Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Minuteman Cleaners Site
East Massapequa, Nassau County
Site Number 1-30-065

March 1999

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Minuteman Cleaners Inactive Hazardous Waste Site
Municipality, County, New York
Site No. 1-30-065

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Minuteman Cleaners inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). 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 upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Minuteman Cleaners Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography 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 upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Minuteman Cleaners 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:

- 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.

- Excavation of two feet of soil from the bottom of the most contaminated drywell, LP-1, to eliminate the greatest concentrations of contaminants, primarily tetrachloroethene and its breakdown products from wastewater disposal in that drywell.

- An air sparging and soil vapor extraction system will be implemented. Air injection wells will be installed to a depth of approximately 18 feet and soil vapor extraction wells to a depth of approximately 8 feet to remediate the area below LP-1&2 and the vicinities of MP-6 and MW-3.

- If future indoor air monitoring detects site-related chemicals at levels which exceed the NYSDOH Ambient Air Criteria for tetrachloroethene or if the site-related breakdown products of tetrachloroethene are substantially above typical background levels (USEPA VOCs database and NYSDOH Control Home Database) in any nearby residences due to site-related contamination, engineering controls will be implemented to mitigate the impacts of these chemicals on the indoor air quality within the affected residences.

- Since the remedy results in untreated hazardous waste remaining at the site, a long term groundwater monitoring program will be instituted. Three additional off site shallow monitoring wells will be installed as part of this program. The program will allow the effectiveness of the air sparging/SVE to be monitored and will be a component of the operation and maintenance for the site.

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.

3/9/97
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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RECORD OF DECISION

MINUTEMAN CLEANERS
East Massapequa, Nassau County, New York
Site No. 130065
February 1999

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 (NYSDOH) has selected the remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Minuteman Cleaners hazardous waste site. As is more fully described in Sections 3 and 4 of this document, dry cleaning solvents were disposed into drain lines leading to leaching pools at the site resulting in the disposal of hazardous wastes, including tetrachloroethene, at the site, some of which has migrated from the site to the groundwater southwest of the site. These disposal activities have resulted in the following significant threats to the public health and/or the environment.

- a significant threat to human health and/or the environment associated with subsurface soils contaminated by chlorinated solvents. The potential for human exposure to these contaminated soils exists if future excavations were to occur in the contaminated area. Vapors from the contaminated subsurface soil or impacted groundwater could enter basements resulting in human exposure.

In order to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous waste disposed at the Minuteman site has caused, the following remedy was selected:

- 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.

- Excavation of two feet of soil from the bottom of the most contaminated drywell, LP-1, to eliminate the greatest concentrations of contaminants, primarily tetrachloroethene and its breakdown products from wastewater disposal in that drywell. This will eliminate the threat of both future human contact with and further contamination of the groundwater by these soils. Due to the high concentrations of contaminants, remediation of these soils via air sparging/soil vapor extraction would be very inefficient. The leaching pools would then be backfilled with clean soil.

- An on site air sparging and soil vapor extraction system will be implemented. Air injection wells will be installed to a depth of approximately 18 feet and soil vapor extraction wells to a depth of approximately 8 feet to remediate the area below LP-1&2 and the vicinities of MP-6 and MW-3. Any major breaks in the asphalt in this area will be patched or covered with plastic to prevent air infiltration. The number and locations of these wells will be determined during design. The air injection wells will be connected to an air compressor to force air bubbles into the groundwater. The

SVE wells will be connected to a vacuum extraction blower in order to remove the contaminated air from the subsurface soils above the water table. This contaminated air will then be run through a carbon adsorption system. Influent and effluent air from this system will be sampled in order to insure the system is effective at removing contaminants. The system will be operated until the source is remediated to soil cleanup guidelines and groundwater standards or until the practical limits of the technology are reached. By removing contaminants from soil and onsite groundwater, this system will reduce the risk of exposure to these media. By treating the groundwater with the greatest concentration of contaminants, the remedy will also reduce the risk of vapors from the groundwater entering the basements of nearby residences in the future.

- If future indoor air monitoring detects site-related chemicals at levels which exceed the NYSDOH Ambient Air Criteria for tetrachloroethene or if the site-related breakdown products of tetrachloroethene are substantially above typical background levels (USEPA VOCs database and NYSDOH Control Home Database) in any nearby residences due to site-related contamination, engineering controls will be implemented to mitigate the impacts of these chemicals on the indoor air quality within the affected residences.

- Since the remedy results in untreated hazardous waste remaining at the site, a long term groundwater monitoring program will be instituted. Three additional off site shallow monitoring wells will be installed as part of this program. The program will allow the effectiveness of the air sparging/SVE to be monitored and will be a component of the operation and maintenance for the site.

The selected remedies, discussed in detail in Section 8 of this document, are intended to attain the remediation goals selected for this site in conformity with applicable standards, criteria, and guidance (SCGs) in Section 6 of this PRAP.

SECTION 2: SITE LOCATION AND DESCRIPTION

Minuteman Cleaners, NYSDEC site #130065, is a retail dry cleaning establishment at 5640 Merrick Road in East Massapequa, Town of Oyster Bay, Nassau County. The 0.38 acre site is located approximately 2000 feet west of the Nassau/Suffolk County line (See Figure 1). The area around the site is primarily commercial along Merrick Road, with residential neighborhoods to the north and south. The nearest surface water body is the Carmans River, an arm of South Oyster Bay, located just approximately 1000 feet west of the site. The Carmans River is tidal in the vicinity of the site.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The building that houses Minuteman Dry Cleaners was constructed in 1966. The building has been occupied by retail dry cleaning establishments since it's construction, or shortly thereafter. Prior to October 1985 the dry cleaners was operated by Vernest Cleaning Corporation. In October 1985 the business was purchased by Merrick Cleaners Inc., which has operated the site as Minuteman Dry Cleaners from 1985 to the present.

The laundry waste water lines at the site were not connected to the public sewer system until 1996. Prior to that date laundry waste water was discharged to five on-site leaching pools. Therefore, solvents may have been released into these leaching pools at any time from 1966 until 1996 via the waste water lines.

3.2: Remedial History

In May of 1990 the Nassau County Department of Health (NCDOH) took samples of the liquid from three of the drywells located at Minuteman Dry Cleaners. These samples were found to contain tetrachloroethene (PCE) at concentrations ranging from 13,000 to 16,000 parts per billion (ppb). Other volatile organic compounds, including 1,1,1 trichloroethane (TCA), dichloroethene (DCE), trichloroethene (TCE), toluene, ethyl benzene, xylene and benzene, were also in the leaching pool liquid, all at concentrations less than 500 ppb. NCDOH notified the operator of Minuteman Cleaners, Mr. Sun Ja Jang, and requested that Minuteman undertake a remedial investigation of the property. Mr. Jang hired a professional engineering firm, Richard D. Galli, P.E., in August of 1990 to conduct the investigation.

During this investigation conducted between November 1990 and July 1991, the leaching pools at the site were resampled confirming the contamination found by NCDOH. Three onsite monitoring wells were also installed, one up gradient and two immediately downgradient of the leaching pools (See Figure 2). The resulting Draft Remedial Action Concept Report, submitted to NCDOH in September of 1991, indicated that groundwater samples taken July 10, 1991 from MW-3 contained PCE at a concentration of 17,000 ppb, DCE at 7,600 ppb, TCE at 1,400 ppb, xylenes (total) at 1630 ppb, toluene at 510 ppb, ethyl benzene at 280 ppb and benzene at 53 ppb. MW-1 was also contaminated, with 570 ppb of total xylenes the largest single contaminant detected, followed by DCE at 290 ppb, ethyl benzene at 200 ppb, toluene at 160 ppb, TCE at 52 ppb, benzene at 20 ppb and PCE at 17 ppb. MW-2, the upgradient background well, had only one contaminant, PCE, at 1 ppb. NYSDEC's groundwater standard is 5 ppb each for PCE, TCE, DCE and xylene.

The Remedial Action Concept Report recommended hooking up all aqueous waste streams from the cleaners to the public sewer system, backfilling the leaching pools with concrete, and installing a groundwater pump and treat system to be run for a maximum of one year. NCDOH responded that an off-site groundwater investigation would be required to determine whether contaminated groundwater had left the site before an appropriate pump and treat system could be designed.

In November 1991 the attorney representing Minuteman Cleaners sent a letter to Mr. Jozef Atlas, the owner of the property on which Minuteman operates under a lease agreement. The letter asked that Mr. Atlas arrange for the building to be hooked up to the public sewer system and that remediation costs be borne by both parties. The site was referred to NYSDEC and was listed as a class 2, a site that is a significant threat to the public health and the environment, in July of 1992. No further progress was made in the investigation of the site until a March 1996 Order on Consent was signed by Mr. Atlas and NYSDEC in which Mr. Atlas agreed to conduct a Remedial Investigation and Feasibility Study under NYSDEC oversite.

SECTION 4: CURRENT STATUS

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health or the environment posed by the presence of hazardous waste, Mr. Jozef Atlas 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 in three phases. The first phase was conducted between March and June 1996 and the second phase between July and October 1996. The final phase was conducted in September of 1998. Two reports entitled *Results of Work Plan Implementation* (June 1996) and *Results of RI/FS Investigation* (October 1996) have been prepared describing the field activities and findings of the RI in detail.

The RI included the following activities:

- *Soil borings and sampling through the bottom of each leaching pool to a depth of 12 feet (20 feet below grade) to determine the level of contamination beneath the pools*
- *Installation of a fourth shallow monitoring well downgradient of the site and sampling of groundwater from the new well and the three previously existing monitoring wells*
- *Downgradient groundwater sampling at depths of 15, 30 and 50 feet using temporary wells installed by a groundwater probe to determine whether groundwater contamination had migrated off-site*
- *Soil gas samples were taken at three locations near the southern property line of the site*
- *Indoor air sampling of residences near the site*

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater and drinking water SCGs identified for the Minuteman site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4046 soil cleanup objectives for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil. New York State Department of Health Guidance Values were used as the SCG for indoor air quality.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media 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, SCGs are given for each medium.

4.1.1 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. The contaminants found at the Minuteman site are volatile organic compounds, or VOCs. The specific VOCs found at the Minuteman site include tetrachloroethene (PCE), its breakdown products, trichloroethene (TCE), dichloroethene (DCE), and vinyl

chloride in addition to toluene, ethyl benzene, xylene, acetone, and benzene. PCE is a common dry cleaning solvent which breaks down to form TCE, DCE and vinyl chloride, so the contamination found at the site is consistent with what would be expected at a dry cleaning site. The other VOC's found are petroleum related.

4.1.2 Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in soils and groundwater and compares the data with the proposed remedial action levels for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

A soil boring was completed through the bottom of three of the five leaching pits, LP-1, LP-2 and LP-3, in April of 1996 (See Figure 2). Soil samples where taken for analysis from three depths at each leaching pool: 0-2, 5-7 and 10-12 feet below the bottom of the pool. These samples were taken at the equivalent of 8-10, 13-15 and 18-20 feet below the ground surface because the bottom of the leaching pools are approximately eight feet below ground. The groundwater interface is located approximately 9 feet below the surface in the vicinity of the leaching pools.

The results of the analysis of these samples indicate that contamination decreases from LP-1 to LP-3. The highest levels of contamination were found in LP-1 with the sample taken 10-12 feet below ground surface which contained 2,900 ppm of PCE. DCE (180 ppm), TCE (92 ppm) and xylene (5.9 ppm) were also present. Contamination decreased with depth and the deepest sample at 18-20 feet below the ground surface contained 0.46 ppm of PCE and 0.11 ppm of DCE.

The highest contamination in LP-2 was 64 ppm of PCE at 13-15 feet below ground surface. The highest contamination in LP-3 was 0.61 ppm of PCE, also at 13-15 feet below ground surface. Samples were also taken from the first two feet below the bottom of the leaching pools, 8-10 feet below ground surface, at LP-4 and LP-5. These samples contained levels of contamination below soil cleanup goals.

Under NYSDEC's Technical and Administrative Guidance Memorandum 4046, the recommended soil cleanup objective for PCE is 1.4 ppm. The soil cleanup objectives for DCE, TCE and Xylene are 0.3 ppm, 0.7 ppm and 1.2 ppm respectively

Groundwater

Groundwater from the site flows to the southwest toward the Carmans River. During the investigation at the site a fourth shallow monitoring well (MW-4) was installed and all four wells were then sampled in April of 1996. Groundwater samples were also taken from five groundwater probe locations in September of 1996 (MP-5 through MP-9, see Figures 3 and 4). At each groundwater probe location a groundwater sample was taken from depths of 15, 30 and 50 feet below the ground surface. Additional groundwater samples were taken from four more groundwater probe locations (MP-10 through MP-13) in September of 1998. Two of these locations were sampled at 15 and 30 feet and the other two locations were sampled at only 15 feet.

Of the on site wells and groundwater probe points sampled in 1996, samples from groundwater probe point MP-6 contained the greatest contamination; 31,000 ppb of PCE was present in the 15 foot sample, with

2,700 and 1,200 ppb of PCE found at 30 and 50 feet respectively. The highest contaminant concentration in any other on site well or groundwater probe point was 330 ppb of DCE in MW-1. MW-3 contained a maximum of 130 ppb of DCE and MP-5 contained a maximum of 41 ppb of TCE. In earlier sampling conducted during June of 1991, the greatest contaminant concentration in MW-1 was 570 ppb of total xylenes while MW-3 contained 17,000 ppb of PCE.

The greatest groundwater contamination in any of the off site wells or groundwater probe points was found at MP-12 at the 15 foot depth during the September 1998 investigation. This sample contained 7,100 ppb of DCE, 2,500 ppb of total xylenes and 650 ppb of ethyl benzene. Two other 15 foot groundwater probe samples taken during the September 1998 sampling contained the next highest contaminant concentrations. MP-11S contained 2,200 ppb of DCE while MP-10S contained 1,200 ppb of total xylenes and 530 ppb of ethyl benzene. Other results from the sampling done at that time include 54 ppb of DCE in MP-11D and 25 ppb of total xylenes at MP-10D. Both of these samples were taken at depths of 30 feet. The remaining 15 foot deep sample, taken from MP-13S, contained 6 ppb of chlorobenzene.

The greatest off site groundwater contamination found during the 1996 sampling was ethyl benzene at 1,500 ppb from the 15 foot depth in MP-7. Ethyl benzene was present in the soils and groundwater on site, but it wasn't the predominant contaminant. Oddly, none of the other major on-site contaminants, including PCE and its breakdown products, were found in this sample. Elsewhere off site concentrations of contaminants were relatively low, with the highest being 39 ppb of chlorobenzene at 15 feet in MP-9 and 16 ppb of PCE at 15 feet in MP-8.

NYSDEC's Ambient Water Quality groundwater standard for each of the contaminants found in the groundwater on and near this site is 5 ppb with two exceptions. The standard for vinyl chloride is 2 ppb and the standard for benzene is 1 ppb. These standards are based on protecting people drinking the groundwater.

Soil Gas

Soil gas sampling was conducted at three locations near the southern property line of the site. The results indicated the presence of the same volatile organic compounds as were found in the on site soil and groundwater. The highest concentration found was DCE at 7 parts per million volume. This concentration was high enough to merit the investigation of indoor air quality in the nearest residence.

Indoor Air

The New York State Department of Health and Nassau County Department of Health collected indoor air samples from the basement and first floor of the currently unoccupied residence immediately south of the site. The results revealed the presence of PCE vapors in the air at a concentration of 60 micrograms per cubic meter in the basement and 35 micrograms per cubic meter on the first floor. These concentrations are below NYSDOH Guidance values for PCE in indoor air of 100 micro grams per cubic meter. However, the State and County Health Departments will resample the indoor air at the adjacent residence to confirm the previous results. Indoor air samples have also been taken in another house further from the site found to have a basement. No significant site related contamination was found. To date no other homes with basements have been found in the area of the plume.

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 the *Remediation Feasibility Report.*

An exposure pathway is how an individual may come into 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.

There are no completed pathways which are known to exist at the site. However, there are several possible, though unlikely, future exposure pathways. The possible future exposure pathways include:

- Currently there is no human exposure to the contaminated soils as the leaching pools have covers bolted on and the contaminated area is paved. If a future excavation for utility access, building expansion or replacement or other reason were to occur it is possible someone could ingest, come into skin contact, or breathe vapors from the exposed, contaminated soils.

- Currently no one is known to be ingesting contaminated groundwater. There are no legally registered private or public supply wells within a half mile radius of the site. Groundwater from the site empties into the Carman River less than 1000 feet from the site. It is possible that such a supply well could be installed in the future. However, this is considered highly unlikely due to the presence of a public water supply and the proximity of salt water which could encroach on such a well.

- In areas where the groundwater is highly contaminated, vapors from the groundwater could enter basements (as in the case of the unoccupied Carmen Blvd. residence) which could result in human exposure. However, only a few of the residences immediately south and southeast of the site have basements. NYSDEC and NYSDOH are conducting a survey of nearby homes to determine where basements are present. Those residences with basements which are considered to be at risk have been tested and one will soon be retested for the presence of volatile organic vapors. If results of this testing reveals the presence of VOCs at concentrations high enough to be of concern, additional measures will be taken to address the problem.

4.3 Summary of Environmental Exposure Pathways:

There are no known environmental exposures at this site which would impact biota. The offsite groundwater plume will eventually discharge to the saline portion of the Carmens River or South Oyster Bay. The Department has assessed the discharge of this plume and determined that it does not present an adverse environmental impact to biota.

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 following is the chronological enforcement history of this site.

Orders on Consent

Date	Index	Subject
3/26/96	W1-0736-95-10	RI/FS

The NYSDEC and Mr. Jozef Atlas entered into a Consent Order on March 26, 1996. The Order only obligates the responsible parties to implement an RI/FS. Upon issuance of the Record of Decision the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

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 should eliminate or mitigate all significant threats to the public health and to 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, to the extent practicable, ingestion of groundwater affected by the site that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*
- *Eliminate, to the extent practicable, future off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*
- *Eliminate, to the extent practicable, exposures to chlorinated solvents from the site.*
- *Eliminate, to the extent practicable, the migration of chlorinated solvents from the site soils/waste into the groundwater.*

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should 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 Minuteman Cleaners site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled *Remediation Feasibility Investigation Site Code No. 1-30-065* prepared for Minuteman Cleaners.

A summary of the detailed analysis follows. As used in the following text, 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 Alternatives

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

No Action

Present Worth:	$ 53,434
Capital Cost:	$ 0
Annual O&M:	$ 3,476

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

Air Sparging and Soil Vapor Extraction

Present Worth:	$ 97,377
Capital Cost:	$ 52,387
Monthly O&M while operating:	$ 3,400
Annual O&M - Monitoring	$ 3,476
Time to Implement	6 months - 1 year

Under this alternative the top 2 feet of soil and sediment would be removed from leaching pit LP-1. Air injection wells would be installed in the area of on site contamination to a depth of approximately 18 feet, ten feet below the water table. Air would be pumped under pressure into groundwater via the air injection wells and would then bubble up through the groundwater toward the surface. As the air bubbles pass through the groundwater and subsurface soils contaminated by volatile organic compounds, the VOC's would mix with the air bubbles. The air with the VOC contaminants would travel upward to the vadose zone, the area below ground but above the water table. The vadose zone is not saturated by groundwater.

Soil vapor extraction wells would be installed in the vadose zone. At this site the vadose zone extends from the surface to a depth of approximately 8 feet. A vacuum would be applied to the soil vapor extraction (SVE) wells so that when the contaminated air bubbles rose from the groundwater into the vadose zone the bubbles would then be pulled into the SVE wells. The contaminated air in the SVE well would then be run through a carbon treatment canister which removes the volatile contaminants from the air.

The leaching pools would be backfilled to prevent uncontaminated air from the surface from being pulled through the pools into the SVE wells, thus limiting the effectiveness of the SVE system. There must also be a ground surface covering such as asphalt or plastic sheets to prevent surface air from entering the SVE well. However, the contaminated area at this site is currently paved so little additional ground cover would be required.

The system would be run until sampling of the air being removed from the subsurface indicated the system was no longer removing significant quantities of contaminants from the subsurface. A groundwater monitoring plan in which the existing monitoring wells and three additional wells are sampled twice a year for five years would then be conducted.

Excavation, Removal, and Disposal at a Secure Landfill

Present Worth:	$ 94,056
Capital Cost:	$ 79,066
Annual O&M - Monitoring:	$ 3,476
Time to Implement	6 months

Under this alternative any water in leaching pools LP-1 and LP-2 would be removed and properly disposed of. Then the top of the two leaching pools would be removed, and soils would be excavated from the leaching pool bottoms using a truck-mounted crane with a bucket grab. Each leaching pool would be excavated to a depth of 18-20 feet below the leaching pool bottom. Since the leaching pool bottom is located at the approximate elevation of water table, this excavation would also be 18-20 feet below the water table. This would mean the excavation would need shoring for the sides of the excavation to prevent undermining the nearby building and excavation. The shoring used would likely be sheet piling.

Excavated soils would then be transported to a licensed hazardous waste landfill for disposal. The excavation would be backfilled with clean soil. A groundwater monitoring plan would be developed in which three additional monitoring wells are installed downgradient. These wells, in addition to the existing four monitoring wells, would be sampled twice a year for five years. At that time a reevaluation or the groundwater monitoring program would be conducted.

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 (6NYCRR 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 contained 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.

The two SCGs most relevant to this site are NYSDEC Division of Water Technical and Operational Guidance Series Ambient Water Quality Standards and Guidance Values for groundwater standards, and NYSDEC's Division of Environmental Remediation Technical and Administrative Guidance Memorandum (TAGM) 4046 for soil cleanup objectives.

NYSDEC's Ambient Water Quality groundwater standard for each of the contaminants found in the groundwater on and near this site is 5 ppb with two exceptions. The standard for vinyl chloride is 2 ppb and the standard for benzene is 1 ppb.

The no action alternative would not meet this SCG.

Air sparging may be capable of reducing contamination in the upper ten feet of the on site aquifer. Since air sparging cannot be used at greater depths, contamination at more than ten feet would not meet this

SCG. Off site contamination, which is above groundwater standards, would not be addressed under this alternative. Therefore, off site groundwater would not meet this SCG. However, off site groundwater poses very little threat to human health and the environment. This groundwater will continue to be monitored and contamination is anticipated to quickly diminish.

Remediation of the deep and off site groundwater by other methods, while technically possible, would not be practical considering the very low risk to human health and the environment the contamination in that groundwater presents.

The excavation and removal alternative, since it would not address groundwater, would not meet this SCG. However, some reduction of on site groundwater contamination may occur due to the removal of soils acting as a source of contamination and off site contamination presents very little threat.

The TAGM 4046 soil cleanup objectives for the major contaminants found in soil at the site range from 0.3 ppm for 1,2 DCE to 5.5 ppm for ethyl benzene. PCE, the most common contaminant, has a soil cleanup level of 1.4 ppm.

The no action alternative would not meet this SCG.

Air sparging with SVE would likely be able to meet this SCG. The excavation and removal alternative would also meet this SCG.

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

The only significant risk to human health is presented by a possible future on site excavation exposing workers and the public to the high levels of contamination in shallow soils and groundwater.

The no action alternative would do nothing to mitigate that risk.

The air sparging/SVE alternative would remediate the shallow soils and groundwater to a depth of 18 feet below grade, virtually eliminating the risk of human exposure since it is unlikely anyone would excavate deeper than 18 feet in this area.

The excavation and removal alternative would reduce the risk of human exposure to contaminated soils, but the risk of exposure to groundwater with high concentrations of solvents would remain.

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.

The no action and air sparging/SVE alternatives would have no short term adverse impacts. Excavation and removal has the potential to create air releases of contaminants in the vicinity of the excavation, but these releases are relatively easy to monitor and control.

The length of time it would take to maintain the remedial objectives using air sparging is difficult to predict accurately, but it is anticipated that the system would run for between six months and one year.

The time to implement the excavation and removal alternative would be one to two weeks.

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.

The no action alternative would not reduce the risks nor would implement any control to limit them.

The remaining potential risk under the air sparging alternative would be if a downgradient water supply well is installed allowing humans to ingest unremediated groundwater from off site or deeper than 18 feet on site. The likelihood of this potential risk is considered to be very low.

The remaining potential risks for the excavation and removal alternative would be ingestion or dermal contact with unremediated groundwater. The potential ingestion risk would be if a downgradient water supply is installed allowing humans to ingest unremediated groundwater from on or off site. The likelihood of this risk is considered to be very low. The dermal contact risk results from the possibility of a future excavation allowing workers to be exposed to contaminated shallow groundwater. The likelihood of such a risk is considered to be low.

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.

The no action alternative would not reduce the toxicity, mobility or volume of wastes at the site.

The air sparging/SVE would significantly reduce the volume and mobility of waste at the site by removing contaminants from the soil and groundwater so they could be properly disposed of.

The excavation and removal alternative would not reduce the volume of contamination but would reduce the mobility of the contaminants in the excavated soil by placing them in a lined hazardous waste landfill.

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..

There would be no major technical or administrative problems with implementing the air sparging alternative.

The excavation alternative would not present any major administrative problems. However, excavation of soils to the proposed depth below the water table would not be possible without shoring up the sides of the excavation to prevent undermining the nearby building and excavation equipment. The shoring used would likely be sheet piling.

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. The no action alternative is the least expensive alternative and the air sparging and excavation alternatives are comparable in cost.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon 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. No significant comments were received.

SECTION 8: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting the air sparging/SVE alternative with the additional removal of 2 feet of soils immediately below LP-1 as the remedy for this site.

This selection is based upon the evaluation of the three alternatives developed for this site. The no action alternative was not protective of human health and the environment and did not meet all SCGs. Both air sparging/SVE and excavation were protective, but neither fully met all SCGs. These two alternatives were similar with respect to the majority of the balancing criteria. However, air sparging addresses the most concentrated area of groundwater contamination, the shallow groundwater on site, while excavation did not. Excavation also presented implementability problems due to the need for additional shoring. Although these problems could be addressed by sheet piling, the cost of such additional work would eliminate the price advantage excavation gained by having lower O&M costs. Overall air sparging/SVE is more protective and comes closer to meeting SCGs by addressing on site groundwater than excavation for a comparable cost.

Remediation of the deep and offsite groundwater was not selected since remediation of these areas would be impractical due to implementability concerns. Such remediation would require an off site pump and treat system with associated difficulties of installing the wells and piping in the residential neighborhood above the plume. The deep and offsite groundwater plumes do not pose a significant threat to human health and any environmental exposures do not result in adverse environmental impacts. There are no known receptors that are or will be exposed to this groundwater and the groundwater will discharge into either the Carmans River or South Oyster Bay approximately 1000 to 2000 feet southwest of the site.

The estimated present worth cost to implement the remedy is $97,377. The cost to construct the remedy is estimated to be $52,387 and the estimated operation cost for approximately 9 months is $30,000. The estimated average annual operation and maintenance cost for groundwater monitoring is $3,476

The elements of the proposed 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. From the bottom of LP-1, two feet of sludge and sediment will first be removed. This small amount of sediment is highly contaminated and its removal would decrease both the amount of time the air sparging/SVE system is required to run and the amount of carbon required to treat the waste with the carbon adsorption canister. This will eliminate the threat of both future human contact with and further contamination of the groundwater by these soils. The leaching pools would then be backfilled with clean soil.

3. Air injection wells will be installed to a depth of approximately 18 feet and soil vapor extraction wells to a depth of approximately 8 feet to remediate the area below LP-1&2 and the vicinities of MP-6 and MW-3. Any major breaks in the asphalt in this area will be patched or covered with plastic to prevent air infiltration. The number and locations of these wells will be determined during design. The air injection wells will be connected to an air compressor to force air bubbles into the groundwater. The SVE wells will be connected to a vacuum extraction blower in order to remove the contaminated air from the subsurface soils above the water table. This contaminated air will then be run through a carbon adsorption system. Influent and effluent air from this system will be sampled in order to insure the system is effective at removing contaminants. The system will be operated until the source is remediated to soil cleanup guidelines and groundwater standards or until the practical limits of the technology are reached. By removing contaminants from soil and onsite groundwater, this system will reducing the risk of exposure to these media. By treating the groundwater with the greatest concentration of contaminants, the remedy will also reduce the risk of vapors from the groundwater entering the basements of nearby residences in the future.

4. If future indoor air monitoring detects site-related chemicals at levels which exceed the NYSDOH Ambient Air Criteria for tetrachloroethene or if the site-related breakdown products of tetrachloroethene are substantially above typical background levels (USEPA VOCs database and NYSDOH Control Home Database) in any nearby residences due to site-related contamination, engineering controls will be implemented to mitigate the impacts of these chemicals on the indoor air quality within the affected residences.

5. Since the remedy results in untreated hazardous waste remaining at the site, a long term groundwater monitoring program will be instituted. Three additional off site shallow monitoring wells will be installed as part of this program. The program will allow the effectiveness of the air sparging/SVE to be monitored and will be a component of the operation and maintenance for the site.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) 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 was sent to the people on the mailing list describing the Proposed Remedial Action Plan(PRAP) and inviting them to the public meeting on the PRAP.
- A Public Meeting held to provide interested parties the opportunity to learn more about the site and comment on the proposed remedy.
- A thirty day public comment period was held after the issuance of the PRAP to allow the public to comment on the proposed remedy.
- A Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

Table 1
Nature and Extent of Contamination -Volatile Organic Compounds (VOCs)

MEDIA	LOCATION AND SAMPLE DATE	CONC. OF TOTAL VOCs (ppb)	PRIMARY CONTAMINANT(S) AND CONCENTRATION (ppb)		SCG OF PRIMARY CONTAMINANT (ppb)
Groundwater	MW-1 4/96	362	1,2 Dichloroethene (CIS)	330	5
	MW-2 4/96	0			
	MW-3 4/96	155	1,2 Dichloroethene (CIS)	130	5
	MW-4 4/96	13	Chlorobenzene	13	5
	MP-5(15ft) 9/96	115	Trichloroethene	41	5
	MP-6(15ft) 9/96	36,300	Tetrachloroethene	31,000	5
			Trichloroethene	4,300	5
			Ethyl Benzene	710	5
	MP-6(30ft) 9/96	2738	Tetrachloroethene	2,700	5
	MP-6(50ft) 9/96	1268	Tetrachloroethene	1,200	5
	MP-7(15ft) 9/96	1581	Ethyl Benzene	1,500	5
	MP-8(15ft) 9/96	24	Tetrachloroethene	16	5
	MP-9(15ft) 9/96	49	Chlorobenzene	39	5
	MP-10(15ft) 9/98	1743	Xylene (total)	1,200	5
			Ethyl Benzene	530	5
	MP-10(30ft) 9/98	38	Xylene (total)	25	5
	MP-11(15ft) 9/98	2271	1,2 Dichloroethene (total)	2,200	5
	MP-11(30ft) 9/98	58	1,2 Dichloroethene (total)	54	5
	MP-12(15ft) 9/98	10,460	1,2 Dichloroethene (total)	7,100	5
			Xylene (total)	2,500	5
			Ethyl Benzene	650	5
	MP-13(15ft) 9/98	6	Chlorobenzene	6	5

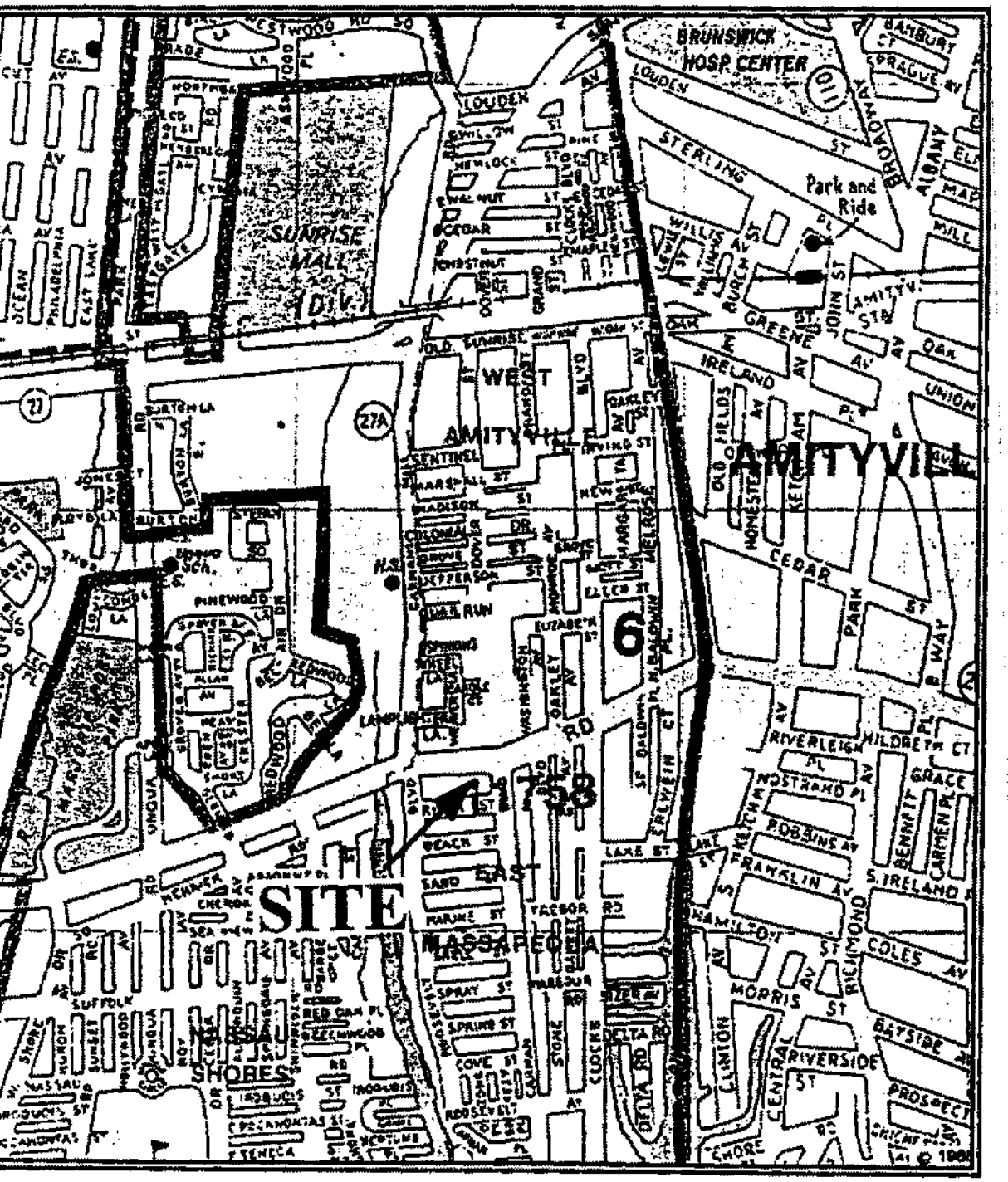
MEDIA	LOCATION	CONC. OF TOTAL VOCs (ppb)	PRIMARY CONTAMINANT(S) AND CONCENTRATION (ppb)		SCG OF PRIMARY CONTAMINANT (ppb)
Soils	LP-1A (0-2 ft)*	3,178,000	Tetrachloroethene	2,900,000	1,400
All soil samples taken 4/96			1,2 Dichloroethene	180,000	300
			Trichloroethene	92,000	700
	LP-1B (5-7 ft)	64,000	Xylene (total)	30,000	1,200
			Ethyl Benzene	17,000	5,500
			1,2 Dichloroethene	14,000	300
	LP-1C (10-12 ft)	570	Tetrachloroethene	460	1,400
	LP-2A (0-2 ft)	5,800	Tetrachloroethene	5,800	1,400
	LP-2B (5-7 ft)	66,700	Tetrachloroethene	64,000	1,400
	LP-2C (10-12 ft)	40	Tetrachloroethene	21	1,400
	LP-3A (0-2 ft)	0			
	LP-3B (5-7 ft)	610	Tetrachloroethene	610	1,400
	LP-3C (10-12 ft)	385	Tetrachloroethene	300	1,400
	LP-4A (0-2 ft)	76	Acetone	76	200
	LP-5A (0-2 ft)	4	Tetrachloroethene	4	1,400
ndoor Air	Basement	88**	Tetrachloroethene	60**	100**
Carmen	1st Floor	50**	Tetrachloroethene	35**	100**
Blvd. Residence	Outdoor Air	29**	Toluene	20**	NA

Depths indicated for soil samples are measured from the bottom of the leaching pools. Leaching pool bottoms are approximately 8 feet below ground surface

Concentrations given for indoor air samples are in micrograms per cubic meter

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Monthly O&M	Total Present Worth
No Action	$0	$3,476	$0	$53,434
Air Sparging/SVE	$52,387	$3,476	$3,400	$97,377
Excavation and Disposal	$79,066	$3,476	$0	$94,056

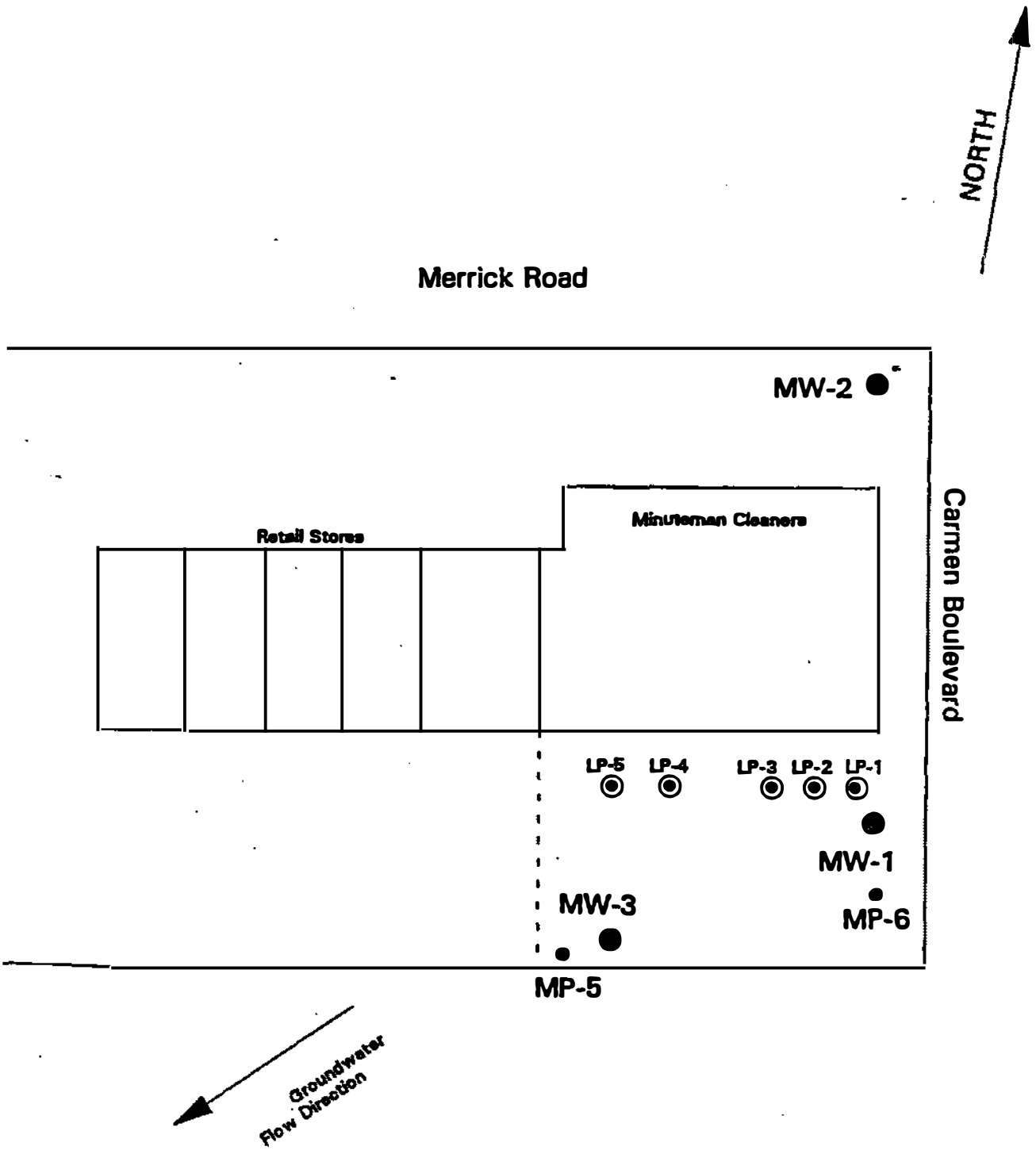


ubject Property Location
agstrom Atlas

Figure 1

EEA Inc.
55 Hilton Avenue
Garden City, New York

Sample Collection Locations



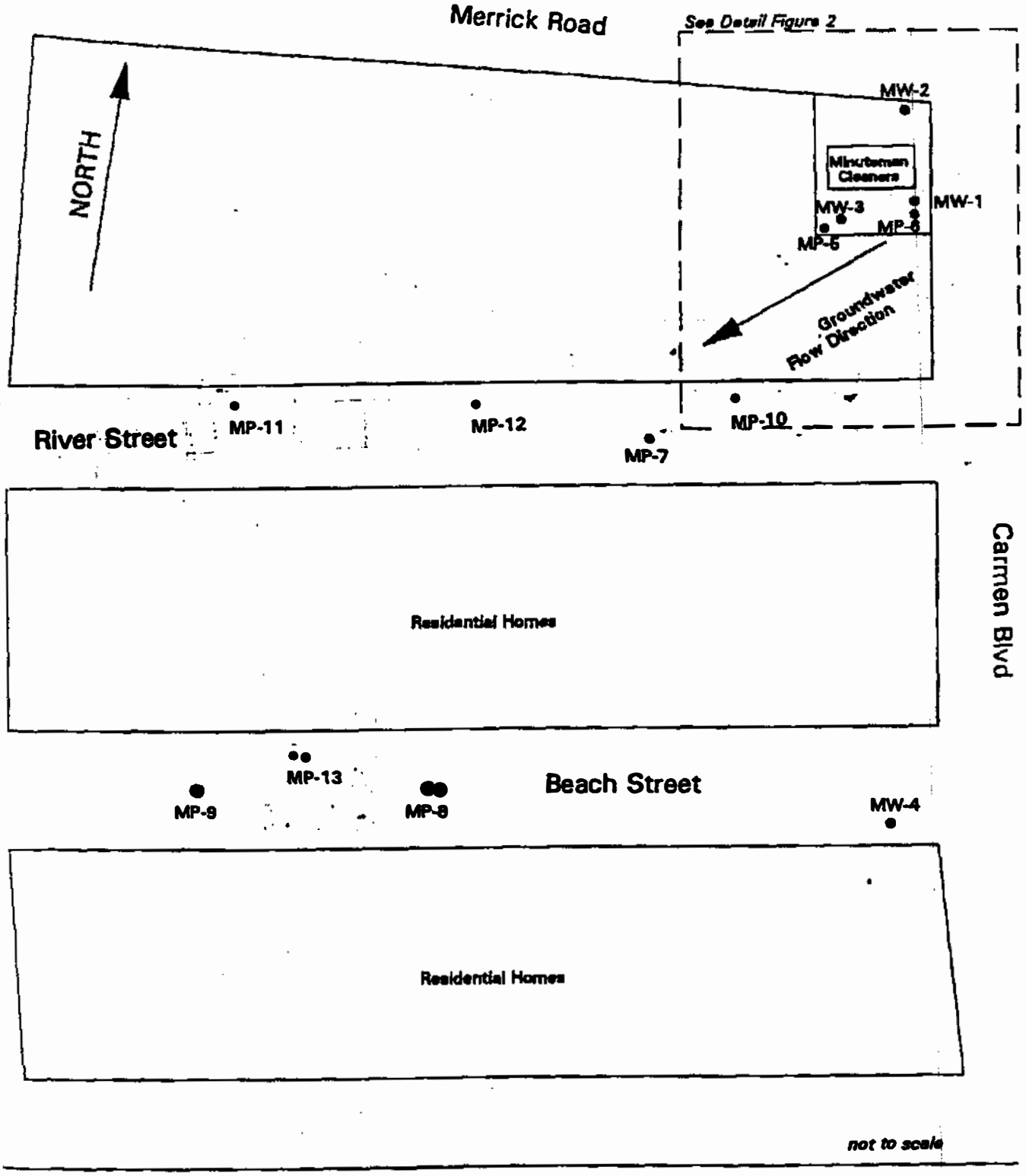
not to scale

Property Located at:

Minuteman Cleaners
5640 Merrick Road
East Massapequa, New York

Figure 2

Groundwater Sample Collection Locations



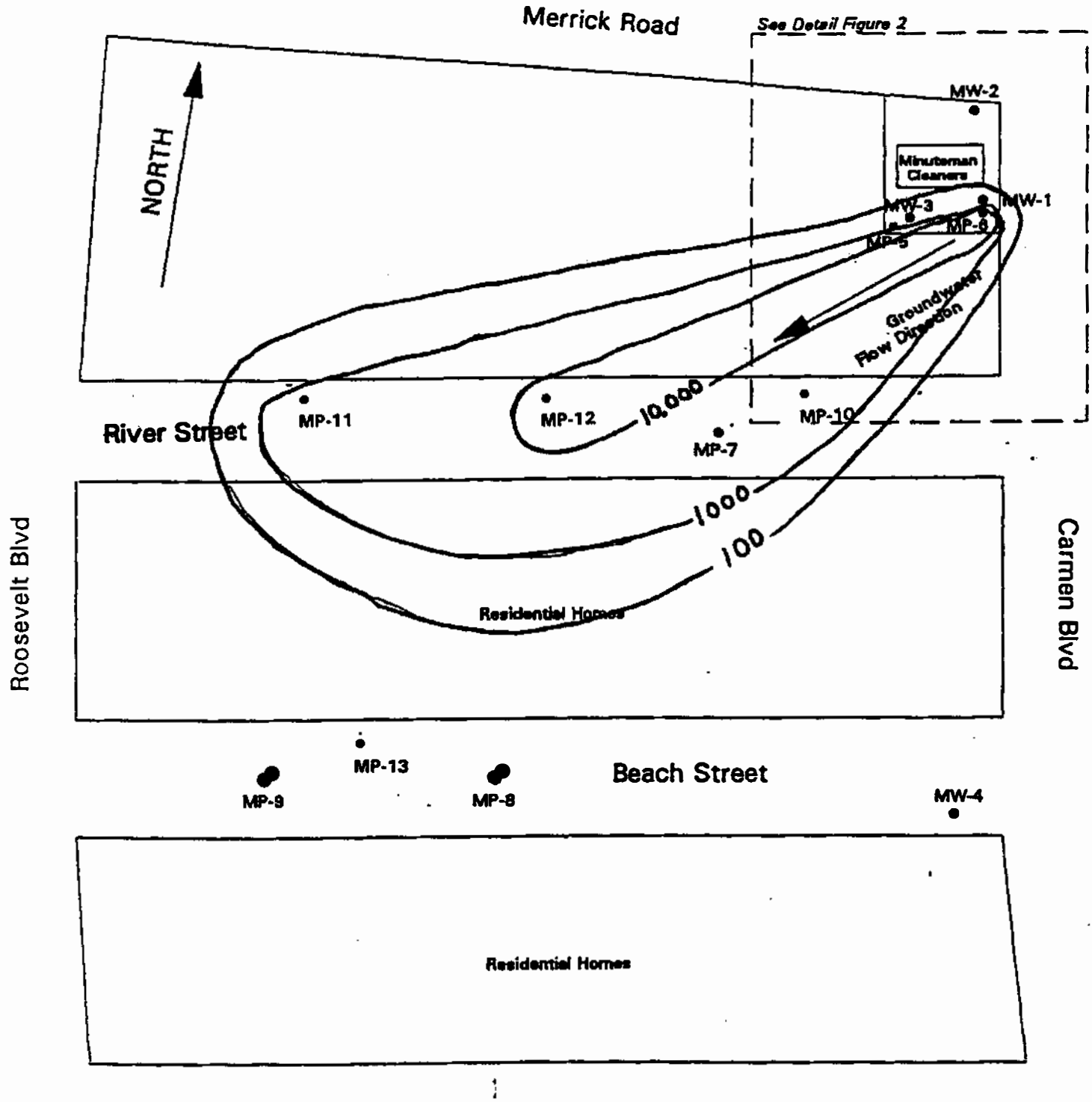
Property Located at:
Minuteman Cleaners
5640 Merrick Road
East Massapequa, New York

●● - Groundwater Monitoring Well

●● - Groundwater Sample Collection Point

Figure 3

Shallow Groundwater Contaminant Plume



concentrations in parts per billion (ppb)

not to scale

— 100 — Total VOCs

● - Groundwater Monitoring Well

● - Groundwater Sample Collection Point

Property Located at:

Minuteman Cleaners
5640 Merrick Road
East Massapequa, New York

Figure 4

APPENDIX A

RESPONSIVENESS SUMMARY

Minuteman Cleaners
Proposed Remedial Action Plan
East Massapequa, Nassau County
Site No. 1-30-065

'he Proposed Remedial Action Plan (PRAP) for Minuteman Cleaners, was prepared by the New York State)epartment of Environmental Conservation (NYSDEC) and issued to the local document repository on January 12, 999. This Plan outlined the preferred remedial measures proposed for the remediation of the contaminated soil, :diment and groundwater at the Minuteman Cleaners site. The preferred remedy is air sparging/soil vapor xtraction.

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

public meeting was held on January 26,1999 which included a presentation of the Remedial Investigation (RI) and e Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for tizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have :come part of the Administrative Record for this site.

he public comment period for the PRAP ended on February 12, 1999.

is Responsiveness Summary responds to all questions and comments raised at the January 26,1999 public eeting. No written comments were received.

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

OMMENT 1: Has the Carmen River been tested for contamination?
ESPONSE 1: No, the contaminants migrating from the site do not accumulate in plants or wildlife, and therefore e not a threat to marine fish or wildlife. Conservative calculations of the estimated amount of contaminants aching the Carmens River were made. Even under these hypothetical "worst case" conditions, no violations of y applicable surface water or sediment standards or guidelines would occur.

OMMENT 2: Might the xylene and ethyl benzene found be coming from the uniform company west of the e?
ESPONSE 2: It is possible that xylene and ethyl benzene contamination is from another source, such as the iform company or a property just west of the site where 2 underground fuel tanks were removed in the past. parate investigations of both of these possible sources are currently being conducted by the Department.

COMMENT 3: **How noisy would the air compressor used in the air sparging be?**
RESPONSE 3: The compressor would be housed in a shed and measures to keep the noise to acceptable levels (sound insulation, etc.) will be taken into account during the design of the treatment system.

COMMENT 4: **There is a freshwater spring next to my house on Clocks Boulevard. Has it been tested?**
RESPONSE 4: No. Clocks Boulevard is east of the site and the groundwater from the site is flowing to the southwest. The Clocks Boulevard vicinity would not be influenced by this site.

COMMENT 5: **Which cleanup would be more efficient, excavation or air sparging?**
RESPONSE 5: NYSDEC believes air sparging would be more efficient, because it would treat groundwater as well as soil contamination. Excavation would treat only soil contamination for about the same cost as air sparging.

COMMENT 6: **I live very near the site. What are the possible health effects from exposure to tetrachloroethene?**
RESPONSE 6: The following is a description of potential health effects associated with tetrachloroethene. It is important to note that this information is based on exposures to tetrachloroethene at high levels. The NYSDEC and NYSDOH believe that no one is currently being exposed to tetrachloroethene at unhealthful levels. Tetrachloroethene causes cancer in laboratory animals exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in people who are exposed to lower levels over long periods of time. Whether or not tetrachloroethene causes cancer in humans is unknown. People exposed to large amounts of this chemical in the workplace or from hobbies have had nervous system damage. Exposure to high concentrations of tetrachloroethene has also caused liver and kidney damage in laboratory animals.

COMMENT 7: **Is there any way that contamination from LP-1 could travel east?**
RESPONSE 8: No, since the only way contamination is currently migrating is via groundwater, which is flowing to the west/southwest.

COMMENT 9: **There is a cluster of people with cancer on Sand Street, three blocks south of the site. Why wasn't the groundwater investigated there?**
RESPONSE 10: Based on the groundwater flow direction, contaminated groundwater from the site would not reach as far south as Sand Street. This conclusion is supported by the finding of only low levels of contamination on Beach Street, the street one block north of Sand, indicating that Beach Street is the southern edge of the groundwater plume.

COMMENT 11: **There has been a lot of rain recently. Might that be part of the problem?**
RESPONSE 11: The recent rains should have only a negligible effect on the contamination.

COMMENT 12: **What would stop the property owner from just walking away from the site?**
RESPONSE 12: The State of New York could then take him to court in an effort to recover the costs of the investigation or remediation.

COMMENT 13: **How did the owner of the site get away with not hooking up to the sewers for all these years?**
RESPONSE 13: According to the Nassau County Department of Health, it appears that an error was made in not pursuing the owner to hook up to the sewers when they became available. Legally, the owner is responsible to be hooked up within one year of when sewer service becomes available.

COMMENT 14: **Who exactly will pay for this cleanup?**
RESPONSE 14: NYSDEC will approach the property owner and/or the operator of the facility and ask them to fund the implementation of the selected remedy. If they refuse, the State would pay for the cleanup through it's

Superfund program. The State would then attempt to recover it's costs from the owner or operator through legal action.

COMMENT 15: **How long would it take before the State stepped in to begin to clean up the site if the owner and operator refuse?**
RESPONSE 15: Within several months of the Record of Decision if the owner and/or operator were uncooperative.

COMMENT 16: **Who would be in charge of groundwater monitoring?**
RESPONSE 16: Either the owner or operator would be responsible for groundwater monitoring under NYSDEC oversite if they agreed to conduct the monitoring. Otherwise, NYSDEC and it's consultants would be responsible.

COMMENT 17: **The Fact Sheet says the air sparging alternative would include some excavation.**
RESPONSE 17: Yes, a small amount of soil would be excavated under the air sparging plan. Two feet of soil would be removed from the bottom of leaching pool LP-1 because this small volume of soil is highly contaminated and it would therefore be inefficient to treat via air sparging.

COMMENT 18: **Is the air sparging system aimed at remediating groundwater onsite only or would it address both onsite and offsite groundwater?**
RESPONSE 18: The proposed remedy only addresses onsite groundwater. The source area onsite is where the contaminants are most concentrated and accessible, and therefore can be dealt with most effectively. In addition, there are technical impracticalities associated with air sparging the offsite groundwater, which are described in the response to comment 19.

COMMENT 19: **What about offsite groundwater?**
RESPONSE 19: The offsite groundwater is somewhat dispersed and diffuse and much more difficult to address effectively because of accessibility complications. Additionally, if air sparging was used to remediate the offsite groundwater, it would release volatile contamination currently in the groundwater into the air found in the pore spaces of the soils. Vapor extraction wells would then be necessary to capture these volatiles before they could enter adjacent homes. Since the volatiles currently in the groundwater do not appear to be impacting any of the homes in the vicinity of the offsite groundwater contamination and we could not be absolutely certain that we could capture all of the volatiles released from the offsite groundwater if air sparging was used, remediating the offsite groundwater in the residential area via air sparging is not viable.

COMMENT 20: **What level of cleanup is NYSDEC aiming for with the onsite groundwater?**
RESPONSE 20: While NYSDEC's remedial goal is to treat to groundwater standards, air sparging may not be capable of fully attaining that goal. The air sparging system will continue to be operated to the limit attainable by the technology.

COMMENT 21: **What is the estimated limit of the technology? What would be an acceptable level for air sparging to attain in contaminated on site groundwater?**
RESPONSE 21: Air sparging has been able to meet the groundwater standard of 5 ppb for PCE at other sites, however, this site has greater concentrations of PCE in the groundwater than those sites. While it may be possible to reach the groundwater standard, at a minimum NYSDEC hopes to reduce the concentration of PCE in onsite groundwater from the current 31,000 ppb to something in the range of 100 ppb.

COMMENT 22: **When did it become illegal to discharge Minuteman type wastes to the groundwater?**
RESPONSE 22: One year after the owner was notified that public sewers were available. Public sewers reportedly became available in the vicinity of Minuteman Cleaners in 1979.

COMMENT 23: **Does NYSDEC have any hypothesis on the reason MW-3 dropped from 17,000 ppb in 1991 to 130 ppb in 1996?**
RESPONSE 23: Such a drastic drop in contaminant concentration without any remedial efforts taking place could indicate an anomalous result on that groundwater sample. The groundwater in the vicinity of MW-3 will be treated by the air sparging system.

COMMENT 24: **Might construction result in air emissions of PCE?**
RESPONSE 24: Engineering controls will be in place to minimize any air emissions during construction. Air monitoring will be conducted during construction activities to ensure air emissions do not exceed acceptable levels. Since air sparging treats the waste in place, there is much less risk of air emissions than there would be in an intrusive remedy such as excavation.

COMMENT 25: **Will NYSDEC come back in a few years to retest for contamination?**
RESPONSE 25: Groundwater will be monitored twice a year for at least five years. This data will be evaluated annually to determine whether the groundwater monitoring program needs modification.

COMMENT 26: **Does NYSDEC have any idea what the concentration of contaminants reaching the Carmens River might be?**
RESPONSE 26: NYSDEC has conducted mass loading calculations and the results indicate no surface water or sediment standards or guidelines will be violated, even when very conservative assumptions about concentrations and travel times are used.

COMMENT 27: **I suggest the Carmen River should be monitored.**
RESPONSE 27: The VOCs reaching surface water are anticipated to undergo rapid dilution and loss to the atmosphere by volatilization. Dilution is accomplished by the expected rapid mixing of groundwater with clean upstream flow and salt water from the bay. Volatilization will occur rapidly in the river; estimates of half lives under quiescent conditions are on the order of a few hours for these compounds with relatively high Henry's Law Constants. However, in order to best measure the concentration of contaminants reaching the Carmens River, the remedy includes the installation of groundwater monitoring wells on Roosevelt Boulevard, which is the last street before the river. The results of groundwater sampling in these wells will give a very good indication of the mass of contaminants reaching the river.

COMMENT 28: **If a remediation is required at the uniform company, would it be beneficial to do both remedies at the same time?**
RESPONSE 28: There would not be a significant enough benefit in conducting both remediations concurrently to merit the delay of remedial activities at the Minuteman site.

COMMENT 29: **Is the landlord of the Minuteman Cleaners property being kept abreast of what is going on at the site?**
RESPONSE 29: Yes.

COMMENT 30: **How will the community be informed of the final remedy decision?**
RESPONSE 30: A notice will be sent out to the people and organizations on the mailing list and the document describing the selected remedy, the Record of Decision, will be available for public review at the Massapequa Public Library.

COMMENT 31: **Are there any laws concerning two companies that use hazardous waste operating near each other?**
RESPONSE 31: We are unaware of any such laws.

OMMENT 32: Information about the site should be publicized in the Amityville Record.
ESPONSE 32: The Amityville Record will be added to our mailing list for future information about the site.

OMMENT 33: If the responsible parties agree to conduct the cleanup does that relieve them from possible ture liability?
ESPONSE 33: No.

APPENDIX B

Administrative Record

Remedial Action Concept, September 1991. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by Richard D. Galli, P.E., P.C.

Initial RI/FS Work Plan, Site Code No. 1-30-065, March 1996. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by EEA, Inc.

Results of Work Plan Implementation, Site Code No. 1-30-065, June 1996. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by EEA, Inc.

RI/FS Work Plan, Site Code No. 1-30-065, July 1996. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by EEA, Inc.

Results of the RI/FS Investigation, Site Code No. 1-30-065, October 1996. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by EEA, Inc.

Remediation Feasibility Investigation, Site Code No. 1-30-065, April 1997, revised May 1998. Prepared for Minute-Man Cleaners, 5640 Merrick Road, East Massapequa, New York by EEA, Inc.

Proposed Remedial Action Plan, Minuteman Cleaners, East Massapequa, Nassau County, New York, January 1999. Prepared by the New York State Department of Environmental Conservation.

Responsiveness Summary for the RI/FS, February 1999. Prepared by the New York State Department of Environmental Conservation.