Ms. Sanderina Kasper has not been a record owner of the premises located at 3801 Hempstead Turnpike, Levittown, New York, and identified on the Nassau County Clerks Tax map as Section 46, Block 574, Lot 64 (the "Site"). Therefore, Ms. Kasper's name has been deleted as a responsible party.

A letter dated July 3, 2002 was received from Stephanie O. Davis of FPM Group, a consultant for the property owners, which included the following comments:

COMMENT 67: In response to the May 2002 Proposed Remedial Action Plan (PRAP) and on behalf of the Kasper 1977 Trust, FPM Group (FPM) is hereby providing comments addressing several portions of the PRAP. Our comments and suggested revisions are listed below.

In general, we would like to note that it is planned to remediate the source area and impacted groundwater on OU1 such that the concentrations of contaminants in groundwater entering the upgradient side of OU2 are anticipated to decrease with time. It should also be noted that, with the exception of one well located near the upgradient side of OU2 (MW-10S), dissolved perchloroethylene (PCE) concentrations have been decreasing through out the OU2 area. It should also be noted that if the Island Trees High School irrigation well is moved, then the potential for human exposure to impacted groundwater associated with OU2 will essentially be eliminated. Therefore, if the objective of the proposed air sparging system, as stated on page 2 of the PRAP, is to prevent the higher PCE concentrations from migrating further, it is not clear that there is a need for this system based on the observed plume behavior, anticipated reduction in source, and lack of human exposure.

RESPONSE 67: NYSDEC is of the opinion that it is important to limit, to the extent practical, further contamination of a sole source aquifer such as the aquifer present in the vicinity of the site. It should also be noted that it is not currently planned to relocate the irrigation well. Relocation of the well is only a contingency if unacceptable PCE concentration reach the current location before or despite the installation of the remedial system.

COMMENT 68: On page 1, the PRAP states that there is "A significant threat to human health associated with the potential for human exposure to PCE vapors that may migrate into buildings or basements". Also, in Section 6 (page 9), the elimination of migrating vapors is identified as a remediation goal. However, in Section 4.2 of the PRAP (page 8) it is indicated that the likelihood of this migration is low. Based upon a review of the document and our understanding of the site, it appears that the latter is correct. FPM suggests that the vapor migration issue be assessed and that its relative importance be clearly indicated consistently in the PRAP.

RESPONSE 68: The likelihood of such a migration is low. The language on page 1 has been modified to term this threat a potential threat rather than a significant threat. In Section 6, the text was reworded to say the potential for vapor migration is limited.

COMMENT 69: On pages 2 and 18, activated carbon is identified as the treatment process for the effluent PCE generated from the soil vapor extraction system. However, given the relatively low concentrations in the groundwater, it is not likely that contaminants captured by the soil vapor extraction system will require carbon treatment. Pages 2 and 18 should be reworded to indicate that the need for effluent treatment would be evaluated during the design phase.

RESPONSE 69: It is possible that PCE concentrations in effluent air may be low enough that treatment is not required. Therefore, the requested change in language has been made.

COMMENT 70: On page 2, the document includes, "Monitoring of the air and groundwater at the Island Trees High School irrigation well to check for compliance with NYSDEC Air Guide 1 requirements". What air will be monitored for Air Guide 1 requirements? The soil vapor extraction system emissions or indoor air quality or outdoor air in the vicinity of the well/irrigation system? Air Guide 1 does not include groundwater and no standards for groundwater are referenced. FPM suggests that the air monitoring locations be clarified and that the relationship of groundwater monitoring results and appropriate regulatory guidance be stated.

RESPONSE 70: The outdoor air immediately downwind of areas being irrigated will be monitored. The text has been revised to clarify that only air monitoring data will be evaluated for compliance with Air Guide 1 requirements. The details of monitoring air in the vicinity of the irrigation system for Air Guide 1 requirements will be established during the design of the remedy.

COMMENT 71: On page 12, Alternative #4, the chosen remedy for the site, includes an estimated operational time of 10 years for the air sparge and soil vapor extraction remediation systems. Is this time frame realistic? Based on past experiences with similar sites, a conservative estimate of 5 to 10 years seems more realistic.

RESPONSE 71: NYSDEC's consultant estimated the time required for contaminated groundwater to migrate from the downgradient edge of the site to the northern property line of the school as 10 years. NYSDEC acknowledges that this is a conservative estimate. The length of time the remediation system will be run will be determined by the groundwater and air effluent PCE concentrations during remediation.

COMMENT 72: On page 12, Alternative #4 does not specify a "shut-down" criteria (i.e. a target dissolved PCE concentration, asymptotic PCE removal rates, or other logical target) for the proposed remediation systems. A range of realistic shut-down scenarios should be presented and may include the following: declining dissolved PCE concentration, lack of human exposure pathway (moved irrigation well), dissolved PCE concentration less than 100 ppb, asymptotic contaminant removal rate as determined for SVE effluent data.

RESPONSE 72: The following language was added to Section 8: "The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until NYSDEC determines that continued operation is technically impracticable or not feasible."

COMMENT 73: On page 7 in the fourth paragraph in the right column, the referenced well should be MW-9D.

RESPONSE 73: The correction has been made.

APPENDIX B
Administrative Record