Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

Huntington/East Northport Landfill Site
Town of Huntington, Suffolk County
Site Number 1-52-040

March 1996

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Huntington/East Northport Landfill Inactive Hazardous Waste Site
Town of Huntington, Suffolk County, New York
Site No. 152040

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Huntington/East Northport Landfill 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 Huntington/East Northport Landfill 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 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 Huntington/East Northport Landfill and the criteria identified for evaluation of alternatives the NYSDEC has selected an institutional controls and water supply protection remedy. The components of the remedy are as follows:

- The Town will place deed restrictions that will limit excavation and drilling in the capped landfill.
- Town land use controls, which will be implemented through the Town Board, will prohibit new well installations near the landfill and consequently limit exposures to landfill solids and sediments and potential exposure by the public to hazards associated with drilling new wells or coming into contact with affected groundwater.
- The Town will place physical barriers (fencing) around the landfill property to prohibit entry on to the site by the general public.
- The Town of Huntington will finance additional connections to public water supplies of residences or properties that have a private drinking water well that may be impacted or threatened in the future by the landfill leachate plume.

- A long-term monitoring program will be instituted by the Town.

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. Hazardous wastes will remain on site, however, since the landfill material cannot be excavated and treated effectively.

3/26/96
Date

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

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SECTION 1: SITE DESCRIPTION

The East Northport Landfill is located in the Town of Huntington in the northwest corner of Suffolk County, New York. See Figure 1. The landfill encompasses a 44-acre triangular site on Town Line Road, which coincides with the border between the towns of Huntington and Smithtown. Figure 2 shows the location of the landfill, groundwater monitoring wells, private wells, and other sampling locations associated with this investigation. The area encompassed by Figure 2 represents the area herein referred to as the study area. The site is located in an area of Huntington which can be generally characterized as a mixture of municipal, industrial, commercial, and residential properties. East of the landfill are located a number of trucking and stone supply businesses, located directly west and south is the Long Island Lighting Company (LILCO) and Iroquois Natural Gas Pipeline and Right-of-Way properties. Further to the west and south are residential properties. Immediately north of the site is the 12-acre "leasehold" property which is the present location of the Town's resource recovery plant.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

Prior to the early 1930s, the land now occupied by the Town of Huntington's East Northport Landfill was farmland. By 1935, sand mining operations along with disposal of municipal solid waste were on going on the west side of Town Line Road where the landfill currently exists.

In 1955, the first of three incinerators was constructed at the northern end of the complex. The incinerators ceased operations and were decommissioned in the Summer of 1989.

The amount of waste accepted at the landfill site varied from year to year and month to month. Based on the limited information available in 1973, 292,000 tons of solid waste were accepted at the complex. In 1977, the Town accepted more than 270,000 tons to the landfill.

The types of wastes generally accepted at the landfill site were municipal solid waste and construction and demolition debris. There is no historical evidence of the disposal of large amounts of highly toxic materials, drummed wastes or petroleum hydrocarbons. Those areas of the landfill that have been regraded have revealed no unexpected waste disposal material or practices.

2.2: Remedial History

The Huntington Landfill was listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in December 1983. There have been numerous studies of the landfill, including a NYSDEC Phase I Investigation completed in December 1985. The site was classified a Class 2 (significant threat to public health or environment - action required) in December 1986.

Due to landfill leachate migrating into the groundwater beneath the site, there have been three phases of providing public water to residents whose wells were impacted or threatened by the contaminated groundwater. Phases I and II occurred between 1986 and 1989 prior to the start of the Remedial Investigation (RI) at the site. Phase III occurred in 1993.

To comply with NYSDEC regulations, the Town of Huntington initiated a methane gas monitoring and control program at the landfill in 1978. Later, an active gas control system was installed in phases around the entire landfill with two blower stations controlling gas collection.

Landfilling of municipal solid waste ceased at the landfill in September 1989. In December of 1991, the site boundary was modified to exclude the 12-acre leasehold property, now the site of the Town's resource recovery plant. Between late fall 1990 and August 1993, the landfill was completely regraded in preparation for constructing a final cover system.

An Order on Consent between the Town of Huntington and the NYSDEC requiring a full remedial program was executed on March 26, 1991.

SECTION 3: CURRENT STATUS

The Town of Huntington and the NYSDEC, under the State Superfund Program, initiated a Remedial Investigation/ Feasibility Study (RI/FS) in September 1991 to address the contamination at the site.

3.1: 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 2 phases. The first phase was conducted between September 1991 and January 1993 and the second phase between November 1993 and September 1995. Reports entitled Remedial Investigation for the East Northport Landfill - September 1995 and Phase II Remedial Investigation Report Landfill Gas and Ambient Air - August 1995 have been prepared describing the field activities and findings of the RI in detail. A summary of the RI follows:

The RI activities consisted of the following:

- Surface Water Investigation
- Landfill Sediment Investigation
- Leachate Investigation
- Groundwater Investigation
- Private Well Inventory and Sampling
- Landfill Gas and Ambient Air Investigation

- Groundwater Modeling
- Ambient Air Modeling
- Baseline Human Health Risk Assessment

The analytical data obtained from the RI was compared to Applicable Standards, Criteria, and Guidance Values (SCGs) in determining remedial alternatives. Groundwater, drinking water, and surface water SCGs identified for the Huntington/East Northport Landfill Site were based on the NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil analytical results, the NYSDEC soil clean-up guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals for soil and sediment.

Based on the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure rates, certain areas and media of the site require remediation.

As part of the RI, areas of contamination have been defined and characterized for leachate seepage, surface water and sediments, landfill gases, and groundwater. In all, up to three rounds of samples were collected in the RI/FS process for each media. A brief summary of the results from specific media is given below.

Leachate - Various leachate samples were collected from a shallow drainage system and from the slope of the landfill. These samples were not representative of the leachate generated at the base of the landfill which is at least 50 feet below ground surface. No volatile organic compounds (VOCs) attributable to the landfill were detected. The samples showed high levels of almost all metals. Chromium, lead, and zinc all exceeded NYSDEC class GA groundwater standards by a minimum of ten times.

Sediments and Surface Water - Surface water samples were collected from the west recharge basin. No VOCs, semi-volatile organic compounds, or PCBs were detected in the surface water. Lead was detected at 23 parts per billion (ppb). No VOCs or PCBs were detected in any of the sediment samples collected from the recharge basin.

Surface water samples and sediment samples were also collected from Sunken Meadow Creek which is located approximately 10,000 feet hydraulically downgradient from the landfill. Sunken Meadow Creek is a local discharge zone for the shallow groundwater. Tetrachloroethene (PCE) was detected at trace levels (1 to 5 ppb) in 5 of the 6 surface water samples collected in the fresh water section of Sunken Meadow Creek. The NYSDEC ambient surface water guidance value for PCE is 1 ppb. Leachate indicators in these samples were also elevated above the background samples. The sampling results indicate that the headwaters of the creek are receiving landfill leachate impacted groundwater. The results are presented in Table 1.

Landfill Gas - In the initial 1992 sampling round, 8 of 10 ambient air samples collected on the landfill exceeded the NYSDEC annual guideline concentrations (AGCs) for benzene, with concentrations ranging from 0.16 to 1.5 ug/m^3. The AGC for benzene is 0.12 ug/m^3. In the second round of sampling, benzene was not detected. No concentrations of VOCs exceeded the AGCs in subsequent off-site ambient air sampling results. See Table 2 and Figure 3.

Air quality modeling of the landfill was conducted to estimate maximum off site concentrations of VOCs. This information was used to assess potential health risks due to the movement of VOCs via the air pathway. The results were in general agreement with the field ambient air sampling results. The modeling results indicate that there is no expected off site concentration greater than 5 percent of any AGC.

Groundwater - Groundwater contamination related to the landfill was evaluated by sampling a network of 24 monitoring wells and numerous existing private water supply wells. Analysis of samples revealed a plume of leachate impacted groundwater extending from the landfill to approximately two miles north-northeast of the landfill. The width of the plume is approximately 2,400 feet and it is sinking in the Upper Glacial aquifer as it moves downgradient. In the vicinity of Sunken Meadow Creek there is a reversal in the shallow groundwater flow and groundwater flows upward and discharges to the creek.

The highest levels of VOCs were detected in monitoring wells located over one mile downgradient of the landfill, including : EN-6M with 35 ppb total VOCs, EN-7M with 74 ppb total VOCs, and EN-9M with 40 ppb total VOCs. See Figure 4 which depicts the extent of VOCs in the leachate plume. The most commonly detected VOCs include tetrachloroethene (PCE), trichloroethene (TCE), and 1,2 dichloroethene (1,2 DCE). The groundwater standard for these compounds is 5 ppb. See Table 3.

A number of private wells which clearly exhibit leachate impact also exhibit VOC contamination. These include PW-41, 51, 52, and 148 which are all located within the northern extent of the landfill leachate plume. These homes were all supplied with public water during the fall of 1993. During the fall of 1993, 57 homes were connected to public water. Seventeen residences in the Callahan Drive area, which have private wells that are considered threatened by the landfill leachate plume, have been recommended for hook up to public water as well.

3.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) were conducted at the site based on findings as the RI progressed. An IRM is implemented when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. Three IRMs have been completed while the RI/FS was in progress and three more are underway to address sources of contamination or to address an exposure pathway.

First, at the request of the New York State Department of Health (NYSDOH), the Town entered into an agreement with the Suffolk County Water Authority (SCWA) to connect 57 homeowners to public water as an IRM under the RI/FS program in the Fall of 1993. The 57 residential homeowners were identified as owning a private well used for potable water that were either impacted or threatened by the landfill leachate plume. See Figure 5.

Second, a landfill gas monitoring and extraction system has been reconstructed at the landfill. The extraction system serves to prevent off-site migration of landfill gas.

Third, contaminated sediments were removed in July 1992 from an on-site recharge basin and placed on top of the landfill, where they have been secured under the landfill cover system.

Three additional IRMs which are in progress include the following:

First, to comply with NYSDEC regulations, the Town was required to design and construct a final cover system and upgrade the gas collection system for the regraded landfill. The cover system or "cap" serves to eliminate the infiltration of water into the landfill thereby drastically reducing the generation of leachate. The original cap and upgraded gas collection system design was approved by the NYSDEC in July of 1993. At the request of the Town of Huntington, a second alternate cap design was developed and draft design documents were submitted to the NYSDEC for their review in July 1994. This alternate cap design was approved by the NYSDEC in August 1994. Both designs were competitively bid. Based on the bid prices

received, the Town was authorized to award a contract for the construction of the alternate design. The Town selected a contractor and mobilization took place in October 1994. The landfill cap construction and the upgrading of the landfill gas collection system is substantially complete.

Second, an "outpost" monitoring well will be installed approximately 500 feet to the southeast of the Gun Club Road Public Supply Well. This monitoring well will be approximately 300 feet deep and serve as an early warning system should landfill leachate contaminated groundwater migrate in the direction of the supply well. If sampling from the outpost well detects contamination, an evaluation will be performed to determine the need to provide treatment at the supply well. See Figure 4.

Lastly, public water will be provided to the 22 homes in the Callahan Drive area. See Figure 4.

3.3 Summary of Human Exposure Pathways:

Prior to and during the RI, contaminants migrating from the landfill were detected in some of the private wells downgradient from the site in concentrations exceeding New York State Department of Health public drinking water standards. Local residents do consume water from private wells and therefore groundwater was considered the primary pathway of exposure.

To eliminate the possibility of exposure to site-related contaminants in drinking water, the Town of Huntington has provided or is in the process of providing public water to homes with private wells located within the existing and/or projected area of the groundwater contaminant plume.

The potential exists for exposure to contaminants migrating from the landfill in the air. Air sampling and ambient air modeling conducted during the RI suggest that this pathway of exposure does not represent a significant health concern. Since 1978, the Town has taken measures to prevent the off-site migration of landfill gas. In addition, the landfill cap currently under construction includes the upgrading of the gas control/collection systems that will continue to prevent the uncontrolled release of landfill gas. Once construction of the cap is complete, ambient air and the air pathway of exposure will be reevaluated to ensure that site-related air contaminants are not discharged in concentrations that would represent a health concern.

Surface water, sediment, and leachate are not expected to be significant pathways of exposure for the East Northport Landfill site in its present condition. The landfill will be capped and leachate seeps are no longer expected to occur.

Based on the RI, the pathway of exposure of primary concern is exposure to site-related contaminants in drinking water. Therefore, the groundwater FS for the landfill focused on preventing human exposure to site-related contaminants in drinking water and the impacts of leachate on groundwater. The landfill gas and ambient air FS focused on preventing human exposure to site-related contaminants in air.

3.4 Summary of Environmental Exposure Pathways:

Given that the landfill is currently closed and a permanent cap is nearly complete, the remaining release mechanisms to the environment are direct discharge of leachate to groundwater and landfill gas migration.

It was estimated that prior to the regrading of the landfill 10-20 million gallons per year of leachate were generated and discharged to the groundwater. Upon completion of the landfill cap, rates of water infiltration and subsequent leachate generation will be essentially eliminated.

Groundwater Pathway - The groundwater investigation verified that the groundwater is flowing to the northeast at 0.7 to 1.0 ft/day in the Upper Glacial aquifer. Analysis of groundwater samples has revealed a plume of leachate impacted groundwater extending from the landfill to the northeast, following the direction of groundwater flow. The leachate plume is sinking in the Upper Glacial aquifer as it moves downgradient. The farthest observed extent of the leachate plume is monitoring well EN-9M, located approximately two miles north-northeast of the landfill. The width of the plume is approximately 2,400 feet. Analysis indicates that the deeper Magothy portion of the aquifer has not been impacted by the leachate plume.

VOCs detected within the plume boundaries include PCE, TCE, and 1,2 DCE. The highest observed concentrations of total VOCs were detected in monitoring wells located over one mile from the landfill, including: EN-6M (35 ppb TVOCs), EN-7M (74 ppb TVOCs) and EN-9M (40 ppb TVOCs). The groundwater standard is 5 ppb for these individual compounds, and 100 ppb for TVOCs.

Northeast of the site, Sunken Meadow Creek serves as a zone of shallow groundwater discharge in the study area. PCE at trace concentrations (1 to 5 ppb) was detected in surface water samples collected from the headwaters of the creek as well as elevated levels of leachate indicator parameters indicating impacted groundwater is discharging to this surface water body. No evidence of leachate impact was observed in samples collected within the main body (tidal zone) of Sunken Meadow Creek. Dilution of the trace levels of PCE is occurring. Based on groundwater model simulations, leachate impacted groundwater will discharge to Sunken Meadow Creek but will not reach Long Island Sound. Field data supports this conclusion. The NYSDOH has concluded that the bioconcentration potential of PCE in fish is extremely low, and this compound appears to be eliminated rapidly from the organism. Additional surface water samples will be collected as part of the landfill's post-closure monitoring.

Air Pathway - Based on the results of the on-site ambient air samples collected during the RI, it appears that emissions from the landfill are impacting the quality of ambient air at the landfill. However, under the weather conditions which prevailed during the Phase II RI program, landfill gas emissions did not appear to be impacting off-site ambient air. This conclusion is further supported by the air modeling completed as part of the Phase II RI. The modeling results indicate that the landfill and associated landfill gas collection blowers are not a significant source of VOC contamination. Further ambient air evaluation will be undertaken once the landfill cap installation is completed.

SECTION 4: ENFORCEMENT STATUS

The NYSDEC and the Town of Huntington entered into a Consent Order on March 26, 1991 (Index # W1-254-88-06). The Order obligates the Town to implement a full remedial program and allows reimbursement to the Town of up to 75 percent of the eligible costs of the remediation.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all Standards, Criteria, and Guidance Values (SCGs) and protecting 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:

- Reduce, control, or eliminate the contamination present within the soils/waste on site.
- Eliminate the potential for direct human or animal contact with the contaminated soils on site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the landfill to groundwater (generation of leachate within the fill mass).
- Provide for attainment of SCGs for groundwater and air quality at the limits of the area of concern (AOC).

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Huntington Landfill site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the reports entitled Groundwater Feasibility Study for the East Northport Landfill - September 1995 and the Phase I/II Feasibility Study Landfill Gas and Ambient Air - October 1995.

The general response actions identified in the groundwater FS included No Action, Institutional Controls, Containment, Removal/Collection, Treatment and Disposal/Discharge. These general response actions were evaluated based on technical implementability. The response actions that were not technically implementable were not retained for further analysis. The remaining general response actions were assembled into 20 alternatives. These 20 alternatives were screened based on their ability to meet Remedial Action Objectives (RAOs), their short-term and long-term effectiveness and their implementability. From that analysis, six alternatives were retained for further detailed analysis. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the groundwater and air pathway at the site.

Alternative 1 - No Further Action

The no-further action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative recognizes the three IRMs already conducted at the Huntington Landfill as discussed in Section 4.2. It also recognizes the three IRMs which are in progress. These are the construction of the landfill cap and enhancement of the gas control system, installation of the outpost monitoring well upgradient of the Gun Club Road Public Drinking Water Supply Well and the connection of the 22 additional homes to the public water supply. It requires operation and maintenance of the landfill cap and gas collection system and continued groundwater, surface water, and gas monitoring to evaluate the effectiveness of the remediation completed under the IRM(s). The capital costs are for the remaining costs associated with connecting the 22 homes to public water and installation of the outpost monitoring well.

Present Worth:	$649,674
Capital Cost:	$176,924
Annual GW Mon:	$ 43,302

Time to implement: Immediately

Alternative 2 - Institutional Controls

This alternative recognizes the three IRMs already conducted at the Huntington Landfill and the three which are in progress. In addition, Alternative 2 includes institutional controls which include: deed restrictions for the landfill property, local land use control to limit exposures, access restrictions, local controls on new well installations, and the connection to public water of any residences which may have landfill leachate impacted or threatened drinking water wells in the future. The capital costs are for the remaining costs associated with connecting the 22 homes to public water and installation of the outpost monitoring well.

Present Worth:	$ 707,798
Capital Cost:	$ 176,924
Annual O&M and GW Mon:	$ 48,626
Time to Implement:	Immediately

Alternative 3 - Hydraulic Containment, Groundwater Treatment, and Recharge Basin

This alternative includes the institutional controls and water supply protection elements of Alternative 2 and two hydraulic containment wells to capture any leachate contaminated groundwater from leaving the landfill area to prevent further migration of contaminants. The two wells would need to pump a combined flow of 400 gallons per minute or .576 million gallons per day of groundwater. These wells would be screened approximately 70 to 120 feet below ground level. The location and number of containment wells required were determined through the use of the groundwater model developed during the RI. See Figure 6. The duration of the groundwater containment pumping is uncertain and is dependent on the efficiency of the pump and treat system. A 30-year duration is assumed for estimating costs. The extracted groundwater would be pumped to an on-site treatment system consisting of metals pretreatment, solids removal by filtration, and organics removal by air stripping and vapor phase granular activated carbon. See Figure 7. The treated groundwater would be discharged to the on-site west recharge basin.

Present Worth:	$ 24,133,361*
Capital Cost:	$ 5,322,487
Annual O&M and GW Mon:	$ 1,723,002
Time to Implement:	2.5 years

Alternative 4 - Hydraulic Containment, Groundwater Treatment, and Reinjection Wells

This alternative is the same as Alternative 3 except that the treated groundwater would be discharged through on-site reinjection wells rather than the recharge basin.

Present Worth:	$ 24,203,819*
Capital Costs:	$ 5,406,046
Annual O&M and GW Mon:	$ 1,721,802
Time to Implement:	2.5 years

Alternative 5- Hydraulic Containment, Groundwater Restoration, Treatment, and Recharge Basin

This alternative includes the institutional controls and water supply protection elements of Alternative 2, the hydraulic containment component as discussed in Alternative 3, and four additional extraction wells which would be located approximately 8,000 feet north-northeast of the landfill to address a second VOC plume that is related to the landfill. The four additional wells would be screened from approximately 120 to 170 feet below ground level and would be pumped at approximately 350 gpm each. The six wells would need to pump a combined flow of 1,800 gallons per minute or 2.6 million gallons per day of groundwater. The location and number of extraction wells required were also determined through the use of the groundwater model. See Figure 8. The duration of the groundwater containment and restoration pumping is uncertain and is dependent on the efficiency of the pump and treat system. A 30-year duration is assumed for estimating costs. The extracted groundwater would be pumped to an on-site treatment system. The treatment system would be similar to the system discussed in Alternative 3 but be sized larger to handle the additional flows. The treated groundwater would be discharged to the on-site west recharge basin and an additional off-site recharge basin that would be required.

Present Worth:	$ 69,815,122*
Capital Cost:	$ 13,332,453
Annual O&M and GW Mon:	$ 5,173,590
Time to Implement:	2.5 years

Alternative 6 - Hydraulic Containment, Groundwater Restoration, Treatment, and Reinjection Wells

This alternative is the same as Alternative 5 except that the treated groundwater would be discharged through on-site reinjection wells rather than the recharge basins.

Present Worth:	$ 70,113,404*
Capital Cost:	$ 13,480,074
Annual O&M and GW Mon:	$ 5,187,390
Time to Implement:	2.5 years

* The present worth costs includes 30 years of estimated annual operation and maintenance (O&M) costs for the groundwater collection and treatment systems proposed. They do not include O&M costs associated with maintaining the landfill cap and gas collection system.

6.2 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 Values (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The No-Further Action Alternative and Alternative 2 do not address the chemical specific standards because these alternatives would not actively remediate the affected groundwater that has migrated off site. Natural attenuation and dilution would occur over an unspecified period of time. Alternatives 3 and 4 only satisfy the chemical specific standards for the collected groundwater in the hydraulic containment field near the landfill. Alternatives 5 and 6 fully satisfy the chemical specific standards for the affected groundwater. The surface water and air pathway SCGs will be addressed by all alternatives through continued monitoring in Sunken Meadow Creek and continued monitoring and operation of the landfill gas collection system, respectively. Should future monitoring indicate the need for treatment of the blower exhaust, it will be provided.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

All alternatives, except the No-Further Action Alternative are protective of human health via the groundwater pathway since public water will be provided to any residence with impacted or potentially impacted wells and an "outpost" monitoring well will be installed upgradient of the Gun Club Road public water supply well. All alternatives will be protective of human health via the air pathway in that if future monitoring indicates the need for treatment of the blower exhaust, it will be provided.

Alternatives 5 and 6 would be the most effective alternatives to reduce the impacts to groundwater. The No Further Action Alternative and Alternative 2 will provide no additional protection of groundwater beyond the effect the landfill cap will have in restricting rainwater from producing leachate in the future.

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 implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

Each alternative presents short-term risk to the community during the construction of the landfill cap. The landfill cap is expected to be completed within a few months, while the groundwater containment and restoration components of Alternatives 3 through 6 would be expected to take an additional 2.5 years to design and construct. The construction of Alternatives 3 through 6 would cause short term impacts to the community due to the use of heavy machinery which would generate dust, traffic congestion, and cause safety hazards.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. 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.

None of the alternatives are considered a permanent solution since the landfill waste will remain in place. The landfill cap will provide a permanent control in preventing additional leachate production from the landfill if it is properly maintained. Alternatives 3 through 6 will provide permanent treatment of contaminated groundwater in the aquifer, although the length of time needed is uncertain..

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-Further Action Alternative and Alternative 2 will not reduce the toxicity, mobility, or volume of landfill solids or the affected groundwater. The remaining four alternatives would significantly reduce the toxicity, mobility or volume of affected groundwater. Alternatives 3 and 4 would treat approximately 20 - 40% of the contaminated groundwater. Alternatives 5 and 6 would treat 40 - 60% of the contaminated groundwater. The capping of the landfill will prevent the generation of leachate in the future.

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

The landfill cap (all alternatives) and the construction of the groundwater treatment facility (Alternatives 3 through 6) are both considered technically feasible, though difficulties may be encountered during construction. The recharge basins required in Alternatives 3 and 5 are considered a reliable discharge alternative. On the other hand, reinjection wells required in Alternatives 4 and 6, may become clogged at the screened interval causing discharge problems. The 2.6 million gallons per day flow to be pumped and the large amount of piping which would be required for Alternatives 5 and 6, would make them very difficult to implement.

7. Cost. Capital and operation and maintenance (for 30 years) 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 4. The capital costs for each alternative include the costs for the 17 public water connections in the Callahan Drive area and the outpost well, since this work has not been completed.

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.

In general the public comments received were supportive of the selected remedy. Several comments received pertaining to the long-term monitoring program has resulted in some modifications of the requirements of the long-term monitoring program of Sunken Meadow Creek. The Creek will be required to be monitored on a semi-annual basis. In addition, during the PRAP comment period it was determined that there are five

additional homes on Fort Salonga Road that still utilize private wells as a drinking water source. The State and county health departments have evaluated the location of these homes relative to the landfill leachate plume, considered the uncertainties of the groundwater model, and have determined that to be protective of public health these homes must be connected to a public water supply. This will bring the total number of homes to be connected to public water in the Callahan Drive/Fort Salonga Road area to 21.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 2 as the remedy for this site.

This selection is based upon the fact that threats to human health will be addressed through the connection of any remaining residences to public water that are utilizing a private well threatened by the landfill leachate plume and the construction of the "outpost" well. In addition, risks from the landfill gases will be minimized through the continued monitoring and operation of the landfill gas collection system and the continued monitoring of the landfill gas monitoring wells to detect any possible off-site subsurface migration of gases.

Compliance with groundwater SCGs should be met over an unspecified time period through the completion of the landfill cap. Surface water SCGs will be addressed through the continued monitoring of contaminants in the Sunken Meadow Creek. If contaminant levels increase, a decision can be made as to the appropriate course of action. Air SCGs will be addressed through the continued operation of the landfill gas collection system and continued monitoring of emissions. Should future monitoring indicate the need for treatment of the blower exhaust, it will be provided by the Town of Huntington. The landfill gas and ambient air FS will be utilized to determine the most feasible, cost-effective alternative.

The estimated present worth cost to implement the remedy is $ 707,798. The cost to construct the remedy is estimated to be $ 176,924 and the estimated average annual operation and maintenance cost for 30 years is $ 48,626.

The elements of the selected remedy are as follows:

1. The Town will place restrictions that will limit excavation and drilling in the capped landfill.

2. Town land use controls, which will be implemented through the Town Board, will prohibit new well installations near the landfill and consequently limit exposures to landfill solids and sediments and potential exposure by the public to hazards associated with drilling new wells or coming into contact with affected groundwater.

3. The Town will place physical barriers (fencing) around the landfill property to prohibit entry on to the site by the general public.

4. The Town of Huntington will finance additional connections to public water supplies of residences or properties that have a private drinking water well that may be impacted or threatened in the future by the landfill leachate plume.

5. A long-term monitoring program will be instituted. This program will allow the effectiveness of the landfill cap and gas collection system to be monitored. This long-term monitoring program will be a component of the operations and maintenance for the landfill and will be developed in accordance

with the requirements of the 6 NYCRR Part 360-Solid Waste Management Facilities. This monitoring program will include the continued semi-annual sampling of the outpost monitoring well which is being installed, and continued monthly sampling of the landfill gas monitoring wells, semi-annual sampling of a network of ten groundwater monitoring wells, and semi-annual sampling from Sunken Meadow Creek. The appropriateness of the monitoring program will be evaluated at least once annually.

SECTION 8: 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:

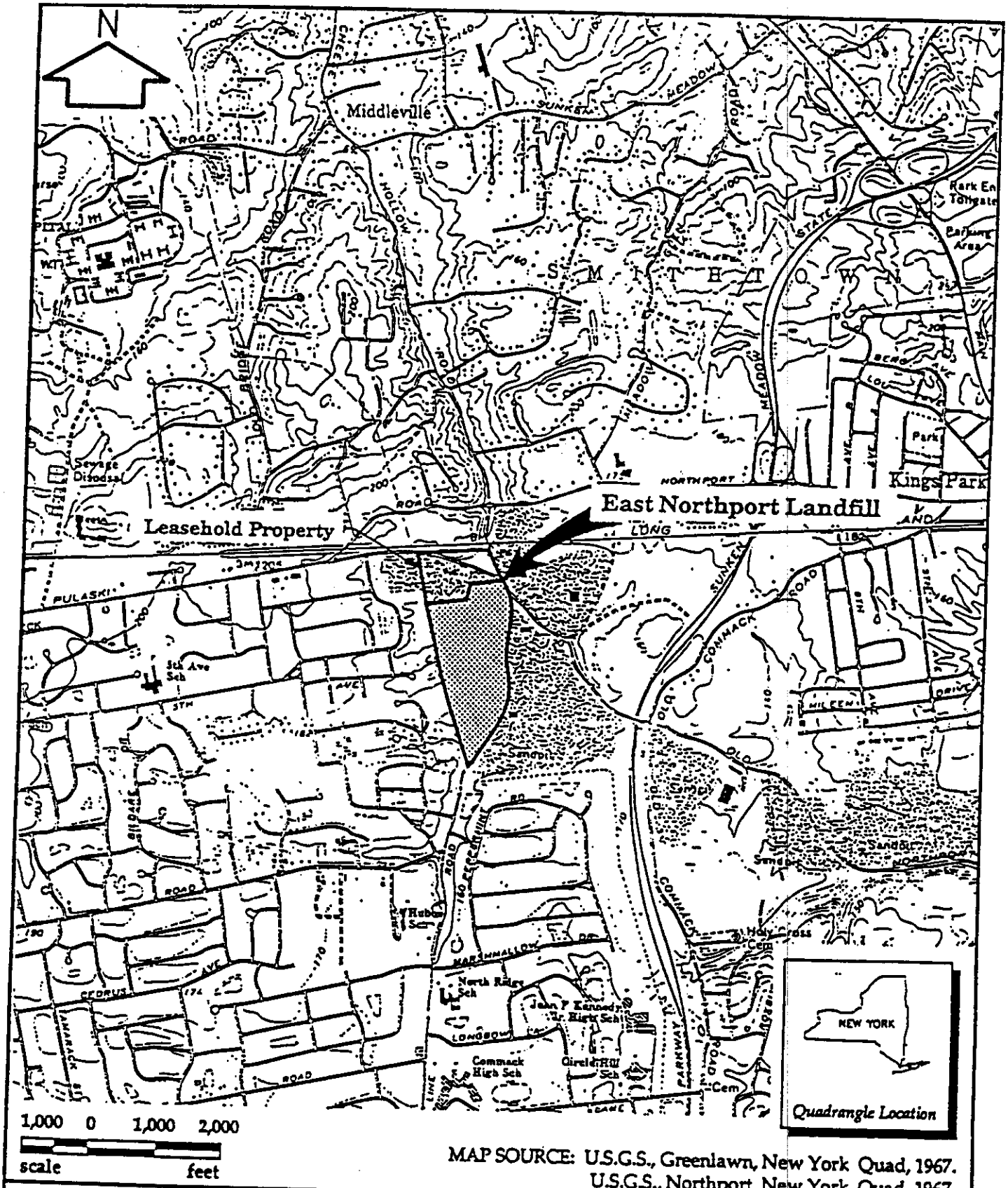
- A repository for documents pertaining to the site was established.

- A site mailing list was established which included nearby property owners, local elected officials, local media and other interested parties. Project fact sheets were sent out periodically using the mailing list.

- Public meetings to discuss the remedial investigation and interim remedial program were conducted on March 22, 1991, October 24, 1991, and June 30, 1993. In addition, a public meeting was conducted by the New York State Department of Health on March 16, 1992 to explain the cancer study results and a public meeting was hosted by Suffolk County Legislator D'Andre on August 5, 1993 to discuss providing public water to residential wells impacted or threatened by the landfill leachate plume.

- On December 13, 1995 a public meeting to present the Proposed Remedial Action Plan (PRAP) was conducted. A public comment period on the PRAP extended from December 4, 1995 to January 8, 1996.

- In March 1996, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.



MAP SOURCE: U.S.G.S., Greenlawn, New York Quad, 1967.
U.S.G.S., Northport, New York Quad, 1967.

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FIGURE 1
Site Location

Town Of Huntington
Remedial Investigation For The East Northport Landfill

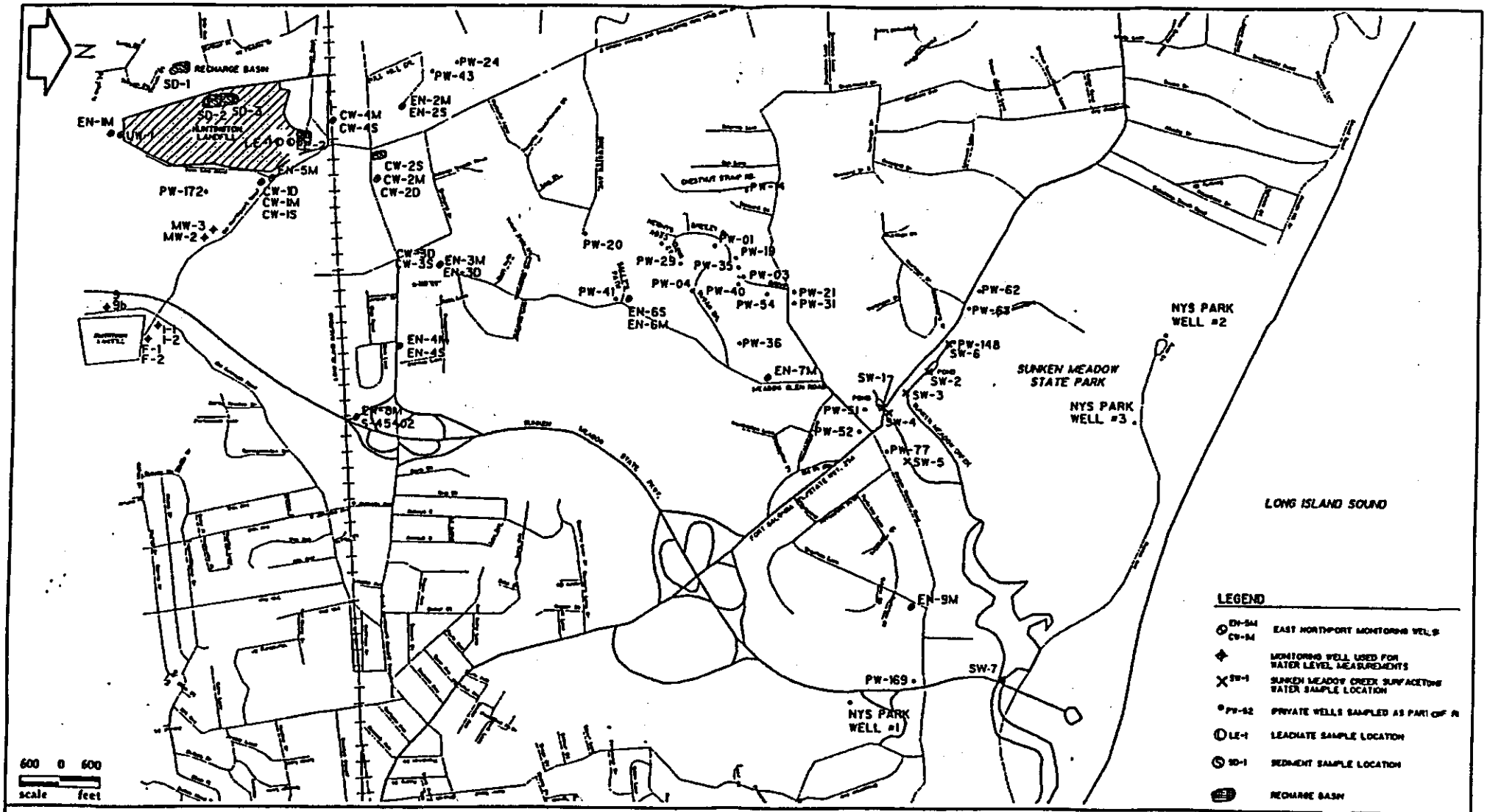

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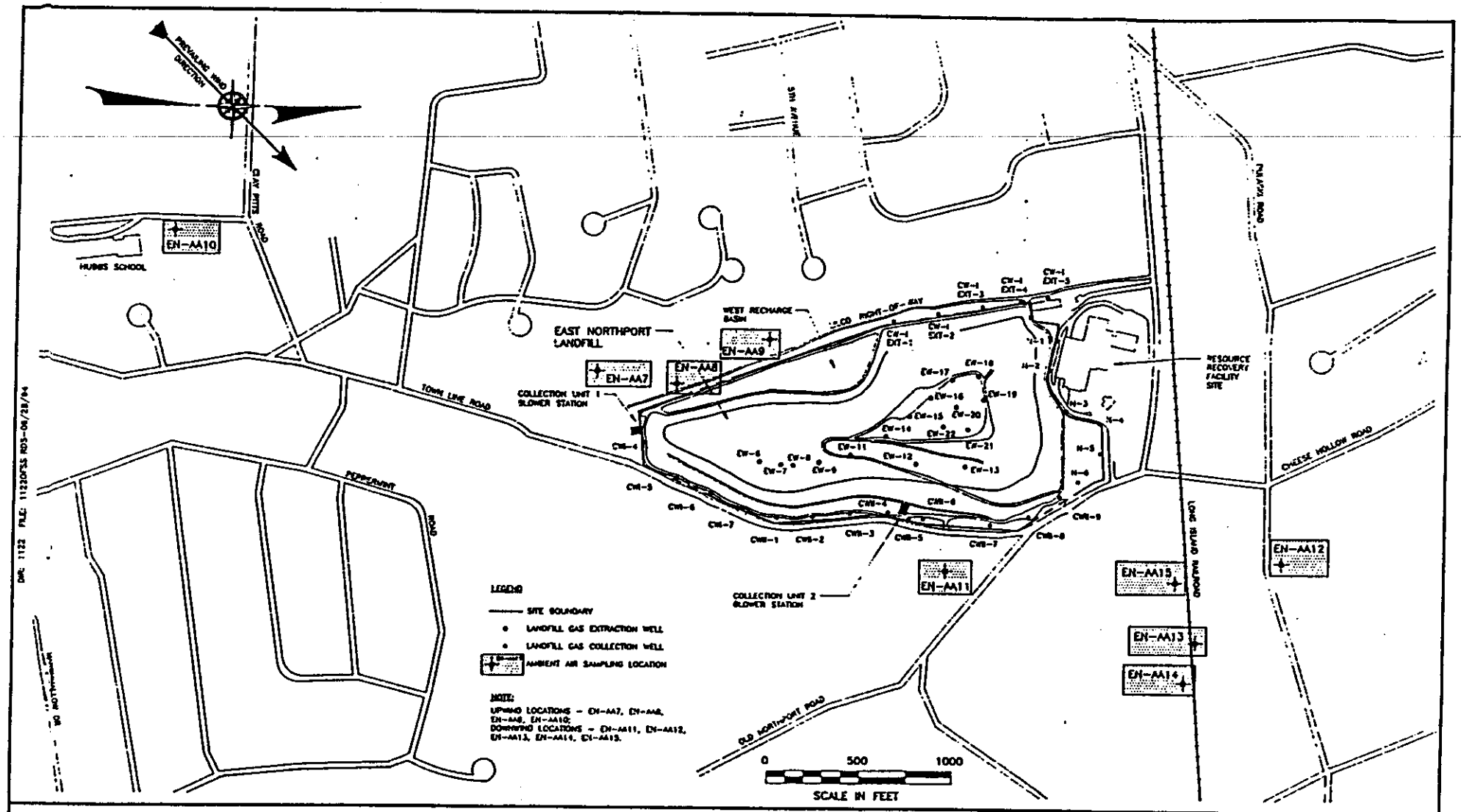
FIGURE 2
Study Area Map

Town Of Huntington
Remedial Investigation For The East Northport Landfill



EAST NORTHPORT LANDFILL GAS AND AMBIENT AIR
PHASE II REMEDIAL INVESTIGATION

Dvirka and Bartilucci Consulting Engineers

OFF-SITE AMBIENT AIR SAMPLING LOCATIONS

FIGURE 3.

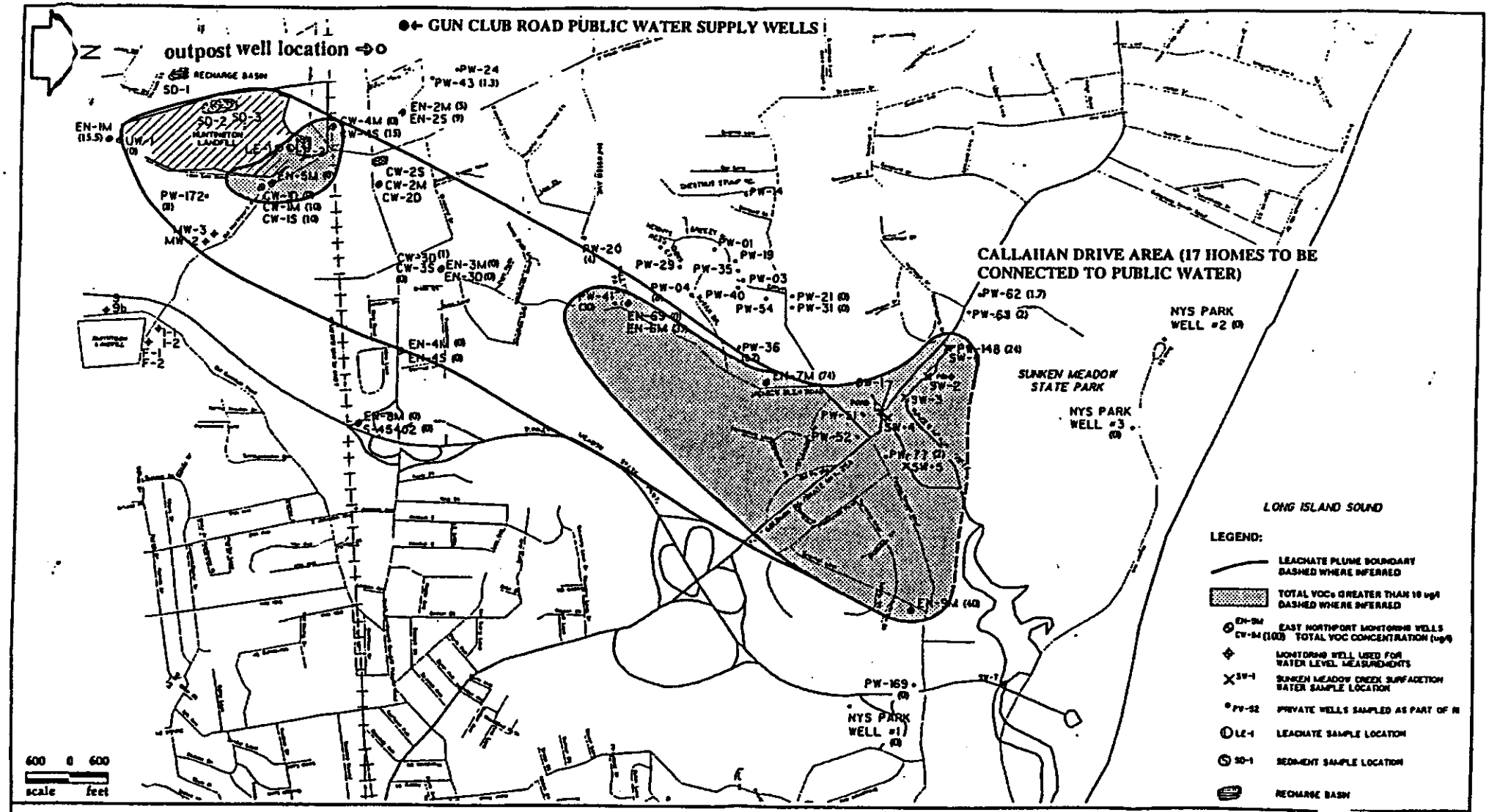


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FIGURE 4

Extent Of VOCs Within Leachate Plume (Greater Than 10 µg/l)

Town Of Huntington
Remedial Investigation For The East Northport Landfill

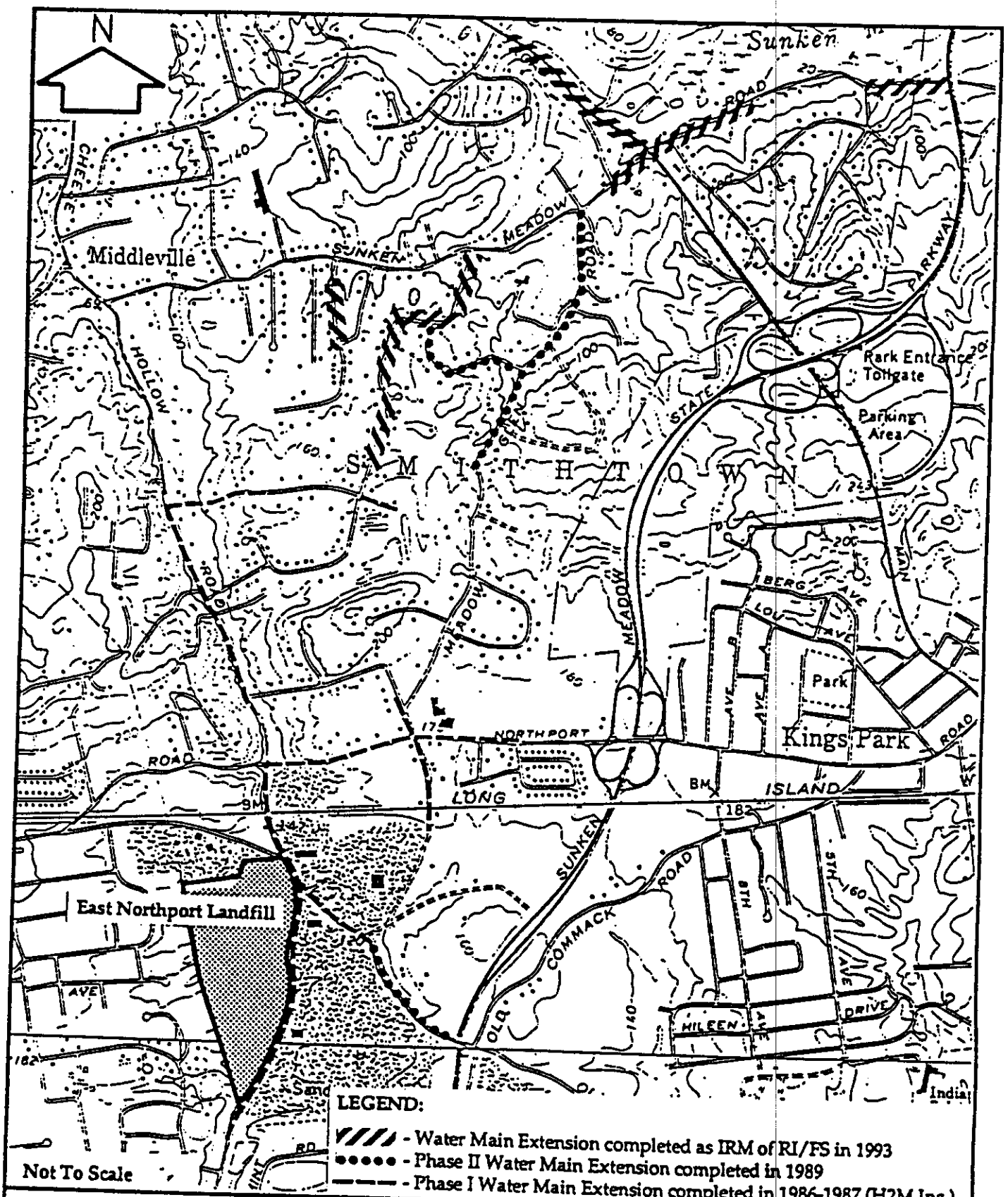

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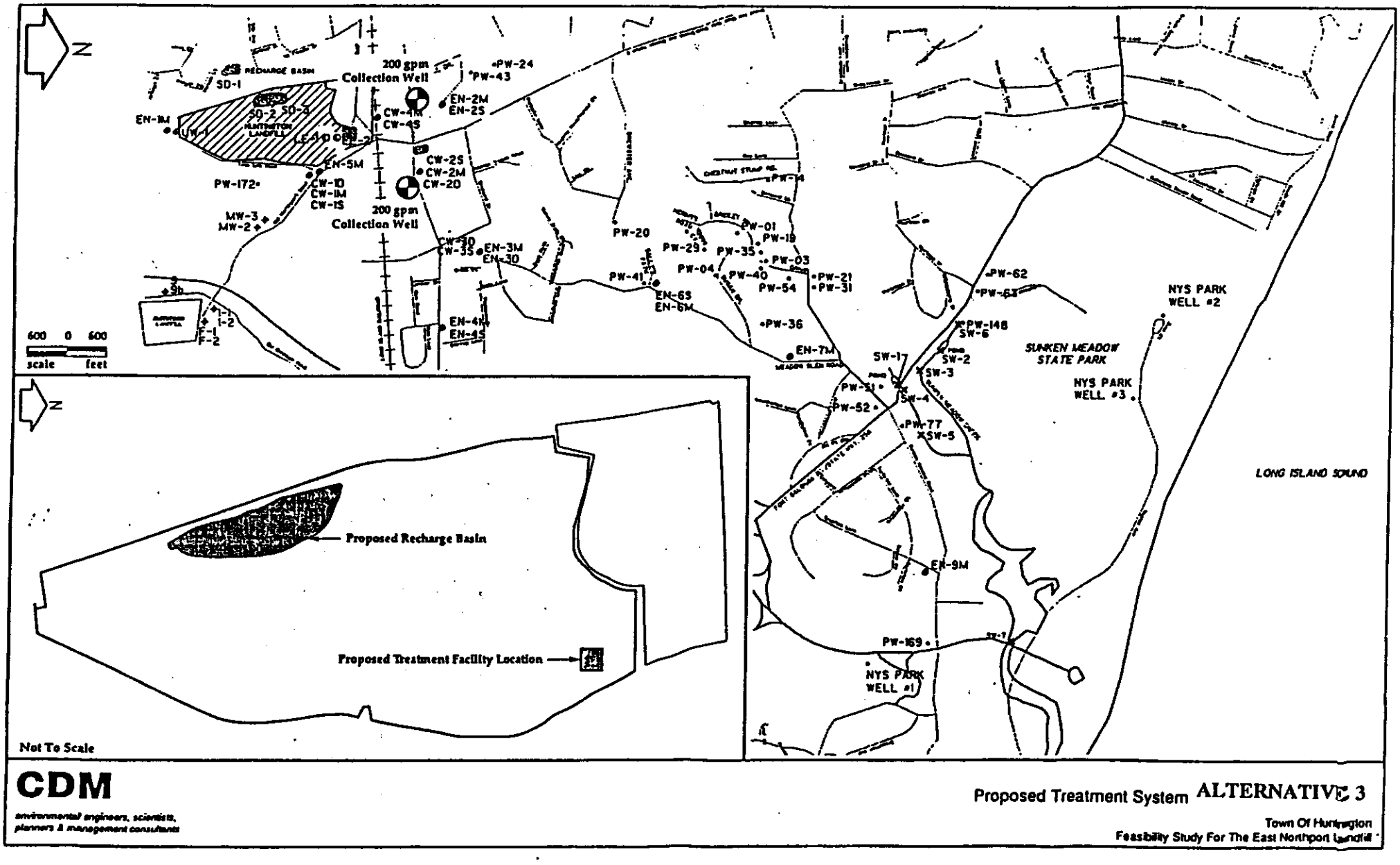
FIGURE 5

Extension Of Suffolk County Water Mains

Town Of Huntington

Remedial Investigation For The East Northport Landfill



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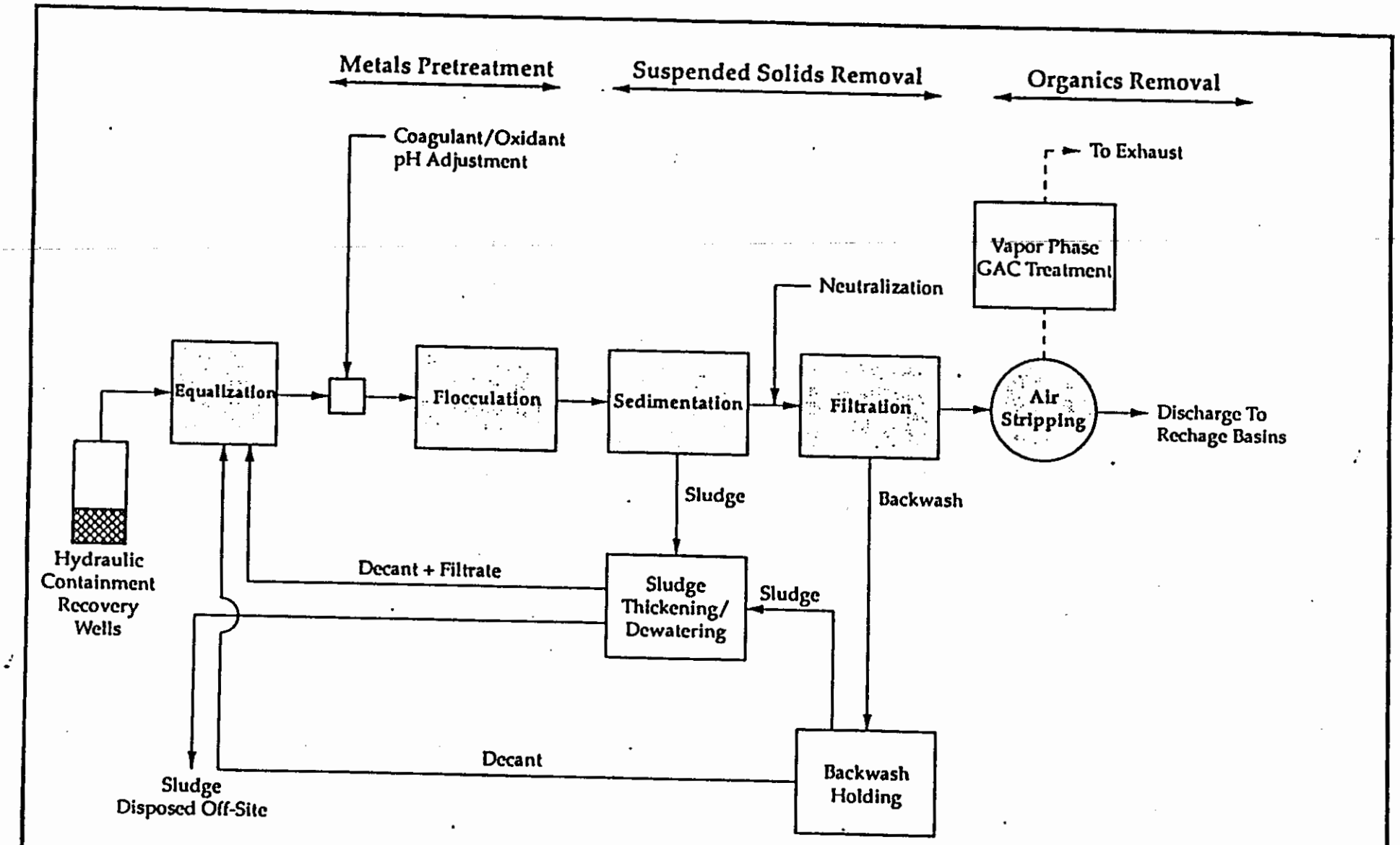
Proposed Treatment System ALTERNATIVE 3

Town Of Huntington
Feasibility Study For The East Northport Landfill

FIGURE 6



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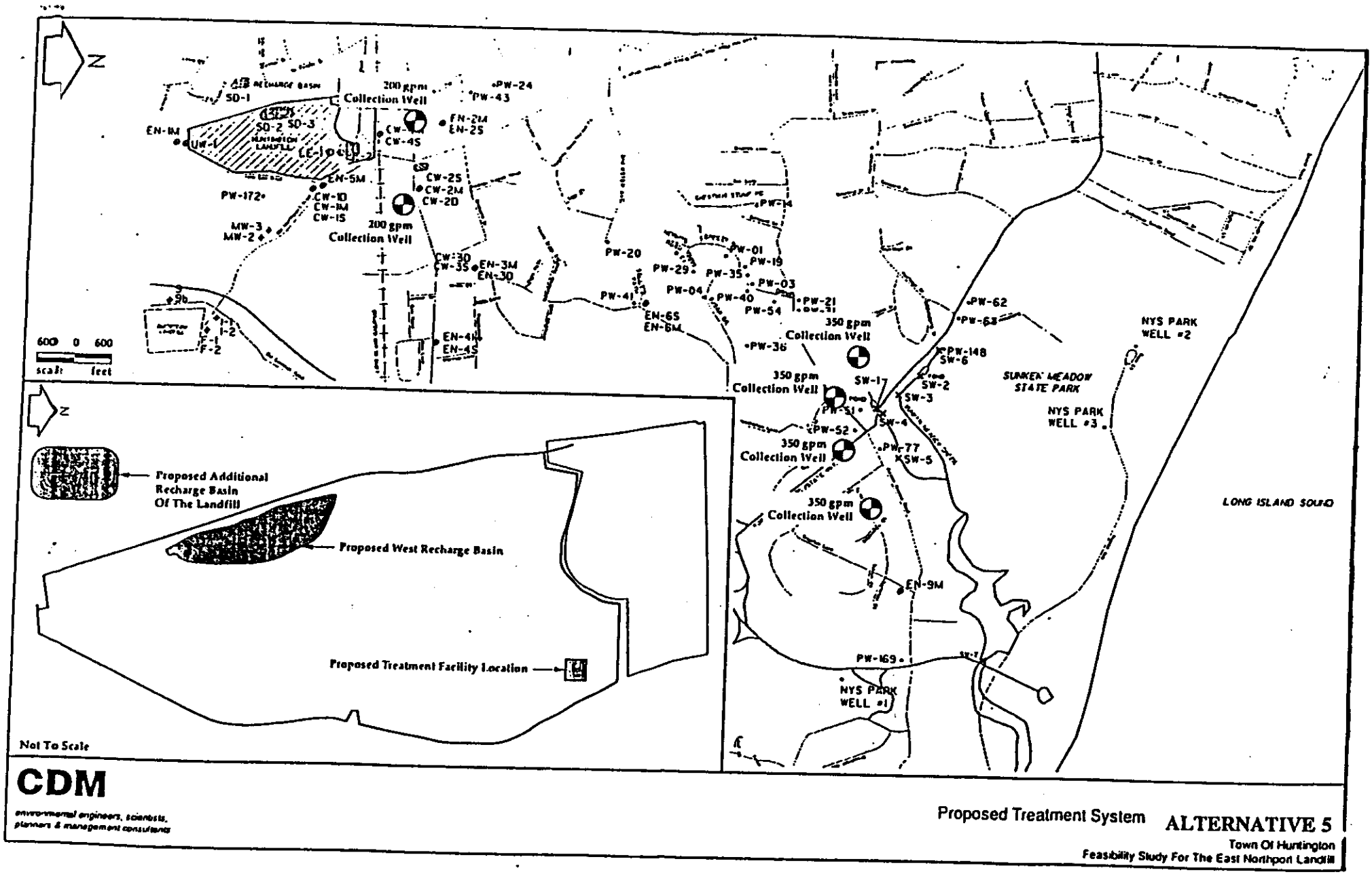
Proposed Flow Schematic ALTERNATIVE 3

Town Of Huntington
Feasibility Study For The East Northport Landfill

FIGURE 7



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Proposed Treatment System **ALTERNATIVE 5**

Town Of Huntington
Feasibility Study For The East Northport Landfill

FIGURE 8

TABLE 1
Summary of Sunken Meadow Creek Sample Analysis
November 16, 1994

Location ID	SW-1	SW-2	SW-3	SW-3 (DUP)	SW-4	SW-5	SW-6
Volatile Organics							
Trichloroethylene ppb	1.00U	1.00U	1.00U	1.00U	1.00U	1.00U	1.00U
Tetrachloroethylene ppb	3.00@	4.00@	1.00@	1.00@	2.00@	5.00@	1.00U
1,2-Dichloroethene (Total) ppb	1.00U	1.00U	1.00U	1.00U	1.00U	1.00U	1.00U
Field Parameters and Inorganics							
Conductivity uS	688.00	859.00	504.00	504.00	537.00	938.00	742.00
Alkalinity (Bicarbonate) ppm	22.00	38.00	24.00	14.00	20.00	34.00	42.00
Chloride ppm	36.00	37.00	19.00	20.00	21.00	69.00	36.00
Hardness, Total As CaC03	47.00	80.00	54.00	42.00	44.00	100.00	56.00

Notes:

NA - Parameter Not Analyzed
U = Analyzed for but not detected at or above the contract required quantification limit (CRQL).
@ = Sample value exceeds NYSDEC Guidance Value for saline surface water for tetrachloroethene of 1 ppb.

huertab2

TABLE 2
24 HOUR AMBIENT AIR SAMPLING RESULTS - APRIL 1994
VOLATILE ORGANIC COMPOUNDS

SAMPLE ID	EN-AA1*	EN-AA2*	EN-AA3*	EN-AA4*	EN-AA5*	EN-AA6*	EN-AA7**	EN-AA8**	Annual Conc. (AGCs)
Acetone	21	19	19	11	15	15	13	17	14,000
2-Butanone (MEK)	ND	4.6	ND	ND	ND	ND	ND	ND	300
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	770
Tetrachloroethene (PCE)	ND	17	ND	ND	ND	ND	ND	ND	1.2
Toluene	ND	1.9	1.6	1.3	1.6	ND	ND	4.9	2,000
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	2,000
Trichloroethene (TCE)	ND	12	ND	ND	ND	ND	ND	ND	0.45

Qualifiers:
ND: Analyzed for but not detected
* On-site sampling location
** Upwind sampling
*** Downwind sampling location
All units ug/cuM
AGCs - NYSDEC Annual Guideline Concentrations

TABLE 2
24 HOUR AMBIENT AIR SAMPLING RESULTS - APRIL 1994
VOLATILE ORGANIC COMPOUNDS

(Cont.)								
SAMPLE ID	EN-AA9**	EN-AA10**	EN-AA11***	EN-AA12***	EN-AA13***	EN-AA14***	EN-AA15***	Annual Conc. (AGCs)
Acetone	14	15	17	15	7.9	26	18	14,000
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	300
Chloromethane	ND	ND	ND	ND	ND	0.7	ND	770
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	ND	ND	1.2
Toluene	1.2	ND	ND	ND	ND	ND	ND	2,000
1,1,1-Trichloroethane	4.7	ND	ND	ND	ND	ND	ND	2,000
Trichloroethene (TCE)	ND	ND	ND	ND	ND	ND	ND	0.45

Qualifiers:
ND: Analyzed for but not detected
* On-site sampling location
** Upwind sampling
*** Downwind sampling location
All units ug/cuM

TABLE 3
SUMMARY OF GROUNDWATER ANALYSIS FROM SELECT WELLS
FALL 1994 OR MOST RECENT

Sample ID	NYSDEC Class GA Standards	EN-6M	EN-7M	EN-9M	PW-41	PW-51	PW-52	PW-148
Volatile Organics (ppb)								
Tetrachloroethene	5	24@	34@	10U	27@	12@	9@	20@
Trichloroethene	5	4J	9J@	40J@	2	0.5	0.81	4
1,2 Dichloroethene (Total)	5	6J	27	10U	5	0.50U	1.7	2
Leachate Parameters (ppm)	**Background**							
Alkalinity	20.00	144	60	40	NA	NA	26	72
Chloride	19.50	223	151	80	165	NA	38	113
Sulfate	29.93	108	131	14.80	57	NA	28.2	142
Hardness	73.72	350	281	112	NA	68.90	95.6	244
Conductivity uS	286.00	910	1340	878	853	170	217	773

Notes:

@ = Sample value exceeds NYSDEC Class GA Standard of Guidance Value
J = Estimated Due to Variance from Quality Control Limits
U = Result Less than Contract Required Detection Limit
NA = Not Analyzed
ppb = parts per billion
ppm =parts per million

TABLE 4
CAPITAL AND PRESENT WORTH COSTS
OF EACH ALTERNATIVE

Costs	ALT. 1 - No Further Action	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6
Capital Costs						
Public Water Connections (1)	$115,000	$115,000	$115,000	$115,000	$115,000	$115,000
Outpost Well (1)	61,924	61,924	61,924	61,924	61,924	61,924
Groundwater Remediation (2)	0	0	5,145,563	5,229,122	13,155,529	13,303,150
Total Capital Costs	$176,924	$176,924	$ 5,322,487	$5,406,046	$13,332,453	$13,480,074
Annual O&M Costs (3,4)	43,302	48,626	1,723,002	1,721,802	5,173,590	5,187,390
Present worth of O&M (5)	472,750	530,874	18,810,874	18,797,773	56,482,669	56,633,330
Total Present Worth	**$649,674**	**$707,798**	**$24,133,361**	**$24,203,819**	**$69,815,122**	**$70,113,404**

Notes:
(1) Work in Progress
(2) Includes Engineering and Design
(3) All Alternatives include an estimated annual cost of $43,302 for groundwater monitoring.
(4) It is assumed that the groundwater pump and treat remedies would operate for thirty years, which is the time period recommended by the USEPA when comparing the costs of different remedial alternatives. This is a very conservative time period and it is very likely that the groundwater pump and treat remedies would take less time, although the actual time required is uncertain. The annual O&M costs do not include the landfill cap and landfill gas collection and monitoring annual O&M costs.
(5) Annual Interest of 8% applied over thirty years

APPENDIX A
RESPONSIVENESS SUMMARY
HUNTINGTON/EAST NORTHPORT LANDFILL SITE
SITE NO. 152040

The issues addressed below were raised during a public meeting held on December 13, 1995 at the Dickenson Avenue Elementary School in East Northport, New York and in a comment letter from the Town of Smithtown's Department of Environment & Waterways. The purpose of the meeting was to present the Proposed Remedial Action Plan (PRAP) for the site and receive comments on the PRAP for consideration during the selection of a final remedy. The public comment period for the PRAP extended from December 4, 1995 to January 8, 1996.

I. Groundwater

1. **A comment was raised that the discharge of storm water runoff from the landfill to the west recharge basin may result in a groundwater mound forming under the landfill which may result in landfill waste coming in contact with groundwater.**

   There are many factors which must be considered when evaluating the potential for groundwater mounding to occur and then coming into contact with landfill waste. These include the duration and the intensity of a rainfall event, the volume of runoff to the recharge basin, the location of the recharge basin relative to the waste mass, the percolation rate of runoff through the unsaturated subsurface, the depth to the groundwater table, the effective porosity, the depth below ground of the waste mass, as well as other factors. The depth to the groundwater table in the area of the landfill is approximately 50 feet mean sea level (msl) or approximately 75 feet below ground surface. The reported depth of the landfill is approximately 65 feet below ground surface. See Figure 3-1 of the Final Remedial Investigation (RI) report. Based on available data, there is no clear evidence of a localized hydraulic mound beneath the Huntington/East Northport landfill. The landfill cap is designed to eliminate the infiltration of water into the landfill thereby drastically reducing the generation of leachate and subsequent groundwater contamination. If future groundwater monitoring does not indicate a reduction of groundwater contamination as is expected, the Town of Huntington will be required to evaluate possible reasons for the continued groundwater contamination. This could include the evaluation of the possibility of groundwater mounding into the waste mass as a cause.

2. **Is the groundwater flow direction to the north northeast likely to change in the future?**

   No.

3. **What is the upward groundwater flow near Sunken Meadow Creek?**

   The flow in the Upper Glacial portion of the aquifer is in a north northeast direction from the vicinity of the landfill. Groundwater flows vertically downward within the central portion of Long Island to recharge underlying aquifers. Further north, groundwater flow is nearly horizontal. Finally, groundwater flow near the shoreline is upward from the deeper zones and discharge to the Long Island Sound and Sunken Meadow Creek occurs.

II. Drinking Water

1. **It was stated that a "outpost" well will be located approximately two years upgradient of the Suffolk County Water Authority (SCWA) Gun Club Road public supply well in the direction of the Huntington Landfill. How was this distance determined?**

To be protective of public health, the New York State Department of Health (NYSDOH) and the Suffolk County Department of Health Services (SCDHS) has requested that this outpost well be installed and sampled. This will provide an early warning should groundwater contamination related to the landfill migrate in the direction of the SCWA well field on Gun Club Road. Two years would be sufficient time to design and construct a treatment system at this well head if necessary. Based on the rate of groundwater flow in the portion of the aquifer that the public supply wells are screened, it was determined that the "outpost" well would need to be placed approximately 500 feet from the well field to allow for a two year warning period.

2. **The drinking water supply at Sunken Meadow Park is from an on-site well . While this well has not been impacted by the leachate plume, it is possible that the plume could spread to this area in the future. For this reason, frequent monitoring of this well should be performed. (This comment was received from the Town of Smithtown - Department of Environment & Waterways in a letter dated January 4, 1996.)**

Drinking water in a majority of the Sunken Meadow State Park is obtained from wells #2 and #3, which are located in the western portion of the park. The remaining portion of the park is serviced by water supplied by the Suffolk County Water Authority. Well #1 in the park has been closed. Based on information supplied by the Suffolk County Department of Health Services (SCDHS) - Division of Environmental Quality, the two wells in the park are sampled both by an environmental services contractor for the park superintendent and by the SCDHS. Analysis of the samples include an inorganic scan, volatile organic compounds and bacterial analysis. Based on Part 5 of the NYS Sanitary Code, the SCDHS has regulatory authority over these public, non-community water supply wells and has stated that the sampling program is adequate and sufficient. If future monitoring detects any increase of landfill related contaminants, SCDHS will take appropriate measures including increasing the sampling frequency.

III. Surface Water

1. **Sunken Meadow Creek is a locally significant fish and wildlife habitat. It is also a tributary of the Nissequogue River, which has been designated as both a New York State Significant Coastal Fish and Wildlife Habitat and a U.S. Fish and Wildlife Service Significant Coastal Habitat. For this reason, we believe that a greater frequency of testing is warranted for the surface water in Sunken Meadow Creek, perhaps on a quarterly basis. (This comment was received from the Town of Smithtown - Department of Environment & Waterways in a letter dated January 4, 1996.)**

The NYSDEC agrees with this comment and has revised the post closure monitoring requirements to require semi-annual sampling from Sunken Meadow Creek. This sampling frequency will be consistent with the sampling frequency of the groundwater monitoring wells. The exact number and sample locations will be determined based on the results of the Spring, 1996 sampling round

scheduled for both the monitoring wells and Sunken Meadow Creek. It is anticipated that a minimum of six samples from Sunken Meadow Creek will be required on a semi-annual basis.

IV. Proposed Remedy

1. **A comment was made that the other remedies which were evaluated were too expensive and that the proposed remedy was sufficient.**

The NYSDEC agrees with this comment.

2. **The proposed post landfill closure semi-annual frequency of groundwater sampling is not sufficient. Monthly sampling would be better.**

In designing a long-term monitoring program, a balance between the cost of the program versus providing an adequate data base capable of detecting trends over time has to be met. During the remedial investigation, three rounds of groundwater samples were collected. Previous to the remedial investigation, existing monitoring wells had been sampled on multiple occasions. As reported in the Remedial Investigation Report, comparison between the pre-existing groundwater quality data with the RI data indicates good agreement between the two data sets. This agreement also holds true for the sampling data collected from various homeowner wells over time. There are also seasonal variations in groundwater contamination concentrations, but with a plume the size and nature of the Huntington Landfill leachate plume this is not expected to be significant. With the capping of the landfill substantially complete, leachate production should drop off drastically. Sampling of the monitoring wells adjacent to the landfill should show a noticeable drop in leachate indicators over the next several sampling rounds. In this hydrogeological flow regime, a semi-annual sampling frequency is sufficient to detect this change. If the initial sampling data does not demonstrate this reduction in leachate indicators, then the Town of Huntington will have to collect additional rounds of samples on a more frequent basis to provide an explanation (such as failure in the landfill cap). Finally the appropriateness of the monitoring program will be evaluated at least once annually.

3. **What is meant by long term monitoring?**

The duration of a monitoring program is very site specific. Typically, monitoring will occur until the site or media (groundwater, soil, sediment, etc.) has been completely remediated. For sites where a groundwater plume will not be actively remediated and natural attenuation will be the only process to reduce contaminant levels in the groundwater, an effective monitoring program is critical. The monitoring program will need to continue until contaminant levels have dropped to acceptable levels in the aquifer. Post-closure monitoring must be performed for a minimum of 30 years. However, after a five-year period, the Town of Huntington may request that the NYSDEC modify the sampling and analysis requirements. A site specific landfill post-closure groundwater monitoring program is being developed. Factors which must be considered are future use of the aquifer, threatened drinking water or supply wells, impacted or threatened surface water resources which the aquifer is being discharged to, as well as other factors.

4. **The capped landfill should be available for recreational use in the future, maybe ten years from now.**

Although there are old landfills on Long Island being used for recreational purposes, these are all landfills where it has been determined that there is not a threat to public health or the integrity of the landfill cap. Most of these landfills are not elevated above the ground surface. The Huntington/East Northport landfill extends approximately 185 feet above the ground surface and has side slopes that exceed three to one. Properly functioning drainage terraces and down spouts are crucial to maintaining the integrity of the landfill cover system. Recreational use of the landfill would likely result in damage to the cover system which may cause it to fail resulting in additional groundwater contamination. Failure of the landfill cover system may also result in unacceptable exposures to the waste materials. Finally, recreational use of the landfill may result in exposures to landfill gases. Given the above information, recreational use of the landfill is not anticipated in the foreseeable future.

5. **How does the gas collection system(s) at the landfill work and where will the gas utilization electrical generator be located?**

There are two separate major landfill gas management systems at the Huntington/East Northport Landfill. The first is the perimeter landfill gas collection system which consists of a series of gas collection wells at the perimeter of the landfill which are connected by header pipe. This header pipe channels the collected gas to a new blower station at the south end of the landfill consisting of two 2,500 cfm blower/motor assemblies (100% redundancy) each capable of independently providing adequate perimeter landfill gas control. There is also a series of landfill gas monitoring wells outside the perimeter gas collection system which are sampled monthly to detect any possible gas migration which may escape being managed by the perimeter gas collection system.

The second major landfill gas management system at the landfill is the landfill gas recovery/conversion system which consists of seventeen landfill gas extraction wells (drilled at locations at the top of the landfill into the waste mass) interconnected by gas transmission piping which will be connected to a electrical generator unit. The electrical generator unit will be sighted on a pad along Town Line Road. Groups of passive gas vents on the landfill have been interconnected which will also be connected to the electrical generator.

APPENDIX B
ADMINISTRATIVE RECORD
HUNTINGTON/EAST NORTHPORT LANDFILL SITE NO. 152040

A. Reports and Work Plans:

Solid Waste Management Study for the Closure of the East Northport Landfill, Holzmacher McLendon and Murrell, P.C., July 1982.

Engineering Investigation at Inactive Hazardous Waste Sites in New York, Phase I Investigations, Huntington Landfill - East Northport, Suffolk County, New York, Vols I & II, Woodward-Clyde, Inc., December 1985.

Proposed Resource Recovery Site Investigation of Landfill Boundaries and Groundwater Subsurface Gas Conditions, Dvirka and Bartilucci, October 1986.

Pre-RI/FS Evaluation of the Ability to Implement Certain Remedial Technologies for the Town of Huntington's Solid Waste Disposal Complex, Dvirka and Bartilucci, February 1987.

Remedial Investigation and Feasibility Study Work Plan, East Northport Landfill, Dvirka and Bartilucci, August 1988.

Environmental Assessment, Town of Huntington Resource Recovery Project Site, East Northport, New York, Vols. I & II, Blasland, Bouck & Lee, June 1989.

Slope Stability Report East Northport Landfill Town of Huntington, Lippincott Engineering Associates - June 1990.

Final Regrading Plan East Northport Landfill, Camp, Dresser & McKee, January 1991.

Daily Construction Reports for the Construction of Landfill Gas Collection Wells Along the Leasehold Boundary, Dvirka and Bartilucci, July 1991.

Work Plan Remedial Investigation/Feasibility Study East Northport Landfill, Camp, Dresser & McKee, September 9, 1991.

Project Operation Plan Remedial Investigation/Feasibility Study East Northport Landfill, Camp, Dresser & McKee, September 9, 1991.

Citizen Participation Plan for the Interim Remedial Program and RI/FS - East Northport Landfill, Camp, Dresser & McKee, September 9, 1991.

Addendum to: Project Operations Plan and Work Plan Remedial Investigation/Feasibility Study, Camp, Dresser & McKee, November 12, 1991.

Landfill Gas Interim Remedial Program Work Plan, Dvirka and Bartilucci, September 1991.

Landfill Gas Remedial Investigation and Feasibility Study Work Plan East Northport Landfill, Dvirka and Bartilucci-September 1991.

Final Work Plan Interim Remedial Program for the East Northport Landfill, Huntington, New York, Camp, Dresser & McKee - May 1992.

Draft Remedial Investigation Report East Northport Landfill, Huntington, New York, Camp, Dresser & McKee, January 1993.

Work Plan Phase II Remedial Investigation East Northport Landfill, Camp, Dresser & McKee, November 1993.

Remedial Investigation Phase II: East Northport Landfill Groundwater Model Report, Camp, Dresser & McKee, January 1994.

Private Well Inventory Remedial Investigation/Feasibility Study East Northport Landfill, Preliminary-October 1991, Expanded-May 1992, Camp, Dresser & McKee.

Contract Documents and Specifications Interim Remedial Program Huntington/East Northport Landfill, Town of Huntington, etal - June 1993.

Phase I Remedial Investigation Report - Landfill Gas and Gas Condensate, East Northport Landfill, Dvirka and Bartilucci - November 1992 (Draft).

Landfill Gas Remedial Investigation and Feasibility Study Work Plan Addendum East Northport Landfill, Dvirka and Bartilucci, - January 1994.

Huntington/East Northport Landfill NYSDEC I.D. No. 152040 Interim Remedial Program (IRP) Decision Document, NYSDEC - January 19, 1994.

Town of Huntington Contract Documents and Specifications East Northport Landfill - Contract No. ENV 94-02/0-C - May 26, 1994.

Addendum No. 1 to Contract Documents and Specifications Contract No. ENV94-01/0-C Interim Remedial Program Huntington/East Northport Landfill, Camp, Dresser & McKee - June 1, 1994.

Addendum No. 2 to Contract Documents and Specifications Contract No. ENV94-01/0-C Interim Remedial Program Huntington/East Northport Landfill, Camp, Dresser & McKee - June 13, 1994.

Addendum No. 3 to Contract Documents and Specifications Contract No. ENV94-01/0-2 Interim Remedial Program Huntington/East Northport Landfill, Camp, Dresser & McKee - June 20, 1994.

Phase II Private Well Survey, East Northport Landfill-Camp, Dresser & McKee-August 1994.

Final Remedial Investigation for the East Northport Landfill, Camp, Dresser & McKee - October 1995. (3 Volumes)

Final Baseline Human Health Risk Assessment Report, Camp, Dresser & McKee - October, 1995.

Final Groundwater Feasibility Study for the East Northport Landfill, Camp, Dresser & McKee-October 1995.

Phase II Remedial Investigation Report Landfill Gas and Ambient Air, East Northport Landfill, Dvirka and Bartilucci - August 1995.

Phase I/II Feasibility Study Landfill Gas and Ambient Air, East Northport Landfill, Dvirka and Bartilucci - November 1995.

B. Order on Consent

1. "In the Matter of the Development and Implementation of a Remedial Program for an Inactive Hazardous Waste Disposal Site, Under Article 27, Title 13, of the Environmental Conservation Law of the State of New York by Town of Huntington, Respondent," Order on Consent Index #W1-254-88-06 Site #152040 dated March 26, 1991.

2. Order on Consent Revised Compliance Schedule by letter dated May 4, 1994.

3. Order on Consent Revised Compliance Schedule dated January 6, 1995.