FINAL REMEDIAL INVESTIGATION REPORT
SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK
VOLUME I

Jan 21, 2004

Work Assignment No.: 112-RICO-02KQ

Prepared for:
U.S. Environmental Protection Agency
290 Broadway
New York, New York 10007-1866

Prepared by:
CDM Federal Programs Corporation
125 Maiden Lane - 5th Floor
New York, New York 10038

EPA Work Assignment No.	: 112-RICO-02KQ
EPA Region	: II
Contract No.	: 68-W-98-210
CDM Federal Programs Corporation	
Document No.	: 3223-112-RR-FRIR-04446
Prepared by	: CDM
Site Manager	: Susan Schofield, P.G.
Telephone Number	: (203) 262-6633
EPA Remedial Project Manager	: Syed Quadri
Telephone Number	: (212) 637-4233
Date Prepared	: January 16, 2004

Strang

MEMORANDUM

Integrated into Final RI Report. 6/1/04 JKStrang

TO: RI Recipients
Smithtown Groundwater Contamination Site

FROM: Susan Schofield
CDM site manager

SUBJECT: Replacement text for Final RI Report
Smithtown Groundwater Contamination Site

DATE: May 27, 2004

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Replacement text for the Final Remedial Investigation Report for the Smithtown Groundwater Contamination Site is included with this memorandum. Replacement sections are detailed below. No changes were made to tables and figures in Volume I of the report. No changes were made to Volume II or Volume III of the report.

Replacement text includes the following elements:

- Table of Contents
- Executive Summary
- Section 1
- Section 2
- Section 3
- Section 4
- Section 5
- Section 6
- Section 7
- Section 8

Please discard the previous verison of the text in Volume I of the Final RI Report.

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CDM

125 Maiden Lane, 5th Floor
New York, New York 10038
tel: 212 785-9123
fax: 212 785-6114

January 16, 2004

Mr. Syed Quadri
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10278

PROJECT: RAC II Contract No.: 68-W-98-210
Work Assignment: 112-RICO-02KQ

DOCUMENT NO.: 3223-112-RR-FRIR-04446

SUBJECT: Final Remedial Investigation Report
Smithtown Groundwater Contamination Site
Smithtown, New York

Dear Mr. Quadri:

CDM Federal Programs Corporation (CDM) is pleased to submit the Final Remedial Investigation Report for the Smithtown Groundwater Contamination Site, Smithtown, New York, as fulfillment of Subtask No. 9 of the Statement of Work. The Final RI report was revised according to the Comment/Response letter dated December 3, 2003, with the following exceptions:

- Comments # 11 and # 66 - A map of the homes connected to public water was not included in the Final RI report. A map with this information was included in the Draft FS report.

- Comment # 28 - Instead of comment notes at the bottom of Table 4-16 to help distinguish sample locations, the sample locations were grouped within the table (e.g., a header was added before all samples from the Nissequogue River, Stony Brook Harbor, or the wetlands).

Per your request, CDM is mailing copies of the report to the distribution list provided.

If you have any questions on this submittal, please contact me at (212) 785-9123 or Ms. Susan Schofield at (203) 262-6633.

Very truly yours,

CDM FEDERAL PROGRAMS CORPORATION

Demetrios Klerides for

Jeanne Litwin, REM
RAC II Technical Operations Manager

cc: F. Rosado, EPA (letter only)
D. Butler, EPA (letter only)
J. DeFranco, CDM
RAC II Document Control
S. Schofield, CDM
R. Goltz, CDM
B. Irons, CDM

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Acronyms

AGS	Advanced Geological Services
amsl	above mean sea level
ARARs	applicable or relevant and appropriate requirements
ASC	analytical services coordinator
bgs	below ground surface
BOD	biological oxygen demand
CDM	CDM Federal Programs Corporation
cis-1,2-DCE	cis-1,2-dichloroethene
CLP	Contract Laboratory Program
cm/sec	centimeters per second
COEC	contaminant of ecological concern
COD	chemical oxygen demand
COPC	contaminant of potential concern
CT	Central Tendency
D	deep
DCE	dichloroethene
DESA	Division of Environmental Science and Assessment
DNAPL	dense non-aqueous phase liquid
DPT	direct push technique
DTW	depth to water
EMSL	EMSL Analytical, Inc.
EPA	Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
FCR	field change request
FS	Feasibility Study
GAC	granular activated carbon
GI	gastro-intestinal
gpm	gallons per minute
GPR	ground penetrating radar
GPS	global positioning satellite
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
HRS	Hazardous Ranking System
HSA	hollow stem auger
H_2S	hydrogen sulfide
I	intermediate
IDW	Investigation Derived Waste
in/yr	inch per year
Kd	retardation coefficient
LDL	low detection limit
MCL	Maximum Contaminant Level
mg/Kg	milligram per kilogram
mg/L	milligram per liter

MHZ	megahertz
ml/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tert butyl ether
NAEVA	NAEVA Geophysics, Inc.
NH3	ammonia
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO_2/NO_3	nitrate/nitrite
NPL	National Priorities List
NTU	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
PAH	polycyclic aromatic hydrocarbon
PAR	Pathways Analysis Report
PCB	polychloride biphenyl
PCE	tetrachloroethene
ppb	parts per billion
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RAC	Response Action Contract
RAL	Removal Action Limit
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
ROD	Record of Decision
RPD	relative percent difference
S	shallow
SCDHS	Suffolk County Department of Health Services
SCWA	Suffolk County Water Authority
SDS	storm drain sediment
SDW	sediment wetland
SL	sludge
SLERA	Screening Level Ecological Risk Assessment
SO_4	sulfate
SSS	spring/seep sediment
SVOC	semi-volatile organic compound
SWS	surface water seep/spring
SWW	surface water wetland
TAL	Target Analyte List
TBC	To Be Considered
TCE	trichloroethene
TCL	Target Compound List
TDS	total dissolved solids

the site	Smithtown Groundwater Contamination Site
TKN	total Kjehldahl nitrogen
TOC	total organic carbon
TSS	total suspended solids
UCL	Upper Confidence Limit
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound
VPW	vertical profile well
WW	wastewater
ug/Kg	microgram per kilogram
ug/L	microgram per liter
1,1-DCE	1,1-dichloroethene
1,1,1-TCA	1,1,1-trichloroethane

Executive Summary

CDM Federal Programs Corporation (CDM) received Work Assignment 012-RICO-02KQ under the Base Period of the Response Action Contract (RAC) to perform a remedial investigation/feasibility study (RI/FS), a human health risk assessment (HHRA), and a screening level ecological risk assessment (SLERA) at the Smithtown Groundwater Contamination Site (the site), located in Smithtown, Suffolk County, New York for the Environmental Protection Agency (EPA). The report was completed under the Option Period of the RAC contract as work assignment 112-RICO-02KQ.

Purpose of Report

The purpose of the RI Report is to present the results of the field investigations, including groundwater screening surveys, monitoring well and piezometer installation, groundwater sampling, surface water and sediment sampling, and sanitary system sampling. The human health and ecological risk assessments will be submitted as separate documents. The goal of the investigations was to define the nature and extent of groundwater contamination in the residential areas of the site, identify source areas for that contamination and define the hydrogeologic framework. Sample results are compared with applicable New York and federal screening criteria and/or standards to determine the extent of contamination.

Site Description

The site includes an area that has contaminated groundwater within the Villages of Nissequogue and Head of the Harbor, and the Hamlet of St. James, Smithtown, northern Suffolk County, New York. The site is situated in an approximately four-square mile predominantly residential area bounded by Stony Brook Harbor and an east-west line defined by Spring Hollow Road to the north; the Nissequogue River to the west; Edgewood Avenue and North County Road to the south; and Hitherbrook Road to the east. The site is bounded by bodies of water to the northeast (Stony Brook Harbor) and west (Nissequogue River), and residential developments to the north and east. Some homes use private wells for potable drinking water and septic systems for sanitary wastewater disposal. Some business/retail development is located in St. James, primarily along Lake Avenue and North Country Road (Route 25A).

Site History

In October 1997, EPA received a written request from the New York State Department of Environmental Conservation (NYSDEC) requesting assistance in funding alternative water supplies for residences affected by contaminated groundwater. A private well sampling survey prepared by the Suffolk County Department of Health Services (SCDHS) presented drinking water results from 35 private wells in the area. Analytical data indicated that several wells were contaminated with volatile organic compounds (VOCs), primarily tetrachloroethene (PCE).

SCDHS collected samples from approximately 150 homes throughout the area of the site. Analytical results indicated that 23 residences were contaminated with PCE at concentrations exceeding the State and federal maximum contaminant level (MCL) of 5 parts per billion (ppb). In April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of PCE contamination. A total of 35 residential wells were identified as contaminated with PCE (or its breakdown products) at concentrations above the MCLs.

In April 1998, EPA began the delivery of bottled water to the affected homes where the Removal Action Level was exceeded. In June 1998, EPA expanded water delivery to all residences where the MCLs for PCE or its breakdown products was exceeded.

In July 1998, an EPA Action Memorandum was signed, authorizing Removal Action activities to be conducted at the site. For homes where the MCL was exceeded and where public water was available, EPA provided the service connection to the public supply. For homes where the MCL was exceeded and public water was not available, EPA installed individual household granular activated carbon treatment systems or upgraded existing treatment systems installed independently by residents.

A Hazard Ranking System Report was prepared for the Smithtown Groundwater Contamination site in August 1998. On January 19, 1999, the Smithtown Groundwater site was placed on the National Priorities List.

Results of Previous Investigations

SCDHS sampled 11 facilities from November 1997 through April 1998. Each facility utilizes a private sanitary sewerage disposal system consisting of septic tanks, cesspools/leaching pits, and/or other on-site wastewater disposal. Sample results showed detections of a number of VOCs, suggesting that several of the suspected source facilities were discharging hazardous wastes to the subsurface through their septic systems. Concentrations of PCE in liquid samples ranged from non-detect to 65,000,000 ppb. PCE in sludge samples ranged from non-detect to 160,000 ppb. At the direction of SCDHS, the septic systems were cleaned out subsequent to the 1997/1998 sampling. SCDHS issued letters to each property owner that clean outs were adequate and that no further action was necessary.

SCDHS and EPA sampling indicated that 35 residential wells were contaminated with PCE (or its breakdown products) at concentrations above the MCLs.

Study Area Investigations

The field investigations undertaken for the RI included work in the residential areas of the site and work at potential sources along Lake Avenue and North Country Road. Investigations included geophysical surveys for underground utilities; groundwater screening surveys at 12 locations in the residential area and 11 locations at potential sources; installation of 6 piezometers, 14 monitoring wells, and environmental sampling. Sampling included three rounds of piezometer samples, two rounds of monitoring well and piezometer samples, four rounds of residential well samples; surface water/sediment samples, and septic system wastewater and sludge samples.

Physical Characteristics of the Study Area

Topography

The topography of the site is complex, with an altitude range of 400 feet above sea level to sea level at the edges of the Nissequogue River and Stony Brook Harbor. The site is located on the crest and north- and south-facing flanks of the Harbor Hill moraine. Deep post-glacial fluvial incision of the moraine formed Stony Brook Harbor, the Nissequogue River estuary, and the dissected hills and steep, narrow valleys on the moraine itself.

Drainage and Surface Water Hydrology

The site is located within the Nissequogue River watershed system, which, is less than 100 feet wide at the southwestern edge of the site but widens downstream to over 2,000 feet at the northwest corner of the site. Stony Brook Harbor is a large tidal inlet which is not fed by significant surface runoff (i.e., rivers or streams). No surface water bodies are present on the site, except for a few small ponds.

The Nissequogue River and Stony Brook Harbor are influenced by semi-diurnal tidal variations in water level. Extensive mud and sand flats are exposed at low tide. Net flow direction of waters in the Nissequogue River is dominantly towards Long Island Sound, especially during ebb tides; however, a subordinate flood tide flow may retard the river's net seaward discharge. The dominant current direction within Stony Brook Harbor is controlled by tidal oscillations rather than an effluent stream flow from the land. The average tidal range (measured between mean high and low water levels) for the period 1960 to 1978 was 6.6 feet at the nearby Port Jefferson Harbor.

Groundwater discharge seeps were noted during low tide along the Nissequogue River and Stony Brook Harbor. The incised, steep-sided valleys contain ephemeral streams, which only flow during significant surface runoff events.

A small wetland (approximately one acre) is located at the southern end of Stony Brook Harbor, where a small stream enters a low-lying area next to the inlet. Vegetation and standing water indicative of perennial wetland conditions are present.

Geology

The site is located within the Atlantic Coastal Plain Physiographic Province. Coastal submergence and emergence spanning the Cretaceous Period resulted in significant differential erosion during the Cenozoic, and glaciation during the Quaternary is reflected in the present day regional and local geology of Long Island.

The regional geology of Long Island is characterized by a southeastward-thickening wedge of unconsolidated Late Cretaceous sediments unconformably overlying a gently-dipping basement bedrock surface. The stratigraphy is briefly summarized below, from oldest to youngest.

- Basement - Precambrian to Early Paleozoic igneous or metamorphic bedrock
- Raritan Formation (Cretaceous) - Sedimentary sands, silts, and clay

- Magothy Formation (Late Creataceous) - Sedimentary coarse sands and gravels, sands and silts
- Glacial Deposits (Pleistocene) - Sands, silts, tills, and clays deposited by several episodes of glaciation.

Hydrogeology

Six major hydrogeologic units have been identified beneath Long Island, as described below.

- Consolidated bedrock
- Lloyd aquifer portion of the Raritan Formation
- Raritan confining unit
- Magothy aquifer
- Smithtown Clay confining unit (when it is below the water table)
- Upper Glacial aquifer

The Upper Glacial and Magothy aquifers are the most heavily used for water supply in the vicinity of the site. Residential wells are usually completed in the Upper Glacial aquifer, while public supply wells tap both aquifers.

Groundwater at the site generally flows in a north/northwest direction, toward Long Island Sound. On a smaller scale, groundwater flow is complex because of the influence of surface water bodies such as the Nissequogue River and Stony Brook Harbor. These water bodies act as groundwater discharge points. The depth to groundwater across the site varies from 5 feet below ground surface (bgs) to more than 200 feet bgs.

Demography and Land Use

According to the 2000 U.S. Census, the Village of Head of the Harbor's population was 1,447, the Village of Nissequogue's population was 1,543. According to the Suffolk County Planning Commission, residential land accounted for 40% of the land area. The remaining land was described as undeveloped (30%); agricultural (10%), transportation, communication, and utilities (10%); institutional (5%); commercial (1%). Industrial and marine commercial land use was negligible. The site is heavily residential, with limited commercial development along Lake Avenue and North Country Road.

Ecology

The majority of the site is residential, with homes on lots generally one acre or larger. Ecological resources are primarily concentrated around the surface water bodies of Stony Brook Harbor and the Nissequogue River.

Stony Brook Harbor is an estuarine inlet off of Smithtown Bay of Long Island Sound. The surface water is given an SA saline surface water classification by NYSDEC. The best usages for Class SA saline surface waters are shellfishing for market purposes, primary and secondary contact recreation, and fishing. Extensive mud and sand flats are exposed at low tide. The basic habitat of this intertidal zone is the salt marsh. Within this intertidal zone, the dominant vegetative species is smooth cordgrass (*Spartina alterniflora*) and the dominant wildlife species is ribbed mussel (*Guekensia demissa*).

The tidal Nissequogue River flows to Smithtown Bay of Long Island Sound. The surface water of the river in the area of the site is classified by NYSDEC as SC saline surface water. The best usage for SC saline surface waters is fishing. The State of New York designates that these waters shall be suitable for fish survival. Similarly to the shore of Stony Brook Harbor, numerous seeps discharge groundwater from the shallow unconfined aquifer to intertidal zone of the river at the site. The salt marsh, similar in appearance to that described for the harbor, is the predominant habitat of the intertidal zone. Extensive mud and sand flats are exposed at low tide.

Site Conceptual Model

The site conceptual model integrates all the different types of information collected during a remedial investigation, including geology, hydrogeology, site background and setting, and the fate and transport of contamination associated with the site.

Residential wells and monitoring wells are screened in the Upper Glacial aquifer, which consists of interbedded sand and gravel, sand, sandy clay, and silt. The water table ranges from less than 5 feet bgs adjacent to both the Nissequogue River and Stony Brook Harbor to over 200 feet bgs (approximately 15 feet above mean sea level). Some wells screened in the Upper Glacial aquifer below the Smithtown Clay unit are artesian, with heads ranging from five to ten feet above grade.

Regional groundwater flow is to the north/northwest, toward Smithtown Bay and the Long Island Sound. Locally, groundwater flow is complex; both the Nissequogue River and Stony Brook Harbor influence flow to the west and north/northeast, respectively. Horizontal flow velocities in the unconfined water table aquifer are about 1.0 foot/day. A slightly upward head differential is present in wells screened in the Upper Glacial aquifer. However, a significant upward head differential (eight feet) is present in one set of nested wells screened above and below the Smithtown Clay.

The SCDHS collected samples from septic systems at current and former commercial/industrial users of solvents and dry cleaning agents in the area upgradient of the contaminated private wells. Numerous discharges may have occurred over the years at each of the 11 identified facilities. Septic systems were cleaned after SCDHS sampling in the late 1990s. Wastewater and sludge samples collected from these potential source areas in 2003 indicated that housekeeping practices have improved and that none are currently contributing contamination to the aquifer.

Liquid chlorinated solvents discharged through small septic systems would be expected to migrate downward through the unsaturated zone in a relatively linear pattern, with minimal dispersion from the discharge location. The unsaturated zone is approximately 100 to 125 feet thick at the potential sources. Contaminated releases may have occurred periodically, resulting in numerous small, discontinuous slugs of contamination in the groundwater. The distance (up to two miles) separating the potential sources further complicates contaminant transport scenarios. Releases may have occurred as much as 25 to 30 years ago, based on travel time in the groundwater for contamination to reach the more distal residential wells and monitoring wells.

Once liquid chlorinated solvent (PCE and trichloroethene [TCE]) encounters the water table, some of the solvent will become dissolved in the groundwater and begin to move in the direction of groundwater flow. These dissolved compounds move with the groundwater flow, but generally at a slower rate than groundwater. If disposal of PCE from the southernmost upgradient area is assumed to have begun in 1970, at an estimated flow rate of 1 foot/day for the Upper Glacial, in 32 years contaminated groundwater would have migrated about 12,000 feet or 2.5 miles in the Upper Glacial aquifer. There are no known large scale pumping or supply wells in the area to alter the natural movement of groundwater.

Nature and Extent of Contamination

Selection of Screening Criteria

Screening criteria were selected to evaluate contaminants detected in various media at the site. Whenever possible, established regulatory criteria, known as chemical-specific applicable or relevant and appropriate requirements (ARARs) were selected. In the absence of ARARs, non-enforceable regulatory guidance values, known as "to be considered" (TBC) were selected. The evaluated screening criteria, by media type, are shown below. The most stringent criteria were selected for screening the site data. No screening criteria are applicable to the storm drain sediment samples.

Media	Screening Criteria
Groundwater	■ EPA National Primary Drinking Water Standards (web page), EPA 816-F-01-007, March 2001 ■ New York Ambient Water Quality Standards and Guidance Values, August 4, 1999 ■ New York State Department of Health Drinking Water Standards
Surface Water	■ New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Fish Propagation, Wildlife Protection, and Human Consumption of Fish (saline waters and fresh water)
Sediment	■ Technical Guidance for Screening Contaminated Sediments. New York Division of Fish, Wildlife and Marine Resources, January 25, 1999 (salt water or fresh water)

Septic System Wastewater and Sludge	■ Article 12 of the Suffolk County Sanitary Code. Standard Operating Procedure No. 9-95 - Pumpout and Soil Cleanup Criteria, January 7, 1999.

Determination of Site Contaminants of Potential Concern

Chlorinated VOCs were selected as site contaminants of potential concern (COPCs) for several reasons: 1) PCE and its breakdown products were detected in several residential private wells (which resulted in the site's listing on the National Priorities List). Early samples collected by SCDHS and EPA's Removal Group only analyzed for VOCs, since PCE, with its low MCL, was of immediate concern. 2) SCDHS sample results (late 1990s) from septic systems at the 11 potential source areas indicated elevated levels of chlorinated VOCs similar to those detected in the private residential wells downgradient of the source areas. Limited inorganic analyses were done for the wastewater and sludge samples, with detections primarily occurring in the sludge samples. The inorganics were considered much less mobile than the VOCs, which were disposed in the septic systems in liquid form. With the thick unsaturated zone in the potential source areas (approximately 120 to 140 feet) the inorganic analytes detected in the semi-solid sludge samples were considered unlikely to migrate to groundwater. Therefore, the contaminants considered site related were limited to chlorinated VOCs.

CDM compared detections of selected inorganic analytes in Smithtown groundwater with data from upgradient wells at nearby Suffolk County Superfund sites and SCWA analyses presented in their 2002 water quality report (available at <SCWA.com>) to determine if inorganic levels are comparable and represent background for Suffolk County groundwater. The data and comparisons are in Appendix J as Tables 1 and 2. Levels of copper, iron, lead, manganese, silver, and zinc in Smithtown monitoring wells (summarized in columns 2 through 5 in Table 2, Appendix J) fall within the ranges in upgradient wells from nearby Superfund sites (column 6 in Table 2, Appendix J) or the SCWA results (columns 7 and 8 in Table 2, Appendix J). These inorganic analytes are, therefore, not considered site contaminants of concern.

Levels of aluminum, chromium, and nickel in some Smithtown monitoring wells are above the range of the comparison wells (Table 2, Appendix J). A review of Smithtown monitoring well results for aluminum, chromium, and nickel (Table 3, Appendix J) show that many site wells contain levels of these analytes that are within the range of upgradient wells at other Superfund sites. For aluminum, 30 of the 39 detections are below 900 micrograms per liter (ug/L) (high end of the aluminum range in upgradient wells). For chromium, 29 of the 37 detections are below 60 ug/L (high end of the chromium range in upgradient wells). For nickel, 8 of the 37 detections are below or equal to 9 ug/L (high end of the nickel range in upgradient wells). We have no reason to believe that aluminum and chromium in Smithtown groundwater are related to the site source areas. These analytes, therefore, are not considered site contaminants of concern. Nickel appears to be elevated in many of the site monitoring wells. A source or sources for nickel are unknown. However, since nickel is wide-spread and given the complexity of groundwater flow in the Smithtown area, nickel is also not considered a site contaminant of concern.

Cyanide was detected in 31 of 39 analyses. All detections were approximately two orders of magnitude below the MCL of 200 ug/L. Cyanide was not analyzed in any of the upgradient wells or by SCWA; therefore, a comparison with typical Suffolk County groundwater is not possible. However, since cyanide is wide-spread and given the complexity of groundwater flow in the Smithtown area, cyanide is not considered a site contaminant of concern.

Groundwater

Three types of groundwater samples were collected at the site. Screening samples were collected at vertical profile wells (VPWs), samples were collected from monitoring wells and piezometers, and samples were collected from private residential wells. Contaminant summaries focus on VOCs, the contaminants of concern for the site.

Vertical Profile Wells

Twelve VPWs were installed in the residential areas. Groundwater samples were collected at 10-foot intervals. Eleven VPWs were installed in the potential sources. Groundwater samples were collected at the top of the water table and approximately 10 feet into the groundwater. All VPW samples were analyzed for low-detection limit VOCs only.

Residential Areas

Toluene and methyl tert butyl ether (MTBE) were commonly detected in residential area samples. Toluene is suspected to be cross-contamination from the drilling rig motor during sample collection. Toluene was detected very infrequently in other types of groundwater samples (e.g., residential wells, monitoring wells). Toluene was not present in related trip blanks because trip blank bottles are sealed prior to arrival at each drilling location. Trip blanks are stored in coolers to maintain the proper temperature. Therefore, they are not exposed to drill rig emissions similar to the environmental samples. Sporadic detections of chlorinated VOCs were encountered in some VPW samples, with levels generally below the screening criteria. VPW-24, located at 54 Harbor Hill Road, had the most VOC detections. PCE exceeded the 5 ug/L screening criterion in three samples: 64 - 69 feet bgs at 5.6 ug/L; 44 - 49 feet bgs at 7.3 ug/L; and 24 - 29 feet bgs at 7.5 ug/L. One additional compound, 1,1,1-trichloroethane (1,1,1-TCA) at 5.7 ug/L, exceeded the 5 ug/L screening criterion in the sample from 174 - 179 feet bgs. Numerous other chlorinated VOCs were detected, at levels below screening criteria.

Potential Sources

The groundwater screening criteria for site-related chlorinated VOCs were exceeded at only one location. PCE exceeded its screening criterion at VPW-5, with a detection at 118 - 122 feet bgs at 15 ug/L. MTBE was detected in several samples, but exceeded its screening criterion in one sample at VPW-11 (128 - 132 feet bgs). Several other chlorinated VOCs were detected, but were generally below 1 ug/L.

Monitoring Wells and Piezometers

Groundwater samples were collected from five of the six piezometers in June 2001. The 2001 piezometer samples were analyzed for low-detection limit VOCs only. Round 1 groundwater samples were collected from 13 monitoring wells and 6 piezometers in March 2002. Round 2 groundwater samples were collected from 14 monitoring wells and 6 piezometers in June 2003. The 2002 and 2003 samples were analyzed for full Target Compound List/Target Analyte List (TCL/TAL) parameters. Each round of sampling is discussed below.

<u>2001 Piezometer Results</u>

The screening criterion for 1,1,1-trichloroethane (1,1,1-TCA) was exceeded at 7.2 ug/L in MW-E. Several other piezometer samples contained several chlorinated VOCs below screening criteria.

<u>Round 1 Sample Results</u>

Several VOCs exceeded screening criteria, including:

- MW-3S, in the central, southern part of the residential area, contained cis-1,2-dichloroethene (cis-1,2-DCE) at 50 D ug/L and PCE at 12 ug/L
- MW-4I, in the central part of the residential area, contained PCE at 16 ug/L
- MW-4D, in the central part of the residential area, contained PCE at 38 D ug/L
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 150 D ug/L and 1,1-dichloroethene (1,1-DCE) at 31 D ug/L
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 7.1 ug/L
- MW-F, the southern-most sampling point, contained TCE at 5.8 ug/L

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in March 2002, at levels below screening criteria.

Several inorganic analytes exceeded screening criteria. The chromium screening criterion of 50 ug/L was exceeded in MW-4S, with a detection of 81.6 ug/L. The sodium criterion of 20,000 ug/L was exceeded in three wells, MW-4I at 23,300 ug/L; MW-5I at 30,900 ug/L; and MW-5D at 37,000 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded: for aluminum and iron, 17 of 19 wells exceeded the criteria, for manganese, 2 wells exceeded the criterion.

<u>Round 2 Sample Results</u>

Several VOCs exceeded screening criteria, including:

- MW-2, in the west-central part of the residential area, contained PCE at 5.6 ug/L
- MW-3S, in the central, southern part of the residential area, contained cis-1,2-DCE at 120 D ug/L, PCE at 10 ug/L, and TCE at 6.1 ug/L

- MW-3I, in the central, southern part of the residential area, contained cis-1,2-DCE at 7.5 ug/L
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 92 D ug/L and PCE at 5.7 J ug/L
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 8.4 ug/L
- MW-F, the southern-most sampling point, contained TCE at 6.7 ug/L

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in June 2003, at levels below screening criteria.

Several inorganic analytes exceeded screening criteria. The chromium screening criterion of 50 ug/L was exceeded in MW-3I at 208 ug/L, MW-4S at 63.4 ug/L, MW-5S at 135 J ug/L, MW-5I at 832 ug/L, MW-5D at 797 ug/L, MW-6I at 88.9 J ug/L, and MW-E at 70.9 J ug/L. The nickel screening criterion of 100 ug/L was exceeded in MW-5D at 623 ug/L. The sodium criterion of 20,000 ug/L was exceeded in five wells, MW-3I at 24,000 ug/L; MW-4I at 21,100 J ug/l; MW-5S at 408,000 D ug/L; MW-5I at 33,500 ug/L; and MW-5D at 35,600 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded: for aluminum in 16 of 20 wells; for iron in 19 of 20 wells, and for manganese in 1 well.

Residential Wells

Table 4-14 and Figures 4-6 , 4-7, 4-8 and 4-9 indicate the chlorinated VOCs detected in residential wells sampled in 1999, 2001, 2002, and 2003. Figure 4-10 shows all wells that had exceedances of screening criteria during any round of sampling; wells with no detections or detections below screening criteria in any round of sampling are also shown. Figure 4-11 shows the highest detection in each residential well during all four rounds of sampling.

Spring/Seep Surface Water and Sediment

Surface water and sediment samples were collected along the Nissequogue River and Stony Brook Harbor at low tide. Surface water was collected from seeps, presumably groundwater discharging into the larger water bodies. Sediment samples were co-located with the surface water samples.

Spring/Seep Surface Water

Table 4-15 and Figure 4-12 indicate the VOCs detected in spring/seep surface water samples. For marine waters, criteria are only available for TCE and PCE. Fresh water criteria are available for 1,1-DCA, cis-1,2-DCE, and 1,1,1-TCA. VOCs were detected in 4 of the 12 samples collected; PCE at 2 ug/L in DSW-001, the sample from Dunton Spring adjacent to Stony Brook Harbor, exceeded the 1 ug/L screening criterion. Sample SWS-008, along the Nissoquogue River, was the only sample with more than one VOC detected; four were detected.

Table 4-16 summarizes the inorganic analytes detected in surface water samples. Saline water criteria were utilized except for aluminum, barium, iron, magnesium, and manganese. Copper's screening criterion of 3.4 ug/L was exceeded in 8 of 10 detections. The lead criterion of 8 ug/L was exceeded in one of three detections and all seven cyanide detections exceeded the 1 ug/L screening criterion. Exceedances of fresh water criteria include 8 of 12 samples for aluminum; 3 of 12 samples for iron; and 1 sample for magnesium.

Spring/Seep Sediment

Table 4-17 indicates the VOC compounds detected in spring/seep sediment samples. Figure 4-12 shows VOCs detected in sediment samples. It should be noted that detection limits for some sediment sample VOCs were elevated. Two VOCs exceeded their sample-specific screening criteria: in sample SSS-001, on the western side of Stony Brook Harbor, 1,2-dichlorobenzene, detected at 11 J micrograms per kilogram (ug/Kg), exceeded its criterium of 6.528 ug/Kg. In samples SSS-010 and SSS-011, both along the Nissoquogue River, 1,1-DCE was detected at 2 J ug/Kg and 14 J ug/Kg, respectively, exceeding sample-specific screening criteria of 0.0316 ug/Kg and 0.58 ug/Kg, respectively.

Table 4-18 shows detections of inorganic analytes. Lead exceeded its 31 milligram/kilogram (mg/Kg) screening criterion in sample SSS-002 at 39.2 mg/Kg and in SSS-008 at 47.6 mg/Kg. Copper slightly exceeded its criterion of 16 mg/Kg in samples SSS-005 at 16.2 J mg/Kg and SSS-011 at 16.1 mg/Kg.

Wetland Surface Water and Sediment

Surface water and sediment samples were collected from the wetland south of Stony Brook Harbor, behind the residence at 54 Harbor Hill Road. Sediment samples were collected from two intervals: 0 to 6 inches and 18 to 24 inches bgs. Surface water and sediment samples were co-located.

Wetland Surface Water

Table 4-15 and Figure 4-12 indicate the VOCs detected in wetland surface water samples. For marine waters, criteria are only available for TCE and PCE. Fresh water criteria are available for 1,1-DCA, cis-1,2-DCE, and 1,1,1-TCA. VOCs were detected in all nine samples collected; the PCE screening criterion of 1 ug/L was exceeded in two samples (SWW-001 at 3 ug/L and SWW-002 at 2 ug/L). 1,1,1-TCA was detected in all nine samples, while 1,1-DCA was detected in seven and 1,1-DCE was detected in five.

Table 4-16 indicates the inorganic analytes detected in surface water samples. Saline water criteria were utilized except for aluminum, barium, iron, magnesium, and manganese. Cyanide was detected in eight of nine samples; all detections exceeded the 1 ug/L screening criterion.

Wetland Sediment

No VOCs exceeded their sample-specific screening criteria. It should be noted that detection limits for some sediment sample VOCs were elevated.

Detections were noted on Table 4-19 for nearly all inorganic analytes; numerous analytes exceeded their screening criteria. Antimony had 5 exceedances; arsenic had 9; chromium had 17; copper had 25; lead had 22; manganese had 1; mercury had 8; nickel had 14, and silver had 4 exceedances.

Storm Drain Sediment

The most commonly detected VOC compound was trichlorofluoromethane, which was detected in 8 of 13 samples. Other VOCs with multiple detections (each detected twice) include 2-butanone, toluene, and xylene. VOCs with single detections include acetone, carbon disulfide, methyl acetate, chloroform, cyclohexane, methylcyclohexane, MTBE, ethylbenzene, and isopropylbenzene.

Sample SDS-004, located on Swan Place near Stony Brook Harbor, had the most VOC compounds, with six detected.

Detections were noted for nearly all inorganic analytes, as shown on Table 4-20. Elevated levels of aluminum, arsenic, chromium, copper, iron, lead, nickel, vanadium, and zinc were observed in samples SDS-001, SDS-010, and SDS-011. In addition, copper was elevated in sample SDS-013; lead in SDS-004; and zinc in SDS-003.

Sanitary/Cess Pool Samples

Wastewater samples were collected from 10 septic systems at 11 potential sources upgradient of the residential areas. No wastewater was present at WW-4, 617-621 Lake Avenue (Sal's Auto Body). Sludge samples were collected at 9 of the 11 locations. Sludge was too slippery to lodge in the sampling device at two locations. All samples were analyzed for TCL compounds and TAL analytes.

Wastewater Samples

Total VOCs ranged from 148 ug/L to 731 ug/L, below the 1,000 ug/L the screening criteria.

Numerous inorganic analytes were detected in all samples (Table 4-21). Sample WW-7, located at 400 North Country Road (Four Seasons Cesspool), had notably higher detections of several analytes, including aluminum, barium, chromium, copper, lead, mercury, nickel, and zinc.

Sludge Samples

Several VOCs were detected in all samples, but only two detections of toluene exceeded the 3,000 ug/Kg screening criterion: SL-7 at 28,000 ug/Kg and SL-8 at 30,000 ug/Kg. SL-7 was collected at 400 North Country Road (Four Seasons Cesspool) and SL-8 was collected at 430-11 North Country Road (North Country Cleaners).

Numerous inorganic analytes were detected in all samples (Table 4-22). Three detections exceeded screening criteria: in SL-7, copper at 659 EJ mg/Kg exceeded the 500 mg/Kg screening criterion and mercury at 2.1 J slightly exceeded the 2 mg/Kg criterion. Mercury also exceeded its criterion at SL-3, located at 561 Lake Avenue (St. James Cleaners).

Air Samples

EPA collected air samples on March 11-13, 2003 at 12 homes in the vicinity of the site, with air sampling canisters located in home basements (or first floor in homes with no basements). Two duplicate samples were collected. Data for VOCs were analyzed through the Contract Laboratory Program (CLP), with data validation by EPA. Results are presented in Appendix I.

Analytical results were compared to the Risk Based Concentrations (RBC) developed by EPA Region 3 (October 2003) for ambient air. For two compounds, TCE and 1,2-dibromoethane, laboratory detection limits were higher than the RBCs. No other compounds exceeded the RBCs.

Air sampling results were compared to residential groundwater results at the residences who participated in the residential well sampling activities. Seven of the 12 residences were sampled during both well sampling activities. There was no correlation between the indoor air and groundwater results. The VOCs detected in residential well water were not reflected in the air sample results. Therefore, it appears that indoor air detections are not directly linked to the groundwater contamination.

Fate and Transport Summary

The persistence of contaminants is determined by the rate of degradation, velocity of the groundwater, the geochemical conditions in the aquifer, and the retardation coefficient (Kd) of the individual compounds. The Kd values range from 10^{-5} to 10^{-3} which show that they will have low adsorption to the materials in the aquifer. The chlorinated VOCs may have been introduced to the aquifer at numerous small upgradient source areas, resulting in complex downgradient patterns of VOCs, with no coherent contaminant plume.

The chlorinated VOCs are mobile and biodegradable. As they move with the groundwater away for the areas where they were introduced, the concentrations are expected to decrease mainly from dispersion and dilution effects, and natural attenuation via biodegradation.

Summary of Risk Assessments

Site-specific risk assessments were completed to assess both human health risks and ecological risks. Summaries are provided below.

Human Health Risk Assessment

A summary of the carcinogenic risks and noncarcinogenic hazards for exposures to contaminants in various media at the Smithtown Groundwater Contamination site were quantitatively evaluated for potential health threats.

Risks to Residential Users of Groundwater

Because all fresh groundwater in New York State is classified for use as a potable water supply, potential risks were estimated for adult and child residents assuming exposure to groundwater that is used as tap water. The total reasonable maximum exposure (RME) cancer risk for adult and child resident exposures was 4×10^{-4} (four in ten thousand), which exceeds the EPA range of 10^{-6} to 10^{-4}. This risk is primarily associated with arsenic, TCE, and PCE in groundwater. When central tendency (CT) exposure assumptions are used, the total cancer risk for adult and child residents decreases to 1×10^{-4}, which is at the upper end of the range of 10^{-6} to 10^{-4}. Arsenic, which accounted for 51 percent of the estimated risk, is not a site-related contaminant and had a maximum concentration below State and federal drinking water standards.

The total RME Hazard Index (HI) for both adult and child residents exceeded the threshold of 1 for noncancer effects (HI of 4 for adults and 20 for children), indicating that noncancer health effects may occur from RME exposures to groundwater by residents. When the hazard index is broken out by target organ, the hazard index exceeded unity for effects to the liver and gasto-intestine (GI) tract for adults and to the liver, GI tract, and skin for children. Noncancer effects to the liver were primarily associated with ingestion and inhalation of chloroform (HI of 0.97 for adults and 14 for children). Noncancer effects to the GI tract were associated with ingestion of chromium (HI of 1 for adults and 2.4 for children). Noncancer effects to the skin for children were associated with ingestion of arsenic in groundwater (HI of 1.4 for children). When CT exposure assumptions (i.e., more typical exposures) are used, the hazard indices for adult and child residents still exceeded the threshold of one (i.e., 2 for adults and 6 for children).

Risks to Recreational Users of the Nissequogue River

Risks associated with recreational use of the Nissequogue River were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for adult recreational users was 2×10^{-4} (two in ten thousand) for the RME scenario, just above EPA's target risk range of 10^{-6} to 10^{-4}. But the cancer risk is within the range for the more typical CT exposures (3×10^{-5}). The total excess lifetime cancer risk for child recreational users was 1×10^{-4} for the RME scenario, which is at the upper boundary of EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk for child recreational users was within the range for the more typical CT exposures (5×10^{-5}).

These cancer risks at the Nissequogue River are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown site. PAHs were not detected at elevated concentrations in groundwater at the site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Nissequogue River users were well below the threshold of 1 at 0.04 for adults and 0.2 for children for the RME scenario.

Risks to Recreational Users of the Stony Brook Harbor

Risks associated with recreational activities at Stony Brook Harbor and wetland were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for each adult and child recreational users was 7×10^{-6} (seven in one million), within EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk is below the range for the more typical CT exposures for adult recreational users (9×10^{-7}) and within the target range for CT exposures for child recreational users (2×10^{-6}).

These cancer risks at the Stony Brook Harbor and wetland are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown site. PAHs were not detected at elevated concentrations in groundwater at the site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Stony Brook Harbor users were well below the threshold of 1 at 0.08 for adults and 0.6 for children for the RME scenario.

Screening Level Ecological Risk Assessment Summary

Results of the screening level ecological risk assessment process indicate that the potential exists for ecological risk at the site resulting from exposure to chemicals detected in site sediment and surface water. Contaminants of potential ecological concern may present a risk to the aquatic invertebrates and receptors with food chain exposures from surface water and sediment of the seepage areas of the Nissequogue River and Stony Brook Harbor and the harbor wetland. For estuarine fish and crabs, contaminants of potential ecological concern in the surface water of the river, water discharging to the harbor (as determined from groundwater concentrations), and the harbor wetland may pose a potential risk. Primary risk contributors are metals and are not associated with site-related groundwater contamination, as discussed in Section 4.1.1. The chemicals that are responsible for the potential risk to ecological receptors are not the low levels of site-related contamination (volatile compounds in the 1 to 2 ppb range) in the groundwater that is discharging into the surface water of the Nissequogue River and Stony Brook Harbor.

Conclusions

Groundwater Results

Groundwater contamination in the Smithtown area has been identified in isolated pockets which most likely represent small slugs of contamination that were input into the groundwater in the distant past. Groundwater flow on a regional scale is generally toward the north/northwest and Long Island Sound. On a local scale, groundwater flow is complex. The two major water bodies in the area, the Nissequogue River to the west and Stony Brook Harbor to the northeast, act as discharge points for groundwater.

The RI was not able to pinpoint the sources of groundwater contamination. The groundwater model suggests the contamination observed in the residential areas may have originated in the commercially developed areas of the site. However, based on groundwater flow rates, contamination detected in the residential wells and/or monitoring well network during the RI, was input to the groundwater many years ago. Locations of dry cleaners or other businesses that may have used chlorinated solvents may have changed over the years, but the general commercial areas upgradient of the residential areas have not changed significantly. The septic systems at the businesses investigated ranged from 8 to 15 feet in depth below the ground surface, with an approximate diameter of 10 feet. Leach fields vary in size, depending on the size of the associated building. The size of the septic systems indicates that contaminant releases through these systems would be limited in areal extent.

Figure 1-4, generated by the site groundwater model, shows estimated entry points of contamination to the water table. Observed contamination in residential wells was "backtracked" by moving the groundwater back toward its origin. The figure indicates that contamination may have contacted the groundwater table as much as 30 years ago. Given a 30 year time frame, contaminant entry points to the water table cannot be pinpointed to an exact location.

Because of the sporadic nature and isolated pockets of the contamination observed in the residential wells, a contiguous groundwater plume can not be mapped. The detections may represent small, isolated slugs of contamination that may have been released periodically in the past, as small point sources through septic systems. The area has no large, municipal sanitary systems. Most businesses and homes in the area use individual septic systems for sanitary waste disposal. Contamination that may have been discharged to septic systems in the past would move with the groundwater as small, isolated pockets. Contamination released periodically from small-scale septic systems explains the pattern of disconnected pockets of contamination observed over the years in the many rounds of residential sampling. Wells with contamination occur in small clusters, or isolated contaminated wells surrounded by wells with no contamination. Well completion records for the residential area are incomplete, and residential wells are often completed at variable depths. Therefore, wells that produce contaminated water may tap a different depth and flow zone of the aquifer than other nearby, adjacent wells that are not contaminated. The observed patterns of groundwater contamination in the residential areas do not represent a mappable groundwater plume and no clear link was established between the residential area and areas where contaminants may have been released.

Two areas of contamination in the residential area appear to have higher levels of VOCs. Area One is near Harbor Hill Road and Stony Brook Harbor on the east side of the site. Groundwater depth ranges from approximately 5 feet to 150 feet and the thickness of contaminated groundwater is approximately 100 feet. The maximum PCE concentration is 140 ug/L.

Area Two is near the Waterford Stables and the Nature Conservancy property on the west side of the site. Groundwater is approximately 150 feet bgs and the thickness of contaminated groundwater is approximately 125 feet. The maximum PCE concentration is 63 ug/L.

These areas will be evaluated for possible groundwater remediation during the Feasibility Study for the Smithtown site.

Surface Water/Sediment Results

Spring and seep surface water and sediment results indicate that groundwater with low levels of chlorinated VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in sediments, although the detection limits for some sediment sample VOCs were elevated (see Table 4-17 or Appendix G). Several detections of inorganic analytes in surface water and/or sediment were noted. These analytes are not related to Smithtown site contamination. The discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges.

Storm Drain Sediment Results

Storm drain sediment samples were collected to evaluate if illicit chemical dumping had occurred in the past at storm drains in the residential area. The types of contaminants detected in these sediments, along with the lack of detections of chlorinated VOCs, indicate that the storm drains have not been used in the recent past for illicit disposal of hazardous chemicals associated with the Smithtown site.

Several detections of inorganic analytes in storm drain sediments were noted. These analytes are not related to Smithtown site contamination.

Contaminants identified in the storm drain sediments would have limited migration potential to the groundwater. Inorganics have limited solubility and would be expected to stay bound to the sediment particles. VOCs would be unlikely to migrate through the thick unsaturated zone into the groundwater.

Septic System Results

Wastewater and sludge samples were collected in 2003 from the same potential sources of contamination identified by SCDHS in 1997. Subsequent to the sampling conducted by SCDHS, the septic systems were cleaned. The 2003 samples evaluated current levels of contamination in the septic systems. No wastewater samples exceeded the 1,000 ug/L total VOC screening criterion. Three sludge samples had limited exceedances of screening criteria: SL-3 exceeded the mercury criterion; SL-7 exceeded the toluene, copper, and mercury criteria; and SL-8 exceeded the toluene criterion. The limited exceedances of screening criteria indicate that the business waste handling practices have improved since septic systems were cleaned out in the late 1990s. These systems are not currently considered sources of contamination to the groundwater.

Air Sample Results

Air sample analytical results were compared to EPA Region 3 RBCs for ambient air. No other compounds exceeded the RBCs, although detection limits exceeded the RBC for TCE and 1,2-dibromoethane.

Air sample results from residences were compared to groundwater results where the residential well was sampled during the RI. Seven of the 12 residences were sampled during both sampling activities. There was no correlation between the indoor air and groundwater results. The VOCs detected in residential well water were not reflected in the air sample results. Therefore, it appears that indoor air detections are not directly linked to the groundwater contamination.

Section 1
Introduction

CDM Federal Programs Corporation (CDM) received Work Assignment 012-RICO-02KQ under the Base Period of the Response Action Contract (RAC) to perform a remedial investigation/feasibility study (RI/FS), a human health risk assessment (HHRA), and a screening level ecological risk assessment (SLERA) at the Smithtown Groundwater Contamination Site (the site), located in Smithtown, Suffolk County, New York for the Environmental Protection Agency (EPA). This Remedial Investigation (RI) Report was prepared in accordance with Section 5.9 of the CDM Final Supplemental Work Plan, dated January 15, 2003. The report was completed under the Option Period of the RAC contract as work assignment 112-RICO-02KQ.

1.1 Purpose of Report

The purpose of the RI Report is to present the results of the field investigations conducted at the site, including groundwater screening surveys, monitoring well and piezometer installation, groundwater sampling, surface water and sediment sampling, and sanitary system sampling. A summary of the ecological investigation is included. The human health and ecological risk assessments will be submitted as separate documents. The goal of the investigations at the site was to define the nature and extent of groundwater contamination in the residential areas of the site, identify source areas for that contamination and define the hydrogeologic framework. Sample results are compared with applicable New York and federal screening criteria and/or standards to determine the extent of contamination.

1.2 Site Background

Background information on the site is presented in the following sections, including a site description, site history, and summaries of investigations conducted at the site prior to the RI/FS.

1.2.1 Site Description

The Smithtown Groundwater Contamination site includes an area with contaminated groundwater in the Villages of Nissequogue and Head of the Harbor, and the Hamlet of St. James, Smithtown, in northern Suffolk County, New York. Figure 1-1 and Figure 1-2 provide a site location map and site map, respectively. The site is situated in an approximately four-square mile predominantly residential area bounded by Stony Brook Harbor and an east-west line defined by Spring Hollow Road to the north; the Nissequogue River to the west; Edgewood Avenue and North County Road to the south; and Hitherbrook Road to the east. The site is bounded by bodies of water to the northeast (Stony Brook Harbor) and west (Nissequogue River), and residential developments to the north and east. Homes in this predominantly residential area primarily use private wells for potable drinking water and septic systems for sanitary wastewater disposal. Some business/retail development is located in St. James to the south/southeast.

1.2.2 Site History

On October 9, 1997, EPA received a written request from the New York State Department of Environmental Conservation (NYSDEC) requesting assistance in funding alternative water supplies for residences affected by contaminated groundwater. Attached to NYSDEC's request for assistance was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS), which presented drinking water results from 35 private wells in the area (SCDHS 1997). Analytical data from this survey indicated that several wells were contaminated with volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE).

SCDHS collected samples from approximately 150 homes throughout the area of the site. Analytical results from these data indicated that 23 residences were contaminated with PCE at concentrations exceeding the State and federal maximum contaminant level (MCL) of 5 parts per billion (ppb). Four of these residences had PCE concentrations exceeding EPA's Removal Action Level (RAL) of 70 ppb. As a follow up to the SCDHS sampling, in April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of PCE contamination. Based on the SCDHS and EPA analytical data, a total of 35 residential wells were identified as contaminated with PCE (or its breakdown products) at concentrations above the MCLs. The RAL for PCE was exceeded in six homes. The SCDHS advised all affected residents not to use the well water for drinking or cooking purposes and to limit exposure through direct contact.

In April 1998, EPA began the delivery of bottled water to the affected homes where the RAL was exceeded. In June, 1998, EPA expanded its delivery of bottled water to all residences where the MCLs for PCE or its breakdown products was exceeded. By July 1998, all residences had received the water sampling results.

On July 23, 1998, an EPA Action Memorandum was signed that authorized Removal Action activities to be conducted at the site. Removal activities were restricted to homes that exceeded EPA's MCLs. For homes where the MCL was exceeded and where public water was available, EPA provided the service connection to the public supply from the Suffolk County Water Authority (SCWA) distribution system to the household water distribution system. Existing wells were disconnected. For homes where the MCL was exceeded and public water was not available, EPA installed individual household granular activated carbon (GAC) treatment systems or upgraded the existing treatment systems installed independently by the residents. Table 1-1 lists the homes where EPA has provided connection to the water mains or provided treatment at the tap. The Feasibility Study (FS) for the Smithtown site will evaluate connections to public water for all wells that exceed EPA and NYSDEC MCLs.

SCDHS investigated 11 current and former commercial/industrial facilities in the area (located south/southeast of the contaminated private wells) to identify potential sources of the contaminated groundwater. These investigations included the installation, and subsequent sampling, of monitoring wells in the area of these facilities.

The vertical extent of the contamination plume was expected to be within the unconfined Upper Glacial/Magothy aquifer unit. The aquifer is approximately 500 feet thick; the depth to the water table ranges from less than 5 feet to 200 feet below ground surface (bgs). The groundwater flow direction is complex in the site vicinity. The regional flow is toward the north; however, the two major bodies of water, the Nissequogue River and Stony Brook Harbor induce flow to the west and east, respectively.

A Hazard Ranking System (HRS) Report was prepared for the Smithtown Groundwater Contamination site in August 1998. On January 19, 1999, the site was placed on the National Priorities List (NPL). EPA is the lead agency with responsibility for conducting remedial actions at the site.

Since 1998, EPA has collected samples from approximately 500 private wells in the Smithtown area. EPA has provided hookup to the public water supply or treatment at the tap for 39 private wells with PCE levels above or equal to 5 ppb.

1.2.3 Results of Previous Investigations

Several rounds of residential well sampling have been conducted, beginning in 1996, by SCDHS and EPA. These investigations revealed that some site residential wells have been impacted by contaminated groundwater with elevated concentrations of PCE and/or its associated breakdown products. The SCDHS collected samples from approximately 150 homes throughout the site. As a follow up to the SCDHS sampling, in April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of groundwater contamination. In addition, SCDHS investigated 11 current and former nearby commercial/industrial facilities (located hydraulically upgradient of the residences) in order to identify potential sources for the contamination. SCDHS installed and sampled a number of groundwater monitoring wells downgradient of these facilities. The following subsections summarize the data collected from these pre-RI sampling activities.

1.2.3.1 Sources and Distribution of Contamination

The site is located hydraulically downgradient of at least 11 potential contaminant source facilities, principally located in the Hamlet of St. James. Most of these potential source facilities are existing or former dry cleaners. Figure 1-3 indicates the locations of 11 potential source facilities investigated by the SCDHS.

The SCDHS sampled each facility from November 1997 through March 1999 (Table 1-2). Each facility has a private sanitary sewerage disposal system that consists of septic tanks, cesspools/leaching pits, and/or other on-site wastewater disposal systems. Liquids and sludge samples collected from disposal systems were analyzed by a SCDHS laboratory for organic and inorganic contaminants, including purgeable halocarbons and aromatic hydrocarbons (EPA Method 8260) and total metals. Table 1-3 presents the analytical results for the sampling.

SCDHS sample results show detections of a number of VOCs. The sample data suggested several of the suspected source facilities in and around St. James discharged hazardous wastes to the subsurface through their septic systems. Concentrations of PCE in liquid samples ranged from non-detect to 65,000,000 ppb. PCE in sludge samples ranged from non-detect to 160,000 ppb. At the direction of SCDHS, the septic systems were cleaned out subsequent to the 1997/1999 sampling. Confirmatory soil samples were collected as part of the cleanup. SCDHS notified all business owners that analytical results indicated no further actions were necessary. SCDHS notification letters and results are included in Appendix I.

1.2.3.2 Chemical Characteristics of Groundwater

The SCDHS analyzed domestic well water samples from approximately 150 homes throughout the site area during 1996 (SCDHS 1997). Analytical results indicated that 23 residences were contaminated with PCE at concentrations exceeding the State and federal MCL of 5 ppb. Four residences had PCE concentrations that exceeded EPA's RAL of 70 ppb.

As a follow up to the SCDHS sampling, in April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of PCE contamination. Based on the SCDHS and EPA analytical data, a total of 35 residential wells were identified as contaminated with PCE (or its breakdown products) at concentrations above the MCLs. Table 1-1 lists the homes where EPA has taken an action. The RAL for PCE was exceeded in six homes.

Figure 1-3 is a property tax map showing the geographic distribution of PCE contamination in residential wells across the site as of April 1998 (Weston 1998). The map includes sample data from both the SCDHS and EPA sampling events. The map colors indicate concentrations of PCE in residential wells, including non-detect; less than 5 ppb; between 5 and 70 ppb; and over 70 ppb. Figure 1-3 also shows properties with no sample data. These properties fell into three categories at the time of sampling: (1) properties with no house or well; (2) properties where no access to the private well was granted; or (3) the house was under construction at the time of sampling.

The areal extent of groundwater contamination in residential wells across the site suggests that multiple hydraulically upgradient areas are likely responsible for the discharge of chlorinated solvents to the subsurface. CDM's DYNPLOT™ groundwater modeling software was utilized to determine the potential origin of observed contamination in selected residential wells. Groundwater particle backtrack modeling of contaminants detected in five residential well samples with the highest PCE detections are shown on Figure 1-4.

Particle backtracks are performed to identify potential sources for contamination identified in selected residential wells. Particles are entered into the system at known locations (e.g., residential wells) and run backwards in time. The particles are advected through the system without dispersion until a boundary node is encountered, or the particle reaches the phreatic surface. Using DYNPLOT, the particle "backtracks" can be plotted, showing the location at the start of simulation (denoted by a square), the path and time of travel for a defined period, and ending location of the particle (denoted by an asterisk). Particle backtracks are simulated using advection. They do not account for dispersion, retardation, or decay.

The particle backtracks shown in Figure 1-4 suggest that groundwater contamination observed at each selected residential well may have separate sources, originating from at least five hydraulically upgradient locations.

1.3 Review of Aerial Photographs

EPA's Environmental Photographic Interpretation Center (EPIC) (EPA 1999) collected current and historical aerial photographs of the Smithtown area to identify potential past and present waste sites. Photographs from 1951 through 1994 were interpreted. Numerous ponds of liquid and construction sites were noted, along with frequent observations of debris or stained material along portions of the Long Island Railroad. However, none were pinpointed to the approximate locations of the identified potential source areas for groundwater contamination.

1.4 Current Conditions

The site remains primarily residential, with commercial strip malls and small businesses clustered along Lake Avenue and North Country Road. The site topography is complex, as shown on Figure 1-5. Topography may influence contaminant migration. Over the past several years, the Suffolk County Water Authority (SCWA) has extended water mains along all the roads in the site. Many residents have connected into the water mains and no longer use their private wells for drinking water. Connection records from SCWA and the St. James water district have been requested. A preliminary list of homes within the site area not connected to public water is provided in Table 1-4.

Table 1-5 lists homes connected to SCWA or St. James Water District public water mains. Both lists will be updated for the Feasibility Study.

1.5 Report Organization

Executive Summary - provides a synopsis of the investigations conducted and their results.

Section 1 — Introduction - presents the regulatory framework for performing the RI and summarizes the objectives of the RI. It provides an overview of the study area and site, including summaries of previous investigations. The organization of the remainder of the report is presented.

Section 2	Study Area Investigations - describes the methodology and sampling rationale for the various investigations that were conducted for the RI under the RAC contract.
Section 3	Physical Characteristics of the Study Area - briefly describes the physical attributes of the study area, including surface topography, meteorology, surface water hydrology, geology, and hydrogeology. Sections on demography, land use, and ecology describe the potential populations and habitats of human and ecological receptors.
Section 4	Nature and Extent of Contamination - lists the screening criteria against which site data were assessed to determine the extent of groundwater contamination and describes the type and extent of contamination determined to be present. Surface water, sediment, wastewater and sludge data are presented and evaluated. EPA's air samples are also presented.
Section 5	Contaminant Fate and Transport - evaluates the persistence and mobility in the environment of the contaminants identified and summarizes the fate and transport mechanisms that apply to the site.
Section 6	Risk Assessment Summaries - The HHRA evaluates the potential for human health risk from exposure to site groundwater, surface water, and sediment under a future No Action alternative. The SLERA evaluates the potential for ecological risks from exposure to site surface water and sediment under a future No Action alternative. Both documents are in separate volumes.
Section 7	Conclusions and Recommendations - presents conclusions and recommends future actions.
Section 8	References

Section 2
Study Area Investigations

The field investigations undertaken for the RI are summarized below. Investigations were conducted during 1999, 2001, 2002, and 2003. Investigations included the residential areas of the site, with 2003 work focused on potential sources. All investigations were conducted in accordance with the site-specific Quality Assurance Project Plan (QAPP), except as documented in field change requests (FCRs). FCRs are included as Appendix B.

2.1 Geophysical Surveys

Geophysical investigations were conducted in two phases, beginning in the residential area and concluding at the potential sources.

2.1.1 Residential Areas

Prior to initiating the residential study area drilling program, and in addition to utility company mark-outs, a geophysical utility location and feature survey was conducted within a ten-foot radius of each proposed soil boring and piezometer location by NAEVA Geophysics, Inc (NAEVA) under subcontract to CDM. NAEVA utilized a comprehensive suite of geophysical tools to identify and locate any underground utilities or buried objects, including:

- Fisher TW-6 Pipe and Cable Locator
- Ditchwitch Subsite 75 Cable Locator
- 3M Dynatel 2250 Cable Locator
- Sensors & Software Noggin 250 Ground Penetrating Radar (GPR) with a 250 megahertz (MHZ) antenna

Subsurface anomalies interpreted as buried utilities were marked as such on the ground surface. The results of the surveys were also provided on individual boring location maps. The geophysical report is included in Appendix A.

2.1.2 Potential Sources

Prior to initiating the drilling program at the potential sources and in addition to utility company mark-outs, a subsurface geophysical feature survey was conducted within a twenty-foot radius of each septic system by Advanced Geological Services (AGS) under subcontract to CDM. AGS utilized a comprehensive suite of geophysical tools to identify and locate the sanitary systems and any adjacent underground utilities or buried objects, including:

- Geophysical Survey Systems SIR System 2 GPR with a 400 MHZ antenna
- Radiodetection RD 400/PDL2 utility locating instrument
- Geonics EM31 ground conductivity instrument
- Geonics EM61 metal detection instrument

Subsurface anomalies interpreted as septic systems or buried utilities were marked as such on the ground surface. The results of the surveys were also provided on individual boring location maps. The geophysical report is included in Appendix A.

2.2 Groundwater Investigations

Several types of groundwater investigations were undertaken at the site, including groundwater screening surveys at vertical profile well (VPW) locations; piezometer and monitoring well installation; gamma logging of boreholes; and groundwater sampling at monitoring wells/piezometers and residential wells.

2.2.1 Vertical Profile Well Installation

VPW locations were installed in two areas - the residential portion of the site and the potential sources. VPW locations are shown in Figure 2-1

2.2.1.1 Residential Areas

CDM installed 12 groundwater screening VPWs from April to June 2001, as part of the Phase 1 Hydroassesment activities. Groundwater screening activities were not conducted at two locations, VPW-13 at 3 Tide Mill Lane and VPW-22 at the Swan Place cul-de-sac due to unresolved access issues during the Phase 1 drilling activities. The purpose of the VPW sampling was to characterize and provide a detailed evaluation of the water quality, hydraulic gradient, and stratigraphy of the Upper Glacial aquifer and Smithtown Clay unit. The data collected during the VPW sampling activities provided rationale for the location and depth of 13 monitoring wells.

All VPWs were advanced by a truck-mounted hollow stem auger (HSA) drill rig with 6 1/4-inch inner diameter HSAs. Split spoon soil samples were not collected unless a change in drilling penetration indicative of clay was noted by the field geologist. Total drilled depth ranged from 103 feet to 255 feet bgs. Drilling was terminated upon reaching the predetermined total depth, as indicated in the QAPP. At locations VPW-15, VPW-16, VPW-18, and VPW-20, boreholes were terminated before the predetermined total depth because the drilling rig could not advance augers any deeper without damaging the drill stem or the drive train of the drill rig. Drilling penetration was dependent on lithology, compaction and saturated thickness. Table 2-1 lists predetermined and actual total depth for the VPW wells.

Split spoons were collected at VPW-18 from 169-171 and 205-207 feet bgs; VPW-19 from 140-142 feet bgs; and VPW-24 from 117-119 and 142-144 feet bgs. However, no clay was noted in any of the split spoons from either borehole.

Before VPW groundwater sampling, downhole gamma logging was conducted through the HSAs, as discussed in Section 2.2.4.

Upon reaching the terminus of the boring, a 5-foot long, 2-inch diameter, continuous wire wrap stainless steel screen with black steel riser pipe was lowered to the base of the borehole. The augers were pulled back 15 feet exposing the screen and allowing the formation to collapse in the annulus adjacent to the screen. After collection of a groundwater sample (Section 2.3.1.1), both the augers and the temporary well were pulled back ten feet for collection of groundwater from the next horizon in the aquifer. The cutting head auger was always 15 feet above the top of the screen in order to keep the borehole open to aid in the removal of the temporary screen.

Collection of groundwater screening samples at ten-foot intervals was continued to the water table. After collection of the last sample, both the augers and the temporary screen were removed from the borehole. The remaining void was properly abandoned, sealed with cement/bentonite grout pumped from the base of the open borehole through a tremie pipe.

2.2.1.2 Potential Sources

In February 2003, CDM installed 11 groundwater screening VPWs immediately adjacent to suspected groundwater contamination source facilities septic systems. Groundwater samples were collected from 10 locations, as described below. The purpose of these VPWs was to characterize groundwater quality directly below these facilities. The VPW sample results provided rationale for the location and depth of monitoring well MW-7, installed at one of the potential sources, Polo Cleaners.

All VPWs were advanced by a track-mounted direct push technique (DPT) Geoprobe rig with 1.5 inch diameter hollow rods. Lithology samples were not collected; however, changes in drilling penetration indicative of fine grain horizons were noted by the field geologist. Total depth ranged from 125 to 200 feet bgs, depending on the estimated depth to water at each location.

Before the field investigation, two groundwater screening samples were assumed to be collected at each VPW location: one at the top of the water table and the second ten feet below the top of the water table. Exceptions to this protocol are described below.

At two locations, VPW-7 (Four Seasons Cesspool) and VPW-8 (North Country Cleaners), three screening samples were collected. Once a site-wide approximate depth to water (DTW) was established, discrete sampling zones were established eliminating over pushing at the other VPW.

At VPW-2 (Avenue Cleaners), pushing was initially terminated at 156 feet bgs because no water was encountered from 120 (the estimated water table depth) to 156 feet bgs. Relative penetration resistance decreased in this zone, possibly indicating that a finer-grained lithology was encountered. VPW-2 was re-pushed to 200 feet bgs. Groundwater screening samples were subsequently collected from 156 to 160 and 166 to 170 feet bgs.

At VPW-4 (Sal's Auto Body) lower penetration resistance was noted from 125 to 140 feet bgs, assumed to coincide with the uppermost portion of the water table. A screening sample was collected below the finer-grained unit at 140 to 144 feet bgs.

Upon reaching the terminus of the boring, the rod was pulled back to expose a 4-foot long stainless steel screen. An approximate DTW measurement was made to determine the screening intervals for each VPW location. An accurate DTW measurement was impossible because of the small inner diameter of the Geoprobe rods. After sample collection (Section 2.3.1.2), the rods were advanced four feet, thereby closing the screen off to the formation. A dedicated Teflon-lined tube with a ball-check valve was lowered inside the rod to the base of the screen to remove the remaining standing water inside the rods/screen. When all the remaining water was removed, the rods were pulled back ten feet. The screen opening mechanism was reset, the rods were pulled back another four feet, exposing the screen to permit collection of the next sample. After collection of the last sample, the rods were removed from the borehole. The remaining void was properly abandoned and sealed with bentonite pellets placed from the surface.

Downhole gamma logging was not conducted as planned at the potential source VPW locations due to the small diameter of the Geoprobe rods. This change was documented in FCR-P2-2 in Appendix B.

2.2.2 Piezometer Installation

In May 2001, CDM installed five piezometers as part of the Phase I Hydroassesment activities. One proposed piezometer, MW-B, was not installed at the Swan Place cul-de-sac due to unresolved access issues. Subsequently, one additional piezometer, MW-G, was installed in March of 2002 during the monitoring wells installation phase of drilling. The purpose of the piezometers was to monitor seasonal water level fluctuations for incorporation into the site groundwater model, helping to refine the modeling of groundwater flow and contaminant transport at the site. The piezometers also provide additional information on local stratigraphy of both the Upper Glacial aquifer and the Smithtown Clay unit.

All piezometers were advanced with a truck-mounted HSA drilling rig with 6 1/4-inch inner diameter HSAs. Total drilled depth ranged from 148 feet to 300 feet bgs; drilling was terminated upon reaching the predetermined total depth. Table 2-2 shows piezometer screen elevations. Split spoon soil samples were not collected during piezometer installation. Peizometer locations are shown in Figure 2-1.

Before introduction of any well construction materials, downhole gamma logging was conducted through the HSAs, as discussed in Section 2.2.4.

Upon reaching the terminus of the boring, a small amount of Morie No. 01 sand was added through the augers to the base of the borehole to provide a stable footing for the base of the well screen. A 10-foot long, 2-inch diameter, 0.010 slot, schedule 40 polyvinyl chloride (PVC) screen with 10-foot sections of schedule 40 PVC riser pipe was then lowered to the base of the borehole. Additional Morie No. 01 sand was added to fill the annulus as the augers were pulled back to prevent the borehole wall from collapsing. Sand was given sufficient time to settle through the water column; the sand pack thickness was measured frequently to ensure that over-packing did not occur. When the sand pack was at least two feet above the top of the screen, a layer of pure bentonite slurry was added by tremie pipe above the sand. The annulus was then finished with a cement-bentonite grout introduced from the base upward, through a tremie pipe. Piezometer construction details are provided in Appendix C.

Each piezometer was finished with a 6-inch diameter protective surface casing or an 8-inch diameter bolt-down flush-mount curb box, depending on the piezometers' location. Lockable well casing compression caps were provided for each well. All excess soil cuttings and water generated during the drilling activities were moved to the investigation-derived waste (IDW) storage area.

The piezometers were developed by the drilling subcontractor using a submersible pump to improve the hydraulic connection with the aquifer. Development was considered complete when a relatively sediment-free discharge was achieved and the pH, temperature, and specific conductivity remained stable within ten percent. Development water was contained in tanks and moved to the IDW storage area.

2.2.3 Monitoring Well Installation

Thirteen monitoring wells were installed in the residential areas of the site and one well was installed at a potential source. Monitoring well locations are shown in Figure 2-1.

2.2.3.1 Residential Area

From January through March 2002, CDM installed 13 monitoring wells at 6 locations as part of the Phase I Hydroassesment activities. The monitoring wells were installed to allow collection of groundwater samples and to monitor seasonal water level fluctuations to refine the groundwater flow and contaminant transport conceptual model at the site. The monitoring wells will also provide additional information on local stratigraphy of both the Upper Glacial aquifer and the Smithtown Clay unit.

All monitoring wells were advanced with a truck-mounted HSA drilling rig with six 1/4-inch inner diameter HSAs. Total drilled depth ranged from 50 feet to 250 feet bgs; drilling was terminated upon reaching the predetermined total depth. Screen depths were determined after a thorough review of the groundwater screening results from the VPWs and from the results from the residential groundwater sampling round conducted in May and June 2001. Table 2-2 outlines well screen elevations. Split spoon soil samples were not collected during monitoring well installation.

Before introduction of any well construction materials, downhole gamma logging was conducted through the HSAs, as discussed in Section 2.2.4.

Upon reaching the terminus of the boring, the plug was removed from the lead auger with a downhole hammer. Then a small amount of Morie No. 01 sand was added through the augers to the base of the borehole to provide a stable footing for the base of the well screen. A 10-foot long, 4-inch diameter, 0.010 slot, schedule 5 stainless steel screen with 10-foot sections of schedule 5 stainless steel riser pipe was then lowered to the base of the borehole. Additional Morie No. 01 sand was added to fill the annulus as the augers were pulled back to prevent the borehole wall from collapsing. Sand was given sufficient time to settle through the water column; the sand pack thickness was measured frequently to ensure that over-packing did not occur. When the sand pack was at least two feet above the top of the screen, a layer of pure bentonite slurry was added by tremie pipe above the sand. The annulus was then finished with a cement-bentonite grout introduced from the base upward, through a tremie pipe. Monitoring well construction details are provided in Appendix C.

Each monitoring well was finished with an 8-inch diameter bolt-down flush-mount curb box. Lockable well casing compression caps were provided for each well. The well depth designator, S (shallow), I (intermediate), or D (deep) was painted on the concrete directly adjacent to the bolt-down lid of the curb-box. All excess soil cuttings and water generated during the drilling activities were moved to the IDW storage area.

The monitoring wells were developed by the drilling subcontractor using a submersible pump to improve the hydraulic connection with the aquifer. Development was considered complete when a relatively sediment-free discharge was achieved and the pH, temperature, and specific conductivity remained stable within ten percent. Development water was contained in tanks and moved to the IDW storage area.

2.2.3.2 Potential Sources

After evaluation of the VPW groundwater screening results from the potential sources, CDM, with concurrence from EPA, installed one (MW-7) of the eight proposed monitoring wells. Of the 26 VPW samples collected at the potential sources, the only noteworthy detection of PCE was found in sample VPW-5B. This PCE detection led to the installation of MW-7 in the rear of Polo French Cleaners on North Country Road. MW-7 was logged as described in Section 2.2.4 and installed as described in Section 2.2.3.1.

2.2.4 Geophysical Borehole Logging

Upon reaching the terminus of each residential area VPW, monitoring well, and piezometer borehole, field personnel completed gamma logs through the HSAs. Logging equipment consisted of a Delta Epsilon Model 1000AM digital well logger coupled with a Delta Epsilon Model GE 9409 combination downhole probe. The combination probe measures natural gamma (1-inch by 3-inch detector), single point resistance, spontaneous potential, and 16-inch normal resistance. However, only the natural gamma borehole logs were recorded and saved.

Gamma logging was performed to supplement the characterization of site stratigraphy and lithology by indicating the presence of clay layers which may not have been observed during drilling or in split spoon samples. Sand horizons in the Upper Glacial aquifer tend to be well washed, with low amounts of silt and clay in the matrix. Gamma logs are provided in Appendix D.

2.3 Groundwater Sampling

Groundwater samples were collected to define the nature and extent of related contamination in the Upper Glacial aquifer. Screening level groundwater samples were collected at VPWs located in the residential areas and at the potential sources. Two rounds of samples were collected from the monitoring wells; three rounds were collected from the piezometers and four rounds were collected from selected residential wells.

2.3.1 Screening Samples

Groundwater screening samples were collected from VPWs in the residential areas and from the potential sources. Sampling strategies differed between the two areas, as discussed below.

2.3.1.1 Residential Areas

Screening level groundwater samples were collected from each VPW. Once the temporary screen was set at the desired sampling interval, a 2-inch diameter Grundfos Redi-Flo2™ pump was slowly lowered and set one foot below the top of the screen to ensure that the samples were representative of formation groundwater.

Groundwater samples were collected using the low-flow purging and sampling methodology detailed in the Final QAPP. Table 2-3 lists the groundwater screening depths for each VPW. Low flow groundwater sampling sheets are provided in Appendix E.

All screening groundwater samples were analyzed for low detection limit (LDL) VOCs with a one-week turnaround time through the CDM subcontract laboratory, EMSL Analytical, Inc. (EMSL). Groundwater was also analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity.

2.3.1.2 Potential Sources

Screening level groundwater samples were collected from all VPWs except VPW-2 (Avenue Cleaners). The small inner diameter of the Geoprobe rods (less than 2 inches), prohibited the use low-flow sampling techniques outlined in the QAPP (Appendix B for FCR-P2-1 and FCR-P2-3). Once the Geoprobe screen was set at the desired sampling interval, a 1/2-inch diameter dedicated Teflon-lined tube with a ball-check valve was slowly lowered to the base of the screen so groundwater could enter the tube. When groundwater stopped entering the tube, the ball settled to the base, preventing the flow of water out of the tube. The tube was brought to the surface and cut just above the water. Groundwater was poured into the appropriate sample containers.

All screening groundwater samples were analyzed for LDL VOCs with a two-day turnaround time through the CDM subcontract laboratory, Mitkem Corporation. Due to the limited groundwater quantity, no other measurements (e.g., dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity) were taken, as documented in FCR-P2-3 (Appendix B).

2.3.2 Initial Piezometer Samples

An initial round of groundwater samples was collected from the piezometers on June 11 through June 13, 2001. Groundwater samples were collected using the low-flow purging and sampling procedures described in the Final QAPP. Low flow groundwater sampling sheets are provided in Appendix E.

Piezometer samples were analyzed for LDL VOCs with a one-week turnaround time, through the CDM subcontract laboratory, EMSL. Groundwater was also analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity.

2.3.3 Monitoring Well/Piezometer Samples

In March 2002, CDM conducted a full round of groundwater sampling from all monitoring wells and piezometers across the site. Groundwater samples were collected using the low-flow purging and sampling procedures described in the Final QAPP. Low-flow groundwater sampling sheets are provided in Appendix E. Monitoring well samples were analyzed for Contract Laboratory Program (CLP) LDL VOCs, Target Compound List (TCL) semivolitile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) inorganic analytes and cyanide. Groundwater samples were also analyzed by EMSL for chloride, total organic carbon (TOC), pH, alkalinity, total suspended solids/total dissolved solids (TSS/TDS), sulfate (SO_4), nitrate/nitrite (NO_2/NO_3), hardness, ferrous iron, biological oxygen demand (BOD), chemical oxygen demand (COD), ammonia (NH_3), and total Kjeldahl nitrogen (TKN).

Groundwater was analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity. In all but two of the monitoring wells sampled, MW-1S and MW-A, final turbidity measurements were above 10 nephelometric turbidity units (NTUs). The turbidity measurements at the time of sampling ranged from 4.3 to 169 NTUs.

In June 2003, CDM conducted the second full round of groundwater sampling from all installed residential and potential source monitoring wells and piezometers. CDM attempted to sample three additional SCDHS monitoring wells located in the residential area. These monitoring wells could not be sampled because they were constructed of two-inch diameter, schedule 80 PVC, which would not allow the passage of the 2-inch diameter Redi-Flo pump. Round 2 groundwater samples were collected using the low-flow purging and sampling procedures described in the Final QAPP. Low-flow groundwater sampling sheets are provided in Appendix E. Monitoring well samples were analyzed for CLP LDL VOCs, TCL SVOC, pesticides/PCBs, and TAL inorganic analytes and cyanide. Groundwater samples were analyzed for NH_3, TSS/TDS, and NO_2/NO_3 by EPA Division of Environmental Science and Assessment Laboratory (DESA). Groundwater samples were analyzed by

Mitkem Corporation, CDM's subcontract laboratory, for BOD, bromide, COD, hardness, methane/ethane/ethene, sulfate, chloride, hydrogen sulfide (H_2S), TKN, total phosphate and TOC.

Groundwater was analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity. In all but four of the monitoring wells sampled in the second round, MW-1I, MW-2, MW-6S and MW-A, final turbidity measurements were above 10 NTUs. The turbidity measurements at the time of sampling ranged from 8 to 280 NTUs.

2.3.4 Residential Well Samples

Groundwater samples were collected from selected residential wells to further determine the nature and extent of the groundwater contamination. Residential wells were selected based on the following factors:

- Previous sampling indicated that the well was contaminated with PCE at a concentration exceeding the MCL or RAL.
- The well was downgradiant or in close proximity to a well that had a PCE concentration exceeding the MCL or RAL.
- The depth of the well in relation to nearby wells that have PCE concentrations exceeding the MCL or RAL.
- The depth and/or location of the well would provide useful information regarding contaminant migration that may have occurred since the previous sampling round.
- The homeowner contacted EPA and requested sampling of their residential well.

Prior to sampling, well owners were interviewed to ascertain information about their well construction and treatment systems. The information related to the following:

- Well construction, such as well depth, open interval, construction date
- Household treatment systems such as activated carbon, water softeners, or filters
- Size of holding tank
- Location of nearest tap or spigot and location of outside spigot

If a household treatment system was noted and no tap or spigot was positioned before the household treatment system, field staff attempted to reroute water to avoid the treatment system. This was usually accomplished by opening and closing a number of valves in the piping adjacent to the treatment system. After sample collection, additional quantities of groundwater were purged to ensure that untreated water was removed from piping and holding tanks.

Residential well samples were collected from taps or outside spigots nearest to the well head and not subject to mechanical filtering or chemical treatment by household treatment systems. Well construction information was generally limited; therefore, the amount of standing water in the residential wells could not be determined. Taps and spigots were fully opened and a discharge rate was calculated. Twice the amount of water stored in the holding tank was discharged, while water quality parameters (temperature, pH, and conductivity) were measured with a Horiba U-22 meter. When water quality parameters stabilized and sufficient water was removed, the sample was collected. Water at households without holding tanks was pumped for 15 minutes, and, when water quality parameters stabilized, the sample was collected. After purging, the flow was reduced to 250 milliliters/minute (ml/min) and the VOC sample was collected, as detailed in the Final QAPP.

First round residential well samples were collected in July and August 1999 and analyzed for LDL VOCs and pesticides/dacthal by CDM's subcontract laboratory. Table 2-4 lists residential wells sampled in 1999.

Second round residential well samples were collected in May and June 2001 and analyzed for LDL VOCs through the CLP. Table 2-5 lists residential wells sampled in 2001.

A limited third round of residential samples was collected during the field investigation conducted in early 2002. These residential samples were analyzed for LDL VOCs through the CLP. Table 2-6 lists residential wells sampled in 2002.

Fourth round residential well samples were collected in April, May, and June 2003 and analyzed for LDL VOCs through the CLP. Table 2-7 lists residential wells sampled in 2003.

2.4 Spring/Seep Surface Water and Sediment Sampling

CDM collected one round of spring/seep surface water and sediment samples from locations adjacent to Stony Brook Harbor and the Nissequogue River. The objective of the sampling was to determine if contaminated groundwater discharges to either water body. The water and sediment samples were co-located, with the water sample collected first. In order to provide background data for use in the RI and risk assessments. CDM collected spring/seep surface water and spring/seep sediment samples from two background locations that were anticipated, based on available information, to be free from site impacts and site-specific contamination. The spring/seep surface water and sediment sample locations are shown in Figure 2-2 and described in Table 2-8.

Along both Stony Brook Harbor and the Nissequogue River, numerous groundwater discharge seeps were noted during the initial reconnaissance. These seeps are exposed only at low tide; therefore, samples were collected at, or just after, slack low tide to insure that the sample collected represented discharging groundwater.

In April 2001, CDM collected 11 spring/seep surface water (SWS) samples and 12 spring/seep sediment (SSS) samples. Samples SWS-1 through SWS-3 and SWS-7 were collected on the western shore of Stony Brook Harbor. Two background spring/seep surface water samples, SWS-5 and SWS-6, were collected along the eastern shore of Stony Brook Harbor. Samples SWS-8 through SWS-12 were collected along the eastern shore of the Nissequogue River.

Spring/seep sediment samples SSS-1 through SSS-12 were co-located, collected immediately after the associated surface water sample. One location, SSS-4 has no associated spring/seep surface water sample because further investigation determined that groundwater was not discharging into this area of standing water. All spring/seep surface water and sediment sample locations are shown in Figure 2-2 and described in Table 2-8.

Dunton Spring is located approximately 100 feet west of Stony Brook Harbor, north of 3 Harbor Road. Throughout the field investigation, water was discharging through a garden hose at a rate of about 5 gallons per minute. The hose is located a few feet from an old, roofless stone structure. A water sample (DSW-1) was collected from the garden hose. No associated sediment sample was collected. During Round 2 residential well sampling, the property owner at 3 Harbor Road indicated that the discharge from the garden hose is not a spring, but overflow from the homeowner's artesian well. The owner stated that a pipe runs from the old stone structure to his residential supply well. When his well is not pumping, artesian pressure forces groundwater through buried piping to the old spring house. Other interviews with long time area residents indicated that at one time a perennially flowing spring originated from the ground inside the stone structure.

Surface water was also analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity. Salinity measurements were taken on all surface water samples except those from Stony Brook Harbor. All readings were recorded in the field logbook.

Co-located sediment samples were collected from the surface to six inches bgs using a decontaminated stainless steel trowel. The volatile organic sample was collected first, directly from the sampling trowel into Encore™ sample containers. The use of Encore™ sample containers was not detailed in the Final QAPP, resulting in FCR-003 (Appendix B). Sediment for the remaining parameters was placed in a decontaminated stainless steel mixing bowl and thoroughly homogenized prior to filling sample containers. All other procedures detailed in the Final QAPP were followed during sample collection.

Spring/seep surface water samples were analyzed for TCL/TAL parameters through the CLP; chloride, TOC, pH, alkalinity, TSS/TDS, SO_4, NO_2/NO_3, hardness, ferrous iron, BOD, COD, NH_3, TKN, and dacthal were analyzed by EMSL, CDM's subcontract laboratory.

Spring/seep sediment samples were collected for TCL/TAL parameters through the CLP; TOC, pH, percent moisture, and particle size were analyzed by EMSL, CDM's subcontract laboratory.

Upon completion of sampling, each location was marked with a wooden stake and flagging, and an indelible marker was used to mark the sample location on the stake.

2.5 Wetland Surface Water and Sediment Sampling

CDM collected one round of wetland surface water and sediment samples adjacent to the western shore of Stony Brook Harbor and behind 54 Harbor Hill Road. Samples were collected during low tide. The sediment samples were collected in an area adjacent to the surface water samples. These samples were collected to determine if groundwater discharges to the wetlands, and to define the nature and extent of contamination in the wetland sediment. The wetland surface water and sediment sample locations are shown in Figure 2-2 and described in Table 2-9.

Initial sampling reconnaissance determined that the wetlands adjacent to the western shore of Stony Brook Harbor and behind 54 Harbor Hill Road are both tidal in nature. The wetlands drain through a corrugated pipe under a bridge on Harbor Road. At high tide, water from Stony Brook Harbor flows into the wetlands behind 54 Harbor Hill Road. At low tide, water drains from the wetlands into Stony Brook Harbor.

In April 2001, CDM collected 9 wetland surface water (SWW) samples and 30 wetland sediment (SDW) samples. Wetland surface water sample SWW-1 was on the north side of the Harbor Road bridge, while SWW-2 through SWW-9 were collected from the wetlands behind 54 Harbor Hill Road. No background wetland surface water samples were collected.

Sediment samples SDW-1 through SDW-5 were collected from the wetlands on the western shore of Stony Brook Harbor. Wetland sediment samples SDW-7 (co-located with SWW-1) was collected from the wetlands just north of the Harbor Road bridge. Wetland sediment samples SDW-8 through SDW-15 (co-located with SWW-2 through SWW-9) were collected from the wetlands behind 54 Harbor Hill Road. A background sediment sample (SDW-6) was collected from the wetlands on the eastern shore of Stony Brook Harbor. A background surface water sample was not collected at this location because at the time of sampling no standing surface water was noted by the field crew. The procedures detailed in the Final QAPP were followed during sample collection.

Surface water was also analyzed in the field for dissolved oxygen, oxidation-reduction potential, pH, temperature, conductivity, and turbidity. All readings were recorded in the field logbook.

Sediment samples were collected from two depths: the surface to 6 inches bgs and 18 to 24 inches bgs. The first horizon was collected using a decontaminated stainless steel trowel; data will be used evaluate the presence of site-related contamination in the active ecological zone. The next foot of soil was then removed with a decontaminated stainless steel hand auger, advanced to 18 inches bgs. The second interval sample was collected with the same procedure as the top interval. The deeper analytical data will be used to determine the vertical extent of site-related contamination. The volatile organic sample was collected first, directly from the sampling trowel into Encore™ sample containers. The use of Encore™ sample containers was not detailed in the Final QAPP; FCR-003 (Appendix B) was recorded for this change. Sediment for the remaining parameters was placed in a decontaminated stainless steel mixing bowl and thoroughly homogenized prior to filling sample containers. All other procedures detailed in the QAPP were followed during sample collection.

Wetland surface water samples were analyzed for TCL/TAL parameters through the CLP. Chloride, TOC, pH, alkalinity, TSS/TDS, SO_4, NO_2/NO_3, hardness, ferrous iron, BOD, COD, NH_3, TKN, and dacthal were analyzed by EMSL, CDM's subcontract laboratory.

Wetland sediment samples were analyzed for TCL/TAL parameters through the CLP. TOC, pH, percent moisture, and particle size were analyzed by EMSL, CDM's subcontract laboratory.

Upon completion of sampling, each location was marked with a wooden stake and flagging, and an indelible marker was used to mark the sample location on the stake.

2.6 Storm Drain Sampling

CDM collected storm drain sediment samples from catch basins and storm drains in the Smithtown area. The objective of the storm drain sediment sampling was to determine if the drains were used to dispose of contaminated material associated with the site. The storm drain sediment sample locations are shown in Figure 2-2 and described in Table 2-10.

In April 2001, CDM collected 13 storm drain sediment (SDS) samples. Nine samples were collected from storm drains and catch basins on private roads in the Village of Nissequogue; four samples were collected from storm drains and catch basins on public roads in the Village of Head of the Harbor. Sampling at six other proposed drain/basin locations was not conducted because proposed basins could not be located or the basin covers could not be removed.

Storm drain sampling was completed using a decontaminated stainless steel hand auger. Field personnel did not enter any storm drain or catch basin. Storm drain sediment samples were collected from the sediment surface to six inches below the surface. Sediment was removed from the hand auger with a decontaminated stainless steel trowel. The volatile organic sample was collected first, directly from the sampling trowel into Encore™ sample container. The use of Encore™ samplers was documented in FCR-003 (Appendix B). Sediment for the remaining parameters was placed in a decontaminated stainless steel mixing bowl and thoroughly homogenized prior to filling sample containers. All other procedures detailed in the QAPP were followed during sample collection.

Storm drain sediment samples were analyzed for TCL/TAL parameters through the CLP. TOC, pH, percent moisture, and particle size were analyzed by EMSL, CDM's subcontract laboratory.

2.7 Potential Sources Sanitary/Septic System Sampling

CDM collected sanitary waste samples from all 11 septic systems of the potential groundwater contamination source facilities. The objective of the septic system sampling was to determine if the facilities were discharging VOCs that were similar to the contamination identified in the residential areas. The sanitary/septic wastewater and sludge sample locations are shown in Figure 2-2 and described in Table 2-11.

2.7.1 Wastewater Samples

In February 2003, CDM collected ten wastewater samples (WW) samples. A wastewater sample was not collected at Sal's Auto Body (VPW-4); the septic system services an unoccupied building, so the system received no sanitary waste at the time of sampling. At all other potential source facilities, wastewater samples were collected while sanitary wastes were actively being discharged to the septic systems.

Field personnel did not enter the septic system. Sanitary wastewater was collected by lowering a disposable Teflon bottom fill bailer. The bailer was then brought to the surface and the samples poured into the appropriate bottlewear. All procedures detailed in the QAPP were followed during sample collection.

Sanitary wastewater samples were analyzed for TCL VOCs, TCL SVOCs, and pesticides/PCBs by EPA's DESA laboratory. TAL metals and cyanide were analyzed through the CLP.

2.7.2 Sanitary Sludge Samples

Nine sludge (SL) samples co-located with the wastewater samples were collected in February 2003. Sanitary sludge samples could not be collected at Avenue Cleaners (VPW-2) and The Cleaners (VPW-9) due to limited volume of sludge. As the sample was collected at these locations, the sludge was washed out of the hand augers by standing wastewater. No sludge was found at Sal's Auto Body (VPW-4), a sample of native sand and gravel was sent for analysis. Discussions with the property owner indicated the building has not been occupied since the first SCDHS sampling in 1997/1998. All other sanitary sludge samples were collected from active facilities which were discharging sanitary wastes to their respective systems.

Sanitary sludge sampling was completed using a decontaminated stainless steel hand auger. Field personnel did not enter any septic system. Sludge samples were collected from the sludge surface to six inches below the surface. On occasion the sampling crew needed to advance the hand auger deeper to incorporate course grained sand

and gravel. This sand and gravel acted as a plug which prohibited the sludge from running out of the hand auger as the sludge was pulled through the standing wastewater. The sand and gravel plug was removed from the bottom of the hand auger and returned to the septic system. The remaining sludge was removed from the hand auger with a decontaminated stainless steel trowel and placed in a decontaminated stainless steel mixing bowl. The VOC samples were collected first, directly from the mixing bowl into one four-oz. jar with a Teflon-lined lid. This was in deviation of the QAPP. However, in anticipation of the sludge consistency, an FCR was prepared that changed VOC sample containers from Encore samplers to the four ounce jars (FCR-P2-4 Appendix B). This request was also approved by CDM's Analytical Services Coordinator (ASC). Sludge for the remaining parameters was thoroughly homogenized prior to filling the remaining sample containers. All other procedures detailed in the QAPP were followed during sludge collection.

Sanitary sludge samples were analyzed for TCL VOCs, TCL SVOCs, and pesticide/PCBs by EPA's DESA laboratory. TAL metals and cyanide were analyzed through the CLP.

2.8 Wetland Continuous Water Level Measurements

Continuous water level measurements were to be conducted in the wetlands south of Stony Brook Harbor. During the initial site reconnaissance, it could not be determined if the wetlands south of Stony Brook Harbor were influenced just by tidal oscillations or by tidal oscillations and groundwater discharge into the wetland. However, during the field investigation, the field team leader noted that surface water flowed from the wetlands into Stony Brook Harbor at low tide. At high tide, water flowed from the Harbor through a culvert under Harbor Road, into the wetlands.

Flow is controlled by a weir at the south end of the culvert. The elevation at the base of the culvert allows high tide from Stony Brook Harbor to flow through the culvert into the wetland. When the tide drops to the same elevation as the top of the weir, water from the harbor stops flowing into the wetlands. As the tide continuous to drop, the flow reverses, with water flowing out of the wetlands into Stony Brook Harbor. The weir then holds the surface water level in the wetlands at a fixed elevation; the only flow past the weir is due to the discharge of groundwater to the surface in the wetlands.

It was determined that the continuous water level measurements detailed in the Work Plan were not needed, since these visual observation indicated that the wetlands are both influenced by diurnal tidal fluctuations and groundwater discharge at low tide. Photos of surface water flow adjacent to the culvert are in Appendix F.

2.9 Synoptic Water Level Measurements

Synoptic water level measurements were collected from site piezometers and monitoring wells to develop equipotential maps for the Upper Glacial aquifer. The data was used to determine horizontal and vertical flow gradients and were evaluated in light of other surface and subsurface hydrogeologic information to develop a comprehensive hydrogeologic conceptual model for the site. Measurements are included in Table 2-12.

One round of synoptic water level measurements was collected on June 11, 2001 from the five newly installed piezometers. Two synoptic rounds were completed on March 19, 2002 and June 11, 2003 from all available monitoring wells and piezometers. The measurements were collected with a Solinst 200-foot electronic water level indicator. Static water levels in the piezometers and monitoring wells were measured to the nearest 0.01 foot from the surveyor's mark, a groove filed into the top of the inner PVC or stainless steel riser casing. All measurements, including depth to water and total depth of the wells, were recorded in the field logbook and on synoptic water level measurement data sheets.

2.10 Elevation/Location Survey

CDM utilized a RAC II Team firm with New York licensed surveyors to measure the elevations and locations of all sampling points during the field investigation. Measurements of sample points were collected with a Global Positioning System (GPS). Elevation measurements at the monitoring wells and piezometers were collected on both the steel curb-box cover and the PVC/SS riser, with an accuracy of 0.01 foot. Ground elevations were collected at all other sampling points. Table 2-2 shows the elevation measurements of the monitoring wells and piezometers.

2.11 Ecological Investigations

CDM conducted walkover ecological investigations at the site, to determine habitats, receptor species, and identify vegetation for use in the SLERA. CDM also gathered information on federal and/or New York State rare, threatened, and endangered species in the area.

2.12 Investigation Derived Waste

CDM procured the services of two IDW disposal subcontractors to dispose of all site generated waste. Soil generated during drilling was stored in 20-cubic yard roll-off containers at the decontamination/staging area. All monitoring well development water and sample purge water were stored in a 4,000-gallon tank stored at the decontamination/staging area. The IDW subcontractors sampled all roll-offs and purge water to determine Resource Conservation and Recovery Act (RCRA) characteristics for disposal. All soil and purge water generated during the investigation was determined to be non-hazardous and properly disposed of by the IDW subcontractors.

Section 3
Physical Characteristics of the Study Area

3.1 Topography

The topography of the northern part of Long Island in which the site is located is characterized by two lines of hills, which are glacial terminal moraines. Maximum altitudes reach 400 feet above mean sea level (amsl); the moraines converge to the west of Smithtown in Nassau County. The southern line of hills, the Ronkonkoma moraine, extends eastward to form the South Fork of Long Island (Franke and McClymonds 1972). The northern chain of hills, the Harbor Hill moraine, extends eastwards to form the North Fork. The Harbor Hill moraine, on which the site is located, forms a prominent ridge, frequently dissected by steep-sided valleys, found along the northern coast of Long Island. During a drop in sea level after the retreat of the ice, approximately 10,000 years ago, deep landward erosion by north-flowing streams created deeply incised valleys which were drowned after sea level rose. The north shore's characteristic headland and bay morphology is a result of this process. Headland wave erosion has steepened the north-facing cliffs to nearly vertical.

The site is located on the crest and north- and south-facing flanks of the Harbor Hill moraine. According to the United States Geological Survey (USGS) *Saint James* 1:24,000 topographic quadrangle, the maximum elevation is 228 feet amsl at the crest of a roughly northeast-southwest trending ridge across the north-central portion of the site. North of the morainal ridge, the general topographic surface slopes down to approximately 100 feet amsl at the northern margin of the site. A gentler slope drops down to about 150 feet amsl at the southern limit of the site. Site topography is shown on Figure 1-2. Deep post-glacial fluvial incision of the moraine formed Stony Brook Harbor to the east and the Nissequogue River estuary to the west, bringing these areas close to sea level.

3.2 Drainage and Surface Water Hydrology

The Smithtown site is located within the Nissequogue River watershed system (Suter *et al.* 1949; Figure 3-1). The Nissequogue River estuary forms the western boundary of the site, with Stony Brook Harbor to the northeast. The Nissequogue River estuary is less than 100 feet wide at the southwestern edge of the site but widens downstream to over 2,000 feet at the northwest corner of the site. From the head of Stony Brook Harbor, the harbor widens to more than 2,000 feet at the northeastern corner of the site. The Nissequogue River flows northwest an additional two miles beyond the site where it discharges into the waters of Smithtown Bay and Long Island Sound. Stony Brook Harbor is a large tidal inlet which is not fed by significant surface runoff (i.e., rivers or streams). No surface water bodies are present on the site, except for a few small ponds that are likely ornamental or are used by a horse farm in the north-central portion of the site.

Both the adjacent reaches of the Nissequogue River and Stony Brook Harbor are influenced by semi-diurnal tidal variations in water level. Extensive mud and sand flats are exposed at low tide. Net flow direction of waters in the Nissequogue River is dominantly towards Long Island Sound, especially during ebb tides; however, a subordinate flood tide flow may retard the river's net seaward discharge. The dominant current direction within Stony Brook Harbor is controlled by tidal oscillations rather than an effluent stream flow from the land. Tidal water level data were gathered from the National Oceanographic and Atmospheric Administration's (NOAA's) tidal bench mark on-line database (http://www.opsd.nos.noaa.gov/bench/ny) for Port Jefferson Harbor, a large tidal inlet located approximately four miles east of Stony Brook Harbor and the nearest location where accurate tidal data could be obtained. The average tidal range (measured between mean high and low water levels) for the period 1960 to 1978 was 6.6 feet. Port Jefferson Harbor is of a similar size and geometry to Stony Brook Harbor; therefore, tidal range amplification effects are likely to be similar. Average tidal ranges along the Long Island Sound coast are only about 2.5 feet, as noted from the NOAA bench mark database.

Numerous springs discharge groundwater from the shallow unconfined aquifer to the rivers, inlets, and bays along the coast of Long Island (Lubke 1964). The flow of individual springs is generally less than 10 gallons per minute (gpm); the aggregate discharge of springs and seeps from the site to adjoining water bodies is not known, but may be considerable. Dunton Spring is located on the site, at the southern end of Stony Brook Harbor. Significant discharge of groundwater from the deeper aquifer zones likely occurs through upward leakage to the sea bottom of Long Island Sound further offshore.

In addition, the area of the site has been incised by steep-sided valleys which contain ephemeral streams; visual observations suggest these streams only flow during significant stormwater surface runoff events. The ephemeral stream valleys likely were eroded during peri-glacial surface runoff during permafrost conditions when little or no infiltration of precipitation could occur.

A small wetland (approximately one acre) is located at the southern end of Stony Brook Harbor, where a small stream enters a low-lying area next to the inlet. Perennial wetland vegetation and standing water are present.

3.3 Geology and Hydrogeology

The regional and site-specific geology and hydrogeology are summarized in the following sections.

3.3.1 Geology

The site is located within the Atlantic Coastal Plain Physiographic Province. A history of coastal submergence and emergence spanning the Cretaceous Period, significant differential erosion during the Cenozoic, and glaciation during the Quaternary is reflected in the present day regional and local geology of Long Island (Lubke 1964).

3.3.1.1 Regional Geology

The regional geology of Long Island is characterized by a southeastward-thickening wedge of unconsolidated Late Cretaceous sediments unconformably overlying a gently-dipping basement bedrock surface, as depicted in Figure 3-2. Basement rock is composed of Precambrian to Early Paleozoic igneous or metamorphic consolidated bedrock. The unconsolidated sedimentary wedge unconformably overlies the bedrock, and is comprised of the fluvio-deltaic Raritan and Magothy formations. Thicknesses range from zero feet beneath Long Island Sound to the north, on the submerged western margin of the Coastal Plain, to more than 2,000 feet under the southern shores of Long Island. The Late Cretaceous sedimentary wedge deposits are unconformably overlain by glacial Pliocene(?) and Pleistocene deposits (Franke and McClymonds 1972). A lithologic description of these geologic units is presented in Figure 3-3, and a brief discussion of the depositional sequence is presented below.

Cretaceous

The Raritan Formation is the basal unit of the Late Cretaceous sedimentary wedge, and rests unconformably on bedrock. It is made up of the Lloyd Sand Member and the overlying Raritan Clay Member. The Raritan Clay is the most widespread hydrologic confining layer on Long Island. The contact between the two members is gradational. The Lloyd Member's updip erosional pinchout is located a few miles north of the Smithtown area, under Long Island Sound. The Raritan Clay's updip erosional pinchout generally is located subparallel to the northern coast of Suffolk County.

The Magothy Formation unconformably overlies the Raritan Formation, and is the upper unit of the Late Cretaceous sedimentary wedge. The contact is commonly marked by a change from the solid clays of the Raritan Clay member to coarse sands and gravels of the basal unit of the Magothy. The updip erosional pinchout of the Magothy also is located subparallel to the northern coast.

Cretaceous - Tertiary/Quaternary Boundary

After the Cretaceous, deep erosion of the land surface took place as a response to fluctuations in sea level. Geological evidence indicates that lower sea levels exposed the entire Atlantic continental margin during the Tertiary, which would have promoted rejuvenation and deep incision of rivers and streams across the Coastal Plain (Fulthorpe, *et al.* 1999). Later deposition of abundant fluvial and glacial clastic deposits during the Pliocene(?) and Quaternary filled these incised buried valleys. The top of the Cretaceous sequence is marked by a highly irregular erosion surface upon which rests Quaternary deposits of Pleistocene and, in some places, Tertiary Pliocene (?) age.

The structural contour map of the top-Cretaceous for the Smithtown area is presented in Figure 3-4, constructed from a database of well information obtained from the USGS, SCDHS, and SCWA, based on a published map by Buxton *et al.* (1989). The structural contour map indicates the top of the Cretaceous unconformity surface is deeply incised by a predominantly north-northwest and south-southeast trending paleovalley. The Smithtown site is centrally located within the paleovalley. The top-Cretaceous surface plunges steeply (almost vertically) westwards towards the axis of the paleovalley, from the village of Stony Brook towards Head of the Harbor and

Stony Brook Harbor. The unconformity surface is at an elevation of approximately 50 feet below msl in Stony Brook. On the western side of the paleovalley, the erosion surface dips steeply eastwards from the villages of San Remo and North Smithtown, where the top-Cretaceous is at approximately 150 feet below msl.

Undifferentiated Pleistocene Deposits
Deposits of Pleistocene age mantle the Cretaceous formations in the Smithtown area. Undifferentiated Tertiary gravels and clays may exist within buried valleys in northern Long Island.

Upper Pleistocene Deposits
The thickness and distribution of the Upper Pleistocene Glacial Deposits were controlled by the older, now buried paleotopography discussed above. The pattern of streams and river valleys that dissected the surface of Long Island during the Cenozoic likely was later modified by Pleistocene overriding ice sheets and meltwater erosion and deposition. Although the main buried valleys generally slope northward, major tributaries are oriented east-west, presumably along softer, less resistant beds in the Magothy.

The Smithtown Clay is an extensive clay unit within the Upper Pleistocene Deposits, and has been identified in several wells in the buried valley beneath Smithtown (Lubke 1964; Krulikas and Koszalka 1983). The Smithtown Clay Unit (informal usage) is a glaciolacustrine deposit of the later Wisconsin glacial stage (e.g., Lubke 1964, Krulikas and Koszalka 1983). The clay unit was deposited in a large post-glacial lake or series of lakes in the intermorainal area during the Upper Pleistocene, during wasting of the Ronkonkoma ice sheet. The clay layer underlies almost all of the Smithtown site (Lubke 1964) . The upper surface lies above sea level and reaches a maximum elevation of 70 feet amsl. Krulikas and Koszalka (1983) revealed the extent of the Smithtown Clay Unit could be traced across much of northern Suffolk County (Figure 3-5). The clay unit generally is over 50 feet thick over a relatively large part of northern Suffolk County, but is over 100 feet just north of the Ronkonkoma moraine and just south of the Harbor Hill moraine in the town of Brookhaven.

The Upper Glacial Deposits unconformably overlie the Magothy and consist of a complex succession of glacial outwash deposits, glacio-lacustrine clays, at least and possibly two sheets of glacial till, possible reworked Magothy deposits, and other ice contact deposits within the Harbor Hill Moraine.

3.3.1.2 Site-Specific Geology
Site-specific geologic information includes data acquired during the RI field investigations. From April 2001 through May 2003, 23 groundwater screening VPWs, 6 piezometers, and 14 monitoring wells were installed for the RI field investigations. Gamma logs were run in 12 of the VPWs, and in all of the piezometers and monitoring wells. The drilling and logging activities provided additional information on local stratigraphy of the glacial till and Smithtown Clay units of the Upper Pleistocene Deposits. Monitoring well and piezometer construction logs are provided

in Appendix C; gamma logs are provided in Appendix D. Local geologic information from other cited sources is also included.

Raritan and Magothy Formations

Smolensky *et al.* (1989) indicate that the Raritan Clay is exposed at the unconformity surface beneath the Smithtown site, defining a lower limit of deep contaminant migration. However, little data are available to confirm the presence of the Raritan Clay beneath the site. Within the vicinity of the site, published well data indicate that the Magothy has been omitted due to erosion (Smolensky, et al. 1989).

Cretaceous - Tertiary/Quaternary Boundary

The top of the Cretaceous unconformity is deeper than 400 feet below msl within the area of the site. Well data from those wells located within the boundary of the site and in its vicinity, within the center of the paleovalley, do not penetrate deep enough to encounter a top-Cretaceous erosion surface. Published Suffolk County well data (Buxton *et al.* 1989) show that changes in altitude of the top-Magothy can be dramatic over short distances in the Smithtown vicinity. These and other well data suggest that a roughly north-northwest to south-southeast trending buried valley, possibly eroded by an ancestral Nissequogue River, lies beneath the Nissequogue River and Stony Brook Harbor area. It is likely that the post-Cretaceous erosion surface is encountered below the site at a depth of more than 400 feet below msl. Tertiary deposits have been described elsewhere on Long Island; however, none have been recognized beneath the site.

Pliocene and Pleistocene Deposits

The Upper Pleistocene Deposits in the Smithtown area include:

- At least one and possibly two sheets of glacial till deposited as ground moraine by continental ice
- Ice contact deposits within the Harbor Hill terminal moraine
- A considerable thickness of glaciofluvial deposits laid down by meltwater streams on outwash plains and spillways during the advance, stagnation, and recession of the ice
- Discontinuous bodies of silt and clay (including the Smithtown Clay) deposited in glacial lakes (Lubke 1964)

Published data suggest the Smithtown Clay is almost continuous across much of the Smithtown. Figure 3-6 is a cross section showing the rapid changes in thickness of the Smithtown Clay along a transect from south to north across the Smithtown site. The extent of the Smithtown Clay Unit in and around the Smithtown site is shown on Figure 3-7. Existing well data suggest the surface of the clay unit dips gradually to the north or northwest from an elevation of approximately 30 to 50 feet above msl south of the site, in the Hamlet of St. James, to ±40 to 60 feet below msl north of the site, in the Village of Nissequogue (Figures 3-6 and 3-7).

3.3.2 Hydrogeology

This section describes the regional and site-specific hydrogeologic characteristics of stratigraphic units in the area.

3.3.2.1 Regional Hydrogeology

Six major hydrogeologic units have been identified beneath Long Island, as described in Figure 3-3. consolidated bedrock, the Lloyd aquifer, the Raritan confining unit, the Magothy aquifer, the Smithtown Clay, and the Upper Glacial aquifer. The unconsolidated depositional units of Late Cretaceous to Pleistocene age which overlie the virtually impermeable basement bedrock constitute the regional aquifer system within the Long Island Coastal Plain. The Lloyd aquifer occurs over the entire island, and is confined by the overlying Raritan confining unit. The Magothy and Upper Glacial aquifers overlying the Raritan confining unit are found across most of Long Island and can be confined, semi-confined, and unconfined aquifers, depending on the presence of clay layers, such as the Smithtown Clay. Combined, these two aquifers are the most productive and heavily utilized groundwater resource on Long Island.

Magothy Aquifer

Flow in within the Magothy aquifer is controlled by regional-scale flow systems. Calculations of the flow velocity, as presented by Lubke (1964), ranged from 0.4 to 0.6 feet/day. According to McClymonds and Franke (1972), average transmissivities are highest for the Magothy aquifer (240,000 gpd/foot). Average hydraulic conductivities are 1,300 gpd/square foot.

Smithtown Clay/Upper Glacial Aquifer

The shallow unconfined water table aquifer over most of Long Island is within the Upper Glacial aquifer unit. Groundwater movement can be deduced from water table contour maps, such as that by Hibberd *et al.* (1993). In general, water north of the regional groundwater divide, which trends east-west across the island, moves northward towards Long Island Sound, and water south of the divide flows southward toward the Atlantic Ocean (Figure 3-8). The rate of horizontal flow in the Upper Glacial aquifer is controlled by the hydraulic gradient of the water table and by the water-transmitting characteristics of the aquifer material. Horizontal velocity in the upper glacial aquifer generally ranges from 1 to 2 feet/day; vertical flow is much slower, especially where confining layers restrict the upward or downward movement of water. Residence times in the Upper Glacial aquifer generally are less than 30 years (Franke and Cohen 1972). Transmissivity within the Upper Glacial aquifer is 200,000 gpd/foot. Average hydraulic conductivities are high (1,700 gpd/square foot) (McClymonds and Franke 1972).

Depth to Groundwater

Depth to groundwater on Long Island is less than 150 feet in most areas, ranging from zero feet along the shores and stream channels to greater than 250 feet in the extreme northwestern part of Suffolk County. The depth to groundwater primarily is determined by the island's glacial geology and associated topographic features, but also is affected by local and temporal variations in precipitation and groundwater withdrawals. The water table is a subdued expression of the island's topography; thus, the depth to water generally is greater in the topographically high areas, such as those near the north shore and east-west trending glacial moraines that form the "spine" of the island, than in low-lying areas, such as stream valleys and most of the southern half of the island. Figure 3-9 depicts the regional depth to water (Simmons 1989). The map does not include local variations in water table depth caused by perched groundwater conditions.

Groundwater Recharge

All of the groundwater on Long Island is derived from precipitation. The volume of water that percolates down to the water table and recharges the aquifers is the residual of the total precipitation not returned to the atmosphere by evapotranspiration or lost to the sea by runoff. Unconfined aquifers are recharged by infiltration in outcrop areas; confined aquifers are recharged by vertical leakage through overlying "leaky" confining units. Owing to the permeable nature of the surface soils and substrata and the generally gentle slope of the land surface, infiltration is high. Areas of the site which are covered by impervious surfaces such as roads, surface runoff is directed to open bottom storm water recharge catch basins. The rate of natural recharge varies greatly from season to season and from year to year, depending on such factors as evapotranspiration, air and soil temperatures, soil-moisture conditions, and the nature and seasonal distribution of precipitation.

Natural replenishment of the intermediate and deeper aquifers is achieved by downward movement of water from the shallow aquifer through discontinuities in clayey and silty beds and by the slow movement of water through the aquicludes. Where a downward head differential exists between the shallow and intermediate aquifers, generally delineated by the 60-foot amsl water table contour, downward movement of water from the shallow to the intermediate aquifer takes place (Lubke 1964). The area defined by the 60-foot water table contour is located southeast of the site in the hamlet of St. James, and defines an area where the intermediate aquifer is being recharged.

Groundwater Discharge

Regional discharge is typically into streams and rivers (via upward leakage through confining units or confined aquifers), and ultimately to Long Island Sound. Groundwater discharges naturally as flow from coastal springs, submarine discharge to the Sound, coastal inlets and estuaries, and effluent seepage into streams draining into the Sound. Discharging groundwater also can be lost through evapotranspiration in the vadose zone. Evapotranspiration and submarine seep discharges are substantial on Long Island; however, in the context of this investigation, the nature of springs that may discharge to the surface water bodies across the site are of more significance with regard to potential impact to the population. The flow of individual springs has been observed generally to be less than 10 gpm, but aggregate discharge from such springs may amount to several million gallons a day for the area of the site.

3.3.2.2 Site-Specific Hydrogeology

Within the Smithtown site vicinity, discrete aquifers or water-bearing units have been recognized (Lubke 1964). Each unit may comprise parts of one or more of the lithostratigraphic formations described in the regional hydrogeology section above. In addition, locally-occurring perched water bodies have been recognized at several localities in the Smithtown area. The aquifers have been defined on the basis of their hydraulic continuity, deduced from the behavior of water levels in wells, and by the degree of confinement of the water in the aquifer indicated by the presence or absence of extensive confining beds or aquicludes. Lubke (1964) separated the groundwater reservoir into three mapable units: shallow, intermediate, and deep aquifers. Figure 3-3 presents the correlation between the local aquifer designation and the regional geologic units. The shallow and intermediate aquifers are separated only imperfectly by discontinuous silt and clay bodies. The intermediate and deep aquifers are separated much more effectively by a silt and clay aquiclude (Raritan Clay), which is thick and aerially extensive. Consequently, water is interchanged much more readily between the shallow and intermediate aquifers than between the intermediate and deep aquifers. This RI characterized the nature and extent in the unconfined aquifer system. The characteristics and limits of the perched groundwater bodies, the two aquifers, their related water table and piezometric surfaces, and the nature of water level fluctuations in wells tapping these aquifers are described in the following sections.

Intermediate Aquifer

The intermediate aquifer includes most of the Pleistocene and possibly some of the Tertiary (?) deposits that may lie in the deeper parts of buried paleovalleys and the majority of the Magothy Formation (where it exists) to the top of the confining clay unit of the Raritan Formation. Average hydraulic conductivity within the Magothy Formation is 1.85×10^{-2} centimeters per second (cm/sec) (McClymonds and Franke 1972). The intermediate aquifer occurs beneath the entire land area and possibly beneath the southern margin of the Sound. The aquifer is wedge shaped, and thickens progressively towards the south and southeast. The top of the aquifer is irregular and is marked by discontinuous clay bodies within the deposits of the Plio(?)-Pleistocene succession, Smithtown Clay Unit, or Magothy Formation. In the Smithtown area, the depth to the top of the intermediate aquifer varies between about 60 feet to almost 200 feet below msl. The lower limit of the aquifer, which coincides with the top of the underlying clay member of the Raritan Formation, ranges from 100 feet to more than 700 feet below msl. The depth of the lower surface of this aquifer at the Smithtown Site is more than 400 feet below msl. Completion logs and gamma ray logs from SCWA wells at the Edgewood Avenue well field, along the southern portion of the site, encountered a possible Raritan Clay layer at ±700 below msl. Water in the aquifer is commonly confined and is more pronounced in its deeper parts.

The morphology of the piezometric surface of the intermediate aquifer is a somewhat subdued expression of the water table (Lubke 1964, Figure 3-10). A prominent depression on the surface is shown by the southward bending of the water level in the valley of the Nissequogue River. The intermediate aquifer's piezometric surface is commonly 5 to 25 feet lower than the water table. This relationship is reversed towards the north shore where the piezometric surface is from 5 to 10 feet higher than the water table (Lubke 1964). Monitoring well MW-5D is artesian, with a head approximately 6 feet above the ground surface (20 feet above msl); it flows freely at a rate of about 5 gpm. A number of residential wells are known to be artesian and are presumed to be set in the intermediate aquifer.

The Smithtown Clay unit acts as an effective aquiclude between the shallow and intermediate aquifers where it exists, causing pronounced differences in head observed in wells located east of St. James. For example, one well screened above the clay layer (at total depth of 48 feet bgs) has a water level at about 64 feet amsl, and a well screened in the intermediate aquifer (at between 181 and 196 feet bgs) has a water level of 50 feet amsl. Within the area of the site in which the Smithtown Clay is absent, the outwash sands and gravels of the intermediate aquifer are likely to be unconfined and therefore possess the same hydraulic head as the overlying outwash sands and gravels of the shallow aquifer.

Seasonal fluctuations in water levels within the intermediate aquifer due to seasonal recharge variations commonly exhibit a lag of several months behind the water level changes recorded in the shallow unconfined aquifer. Groundwater flow in the intermediate aquifer generally is horizontal; however, north of the 30 foot amsl piezometric contour south of St. James and the Smithtown site, there is commonly an upward head differential between the two aquifers, causing an upward movement of groundwater, especially along the shores of Long Island Sound and its contiguous estuaries and inlets (i.e., the Nissequogue River estuary and Stony Brook Harbor).

Shallow Aquifer

The shallow aquifer frequently includes saturated coarse outwash sands and gravels of the Upper Pleistocene glacial deposits, and may also include the upper part of the Magothy Formation, especially in the areas outside of the Smithtown buried valley. Locally, saturated Tertiary gravel also may form part of the shallow aquifer. The aquifer extends as far north as the shores of Long Island Sound. The water table generally occurs at elevations from ±20 feet amsl on the northern boundary of the site, zero feet msl along the shores of the Stony Brook Harbor and Nissequogue River to about 30 feet amsl just north of St. James (Figure 3-11). Generally, the aquifer is under unconfined conditions and the upper limit of the aquifer is the water table. Regionally, the lower boundary of the aquifer is marked, in places, by discontinuous clay beds or lenses, commonly within the upper Pleistocene deposits.

The glaciolacustrine Smithtown Clay Unit forms the lower limit of the shallow aquifer in the site's vicinity at elevations of about 70 to 80 feet below msl. However, gamma ray logs taken from monitoring wells drilled within the southern portion of the site and further south in St. James, indicate that the water table is just above, within, or just below the Smithtown Clay (Appendix D). As the Smithtown Clay dips towards the north, the depth of unconfined groundwater above the clay becomes greater. Residential well data suggests that there may be only a few tens of feet of water above the clay along the northern margin of the site area. As such, the shallow aquifer may be under confined or semi-confined conditions in areas south of the site and under unconfined conditions beneath the site.

As shown on Figure 3-7, the clay unit is not present in wells located across a south-central portion of the Smithtown site. Instead, the upper part of the Upper Glacial Aquifer is in direct contact with the lower part of the Upper Glacial Aquifer, allowing communication and passage of groundwater between the shallow and underlying intermediate aquifers in this portion of the site.

Two prominent mounds on the main water table divide of Long Island are present in the Smithtown area. The western mound is located in the town of Huntington to the west of Smithtown; part of the eastern mound, marked by the 70 foot contour (amsl), is found in southeastern Smithtown (Figure 3-8). Between these two mounds is a pronounced low or trough in the water table which coincides with the valley of the Nissequogue River. The groundwater mound to the southeast of the site is thought to be related to a low permeability deposit in the Magothy Formation, which constitutes the shallow aquifer in that area. Generally, between the eastern and western mounds, the water table slopes towards the Nissequogue River at 20 to 30 feet per mile. North of the eastern mound, the water table also slopes north towards the Sound; a marked reentrant in the 10 and 20 foot contours is indicated just south of Stony Brook Harbor, on the eastern portion of the Smithtown site. Water levels in shallow wells tapping the shallow aquifer fluctuate seasonably as much as eight feet, but the average range is between one and four feet. Average hydraulic conductivity within the Upper Glacial Deposits is 4.62×10^{-2} cm/sec (McClymonds and Franke 1972).

Shallow aquifer groundwater flows away from the major mound at the groundwater divide located to the southeast of Smithtown. In general, groundwater flows to the north toward Long Island Sound. In addition, the Nissequogue and Stony Brook Harbor surface waters cause groundwater to deviate from its northward flow path; locally, groundwater flows towards these areas of low topography and zero head. Figure 3-12 shows the predicted long term average flow field for the Smithtown site and vicinity within the shallow aquifer. The groundwater flow data were generated with CDM's DYNFLOW™ groundwater modeling software. The model predicts that groundwater flows generally in a north-northwest direction; however, strong local influences of flow direction towards the Nissequogue River and Stony Brook Harbor are clearly indicated. As one might expect, the predicted flowpaths appear to be aligned normal to the topographic contours within the site's vicinity (compare with Figure 1-2).

From April 2001 through May 2003, 23 VPWs, 6 piezometers, and 14 monitoring wells were installed as part of the RI field activities. VPW depths ranged from 103 feet to 255 feet bgs, monitoring well and piezometers depths ranged from 50 feet to 300 feet bgs; wells were screened in the shallow unconfined and the upper portion of the intermediate aquifer. Synoptic water level measurements were collected from site piezometers and monitoring wells to develop equipotential maps for the shallow aquifer. The data were used to determine horizontal and vertical flow gradients and were evaluated in light of other surface and subsurface hydrogeologic information to develop a comprehensive hydrogeologic conceptual model for the site.

Water level measurements were collected in 2001 and 2003. Based on these data, general groundwater flow in the shallow aquifer is to the northwest, greatly influeuced by the discharge area of the Nissequogue River. Stony Brook Harbor influences groundwater flow on a more local level. Figures 3-13 and 3-14 illustrate groundwater flow in March 2001 and June 2003, respectively.

Perched Groundwater Bodies

Lenses of perched groundwater are common in the Smithtown area, where they occur above relatively thick layers of impermeable glacial till or on clay of Pleistocene age, they occur above the water table. Perched water bodies have been tapped as much as 200 feet above the main water table; however, they commonly occur at shallow depths where yields are low and undependable.

3.4 Meteorology

The township of Smithtown is located in the northern coast of Long Island, southeastern New York, where the climate is temperate maritime. Climate is more influenced by the ocean than by the adjacent mainland. It is characterized by mild winters and relatively cool summers. Sudden or extreme changes in temperature are rare (Warren *et al.* 1968). There is no climatic data for the town of Smithtown; however, data are available for the town of Islip, located on the southern shore of Long Island, approximately 10 miles south of Smithtown. According to World Climate, the average annual temperature for the years 1961 - 1990 was 51.3° F. Maximum average monthly temperatures of 80.0° F occurred in July and August and minimum average monthly temperatures of 21.4° F occurred in January (www.worldclimate.com). The growing season on Long Island is about 180 to 200 days, from the end of April to the end of October. During the average year, the percentage of possible sunshine ranges from about 50 percent in January to 65 percent in July and averages 62 percent during the growing season. The prevailing winds are from the west, shifting from the southwest in summer to the northwest in winter. Average wind speed is about 12 miles per hour.

Precipitation is the only source of freshwater for streams and groundwater in the Smithtown area. Average precipitation for the period of 1986 - 1995 was 47.4 inches per year (in/yr), with the highest amount of precipitation falling in August (www.worldclimate.com).

3.5 Demography and Land Use

According to the 2000 U.S. Census, the Village of Head of the Harbor's population was 1,447, the Village of Nissequogue's population was 1,543 (www.census.gov). According to the Suffolk County Planning Commission, based on census data from 1992, residential land accounted for 40% of the land area. The remaining land was described as undeveloped (30%); agricultural (10%), transportation, communication, and utilities (10%); institutional (5%); commercial (1%). Industrial and marine commercial land use was negligible.

The Smithtown site is located in a residential area covering portions of the Villages of Nissequogue and Head of the Harbor within the Town of Smithtown, just north of the Hamlet of St. James, Suffolk County, New York. The predominant land use within the boundaries of the site is residential (single family). The residential lot sizes are over one acre on average. A horse farm is located within the north-central portion of the site along Moriches Road. The Nature Conservancy - Long Island Chapter owns a parcel of property approximately 67 acres in size in the central portion of the site. Self-guided marked trails are available for hiking, bird watching, and other outdoor nature-related activities.

Prior to the discovery of contaminated groundwater, residents of both villages used private wells for both drinking and irrigation. Emergency action by EPA and the SCDHS put the homeowners whose residential wells exceeded the RAL for PCE on bottled water until a treatment system could be installed in the residence. The SCWA began running water mains into both villages, giving residents the option to abandon the residential wells and "hook-into" the mains. Many residents have either public water or treatment on their residential well. Sanitary waste solids are collected in septic tanks, sanitary liquids are recharged to the shallow aquifer through cesspools and leaching fields.

Limited commercial retail, office development (including gasoline stations and strip malls), and a high school are located south of the residential area. The more densely-developed residential and commercial retail districts of St. James are located less than one-quarter mile from the site, south of the Port Jefferson Branch of the Long Island Railroad.

3.6 Ecology

Ecological conditions at the site were observed during a site visit in April 2003. The area is residential, with homes on lots generally one acre or larger in size. Ecological resources are primarily concentrated around the surface water bodies of Stony Brook Harbor and the Nissoquogue River. These areas are described below. Vegetation and wildlife observed in the two areas are provided on Tables 3-1 and 3-2.

3.6.1 Stony Brook Harbor

Stony Brook Harbor is an estuarine inlet off of Smithtown Bay of Long Island Sound. The surface water is given an SA saline surface water classification by NYSDEC. The best usages for Class SA saline surface waters are shellfishing for market purposes, primary and secondary contact recreation, and fishing. No salinity readings were collected from the harbor during the RI.

Extensive mud and sand flats are exposed at low tide. Numerous seeps discharge groundwater from the shallow unconfined aquifer to intertidal zone of the harbor.

The basic habitat of this intertidal zone is the salt marsh, where the dominant vegetative species is smooth cordgrass (*Spartina alterniflora*) and the dominant wildlife species is ribbed mussel (*Guekensia demissa*).

A small wetland (approximately one acre) is located at the southern end of Stony Brook Harbor, where a small stream enters a low-lying area next to the inlet. Salinity readings of the wetland water collected during the RI indicate groundwater discharges to the wetland. This wetland is adjacent to the western shore of Stony Brook Harbor, behind 54 Harbor Hill Road. At high tide, water from Stony Brook Harbor flows into this wetland. At low tide, water drains from the wetlands into Stony Brook Harbor through a corrugated pipe under a bridge on Harbor Road. The wetland appears also to have a small freshwater drainage, likely intermittent, coming into it from the upland side. This wetland is dominated by common reed (*Phragmites austalis*) and red-winged blackbirds (*Agelaius phoeniceus*).

3.6.2 Nissequogue River

The Nissequogue River is a tidal river flowing to the Smithtown Bay of Long Island Sound. The surface water of the river in the area of the site is classified by NYSDEC as SC saline surface water. The best usage for SC saline surface waters is fishing. The State of New York designates that these waters be suitable for fish survival.

Similarly to the shore of Stony Brook Harbor, numerous seeps discharge groundwater from the shallow unconfined aquifer to intertidal zone of the river at the site. The salt marsh, similar in appearance to that described for the harbor, is the predominant habitat of the intertidal zone. Extensive mud and sand flats are exposed at low tide.

3.6.3 Threatened, Endangered Species/Sensitive Environments

Information on threatened, endangered, protected species was requested from the US Fish and Wildlife Service (USFWS) and the NYSDEC Natural Heritage Program. Information on the fisheries resources of the Stony Brook Harbor and Nissequogue River areas was requested from the National Marine Fisheries Service (NMFS). Information received is summarized in this section.

The NYSDEC Natural Heritage Program responded that the site is part of a significant Coastal Fish and Wildlife Habitat located at Stony Brook Harbor. The site is located about one mile from a low salt marsh, a listed ecological community, and a nesting area to a listed rare species, the common tern (*Sterna hirundo*).

The USFWS reported no federally listed or proposed endangered or threatened species under the jurisdiction of the USFWS are known to exist within the project area. Additionally, no habitat in the project area is currently designated or proposed critical habitat in accordance with the provisions of the Endangered Species Act.

The NMFS responded that four federally threatened or endangered sea turtles and three species of endangered whales are present in the Northeast. Sea turtles in the northeastern near shore waters typically are small juveniles. The most abundant is the federally threatened loggerhead (*Caretta caretta*), followed in abundance by the federally endangered Kemp's ridley (*Lepidochelys kempi*). The waters off Long Island are warm enough from June to October to support federally endangered green turtles (*Chelonia mydas*). Federally endangered leatherback sea turtles (*Dermochelys coriacea*) have been observed in concentrations off the south shore of Long Island during the summer months. Federally endangered Northern right wales (*Eubalaena glacialis*), humpback whales (*Megaptera novaeangliae*), and fin whales (*Balaenoptera physalus*) may be found in New York waters during certain times of the year.

3.7 Site Conceptual Model

The site conceptual model is developed to integrate all the different types of information collected during a remedial investigation, including geology, hydrogeology, site background and setting, and the fate and transport of contamination associated with the site.

Physical Setting with Respect to Groundwater Movement

The Smithtown site is located within the Atlantic Coastal Plain Physiographic Province. The geology of Long Island is characterized by a southeastward-thickening wedge of unconsolidated sediments unconformably overlying a gently-dipping basement bedrock surface. The sedimentary wedge in the vicinity of the site thickens from about 600 feet at the southern edge of Smithtown Bay to approximately 1,500 feet thick beneath the barrier islands. Major sedimentary units include, from oldest to youngest, the Raritan Formation (which includes the Lloyd aquifer and overlying Raritan Clay), the Magothy Formation, and glacial deposits. Locally, five major hydrogeologic units have been identified beneath the site, from oldest to youngest: consolidated bedrock, the Lloyd aquifer, the Raritan confining unit, the Magothy aquifer, and the Upper Glacial aquifer. The Smithtown Clay unit, a glaciolacustrine deposit of variable thickness is known to exist in the northeast portion of the site. Existing well data indicate the surface of the clay dips gradually to the north or northwest. Other non-continuous, thin horizons of clay may be found in the Upper Glacial aquifer. Some portions of both the Upper Glacial aquifer and the Magothy Formation may have been deformed during the last glacial advance.

At the Smithtown site, the residential supply wells are screened in the Upper Glacial aquifer, which ranges from 200 to 400 feet in thickness and consists of interbedded sand and gravel, sand, sandy clay, and silt. The water table ranges from less than five feet bgs adjacent to both the Nissequogue River and Stony Brook Harbor to over 200 feet bgs (approximately 15 feet amsl) in the south central part of the Village of Nissequogue. Some wells screened in the Upper Glacial aquifer below the Smithtown Clay unit are artesian, with heads ranging from five to ten feet above grade.

Regional groundwater flow is to the north/northwest, toward Smithtown Bay and the Long Island Sound. Locally, groundwater flow is complex; both the Nissequogue River and Stony Brook Harbor influence flow to the west and north/northeast, respectively. Horizontal flow velocities in the unconfined water table aquifer are about 1.0 foot/day (McClymonds and Franke 1972). Numerous groundwater seeps can be found along the shores of both the Nissequoge River and Stony Brook Harbor at low tide, indicative of groundwater discharging from the Upper Glacial aquifer to the surface. A slightly upward head differential is present in wells screened in the Upper Glacial aquifer. However, a significant upward head differential (eight feet) is present in nested wells screened across the Smithtown Clay unit.

All of the groundwater on Long Island is derived from precipitation. The volume of water that percolates down to the water table and recharges the groundwater is the residual of the total precipitation not returned to the atmosphere by evapo-transpiration or lost to the sea by surface runoff. Large residential lots and the generally sandy nature of surface and subsurface soils result in a high rate of infiltration. Road and storm runoff are directed to open bottom catch basins, allowing runoff to percolate to the Upper Glacial aquifer. Neither village provides sanitary sewers; sanitary waste is stored in small, individual septic tanks with waste liquid returned to the Upper Glacial aquifer via leaching pools.

Potential Contaminant Sources to Groundwater
The RI sample data from the potential source area facilities indicate that their business waste handling practices have improved since septic systems were cleaned out in the late 1990s. These facilities are not currently contributing contamination to the groundwater. As indicated previously, a groundwater modeling software, which simulates particle backtracking, was utilized during the RI to determine the potential origin of observed contamination in selected residential wells. The particle backtracks shown in Figure 1-4 suggest that groundwater contamination observed at each selected residential well may have separate sources, originating from at least five hydraulically upgradient locations. The RI was not able to pinpoint any of the suspected source area facilities as the source of groundwater contamination.

Expected Transport and Fate of Site Contaminants
Discrete and discontinuous slugs of liquid chlorinated solvents discharged to the ground surface or very shallow vadose zone (e.g., from a septic system or leach field) would migrate downward through the unsaturated zone in a relatively linear pattern, with minimal dispersion from the discharge location. However, the Smithtown Clay unit may exist above the water table at some of the upgradient areas, complicating migration. If the Smithtown Clay unit is present beneath the leaching pools, discharged solvents would migrate downward to the top of the clay unit, pool, then begin to migrate across the surface of the clay. The distance (up to two miles) separating the area of contaminant release further complicates contaminant transport scenarios. Clay may exist beneath some of the area, but it is not know if the clay is continuous throughout the area. The unsaturated zone in this area is approximately 100 to 125 feet thick.

Once the slugs of liquid chlorinated solvent (PCE and trichloroethene [TCE]) encounter the water table, some of the solvent would dissolve in the groundwater and begin to move in the direction of groundwater flow as small, isolated pockets of contamination. Numerous slugs may exist, moving with the groundwater flow as small, separate areas of contamination. The small areas of contamination likely would not merge into a coherent, mapable groundwater plume as the discrete slugs flow downgradient into the residential areas. The observed patterns of groundwater contamination in the residential areas do not represent a mapable groundwater plume and no clear link was established between the residential area and areas where contaminants may have been released.

If the quantity of solvent reaching the water table is sufficient, some of the solvent will remain in an undissolved state as a dense non-aqueous liquid (DNAPL) and, since PCE and TCE are denser than water, the solvent will continue to move downward under the influence of gravity. DNAPL will continue to sink until it encounters a lower permeability zone, which would slow or stop the downward migration. DNAPL could pool or accumulate on top of a lower permeability zone and remain stationary or move in the down-slope direction of the lower permeability zone. Movement of DNAPL in the saturated zone can be very complex, with movement controlled by the permeability of subsurface stratigraphic units, the shape and configuration of lower permeability zones, and/or the dip of bedding planes. No signs of DNAPL have been observed at the 11 potential source areas.

Chlorinated solvents such as PCE and TCE in a dissolved phase move with the groundwater flow, but generally at a slower rate than groundwater. If disposal of PCE from the southernmost upgradient area is assumed to have begun in 1970, at an estimated flow rate of 1 foot/day for the Upper Glacial, in 32 years contaminated groundwater would have migrated about 12,000 feet or 2.5 miles in the Upper Glacial aquifer. There are no known large scale pumping or supply wells in the area to alter the natural movement of groundwater.

Natural attenuation of chlorinated solvents is a documented process, with PCE and TCE breaking down through a known decay chain of compounds. Some of these daughter compounds (e.g., dichloroethene [DCE]) have been detected in residential and monitoring wells. However, groundwater measurements indicate high levels of oxygen in the aquifer, which would not be conducive to breakdown of chlorinated compounds. Breakdown of PCE and TCE to degradation products may be occurring in the more anaerobic environment in the septic systems. An assessment of natural attenuation potential will be conducted as part of the FS.

Section 4
Nature and Extent of Contamination

This section summarizes organic and inorganic analytes detected in the media sampled at the Smithtown Groundwater Contamination site. Section 4.1 presents the applicable screening criteria for groundwater, surface water, and sediment. Section 4.2 discusses the detected compounds in each medium. A complete set of analytical data is provided in Appendix G. A summary of data quality assurance/quality control (QA/QC) measures and an evaluation of data usability are included in Appendix H.

4.1 Selection of Screening Criteria

Screening criteria were selected to evaluate contaminants detected in various media at the site. Whenever possible, established regulatory criteria, known as chemical-specific applicable or relevant and appropriate requirements (ARARs) were selected. In the absence of ARARs, non-enforceable regulatory guidance values, known as "to be considered" (TBC) were selected. Screening criteria for evaluation of the analytical data are provided in Tables 4-1 through 4-4. The screening criteria address VOCs, SVOCs, pesticides, PCBs, and inorganic contaminants in groundwater, surface water, sediment, and septic system wastewater and sludge samples.

The selected screening criteria, by media type, are shown below.

Media	Screening Criteria
Groundwater	■ EPA National Primary Drinking Water Standards (web page), EPA 816-F-01-007, March 2001 ■ New York Ambient Water Quality Standards and Guidance Values, August 4, 1999 ■ New York State Department of Health Drinking Water Standards
Surface Water	■ New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Fish Propagation, Wildlife Protection, and Human Consumption of Fish (saline waters or fresh water)
Sediment	■ Technical Guidance for Screening Contaminated Sediments. New York Division of Fish, Wildlife and Marine Resources, January 25, 1999. (Salt water or fresh water)
Septic System Wastewater and Sludge	■ Article 12 of the Suffolk County Sanitary Code. Standard Operating Procedure No. 9-95 - Pumpout and Soil Cleanup Criteria, January 7, 1999.

The most stringent criteria were selected for screening the site data, as shown on Tables 4-1 through 4-4, unless noted below.

Surface water screening criteria for marine waters were selected for this site. Although seep surface water samples were fresh water (as evidenced by field salinity measurements), the groundwater seeps are rapidly mixed into the brackish or marine tidal waters that flood the Nissequogue River, the edges of Stony Brook Harbor, and the wetland near the Harbor. Therefore, EPA determined that screening criteria for saline waters are appropriate for this site. However, for compounds or analytes with no saline water screening criteria, fresh water criteria, if available, were used to screen data. If values for both saline water and fresh water were available, the saline water value was selected as the screening criteria. EPA ambient surface water quality criteria (EPA 2002) were reviewed as TBC material, but are not included in the surface water criteria table. EPA determined that New York State criteria are appropriate for screening these data.

New York State sediment screening criteria for VOCs, SVOCs, and pesticides/PBCs require adjustment for the fraction of organic carbon (as TOC) in a sample. Table 4-3 presents the sediment screening criteria prior to adjustment for TOC. For spring/seep and wetland sediments, screening criteria were derived, as appropriate, for each sample, based on the sample-specific TOC (Table 4-17). In compliance with the guidance document, a minimum of 0.2% TOC and a maximum of 12% TOC were utilized, even if sample-specific TOC results were lower or higher. Inorganic anaytes are not adjusted for TOC content; sample detections are compared against screening criteria in Tables 4-18 and 4-19. As with surface water, if no salt water sediment screening criteria are available, fresh water criteria were used to screen data.

No screening criteria are applicable to the storm drain sediment samples. Results were evaluated against the known site contaminants, PCE, TCE, and their degradation products.

4.1.1 Determination of Site Contaminants of Potential Concern

Chlorinated VOCs were selected as site contaminants of potential concern (COPCs) for several reasons: 1) PCE and its breakdown products were detected in several residential private wells (which resulted in the site's listing on the National Priorities List). Early samples collected by SCDHS and EPA's Removal Group only analyzed for VOCs, since PCE, with its low MCL, was of immediate concern. 2) SCDHS sample results (late 1990s) from septic systems at the 11 potential source areas indicated elevated levels of chlorinated VOCs similar to those detected in the private residential wells downgradient of the source areas. Limited inorganic analyses were done for the wastewater and sludge samples, with detections primarily occurring in the sludge samples. The inorganics were considered much less mobile than the VOCs, which were disposed in the septic systems in liquid form. With the thick unsaturated zone in the potential source areas (approximately 120 to 140 feet) the inorganic analytes detected in the semi-solid sludge samples were considered unlikely to migrate to groundwater. Therefore, the contaminants considered site related were limited to chlorinated VOCs.

CDM compared detections of selected inorganic analytes in Smithtown groundwater with data from upgradient wells at nearby Suffolk County Superfund sites and SCWA analyses presented in their 2002 water quality report (available at <SCWA.com>) to determine if inorganic levels are comparable and represent background for Suffolk County groundwater. The data and comparisons are in Appendix J as Tables 1 and 2. Levels of copper, iron, lead, manganese, silver, and zinc in Smithtown monitoring wells (summarized in columns 2 through 5 in Table 2, Appendix J) fall within the ranges in upgradient wells from nearby Superfund sites (column 6 in Table 2, Appendix J) or the SCWA results (columns 7 and 8 in Table 2, Appendix J). These inorganic analytes are, therefore, not considered site contaminants of concern.

Levels of aluminum, chromium, and nickel in some Smithtown monitoring wells are above the range of the comparison wells (Table 2, Appendix J). A review of Smithtown monitoring well results for aluminum, chromium, and nickel (Table 3, Appendix J) show that many site wells contain levels of these analytes that are within the range of upgradient wells at other Superfund sites. For aluminum, 30 of the 39 detections are below 900 ug/L (high end of the aluminum range in upgradient wells). For chromium, 29 of the 37 detections are below 60 ug/L (high end of the chromium range in upgradient wells). For nickel, 8 of the 37 detections are below or equal to 9 ug/L (high end of the nickel range in upgradient wells). We have no reason to believe that elevated levels of these inorganic analytes result, in part, from the turbidity of monitoring well samples (Appendix E). Although the monitoring wells were developed according to specifications, some well samples had elevated turbidity levels.

Further evidence that turbidity affects the levels of inorganic analytes was provided by SCDHS. Inorganic analytical results from 1997/1998 for numerous private wells within the boundaries of the Smithtown site indicate low levels of aluminum, chromium, and nickel (Table 4, Appendix J). Since residential wells are pumped on a regular, daily basis, fine particulates are removed from the screen interval, resulting in water with low turbidity. In addition, it is unlikely that the particulates observed as high turbidity readings in some of the site monitoring wells are mobile in the groundwater. The residential inorganic data, therefore, are more representative of groundwater that would discharge to surface water bodies.

The geology of the Smithtown area is a complex mix of glacial sediments, including sands, silts, and clays. As such, nickel and chromium are common components of the minerals that make up these sediments, especially the finer-grained deposits.

Based on these discussions and the knowledge that inorganics are not associated with dry cleaning operations, the inorganic analytes detected in site media are not considered to be related to the Smithtown site. Inorganics are not, therefore, site contaminants of potential concern.

4.2 Nature and Extent of Contamination

The nature and extent of contamination for the sampled media are discussed in the following sections, including groundwater, surface water, sediments, and sanitary septic systems.

4.2.1 Groundwater

Three types of groundwater samples were collected during field investigations at the Smithtown site. Screening samples were collected at VPWs, samples were collected from monitoring wells and piezometers, and samples were collected from private residential wells.

4.2.1.1 Discussion of Groundwater Results

Groundwater contamination in the Smithtown area has been identified in isolated pockets which most likely represent small slugs of contamination that were input into the groundwater in the distant past. Groundwater flow on a regional scale is generally toward the north/northwest and Long Island Sound. On a local scale, groundwater flow is complex. The two major water bodies in the area, the Nissoquogue River to the west and Stony Brook Harbor to the northeast, act as discharge points for groundwater.

The RI was not able to pinpoint the sources of groundwater contamination. The groundwater model suggests the contamination observed in the residential areas may have originated in the commercially developed areas of the site. However, based on groundwater flow rates, contamination detected in the residential wells and/or monitoring well network during the RI, was input to the groundwater many years ago. Locations of dry cleaners or other businesses that may have used chlorinated solvents may have changed over the years, but the general commercial areas upgradient of the residential areas have not changed significantly. The septic systems at the businesses investigated ranged from 8 to 15 feet in depth below the ground surface, with an approximate diameter of 10 feet. Leach fields vary in size, depending on the size of the associated building. The size of the septic systems indicates that contaminant releases through these systems would be limited in areal extent.

Figure 1-4, generated by the site groundwater model, shows estimated entry points of contamination to the water table. Observed contamination in residential wells was "backtracked" by moving the groundwater back toward its origin. The figure indicates that contamination may have contacted the groundwater table as much as 30 years ago. Given a 30 year time frame, contaminant entry points to the water table cannot be pinpointed to a specific location.

Because of the sporadic nature and isolated pockets of the contamination observed in the residential wells, a contiguous groundwater plume can not be mapped. The detections may represent small, isolated slugs of contamination that may have been released periodically in the past, as small point sources through septic systems. The area has no large, municipal sanitary systems. Most businesses and homes in the area use individual septic systems for sanitary waste disposal. Contamination that may have been discharged to septic systems in the past would move with the groundwater as small, isolated pockets. Contamination released periodically from small-scale septic systems explains the pattern of disconnected pockets of contamination observed over the years in the many rounds of residential sampling. Wells with contamination occur in small clusters, or isolated contaminated wells surrounded by wells with no contamination. Well completion records for the residential area are incomplete, and residential wells are often completed at variable depths. Therefore, wells that produce contaminated water may tap a different depth and flow zone of the aquifer than other nearby, adjacent wells that are not contaminated. The observed patterns of groundwater contamination in the residential areas do not represent a mappable groundwater plume and no clear link was established between the residential area and areas where contaminants may have been released.

Two areas of contamination in the residential area appear to have higher levels of VOCs. Area One is near Harbor Hill Road and Stony Brook Harbor on the east side of the site. Groundwater depth ranges from approximately 5 feet to 150 feet and the thickness of contaminated groundwater is approximately 100 feet. The maximum PCE concentration is 140 ug/L.

Area Two is near the Waterford Stables and the Nature Conservancy property on the west side of the site. Groundwater is approximately 150 feet bgs and the thickness of contaminated groundwater is approximately 125 feet. The maximum PCE concentration is 63 ug/L.

These areas will be evaluated for possible groundwater remediation during the Feasibility Study for the Smithtown site.

4.2.1.2 Vertical Profile Wells

Twelve VPWs were installed in the residential areas in the Spring of 2001. Groundwater samples were collected at 10-foot intervals, from the bottom of each VPW to the water table (Table 2-3). VPW samples were analyzed for low-detection limit VOCs only. Analytical data from these VPWs were validated.

Eleven VPWs were installed at the potential sources in the Spring of 2003. Groundwater samples were collected at the top of the water table and approximately 10 feet into the groundwater (Table 2-3). VPW samples were analyzed for low-detection limit VOCs only. Analytical data from these VPWs were not validated.

Residential Areas

Table 4-5 and Figures 4-1 and 4-2 indicate VOCs detected in all VPW groundwater samples. Toluene and methyl tert butyl ether (MTBE) were commonly detected. The frequent detections of toluene are believed to be a result of sample cross-contamination from drilling rig motor emissions during sample collection. Toluene was detected very infrequently in all other groundwater samples (e.g., residential wells, monitoring wells). Toluene was not present in related trip blanks because trip blank bottles are sealed prior to arrival at each drilling location. Trip blanks are stored in coolers to maintain the proper temperature. Therefore, they are not exposed to drill rig emissions similar to the environmental samples. Sporadic detections of chlorinated VOCs were encountered in some VPW samples, with levels generally below the screening criteria. VPW-24, located at 54 Harbor Hill Road near Stony Brook Harbor, had the most VOC detections. PCE exceeded the 5 ug/L screening criterion in three samples: 64 - 69 feet bgs at 5.6 ug/L; 44 - 49 feet bgs at 7.3 ug/L; and 24 - 29 feet bgs at 7.5 ug/L. One additional compound, 1,1,1-trichloroethane (1,1,1-TCA) at 5.7 ug/L, exceeded the 5 ug/L screening criterion in the sample from 174 - 179 feet bgs. Numerous other chlorinated VOCs were detected, at levels below screening criteria (Table 4-5).

Potential Sources

Table 4-6 and Figures 4-1 and 4-2 indicate the VOCs detected in VPWs installed at the potential sources. The groundwater screening criteria for site-related chlorinated VOCs were exceeded at only one location. PCE exceeded its screening criterion at VPW-5, with a detection at 118 - 122 feet bgs at 15 ug/L. MTBE was detected in several samples, but exceeded its screening criterion in one sample at VPW-11 (128 - 132 feet bgs). Several other chlorinated VOCs were detected, but were generally below 1 ug/L.

4.2.1.3 Monitoring Wells and Piezometers

Groundwater samples were collected from five of the six piezometers in June 2001. The 2001 piezometer samples were analyzed for low-detection limit VOCs only. Round 1 groundwater samples were collected from 13 monitoring wells and 6 piezometers in March 2002. Round 2 groundwater samples were collected from 14 monitoring wells and 6 piezomters in June 2003. The 2002 and 2003 samples were analyzed for full TCL/TAL parameters. Each round of sampling is discussed below.

2001 Piezometer Results

Samples collected from five piezometers in June 2001 showed one screening criterion exceedence for 1,1,1-TCA at 7.2 ug/L in MW-E. Several other piezometer samples contained several chlorinated VOCs below screening criteria (Table 4-7).

Round 1 Sample Results

Table 4-8 and Figure 4-3 indicate the VOCs detected in monitoring wells and piezometers in March 2002. Several VOCs exceeded screening criteria, including:

- MW-3S, in the central, southern part of the residential area, contained cis-1,2-dichloroethene (cis-1,2-DCE) at 50 D ug/L and PCE at 12 ug/L
- MW-4I, in the central part of the residential area, contained PCE at 16 ug/L
- MW-4D, in the central part of the residential area, contained PCE at 38 D ug/L
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 150 D ug/L and 1,1-dichloroethene (1,1-DCE) at 31 D ug/L
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 7.1 ug/L
- MW-F, the southern-most sampling point, contained TCE at 5.8 ug/L

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in March 2002, at levels below screening criteria.

SVOCs were sporadically detected in groundwater samples, with only bis(2-ethylhexyl)phthalate exceeding its screening criterion of 5 ug/L in MW-1I at 15 ug/L and MW-4S at 6 J ug/L. Other SVOC detections included benzaldehyde at 1 J ug/L in MW-F; phenanthrene at 0.9 J ug/L in MW-C; and di-n-butylphthalate at 1 J ug/L in MW-6S.

No pesticides or PCBs were detected in monitoring well or piezometer samples.

Table 4-9 indicates the inorganic analytes detected in monitoring well and piezometer samples. The chromium screening criterion of 50 ug/L was exceeded in MW-4S, with a detection of 81.6 ug/L. The sodium criterion of 20,000 ug/L was exceeded in three wells, MW-4I at 23,300 ug/l; MW-5I at 30,900 ug/L; and MW-5D at 37,000 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded: for aluminum and iron, 17 of 19 wells exceeded the criteria, for manganese, 2 wells exceeded the criterion.

Round 2 Sample Results

Table 4-10 and Figure 4-4 indicate the VOCs detected in monitoring wells and piezometers in June 2003. Several VOCs exceeded screening criteria, including:

- MW-2, in the west-central part of the residential area, contained PCE at 5.6 ug/L
- MW-3S, in the central, southern part of the residential area, contained cis-1,2-DCE at 120 D ug/L, PCE at 10 ug/L, and TCE at 6.1 ug/L
- MW-3I, in the central, southern part of the residential area, contained cis-1,2-DCE at 7.5 ug/L
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 92 D ug/L and PCE at 5.7 J ug/L
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 8.4 ug/L
- MW-F, the southern-most sampling point, contained TCE at 6.7 ug/L

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in June 2003, at levels below screening criteria.

One SVOC compound was detected at levels below screening criteria. Bis(2ethyl-hexyl)phthalate was detected in MW-1I at 1 J ug/L, in MW-E at 2 J ug/L, and in the duplicate sample from MW-G at 3 J ug/L.

No pesticides or PCBs were detected in monitoring well or piezometer samples.

Table 4-11 indicates the inorganic analytes detected in monitoring well and piezometer samples. The chromium screening criterion of 50 ug/L was exceeded in MW-3I at 208 ug/L, MW-4S at 63.4 ug/L, MW-5S at 135 J ug/L, MW-5I at 832 ug/L, MW-5D at 797 ug/L, MW-6I at 88.9 J ug/L, and MW-E at 70.9 J ug/L. The nickel screening criterion of 100 ug/L was exceeded in MW-5D at 623 ug/L. The sodium criterion of 20,000 ug/L was exceeded in five wells, MW-3I at 24,000 ug/L; MW-4I at 21,100 J ug/l; MW-5S at 408,000 D ug/L; MW-5I at 33,500 ug/L; and MW-5D at 35,600 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded: for aluminum in 16 of 20 wells; for iron in 19 of 20 wells, and for manganese in 1 well.

Tables 4-12 and 4-13 and Figure 4-5 present selected results for both rounds of sampling for site-related VOCs and inorganic analytes, respectively.

4.2.1.4 Residential Wells

Table 4-14 and Figures 4-6, 4-7, 4-8, and 4-9 indicate the chlorinated VOCs detected in residential wells sampled in 1999, 2001, 2002, and 2003. Figure 4-10 shows all wells that had exceedances of screening criteria during any round of sampling; wells with no detections or detections below screening criteria in any round of sampling are also shown. Figure 4-11 shows the highest detection in each residential well sampled throughout the four rounds of sampling.

4.2.2 Spring/Seep Surface Water and Sediment

Surface water and sediment samples were collected along the Nissequogue River and Stony Brook Harbor at low tide. Surface water was collected from seeps, presumably groundwater discharging into the larger water bodies. Available salinity measurements are included on Table 4-15. Sediment samples were co-located with the surface water samples. Background samples (SWS-5/SSS-5 and SWS-6/SSS-6) were collected only for the Stony Brook Harbor area.

4.2.2.1 Discussion of Results

Spring and seep surface water and sediment results indicate that groundwater with low levels of chlorinated VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in sediments, although the detection limits for some sediment sample VOCs were elevated (see Table 4-17 or Appendix G). The discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges.

4.2.2.2 Spring/Seep Surface Water

Table 4-15 and Figure 4-12 indicate the VOCs detected in spring/seep surface water samples. For marine waters, criteria are only available for TCE and PCE. Fresh water criteria are available for 1,1-DCA, cis-1,2-DCE, and 1,1,1-TCA. VOCs were detected in 4 of the 12 samples collected; PCE at 2 ug/L in DSW-001, the sample from Dunton Spring at the edge of Stony Brook Harbor, exceeded the 1 ug/L screening criterion.

Sample SWS-008, located along the Nissoquogue River, was the only sample with more than one VOC detected; four were detected.

In October 2003, SCDHS collected a sample from Dunton Spring. Results showed PCE at 7 ug/L (Appendix I).

SVOCs were detected in three samples: SWS-006 and SWS-010 had bis(2-ethylhexyl)phthalate at 1 J ug/L, below the 5 ug/L freshwater screening criterion; SWS-010 also had diethylphthalate at 0.5 J ug/L. SWS-008 contained 10 SVOC compounds, primarily polycyclic aromatic hydrocarbons (PAHs). Several of the PAH detections exceeded screening criteria of 0.002 ug/L. It should be noted that the CLP detection limit is higher than the screening criteria for many SVOC screening criteria.

Three samples had detections of pesticides: SWS-001 had 4,4'-DDE at 0.04 ug/L; SWS-005 had 4,4'-DDE at 0.045 ug/L and 4,4'-DDD at 0.037 ug/L; and SWS-007 had 4,4'-DDE at 0.039 ug/L. All detections exceeded the screening criteria.

Full analytical results for SVOCs and pesticides/PCBs are included in Appendix G.

Table 4-16 summarizes the inorganic analytes detected in surface water samples. Saline water criteria were utilized except for aluminum, barium, iron, magnesium, and manganese. Copper's screening criterion of 3.4 ug/L was exceeded in 8 of 10 detections. The lead criterion of 8 ug/L was exceeded in one of three detections and all seven cyanide detections exceeded the 1 ug/L screening criterion. Exceedances of fresh water criteria include 8 of 12 samples for aluminum; 3 of 12 samples for iron; and 1 sample for magnesium.

Comparison of detected compounds/analytes against the highest detections in the Stony Brook Harbor background samples (Appendix G) indicate frequent exceedances of background in the highest detection in the environmental samples, especially for inorganic analytes.

4.2.2.3 Spring/Seep Sediment

Tables 4-17 and 4-18 indicate the compounds and analytes detected in spring/seep sediment samples. Figure 4-12 shows VOCs detected in sediment samples. It should be noted that detection limits for some sediment sample VOCs were elevated. Two VOCs exceeded their sample-specific screening criteria: in sample SSS-001, located on the southwestern shore of Stony Brook Harbor, 1,2-dichlorobenzene, detected at 11 J micrograms/kilogram (ug/Kg), exceeded its criterion of 6.528 ug/Kg. In samples SSS-010, the northern-most sample along the Nissoquogue River, and SSS-011, also along the Nissoquogue River, 1,1-DCE was detected at 2 J ug/Kg and 14 J ug/Kg, respectively, exceeding sample-specific screening criteria of 0.0316 ug/Kg and 0.58 ug/Kg, respectively.

Table 4-17 also indicates the SVOCs and pesticides/PCBs that were detected. Several SVOCs, mainly PAHs, were detected, but did not exceed criteria. Three samples had pesticide detections that exceeded sample-specific screening criteria, for the pesticides delta BHC, endrin, and alpha BHC.

PCB Aroclors 1242 and 1260 were detected in sample SSS-008 at 1.2 J ug/Kg and 1.3 J ug/Kg, respectively. The sample-specific screening criterion is 0.00346 ug/Kg. In sample SSS-005 Aroclor 1242, at 7.3 J ug/Kg, exceeded it criterion of 0.04888 ug/Kg.

Table 4-18 shows detections of inorganic analytes. Lead exceeded its 31 milligram/kilogram (mg/Kg) screening criterion in sample SSS-002 at 39.2 mg/Kg and in SSS-008 at 47.6 mg/Kg. Copper slightly exceeded its criterion of 16 mg/Kg in samples SSS-005 at 16.2 J mg/Kg and SSS-011 at 16.1 mg/Kg.

Comparison of detected compounds/analytes against the highest detections in the Stony Brook Harbor background samples (Appendix G) indicate frequent exceedances of background in the highest detection in the environmental samples, especially for inorganic analytes.

4.2.3 Wetland Surface Water and Sediment

Surface water and sediment samples were collected from the wetland south of Stony Brook Harbor, behind the residence at 54 Harbor Hill Road. Surface water salinity measurements are included on Table 4-15. Sediment samples were collected from two intervals: 0 to 6 inches and 18 to 24 inches bgs. Surface water and sediment samples were co-located.

4.2.3.1 Discussion of Results

Wetland surface water and sediment results indicate that groundwater with low levels of chlorinated VOC contamination is discharging to the wetland south of Stony Brook Harbor. VOCs do not appear to be concentrating in sediments, although the detection limits for some sediment sample VOCs were elevated (see Table 4-17 or Appendix G). The wetland area is subjected to twice daily tidal flooding, which serves to mix and disperse groundwater discharges.

4.2.3.2 Wetland Surface Water

Table 4-15 and Figure 4-12 indicate the VOCs detected in wetland surface water samples. For marine waters, criteria are only available for TCE and PCE. Fresh water criteria are available for 1,1-DCA, cis-1,2-DCE, and 1,1,1-TCA. VOCs were detected in all nine samples collected; the PCE screening criterion of 1 ug/L was exceeded in two samples (SWW-001 at 3 ug/L and SWW-002 at 2 ug/L). 1,1,1-TCA was detected in all nine samples, with one (SWW-009) equaling the fresh water criteria of 5 ug/L. 1,1-DCA was detected in seven samples and 1,1-DCE was detected in five.

Two samples had detections of bis(2-ethylhexyl)phthalate - SWW-002 at 24 ug/L and SWW-006 at 1 J ug/L. The detection in SWW-002 exceeded the screening criterion of 5 ug/L.

Two samples had detections of the pesticide gamma-BHC (lindane) that exceeded the 0.008 ug/L screening criterion: SWW-005 at 0.026 ug/L and SWW-006 at 0024 ug/L.

No PCBs were detected in wetland surface water samples.

Full analytical results for SVOCs and pesticides/PCBs are included in Appendix G.

Table 4-16 indicates the inorganic analytes detected in surface water samples. Saline water criteria were utilized except for aluminum, barium, iron, magnesium, and manganese. Cyanide was detected in eight of nine samples; all detections exceeded the 1 ug/L screening criterion.

4.2.3.3 Wetland Sediment

Tables 4-17 and 4-19 indicate the compounds and analytes detected in wetland sediment samples. Figure 4-12 shows VOCs detected in sediment samples It should be noted that detection limits for some sediment sample VOCs were elevated. No detected VOCs exceeded their sample-specific screening criteria.

Table 4-17 indicates the SVOCs and pesticides that were detected. Several SVOCs, mainly PAHs, exceeded screening criteria. The pesticides 4,4'DDD and 4,4'DDE were detected in numerous samples, all of which exceeded the sample-specific screening criteria. In addition, dieldrin exceeded criterion in three samples, while gamma BHC (lindane) exceeded its criterion in one sample.

No PCBs were detected.

Detections were noted on Table 4-19 for nearly all inorganic analytes; numerous analytes exceeded their screening criteria. Antimony had 5 exceedances; arsenic had 9; chromium had 17; copper had 25; lead had 22; manganese had 1; mercury had 8; nickel had 14, and silver had 4 exceedances.

4.2.4 Storm Drain Sediment

Table 4-20 indicates the compounds and analytes detected in storm drain sediment samples. Figure 4-12 shows VOCs that were detected.

The most commonly detected VOC compound was trichlorofluoromethane, which was detected in 8 of 13 samples. Other VOCs with multiple detections (each detected twice) include 2-butanone, toluene, and xylene. VOCs with single detections include acetone, carbon disulfide, methyl acetate, chloroform, cyclohexane, methylcyclohexane, MTBE, ethylbenzene, and isopropylbenzene. Sample SDS-004, located on Swan Place near the western side of Stony Brook Harbor, had the most VOC compounds, with six detected.

Numerous SVOCs, primarily PAHs, were frequently detected in many of the samples, most likely originating from storm water runoff from the asphalt roads adjacent to the storm drains.

Several pesticides were detected, as indicated on Table 4-20. Two Aroclors (PCBs) were detected in sample SDS-011, located at the end of Quail Path on the western side of the residential area.

Detections were noted for nearly all inorganic analytes, as shown on Table 4-20. Elevated levels of aluminum, arsenic, chromium, copper, iron, lead, nickel, vanadium, and zinc were observed in samples SDS-001, SDS-010, and SDS-011. In addition, copper was elevated in sample SDS-013; lead in SDS-004; and zinc in SDS-003.

4.2.4.1 Discussion of Results

Storm drain sediment samples were collected to evaluate if illicit chemical dumping had occurred in the past at storm drains in the residential area. The types of contaminants detected in these sediments, along with the lack of detections of chlorinated VOCs, indicate that the storm drains have not been used in the recent past for illicit disposal of hazardous chemicals associated with the Smithtown site. However, contaminants identified in the storm drain sediments would have limited migration potential to the groundwater. Inorganics have limited solubility and would be expected to stay bound to the sediment particles. VOCs would be unlikely to migrate through the thick unsaturated zone into the groundwater.

4.2.5 Sanitary/Cess Pool Samples

Wastewater samples were collected from 10 septic systems at 11 potential sources upgradient of the residential areas. No wastewater was present at WW-4, 617-621 Lake Avenue (Sal's Auto Body). Sludge samples were collected at 9 of the 11 locations. Sludge was too slippery to lodge in the sampling device at two locations. All samples were analyzed for TCL compounds and TAL analytes.

4.2.5.1 Discussion of Results

Wastewater and sludge samples were collected in 2003 from the same potential sources of contamination identified by SCDHS in 1997. Subsequent to the sampling conducted by SCDHS, many of the septic systems were cleaned. The 2003 samples evaluated current levels of contamination in the septic systems. No wastewater samples exceeded the 1,000 ug/L total VOC screening criteria. Three sludge samples had limited exceedances of screening criteria: SL-3 exceeded the mercury criterion; SL-7 exceeded the toluene, copper, and mercury criteria; and SL-8 exceeded the toluene criterion. The limited exceedances of screening criteria indicate that the business waste handling practices have improved since septic systems were cleaned out in the late 1990s. These systems are not currently considered sources of contamination to the groundwater.

4.2.5.2 Wastewater Samples

Compounds and analytes detected in the wastewater samples are shown on Table 4-21 and Figure 4-12. Total VOCs ranged from 148 ug/L to 731 ug/L, below the 1,000 ug/L the screening criteria.

Several SVOCs were detected in each sample; however, no screening criteria are available for wastewater samples. No pesticides or PCBs were detected.

Numerous inorganic analytes were detected in all samples (Table 4-21). Sample WW-7, located at 400 North Country Road (Four Seasons Cesspool), had notably higher detections of several analytes, including aluminum, barium, chromium, copper, lead, mercury, nickel, and zinc.

4.2.5.3 Sludge Samples

Compounds and analytes detected in the sludge samples are shown on Table 4-22 and Figure 4-12. Several VOCs were detected in all samples, but only two detections of toluene exceeded the 3,000 ug/Kg screening criterion: SL-7 at 28,000 ug/Kg and SL-8 at 30,000 ug/Kg. SL-7 was collected at 400 North Country Road (Four Seasons Cesspool) and SL-8 was collected at 430-11 North Country Road (North Country Cleaners).

Several SVOCs without screening criteria were detected in six samples. Four of the seven detected SVOCs were phthalate compounds. No SVOCs were detected in three samples (SL-5, SL-8, and SL-10).

Five pesticides without screening criteria were detected in sample SL-4, located at 617-621 Lake Avenue (Sal's Auto Body) (Table 4-22). The remaining eight sludge samples had no pesticides or PCBs detected.

Numerous inorganic analytes were detected in all samples (Table 4-22). Three detections exceeded screening criteria: in SL-7, copper at 659 EJ mg/Kg exceeded the 500 mg/Kg screening criterion and mercury at 2.1 J slightly exceeded the 2 mg/Kg criterion. Mercury also exceeded its criterion at SL-3, located at 561 Lake Avenue (St. James Cleaners).

4.2.6 Air Sample Results

EPA collected air samples on March 11-13, 2003 at 12 homes in the vicinity of the site, with air sampling canisters located in home basements (or first floor in homes with no basements). Two duplicate samples were collected. Data for VOCs were analyzed through the CLP, with data validation by EPA. Results are presented in Appendix I.

Analytical results were compared to the Risk Based Concentrations (RBC) developed by EPA Region 3 (October 2003) for ambient air. For two compounds, TCE and 1,2-dibromoethane, laboratory detection limits were higher than the RBCs. No other compounds exceeded the RBCs.

Air sampling results were compared to residential groundwater results at the residences who participated in the residential well sampling activities. Seven of the 12 residences were sampled during both well sampling activities. There was no correlation between the indoor air and groundwater results. The VOCs detected in residential well water were not reflected in the air sample results. Therefore, it appears that indoor air detections are not directly linked to the groundwater contamination.

Section 5
Contaminant Fate and Transport

This section describes the persistence and the mobility of the contaminants identified above screening criteria in the environmental samples. An understanding of the fate and transport of contaminants is necessary to realistically evaluate future potential exposure risks and to evaluate remedial technologies for a Feasibility Study.

This section provides the following:

- A listing of the COPCs, as determined in the HHRA and the SLERA
- Groundwater chemistry results, including relevant physical-chemical properties of the contaminants
- Potential contaminant transport pathways
- Transport processes affecting the fate and transport of site COPCs
- Contaminant fate
- Natural attenuation potential
- A summary of the fate and transport of contaminants

5.1 Contaminants of Potential Concern

Fate and transport properties are important for contaminants that exceed ARARs, TBCs, and other screening criteria and for contaminants identified as COPCs for the HHRA and the SLERA. COPCs for the risk assessments are determined based on their toxicity characteristics, frequency, and the maximum concentration at which they were detected in the site's groundwater, surface water, or sediment.

The COPCs identified in the HHRA for the groundwater at the site include acetone, chloroform, cis-1,2-dichloroethene, MTBE, PCE, TCE, bis-2-ethylhexylphthalate, aluminum, arsenic, chromium, iron, manganese, nickel, and vanadium. The COPCs identified for surface water include PCE, TCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, bis(2-ethylhexyl)phthalate, phenanthrene, arsenic, iron, manganese, and thallium. The COPCs identified for sediment include benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, aluminum, antimony, arsenic, chromium, iron, and manganese.

The COPCs identified in the SLERA include, for sediments, acetone, 2-butanone, carbon disulfide, trichlorofluoromethane, benzaldehyde, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, fluoranthene, pyrene, 2-methylnaphthalene, 4-methylphenol, acenaphthalene, acenaphthylene, anthracene, benzo(g,h,i)perylene, carbazole, chrysene, dibenzo(a,h)anthracene, dibenzofuran, di-n-butylphthalate, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, total PAHs, bis(2-ethylhexyl)phthalate, phenanthrene, 4,4'DDD, 4,4'DDE, 4,4'DDT, alpha-chlordane, gamma-chlordane, dieldrin, gamma-BHC (lindane), heptachlor, antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, and silver.

For surface water, COPCs from the SLERA include benzo(a)anthracene, benzo(a)pyrene, phenanthrene, pyrene, bis(2-ethylhexyl)phthalate, dacthal, gamma-GHC (lindane), gamma-chlordane, barium, copper, iron, lead,and manganese.

The determination of site-related COPCs is discussed in Section 4.1.1. Chlorinated VOCs (cis-1,2-dichloroethene, PCE, and TCE) likely were introduced to the site by past improper handling of dry cleaning chemicals at the numerous dry cleaning establishments upgradient of the Smithtown residential areas. Based on site history, chlorinated VOCs have been determined to be the site-related COPCs and are discussed further in the following sections.

5.1.1 Groundwater Chemistry

As part of the site investigation, groundwater chemistry data were collected from monitoring wells, piezometers, and residential wells (Appendix G). The field measured parameters included pH, specific conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential. Field parameter measurements recorded prior to monitoring well and piezometer sample collection are provided in Table 5-1. There are some variations in these results, reflecting the natural variability in the groundwater beneath the site. In general, the groundwater is neutral to slightly acidic, with dissolved oxygen readings indicating aerobic conditions throughout the water column monitored by wells.

5.1.1.1 Chemical and Physical Properties of Contaminants

To predict the persistence and potential migration of contaminants in the groundwater, it is necessary to identify which contaminants are likely to leach or degrade. This depends on a given chemical's physical and chemical properties and the properties of the media through which it migrates. Table 5-2 presents the chemical and physical properties of the organic compounds. The following sections describe the transport and fate of frequently detected chlorinated contaminants at the site, focusing on such properties as dispersion, dilution, chemical and biodegradation, sorption, hydrolysis, chemical persistence, and natural attenuation.

5.2 Contaminant Transport

The physical characteristics of the site are described in Section 3. The physical characteristics that affect the transport of contaminants are summarized in Section 3.7, which describes the site conceptual model. Factors such as topography, geology, hydrogeology, and groundwater flow influence the movement of contaminants in the subsurface, as contaminants migrate through the vadose zone into the groundwater. General groundwater flow is toward the north, toward Long Island Sound. However, at the Smithtown site, groundwater flow is complex due to the influence of two major water bodies, the Nissoquogue River to the west and Stony Brook Harbor on the northeast side of the site.

5.2.1 Potential Contaminant Transport Pathways

Contaminant transport pathways provide the mechanisms for contamination to travel from its area of deposition and to potentially leave the Site. Potential groundwater contaminant transport pathways include:

- Volatization of VOCs into the air
- Vertical infiltration of chemicals into the unconfined aquifer (e.g., from septic system leach fields)
- Discharge of contaminated groundwater to downgradient water bodies, especially at low tide (e.g., Nissoquogue River, Stony Brook Harbor)
- Rainwater flow through contaminated soils and subsequent flushing and dissolution into the glacial sediments
- Uptake of contaminants in sediment or surface water by biota

5.2.2 Contaminant Mobility in Groundwater

The assumed low organic content of the aquifer materials does not provide sufficient humic content for sorption to be important. The upper glacial aquifer has a very high percentage of sand, resulting in low organic content. Because they are not sorbed, the contaminants are mobile in the groundwater (Table 5-2) and will tend to move with the groundwater flow.

5.2.3 Contaminant Transport Processes

Contaminant movement in a dissolved state in groundwater results in several processes that impact contaminant concentration, including dispersion and dilution, as described in the following sections.

5.2.3.1 Dispersion

Dispersion occurs naturally. As groundwater moves away from the source, through different geological materials in the aquifers, the flow rate changes, resulting in physical mixing of the chemicals along the contaminant pathways. The rate at which the material is dispersed is dependent on the stratigraphy, the grain size distribution, groundwater flow gradients, the flow path, and the interaction between groundwater and surface water. Dilution is an effect of dispersion.

5.2.3.2 Dilution

When contaminants come in contact with uncontaminated groundwater, mixing occurs, resulting in a decrease in contaminant concentration. The complex topography of the site, in addition to the complex groundwater flow paths, impact groundwater velocity and gradients. An additional influence on the mass movement of groundwater is the presence of numerous residential wells, completed at variable depths of the aquifer and with variable pumping rates. Rainwater precipitation can also cause dilution of contaminant concentrations.

5.3 Contaminant Fate

Contaminant fate describes the changes that occur to contaminants as they migrate with the groundwater.

5.3.1 VOC Groundwater Reactions

This section focuses primarily on the chemical contaminants found in site groundwater, chlorinated VOCs. These are mainly: PCE, TCE, 1,1,1-TCA, 1,1-DCE, cis-1,2-dichloroethene, and 1,1-dichloroethane.

Halogenated aliphatic hydrocarbons undergo degradation under aerobic and anaerobic conditions. Because the highly halogenated compounds are already oxidized, the more highly halogenated the compound is (such as PCE, with four chlorine atoms), the more resistant it is to aerobic biodegradation (Wiedemeier et al. 1998). Degradation of these compounds typically occurs in anaerobic environments by reduction reactions. These reactions are mediated by microbes, which use the halogenated compound as an electron acceptor to aid respiration or even as a metabolic substrate in the absence of oxygen. The most common anaerobic process for degrading chlorinated compounds is an electron transfer reaction known as reductive dechlorination or hydrogenolysis.

Chlorinated compounds, such as PCE, TCE, and 1,1,1-TCA, are progressively dechlorinated via hydrogenolysis, although most groundwater systems lack sufficient electron donors to promote complete reductive dechlorination of the highly chlorinated compounds (Chapelle 1993). During hydrogenolysis, the chlorine atoms are replaced by hydrogen, resulting in compounds with reduced carbon and less chlorine. In this case, the chlorinated solvent is acting as an electron acceptor and needs other carbon substrates, such as benzene, toluene, ethylbenzene, and xylenes, to act as electron donors. Thus, PCE degrades to TCE which subsequently degrades to DCE, with the *cis* isomer (cis-1, 2-DCE) predominant over the *trans* isomer. As reductive dechlorination proceeds, vinyl chloride is produced, and, ultimately, ethene and carbon dioxide as shown below (Chapelle 1993; Wiedemeier et al. 1998).

PCE(C_2CL_4)--->TCE (C_2HCl_3)--->DCE($C_2H_2Cl_2$)--->Vinyl Chloride(C_2H_3Cl)--->Ethene (C_2H_4) ---> CO_2

The complete degradation of chlorinated solvents is favored by sequential anoxic/oxic conditions (Chapelle 1996). These groundwater reactions are important and useful in that they produce less toxic chemicals. However, no vinyl chloride or ethene has been detected at the Smithtown site except at one of the suspected source areas, VPW-5. Section 5.3.1.4 discusses the potential for natural attenuation at the Smithtown site.

Other Degradation Mechanisms

Chemical degradation may also occur without the aid of microbes. Hydrolysis and sorption can also result in a decrease in contaminant concentration, as discussed below.

5.3.1.1 Hydrolysis

Hydrolysis involves a similar sequence of reactions as above. During hydrolysis water molecules ionize into hydroxyl (OH^-) and hydrogen (H^+) ions. The positive hydrogen ion becomes hydrated forming H^3O^+. Hydrolysis of TCE for example, would involve its ionization as follows: C_2HCl_3--> $C_2HCl_2^+$ + Cl^- and subsequent hydration of the anion.

The rate of hydrolysis of PCE and TCE is too slow to be considered an important transformation process (ATSDR website). When hydrolysis does occur, elevated temperatures and high pH are required.

1,1,1-TCA has been shown to be abiotically degraded. In abiotic degradation, 1,1,1-TCA is reductively dehalogenated to the daughter product chloroethane, which can further react to produce vinyl chloride by dehydrohalogenation (removal of a chlorine atom from one carbon atom and subsequent removal of a hydrogen atom from an adjacent carbon atom). The daughter product chloroethane also can react with water, whereby a chlorine atom is replaced with a hydroxyl ion (hydrolysis) to produce ethanol (Wiedemeier et al. 1998). 1,1,1-TCA also can be abiotically degraded to acetic acid by various substitution reactions (Wiedemeier et al. 1998).

5.3.1.2 Sorption

Sorption occurs when contaminants attach to soil particles and when dissolved chemicals in groundwater are removed from solution. The dissolved phase chlorinated solvents can be removed from solution by adsorbing to particles in the aquifer matrix. The most common adsorption mechanism for these compounds is hydrophobic bonding. This occurs because the water molecule is more polar than the particle surfaces, and so the nonpolar organic molecules tend to leave the aqueous phase and adsorb to the particles (Wiedemeier et al. 1998). Because adsorption typically is reversible, the aquifer matrix may not permanently sequester compounds, but may release the organic contaminants as solution concentrations decrease. The net result of adsorption is to retard the advance of the organic contaminant(s) through the aquifer.

Retardation factors are calculated using the following equation:

$$R = 1 + {}_b * K_{oc} * f_{oc} / n$$

Where:
- R = the retardation factor (dimensionless)
- ${}_b$ = the bulk density of soil (g/cm^3)
- K_{oc} = the calculated organic carbon soil water partition coefficient in ml/g
- n = the porosity of the aquifer at 0.3
- f_{oc} = organic carbon fraction (no soil data is available)

The calculated retardation factors for the site's volatile organic compounds are shown on Table 5-2. These retardation factors for the site contaminants are low and reflect their high mobility and low adsoption on aquifer materials. Thus they are easily transported in the groundwater flow to off-site locations.

5.3.1.3 Contaminant Persistence

Contaminant persistence describes the length of time that a contaminant will remain in its original chemical state in the environment. The chemicals that persist in a given medium are those that resist biodegradation, hydrolysis, and do not sorb to solid materials or particles in the aquifer.

The fraction of PCE that does not volatize at the surface media will sink and be rapidly transported to less permeable portions of the Upper Glacial Aquifer. PCE has low solubility and is denser than water, so where sufficient mass exist it will form DNAPL pools. In addition, PCE does not readily transform in water. Photolysis and hydrolysis studies with PCE by Chodola et. al. (1989) demonstrated that these processes did not contribute substantially to the transformation of PCE. Attenuation through biological degradation is the most important process of PCE transformation but it does not occur rapidly. If DNAPL exists in the Upper Glacial Aquifer, it will persist and remain a source of contamination of the aquifer.

Detections of the daughter chlorinated VOCs were found in many monitoring and residential wells but no vinyl chloride was found; however, DCE and TCE were also found in the source areas. This data suggests that degradation is not occurring in the groundwater, but may be occurring in the anaerobic conditions in the cesspools and are merely being transported within the aquifer.

Even if natural attenuation is in fact occuring in the cesspools, there are limiting factors for natural degradation at the site. The first would be the time required for the complete degradation of all the toxic products in the chain in light of the residential area where many homes have drinking water wells. Second, the decay products observed in the monitoring wells do not indicate that complete dechlorination is occurring. Also, oxygen levels in the groundwater samples indicate oxic conditions which limits the initial degradation of PCE and TCE which require anoxic environments for reductive dechlorination.

5.3.1.4 Natural Attenuation of VOCs in Groundwater

The presence of PCE biodegradation products such as TCE and DCE along with the chemical characteristics of the groundwater at the site indicate that natural attenuation may be occuring.

The Department of the Navy document, Technical Guidelines for Evaluating Monitored Natural Attenuation of Petroleum Hydrocarbons and Chlorinated Solvents in Ground Water at Naval and Marine corps facilities (1998), provides guidelines for assessing the potential for natural attenuation at sites was utilized. These are to evaluate:

1. Change in contaminant mass over time
2. Correct geological and chemical conditions
   a. Depletion of electron donors and acceptors
   b. Increase metabolic by-products
   c. Decrease parent compound and increase in daughter products

Historical EPA data is available for only PCE. Additional data will be required to track the trend in contaminants of concern mass over time, general findings are discussed below.

The geochemical and chemical conditions of the aquifer could facilitate microbial degradation. Daughter products, such as, TCE and DCE, as well as DCA and TCA are present in most wells. Organic carbon levels are low (0.2 - 0.7 milligrams/liter [mg/L]), and dissolved oxygen is present at the site at levels above 0.5 mg/L, suggesting that oxygen reduction would be the predominant microbial process and reductive dechlorination is unlikely since PCE and TCE degrade more readily under reducing conditions. However, the petroleum hydrocarbon compounds, toluene, ethylbenzene and xylenes, are present at significant levels in the aquifer to facilitate reductive dechlorination where correct geological conditions exist. Fermentation of these hydrocarbons, if occuring, could produce hydrogen to support the reductive dechlorination of PCE and TCE. Some indication of this process is observed since cis-1,2-dichloroethene was found much more than trans-1,2-dichloroethene. Nitrate levels are also sufficient to facilitate nitrate microbial reduction if there are anoxic areas of the aquifer. The site data does not show the presence of lower by-products in the groundwater, such as vinyl chloride and ethene. This suggests that any biodegration is stalled at DCE or any vinyl chloride and ethene produced is rapidly degraded and not detected.

Another suggestion of natural attenuation occurring at the source after contaminant disposal is the presence and concentrations of chloride and DCE. Groundwater directional flow is complex due to influences of the various water bodies in the area, but generally, cis-1,2-DCE and choride levels seem to increase across the flow paths in the southern and northeastern portions of the site.

Methane was detected in only one well, MW-6I at 150 ug/L. This result was obtained from round 2 sampling when the dissolved oxygen content of this well was less than 2 mg/L. However, no other chlorinated VOCs in the PCE/TCE pathway chain were detected in this zone of the well.

5.4 Summary of Contaminant Fate and Transport

The persistence of contaminants is determined by the rate of degradation, velocity of the groundwater, the geochemical conditions in the aquifer, and the retardation coefficient (Kd) of the individual compounds. The Kd values in Table 5-2 range from 10^{-5} to 10^{-3} which show that they will have low adsorption to the materials in the aquifer. The chlorinated VOCs may have been introduced to the aquifer as numerous small slugs in upgradient areas, resulting in complex patterns of VOCs detected downgradient of the sources, but no coherent contaminant plume.

The chlorinated VOCs are mobile and biodegradable. As they move with the groundwater, the concentrations are expected to decrease mainly from dispersion and dilution effects. Natural attenuation via biodegradation in the source areas appears to be limited, and due to the oxic conditions found in the aquifer, is not likely to sufficiently reduce contaminant levels. Due to high mobility the contaminant levels may still be elevated as they move off-site.

Section 6
Risk Assessment Summaries

Two risk assessments were completed as part of the RI/FS for the Smithtown site, a human health risk assessment and an ecological risk assessment. The site risk assessments are submitted as separate documents.

6.1 Human Health Risk Assessment

The summary from the final HHRA is presented below.

6.1.1 Summary of Approach

In the HHRA, contaminants in various media at the site were quantitatively evaluated for potential health threats to the following receptors:

- Current and future residential users of groundwater
- Current and future recreational users of the Nissequogue River
- Current and future recreational users of the Stony Brook Harbor and wetland area

The estimates of cancer risk and noncancer health hazard, and the greatest chemical contributors to these estimates were identified.

Chemicals of potential concern were selected based on criteria outlined in the Risk Assessment Guidelines for Superfund (RAGS) (EPA 1989), primarily through comparison to risk-based screening levels. The chemicals of potential concern include all chemicals detected above screening levels, regardless of their source. Thus, inorganic and semivolatile chemicals that are not associated with the groundwater contamination at the Smithtown site were evaluated along with site-related VOCs. The essential nutrients (i.e., calcium, magnesium, potassium, and sodium) were not quantitatively addressed as their potential toxicity is significantly lower than other inorganics at the site, and most existing toxicological data pertain to dietary intake.

Exposure routes and human receptor groups were identified and quantitative estimates of the magnitude, frequency, and duration of exposure were made. Exposure points were estimated using the minimum of the 95 percent Upper Confidence Limit (UCL) and the maximum concentration. Chronic daily intakes were calculated based on the Reasonable Maximum Exposure (RME) (the highest exposure reasonably expected to occur at a site). The intent is to estimate a conservative exposure case that is still within the range of possible exposures. Central Tendency (CT) exposure assumptions were also developed.

In the toxicity assessment, current toxicological human health data (i.e., reference doses and slope factors) were obtained from various sources and were utilized in the order as specified by RAGS (EPA 1989).

Risk characterization involved integrating the exposure and toxicity assessments into quantitative expressions of risks/health effects. Specifically, chronic daily intakes were compared with concentrations known or suspected to present health risks or hazards.

In general, the EPA recommends target values or ranges (i.e., cancer risk of 10^{-6} to 10^{-4} or hazard index of one) as threshold values for potential human health impacts (EPA 1989). These target values aid in determining whether additional response action is necessary at the site.

6.1.2 Summary of Site Risks

This section presents a summary of the carcinogenic risks and noncarcinogenic hazards for exposures to contaminants in various media at the Smithtown Groundwater Contamination site that were quantitatively evaluated for potential health threats.

6.1.2.1 Risks to Residential Users of Groundwater

Because all fresh groundwater in New York State is classified for use as a potable water supply, potential risks were estimated for adult and child residents assuming exposure to groundwater that is used as tap water. The total RME cancer risk for adult and child resident exposures was 4×10^{-4} (four in ten thousand), which exceeds the EPA range of 10^{-6} to 10^{-4}. This risk is primarily associated with arsenic, TCE and PCE in groundwater. When CT exposure assumptions are used, the total cancer risk for adult and child residents decreases to 1×10^{-4}, which is at the upper end of the range of 10^{-6} to 10^{-4}. Arsenic, which accounted for 51 percent of the estimated risk, is not a site-related contaminant and had a maximum concentration below State and federal drinking water standards.

The total RME hazard index (HI) for both adult and child residents exceeded the threshold of 1 for noncancer effects (HI of 4 for adults and 20 for children), indicating that noncancer health effects may occur from RME exposures to groundwater by residents. When the hazard index is broken out by target organ, the hazard index exceeded unity for effects to the liver and gastrointestinal (GI) tract for adults and to the liver, GI tract, and skin for children. Noncancer effects to the liver were primarily associated with ingestion and inhalation of chloroform (HI of 0.97 for adults and 14 for children). Noncancer effects to the GI tract were associated with ingestion of chromium (HI of 1 for adults and 2.4 for children). Noncancer effects to the skin for children were associated with ingestion of arsenic in groundwater (HI of 1.4 for children). When CT exposure assumptions (i.e., more typical exposures) are used, the hazard indices for adult and child residents still exceeded the threshold of one (i.e., 2 for adults and 6 for children).

6.1.2.2 Risks to Recreational Users of the Nissequogue River

Risks associated with recreational use of the Nissequogue River were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for adult recreational users was 2×10^{-4} (two in ten thousand) for the RME scenario, just above EPA's target risk range of 10^{-6} to 10^{-4}. But the cancer risk is within the range for the more typical CT exposures (3 x 10^{-5}). The total excess lifetime cancer risk for child recreational users was 1 x 10^{-4} for the RME scenario, which is at the upper boundary of EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk for child recreational users was within the range for the more typical CT exposures (5 x 10^{-5}).

These cancer risks at the Nissequogue River are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown site. PAHs were not detected at elevated concentrations in groundwater at the site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Nissequogue River users were well below the threshold of 1 at 0.04 for adults and 0.2 for children for the RME scenario.

6.1.2.3 Risks to Recreational Users of the Stony Brook Harbor

Risks associated with recreational activities at Stony Brook Harbor and wetland were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for each adult and child recreational users was 7 x 10^{-6} (seven in one million), within EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk is below the range for the more typical CT exposures for adult recreational users (9 x 10^{-7}) and within the target range for CT exposures for child recreational users (2 x 10^{-6}).

These cancer risks at the Stony Brook Harbor and wetland are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown site. PAHs were not detected at elevated concentrations in groundwater at the site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Stony Brook Harbor users were well below the threshold of 1 at 0.08 for adults and 0.6 for children for the RME scenario.

6.1.3 Summary of Uncertainties

As in any risk assessment, the estimates of potential health threats (carcinogenic risks and noncarcinogenic health effects) for the site have associated uncertainties. In general, the main areas of uncertainty include the following:

- Environmental data
- Exposure parameter assumptions
- Toxicological data
- Risk characterization

As a result of the uncertainties, the risk assessment should not be construed as presenting absolute risks or hazards. Rather, it is a conservative analysis intended to indicate the potential for adverse impacts to occur based on reasonable maximum and central tendency exposures.

6.2 Screening Level Ecological Risk Assessment

The potential risks to ecological receptors at the Smithtown Groundwater Contamination Site were assessed by several methods:

- Food chain risks were estimated for the food chain receptors (great blue heron, spotted sandpiper, marsh wren, and muskrat) by comparing estimated exposure levels (daily doses) with dose-based ingestion ecotoxicological benchmarks. Risks to the food chain receptors were evaluated using hazard quotients (HQs) which were determined for each contaminant of ecological concern (COEC) by dividing estimated daily contaminant doses by ingestion benchmark toxicity values.

- Risks from aquatic exposures were estimated for aquatic receptors estuarine fish and estuarine crab) by comparing surface water contaminant concentrations to aquatic toxicological benchmark values based on direct surface water exposure. Risks to these receptors were determined using HQs which were determined for each COEC by dividing the maximum contaminant concentrations by the benchmark toxicity values.

- Risks from aquatic exposures were estimated for the freshwater benthic invertebrate community by comparing surface water/sediment contaminants concentrations to surface water/sediment quality criteria/guidance values derived for the protection of benthic species.

For the estuarine fish, estuarine crab, and receptors with food chain exposures, HIs were determined by summing the COEC HQs for each ecological receptor. Cumulative HIs were ranked in accordance with a ranking scheme that was used to evaluate potential ecological risks to individual organisms. The ranking scheme is as follows:

HI $\leq$ 1	no adverse effects
HI >1	possible adverse effects

It is important to note that this methodology is not a measure of, and cannot be used to determine, absolute quantitative risk. Use of this technique, however, can indicate the potential for the ecological receptor to be at risk to an adverse effect from exposure to site COECs.

6.2.1 Estimation of Aquatic Risk

Potential ecological risks to contaminants in the sediment and surface water of the site were assessed using direct comparisons of contaminant concentrations in sediment and surface water with criteria, guidelines, and benchmark concentration values based on aquatic ecotoxicity.

Comparisons were made between the maximum detected contaminant levels and associated values during the screening phase for COECs. This resulted in a number of COECs for surface water and for sediment. For the aquatic invertebrate community, the potential for adverse ecological risks to contaminants appears to exist in both the surface water and sediment from the following chemical parameter groups:

- Surface water - inorganics are a potential concern for aquatic invertebrates
- Sediment - volatile organic compounds (acetone, 2-butanone, carbon disulfide, and trichlorofluoromethane. Only trichlorofluormethane is potentially a site-related contaminant as only chlorinated VOCs are considered to be site-related), semivolatile organic compounds, pesticides, and inorganics are a potential concern for aquatic invertebrates.

The estuarine fish and crabs were used as a receptor species to further assess the potential ecological risks from surface water contamination. The potential risks to these receptors were assessed by direct comparisons of contaminant concentrations in surface water with saltwater fish and crab ecotoxicity benchmark values. Tables 5-1 through 5-3 in the SLERA provide the comparison for estuarine fish. Tables 5-4 through 5-6 in the SLERA provide the comparison for estuarine crabs. The potential risk from exposure to surface water for the fish and crabs can be summarized as follows by each area examined:

<u>Nissequogue River</u>

- The estimated hazard index for estuarine fish of approximately 36 indicates the potential for some chance of adverse effects resulting from exposure to site surface water. The primary risk contributor is copper, which contributes over 99 percent of the potential risk.

- The estimated hazard index for estuarine crab of approximately 375 indicates the potential for some adverse effects resulting from exposure to site surface water. The primary risk contributor is lead, which contributes over 99 percent of the potential risk.

<u>Stony Brook Harbor</u>

- The estimated hazard index for estuarine fish of less than 8 indicates the potential for adverse effects resulting from exposure to site surface water. The potential for adverse effects is relatively low and comes from copper.

- The estimated hazard index for estuarine crab of less than 1 indicates no expected adverse effects resulting from exposure to site surface water.

<u>Harbor Wetland</u>

- The estimated hazard index for estuarine fish of approximately 25 indicates the potential for some adverse effects resulting from exposure to site surface water. The primary risk contributor is copper, which contributes over 99 percent of the potential risk.

- The estimated hazard index for estuarine crab of approximately 374 indicates the potential for some chance of adverse effects resulting from exposure to site surface water. The primary risk contributor is lead, which contributes over 99 percent of the potential risk.

The potential risks to estuarine fish and crabs from chemicals in the surface water are not likely to be a site-related issue, as the metals presenting the potential for ecological risk are not groundwater contaminants associated with the site. A determination of background inorganic levels in groundwater is presented in Section 4.1.1.

6.2.2 Estimation of Food Chain Risk

Potential ecological risks to contaminant uptake through the food chain were estimated for food chain receptors: great blue heron, spotted sandpiper, marsh wren, and muskrat. Exposures to the food chain receptors were modeled, as follows:

- The great blue heron is expected to be exposed to contaminants in the sediment, surface water and in fish (exposed to the contaminated sediment and surface water).

- The spotted sandpiper and marsh wren are expected to be exposed to contaminants in the sediment, surface water and aquatic invertebrates (exposed to the contaminated sediment and surface water).

- The muskrat is expected to be exposed to contaminants in the sediment, surface water, and vegetation (exposed to the contaminated sediments and surface water).

Potential risks to the food chain receptors were assessed by comparing estimated exposure dose levels with dose-based toxicological benchmark values. Resultant HQs for each COEC and HIs (cumulative HQs) are provided in Tables D-6 through D-12 in the SLERA. Potential ecological risk results are discussed below.

<u>Nissequogue River</u>
Piscivorous birds
The hazard index of approximately 2 for the great blue heron indicates that there is some, small potential for ecological risks to piscivorous birds from food chain exposure to contaminants in river sediment and surface water. The primary contributors to the potential risk is lead, contributing greater than 99 percent to the potential risk.

Insectivorous birds
The hazard index of approximately 28 for the spotted sandpiper indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in river sediment and surface water. The primary contributors are lead, alpha-chlordane, and naphthalene with contribution to the potential risk of 41, 26, and 11 percent, respectively.

<u>Stony Brook Harbor</u>

Piscivorous birds

The hazard index of less than 2 for the great blue heron indicates that there is some potential for ecological risks to piscivorous birds from food chain exposure to contaminants in harbor sediment and surface water. The primary contributor is lead, with a contribution to the potential risk of 97 percent .

Insectivorous birds

The hazard index of approximately 79 for the spotted sandpiper indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in harbor sediment and surface water. The primary contributor is bis(2-ethylhexyl)phthalate, with a contribution to the potential risk of 80 percent.

<u>Harbor Wetland</u>

Piscivorous birds

The hazard index of approximately 20 for the great blue heron indicates that there is a potential for ecological risks to piscivorous birds from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors to the potential risk are chromium and lead, with contributions to the potential risk of 52 and 29 percent, respectively.

Insectivorous birds

The hazard index of 39 for the marsh wren indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors to the potential risk are chromium, lead, and arsenic with a contribution to the potential risk of 15, 17, and 39 percent, respectively.

Herbivorous mammals

The hazard index of 136 for the muskrat indicates that there is a potential for ecological risks to herbivorous mammals from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors are manganese, antimony, and iron with their contribution to the potential risk of 38, 35, and 18 percent, respectively.

The potential risks to ecological receptors with food chain exposures to chemicals in the surface water and sediment are not likely to be a site-related issue, as the metals presenting the potential for ecological risk are not groundwater contaminants associated with the site.

6.2.3 Risk Summary

Results of the screening level ecological risk assessment process indicate that the potential exists for ecological risk at the site resulting from exposure to chemicals detected in site sediment and surface water. Contaminants of potential ecological concern may present a risk to the aquatic invertebrates and receptors with food chain exposures from surface water and sediment of the seepage areas of the Nissequogue River and Stony Brook Harbor and the harbor wetland. For estuarine fish and crabs, contaminants of potential ecological concern in the surface water of the river, water discharging to the harbor (as determined from groundwater concentrations), and the harbor wetland may pose a potential risk. Primary risk contributors are metals and are not associated with site-related groundwater contamination, as discussed in Section 4.1.1. The chemicals that are responsible for the potential risk to ecological receptors are not the low levels of site-related contamination (volatile compounds in the 1 to 2 ppb range) in the groundwater that is discharging into the surface water of the Nissequogue River and Stony Brook Harbor.

Section 7
Conclusions

This section presents conclusions about the nature and extent of contamination at the Smithtown Groundwater Contamination site. The site consists of two distinct areas. The northern part of the site is entirely residential, with large lots to accommodate septic systems and (in the past) drinking water wells at each home. Water mains were extended to most of the residential streets in 1999 and 2000, allowing individual homes to connect to the public water supply. The southern part of the site is characterized by smaller residential lots and numerous busy streets lined with strip malls and small business establishments. Groundwater in the two areas is discussed in Section 7.1.

7.1 Groundwater

Groundwater contamination in the Smithtown area has been identified in isolated pockets which most likely represent small slugs of contamination that were input into the groundwater in the distant past. Groundwater flow on a regional scale is generally toward the north/northwest and Long Island Sound. On a local scale, groundwater flow is complex. The two major water bodies in the area, the Nissoquogue River to the west and Stony Brook Harbor to the northeast, act as discharge points for groundwater.

The RI was not able to pinpoint the sources of groundwater contamination. The groundwater model suggests the contamination observed in the residential areas may have originated in the commercially developed areas of the site. However, based on groundwater flow rates, contamination detected in the residential wells and/or monitoring well network during the RI, was input to the groundwater many years ago. Locations of dry cleaners or other businesses that may have used chlorinated solvents may have changed over the years, but the general commercial areas upgradient of the residential areas have not changed significantly. The septic systems at the businesses investigated ranged from 8 to 15 feet in depth below the ground surface, with an approximate diameter of 10 feet. Leach fields vary in size, depending on the size of the associated building. The size of the septic systems indicates that contaminant releases through these systems would be limited in areal extent.

Figure 1-4, generated by the site groundwater model, shows estimated entry points of contamination to the water table. Observed contamination in residential wells was "backtracked" by moving the groundwater back toward its origin. The figure indicates that contamination may have contacted the groundwater table as much as 30 years ago. Given a 30 year time frame, contaminant entry points to the water table cannot be pinpointed to a specific location.

Because of the sporadic nature and isolated pockets of the contamination observed in the residential wells, a contiguous groundwater plume can not be mapped. The detections may represent small, isolated slugs of contamination that may have been released periodically in the past, as small point sources through septic systems. The area has no large, municipal sanitary systems. Most businesses and homes in the area use individual septic systems for sanitary waste disposal. Contamination that may have been discharged to septic systems in the past would move with the groundwater as small, isolated pockets. Contamination released periodically from small-scale septic systems explains the pattern of disconnected pockets of contamination observed over the years in the many rounds of residential sampling. Wells with contamination occur in small clusters, or isolated contaminated wells surrounded by wells with no contamination. Well completion records for the residential area are incomplete, and residential wells are often completed at variable depths. Therefore, wells that produce contaminated water may tap a different depth and flow zone of the aquifer than other nearby, adjacent wells that are not contaminated. The observed patterns of groundwater contamination in the residential areas do not represent a mappable groundwater plume and no clear link was established between the residential area and areas where contaminants may have been released.

Two areas of contamination in the residential area appear to have higher levels of VOCs. Area One is near Harbor Hill Road and Stony Brook Harbor on the east side of the site. Groundwater depth ranges from approximately 5 feet to 150 feet and the thickness of contaminated groundwater is approximately 100 feet. The maximum PCE concentration is 140 ug/L.

Area Two is near the Waterford Stables and the Nature Conservancy property on the west side of the site. Groundwater is approximately 150 feet bgs and the thickness of contaminated groundwater is approximately 125 feet. The maximum PCE concentration is 63 ug/L.

These areas will be evaluated for possible groundwater remediation during the Feasibility Study for the Smithtown site.

7.2 Surface Water/Sediment

Spring and seep surface water and sediment results indicate that groundwater with low levels of chlorinated VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in sediments, although the detection limits for some sediment sample VOCs were elevated. Several detections of inorganic analytes in surface water and/or sediment were noted. These analytes are not related to Smithtown site contamination. The discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges.

7.3 Storm Drain Sediment

Storm drain sediment samples were collected to evaluate if illicit chemical dumping had occurred in the past at storm drains in the residential area. The types of contaminants detected in these sediments, along with the lack of detections of chlorinated VOCs, indicate that the storm drains have not been used in the recent past for illicit disposal of hazardous chemicals associated with the Smithtown site.

Several detections of inorganic analytes in storm drain sediments were noted. These analytes are not related to Smithtown site contamination.

Contaminants identified in the storm drain sediments would have limited migration potential to the groundwater. Inorganics have limited solubility and would be expected to stay bound to the sediment particles. VOCs would be unlikely to migrate through the thick unsaturated zone into the groundwater.

7.4 Septic Systems

Wastewater and sludge samples were collected in 2003 from the same potential sources of contamination identified by SCDHS in 1997. Subsequent to the sampling conducted by SCDHS, many of the septic systems were cleaned. The 2003 samples evaluated current levels of contamination in the septic systems. No wastewater samples exceeded the 1,000 ug/L total VOC screening criteria. Three sludge samples had limited exceedances of screening criteria: SL-3 exceeded the mercury criterion; SL-7 exceeded the toluene, copper, and mercury criteria; and SL-8 exceeded the toluene criterion. The limited exceedances of screening criteria indicate that the business was handling practices have improved since the septic systems were cleaned out in the late 1990s. These systems are not currently considered sources of contamination to the groundwater.

7.5 Air Samples

Air sample analytical results were compared to EPA Region 3 RBCs for ambient air. No other compounds exceeded the RBCs, although detection limits exceeded the RBC for TCE and 1,2-dibromoethane.

Air sample results from residences were compared to groundwater results where the residential well was sampled during the RI. Seven of the 12 residences were sampled during both sampling activities. There was no correlation between the indoor air and groundwater results. The VOCs detected in residential well water were not reflected in the air sample results. Therefore, it appears that indoor air detections are not directly linked to the groundwater contamination.

Section 8
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Table 1-1
Residences Hooked Up to Water or Provided Treatment
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Address	Former Address	Type of Action
43 Branglebrink Road	Krauth/Branglebrink Road	Carbon Treatment at tap
40 Branglebrink Road	Gillison/Branglebrink Road	Water Main Connection
41 Branglebrink Road	Renna/Branglebrink Road	Water Main Connection
9 Branglebrink Road	9 Branglebrink Road	Water Main Connection
29 Branglebrink Road	29 Branglebrink Road	Water Main Connection
37 Branglebrink Road	37 Branglebrink Road	Water Main Connection
1 Carmen Lane	1 Carmen Lane	Water Main Connection
7 Carmen Lane	7 Carmen Lane	Water Main Connection
16 Carmen Lane	16 Carmen Lane	Water Main Connection
22 Carmen Lane	22 Carmen Lane	Water Main Connection
30 Cordwood Path	Greshin/Cordwood Path	Water Main Connection
26 Cordwood Path	26 Cordwood Path	Water Main Connection
22 Harbor Lane	3 Harbor Lane	Carbon Treatment at tap
25 Harbor Road	25 Harbor Road	Water Main Connection
49 Harbor Hill Road	49 Harbor Hill Road	Water Main Connection
54 Harbor Hill Road	54 Harbor Hill Road	Water Main Connection
28 Highwoods Court	28 Highwoods Court	Water Main Connection
29 Highwoods Court	29 Highwoods Court	Water Main Connection
31 Highwoods Court	31 Highwoods Court	Water Main Connection
33 Highwoods Court	33 Highwoods Court	Water Main Connection
320 Old Mill Road	245K Old Mill Road	Carbon Treatment at tap
3 Breezy Hollow Road	263J Old Mill Road	Water Main Connection
5 Old Post Lane	255 Old Post Lane	Carbon Treatment at tap
3 Pin Oak Lane	3 Pin Oak Lane	Water Main Connection

Table 1-1
Residences Hooked Up to Water or Provided Treatment
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Address	Former Address	Type of Action
7 Pin Oak Lane	7 Pin Oak Lane	Water Main Connection
412 River Road	207 River Road	Water Main Connection
270 Sachem Hill Road	270 Sachem Hill Road	Water Main Connection
271 Sachem Hill Road	271 Sachem Hill Road	Water Main Connection
5 Swan Place	5 Swan Place	Water Main Connection
6 Swan Place	6 Swan Place	Water Main Connection
3 Tide Mill Lane	3 Tide Mill Lane	Carbon Treatment at tap
1 Tide Mill Road	1 Tide Mill Road	Water Main Connection
2 Tide Mill Road	2 Tide Mill Road	Water Main Connection
8 Tide Mill Road	8 Tide Mill Road	Water Main Connection
3 Watercrest Court	3 Watercrest Court	Carbon Treatment at tap
4 Watercrest Court	4 Watercrest Court	Carbon Treatment at tap
7 Watercrest Court	7 Watercrest Court	Carbon Treatment at tap
8 Watercrest Court	8 Watercrest Court	Carbon Treatment at tap

Table 1-2
Septic System Samples
Suffolk County Department of Health Services
November 1997 to March 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Location (1)	Date	Sample #	Matrix	Analyses
1. Smithtown School Administration Center Edgewood Avenue	3/17/98	1-WS-3-17 2-WS-3-17	Sludge Sludge	VOCs/metals VOCs/metals
2. Avenue Cleaners 483 Lake Avenue	2/23/98	1-WS-2-23 2-WS-2-23 3-WS-2-23	Liquid Sludge Soil/Floor drain	VOCs VOCs VOCs
3. Four Seasons Cesspool 400 Route 25A	2/09/98 3/17/98	1-WS-2-9 2-WS-2-9 3-WS-3-17	Sludge Sludge Sludge	VOCs/metals metals VOCs/metals
4. Gene's French Cleaners 256 Lake Avenue	2/23/98	1-WS-2-23 2-WS-2-23	Liquid Liquid	VOCs VOCs
5. St. James Exxon Center 525 Route 25A	3/02/99	4-WS-3-2 5-WS-3-2	Liquid Sludge	VOCs/metals VOCs/metals
6. Penney's St James Garage 545 Route 25A	3/02/99	1-WS-3-2 2-WS-3-2 3-WS-3-2	Liquid Sludge Sludge	VOCs/metals VOCs/metals VOCs/metals
7. North Country Cleaners 430-11 North Country Road	11/5/97	1-WS-11-5 2-WS-11-5	Liquid Sludge	VOCs/metals VOCs/metals
8. The Cleaners 437 North Country Road	11/6/97	1-WS-11-6 2-WS-11-6	Liquid Sludge	VOCs VOCs
9. Polo French Cleaners 556 North Country Road	11/5/97	3-WS-11-5 4-WS-11-5	Liquid Sludge	VOCs/metals VOCs/metals
10. Sal's Auto Body 617/621 Lake Avenue	4/22/98 5/1/98	1-WS-4-22 (617) 1-WS-5-1 (621) 2-WS-5-1 (621)	Soil Liquid Sludge	VOCs/metals VOCs/metals VOCs/metals
11. St. James Cleaners 561 Lake Avenue	3/23/98	1-WS-3-23 2-WS-3-23	Liquid Sludge	VOCs/metals VOCs/metals

VOCs = volatile organic compounds by SW 846 method 8260

(1) Location number corresponds to number on Figure 1-3

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	AVE. CLEANERS 1-WS-2-23 LIQUID 2-23-98	AVE. CLEANERS 2-WS-2-23 SLUDGE 2-23-98	FOUR SEASONS 1-WS-2-9 SLUDGE 2-9-98	FOUR SEASONS 3-WS-3-17 SLUDGE 3-17-98	GENE'S CLEANERS 1-WS-2-23 LIQUID 2-23-98	GENE'S CLEANER 2-WS-2-23 LIQUID 2-23-98	ADMIN. CENTER 1-WS-3-17 SLUDGE 3-17-98
<u>Compounds</u> - all units in ppb							
Acetone					130		
sec-Butylbenzene							
Chlorobenzene		1,000					
Chloroform					8		
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene		4,200		14,000			
cis-1,2-Dichloroethene					19	1,700,000	
trans-1,2-Dichloroethene							
Ethylbenzene							690
Isopropylbenzene							
p-Ethyltoluene		240					5,100
Isopropylbenzene							
p-Isopropyltoluene		360	170	12,000			

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	AVE. CLEANERS 1-WS-2-23 LIQUID 2-23-98	AVE. CLEANERS 2-WS-2-23 SLUDGE 2-23-98	FOUR SEASONS 1-WS-2-9 SLUDGE 2-9-98	FOUR SEASONS 3-WS-3-17 SLUDGE 3-17-98	GENE'S CLEANERS 1-WS-2-23 LIQUID 2-23-98	GENE'S CLEANER 2-WS-2-23 LIQUID 2-23-98	ADMIN. CENTER 1-WS-3-17 SLUDGE 3-17-98
Methyl ethyl ketone							
Naphthalene		140		6,400			
n-Propylbenzene							
Tetrachloroethene	7				270	65,000,000	
Compounds - all units in ppb							
1,2,4,5-Tetramethylbenzene							
Toluene	44	11,000	460	38,000	82		1,300
1,2,4-Trichlorobenzene							
Trichloroethene					7	1,200,000	
1,2,4-Trimethylbenzene		250					11,000
1,3,5-Trimethylbenzene		120					5,600
Xylenes (total)				3,800			3,700

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	AVE. CLEANERS 1-WS-2-23 LIQUID 2-23-98	AVE. CLEANERS 2-WS-2-23 SLUDGE 2-23-98	FOUR SEASONS 1-WS-2-9 SLUDGE 2-9-98	FOUR SEASONS 3-WS-3-17 SLUDGE 3-17-98	GENE'S CLEANERS 1-WS-2-23 LIQUID 2-23-98	GENE'S CLEANER 2-WS-2-23 LIQUID 2-23-98	ADMIN. CENTER 1-WS-3-17 SLUDGE 3-17-98
METALS							
Analytes - all units in ppm							
Barium	NA	NA	1.3	30	NA	NA	30
Cadmium	NA	NA			NA	NA	4
Chromium	NA	NA	0.1		NA	NA	
Copper	NA	NA	7.2	160	NA	NA	790
Lead	NA	NA	0.6		NA	NA	57
Silver	NA	NA	0.25	12	NA	NA	5.1

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ADMIN. CENTER 2-WS-3-17 SLUDGE 3-17-98	KING BEAR 1-WS-10-27 OIL PHASE 10-27-97	KING BEAR 2-WS-10-27 SLUDGE 10-27-97	NORTH COUNTRY 1-WS-11-5 LIQUID 11-5-97	NORTH COUNTRY 2-WS-11-5 SLUDGE 11-5-97	THE CLEANERS 1-WS-11-6 LIQUID 11-6-97	THE CLEANERS 2-WS-11-6 SLUDGE 11-6-97
Compounds - all units ppb							
Acetone			1,600				
sec-Butylbenzene			310				
Chlorobenzene							
Chloroform							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
cis-1,2-Dichloroethene		4,900	5,600	720	28,000	61	
trans-1,2-Dichloroethene							
Ethylbenzene	2,400		470				
Isopropylbenzene							
p-Ethyltoluene	18,000	2,300	5,000	63			
Isopropylbenzene			210				

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ADMIN. CENTER 2-WS-3-17 SLUDGE 3-17-98	KING BEAR 1-WS-10-27 OIL PHASE 10-27-97	KING BEAR 2-WS-10-27 SLUDGE 10-27-97	NORTH COUNTRY 1-WS-11-5 LIQUID 11-5-97	NORTH COUNTRY 2-WS-11-5 SLUDGE 11-5-97	THE CLEANERS 1-WS-11-6 LIQUID 11-6-97	THE CLEANERS 2-WS-11-6 SLUDGE 11-6-97
p-Isopropyltoluene		1,000			580		250
Methyl ethyl ketone							
Naphthalene		1,800	4,000				
n-Propylbenzene	3,200		700				
Tetrachloroethene		37,000	14,000	6,800	29,000	660	160,000
Compounds - all units in ppb							
1,2,4,5-Tetramethylbenzene	6,800	11,000	5,000				260
Toluene			1,600				
1,2,4-Trichlorobenzene							
Trichloroethene		11,000	25,000	140	4,300		190
1,2,4-Trimethylbenzene	32,000	4,700	7,100	72			
1,3,5-Trimethylbenzene		1,100	2,500				
Xylenes (total)	17,000		3,200				

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ADMIN. CENTER 2-WS-3-17 SLUDGE 3-17-98	KING BEAR 1-WS-10-27 OIL PHASE 10-27-97	KING BEAR 2-WS-10-27 SLUDGE 10-27-97	NORTH COUNTRY 1-WS-11-5 LIQUID 11-5-97	NORTH COUNTRY 2-WS-11-5 SLUDGE 11-5-97	THE CLEANERS 1-WS-11-6 LIQUID 11-6-97	THE CLEANERS 2-WS-11-6 SLUDGE 11-6-97
METALS							
Analytes - all units in ppm							
Barium	30	0.15	15	0.1	20	NA	NA
Cadmium	6.5					NA	NA
Chromium					10	NA	NA
Copper	950	0.75	19	0.5	15	NA	NA
Lead	55	0.33	29	1.2	30	NA	NA
Silver	17.2			.07		NA	NA

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	POLO CLEANER 3-WS-11-5 LIQUID 11-5-97	POLO CLEANER 4-WS-11-5 SLUDGE 11-5-97	SAL'S AUTO 1-WS-4-22 SOIL 4-22-98	S AL'S AUTO 1-WS-5-1 LIQUID 5-1-98	SAL'S AUTO 2-WS-5-1 SLUDGE 5-1-98	ST. JAMES 1-WS-3-23 LIQUID 3-23-98	ST. JAMES 2-WS-3-23 SLUDGE 3-23-98
Compounds - all units in ppb							
Acetone		1,500				930	
sec-Butylbenzene							
Chlorobenzene							
Chloroform						17	
1,2-Dichlorobenzene					1,600		
1,3-Dichlorobenzene					110		
1,4 -Dichlorobenzene					400		
cis-1,2-Dichloroethene	780	4,900				9	1,000
trans-1,2-Dichloroethene						15	1,200
Ethylbenzene					1,000		
p-Ethyltoluene		1,000			760		460
Isopropylbenzene							
p-Isopropyltoluene		15,000	1,400	68	6,000		4,000

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	POLO CLEANER 3-WS-11-5 LIQUID 11-5-97	POLO CLEANER 4-WS-11-5 SLUDGE 11-5-97	SAL'S AUTO 1-WS-4-22 SOIL 4-22-98	S AL'S AUTO 1-WS-5-1 LIQUID 5-1-98	SAL'S AUTO 2-WS-5-1 SLUDGE 5-1-98	ST. JAMES 1-WS-3-23 LIQUID 3-23-98	ST. JAMES 2-WS-3-23 SLUDGE 3-23-98
Methyl ethyl ketone						550	
Naphthalene					160		130
n-Propylbenzene		230			130		
Tetrachloroethene	880	2,100	120			120	13,000
Compounds - all units in ppb							
1,2,4,5-Tetramethylbenzene					140		
Toluene		2,400		120	38,000		250
1,2,4-Trichlorobenzene					510		
Trichloroethene	290	560				26	10,000
1,2,4-Trimethylbenzene		1,000			2,200		670
1,3,5-Trimethylbenzene		450			1,000		190
Xylenes (total)		120			3,700		580
METALS							
Compounds - all units in ppm							

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	POLO CLEANER 3-WS-11-5 LIQUID 11-5-97	POLO CLEANER 4-WS-11-5 SLUDGE 11-5-97	SAL'S AUTO 1-WS-4-22 SOIL 4-22-98	S AL'S AUTO 1-WS-5-1 LIQUID 5-1-98	SAL'S AUTO 2-WS-5-1 SLUDGE 5-1-98	ST. JAMES 1-WS-3-23 LIQUID 3-23-98	ST. JAMES 2-WS-3-23 SLUDGE 3-23-98
Barium		10	10		60	0.7	15
Cadmium							
Chromium					10	0.1	10
Copper		410			90	3.4	180
Lead		35			210	0.4	
Silver						2.5	300

LOCATION SAMPLE NO. MATRIX DATE	ST. JAMES EXXON 4-WS-3-2 LIQUID 3-2-99	ST. JAMES EXXON 5-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 1-WS-3-2 LIQUID 3-2-99	PENNEY'S GARAGE 2-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 3-WS-3-2 SLUDGE 3-2-99
Compounds - all units in ppb					
Acetone					
sec-Butylbenzene					
Chlorobenzene					

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ST. JAMES EXXON 4-WS-3-2 LIQUID 3-2-99	ST. JAMES EXXON 5-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 1-WS-3-2 LIQUID 3-2-99	PENNEY'S GARAGE 2-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 3-WS-3-2 SLUDGE 3-2-99
Chloroform					
1,2-Dichlorobenzene					
1,3-Dichlorobenzene					
1,4 -Dichlorobenzene	69				
cis-1,2-Dichloroethene					
trans-1,2-Dichloroethene					
Ethylbenzene					
p-Ethyltoluene		380	150		
Isopropylbenzene					
p-Isopropyltoluene		4,500	1,000	3,200	
Methyl ethyl ketone					
Naphthalene					
n-Propylbenzene					
Tetrachloroethene	560	1,200	150		

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ST. JAMES EXXON 4-WS-3-2 LIQUID 3-2-99	ST. JAMES EXXON 5-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 1-WS-3-2 LIQUID 3-2-99	PENNEY'S GARAGE 2-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 3-WS-3-2 SLUDGE 3-2-99
Compounds - all units in ppb					
1,2,4,5-Tetramethylbenzene					
Toluene	46	340	770	7,600	470
1,2,4-Trichlorobenzene					
Trichloroethene					
1,2,4-Trimethylbenzene		660	250		
1,3,5-Trimethylbenzene					
Xylenes (total)		100	82	100	
METALS					
Compounds - all units in ppm					
Barium					
Cadmium			0.12		
Chromium					
Copper	0.1	16	3.5		

Table 1-3
Volatile Organic Compounds and Metals Results
Smithtown Groundwater Contamination Site
Smithtown, New York

LOCATION SAMPLE NO. MATRIX DATE	ST. JAMES EXXON 4-WS-3-2 LIQUID 3-2-99	ST. JAMES EXXON 5-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 1-WS-3-2 LIQUID 3-2-99	PENNEY'S GARAGE 2-WS-3-2 SLUDGE 3-2-99	PENNEY'S GARAGE 3-WS-3-2 SLUDGE 3-2-99
Lead			3.7		
Silver					

ppb = parts per billion; ppm = parts per million; NA = Not analyzed for metals.
Note: Organic compounds analyzed by Method 8260.
Blank cells indicate compound or analyte were not detected.
The sample results in this table identify contamination prior to cleanup at each facility.

Table 1-4
Residences Not Connected to Public Water
Smithtown Groundwater Contamination Site
Smithtown, New York

16 Barn Lane	35 Hitherbrook Rd	300 River Rd	1 Swan Place
5 Branglebrink Rd	3 Laurel Hill Path	318 River Rd	3 Sweet Hollow Court
26 Branglebrink Rd	538 Moriches Rd	322 River Rd	4 Sweet Hollow Court
28 Branglebrink Rd	547 Moriches Rd	325 River Rd	2 Teal Way
43 Branglebrink Rd	548 Moriches Rd	326 River Rd	8 Teal Way
45 Branglebrink Rd	551 Moriches Rd	399 River Rd	31 Thompson Lane
49 Branglebrink Rd	552 Moriches Rd	400 River Rd	28 Thompson Hill Rd
40 Bridal Path	564 Moriches Rd	401 River Rd	3 Three Sisters Rd
43 Bridal Path	574 Moriches Rd	405 River Rd	12 Three Sisters Rd
3 Buckingham Court	579 Moriches Rd	407 River Rd	16 Three Sisters Rd
15 Carman Lane	580 Moriches Rd	410 River Rd	28 Three Sisters Rd
19 Carman Lane	600 Moriches Rd	414 River Rd	37 Three Sisters Rd
1 Cordwood Path	603 Moriches Rd	417 River Rd	47 Three Sisters Rd
3 Cordwood Path	614 Moriches Rd	419 River Rd	52 Three Sisters Rd
16 Farm Rd	617 Moriches Rd	423 River Rd	55 Three Sisters Rd
35 Farm Rd	619 Moriches Rd	424 River Rd	**3 Tide Mill Lane***
46 Farm Rd	621 Moriches Rd	425 River Rd	4 Tide Mill Lane
52 Farm Rd	3 Old Mill Path	429 River Rd	5 Tide Mill Lane
8 Fells Way	5 Old Mill Path	432 River Rd	6 Tide Mill Lane
1 Friends Way	300 Old Mill Rd	440 River Rd	3 Tide Mill Rd
3 Friends Way	302 Old Mill Rd	442 River Rd	4 Tide Mill Rd
4 Friends Way	306 Old Mill Rd	443 River Rd	6 Tide Mill Rd
2 Fox Run	312 Old Mill Rd	447 River Rd	9 Tide Mill Rd
23 Glenrich Drive	315 Old Mill Rd	448 River Rd	1 Tracklot Road
29 Grenrich Drive	319 Old Mill Rd	453 River Rd	9 Tracklot Road
28 Harbor Hill Rd	**320 Old Mill Rd***	457 River Rd	2 Twixt Hills Road
34 Harbor Hill Rd	323 Old Mill Rd	461 River Rd	22 Twixt Hills Road
35 Harbor Hill Rd	325 Old Mill Rd	1 Smith Lane	35 Twixt Hills Road
57 Harbor Hill Rd	326 Old Mill Rd	30 Smith Lane	39 Twixt Hills Road
1 Harbor Lane	327 Old Mill Rd	31 Smith Lane	**3 Watercrest Ct***
3 Harbor Lane*	331 Old Mill Rd	1 Spring Hill	**4 Watercrest Ct***
21 Harbor Lane	2 Old Post Lane	2 Spring Hill	**7 Watercrest Ct***
22 Harbor Lane*	**5 Old Post Lane***	5 Spring Hill	**8 Watercrest Ct***
24 Harbor Lane	8 Old Post Lane	8 Spring Hill	9 Watercrest Ct
26 Harbor Lane	8 Partridge Lane	2 Spring Hollow Rd	11 Watercrest Ct
28 Harbor Lane	2 Pinoak Lane	6 Spring Hollow Rd	14 Watercrest Ct
31 Harbor Lane	17 Pinoak Lane	7 Spring Hollow Rd	16 Watercrest Ct
32 Harbor Lane	26 Pinoak Lane	9 Spring Hollow Rd	1 Wetherill Lane
34 Harbor Lane	1 Quail Hollow Court	10 Spring Hollow Rd	4 Wetherill Lane
3 Harbor Rd	2 Quail Hollow Court	11 Spring Hollow Rd	5 Wetherill Lane
18 Harbor Rd.	8 Quail Hollow Court	13 Spring Hollow Rd	7 Wetherill Lane
20 Harbor Rd	38 Quail Path	15 Spring Hollow Rd	8 Wetherill Lane
27 Harbor Rd	41 Quail Path	17 Spring Hollow Rd	10 Woodcrest Drive
58 Harbor Rd	43 Quail Path	19 Spring Hollow Rd	12 Woodcrest Drive
60 Harbor Rd	8 Regal Court	20 Spring Hollow Rd	18 Woodcrest Drive
16 Harness Road	249 River Rd	25 Spring Hollow Rd	21 Woodcrest Drive
4 Highwoods Ct	274 River Rd	15 Stone Gate	5 Woodcutters Path
6 Highwoods Ct	274A River Rd	18 Stone Gate	9 Woodcutters Path
17 Highwoods Ct	274B River Rd	20 Stone Gate	11 Woodcutters Path
19 Highwoods Ct	276 River Rd	22 Stone Gate	
5 Hitherbrook Rd	277 River Rd	24 Stone Gate	
7 Hitherbrook Rd	278 River Rd	1 Summit Trail	
9 Hitherbrook Rd	285 River Rd	2 Summit Trail	
23 Hitherbrook Rd	288 River Rd	3 Summit Trail	Total 211
BOLD* - EPA is currently providing treatment at the tap			

Table 1-5
Residences Connected to Public Water
Smithtown Groundwater Contamination Site
Smithtown, New York

10 Barn Lane	10 Damin Circle	57 Fifty Acre Road	46 Harbor Hill Road
5 Branglebrink Road	12 Damin Circle	3 Fox Run	49 Harbor Hill Road
9 Branglebrink Road	14 Damin Circle	4 Fox Run	54 Harbor Hill Road
15 Branglebrink Road	15 Damin Circle	5 Fox Run	57 Harbor Hill Road
16 Branglebrink Road	16 Damin Circle	6 Fox Run	12 Harbor Road
21 Branglebrink Road	18 Damin Circle	7 Fox Run	25 Harbor Road
23 Branglebrink Road	19 Damin Circle	2 Friends Way	29 Harbor Road
24 Branglebrink Road	20 Damin Circle	2 Frog Hollow	34 Harbor Road
29 Branglebrink Road	22 Damin Circle	3 Frog Hollow	36 Harbor Road
35 Branglebrink Road	23 Damin Circle	6 Frog Hollow	39 Harbor Road
37 Branglebrink Road	24 Damin Circle	8 Frog Hollow	43 Harbor Road
40 Branglebrink Road	26 Damin Circle	9 Frog Hollow	47 Harbor Road
41 Branglebrink Road	27 Damin Circle	11 Frog Hollow	49 Harbor Road
48 Branglebrink Road	28 Damin Circle	17 Frog Hollow	61 Harbor Road
50 Branglebrink Road	29 Damin Circle	11 Gate Road	64 Harbor Road
54 Branglebrink Road	30 Damin Circle	12 Gate Road	2 Harness Road
1 Breezy Hollow	2 Denise Court	19 Gate Road	3 Harness Road
3 Breezy Hollow	3 Denise Court	20 Gate Road	4 Harness Road
31 Bridle Path	4 Denise Court	1 Glenrich Drive	5 Harness Road
33 Bridle Path	5 Denise Court	2 Glenrich Drive	6 Harness Road
34 Bridle Path	6 Denise Court	3 Glenrich Drive	7 Harness Road
36 Bridle Path	7 Denise Court	4 Glenrich Drive	8 Harness Road
37 Bridle Path	8 Denise Court	5 Glenrich Drive	10 Harness Road
38 Bridle Path	1 Farm Road	6 Glenrich Drive	11 Harness Road
41 Bridle Path	6 Farm Road	7 Glenrich Drive	12 Harness Road
1 Buckingham Court	8 Farm Road	8 Glenrich Drive	14 Harness Road
2 Buckingham Court	9 Farm Road	9 Glenrich Drive	15 Harness Road
4 Buckingham Court	12 Farm Road	10 Glenrich Drive	17 Harness Road
5 Buckingham Court	15 Farm Road	11 Glenrich Drive	18 Harness Road
6 Buckingham Court	17 Farm Road	15 Glenrich Drive	19 Harness Road
7 Buckingham Court	25 Farm Road	16 Glenrich Drive	20 Harness Road
8 Buckingham Court	26 Farm Road	21 Glenrich Drive	1 Hill Road
9 Buckingham Court	29 Farm Road	22 Glenrich Drive	3 Hill Road
10 Buckingham Court	32 Farm Road	23 Glenrich Drive	8 Hill Road
20 Buckingham Court	36 Farm Road	24 Glenrich Drive	9 Hill Road
21 Buckingham Court	37 Farm Road	25 Glenrich Drive	10 Hill Road
22 Buckingham Court	39 Farm Road	26 Glenrich Drive	11 Hill Road
1 Carman Lane	40 Farm Road	27 Glenrich Drive	12 Hill Road
7 Carman Lane	41 Farm Road	28 Glenrich Drive	14 Hill Road
16 Carman Lane	42 Farm Road	29 Glenrich Drive	15 Hill Road
21 Carman Lane	43 Farm Road	30 Glenrich Drive	19 Hill Road
22 Carman Lane	45 Farm Road	31 Glenrich Drive	21 Hill Road
1 Cindy Drive	46 Farm Road	33 Glenrich Drive	22 Hill Road
2 Cindy Drive	48 Farm Road	35 Glenrich Drive	23 Hill Road
1 Cordwood Path	50 Farm Road	36 Glenrich Drive	5 Hill Top Court
3 Cordwood Path	56 Farm Road	37 Glenrich Drive	7 Hill Top Court
26 Cordwood Path	2 Fells Way	39 Glenrich Drive	1 Highwoods Court
30 Cordwood Path	5 Fells Way	41 Glenrich Drive	2 Highwoods Court
4 Damin Circle	8 Fells Way	8 Harbor Hill Road	3 Highwoods Court
5 Damin Circle	12 Fells Way	21 Harbor Hill Road	5 Highwoods Court
6 Damin Circle	45 Fifty Acre Road	22 Harbor Hill Road	6 Highwoods Court
7 Damin Circle	49 Fifty Acre Road	30 Harbor Hill Road	7 Highwoods Court
8 Damin Circle	50 Fifty Acre Road	33 Harbor Hill Road	8 Highwoods Court
9 Damin Circle	54 Fifty Acre Road	42 Harbor Hill Road	9 Highwoods Court

Table 1-5
Residences Connected to Public Water
Smithtown Groundwater Contamination Site
Smithtown, New York

10 Highwoods Court	12 Meadow Gate E	319 Old Mill Road	4 Regal Court
11 Highwoods Court	13 Meadow Gate E	322 Old Mill Road	5 Regal Court
12 Highwoods Court	1 Meadow Gate W	325 Old Mill Road	6 Regal Court
14 Highwoods Court	2 Meadow Gate W	327 Old Mill Road	7 Regal Court
15 Highwoods Court	3 Meadow Gate W	329 Old Mill Road	8 Regal Court
16 Highwoods Court	4 Meadow Gate W	333 Old Mill Road	9 Regal Court
18 Highwoods Court	5 Meadow Gate W	334 Old Mill Road	10 Regal Court
25 Highwoods Court	6 Meadow Gate W	335 Old Mill Road	11 Regal Court
26 Highwoods Court	7 Meadow Gate W	3 Old Post Lane	12 Regal Court
20 Highwoods Court	8 Meadow Gate W	4 Old Post Lane	14 Regal Court
21 Highwoods Court	9 Meadow Gate W	6 Old Post Lane	15 Regal Court
22 Highwoods Court	10 Meadow Gate W	7 Old Post Lane	207 River Road
23 Highwoods Court	11 Meadow Gate W	1 Overton Pass	271 River Road
24 Highwoods Court	12 Meadow Gate W	2 Overton Pass	275 River Road
27 Highwoods Court	504 Moriches Road	3 Overton Pass	281 River Road
28 Highwoods Court	506 Moriches Road	4 Overton Pass	283 River Road
29 Highwoods Court	508 Moriches Road	5 Overton Pass	287 River Road
31 Highwoods Court	510 Moriches Road	8 Overton Pass	333 River Road
33 Highwoods Court	512 Moriches Road	10 Overton Pass	335 River Road
1 Highwoods Road	514 Moriches Road	18 Overton Pass	337 River Road
3 Highwoods Road	516 Moriches Road	22 Overton Pass	339 River Road
4 Hitherbrook Road	518 Moriches Road	23 Overton Pass	341 River Road
21 Hitherbrook Road	520 Moriches Road	24 Overton Pass	412 River Road
26 Hitherbrook Road	522 Moriches Road	26 Overton Pass	415 River Road
32 Hitherbrook Road	524 Moriches Road	7 Partridge Lane	418 River Road
33 Hitherbrook Road	528 Moriches Road	9 Partridge Lane	421 River Road
42 Hitherbrook Road	531 Moriches Road	10 Partridge Lane	427 River Road
45 Hitherbrook Road	532 Moriches Road	3 Pinoak Lane	428 River Road
47 Hitherbrook Road	533 Moriches Road	4 Pinoak Lane	435 River Road
1 Karin Drive	535 Moriches Road	7 Pinoak Lane	436 River Road
2 Karin Drive	536 Moriches Road	8 Pinoak Lane	438 River Road
3 Karin Drive	537 Moriches Road	12 Pinoak Lane	439 River Road
4 Karin Drive	539 Moriches Road	14 Pinoak Lane	444 River Road
5 Karin Drive	541 Moriches Road	19 Pinoak Lane	445 River Road
6 Karin Drive	552 Moriches Road	20 Pinoak Lane	451 River Road
7 Karin Drive	555 Moriches Road	21 Pinoak Lane	455 River Road
8 Karin Drive	562 Moriches Road	24 Pinoak Lane	463 River Road
10 Karin Drive	597 Moriches Road	25 Pinoak Lane	464 River Road
11 Karin Drive	599 Moriches Road	2 Quail Hollow Court	468 River Road
1 Laurel Hill Path	611 Moriches Road	3 Quail Hollow Court	470 River Road
2 Laurel Hill Path	613 Moriches Road	4 Quail Hollow Court	268A Sachem Hill Place
4 Laurel Hill Path	615 Moriches Road	31 Quail Path	269 Sachem Hill Place
5 Laurel Hill Path	625 Moriches Road	32 Quail Path	270 Sachem Hill Place
1 Meadow Gate E	631 Moriches Road	33 Quail Path	271 Sachem Hill Place
2 Meadow Gate E	633 Moriches Road	35 Quail Path	2 Skunks Hollow Road
3 Meadow Gate E	638 Moriches Road	37 Quail Path	4 Skunks Hollow Road
4 Meadow Gate E	1 Old Mill Path	38 Quail Path	6 Skunks Hollow Road
5 Meadow Gate E	2 Old Mill Path	40 Quail Path	8 Skunks Hollow Road
6 Meadow Gate E	304 Old Mill Road	42 Quail Path	12 Skunks Hollow Road
7 Meadow Gate E	308 Old Mill Road	43 Quail Path	14 Skunks Hollow Road
8 Meadow Gate E	312 Old Mill Road	44 Quail Path	16 Skunks Hollow Road
9 Meadow Gate E	313 Old Mill Road	1 Regal Court	18 Skunks Hollow Road
10 Meadow Gate E	314 Old Mill Road	2 Regal Court	4 Smith Lane
11 Meadow Gate E	315 Old Mill Road	3 Regal Court	5 Smith Lane

Table 1-5
Residences Connected to Public Water
Smithtown Groundwater Contamination Site
Smithtown, New York

7 Smith Lane	24 The Chase	6 Tween Court	5 Woodcutters Path
9 Smith Lane	2 The Tuck	1 Twixt Hill Road	6 Woodcutters Path
11 Smith Lane	1 Thompson Hill Road	3 Twixt Hill Road	7 Woodcutters Path
15 Smith Lane	2 Thompson Hill Road	4 Twixt Hill Road	8 Woodcutters Path
18 Smith Lane	5 Thompson Hill Road	5 Twixt Hill Road	9 Woodcutters Path
19 Smith Lane	14 Thompson Hill Road	6 Twixt Hill Road	10 Woodcutters Path
20 Smith Lane	15 Thompson Hill Road	7 Twixt Hill Road	Total 589
3 Spring Hill	16 Thompson Hill Road	8 Twixt Hill Road	
9 Spring Hill	17 Thompson Hill Road	9 Twixt Hill Road	
1 Spring Hollow Road	18 Thompson Hill Road	10 Twixt Hill Road	
23 Spring Hollow Road	19 Thompson Hill Road	11 Twixt Hill Road	
24 Spring Hollow Road	20 Thompson Hill Road	12 Twixt Hill Road	
25 Spring Hollow Road	21 Thompson Hill Road	14 Twixt Hill Road	
26 Spring Hollow Road	22 Thompson Hill Road	15 Twixt Hill Road	
2 Squire Path	23 Thompson Hill Road	16 Twixt Hill Road	
4 Squire Path	25 Thompson Hill Road	18 Twixt Hill Road	
5 Squire Path	27 Thompson Hill Road	20 Twixt Hill Road	
1 Steepbank Road	28 Thompson Hill Road	21 Twixt Hill Road	
5 Steepbank Road	29 Thompson Hill Road	22 Twixt Hill Road	
6 Steepbank Road	4 Thompson Lane	24 Twixt Hill Road	
7 Steepbank Road	5 Three Sisters Road	26 Twixt Hill Road	
8 Steepbank Road	7 Three Sisters Road	28 Twixt Hill Road	
9 Steepbank Road	9 Three Sisters Road	30 Twixt Hill Road	
10 Steepbank Road	11 Three Sisters Road	31 Twixt Hill Road	
11 Stonegate	17 Three Sisters Road	32 Twixt Hill Road	
16 Stonegate	18 Three Sisters Road	33 Twixt Hill Road	
17 Stonegate	22 Three Sisters Road	34 Twixt Hill Road	
19 Stonegate	23 Three Sisters Road	35 Twixt Hill Road	
25 Stonegate	27 Three Sisters Road	36 Twixt Hill Road	
26 Stonegate	29 Three Sisters Road	37 Twixt Hill Road	
2 Swan Place	36 Three Sisters Road	38 Twixt Hill Road	
3 Swan Place	37 Three Sisters Road	39 Twixt Hill Road	
4 Swan Place	46 Three Sisters Road	40 Twixt Hill Road	
5 Swan Place	47 Three Sisters Road	41 Twixt Hill Road	
6 Swan Place	50 Three Sisters Road	42 Twixt Hill Road	
7 Swan Place	51 Three Sisters Road	43 Twixt Hill Road	
8 Swan Place	52 Three Sisters Road	44 Twixt Hill Road	
9 Swan Place	53 Three Sisters Road	45 Twixt Hill Road	
1 Sweet Hollow Court	54 Three Sisters Road	46 Twixt Hill Road	
2 Sweet Hollow Court	55 Three Sisters Road	2 Watercrest Court	
4 Sweet Hollow Court	57 Three Sisters Road	3 Watercrest Court	
3 Teal Way	1 Tide Mill Road	5 Watercrest Court	
4 Teal Way	2 Tide Mill Road	6 Wetherill Lane	
6 Teal Way	8 tide Mill Road	2 Woodcrest Drive	
7 Teal Way	4 Tracklot Road	6 Woodcrest Drive	
9 Teal Way	6 Tracklot Road	8 Woodcrest Drive	
11 The Chase	8 Tracklot Road	10 Woodcrest Drive	
12 The Chase	9 Tracklot Road	17 Woodcrest Drive	
14 The Chase	10 Tracklot Road	22 Woodcrest Drive	
15 The Chase	11 Tracklot Road	27 Woodcrest Drive	
16 The Chase	1 Tween Court	1 Woodcutters Path	
17 The Chase	2 Tween Court	2 Woodcutters Path	
18 The Chase	3 Tween Court	3 Woodcutters Path	
19 The Chase	4 Tween Court	4 Woodcutters Path	

Table 2-1
Predetermined and Actual VPW Depths
Smithtown Groundwater Contamination Site
Smithtown, New York

Location	Installed Via	Predetermined Depth (ft bgs)	Bottom of Deepest Screening Sample (ft bgs)	Prohibiting Factors
VPW-1	Geoprobe	150	125	None
VPW-2	Geoprobe	150	170	First attempt was dry to 154 ft bgs, re-pushed rods to 200 ft bgs to determine DTW
VPW-3	Geoprobe	150	144	None
VPW-4	Geoprobe	150	144	None
VPW-5	Geoprobe	150	132	None
VPW-6	Geoprobe	150	154	None
VPW-7	Geoprobe	150	154	None
VPW-8	Geoprobe	150	152	None
VPW-9	Geoprobe	150	142	None
VPW-10	Geoprobe	150	154	None
VPW-11	Geoprobe	150	142	None
VPW-12	HSA	250	255	None
VPW-13				No Access - Not Installed
VPW-14	HSA	250	250	None
VPW-15	HSA	250	220	Drill rig could not spin augers past 230 ft bgs
VPW-16	HSA	300	255	At 265 ft bgs, gimble started to deform
VPW-17	HSA	200	197	None
VPW-18	HSA	250	191	Drill rig could not spin augers past 207 ft bgs

Table 2-1
Predetermined and Actual VPW Depths
Smithtown Groundwater Contamination Site
Smithtown, New York

Location	Installed Via	Predetermined Depth (ft bgs)	Bottom of Deepest Screening Sample (ft bgs)	Prohibiting Factors
VPW-19	HSA	200	203	None
VPW-20	HSA	200	190	Drilled to 200 ft bgs, temporary well screen locked in augers, freed at 177 ft bgs
VPW-21	HSA	150	147	None
VPW-23	HSA	200	197	None
VPW-24	HSA	200	205	None
VPW-25	HSA	100	103	None

Abbreviations:
VPW - vertical profile well
ft bgs - feet below ground surface
HSA - hollow stem auger
DTW - depth to water

Table 2-2
Monitoring Well Construction Details
Smithtown Groundwater Contamination Site
Smithtown, New York

MW Identification Number	Total Depth (ft bgs)	Screen Interval (ft bgs)		TOC Elevation (ft amsl)	Ground Elevation (ft amsl)	Screen Elevation (ft a/b msl)		MW Diameter (in)	Cons.	Comments
		top	bottom			top	bottom			
MW-1S	110	100	110	102.75	103	3	-7	4	SS	
MW-1I	150	140	150	99.82	100	-40	-50	4	SS	
MW-2	190	180	190	167.43	168	-12	-22	4	SS	
MW-3S	177	167	177	168.17	168	1	-9	4	SS	
MW-3I	208	198	208	167.62	168	-30	-40	4	SS	
MW-4S	180	170	180	178.7	179	9	-1	4	SS	
MW-4I	210	200	210	178.15	178	-22	-32	4	SS	
MW-4D	253	243	253	178.36	179	-64	-74	4	SS	
MW-5S	50	40	50	12.84	13	-27	-37	4	SS	
MW-5I	119	109	119	13.84	14	-95	-105	4	SS	
MW-5D	170	160	170	13.31	14	-146	-156	4	SS	
MW-6S	198	188	198	175.64	176	-12	-22	4	SS	
MW-6I	229	219	229	175.45	176	-43	-53	4	SS	
MW-7	134	124	134	154.15	154	30	20	4	SS	
MW-A	150	140	150	133.58	133	-7	-17	2	PVC	
MW-C	175	165	175	161.51	162	-3	-13	2	PVC	
MW-D	195	185	195	94.17	91	-94	-104	2	PVC	Standpipe
MW-E	245	235	245	161.13	161	-74	-84	2	PVC	
MW-F	197	187	197	146.28	146	-41	-51	2	PVC	
MW-G	300	290	300	161.07	161	-129	-139	2	PVC	

Abbreviations:
ft bgs = feet below ground surface
TOC = top of casing
ft amsl = feet above mean sea level
ft a/b msl = feet above/below mean sea level
Cons. = construction material

SS = stainless steel
PVC = polyvinyl chloride

Table 2-3
Summary of Vertical Profile Well Screening Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

VPW	VPW Sample ID	Sample Depth (feet bgs)	Analysis
VPW-1	GWS-VPW1-A GWS-VPW1-B	121-125 110-114	LDL VOCs
VPW-2	GWS-VPW2-A GWS-VPW2-B	166-170 156-160	LDL VOCs
VPW-3	GWS-VPW3-A GWS-VPW3-B	140-144 130-134	LDL VOCs
VPW-4	GWS-VPW4-A	140-144	LDL VOCs
VPW-5	GWS-VPW5-A GWS-VPW5-B	128-132 118-122	LDL VOCs
VPW-6	GWS-VPW6-A GWS-VPW6-B	150-154 140-144	LDL VOCs
VPW-7	GWS-VPW7-A GWS-VPW7-B GWS-VPW7-C	150-154 140-144 130-134	LDL VOCs
VPW-8	GWS-VPW8-A GWS-VPW8-B GWS-VPW8-C	148-152 138-142 129-133	LDL VOCs
VPW-9	GWS-VPW9-A GWS-VPW9-B	138-142 133-137	LDL VOCs
VPW-10	GWS-VPW10-A GWS-VPW10-B GWS-VPW10-C	150-154 150-154 140-144	LDL VOCs
VPW-11	GWS-VPW11-A GWS-VPW11-B GWS-VPW11-C	138-142 138-142 128-132	LDL VOCs

Table 2-3
Summary of Vertical Profile Well Screening Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

VPW	VPW Sample ID	Sample Depth (feet bgs)	Analysis
VPW-12	GSW-VPW12-A	250-255	LDL VOCs
	GSW-VPW12-B	240-245	
	GSW-VPW12-C*	240-245	
	GSW-VPW12-D	230-235	
	GSW-VPW12-E	220-225	
	GSW-VPW12-F	210-215	
	GSW-VPW12-G	200-205	
	GSW-VPW12-H	190-195	
	GSW-VPW12-I	180-185	
	GSW-VPW12-J	170-075	
	GSW-VPW12-K	160-165	
	GSW-VPW12-L	150-155	
	GSW-VPW12-M	140-145	
	GSW-VPW12-N	130-135	
VPW-14	GSW-VPW14-A	245-250	LDL VOCs
	GSW-VPW14-B	235-240	
	GSW-VPW14-C	225-230	
	GSW-VPW14-D	215-220	
	GSW-VPW14-E	205-210	
	GSW-VPW14-F	195-200	
	GSW-VPW14-G	185-190	
	GSW-VPW14-H	175-180	
	GSW-VPW14-I	165-170	
	GSW-VPW14-J	155-160	
	GSW-VPW14-K	145-150	
VPW-15	GSW-VPW15-A	215-220	LDL VOCs
	GSW-VPW15-B	207-212	
	GSW-VPW15-C	197-202	
	GSW-VPW15-D	187-192	
	GSW-VPW15-E	177-182	
	GSW-VPW15-F	167-172	
VPW-16	GSW-VPW16-A	250-255	LDL VOCs
	GSW-VPW16-B	240-245	
	GSW-VPW16-C	230-235	
	GSW-VPW16-D	220-225	
	GSW-VPW16-E	210-215	

Table 2-3
Summary of Vertical Profile Well Screening Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

VPW	VPW Sample ID	Sample Depth (feet bgs)	Analysis
VPW-17	GSW-VPW17-A GSW-VPW17-B GSW-VPW17-C GSW-VPW17-D GSW-VPW17-E GSW-VPW17-F	192-197 184-189 184-189 174-179 164-169 154-159	LDL VOCs
VPW-18	GSW-VPW18-A GSW-VPW18-B GSW-VPW18-C	186-191 175-180 165-170	LDL VOCs
VPW-19	GSW-VPW19-A GSW-VPW19-B GSW-VPW19-C GSW-VPW19-D GSW-VPW19-E GSW-VPW19-F GSW-VPW19-G GSW-VPW19-H GSW-VPW19-I GSW-VPW19-J* GSW-VPW19-K GSW-VPW19-L GSW-VPW19-M	198-203 188-193 178-183 168-173 158-163 148-153 138-143 128-133 118-123 128-133 108-113 98-103 88-93	LDL VOCs
VPW-20 (see note below)	GSW-VPWA20-A GSW-VPWA20-B GSW-VPWA20-C GSW-VPWA20-D GSW-VPWA20-E GSW-VPWA20-F GSW-VPWA20-G GSW-VPWA20-H GSW-VPWA20-I GSW-VPWA20-J	173-177 161-165 151-155 141-145 131-135 121-125 111-115 101-105 91-95 81-85	LDL VOCs

Table 2-3
Summary of Vertical Profile Well Screening Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

VPW	VPW Sample ID	Sample Depth (feet bgs)	Analysis
VPW-21	GSW-VPW21-A	122-127	LDL VOCs
	GSW-VPW21-B	112-117	
(see note below)		----REDRILL----	
	GSW-VPWA21-A	142-147	
	GSW-VPWA21-B	130-135	
	GSW-VPWA21-C	120-125	
	GSW-VPWA21-D	110-115	
	GSW-VPWA21-E	100-105	
	GSW-VPWA21-F	90-95	
	GSW-VPWA21-G	80-85	
	GSW-VPWA21-H	70-75	
	GSW-VPWA21-I	60-65	
	GSW-VPWA21-J	50-55	
	GSW-VPWA21-K	40-45	
	GSW-VPWA21-L*	40-45	
	GSW-VPWA21-M	30-35	
	GSW-VPWA21-N	20-25	
	GSW-VPWA21-O	10-15	
VPW-23	GSW-VPW23-A	192-197	LDL VOCs
	GSW-VPW23-B	184-189	
	GSW-VPW23-C*	184-189	
	GSW-VPW23-D	174-179	
	GSW-VPW23-E	164-169	
	GSW-VPW23-F	154-159	
	GSW-VPW23-G	144-149	
	GSW-VPW23-H	134-139	
	GSW-VPW23-I	124-129	
	GSW-VPW23-J	114-119	
	GSW-VPW23-K	104-109	
	GSW-VPW23-L	94-99	
	GSW-VPW23-M	84-89	
	GSW-VPW23-N	74-79	

Table 2-3
Summary of Vertical Profile Well Screening Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

VPW	VPW Sample ID	Sample Depth (feet bgs)	Analysis
VPW-24	GSW-VPW24-A	200-205	LDL VOCs
	GSW-VPW24-B	193-198	
	GSW-VPW24-C	184-189	
	GSW-VPW24-D	174-179	
	GSW-VPW24-E	164-169	
	GSW-VPW24-F	154-159	
	GSW-VPW24-G	144-149	
	GSW-VPW24-H	134-139	
	GSW-VPW24-I	124-129	
	GSW-VPW24-J	114-119	
	GSW-VPW24-K	104-109	
	GSW-VPW24-L	94-99	
	GSW-VPW24-M	84-89	
	GSW-VPW24-N	74-79	
	GSW-VPW24-O	64-69	
	GSW-VPW24-P	54-59	
	GSW-VPW24-Q	44-49	
	GSW-VPW24-R	34-39	
	GSW-VPW24-S	24-29	
	GSW-VPW24-T*	64-69	
	GSW-VPW24-U*	44-49	
	GSW-VPW24-V	14-19	
VPW-25	GSW-VPW25-A	98-103	LDL VOCs
	GSW-VPW25-B	88-93	
	GSW-VPW25-C	78-83	
	GSW-VPW25-D	68-73	
	GSW-VPW25-E	58-63	
	GSW-VPW25-F	48-53	
	GSW-VPW25-G	38-43	
	GSW-VPW25-H	28-33	
	GSW-VPW25-I	18-23	
	GSW-VPW25-J	8-13	

* Duplicate sample

VPW-20 During collection of the initial screening samples, the screen pulled apart during pullback. The borehole was redrilled, assigned new ID VPW-A20.

VPW-21 During collection of the initial screening samples, the temporary well casing became locked inside the augers. The borehole was abandoned and redrilled, assigned new ID VPW-A21.

Abbreviations: VPW = vertical profile well; ID = identification; ft bgs = feet below ground surface; LDL VOC = low detection limit volatile organic compound

Table 2-4
Residential Wells Sampled in 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
5 Branglebrink Road	NA	5-BGBK-R1
16 Branglebrink Road	NA	16-BGBK-R1
41 Branglebrink Road	Renna/Branglebrink Road	41-BGBK-R1
23 Branglebrink Road	NA	23-BGBK-R1
26 Branglebrink Road	NA	26-BGBK-R1
29 Branglebrink Road	NA	29-BGBK-R1
37 Branglebrink Road	NA	37-BGBK-R1
43 Branglebrink Road	Krauth/Branglebrink Road	43-BGBK-R1
7 Carmen Lane	NA	7-CARL-R1
15 Carmen Lane	NA	15-CARL-R1
19 Carmen Lane	NA	19-CARL-R1
21 Carmen Lane	NA	21-CARL-R1
3 Cordwood Path	NA	3-CORD-R1
8 Fells Way	NA	8-FELLS-R1
12 Fells Way	NA	12-FELLS-R1
2 Friends Way	NA	2-FRIENW-R1
28 Harbor Hill Road	NA	28-HARBH-R1
42 Harbor Hill Road	NA	42-HARBH-R1
50 Harbor Hill Road	NA	50-HARBH-R1
21 Harbor Lane	1 Harbor Lane	21-HARBL-R1
24 Harbor Lane	2 Harbor Lane	24-HARBL-R1
26 Harbor Lane	7 Harbor Lane	26-HARBL-R1
28 Harbor Lane	8 Harbor Lane	28-HARBL-R1
31 Harbor Lane	11 Harbor Lane	31-HARBL-R1

Table 2-4
Residential Wells Sampled in 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
3 Harbor Road	NA	3-HARBR-R1
8 Harbor Road	NA	8-HARBR-R1
12 Harbor Road	NA	12-HARBR-R1
18 Harbor Road	NA	18-HARBR-R1
20 Harbor Road	NA	20-HARBR-R1
27 Harbor Road	NA	27-HARBR-R1
34 Harbor Road	NA	34-HARBR-R1
1 Highwoods Court	NA	1-HIGH-R1
9 Highwoods Court	NA	9-HIGH-R1
12 Highwoods Court	NA	12-HIGH-R1
15 Highwoods Court	NA	15-HIGH-R1
24 Highwoods Court	NA	24-HIGH-R1
27 Highwoods Court	NA	27-HIGH-R1
33 Highwoods Court	NA	33-HIGH-R1
23 Moriches Road	16 Moriches Road	23-MORI-R1
538 Moriches Road	324 Moriches Road	538-MORI-R1
537 Moriches Road	NA	537-MORI-R1
300 Old Mill Road	212 Old Mill Road	300-OMR-R1
302 Old Mill Road	261A Old Mill Road	302-OMR-R1
325 Old Mill Road	262S Old Mill Road	325-OMR-R1
315 Old Mill Road	262A Old Mill Road	315-OMR-R1
320 Old Mill Road	245K Old Mill Road	320-OMR-R1
322 Old Mill Road	245 Old Mill Road	322-OMR-R1
326 Old Mill Road	245A Old Mill Road	326-OMR-R1
327 Old Mill Road	262B Old Mill Road	327-OMR-R1

Table 2-4
Residential Wells Sampled in 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
329 Old Mill Road	262J Old Mill Road	329-OMR-R1
4 Old Mill Path	261T Old Mill Path	4-OMP-R1
5 Old Mill Path	261R Old Mill Path	5-OMP-R1
2 Old Post Lane	259A Old Post Lane	2-OPL-R1
4 Old Post Lane	259B Old Post Lane	4-OPL-R1
5 Old Post Lane	255 Old Post Lane	5-OPL-R1
3 Partridge Lane	NA	3-PART-R1
8 Partridge Lane	NA	8-PART-R1
9 Partridge Lane	NA	9-PART-R1
3 Pin Oak Lane	NA	3-PIN-R1
7 Pin Oak Lane	NA	7-PIN-R1
17 Pin Oak Lane	NA	17-PIN-R1
19 Pin Oak Lane	NA	19-PIN-R1
31 Quail Path	1 Quail Path	31-QUAIL-R1
33 Quail Path	2 Quail Path	33-QUAIL-R1
37 Quail Path	4 Quail Path	37-QUAIL-R1
41 Quail Path	11 Quail Path	41-QUAIL-R1
44 Quail Path	12 Quail Path	44-QUAIL-R1
42 Quail Path	14 Quail Path	42-QUAIL-R1
38 Quail Path	16 Quail Path	38-QUAIL-R1
35 Quail Path	5 Quail Path	35-QUAIL-R1
40 Quail Path	15 Quail Path	40-QUAIL-R1
428 River Road	194A River Road	428-RIVER-R1
419 River Road	198 River Road	419-RIVER-R1
418 River Road	199 River Road	418-RIVER-R1

Table 2-4
Residential Wells Sampled in 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
417 River Road	199A River Road	417-RIVER-R1
3 River Road	211 River Road	3-RIVER-R1
405 River Road	211A River Road	405-RIVER-R1
407 River Road	211C River Road	407-RIVER-R1
264 River Road	264A River Road	264-RIVER-R1
322 River Road	NA	322-RIVER-R1
326 River Road	NA	326-RIVER-R1
337 River Road	NA	337-RIVER-R1
339 River Road	NA	339-RIVER-R1
343 River Road	NA	343-RIVER-R1
400 River Road	211B River Road	400-RIVER-R1
401 River Road	208 River Road	401-RIVER-R1
414 River Road	201 River Road	414-RIVER-R1
423 River Road	197S River Road	423-RIVER-R1
435 River Road	194B River Road	435-RIVER-R1
270 Sachem Hill Place	NA	270-SACHP-R1
15 Stone Gate Road	246 Stone Gate Road	15-STONE-R1
17 Stone Gate Road	247 Stone Gate Road	17-STONE-R1
11 Stone Gate Road	246A Stone Gate Road	11-STONE-R1
19 Stone Gate Road	247A Stone Gate Road	19-STONE-R1
4 Swan Place	NA	4-SWAN-R1
9 Swan Place	NA	9-SWAN-R1
8 Teal Way	20 Teal Way	8-TEAL-R1
9 Teal Way	19 Teal Way	9-TEAL-R1
7 Teal Way	18 Teal Way	7-TEAL-R1

Table 2-4
Residential Wells Sampled in 1999
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
6 Teal Way	21 Teal Way	6-TEAL-R1
4 Teal Way	22 Teal Way	4-TEAL-R1
2 Teal Way	24 Teal Way	2-TEAL-R1
31 Thompson Lane	NA	31-THOM-R1
3 Tide Mill Lane	NA	3-TIDEL-R1
4 Tide Mill Lane	NA	4-TIDEL-R1
5 Tide Mill Lane	NA	5-TIDEL-R1
6 Tide Mill Lane	NA	6-TIDEL-R1
3 Tide Mill Road	NA	3-TIDER-R1
4 Tide Mill Road	NA	4-TIDER-R1
9 Tide Mill Road	NA	9-TIDER-R1
2 Watercrest Court	NA	2-WATER-R1
3 Watercrest Court	NA	3-WATER-R1
5 Watercrest Court	NA	5-WATER-R1
8 Watercrest Court	NA	8-WATER-R1
9 Watercrest Court	NA	9-WATER-R1
11 Watercrest Court	NA	11-WATER-R1
14 Watercrest Court	NA	14-WATER-R1
16 Watercrest Court	NA	16-WATER-R1
1 Wetherill Lane	NA	1-WETHL-R1
4 Wetherill Lane	NA	4-WETHL-R1
5 Wetherill Lane	NA	5-WETHL-R1

NA = Not Applicable

Table 2-5
Residential Wells Sampled in 2001
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
5 Branglebrink Road	NA	5-BGBK-R2
16 Branglebrink Road	NA	16-BGBK-R2
21 Branglebrink Road	NA	21-BGBK-R2
23 Branglebrink Road	NA	23-BGBK-R2
26 Branglebrink Road	NA	26-BGBK-R2
28 Branglebrink Road	NA	28-BGBK-R2
37 Branglebrink Road	NA	37-BGBK-R2
7 Carmen Lane	NA	7-CARL-R2
15 Carmen Lane	NA	15-CARL-R2
19 Carmen Lane	NA	19-CARL-R2
12 Fells Way	NA	12-FELLS-R2
3 Friends Way	NA	3-FRIENW-R2
4 Friends Way	NA	4-FRIENW-R2
3 Gate Road	NA	3-GATER-R2
12 Harbor Hill Road	NA	12-HARBH-R2
35 Harbor Hill Road	NA	35-HARBH-R2
22 Harbor Lane	3 Harbor Lane	22-HARBL-R2
26 Harbor Lane	7 Harbor Lane	26-HARBL-R2
32 Harbor Lane	12 Harbor Lane	32-HARBL-R2
3 Harbor Road	NA	3-HARBR-R2
8 Harbor Road	NA	8-HARBR-R2
18 Harbor Road	NA	18-HARBR-R2
27 Harbor Road	NA	27-HARBR-R2
9 Highwoods Court	NA	9-HIGH-R2

Table 2-5
Residential Wells Sampled in 2001
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
12 Highwoods Court	NA	12-HIGH-R2
15 Highwoods Court	NA	15-HIGH-R2
27 Highwoods Court	NA	27-HIGH-R2
33 Highwoods Court	NA	33-HIGH-R2
537 Moriches Road	NA	537-MORI-R2
546 Moriches Road	NA	546-MORI-R2
300 Old Mill Road	212 Old Mill Road	300-OMR-R2
315 Old Mill Road	262A Old Mill Road	315-OMR-R2
320 Old Mill Road	245K Old Mill Road	320-OMR-R2
322 Old Mill Road	245 Old Mill Road	322-OMR-R2
327 Old Mill Road	262B Old Mill Road	327-OMR-R2
329 Old Mill Road	262J Old Mill Road	329-OMR-R2
3 Old Mill Path	261D Old Mill Path	3-OMP-R2
4 Old Mill Path	261T Old Mill Path	4-OMP-R2
5 Old Mill Path	261R Old Mill Path	5-OMP-R2
2 Old Post Lane	259A Old Post Lane	2-OPL-R2
4 Old Post Lane	259B Old Post Lane	4-OPL-R2
5 Old Post Lane	255 Old Post Lane	5-OPL-R2
8 Partridge Lane	NA	9-PART-R2
35 Quail Lane	5 Quail Lane	35-QUAIL-R2
40 Quail Lane	15 Quail Lane	40-QUAIL-R2
264 River Road	265A River Road	264-RIVER-R2
318 River Road	NA	318-RIVER-R2
322 River Road	NA	322-RIVER-R2
337 River Road	NA	337-RIVER-R2

Table 2-5
Residential Wells Sampled in 2001
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
339 River Road	NA	339-RIVER-R2
343 River Road check	NA	343-RIVER-R2
400 River Road	211B River Road	400-RIVER-R2
401 River Road	208 River Road	401-RIVER-R2
414 River Road	201 River Road	414-RIVER-R2
423 River Road	197S River Road	423-RIVER-R2
435 River Road	194B River Road	435-RIVER-R2
15 Stone Gate Road	246 Stone Gate Road	15-STONE-R2
17 Stone Gate Road	247 Stone Gate Road	17-STONE-R2
9 Swan Place	NA	9-SWAN-R2
3 Teal Way	17 Teal Way	3-TEAL-R2
8 Teal Way	20 Teal Way	8-TEAL-R2
9 Teal Way	19 Teal Way	9-TEAL-R2
31 Thompson Lane	NA	31-THOM-R2
3 Tide Mill Lane	NA	3-TIDEL-R2
6 Tide Mill Lane	NA	6-TIDEL-R2
4 Tide Mill Road	NA	4-TIDER-R2
6 Tide Mill Road	NA	6-TIDER-R2
9 Tide Mill Road	NA	9-TIDER-R2
10 Turtle Crossing Road	NA	10-TURTCR-R2
2 Watercrest Court	NA	2-WATER-R2
5 Watercrest Court	NA	5-WATER-R2
8 Watercrest Court	NA	8-WATER-R2
16 Watercrest Court	NA	16-WATER-R2
1 Wetherill Lane	NA	1-WETHL-R2

Table 2-5
Residential Wells Sampled in 2001
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
4 Wetherill Lane	NA	4-WETHL-R2
7 Wetherill Lane	NA	7-WETHL-R2
8 Wetherill Lane	NA	8-WETHL-R2

NA = Not Applicable

Table 2-6
Residential Wells Sampled in 2002
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
21 Branglebrink Road	NA	21-BGBK-R3
28 Branglebrink Road	NA	28-BGBK-R3
625 Moriches Road	Unknown	625-MORI-R3
323 Old Mill Road	262M Old Mill Road	323-OMR-R3
326 Old Mill Road	245A Old Mill Road	326-OMR-R3
3 Old Mill Path	261D Old Mill Path	3-OMP-R3
17 Pin Oak Lane	NA	17-PIN-R3
8 Spring Hill Road	35C Spring Hill Road	8-SPRHILL-R3
17 Stone Gate Road	247 Stone Gate Road	17-STONE-R3
31 Thompson Lane	NA	31-THOM-R3
3 Tide Mill Lane	NA	3-TIDEL-R3

NA = Not applicable

Table 2-7
Residential Wells Sampled in 2003
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
21 Branglebrink Road	NA	21-BGBK-R4
23 Branglebrink Road	NA	23-BGBK-R4
26 Branglebrink Road	NA	26-BGBK-R4
37 Branglebrink Road	NA	37-BGBK-R4
33 Bridle Path	6 Bridle Path	33-BRIDLEP-R4
37 Bridle Path	9 Bridle Path	37-BRIDLEP-R4
40 Bridle Path	15 Bridle Path	40-BRIDLEP-R4
41 Bridle Path	12 Bridle Path	41-BRIDLEP-R4
7 Carmen Lane	NA	7-CARL-R14
15 Carmen Lane	NA	15-CARL-R4
19 Carmen Lane	NA	19-CARL-R4
1 Fox Run	NA	1-FOXRUN-R4
5 Fox Run	NA	5-FOXRUN-R4
6 Fox Run	NA	6-FOXRUN-R4
22 Harbor Lane	3 Harbor Lane	22-HARBL-R4
32 Harbor Lane	12 Harbor Lane	32-HARBL-R4
3 Harbor Road	NA	3-HARBR-R4
8 Harbor Road	NA	8-HARBR-R4
12 Harbor Road	NA	12-HARBR-R4
18 Harbor Road	NA	18-HARBR-R4
27 Harbor Road	NA	27-HARBR-R4
12 Highwoods Court	NA	12-HIGH-R4
15 Highwoods Court	NA	15-HIGH-R4
27 Highwoods Court	NA	27-HIGH-R4

Table 2-7
Residential Wells Sampled in 2003
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
615 Moriches Road	27A Moriches Road	615-MORI-R4
625 Moriches Road	Unknown	625-MORI-R4
300 Old Mill Road	212 Old Mill Road	300-OMR-R4
315 Old Mill Road	262A Old Mill Road	315-OMR-R4
320 Old Mill Road	245K Old Mill Road	320-OMR-R4
322 Old Mill Road	245 Old Mill Road	322-OMR-R4
323 Old Mill Road	262M Old Mill Road	323-OMR-R4
326 Old Mill Road	245A Old Mill Road	326-OMR-R4
327 Old Mill Road	262B Old Mill Road	327-OMR-R4
3 Old Mill Path	261D Old Mill Path	3-OMP-R4
4 Old Mill Path	261T Old Mill Path	4-OMP-R4
5 Old Mill Path	261R Old Mill Path	5-OMP-R4
2 Old Post Lane	259A Old Post Lane	2-OPL-R4
4 Old Post Lane	259B Old Post Lane	4-OPL-R4
5 Old Post Lane	255 Old Post Lane	5-OPL-R4
8 Partridge Lane	NA	8-PART-R4
17 Pin Oak Lane	NA	17-PIN-R4
35 Quail Path	5 Quail Path	35-QUAIL-R4
318 River Road	NA	318-RIVER-R4
322 River Road	NA	322-RIVER-R4
337 River Road	NA	337-RIVER-R4
339 River Road	NA	339-RIVER-R4
343 River Road	NA	343-RIVER-R4
400 River Road	211B	400-RIVER-R4
401 River Road	208 River Road	401-RIVER-R4

Table 2-7
Residential Wells Sampled in 2003
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
414 River Road	201 River Road	414-RIVER-R4
435 River Road	194B River Road	435-RIVER-R4
1 Smith Lane	48 Smith Lane	1-SMITHL-R4
2 Smith Lane	60A Smith Lane	2-SMITHL-R4
31 Smith Lane	unknown	31-SMITHL-R4
8 Spring Hill Road	35 C Spring Hill Road	8-SPRHILL-R4
6 Spring Hollow Road	41 Spring Hollow Road	6-SPRINGH-R4
7 Spring Hollow Road	32 Spring Hollow Road	7-SPRINGH-R4
9 Spring Hollow Road	33 Spring Hollow Road	9-SPRINGH-R4
20 Spring Hollow Road	34 Spring Hollow Road	20-SPRINGH-R4
3 Steep Bank Road	205 Steep Bank Road	3-STEEPB-R4
15 Stone Gate Road	246 Stone Gate Road	15-STONE-R4
17 Stone Gate Road	247 Stone Gate Road	17-STONE-R4
9 Swan Place	NA	9-SWAN-R4
2 Sweet Hollow Court	NA CHECK ADDRESSES	2-SWEETH-R4
3 Sweet Hollow Court	NA	3-SWEETH-R4
8 Teal Way	20 Teal Way	8-TEAL-R4
9 Teal Way	19 Teal Way	9-TEAL-R4
31 Thompson Lane	NA	31-THOM-R4
3 Tide Mill Lane	NA	3-TIDEL-R4
4 Tide Mill Road	NA	4-TIDER-R4
6 Tide Mill Road	NA	6-TIDER-R4
9 Tide Mill Road	NA	9-TIDER-R4
1 Tracklot Road	53 Tracklot Road	1-TRACKL-R4
6 Tracklot Road	57 Tracklot Road	6-TRACKL-R4

Table 2-7
Residential Wells Sampled in 2003
Smithtown Groundwater Contamination Site
Smithtown, New York

Current Full Address	Former Address	Sample Code
10 Turtle Crossing Road	NA	10-TURTCR-R4
8 Watercrest Court	NA	8-WATER-R4
1 Wetherill Lane	NA	1-WETHL-R4
4 Wetherill Lane	NA	4-WETHL-R4
7 Wetherill Lane	NA	7-WETHL-R4
8 Wetherill Lane	NA	8-WETHL-R4
10 Woodcrest Drive	44 Woodcrest Drive	10-WOODCR-R4
12 Woodcrest Drive	43A Woodcrest Drive	12-WOODCR-R4
19 Woodcrest Drive	41 Woodcrest Drive	19-WOODCR-R4
22 Woodcrest Drive	45 Woodcrest Drive	22-WOODCR-R4
11 Woodcutters Path	NA	11-WOODCUT-R4

NA = Not Applicable

Table 2-8
Spring/Seep Surface Water/Sediment Locations
Smithtown Groundwater Contamination Site
Smithtown , New York

ID	Location	Comments
SSS-1, SWS-1	At Dunton Spring parking lot, west shore of Stony Brook Harbor	SWS-1 re-sampled for pest/PCBs in March 2002
SSS-2, SWS-2	125feet north of parking lot, west shore of Stony Brook Harbor	SWS-2 re-sampled for pest/PCBs in March 2002
SSS-3, SWS-3	55 feet north of parking lot, west shore of Stony Brook Harbor	SWS-3 re-sampled for pest/PCBs in March 2002
SSS-4, SWS-4	120 feet south of parking lot, west shore of Stony Brook Harbor	Surface water sample not collected because groundwater was not discharging
SSS-5, SWS-5	End of Thompson Lane, east shore of Stony Brook Harbor	Background - SWS-5 re-sampled for pest/PCBs in March 2002
SSS-6, SWS-6	End of unnamed dirt road north of Thompson Lane, east shore of Stony Brook Harbor	Background - SWS-6 re-sampled for pest/PCBs in March 2002
SSS-7, SWS-7	380 feet south of parking lot, west shore of Stony Brook Harbor	SWS-7 re-sampled for pest/PCBs in March 2002
SSS-8, SWS-8	Behind 32 Harbor Lane, east shore of the Nissequogue River	None
SSS-9, SWS-9	Behind 9 Tide Mill Road (cul-de-sac), east shore of the Nissequogue River	None
SSS-10, SWS-10	225 feet north of mailbox 194A/428 River Road, east shore of the Nissequogue River	None
SSS-11, SWS-11	Drainage culvert of off River Road opposite Steep Bank Road, east shore of the Nissequogue River	None

Table 2-8
Spring/Seep Surface Water/Sediment Locations
Smithtown Groundwater Contamination Site
Smithtown , New York

ID	Location	Comments
SSS-12, SWS-12	Just north of mailbox 196 River Road, east shore of the Nissequogue River	None
DSW-1	Adjacent to old spring house south of parking lot	Water flowing in hose is overflow from an upgradient residential artesian well

SSS - Spring/ Seep Sediment Sample
SWS - Spring/Seep Surface Water
DSW - Dunton Spring Surface Water
Pest/PCB - pesticides/polychlorinated biphenol

Table 2-9
Wetland Surface Water/Sediment Locations
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Identification	Location
SDW-1	55 feet north of Dunton Spring parking lot, west shore of Stony Brook Harbor
SDW-2	At Dunton Spring parking lot, west shore of Stony Brook Harbor
SDW-3	200 feet south of parking lot, west shore of Stony Book Harbor
SDW-4	355 feet south of parking lot, west shore of Stony Brook Harbor
SDW-5	480 feet south of parking lot, west shore of Stony Brook Harbor
SDW-6 (Background)	75 feet north of unnamed dirt road, east shore of Stony Brook Harbor
SDW-7, SWW-1	North side of Harbor Road bridge
SDW-8, SWW-2	Wetlands southeast of Stony Brook Harbor
SDW-9, SWW-3	Wetlands southeast of Stony Brook Harbor
SDW-10, SWW-4	Wetlands southeast of Stony Brook Harbor
SDW-11, SWW-5	Wetlands southeast of Stony Brook Harbor
SDW-12, SWW-6	Wetlands southeast of Stony Brook Harbor
SDW-13, SWW-7	Wetlands southeast of Stony Brook Harbor
SDW-14, SWW-8	Wetlands southeast of Stony Brook Harbor
SDW-15, SWW-9	Wetlands southeast of Stony Brook Harbor

SDW - Wetland Sediment
SWW- Wetland Surface Water

Table 2-10
Storm Drain Sediment Locations
Smithtown Groundwater Contamination Site
Smithtown, New York

ID	Location	Depth and Condition
SDS-1	IFO 12 Fells Way	5 feet bgs, dry
SDS-2	IFO 3 Watercrest Court	12 feet, dry
SDS-3	Opposite 6 Wetherill Lane	12 feet, dry
SDS-4	IFO 4 Swan Place	11 feet, dry
SDS-5	IFO 3 Fox Run	5 feet dry
SDS-6	IFO 7 Woodcutters Path	14 feet dry
SDS-7	Between 9 and 10 Partridge Lane (cul-de-sac)	4 feet, dry
SDS-8	IFO 43 Quail Path (cul-de-sac)	13 feet, dry
SDS-9	IFO 9 Teal Way	14 feet, dry
SDS-10	Laurel Hill Road cul-de-sac	14 feet, 2 feet of standing water
SDS-11	IFO 8 Old Post Lane	13 feet, 6 feet of standing water
SDS-12	IFO 24 Stone Gate Lane	14 feet, 7 feet of standing water
SDS-13	IFO 15 Carmen Lane (cul-de-sac)	13 feet, 7 feet of standing water

SDS - Storm Drain Sediment
IFO - in front of
No drains/dry wells/catch basins were found at Bridal Path, Steep Bank Road, Old Mill Path, Tide Mill Lane and Sachem Hill Place. The grate at the catch basin located at Tide Mill Road was partially covered with asphalt; cover could not be removed.

Table 2-11
Potential Source Area Septic System Locations
Smithtown Groundwater Contamination Site
Smithtown, New York

ID	Location	Analysis	Comments
SL-1, WW-1	Gene's French Cleaners (VPW-1)	TCL VOCs, SVOCs TAL Metals/CN	
WW-2	Avenue Cleaners (VPW-2)	TCL VOCs, SVOCs TAL Metals/CN	Limited amount of sludge at this location, sludge is washing out of the auger.
SL-3, WW-3	St. James Cleaners (VPW-3)	TCL VOCs, SVOCs TAL Metals/CN	
SL-4	Sal's Auto Body (VPW-4)	TCL VOCs, SVOCs TAL Metals/CN	Septic services abandoned building, no liquid waste in tank or leaching pools.
SL-5, WW-5	Polo French Cleaners (VPW-5)	TCL VOCs, SVOCs TAL Metals/CN	
SL-6, WW-6	SCSD - Admin. Center (VPW-6)	TCL VOCs, SVOCs TAL Metals/CN	
SL-7, WW-7	Four Seasons Cleaners (VPW-7)	TCL VOCs, SVOCs TAL Metals/CN	
SL-8, WW-8	North Country Cleaners (VPW-8)	TCL VOCs, SVOCs TAL Metals/CN	
WW-9	The Cleaners (VPW-9)	TCL VOCs, SVOCs TAL Metals/CN	Limited amount of sludge at this location, sludge is washing out of the auger.
SL-10, WW-10	St. James Exxon Center (VPW-10)	TCL VOCs, SVOCs TAL Metals/CN	
SL-11, WW-11	Penney's St. James Garage (VPW-11)	TCL VOCs, SVOCs TAL Metals/CN	

Abbreviations: VPW = vertical profile well; TCL = Target Compound List; VOC = volatile organic compound; SVOC = semi-volatile organic compound; TAL = Target Analyte List; CN = cyanide

Table 2-12
Synoptic Groundwater Level Measurements
Smithtown Groundwater Contamination Site
Smithtown, New York

MW Identification Number	TOC Elevation (ft amsl)	Ground Elevation (ft amls)	Round 1 - 3/19/02		Round 2 - 6/11/03	
			DTW from TOC (ft bgs)	Water Level Elevation (ft amls)	DTW from TOC (ft bgs)	Water Level Elevation (ft amls)
MW-1S	102.75	103	90.83	11.92	90.38	12.37
MW-1I	99.82	100	87.78	12.04	87.47	12.35
MW-2	167.43	168	151.24	16.19	150.85	16.58
MW-3S	168.17	168	148.31	19.86	148.23	19.94
MW-3I	167.62	168	147.7	19.92	147.77	19.85
MW-4S	178.7	179	159.77	18.93	159.67	19.03
MW-4I	178.15	178	159	19.15	157.75	20.4
MW-4D	178.36	179	159.29	19.07	159.21	19.15
MW-5S	12.84	13	1.68	11.16	1.21	11.63
MW-5I	13.84	14	2.29	11.55	1.9	11.94
MW-5D**	13.31	14	-5.9	19.21	-6.4	19.71
MW-6S	175.64	176	144.93	30.71	145.6	30.04
MW-6I	175.45	176	143.71	31.74	144.29	31.16
MW-7	154.15	154	NI	NI	114.8	39.35
MW-A	133.58	133	112.59	20.99	113.45	20.13
MW-C	161.51	162	145.31	16.20	144.97	16.54
MW-D	94.17	91	75.28	18.89	75.01	19.16
MW-E	161.13	161	144.92	16.21	144.51	16.62
MW-F	146.28	146	119.62	26.66	119.76	26.52
MW-G	161.07	161	144.52	16.55	144.21	16.86

Abbreviations:

ft bgs = feet below ground surface; TOC = top of casing; ft amsl = feet above mean sea level

MW = monitoring well; DTW = depth to water; NI = not installed

** MW-5D is artesian, hence, DTW is listed as a negative depth. Water level was measured by installing a length of temporary casing at the TOC, then determining approximate water level above the measuring point. MW-5D was abandoned in June 2003.

Table 3-1
Plant Community Associations Observed at the Site
Smithtown Groundwater Contamination Site
Smithtown, New York

Habitat (1)	Component	Common Name	Botanical Name	Frequency of Observation (2)
Low Salt Marsh	Herbs	Smooth cordgrass	*Spartina alterniflora*	D
Brackish Tidal Marsh	Herbs	Smooth cordgrass	*Spartina alterniflora*	D
Floodplain Forest	Trees	Cottonwood	*Populus deltoides*	C/D
		Red maple	*Acer rubrum*	C
		Tulip tree	*Liriodendron tulipfera*	C
		Shagbark hickory	*Carya ovata*	I
		Oak	*Quercus* species, likely *Q. Bicolor*	I
		White willow	*Salix alba*	C
		Sugar maple	*Acer saccharum*	C
	Shrubs	Multiflora rose	*Rosa multiflora*	C
		Dogwoods	*Cornus* species, possibly *C. Sericea, C. ammomum, and C. Foemina spp. racemosa*	C
		Greenbriar	*Smilax rotundifolia*	I
		Spicebush	*Lindera benzoin*	C
		Speckled alder	*Alnus incana spp. rugosa*	I
		Black cherry	*Prunus serotina*	I
		Blackgum	*Nyssa sylvatica*	I
		Meadowsweet	*Spiraea alba var. latifolia*	I/C
	Herbs	Skunk cabbage	*Symplocarpus foetidus*	I
		Impatiens	*Impatiens capensis* and/or *I. pallida*	C
		Garlic mustard	*Allaria petiolata*	I/C
		Japanese honeysuckle	*Lonicera japonica*	I/C
		Celendine poppy	*Chelidonium majus*	I/C
		Daylilly	*Hemerocallis fulva*	C
		Mugwart	*Artemisia vulgaris*	C
		Wood fern (type)	family *Dryopteridaceae*	I
		Japanese knotweed	*Polyganum cuspidatus*	I/C

(1) Names for many of the ecological community types are based on Ecological Communities of New York State, Second Edition (Draft). A revised and expanded edition of Carol Reschke's Ecological Communities of New York State, 2002. Albany, NY: New York Natural Heritage Program.
(2) C = Common or frequent; D = Dominant; I = Infrequent

Table 3-2
Animals Observed at the Site
Smithtown Groundwater Contamination Site
Smithtown, New York

Habitat (1)	Component	Common Name	Scientific Name	Frequency of Observation (2)
Low Salt Marsh	Invertebrates	Atlantic ribbed mussel Snails (at least two different types) Horseshoe crab Quahog (hardshell clam) Softshell clam Eastern oyster Dall's acorn barnacle	*Geukensia demissa* unidentified general species *Limulus polychemus* *Mercenaria mercenaria* *Mya arenaria* *Crassostrea virginica* *Chthamalus dalli*	D/C/I I/C I I/C I/C I I
	Birds	Red-winged blackbird Snowy egret Mute swan Gulls and terns Mallard Sandpiper	*Agelaius phoeniceus* *Egretta thula* *Cygnus olor* Several unidentified sp. *Anas platyrbynchos* unidentified, likely *Calidris minutilla*	I/C I/C I I/C I/C I
Brackish Tidal Marsh	Birds	Red-winged blackbird Snow egret Great blue heron Mallard	*Agelaius phoeniceus* *Egretta thula* *Ardea herodias* *Anas platyrhynchos*	D I I/C I/C
	Mammals	Muskrat	*Ondatra zibethicus*	C
Floodplain Forest	Mammals	Red fox	*Vupes fulva*	I

(1) Ecological community types are based on the document Ecological Communities of New York State, Second edition (Draft), A revised and expanded edition of Carol Reschke's Ecological Communities of New York State, 2002. Albany, NY: New York Natural Heritae Program.

(2) C = common; D = dominant; I = infrequent

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)	NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/l	200	5	5	5
1,1,2,2-Tetrachloroethane	ug/l	NL	5	5	5
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	NL	5	NL	5
1,1,2-Trichloroethane	ug/l	5	1	5	1
1,1-Dichloroethane	ug/l	NL	5	5	5
1,1-Dichloroethene	ug/l	7	5	5	5
1,2,3-Trichlorobenzene	ug/l	NL	5	5	5
1,2,4-Trichlorobenzene	ug/l	70	5	5	5
1,2-Dibromo-3-chloropropane	ug/l	0.2	0.04	0.2	0.04
1,2-Dibromoethane	ug/l	0.05	0.0006	0.05	0.0006
1,2-Dichlorobenzene	ug/l	600	3	5	3
1,2-Dichloroethane	ug/l	5	0.6	5	0.6
1,2-Dichloropropane	ug/l	5	1	5	1
1,3-Dichlorobenzene	ug/l	NL	3	5	3
1,4-Dichlorobenzene	ug/l	75	3	5	3
2-Butanone	ug/l	NL	50	NL	50
2-Hexanone	ug/l	NL	50	50	50
4-Methyl-2-pentanone	ug/l	NL	NL	50	50
Acetone	ug/l	NL	50	50	50
Benzene	ug/l	5	1	5	1
Bromochloromethane	ug/l	NL	5	5	5
Bromodichloromethane	ug/l	NL	50	100	50
Bromoform	ug/l	NL	50	100	50
Bromomethane	ug/l	NL	5	5	5
Carbon Disulfide	ug/l	NL	60	50	50
Carbon Tetrachloride	ug/l	5	5	5	5
Chlorobenzene	ug/l	100	5	5	5
Chloroethane	ug/l	NL	5	5	5
Chloroform	ug/l	NL	7	100	7
Chloromethane	ug/l	NL	5	5	5

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
cis-1,2-Dichloroethene	ug/l	70	5		5	5
cis-1,3-Dichloropropene	ug/l	NL	0.4		5	0.4
Cyclohexane	ug/l	NL	NL		NL	NL
Dibromochloromethane	ug/l	NL	50		100	50
Dichlorodifluoromethane	ug/l	NL	5		5	5
Ethylbenzene	ug/l	700	5		5	5
Isopropylbenzene	ug/l	NL	5		5	5
Methyl Acetate	ug/l	NL	NL		NL	NL
Methyl Tert-Butyl Ether	ug/l	NL	10		NA	10
Methylcyclohexane	ug/l	NL	NL		NL	NL
Methylene Chloride	ug/l	5	5		5	5
m-Xylene	ug/l	NL	5		5	5
o-Xylene	ug/l	NL	5		5	5
p-Xylene	ug/l	NL	5		5	5
Styrene	ug/l	100	5		5	5
Tetrachloroethene	ug/l	5	5		5	5
Toluene	ug/l	1,000	5		5	5
trans-1,2-Dichloroethene	ug/l	100	5		5	5
trans-1,3-Dichloropropene	ug/l	NL	0.4		5	0.4
Trichloroethene	ug/l	5	5		5	5
Trichlorofluoromethane	ug/l	NL	5		5	5
Vinyl Chloride	ug/l	2	2		2	2
Xylenes (total)	ug/l	10,000	5		5	5
Semi-Volatile Organics						
1,1'Biphenyl	ug/l	NL	5		NL	5
2,2'-oxybis(1-Chloropropane)	ug/l	NL	5		NL	5
2,4,5-Trichlorophenol	ug/l	NL	1	X	5	1
2,4,6-Trichlorophenol	ug/l	NL	1	X	5	1
2,4-Dichlorophenol	ug/l	NL	5	X	NL	5
2,4-Dimethylphenol	ug/l	NL	50	X	50	50
2,4-Dinitrophenol	ug/l	NL	10	X	NL	10

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)		NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)		Smithtown GW Screening Criteria (4)	
2,4-Dinitrotoluene	ug/l	NL		5		50		5	
2,6-Dinitrotoluene	ug/l	NL		5		50		5	
2-Chloronaphthalene	ug/l	NL		10		5		5	
2-Chlorophenol	ug/l	NL		1	X	5		1	
2-Methylnaphthalene	ug/l	NL		NL		NL		NL	
2-Methylphenol	ug/l	NL		1	X	50		1	
2-Nitroaniline	ug/l	NL		5		5		5	
2-Nitrophenol	ug/l	NL		1	X	50		1	
3,3'-Dichlorobenzidine	ug/l	NL		5		5		5	
3-Nitroaniline	ug/l	NL		5		5		5	
4,6-Dinitro-2-methylphenol	ug/l	NL		1	X	50		1	
4-Bromophenyl-phenylether	ug/l	NL		NL		50		50	
4-Chloro-3-methylphenol	ug/l	NL		1	X	5		1	
4-Chloroaniline	ug/l	NL		5		5		5	
4-Chlorophenyl-phenylether	ug/l	NL		NL		50		50	
4-Methylphenol	ug/l	NL		1	X	50		1	
4-Nitroaniline	ug/l	NL		5		5		5	
4-Nitrophenol	ug/l	NL		1	X	50		1	
Acenaphthene	ug/l	NL		20		50		20	
Acenaphthylene	ug/l	NL		NL		50		50	
Acetophenone	ug/l	NL		NL		50		50	
Anthracene	ug/l	NL		50		50		50	
Atrazine	ug/l	3		7.5		3		3	
Benzaldehyde	ug/l	NL		NL		NL		NL	
Benzo(a)anthracene	ug/l	NL		0.002		50		0.002	
Benzo(a)pyrene	ug/l	0.2		ND		0.2		0.2	
Benzo(b)fluoranthene	ug/l	NL		0.002		50		0.002	
Benzo(g,h,i)perylene	ug/l	NL		NL		50		50	
Benzo(k)fluoranthene	ug/l	NL		0.002		50		0.002	
bis(2-Chloroethoxy)methane	ug/l	NL		5		5		5	
bis(2-Chloroethyl)ether	ug/l	NL		1		5		1	

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
bis(2-Ethylhexyl)phthalate	ug/l	6	5		6	5
Butylbenzylphthalate	ug/l	NL	50		50	50
Caprolactam	ug/l	NL	NL		NL	NL
Carbazole	ug/l	NL	NL		50	50
Chrysene	ug/l	NL	0.002		50	0.002
Dibenz(a,h)anthracene	ug/l	NL	NL		50	50
Dibenzofuran	ug/l	NL	NL		50	50
Diethylphthalate	ug/l	NL	50		50	50
Dimethylphthalate	ug/l	NL	50		50	50
Di-n-butylphthalate	ug/l	NL	50		NL	50
Di-n-octyl phthalate	ug/l	NL	50		50	50
Fluoranthene	ug/l	NL	50		50	50
Fluorene	ug/l	NL	50		NL	50
Hexachlorobenzene	ug/l	1	0.04		1	0.04
Hexachlorobutadiene	ug/l	NL	0.5		5	0.5
Hexachlorocyclopentadiene	ug/l	50	5		5	5
Hexachloroethane	ug/l	NL	5		5	5
Indeno(1,2,3-cd)pyrene	ug/l	NL	0.002		50	0.002
Isophorone	ug/l	NL	50		50	50
Naphthalene	ug/l	NL	10		50	10
Nitrobenzene	ug/l	NL	0.4		5	0.4
N-Nitroso-di-n-propylamine	ug/l	NL	NL		50	50
N-Nitrosodiphenylamine	ug/l	NL	50		50	50
Pentachlorophenol	ug/l	1	1	X	1	1
Phenanthrene	ug/l	NL	50		50	50
Phenol	ug/l	NL	1	X	50	1
Pyrene	ug/l	NL	50		50	50
Pesticides/PCBs						
4,4'-DDD	ug/l	NL	0.3		5	0.3
4,4'-DDE	ug/l	NL	0.2		NL	0.2
4,4'-DDT	ug/l	NL	0.2		5	0.2

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)		NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)		Smithtown GW Screening Criteria (4)	
Aldrin	ug/l	NL		ND		5		5	
Alpha-BHC	ug/l	NL		0.01		5		0.01	
alpha-Chlordane	ug/l	2	##	0.05		2		0.05	
Aroclor-1016	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1221	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1232	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1242	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1248	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1254	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1260	ug/l	0.5		0.09	W	0.5		0.09	
Beta-BHC	ug/l	NL		0.04		5		0.04	
Delta-BHC	ug/l	NL		0.04		5		0.04	
Dieldrin	ug/l	NL		0.004		5		0.004	
Endosulfan I	ug/l	NL		NL		50		50	
Endosulfan II	ug/l	NL		NL		50		50	
Endosulfan sulfate	ug/l	NL		NL		50		50	
Endrin	ug/l	2		ND		2		2	
Endrin aldehyde	ug/l	NL		5		5		5	
Endrin ketone	ug/l	NL		5		NL		5	
gamma-BHC (Lindane)	ug/l	0.2		0.05		0.2		0.05	
gamma-Chlordane	ug/l	2	##	0.05		2		0.05	
Heptachlor	ug/l	0.4		0.04		0.4		0.04	
Heptachlor epoxide	ug/l	0.2		0.03		0.2		0.03	
Methoxychlor	ug/l	40		35		40		35	
Toxaphene	ug/l	3		0.06		3		0.06	
Inorganic Analytes								NL	
Aluminum	ug/l	NL		NL		NL		NL	
Antimony	ug/l	6		3		6		3	
Arsenic	ug/l	50		25		50		25	
Barium	ug/l	2,000		1,000		2,000		1000	
Beryllium	ug/l	4		3		4		3	

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)		NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
Cadmium	ug/l	5		5		5	5
Calcium	ug/l	NL		NL		NL	NL
Chromium	ug/l	100		50	Z	100	50
Cobalt	ug/l	NL		NL		NL	NL
Copper	ug/l	1,300	TT	200		1,300	200
Cyanide	ug/l	200		200		200	200
Iron	ug/l	NL		300	Y	300	300
Lead	ug/l	15	TT	25		15	15
Magnesium	ug/l	NL		35,000		NL	35000
Manganese	ug/l	NL		300	Y	300	300
Mercury	ug/l	2		0.7		2	0.7
Nickel	ug/l	NL		100		NL	100
Potassium	ug/l	NL		NL		NL	NL
Selenium	ug/l	50		10		50	10
Silver	ug/l	NL		50		100	50
Sodium	ug/l	NL		20,000		NL	20000
Sulfate	ug/l	NL		250,000		250,000	250000
Thallium	ug/l	2		0.5		2	0.5
Vanadium	ug/l	NL		NL		NL	NL
Zinc	ug/l	NL		2,000		5,000	2000

Notes:

1. EPA National Primary Drinking Water Standards (web page), EPA 816-F-01-007, March 2001
2. New York Ground Water Quality Standards, August 4, 1999
3. New York State Department of Health Drinking Water Standards
4. Smithtown Groundwater Screening Criteria is the lowest value of the EPA National Primary Drinking Water Standards, New York Ground Water Quality Standards, and the New York Department of Health Drinking Water Standards

MCL - Maximum Contaminant Level
NA - Chemical name listed but no value available
NL - Chemical name not listed or screening value of this type not listed for the chemical
ND - The criteria for this compound is below any detection limit

Table 4-1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)	NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)

TT - Treatment Technique
Criteria is for Chlordane
Z Also applies to hexavalent chromium
Y The sum of iron and manganese should not exceed 500 ug/l
X This value applies to a sum of all phenolic compounds
W This value applies to a sum of all PCB compounds

Table 4-2
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/l	NL		NL		NL		5	5	
1,1,2,2-Tetrachloroethane	ug/l	NL		NL		NL		NL	NL	
1,1,2-Trichloroethane	ug/l	NL		NL		NL		1	1	
1,1,2-Tricholoro-1,2,2-trifluoroethane	ug/l	NL		NL		NL		5	5	
1,1-Dichloroethane	ug/l	NL		NL		NL		5	5	
1,1-Dichloroethene	ug/l	NL		NL		NL		NL	NL	
1,2,3-Trichlorobenzene	ug/l	5	D	NL		NL		NL	5	D
1,2,4-Trichlorobenzene	ug/l	5	D	NL		NL		5	5	D
1,2-Dibromo-3-chloropropane	ug/l	NL		NL		NL		0.04	NL	
1,2-Dibromoethane	ug/l	NL		NL		NL		5	NL	
1,2-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
1,2-Dichloroethane	ug/l	NL		NL		NL		0.6	NL	
1,2-Dichloropropane	ug/l	NL		NL		NL		1	NL	
1,3-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
1,4-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
2-Butanone	ug/l	NL		NL		NL		NL	NL	
2-Hexanone	ug/l	NL		NL		NL		NL	NL	
4-Methyl-2-pentanone	ug/l	NL		NL		NL		NL	NL	
Acetone	ug/l	NL		NL		NL		NL	NL	
Benzene	ug/l	190		NL		10		1	10	
Bromochloromethane	ug/l	NL		NL		NL		NL	NL	
Bromodichloromethane	ug/l	NL		NL		NL		NL	NL	
Bromoform	ug/l	NL		NL		NL		NL	NL	
Bromomethane	ug/l	NL		NL		NL		5	5	
Carbon Disulfide	ug/l	NL		NL		NL		NL	NL	
Carbon Tetrachloride	ug/l	NL		NL		NL		NL	NL	
Chlorobenzene	ug/l	5		NL		400		5	5	
Chloroethane	ug/l	NL		NL		NL		NL	NL	
Chloroform	ug/l	NL		NL		NL		7	7	
Chloromethane	ug/l	NL		NL		NL		5	5	
cis-1,2-Dichloroethene	ug/l	NL		NL		NL		5	5	
cis-1,3-Dichloropropene	ug/l	NL		NL		NL		0.4	0.4	
Cyclohexane	ug/l	NL		NL		NL		NL	NL	
Dibromochloromethane	ug/l	NL		NL		NL		NL	NL	
Dichlorodifluoromethane	ug/l	NL		NL		NL		NL	NL	
Dichlorofluoromethane	ug/l	NL		NL		NL		5	5	
Ethylbenzene	ug/l	4.5		NL		NL		5	4.5	
Isopropylbenzene	ug/l	NL		NL		NL		NL	NL	
Methyl Acetate	ug/l	NL		NL		NL		NL	NL	
Methyl Tert-Butyl Ether	ug/l	NL		NL		NL		NL	NL	
Methylcyclohexane	ug/l	NL		NL		NL		NL	NL	
Methylene Chloride	ug/l	NL		NL		200		5	200	
m-Xylene	ug/l	19	I	NL		NL		5	19	I
o-Xylene	ug/l	19	I	NL		NL		5	19	I
p-Xylene	ug/l	19	I	NL		NL		5	19	I
Styrene	ug/l	NL		NL		NL		50	50	
Tetrachloroethene	ug/l	NL		NL		1		NL	1	
Toluene	ug/l	92		NL		6000		5	92	

Table 4-2
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)	NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)	NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)	NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)
trans-1,2-Dichloroethene	ug/l	NL	NL	NL	5	5
trans-1,3-Dichloropropene	ug/l	NL	NL	NL	0.4	0.4
Trichloroethene	ug/l	NL	NL	40	5	40
Trichloroflorometha ne	ug/l	NL	NL	NL	5	5
Vinyl Chloride	ug/l	NL	NL	NL	NL	NL
Xylenes (total)	ug/l	19	NL	NL	NL	19
Semi-Volatime Organics						
1,1'-Biphenyl	ug/l	NL	NL	NL	NL	NL
2,2'-oxybis(1-Chloropropane)	ug/l	NL	NL	NL	5	5
2,4,5-Trichlorophenol	ug/l	NL	NL	NL	1	1
2,4,6-Trichlorophenol	ug/l	NL	NL	NL	1	1
2,4-Dichlorophenol	ug/l	NL	NL	NL	0.3	0.3
2,4-Dimethylphenol	ug/l	NL	NL	1000	1000	1000
2,4-Dinitrophenol	ug/l	NL	NL	400	400	400
2,4-Dinitrotoluene	ug/l	NL	NL	NL	NL	NL
2,6-Dinitrotoluene	ug/l	NL	NL	NL	NL	NL
2-Chloronaphthalene	ug/l	NL	NL	NL	10	10
2-Chlorophenol	ug/l	NL	NL	NL	1	1
2-Methylnaphthalene	ug/l	4.2	NL	NL	NL	4.2
2-Methylphenol	ug/l	NL	NL	NL	1	1
2-Nitroaniline	ug/l	NL	NL	NL	NL	NL
2-Nitrophenol	ug/l	NL	NL	NL	NL	NL
3,3'-Dichlorobenzidine	ug/l	NL	NL	NL	NL	NL
3-Nitroaniline	ug/l	NL	NL	NL	NL	NL
4,6-Dinitro-2-methylphenol	ug/l	NL	NL	NL	1	1
4-Bromophenyl-phenylether	ug/l	NL	NL	NL	5	5
4-Chloro-3-methylphenol	ug/l	NL	NL	NL	1	1
4-Chloroaniline	ug/l	NL	NL	NL	NL	NL
4-Chlorophenyl-phenylether	ug/l	NL	NL	NL	5	5
4-Methylphenol	ug/l	NL	NL	NL	1	1
4-Nitroaniline	ug/l	NL	NL	NL	NL	NL
4-Nitrophenol	ug/l	NL	NL	NL	1	1
Acenaphthene	ug/l	6.6	NL	NL	20	6.6
Acenaphthylene	ug/l	NL	NL	NL	NL	NL
Acetophenone	ug/l	NL	NL	NL	NL	NL
Anthracene	ug/l	NL	NL	NL	NL	NL
Atrazine	ug/l	NL	NL	NL	NL	NL
Benzaldehyde	ug/l	NL	NL	NL	5	5
Benzo(a)anthracene	ug/l	NL	NL	NL	NL	NL
Benzo(a)pyrene	ug/l	NL	NL	0.0006	NL	0.0006
Benzo(b)fluoranthene	ug/l	NL	NL	NL	NL	NL
Benzo(g,h,i)perylene	ug/l	NL	NL	NL	NL	NL
Benzo(k)fluoranthene	ug/l	NL	NL	NL	NL	NL
bis(2-Chloroethoxy)methane	ug/l	NL	NL	NL	NL	NL
bis(2-Chloroethyl)ether	ug/l	NL	NL	NL	NL	NL

Table 4-2
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
bis-(2-Ethylhexyl)phthalate	ug/l	NL		NL		NL		5	5	
Butylbenzylphthalate	ug/l	NL		NL		NL		NL	NL	
Caprolactam	ug/l	NL		NL		NL		NL	NL	
Carbazole	ug/l	NL		NL		NL		5	5	
Chrysene	ug/l	NL		NL		NL		NL	NL	
Dibenz(a,h)anthracene	ug/l	NL		NL		NL		NL	NL	
Dibenzofuran	ug/l	NL		NL		NL		NL	NL	
Diethylphthalate	ug/l	NL		NL		NL		NL	NL	
Dimethylphthalate	ug/l	NL		NL		NL		NL	NL	
Di-n-butylphthalate	ug/l	NL		NL		NL		NL	NL	
Di-n-octyl phthalate	ug/l	NL		NL		NL		NL	NL	
Fluoranthene	ug/l	NL		NL		NL		NL	NL	
Fluorene	ug/l	2.5		NL		NL		5	2.5	
Hexachlorobenzene	ug/l	NL		NL		0.00003		0.04	0.00003	
Hexachlorobutadiene	ug/l	0.3		NL		0.01		0.5	0.01	
Hexachlorocyclopentadiene	ug/l	0.07		NL		NL		0.45	0.07	
Hexachloroethane	ug/l	NL		NL		0.6		5	0.6	
Indeno(1,2,3-cd)pyrene	ug/l	NL		NL		NL		NL	NL	
Isophorone	ug/l	NL		NL		NL		NL	NL	
Naphthalene	ug/l	16		NL		NL		10	16	
Nitrobenzene	ug/l	NL		NL		NL		0.4	0.4	
N-Nitroso-di-n-propylamine	ug/l	NL		NL		NL		5	5	
N-Nitrosodiphenylamine	ug/l	NL		NL		NL		5	5	
Pentachlorophenol	ug/l	NL		NL		NL		NL	NL	
Phenanthrene	ug/l	1.5		NL		NL		NL	1.5	
Phenol	ug/l	NL		NL		NL		1	1	
Pyrene	ug/l	NL		NL		NL		NL	NL	
Pesticides/PCBs										
4,4'-DDD	ug/l	NL		0.000011	J	0.00008		0.3	0.000011	J
4,4'-DDE	ug/l	NL		0.000011	J	0.000007		0.2	0.000007	
4,4'-DDT	ug/l	NL		0.000011	J	0.00001		0.2	0.00001	
Aldrin	ug/l	NL		NL		0.001	A	0.001	0.001	A
alpha-BHC	ug/l	NL		NL		0.002		0.01	0.002	
alpha-Chlordane	ug/l	NL		NL		0.00002	K	0.05	0.00002	K
Aroclor-1016	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1221	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1232	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1242	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1248	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1254	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1260	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
beta-BHC	ug/l	NL		NL		0.007		0.04	0.007	
delta-BHC	ug/l	NL		NL		0.008		0.04	0.008	
Dieldrin	ug/l	NL		NL		0.0000006		0.004	0.0000006	
Endosulfan I	ug/l	0.001		NL		NL		NL	0.001	
Endosulfan II	ug/l	0.001		NL		NL		NL	0.001	
Endosulfan sulfate	ug/l	NL		NL		NL		NL	NL	
Endrin	ug/l	NL		NL		0.002		0.2	0.002	
Endrin aldehyde	ug/l	NL		NL		NL		NL	NL	
Endrin ketone	ug/l	NL		NL		NL		NL	NL	

Table 4-2
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
gamma-BHC (Lindane)	ug/l	NL		NL		0.008		0.05	0.008	
gamma-Chlordane	ug/l	NL		NL		0.00002	K	0.05	0.00002	K
Heptachlor	ug/l	NL		NL		0.0002		0.04	0.0002	
Heptachlor epoxide	ug/l	NL		NL		0.0003		0.03	0.0003	
Methoxychlor	ug/l	0.03		NL		NL		0.5	0.03	
Toxaphene	ug/l	0.005		NL		0.000006		0.06	0.000006	
Inorganic Analytes										
Aluminum	ug/l	NL		NL		NL		100	100	
Antimony	ug/l	NL		NL		NL		3	3	
Arsenic	ug/l	63		NL		NL		50	63	
Barium	ug/l	NL		NL		NL		1000	1000	
Beryllium	ug/l	NL		NL		NL		NL	NL	
Cadmium	ug/l	7.7		NL		2.7		10	2.7	
Calcium	ug/l	NL		NL		NL		NL	NL	
Chromium	ug/l	54	L	NL		NL		8	54	L
Cobalt	ug/l	NL		NL		NL		5	5	
Copper	ug/l	3.4		NL		NL		2.1	3.4	
Cyanide	ug/l	1		NL		9,000		200	1	
Iron	ug/l	NL		NL		NL		300	300	
Lead	ug/l	8		NL		NL		6.4	8	
Magnesium	ug/l	NL		NL		NL		35000	35000	
Manganese	ug/l	NL		NL		NL		300	300	
Mercury	ug/l	NL		0.0026	F	0.0007	F	0.7	0.0007	F
Nickel	ug/l	8.2		NL		NL		3.5	8.2	
Potassium	ug/l	NL		NL		NL		NL	NL	
Selenium	ug/l	NL		NL		NL		10	10	
Silver	ug/l	NL		NL		NL		50	50	
Sodium	ug/l	NL		NL		NL		NL	NL	
Sulfate	ug/l	NL		NL		NL		NL	NL	
Thallium	ug/l	NL		NL		NL		8	8	
Vanadium	ug/l	NL		NL		NL		14	14	
Zinc	ug/l	66		NL		NL		110	66	

Notes:

1. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Fish Propagation (saline waters)
2. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Wildlife Protection (saline waters)
3. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Human Consumption of Fish (saline waters)
4. New York Surface Water Quality Standards 6NYCRR Chapter X Part 703, 1999
5. Smithtown Surface Water Screening Criteria is the lowest New York Ambient Water Quality Standard or Guidance value.

A Applies to the sum of Aldrin and Dieldrin
C Standard applied to the sum of the PCB compounds
D Standard applied to the sum of 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene
F Applies to dissolved Hg
H Applies to the sum of 1,2-, 1,3-, and 1,4-dichlorobenzene
I Applies to the sum of o-, m-, and p-xylene
J Applies to the sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT
K Applies to the sum of alpha- and gamma-chlordane
L Applies to the acid-soluble form of hexavalent chromium
NL - Chemical name not listed or screening value of this type not listed for the chemical

Table 4-3
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
	Volatile Organic Compounds									
71-55-6	1,1,1-Trichloroethane	ug/gOC	NL		NL		NL		NL	
79-34-5	1,1,2,2-Tetrachloroethane	ug/gOC	0.3		NL		NL		0.3	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/gOC	NL		NL		NL		NL	
79-00-5	1,1,2-Trichloroethane	ug/gOC	0.6		NL		NL		0.6	
75-34-3	1,1-Dichloroethane	ug/gOC	NL		NL		NL		NL	
75-35-4	1,1-Dichloroethene	ug/gOC	0.02		NL		NL		0.02	
120-82-1	1,2,4-Trichlorobenzene	ug/gOC	NL		91	E	NL		91	E
96-12-8	1,2-Dibromo-3-chloropropane	ug/gOC	NL		NL		NL		NL	
106-93-4	1,2-Dibromoethane	ug/gOC	NL		NL		NL		NL	
95-50-1	1,2-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
107-06-2	1,2-Dichloroethane	ug/gOC	0.7		NL		NL		0.7	
78-87-5	1,2-Dichloropropane	ug/gOC	NL		NL		NL		NL	
541-73-1	1,3-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
106-46-7	1,4-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
78-93-3	2-Butanone	ug/gOC	NL		NL		NL		NL	
591-78-6	2-Hexanone	ug/gOC	NL		NL		NL		NL	
108-10-1	4-Methyl-2-pentanone	ug/gOC	NL		NL		NL		NL	
67-64-1	Acetone	ug/gOC	NL		NL		NL		NL	
71-43-2	Benzene	ug/gOC	0.6		26		NL		0.6	
75-27-4	Bromodichloromethane	ug/gOC	NL		NL		NL		NL	
75-25-2	Bromoform	ug/gOC	NL		NL		NL		NL	
74-83-9	Bromomethane	ug/gOC	NL		NL		NL		NL	
75-15-0	Carbon Disulfide	ug/gOC	NL		NL		NL		NL	
56-23-5	Carbon Tetrachloride	ug/gOC	0.6		NL		NL		0.6	
108-90-7	Chlorobenzene	ug/gOC	NL		3.5		NL		3.5	
75-00-3	Chloroethane	ug/gOC	NL		NL		NL		NL	
67-66-3	Chloroform	ug/gOC	NL		NL		NL		NL	
74-87-3	Chloromethane	ug/gOC	NL		NL		NL		NL	
156-59-2	cis-1,2-Dichloroethene	ug/gOC	NL		NL		NL		NL	
10061-01-5	cis-1,3-Dichloropropene	ug/gOC	NL		NL		NL		NL	
110-82-7	Cyclohexane	ug/gOC	NL		NL		NL		NL	
124-48-1	Dibromochloromethane	ug/gOC	NL		NL		NL		NL	
75-71-8	Dichlorodifluoromethane	ug/gOC	NL		NL		NL		NL	
100-41-4	Ethylbenzene	ug/gOC	NL		6.4		NL		6.4	
98-82-8	Isopropylbenzene	ug/gOC	NL		12 FW		NL		12 FW	
79-20-9	Methyl Acetate	ug/gOC	NL		NL		NL		NL	
1634-04-4	Methyl Tert-Butyl Ether	ug/gOC	NL		NL		NL		NL	
75-09-2	Methylene Chloride	ug/gOC	NL		NL		NL		NL	
108-87-2	Metylcyclohexane	ug/gOC	NL		NL		NL		NL	
100-42-5	Styrene	ug/gOC	NL		NL		NL		NL	
127-18-4	Tetrachloroethene	ug/gOC	0.8		NL		NL		0.8	
108-88-3	Toluene	ug/gOC	NL		45		NL		45	
156-60-5	trans-1,2-Dichloroethene	ug/gOC	NL		NL		NL		NL	
10061-02-6	trans-1,3-Dichloropropene	ug/gOC	NL		NL		NL		NL	
79-01-6	Trichloroethene	ug/gOC	2		NL		NL		2	
75-69-4	Trichlorofluoromethane	ug/gOC	NL		NL		NL		NL	
75-01-4	Vinyl Chloride	ug/gOC	0.07		NL		NL		0.07	
1330-20-7	Xylenes (total)	ug/gOC	NL		27	F	NL		27	F
	Semi-Volatile Organics									
92-52-4	1,1'-Biphenyl	ug/gOC	NL		NL		NL		NL	
108-60-1	2,2'-oxybis(1-Chloropropane)	ug/gOC	NL		NL		NL		NL	
95-95-4	2,4,5-Trichlorophenol	ug/gOC	NL		NL		NL		NL	
88-06-2	2,4,6-Trichlorophenol	ug/gOC	NL		NL		NL		NL	
120-83-2	2,4-Dichlorophenol	ug/gOC	NL		NL		NL		NL	
105-67-9	2,4-Dimethylphenol	ug/gOC	NL		NL		NL		NL	
51-28-5	2,4-Dinitrophenol	ug/gOC	NL		NL		NL		NL	
121-14-2	2,4-Dinitrotoluene	ug/gOC	NL		NL		NL		NL	
606-20-2	2,6-Dinitrotoluene	ug/gOC	NL		NL		NL		NL	
91-58-7	2-Chloronaphthalene	ug/gOC	NL		NL		NL		NL	

Table 4-3
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
95-57-8	2-Chlorophenol	ug/gOC	NL		NL		NL		NL	
91-57-6	2-Methylnaphthalene	ug/gOC	NL		30		NL		30	
95-48-7	2-Methylphenol	ug/gOC	NL		NL		NL		NL	
88-74-4	2-Nitroaniline	ug/gOC	NL		NL		NL		NL	
88-75-5	2-Nitrophenol	ug/gOC	NL		NL		NL		NL	
91-94-1	3,3'-Dichlorobenzidine	ug/gOC	NL		NL		NL		NL	
99-09-2	3-Nitroaniline	ug/gOC	NL		NL		NL		NL	
534-52-1	4,6-Dinitro-2-methylphenol	ug/gOC	NL		NL		NL		NL	
101-55-3	4-Bromophenyl-phenylether	ug/gOC	NL		NL		NL		NL	
59-50-7	4-Chloro-3-methylphenol	ug/gOC	NL		NL		NL		NL	
106-47-8	4-Chloroaniline	ug/gOC	NL		NL		NL		NL	
7005-72-3	4-Chlorophenyl-phenylether	ug/gOC	NL		NL		NL		NL	
106-44-5	4-Methylphenol	ug/gOC	NL		NL		NL		NL	
100-01-6	4-Nitroaniline	ug/gOC	NL		NL		NL		NL	
100-02-7	4-Nitrophenol	ug/gOC	NL		NL		NL		NL	
83-32-9	Acenaphthene	ug/gOC	NL		240		NL		240	
208-96-8	Acenaphthylene	ug/gOC	NL		NL		NL		NL	
98-86-2	Acetophenone	ug/gOC	NL		NL		NL		NL	
120-12-7	Anthracene	ug/gOC	NL		107		NL		107	
1912-24-9	Atrazine	ug/gOC	NL		NL		NL		NL	
100-52-7	Benzaldehyde	ug/gOC	NL		NL		NL		NL	
56-55-3	Benzo(a)anthracene	ug/gOC	NL		12 FW		NL		12 FW	
50-32-8	Benzo(a)pyrene	ug/gOC	0.7		NL		NL		0.7	
205-99-2	Benzo(b)fluoranthene	ug/gOC	NL		NL		NL		NL	
191-24-2	Benzo(g,h,i)perylene	ug/gOC	NL		NL		NL		NL	
207-08-9	Benzo(k)fluoranthene	ug/gOC	NL		NL		NL		NL	
111-91-1	bis(2-Chloroethoxy)methane	ug/gOC	NL		NL		NL		NL	
111-44-4	bis(2-Chloroethyl)ether	ug/gOC	0.03		NL		NL		0.03	
117-81-7	bis(2-Ethylhexyl)phthalate	ug/gOC	NL		199.5 FW		NL		199.5 FW	
85-68-7	Butylbenzylphthalate	ug/gOC	NL		NL		NL		NL	
105-60-2	Caprolactam	ug/gOC	NL		NL		NL		NL	
86-74-8	Carbazole	ug/gOC	NL		NL		NL		NL	
218-01-9	Chrysene	ug/gOC	NL		NL		NL		NL	
53-70-3	Dibenz(a,h)anthracene	ug/gOC	NL		NL		NL		NL	
132-64-9	Dibenzofuran	ug/gOC	NL		NL		NL		NL	
84-66-2	Diethylphthalate	ug/gOC	NL		NL		NL		NL	
131-11-3	Dimethylphthalate	ug/gOC	NL		NL		NL		NL	
84-74-2	Di-n-butylphthalate	ug/gOC	NL		NL		NL		NL	
117-84-0	Di-n-octylphthalate	ug/gOC	NL		NL		NL		NL	
206-44-0	Fluoranthene	ug/gOC	NL		1340		NL		1340	
86-73-7	Fluorene	ug/gOC	NL		38		NL		38	
118-74-1	Hexachlorobenzene	ug/gOC	NL		NL		NL		NL	
87-68-3	Hexachlorobutadiene	ug/gOC	0.3		1.6		4		0.3	
77-47-4	Hexachlorocyclopentadiene	ug/gOC	NL		0.7		NL		0.7	
67-72-1	Hexachloroethane	ug/gOC	NL		NL		NL		NL	
193-39-5	Indeno(1,2,3-cd)pyrene	ug/gOC	NL		NL		NL		NL	
78-59-1	Isophorone	ug/gOC	NL		NL		NL		NL	
91-20-3	Naphthalene	ug/gOC	NL		38		NL		38	
98-95-3	Nitrobenzene	ug/gOC	NL		NL		NL		NL	
621-64-7	N-Nitroso-di-n-propylamine	ug/gOC	NL		NL		NL		NL	
86-30-6	N-Nitrosodiphenylamine	ug/gOC	NL		NL		NL		NL	
87-86-5	Pentachlorophenol	ug/gOC	NL		40 FW		NL		40 FW	
85-01-8	Phenanthrene	ug/gOC	NL		160		NL		160	
108-95-2	Phenol	ug/gOC	NL		0.6 FW		NL		0.6 FW	
129-00-0	Pyrene	ug/gOC	NL		961		NL		961	
	Pesticides/PCBs									
72-54-8	4,4'-DDD	ug/gOC	0.01	A	NL		1	A	0.01	A
72-55-9	4,4'-DDE	ug/gOC	0.01	A	NL		1	A	0.01	A
50-29-3	4,4'-DDT	ug/gOC	0.01	A	1		1	A	0.01	A
309-00-2	Aldrin	ug/gOC	0.1	B	NL		0.77	B	0.1	B

Table 4-3
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
319-84-6	alpha-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
5103-71-9	alpha-Chlordane	ug/gOC	0.001	C	0.002	C	0.006	C	0.001	C
12674-11-2	Aroclor-1016	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11104-28-2	Aroclor-1221	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11141-16-5	Aroclor-1232	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
53469-21-9	Aroclor-1242	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
12672-29-6	Aroclor-1248	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11097-69-1	Aroclor-1254	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11096-82-5	Aroclor-1260	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
319-85-7	beta-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
319-86-8	delta-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
60-57-1	Dieldrin	ug/gOC	0.1	B	17		0.77	B	0.1	B
959-98-8	Endosulfan I	ug/gOC	NL		0.004		NL		0.004	
33213-65-9	Endosulfan II	ug/gOC	NL		0.004		NL		0.004	
1031-07-8	Endosulfan sulfate	ug/gOC	NL		NL		NL		NL	
72-20-8	Endrin	ug/gOC	NL		0.73		NL		0.73	
7421-93-4	Endrin aldehyde	ug/gOC	NL		NL		NL		NL	
53494-70-5	Endrin ketone	ug/gOC	NL		NL		NL		NL	
58-89-9	gamma-BHC (Lindane)	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
5103-74-2	gamma-Chlordane	ug/gOC	0.001	C	0.002	C	0.006	C	0.001	C
76-44-8	Heptachlor	ug/gOC	0.0008	I	0.09	I	NL		0.0008	I
1024-57-3	Heptachlor epoxide	ug/gOC	0.0008	I	0.09	I	NL		0.0008	I
72-43-5	Methoxychlor	ug/gOC	NL		0.6		NL		0.6	
8001-35-2	Toxaphene	ug/gOC	0.02		0.01		NL		0.01	
	Inorganic Analytes									
7429-90-5	Aluminum	ug/g	NL		NL		NL		NL	
7440-36-0	Antimony	ug/g	NL		2	J	NL		2	J
7440-38-2	Arsenic	ug/g	NL		6	J	NL		6	J
7440-39-3	Barium	ug/g	NL		NL		NL		NL	
7440-41-7	Beryllium	ug/g	NL		NL		NL		NL	
7440-43-9	Cadmium	ug/g	NL		0.6	J	NL		0.6	J
7440-70-2	Calcium	ug/g	NL		NL		NL		NL	
7440-47-3	Chromium	ug/g	NL		26	J	NL		26	J
7440-48-4	Cobalt	ug/g	NL		NL		NL		NL	
7440-50-8	Copper	ug/g	NL		16	J	NL		16	J
7439-89-6	Iron	ug/g	NL		20000	J	NL		20000	J
7439-92-1	Lead	ug/g	NL		31	J	NL		31	J
7439-95-4	Magnesium	ug/g	NL		NL		NL		NL	
7439-96-5	Manganese	ug/g	NL		460	J	NL		460	J
7439-97-6	Mercury	ug/g	NL		0.15	J	NL		0.15	J
7440-02-0	Nickel	ug/g	NL		16	J	NL		16	J
7440-09-7	Potassium	ug/g	NL		NL		NL		NL	
7782-49-2	Selenium	ug/g	NL		NL		NL		NL	
7440-22-4	Silver	ug/g	NL		1	J	NL		1	J
7440-23-5	Sodium	ug/g	NL		NL		NL		NL	
7440-28-0	Thallium	ug/g	NL		NL		NL		NL	
7440-62-2	Vanadium	ug/g	NL		NL		NL		NL	
7440-66-6	Zinc	ug/g	NL		120	J	NL		120	J
57-12-5	Cyanide	ug/g	NL		NL		NL		NL	

Notes:

1. Source: Technical Guidance for Screening Contaminated Sediments, Division of Fish, Wildlife and Marine Resources, January 25, 1999. Salt water sediment values used as preference. Fresh water values indicatd with FW.
2. Smithtown Sediment Screening Criteria are the lowest of the NYS screening criteria for salt water or fresh water sediment.

Values shown in units of ug/gOC are calculated based on unit organic carbon concentration (1 gOC/kg). Values shown will be multiplied by the measured sample-specific organic carbon content to derive the criteria applicable to each sediment sample.

NL - Chemical name not listed or screening value of this type not listed for the chemical
A Value applies to the sum of DDD, DDE, DDT

Table 4-3
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)	Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)	Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)	Smithtown Sediment Screening Criteria (2)
	B Value applies to the sum of aldrin and dieldrin					
	C Value applies to total Chlordane					
	D Value applies to total Dichlorobenzenes					
	E Value applies to total Trichlorobenzenes					
	F Value applies to total Xylenes					
	G Value applies to total BHCs (total hexachlorocyclohexanes)					
	H Value applies to total PCBs					
	I Value applies to the sum of heptaclor and heptachlor epoxide					
	J Value is Lowest Effect Level (LEL) for aquatic life. NYSDEC criteria do not distinguish between fresh and salt water					
	sediment for inorganics.					

Table 4-4
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Wastewater		
Volatile Organic Compounds	1,000 ppb total VOCs	Note 1
Metals	100 times discharge standard	Note 1
Sludge (ug/Kg)		
Acetone	**	**
Benzene	120	60
Bromobenzene	1,600	800
Bromochloromethane	400	200
Bromodichloromethane	600	300
Bromoform	1,000	500
n-Butylbenzene	6,800	3,400
sec-Butylbenzene	10,000	5,000
tert-Butylbenzene	6,800	3,400
Carbon tetrachloride	1,200	600
Chlorobenzene	3,400	1,700
Chloroethane	400	200
Chloroform	600	300
Chlorotoluene	3,600	1,800
Dibromochloromethane	600	300
1,2-Dibromo-3-chloropropane	1,000	500
1,2-dibromoethane	600	300
Dibromomethane	400	200
o-(1,2)-Dichlorobenzene	15,000	8,000
m-(1,3)-Dichlorobenzene	3,200	1,600

Table 4-4
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
p-(1,4)-Dichlorobenzene	15,000	8,000
Dichlorodifluoromethane	600	300
1,1-Dichloroethane	400	200
1,2-Dichloroethane	200	100
1,2-Dichloroethene	800	400
cis-1,2-Dichloroethene	600	300
trans-1,2-Dichloroethene	600	300
1,2-Dichloropropane	600	300
1,3-Dichloropropane	600	300
2,2-Dichloropropane	600	300
1,1-Dichloropropene	600	300
cis-1,3-Dichloropropene	600	300
trans-1,3-Dichloropropene	600	300
p-Diethylbenzene	7,600	3,800
Ethylbenzene	11,000	5,500
p-Ethyltoluene	3,600	1,800
Hexachlorobutadiene	15,000	10,000
Isopropylbenzene	5,200	2,600
p-Isopropyltoluene	7,800	3,900
Methylene chloride	200	100
MTBE	1,200	600
Methylethylketone	600	300
Methylisobutylketone	2,000	1,000
Naphthalene	15,000	10,000
n-Propylbenzene	5,000	2,500

Table 4-4
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Styrene	2,000	1,000
1,1,1,2-Tetrachloroethane	600	300
1,1,2,2-Tetrachloroethane	1,200	600
Tetrachloroethene	2,800	1,400
1,2,4,5-Tetramethylbenzene	15,000	10,000
Toluene	3,000	1,500
1,2,3-Trichlorobenzene	6,800	3,400
1,2,4-Trichlorobenzene	6,800	3,400
1,1,1-Trichloroethane	1,600	800
1,1,2-Trichloroethane	600	300
Trichloroethene	1,400	700
Trichlorofluoromethane	1,600	800
1,2,3-Trichloropropane	800	400
1,2,4-Trimethylbenzene	4,800	2,400
1,3,5-Trimethylbenzene	5,200	2,600
Vinyl chloride	400	200
Xylene(s)	2,400	1,200
Acenaphthene	75,000	50,000
Anthracene	75,000	50,000
Benzo(a)anthracene	6,000*	3,000*
Benzo(b)fluoranthene	2,200*	1,100*
Benzo(k)fluoranthene	2,200*	1,100*
Benzo(g,h,i)perylene	75,000	50,000
Benzo(a)pyrene	22,000*	11,000*
Chrysene	800	400

Table 4-4
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Dibenzo(a,h)anthracene	75,000*	50,000*
Fluoranthene	75,000	50,000
Fluorene	75,000	50,000
Indeno(1,2,3-cd)pyrene	6,400	3,200
Phenanthrene	75,000	50,000
Pyrene	75,000	50,000
Sludge Inorganic Analytes (mg/Kg) Note 2		
Arsenic	25	7.5
Beryllium	8	1.6
Cadmium	10	1.0
Chromium	100	10
Copper	500	25
Lead	400	100
Mercury	2	0.1
Nickel	1,000	13
Silver	100	5

Source: Suffolk County Department of Health Services, Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code. SOP No. 9-95. January 7, 1999.
Note 1: Liquid endpoint samples must be collected when groundwater is encountered during a cleanup operation. If the concentration of VOCs, or metals, in the sample meets, or exceeds 100 times the discharge standard for a specific parameter, or the total VOC concentration meets, or exceeds 1,000 ppb, a groundwater sample must be collected immediately downgradient of the point of contamination to determine if there has been an impact on the groundwater.
Note 2: Certain metals, such as aluminum, iron, and manganese, appear naturally in Long Island soils and are not considered to be significant under most conditions. Other metals will be evaluated on a case by case basis.
*: If direct human exposure from ingestion or inhalation is a concern, the human health guidance values published by EPA should be used to formulae a cleanup goal, if that value is lower than the "Cleanup Objective" listed.
**: Due to its relatively short half life in nature, if acetone is the only contaminant of concern in a sample, the primary response should be to determine and eliminate the source of the acetone discharge. The requirement to perform a remediation will be determined on a case by case basis.

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-12 is located at the end of the Sachem Hill Road cul-de-sac. Ground elevation = 138.36 ft amsl											
VPW-12A	250-255 ft	-111.64	ND	ND	ND	ND	ND	ND	**20 J**	R	1
VPW-12B	240-245 ft	-101.64	ND	ND	ND	ND	ND	ND	**16**	R	1.2
VPW-12C	dup of B	-101.64	ND	ND	ND	ND	ND	ND	**15**	R	1.2
VPW-12D	230-235 ft	-91.64	ND	ND	ND	ND	ND	ND	**21**	R	1
VPW-12E	220-225 ft	-81.64	ND	ND	ND	ND	ND	ND	**18**	R	1.4
VPW-12F	210-215 ft	-71.64	ND	ND	ND	ND	ND	ND	**24**	R	1
VPW-12G	200-205 ft	-61.64	ND	ND	ND	ND	ND	ND	**28**	R	1.2
VPW-12H	190-195 ft	-51.64	ND	ND	ND	ND	ND	ND	**16 J**	R	0.7 J
VPW-12I	180-185 ft	-41.64	ND	ND	ND	ND	ND	ND	**34 J**	R	0.9 J
VPW-12J	170-175 ft	-31.64	ND	ND	ND	ND	ND	ND	**20 J**	R	0.7 J
VPW-12K	160-165 ft	-21.64	0.6 J	0.7 J	ND	1.1 J	ND	ND	**9 J**	R	ND
VPW-12L	150-155 ft	-11.64	0.8 J	ND	0.7 J	ND	ND	ND	**11 J**	R	ND
VPW-12M	140-145 ft	-1.64	0.5 J	ND	0.7 J	ND	ND	ND	**17 J**	R	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-12N	130-135 ft	8.36	ND	ND	ND	ND	ND	ND	**13 J**	R	ND
VPW-14 is located at the east end of the Highwoods Court cul-de-sac. Ground elevation = 157.28 ft amsl											
VPW-14A	245-250 ft	-87.72	ND	ND	0.6	ND	ND	ND	**15**	R	ND
VPW-14B	235-240 ft	-77.72	ND	ND	ND	ND	ND	ND	**28**	R	ND
VPW-14C	225-230 ft	-67.72	ND	ND	ND	ND	ND	ND	**38**	ND	ND
VPW-14D	215-220 ft	-57.72	ND	ND	ND	ND	ND	ND	**32**	R	ND
VPW-14E	205-210 ft	-47.72	ND	ND	ND	ND	ND	ND	**37**	R	ND
VPW-14F	195-200 ft	-37.72	ND	ND	ND	ND	ND	ND	**28**	R	ND
VPW-14G	185-190 ft	-27.72	ND	ND	ND	ND	ND	ND	**56**	ND	ND
VPW-14H	175-180 ft	-17.72	ND	ND	ND	ND	ND	ND	**54**	ND	ND
VPW-14I	165-170 ft	-7.72	ND	ND	ND	ND	ND	ND	**36**	ND	ND
VPW-14J	155-160 ft	2.28	ND	ND	ND	ND	ND	ND	**37**	ND	ND
VPW-14K	145-150 ft	12.28	ND	ND	ND	ND	ND	ND	**16**	ND	ND
VPW-15 is located at 28 Branglebrink Road. Ground elevation = 186.58 ft amsl											

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-15A	215-220 ft	-28.42	ND	ND	ND	ND	ND	ND	**5.1 J**	ND	ND
VPW-15B	207-212 ft	-20.42	ND	ND	ND	ND	ND	ND	**7.2 J**	ND	ND
VPW-15C	197-202 ft	-10.42	ND	ND	0.8 J	ND	ND	ND	**5.7 J**	ND	0.5 J
VPW-15D	187-192 ft	-0.42	ND	ND	0.6 J	ND	ND	ND	**5.7 J**	ND	0.6 J
VPW-15E	177-182 ft	8.58	ND	ND	ND	ND	ND	ND	**5.1 J**	ND	0.9 J
VPW-15F	167-172 ft	18.58	ND	ND	ND	ND	ND	R	ND	R	0.9 J
VPW-16 is located at 23 Branglebrink Road. Ground elevation = 218.97 ft amsl											
VPW-16A	250-255 ft	-31.03	ND	ND	ND	ND	ND	ND	**6**	ND	ND
VPW-16B	240-245 ft	-21.03	4.1	ND	**5.9**	ND	1.3	1.2	**12**	ND	ND
VPW-16C	230-235 ft	-11.03	1.3	ND	3.6	ND	0.9	0.9	**6.4**	ND	ND
VPW-16D	220-225 ft	-1.03	ND	1.3	ND	2.9	ND	ND	4	ND	ND
VPW-16E	210-215 ft	8.97	ND	1.7	ND	3.5	ND	ND	3.7	ND	ND
VPW-17 is located opposite 5 Branglebrink Road. Ground elevation = 165.99 ft amsl											
VPW-17A	192-197 ft	-26.01	ND	ND	ND	ND	ND	ND	2.7	ND	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**10**	**10**
VPW-17B	184-189 ft	-18.01	ND	ND	0.7	ND	ND	ND	**6.3**	ND	ND
VPW-17C	dup of B	-18.01	ND	ND	0.7	ND	ND	ND	**6.3**	ND	ND
VPW-17D	174-179 ft	-8.01	ND	ND	0.6	ND	ND	ND	3.9	ND	ND
VPW-17E	164-169 ft	1.99	ND	ND	0.5	ND	ND	ND	**7.6**	ND	ND
VPW-17F	154-159 ft	11.99	ND	ND	ND	ND	ND	ND	**5.4**	ND	ND
VPW-18 is located at 245 Old Mill Road. Ground elevation = 167.78 ft amsl											
VPW-18A	186-191 ft	-18.22	ND	0.7	ND	1.8	ND	N	**24**	ND	0.6
VPW-18B	175-180 ft	-7.22	ND	0.5	ND	1	ND	ND	**25**	ND	ND
VPW-18C	165-170 ft	2.78	ND	0.5	ND	0.9	0.6	ND	**38**	ND	ND
VPW-19 is located at 15 Quail Path. Ground elevation = 101.87 ft amsl											
VPW-19A	198-203 ft	-96.13	R	ND	ND	ND	ND	ND	0.7	2.9 J	ND
VPW-19B	188-193 ft	-86.13	R	ND	ND	ND	ND	ND	1.2	2.7 J	ND
VPW-19C	178-183 ft	-76.13	ND	ND	ND	ND	ND	ND	3.3 J	1.1 J	ND
VPW-19D	168-173 ft	-66.13	ND	ND	ND	ND	ND	ND	1.9 J	2 J	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-19E	158-163 ft	-56.13	ND	ND	ND	ND	ND	ND	0.7 J	2.9 J	ND
VPW-19F	148-153 ft	-46.13	0.5 J	ND	0.8 J	ND	ND	ND	ND	0.8 J	ND
VPW-19G	138-143 ft	-36.13	ND	ND	0.6 NJ	ND	ND	ND	ND	0.5 J	ND
VPW-19H	128-133 ft	-26.13	ND	ND	ND	ND	ND	ND	0.7 J	1.6 J	ND
VPW-19I	118-123 ft	-16.13	ND	ND	ND	ND	ND	ND	1.7 J	1.4 J	ND
VPW-19J	dup of H	-16.13	ND	ND	ND	ND	ND	ND	0.8 J	1.6 J	ND
VPW-19K	108-113 ft	-6.13	0.6	R	0.6	ND	ND	ND	2	0.6 J	ND
VPW-19L	98-103 ft	3.87	ND	R	0.6	0.6	ND	ND	1.4	R	ND
VPW-19M	88-93 ft	13.87	ND	R	ND	ND	ND	ND	2.1	0.6 J	ND
VPW-20 is located at the end of the Carmen Lane cul-de-sac. Ground elevation = 90.08 ft amsl											
VPW-20A	185-190 ft	-94.92	ND	ND	ND	ND	ND	ND	**32**	ND	ND
VPW-20B	175-180 ft	-84.92	ND	ND	ND	ND	ND	ND	**11**	ND	ND
VPW-20C	165-170 ft	-74.92	ND	ND	ND	ND	ND	ND	**6.3**	ND	0.6
VPW-20D	155-160 ft	-64.92	ND	ND	ND	ND	ND	ND	**6.1**	ND	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-20E	145-150 ft	-54.92	ND	ND	ND	ND	ND	ND	**15**	ND	ND
VPW-20F	125-130 ft	-34.92	ND	ND	ND	ND	ND	ND	**28**	R	ND
VPW-20G	115-120 ft	24.92	ND	ND	ND	R	ND	ND	**15**	R	ND
VPWA-20 is located at the end of the Carmen Lane cul-de-sac. Ground elevation = 90.08 ft amsl											
VPWA-20A	173-177 ft	-82.92	ND	ND	ND	ND	ND	ND	2.4	ND	ND
VPWA-20B	161-165 ft	-70.92	ND	ND	ND	ND	ND	ND	**8.5**	ND	ND
VPWA-20C	151-155 ft	-60.92	ND	ND	ND	ND	ND	ND	**16**	ND	ND
VPWA-20D	141-145 ft	-50.92	ND	ND	ND	ND	ND	ND	**14**	ND	ND
VPWA-20E	131-135 ft	-40.92	ND	ND	ND	ND	ND	ND	**9.3**	ND	ND
VPWA-20F	121-125 ft	-30.92	ND	ND	ND	ND	ND	ND	**11**	ND	ND
VPWA-20G	111-115 ft	-20.92	ND	ND	ND	ND	ND	ND	**12**	ND	ND
VPWA-20H	101-105 ft	-10.92	ND	ND	ND	ND	ND	ND	**8.8**	ND	ND
VPWA-20I	91-95 ft	-0.92	ND	ND	ND	ND	ND	ND	**5.4**	ND	ND
VPWA-20J	81-85 ft	9.08	ND	ND	ND	ND	ND	ND	**10**	ND	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-21 is located at the end of Cordwood Path (by Stony Brook Harbor). Ground elevation = 11.95 amsl											
VPW-21A	122-127 ft	-110.05	ND	ND	ND	ND	ND	R	**11 J**	R	ND
VPW-21B	112-117 ft	-100.05	ND	ND	0.5 J	ND	ND	R	**7.5 J**	R	ND
VPWA-21 is located at the end of Cordwood Path (by Stony Brook Harbor). Ground elevation = 11.95 ft amsl											
VPWA-21A	142-147 ft	-130.05	ND	ND	ND	ND	ND	R	1	ND	ND
VPWA-21B	130-135 ft	-118.05	ND	ND	ND	ND	ND	R	**13**	ND	ND
VPWA-21C	120-125 ft	-108.05	ND	ND	ND	ND	ND	R	**14**	ND	ND
VPWA-21D	110-115 ft	-98.05	ND	ND	ND	ND	ND	R	**15**	ND	ND
VPWA-21E	100-105 ft	-88.05	ND	ND	ND	ND	ND	R	**6.4**	ND	ND
VPWA-21F	90-95 ft	-78.05	ND	ND	ND	ND	ND	R	**11 J**	ND	ND
VPWA-21G	80-85 ft	-68.05	ND	ND	ND	ND	ND	R	**15 J**	ND	ND
VPWA-21H	70-75 ft	-58.05	ND	ND	ND	ND	ND	R	**5.2 J**	ND	ND
VPWA-21I	60-65 ft	-48.05	ND	ND	ND	ND	ND	R	**5.9 J**	R	ND
VPWA-21J	50-55 ft	-38.05	ND	ND	0.5 J	ND	ND	R	**5.6 J**	R	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Toluene	naphthalene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPWA-21K	40-45 ft	-28.05	ND	ND	ND	ND	ND	R	**6.4 J**	R	ND
VPWA-21L	dup of K	-28.05	ND	ND	ND	ND	ND	R	**19 J**	ND	ND
VPWA-21M	30-35 ft	-18.05	ND	ND	ND	ND	ND	R	**39 J**	ND	ND
VPWA-21N	20-25	-8.05	ND	ND	ND	ND	ND	R	**45 J**	ND	ND
VPWA-21O	10-15	1.95	ND	ND	ND	ND	ND	R	**61 J**	1.2 J	ND
VPW-23 is located at the end of the Watercrest Court cul-de-sac. Ground elevation = 97.03 ft amsl											
VPW-23A	192-197 ft	-94.97	ND	ND	ND	ND	ND	ND	**5.3**	1.6	0.8
VPW-23B	184-189 ft	-86.97	ND	ND	ND	ND	ND	ND	**14**	1.4	0.9
VPW-23C	dup of B	-86.97	ND	ND	ND	ND	ND	ND	**14**	1.4	0.8
VPW-23D	174-179 ft	-76.97	ND	ND	ND	ND	ND	ND	**15**	1.1	0.6
VPW-23E	164-169 ft	-66.97	ND	ND	ND	ND	ND	ND	**16**	1.2	ND
VPW-23F	154-159 ft	-56.97	ND	ND	ND	ND	ND	ND	**19**	1.3	ND
VPW-23G	144-149 ft	-46.97	ND	ND	ND	ND	ND	ND	**19**	1.2 J	ND
VPW-23H	134-139 ft	-36.97	ND	ND	ND	ND	ND	ND	**17**	1.2 J	ND

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-23I	124-129 ft	-26.97	ND	ND	ND	ND	ND	ND	**17**	1 J	ND
VPW-23J	114-119 ft	-16.97	ND	ND	ND	R	ND	ND	**17**	1 J	ND
VPW-23K	104-109 ft	-9.97	ND	ND	ND	R	ND	ND	**12**	0.8 J	ND
VPW-23L	94-99 ft	3.03	ND	ND	ND	R	ND	ND	**10**	0.6 J	ND
VPW-23M	84-89 ft	13.03	ND	ND	ND	R	ND	ND	**16**	0.7 J	ND
VPW-23N	74-79 ft	23.03	ND	ND	ND	R	ND	ND	**12**	0.6 J	ND
VPW-24 is located southeast of 54 Harbor Hill Road. Ground elevation = 30.86 ft amsl											
VPW-24A	200-205 ft	-169.14	1.1	ND	1.6	0.9	ND	ND	**79**	0.6 J	2.7 J
VPW-24B	193-198 ft	-162.14	0.9	ND	1.3	0.5	ND	ND	**78**	R	2.1 J
VPW-24C	184-189 ft	-153.14	1.3	ND	1.8	0.6	ND	0.5	**99**	ND	2 J
VPW-24D	174-179 ft	-143.14	4.6	ND	**5.7**	ND	1.6	2.3	**22**	ND	0.8 J
VPW-24E	164-169 ft	-133.14	3	ND	3.3	ND	1	0.9 J	**48 J**	ND	ND
VPW-24F	154-159 ft	-123.14	2.3	ND	2.7	0.5	0.9	1.1 J	**49 J**	ND	1.4
VPW-24G	144-149 ft	-113.14	2.1	ND	2.5	0.6	0.7	1 J	**71 J**	ND	1.5

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Toluene	naphthalene	MTBE
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**10**	**10**
VPW-24H	134-139 ft	-103.14	1.8	ND	2.1	0.6	0.5	0.5 J	**68 J**	ND	1.6
VPW-24I	124-129 ft	-93.14	1.4	ND	1.8	0.7	ND	ND	**72 J**	ND	1.7
VPW-24J	114-119 ft	-83.14	1.2	ND	1.4	0.8	ND	ND	**68 J**	ND	1.6
VPW-24K	104-109 ft	-73.14	0.7	ND	1	2.5	ND	ND	**30 J**	ND	1
VPW-24L	94-99 ft	-63.14	0.7	ND	0.9	1.5	ND	ND	**45 J**	ND	1.2
VPW-24M	84-89 ft	-53.14	0.6	ND	0.8	2.1	ND	ND	**35 J**	ND	1.4
VPW-24N	74-79 ft	-43.14	0.7	ND	0.8	2.9	ND	ND	**39 J**	ND	1.2
VPW-24O	64-69 ft	-33.14	ND	ND	0.5	**5.6**	ND	ND	**21**	ND	0.8
VPW-24P	54-59 ft	-23.14	ND	ND	ND	3.6	ND	ND	**17**	ND	0.8
VPW-24Q	44-49 ft	-13.14	ND	ND	ND	**7.3**	ND	ND	**16**	ND	0.8
VPW-24R	34-39 ft	-3.14	ND	ND	0.5	3	ND	ND	**20**	R	0.9
VPW-24S	24-29 ft	6.86	ND	ND	ND	**7.5**	ND	ND	**13**	ND	0.6
VPW-24T	dup of O	-33.14	ND	ND	ND	4.5	ND	ND	**19**	R	0.9
VPW-24U	dup of Q	-13.14	ND	ND	ND	**5**	ND	ND	**14**	R	0.8

Table 4-5
Selected Volatile Organic Compound Results in Residential Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (bgs)	Elevation (a/bmsl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**10**	**10**
VPW-24V	14-19 ft	16.86	ND	ND	ND	3	ND	ND	**15**	R	0.8
VPW-25 is located northwest of 54 Harbor Hill Road. Ground elevation = 13.99 ft amsl											
VPW-25A	98-103 ft	-84.01	ND	ND	ND	ND	ND	ND	3.1	1.7	ND
VPW-25B	88-93 ft	-74.01	ND	ND	ND	ND	ND	ND	**6.1**	0.9	ND
VPW-25C	78-83 ft	-64.01	ND	ND	ND	ND	ND	ND	**12**	1.4	ND
VPW-25D	68-73 ft	-54.01	ND	ND	ND	ND	0.5	ND	**17**	1.4 J	ND
VPW-25E	58-63 ft	-44.01	ND	ND	ND	ND	ND	ND	**18**	1.4 J	ND
VPW-25F	48-53 ft	-34.01	ND	ND	ND	0.9	ND	ND	**11**	0.8 J	ND
VPW-25G	38-43 ft	-24.01	ND	ND	ND	0.7	ND	ND	**11**	0.7 J	ND
VPW-25H	28-33 ft	-14.01	ND	ND	ND	0.7	ND	ND	**17**	0.9 J	ND
VPW-25I	18-23 ft	-4.01	ND	ND	ND	0.8	ND	ND	**12**	0.8 J	ND
VPW-25J	8-13 ft	5.99	ND	ND	ND	0.9	ND	ND	**19**	0.7 J	ND

All units in micrograms/liter (ug/L)
Abbreviations: bgs = below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; TCE = trichloroethene; MTBE = methyl tert butyl ether; ft = feet; J = estimated value; R = data rejected

Table 4-6
Selected Volatile Organic Compound Results in Potential Source Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (ft bgs)	Elevation (ft a/bmsl)	1,2-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW-1 is located at 256 Lake Avenue (Gene's French Cleaners). Ground elevation = 161.5 ft amsl											
VPW-01-A	121-125	40.5	ND	ND	ND	ND	ND	ND	ND	ND	1.1
VPW-01-B	110-114	51.5	ND	ND	ND	ND	ND	ND	ND	ND	2.2
VPW-2 is located at 483 Lake Avenue (Avenue Cleaners). Ground Elevation = 161.3 ft. amsl											
VPW-2-A	166-170	-12	ND	ND	ND	ND	ND	ND	0.68	ND	ND
VPW-2-B	156-160	-2	ND	ND	ND	ND	ND	ND	0.82	ND	ND
VPW-3 is located at 561 Lake Avenue (St. James Cleaners). Ground elevation = 166.3 ft amsl											
VPW-03-A	140-144	26.3	ND	ND	ND	ND	ND	ND	0.36J	ND	ND
VPW-03-B	130-134	36.3	ND	ND	ND	1.8	ND	ND	ND	ND	ND
VPW-4 is located at 617-621 Lake Avenue (Sal's Auto Body). Ground elevation = 168.3 ft amsl											
VPW-04-A	140-144	28.3	ND	ND	0.41J	0.53	ND	ND	ND	ND	ND
VPW-5 is located at 556 North Country Road (Polo French Cleaners) Ground elevation = 154.2 ft amsl											
VPW-05-A	128-132	26.2	ND	0.38J	ND	1.3	ND	ND	ND	ND	1.8
VPW-05-B	118-122	36.2	ND	1.6	ND	**15**	0.33J	ND	ND	ND	1.9

Table 4-6
Selected Volatile Organic Compound Results in Potential Source Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (ft bgs)	Elevation (ft a/bmsl)	1,2-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Toluene	naphthalene	MTBE
Screening Criteria			5	5	5	5	5	5	5	10	10
VPW- 6 is located on Edgewood Avenue (Smiththown School District Admin. Building). Ground elevation = 153.2 ft amsl											
VPW-06-A	150-154	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
VPW-06-B	140-144	13.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
VPW-7 is located at 400 North Country Road (Four Seasons Cesspool) Ground elevation = 151.3 ft amsl											
VPW-07-A	150-154	1.3	ND	ND	ND	0.75	ND	ND	0.75	ND	ND
VPW-07-B	140-144	11.3	ND	ND	ND	0.79	0.85	ND	0.43J	ND	0.38J
VPW-07-C	130-134	21.3	ND	ND	0.33J	0.77	0.64	ND	0.4J	ND	1.7
VPW-8 is located at 430-11 North Country Road (North Country Cleaners) Ground elevation = 158.6 ft amsl											
VPW-08-A	148-152	10.6	ND	ND	ND	ND	ND	ND	0.51	ND	0.64
VPW-08-B	138-143	20.6	ND	ND	ND	ND	ND	ND	ND	ND	6.9
VPW-08-C	128-133	30.6	ND	ND	ND	ND	ND	ND	ND	ND	1.1
VPWA-9 is located at 437 North Country Road (The Cleaners) Ground elevation = 158.4 ft amsl											
VPW-09-A	138-142	20.4	ND	ND	ND	ND	ND	ND	ND	ND	7.9
VPW-09-B	133-137	25.4	ND	0.37J	ND	ND	ND	ND	0.5	ND	6.6

Table 4-6
Selected Volatile Organic Compound Results in Potential Source Area Vertical Profile Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Depth (ft bgs)	Elevation (ft a/bmsl)	1,2-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	Tolu-ene	naphth alene	MTBE
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**10**	**10**
VPW-10 is located at 525 North Country Road (St. James Exxon Center) Ground elevation = 165.2 ft amsl											
VPW-10-A	150-154	15.2	ND	ND	ND	0.41J	ND	ND	0.3J	ND	ND
VPW-10-B	150-154	15.2	ND	ND	ND	0.34J	ND	ND	0.43J	ND	ND
VPW-10-C	140-144	25.2	ND	ND	ND	1.2	ND	ND	ND	ND	ND
VPW-11 is located at 545 North Country Road (Penney's St. James Garage) Ground elevation = 164.2 ft amsl											
VPW-11-A	138-142	26.2	ND	ND	ND	ND	ND	ND	0.38J	ND	1.2
VPW-11-B	138-142	26.2	ND	ND	ND	ND	ND	ND	0.47J	ND	1.2
VPW-11-C	128-132	36.2	ND	ND	ND	0.38J	ND	ND	ND	ND	**20**

All units in micrograms/liter (ug/L)
Abbreviations: ft bgs = feet below ground surface; ft a/b msl = feet above/below mean sea level; 1,2 -DCA = 1,2-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; TCE = trichloroethene; MTBE = methyl tert butyl ether; ft = feet; J = estimated value

Table 4-7
Volatile Organic Compound Results in Piezometers
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	1,2-DCA	TCE	1,1-DCE	ace-tone	dichlorometh
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**50**	**5**
MW-A	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND
MW-C	165 to 175	-3 to -13	ND	ND	ND	1.2	ND	ND	9.1	ND
MW-D	185 to 195	-94 to -104	ND	ND	ND	ND	ND	ND	10	0.5
MW-E	235 to 245	-74 to -84	3.1	ND	**7.2**	ND	1.4	1.1	7.1	ND
MW-F	187 to 197	-41 to -51	1.9	0.6	1.5	ND	2.4	ND	9.1	ND

All values in micrograms/liter (ug/L). Sample results from June 2001.
bold = exceeds screening criteria
Abbreviations:
ft bgs = feet below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; 1,2-DCA = 1,2-dichloroethane; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; dichlorometh = dichloromethene; ND = non-detect

Note 1: Smithtown screening criteria are the lowest values of the EPA National Primary Drinking Water Standards, the New York Groundwater Quality Standards, or the New York Department of Health Drinking Water Standards

Table 4-8
Round 1 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	10
MW-1S	100 to 110	3 to -7	ND	1.1	0.47 J	0.82	0.31 J	ND	0.50	ND	ND
MW-1I	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	180 to 190	-12 to -22	ND	1.3	1.0	4.4	0.52	ND	ND	ND	ND
MW-3S	167 to 177	1 to -9	ND	**50 D**	ND	**12**	ND	ND	ND	0.48 J	ND
MW-3I	198 to 208	-30 to -40	ND	1.7	0.42 J	0.82	0.40 J	ND	ND	ND	1.2
MW-4S	170 to 180	9 to -1	ND	ND	ND	2.3	ND	ND	ND	ND	ND
MW-4I	200 to 210	-22 to -32	ND	2.9	0.15 J	**16**	0.68	ND	ND	ND	ND
MW-4D	242 to 252	-63 to -73	0.56	1.4	0.58	**38 D**	0.94	ND	ND	ND	ND
MW-5S	40 to 50	-27 to -37	ND	ND	0.40 J	3.6	ND	ND	ND	ND	ND
MW-5I	109 to 119	-95 to -105	0.20 J	0.44 J	0.37 J	1.6	1.5	ND	ND	ND	0.78
MW-5D	160 to 170	-146 to -156	ND	0.37 J	0.35 J	1.0	0.90	ND	ND	ND	1.2
MW-6S	188 to 198	-12 to -22	ND	ND	**150 D**	5.3	2.2	**31 D**	0.63 J	ND	ND
MW-6I	219 to 229	-43 to -53	ND	ND	0.31 J	ND	ND	ND	ND	ND	ND

Table 4-8
Round 1 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			5	5	5	5	5	5	7	5	10
MW-A	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-C	165 to 175	-3 to -13	ND	ND	0.17 J	ND	ND	ND	ND	ND	1.3
MW-D	185 to 195	-94 to -104	0.48 J	ND	0.74	ND	0.27 J	ND	ND	ND	ND
MW-E	235 to 245	-74 to -84	3.0	ND	**7.1**	ND	1.9	1.7	ND	ND	ND
MW-F	187 to 197	-41 to -51	2.6	1.2	1.7	0.16 J	**5.8**	ND	0.40 J	ND	ND
MW-G	290 to 300	-129 to -139	ND	ND	0.46 J	ND	0.21 J	ND	ND	ND	ND

All values in micrograms/liter (ug/L)
bold = exceeds screening criteria
Abbreviations:
ft bgs = feet below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; 1,1-DCE = 1,1-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene;MTBE = methyl tert butyl ether; ND = non-detect; J = estimated value; D = value from diluted sample

Note 1: Smithtown screening criteria are the lowest values of the EPA National Primary Drinking Water Standards, the New York Groundwater Quality Standards, or the New York Department of Health Drinking Water Standards

Table 4-9
Summary of Round 1 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Moni-toring Well	Alum-inum (1)	Bari-um	Cal-cium	Chro-mium	Cop-per	Iron (1)	Lead	Mag-nesi-um	Manga nese(1)	Nickel	Potass -ium	Sod-ium	Zinc	Cyan-ide
Screen-ing Criteria	**200**	**1,000**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**NS**	**20,000**	**2,000**	**200**
MW-1S	**456**	31.8 B	19,100	20.9	3.3 B	**734**	ND	8,400	20.9	14.8 B	1690BE	17,400	4.5 B	1.5 B
MW-1I	**663**	16.2 B	6,560	8.1 B	4.9 B	**1,220**	ND	2,950 B	220	7.0 B	1200BE	4,440 B	7.6 B	2.3 B
MW-2	**729**	35.6 B	20,200	14.0	11.1 B	**1,130**	ND	7,130	203	12.4 B	1910BE	17,300	21.7	1.7 B
MW-3S	138 B	21.0 B	12,300	17.4	6.2 B	168	4.0	4,980 B	48.7	13.8	1590BE	12,500	21.5	1.5 B
MW-3I	**430**	35.4 B	17,500	24.4	7.0 B	**691**	ND	7,730	52.0	16.0 B	1840BE	23,100	5.1 B	1.0 B
MW-4S	**3,270**	43.1 B	20,700	**81.6**	15.4 B	**6,050**	2.8 B	9,640	**320**	60.8	2530BE	15,800	22.0	0.95 B
MW-4I	**867**	41.8 B	12,600	20.8	4.9 B	**1,600**	2.5 B	5,960	178	16.5 B	1920BE	**23,300**	8.8 B	1.3 B
MW-4D	**781**	41.5 B	18,800	14.5	17.4 B	**1,380**	ND	8,060	131	11.4 B	1820B	17,200	7.7 B	ND
MW-5S	**303**	48.8 B	35,200	3.8 B	4.3 B	**425**	ND	23,000	63.1	ND	1980BE	15,400	4.8 B	1.4 B
MW-5I	**228**	36.6 B	23,700	4.8 B	8.2 B	140	2.4 B	9,050	31.5	4.3 B	1970BE	**30,900**	5.4 B	1.1 B
MW-5D	**448**	36.5 B	19,200	1.9 B	6.5 B	**487**	ND	8,050	109	4.6 B	2690BE	**37,000**	9.7 B	1.8 B

Table 4-9
Summary of Round 1 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Aluminum (1)	Barium	Calcium	Chromium	Copper	Iron (1)	Lead	Magnesium	Manganese (1)	Nickel	Potassium	Sodium	Zinc	Cyanide
Screening Criteria	**200**	**1,000**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**NS**	**20,000**	**2,000**	**200**
MW-6S	**500**	42.2 B	19,900	7.2 B	7.4 B	**1,000**	ND	7,920	146	10.9 B	1960BE	17,300	18.3 B	1.4 B
MW-6I	**2,410**	63.3 B	25,100	29.1	12.6 B	**4,810**	2.3 B	9,820	**340**	22.3 B	5310EJ	10,400	14.2 B	ND
MW-A	169 B	13.1 B	15,700	7.7 B	ND	99.7 B	ND	7,490	113	6.3 B	1600BE	11,600	ND	2.2 B
MW-C	**307**	29.2 B	14,000	6.2 B	3.0 B	**297**	ND	6,280	20.1	4.5 B	1790BE	15,600	5.2 B	1.8 B
MW-D	**686**	13.0 B	16,000	4.5 B	ND	**815**	ND	7,690	152	3.6 B	1170BE	7,810	6.6 B	2.1 B
MW-E	**672**	30.7 B	26,200	14.1	2.5 B	**966**	ND	13,600	58.4	9.0 B	1940BE	17,300	6.8 B	1.2 B
MW-F	**631**	40.7 B	26,800	17.5	1.90B	**647**	ND	10,700	251	12.5 B	5290EJ	16,400	8.2 B	1.7 B
MW-G	**522**	6.8 B	8,760	18.7	1.6 B	**726**	ND	3,830 B	101	12.7 B	1410BE	6,700	3.5 B	1.3 B

All units in micrograms/Liter (µg/L)
Notes/Abbreviations: (1) Secondary regulatory standard; ND = Non-Detect; B = result between instrument detection limit and contract required detection limit; E = data estimated due to interference; **bold** = exceeds screening criteria

Table 4-10
Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			5	5	5	5	5	5	7	5	10
MW-1S	100 to 110	3 to -7	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1I	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	180 to 190	-12 to -22	0.23 J	1.2	0.57	**5.6**	0.41 J	ND	ND	ND	ND
MW-3S	167 to 177	1 to -9	ND	**120 D**	ND	**10**	**6.1**	ND	ND	1.4 J	ND
MW-3I	198 to 208	-30 to -40	ND	**7.6**	ND	0.66 J	0.35 J	ND	0.20 J	0.22 J	ND
MW-4S	170 to 180	9 to -1	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4I	200 to 210	-22 to -32	ND	ND	ND	1.0	ND	ND	ND	ND	ND
MW-4D	242 to 252	-63 to -73	ND	ND	ND	1.4	ND	ND	ND	ND	ND
MW-5S	40 to 50	-27 to -37	ND	ND	ND	ND	ND	ND	0.62	ND	ND
MW-5I	109 to 119	-95 to -105	0.27 J	0.62	0.57	1.7	2.0	ND	0.49 J	ND	1.4
MW-5D	160 to 170	-146 to -156	ND	0.25 J	0.32 J	0.72	0.67	ND	ND	ND	1.8
MW-6S	188 to 198	-12 to -22	ND	ND	**92 D**	**5.7 J**	2.0 J	ND	ND	ND	1.1
MW-6I	219 to 229	-43 to -53	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND

Table 4-10
Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-7	124 to 134	20 to 30	ND	0.32 J	ND	4.6	0.25 J	ND	ND	ND	ND
MW-A	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-C	165 to 175	-3 to -13	ND	ND	ND	ND	ND	ND	ND	ND	0.87
MW-D	185 to 195	-94 to -104	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-E	235 to 245	-74 to -84	3.7	0.43 J	**8.4**	0.17 J	3.8	ND	ND	ND	ND
MW-F	187 to 197	-41 to -51	2.1	1.3	1.4	0.16 J	**6.7**	ND	ND	ND	ND
MW-G	290 to 300	-129 to -139	ND	ND	ND	ND	ND	ND	ND	ND	ND

All values in micrograms/liter (ug/L)
bold = exceeds screening criteria
Abbreviations:
ft bgs = feet below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; 1,1-DCE = 1,1-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene;MTBE = methyl tert butyl ether; ND = non-detect; J = estimated value; D = value from diluted sample

Note 1: Smithtown screening criteria are the lowest values of the EPA National Primary Drinking Water Standards, the New York Groundwater Quality Standards, or the New York Department of Health Drinking Water Standards

Table 4-11
Summary of Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Aluminum (1)	Barium	Calcium	Chromium	Copper	Iron (1)	Lead	Magnesium	Manganese(1)	Nickel	Potassium	Sodium	Zinc	Cyanide
Screening Criteria	**200**	**1,000**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**NS**	**20,000**	**2,000**	**200**
MW-1S	**498**	27.4J	17,500	R	11.6J	**1,300**	ND	7,570	14.2J	36.3J	1,640EJ	15,800	35.2J	ND
MW-1I	**666**	6.0J	5,500	R	4.8J	**1,060**	ND	2,660J	140	13.9J	1,080EJ	4,250J	6.1J	ND
MW-2	**289**	28.7EJ	19,600	20.3	ND	**532**	7.5J	7,370	36.0	19.7J	1,610EJ	17,900	11.8J	ND
MW-3S	51.3J	16.3EJ	12,200	20.2	10.9J	178	ND	4,860J	6.1J	13.4J	1,490EJ	11,100	34.6J	ND
MW-3I	**604**	36.6EJ	18,600	**208**	18.4J	**2,680**	ND	8,020	70.6	103	2,010EJ	**24,000**	19.2J	2.2J
MW-4S	**1,630J**	16.8 J	22900J	**63.4 J**	11.3 J	**2,020J**	ND	9,310J	63.2J	39.3J	2,370NJ	11,500J	36.7J	2.6J
MW-4I	**709J**	27.7J	12600J	31.6J	36.2J	**1,610J**	ND	5,990J	70.7J	33.0J	1,850NJ	**21,100J**	20.7J	2.4J
MW-4D	**2,340J**	37.9J	16900J	43.6J	16.0J	**3,020J**	ND	7,470J	148J	34.6J	1,940NJ	15,500J	27.0J	2.2J
MW-5S	**96.4J**	41.2EJ	30,900	**135J**	7.7J	**993**	ND	19,300	32.3J	41.7	2,960EJ	**408,000 D**	9.6J	2.1J
MW-5I	**979**	38.9EJ	21,700	**832**	26.9	**5,310**	ND	8,920	65.7	82.7	2,220EJ	**33,500**	19.1J	ND
MW-5D	**604**	36.6EJ	18,000	**797**	21.6J	**4010**	ND	7,530	153	**623**	2,790EJ	**35,600**	8.0J	2.4J

Table 4-11
Summary of Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Aluminum (1)	Barium	Calcium	Chromium	Copper	Iron (1)	Lead	Magnesium	Manganese(1)	Nickel	Potassium	Sodium	Zinc	Cyanide
Screening Criteria	200	1,000	NS	50	200	300	15	35,000	300	100	NS	20,000	2,000	200
MW-6S	181J	33.4EJ	19,500	7.1J	ND	**407**	6.3J	7,860	37.8	6.4J	1,670EJ	15,400	39.6J	ND
MW-6I	**11,300J**	116J	29700J	**88.9J**	41.5J	**17500J**	ND	13,400J	**775J**	60.5J	8,110NJ	9,440J	47.4J	2.7J
MW-7	103J	67.4EJ	16,600	11.7	ND	**389**	ND	2,880J	276	19.6J	3,960EJ	19,800	33.0J	2.2J
MW-A	1,810	20.8EJ	15,000	37.3	R	**2,380**	ND	7,460	143	24.1J	1,770EJ	9,830	46.8J	2.1J
MW-C	**664J**	18.0J	13500J	25.9J	6.5J	**833J**	ND	6,130J	41.8J	14.6J	1,950NJ	14,700J	44.9J	2.4J
MW-D	**449J**	ND	13300J	2.0J	ND	**453J**	ND	6,400J	100J	ND	1,040NJ	6,390J	7.4J	2.3J
MW-E	**1,060J**	22.7J	24800J	**70.9J**	31.4J	**1,730J**	ND	12,800J	106J	45.7J	1,930NJ	16,500J	53.0J	3.5J
MW-F	**1,090**	41.5EJ	25,600	12.4	ND	**1,230**	ND	7,190	214	9.0J	2,830EJ	14,600	9.8J	2.5J
MW-G	**1,380J**	ND	6,550J	19.1J	3.3J	**1,320J**	ND	3,450J	38.3J	9.6J	1,430NJ	5,230J	10.4J	3.6J

All units in micrograms/Liter (µg/L)
Notes/Abbreviations: (1) Secondary regulatory standard; ND = Non-Detect; B = result between instrument detection limit and contract required detection limit; E = data estimated due to interference; J = estimated value; **bold** = exceeds screening criteria

Table 4-12
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-1S/R1	100 to 110	3 to -7	ND	1.1	0.47 J	0.82	0.31 J	ND	0.50	ND	ND
MW-1S/R2	100 to 110	3 to -7	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1I/R1	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1I/R2	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2/R1	180 to 190	-12 to -22	ND	1.3	1.0	4.4	0.52	ND	ND	ND	ND
MW-2/R2	180 to 190	-12 to -22	0.23 J	1.2	0.57	**5.6**	0.41 J	ND	ND	ND	ND
MW-3S/R1	167 to 177	1 to -9	ND	**50 D**	ND	**12**	ND	ND	ND	0.48 J	ND
MW-3S/R2	167 to 177	1 to -9	ND	**120 D**	ND	**10**	**6.1**	ND	ND	1.4 J	ND
MW-3I/R1	198 to 208	-30 to -40	ND	1.7	0.42 J	0.82	0.40 J	ND	ND	ND	1.2
MW-3I/R2	198 to 208	-30 to -40	ND	**7.6**	ND	0.66 J	0.35 J	ND	0.20 J	0.22 J	ND
MW-4S/R1	170 to 180	9 to -1	ND	ND	ND	2.3	ND	ND	ND	ND	ND
MW-4S/R2	170 to 180	9 to -1	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4I/R1	200 to 210	-22 to -32	ND	2.9	0.15 J	**16**	0.68	ND	ND	ND	ND
MW-4I/R2	200 to 210	-22 to -32	ND	ND	ND	1.0	ND	ND	ND	ND	ND
MW-4D/R1	242 to 252	-63 to -73	0.56	1.4	0.58	**38 D**	0.94	ND	ND	ND	ND

Table 4-12
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-4D/R2	242 to 252	-63 to -73	ND	ND	ND	1.4	ND	ND	ND	ND	ND
MW-5S/R1	40 to 50	-27 to -37	ND	ND	0.40 J	3.6	ND	ND	ND	ND	ND
MW-5S/R2	40 to 50	-27 to -37	ND	ND	ND	ND	ND	ND	0.62	ND	ND
MW-5I/R1	109 to 119	-95 to -105	0.20 J	0.44 J	0.37 J	1.6	1.5	ND	ND	ND	0.78
MW-5I/R2	109 to 119	-95 to -105	0.27 J	0.62	0.57	1.7	2.0	ND	0.49 J	ND	1.4
MW-5D/R1	160 to 170	-146 to -156	ND	0.37 J	0.35 J	1.0	0.90	ND	ND	ND	1.2
MW-5D/R2	160 to 170	-146 to -156	ND	0.25 J	0.32 J	0.72	0.67	ND	ND	ND	1.8
MW-6S/R1	188 to 198	-12 to -22	ND	ND	**150 D**	**5.3**	2.2	**31 D**	0.63 J	ND	ND
MW-6S/R2	188 to 198	-12 to -22	ND	ND	**92 D**	**5.7 J**	2.0 J	ND	ND	ND	1.1
MW-6I/R1	219 to 229	-43 to -53	ND	ND	0.31 J	ND	ND	ND	ND	ND	ND
MW-6I/R2	219 to 229	-43 to -53	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND
MW-7/R2	124 to 134	20 to 30	ND	0.32 J	ND	4.6	0.25 J	ND	ND	ND	ND
MW-A/R1	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-A/R2	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-C/R1	165 to 175	-3 to -13	ND	ND	0.17 J	ND	ND	ND	ND	ND	1.3

Table 4-12
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-C/R2	165 to 175	-3 to -13	ND	ND	ND	ND	ND	ND	ND	ND	0.87
MW-D/R1	185 to 195	-94 to -104	0.48 J	ND	0.74	ND	0.27 J	ND	ND	ND	ND
MW-D/R2	185 to 195	-94 to -104	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-E/R1	235 to 245	-74 to -84	3.0	ND	**7.1**	ND	1.9	1.7	ND	ND	ND
MW-E/R2	235 to 245	-74 to -84	3.7	0.43 J	**8.4**	0.17 J	3.8	ND	ND	ND	ND
MW-F/R1	187 to 197	-41 to -51	2.6	1.2	1.7	0.16 J	**5.8**	ND	0.40 J	ND	ND
MW-F/R2	187 to 197	-41 to -51	2.1	1.3	1.4	0.16 J	**6.7**	ND	ND	ND	ND
MW-G/R1	290 to 300	-129 to -139	ND	ND	0.46 J	ND	0.21 J	ND	ND	ND	ND
MW-G/R2	290 to 300	-129 to -139	ND	ND	ND	ND	ND	ND	ND	ND	ND

All values in micrograms/liter (ug/L); **bold** = exceeds screening criteria
Abbreviations: ft bgs = feet below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; 1,1-DCE = 1,1-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene;MTBE = methyl tert butyl ether; ND = non-detect; J = estimated value; D = value from diluted sample
R1 = Round 1; R2 = Round 2
Note 1: Smithtown screening criteria are the lowest values of the EPA National Primary Drinking Water Standards, the New York Groundwater Quality Standards, or the New York Department of Health Drinking Water Standards

Table 4-13
Summary of Round 1 and Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Turbidity (NTU)	Aluminum (1)	Calcium	Chromium	Copper	Iron (1)	Lead	Magnesium	Manganese (1)	Nickel	Sodium	Zinc	Cyanide
Screening Criteria	**NA**	**200**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**20,000**	**2,000**	**200**
MW-1S R1	10.0	**456**	19,100	20.9	3.3 B	**734**	ND	8,400	20.9	14.8B	17,400	4.5 B	1.5 B
MW-1S R2	20.1	**498**	17,500	R	11.6J	**1300**	ND	7,570	14.2J	36.3J	15,800	35.2J	ND
MW-1I R1	18.1	**663**	6,560	8.1 B	4.9 B	**1,220**	ND	2,950B	220	7.0 B	4,440B	7.6 B	2.3 B
MW-1I R2	9	**666**	5,500	R	4.8J	**1,060**	ND	2,660J	140	13.9J	4,250J	6.1J	ND
MW-2 R1	38.6	**729**	20,200	14.0	11.1 B	**1,130**	ND	7,130	203	12.4B	17,300	21.7	1.7 B
MW-2 R2	8	**289**	19,600	20.3	ND	**532**	7.5J	7,370	36.0	19.7J	17,900	11.8J	ND
MW-3S R1	36.3	138 B	12,300	17.4	6.2 B	168	4.0	4,980B	48.7	13.8	12,500	21.5	1.5 B
MW-3S R2	1.91	51.3J	12,200	20.2	10.9J	178	ND	4,860J	6.1J	13.4J	11,100	34.6J	ND
MW-3I R1	20.6	**430**	17,500	24.4	7.0 B	**691**	ND	7,730	52.0	16.0B	**23,100**	5.1 B	1.0 B
MW-3I R2	29	**604**	18,600	**208**	18.4J	**2,680**	ND	8,020	70.6	103	**24,000**	19.2J	2.2J
MW-4S R1	109	**3,270**	20,700	**81.6**	15.4 B	**6,050**	2.8 B	9,640	**320**	60.8	15,800	22.0	0.95 B
MW-4S R2	46	**1,630J**	22900J	**63.4 J**	11.3 J	**2,020J**	ND	9,310J	63.2J	39.3J	11500J	36.7J	2.6J
MW-4I R1	70.2	**867**	12,600	20.8	4.9 B	**1,600**	2.5 B	5,960	178	16.5B	**23,300**	8.8 B	1.3 B

Table 4-13
Summary of Round 1 and Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Tur-bidity (NTU)	Alum-inum (1)	Cal-cium	Chro-mium	Cop-per	Iron (1)	Lead	Mag-nesi-um	Mang-anese (1)	Nick-el	Sod-ium	Zinc	Cyan-ide
Screening Criteria	**NA**	**200**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**20,000**	**2,000**	**200**
MW-4I R2	31	**709J**	12600J	31.6J	36.2J	**1,610J**	ND	5,990J	70.7J	33.0J	**21100J**	20.7J	2.4J
MW-4D R1	80.2	**781**	18,800	14.5	17.4 B	**1,380**	ND	8,060	131	11.4B	17,200	7.7 B	ND
MW-4D R2	4.91	**2,340J**	16900J	43.6J	16.0J	**3,020J**	ND	7,470J	148J	34.6J	15500J	27.0J	2.2J
MW-5S R1	10.8	**303**	35,200	3.8 B	4.3 B	**425**	ND	23,000	63.1	ND	15,400	4.8 B	1.4 B
MW-5S R2	15	**96.4J**	30,900	**135J**	7.7J	**993**	ND	19,300	32.3J	41.7	**408000 D**	9.6J	2.1J
MW-5I R1	189	**228**	23,700	4.8 B	8.2 B	140	2.4 B	9,050	31.5	4.3 B	**30,900**	5.4 B	1.1 B
MW-5I R2	84.7	**979**	21,700	**832**	26.9	**5,310**	ND	8,920	65.7	82.7	**33,500**	19.1J	ND
MW-5D R1	95.3	**448**	19,200	1.9 B	6.5 B	**487**	ND	8,050	109	4.6 B	**37,000**	9.7 B	1.8 B
MW-5D R2	50	**604**	18,000	**797**	21.6J	**4010**	ND	7,530	153	**623**	**35,600**	8.0J	2.4J
MW-6S R1	159	**500**	19,900	7.2 B	7.4 B	**1,000**	ND	7,920	146	10.9B	17,300	18.3 B	1.4 B
MW-6S R2	8.3	181J	19,500	7.1J	ND	**407**	6.3J	7,860	37.8	6.4J	15,400	39.6J	ND
MW-6I R1	116	**2,410**	25,100	29.1	12.6 B	**4,810**	2.3 B	9,820	**340**	22.3B	10,400	14.2 B	ND
MW-6I R2	280	**11300J**	29700J	**88.9J**	41.5J	**17500J**	ND	13400J	**775J**	60.5J	9,440J	47.4J	2.7J

Table 4-13
Summary of Round 1 and Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Monitoring Well	Tur-bidity (NTU)	Alum-inum (1)	Cal-cium	Chro-mium	Cop-per	Iron (1)	Lead	Mag-nesi-um	Mang-anese (1)	Nick-el	Sod-ium	Zinc	Cyan-ide
Screening Criteria	**NA**	**200**	**NS**	**50**	**200**	**300**	**15**	**35,000**	**300**	**100**	**20,000**	**2,000**	**200**
MW-7 R2	12.7	103J	16,600	11.7	ND	**389**	ND	2,880J	276	19.6J	19,800	33.0J	2.2J
MW-A R1	4.3	169 B	15,700	7.7 B	ND	99.7 B	ND	7,490	113	6.3 B	11,600	ND	2.2 B
MW-A R2	77.3	**1,810**	15,000	37.3	R	**2,380**	ND	7,460	143	24.1J	9,830	46.8J	2.1J
MW-C R1	20.2	**307**	14,000	6.2 B	3.0 B	**297**	ND	6,280	20.1	4.5 B	15,600	5.2 B	1.8 B
MW-C R2	16.9	**664J**	13500J	25.9J	6.5J	**833J**	ND	6,130J	41.8J	14.6J	14700J	44.9J	2.4J
MW-D R1	26.6	**686**	16,000	4.5 B	ND	**815**	ND	7,690	152	3.6 B	7,810	6.6 B	2.1 B
MW-D R2	9.7	**449J**	13300J	2.0J	ND	**453J**	ND	6,400J	100J	ND	6,390J	7.4J	2.3J
MW-E R1	51.6	**672**	26,200	14.1	2.5 B	**966**	ND	13,600	58.4	9.0 B	17,300	6.8 B	1.2 B
MW-E R2	32.5	**1,060J**	24800J	70.9J	31.4J	**1,730J**	ND	12800J	106J	45.7J	16500J	53.0J	3.5J
MW-F R1	144	**631**	26,800	17.5	1.90B	**647**	ND	10,700	251	12.5B	16,400	8.2 B	1.7 B
MW-F R2	55.9	**1,090**	25,600	12.4	ND	**1,230**	ND	7,190	214	9.0J	14,600	9.8J	2.5J
MW-G R1	49.5	**522**	8,760	18.7	1.6 B	**726**	ND	3,830B	101	12.7B	6,700	3.5 B	1.3 B
MW-G R2	18	**1,380J**	6,550J	19.1J	3.3J	**1,320J**	ND	3,450J	38.3J	9.6J	5,230J	10.4J	3.6J

Table 4-13
Summary of Round 1 and Round 2 Monitoring Well Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

All units in micrograms/Liter (µg/L)

Notes/Abbreviations: (1) Secondary regulatory standard; NTU = Nephelometric Turbidity Units; NA = not applicable; ND = Non-Detect; B = result between instrument detection limit and contract required detection limit; E = data estimated due to interference; J = estimated value; R1 = Round 1 results; R2 = Round 2 results; **bold** = exceeds screening criteria

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
All Rounds in micrograms per liter (ug/L)											
5-BGBK-R1	5 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
5-BGBK-R2	5 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-BGBK-R1	16 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-BGBK-R2	16 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
41-BGBK-R1	41 Branglebrink	Renna	ND	0.5J	ND	ND	ND	ND	4	ND	ND
21-BGBK-R2	21 Branglebrink	NA	2	1	ND	ND	**6**	4	ND	ND	ND
21-BGBK-R3	21 Branglebrink	NA	1.3	0.72	ND	ND	4.8	2.5	ND	ND	ND
21-BGBK-R4	21 Branglebrink	NA	ND	0.37J	ND	ND	1.1	1.1	ND	ND	ND
23-BGBK-R1	23 Branglebrink	NA	ND	ND	**14**	0.4J	1	3	4	ND	ND
23-BGBK-R2	23 Branglebrink	NA	ND	ND	**74D**	2	0.6J	**12**	**63D**	ND	ND
23-BGBK-R4	23 Branglebrink	NA	ND	ND	**6**	ND	0.48J	0.75	1.8	ND	ND
26-BGBK-R1	26 Branglebrink	NA	ND	ND	ND	ND	1	0.7J	ND	ND	ND
26-BGBK-R2	26 Branglebrink	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
28-BGBK-R3	28 Branglebrink	NA	ND	ND	ND	ND	0.24J	0.16J	ND	ND	ND
28-BGBK-R4	28 Branglebrink	NA	ND	ND	ND	ND	0.3J	0.24J	0.21J	ND	ND
29-BGBK-R1	29 Branglebrink	NA	ND	ND	2	ND	ND	ND	8	ND	ND
37-BGBK-R1	37 Branglebrink	NA	ND	ND	**140**	ND	ND	ND	**33**	ND	ND
37-BGBK-R2	37 Branglebrink	NA	ND	ND	**16**	0.6J	ND	0.9J	**18**	ND	ND
37-BGBK-R4	37 Branglebrink	NA	ND	ND	**47DJ**	0.36J	0.23J	**8.7J**	**21DJ**	R	ND
43-BGBK-R1	43 Branglebrink	Krauth	ND	ND	**23**	ND	1	1	**12**	ND	ND
37-BRIDLEP-R4	37 Bridle Path	9	ND	ND	ND	ND	0.26J	ND	0.15J	ND	ND
33-BRIDLEP-R4	33 Bridle Path	6	ND	ND	ND	ND	ND	ND	ND	ND	ND
40-BRIDLEP-R4	40 Bridle Path	15	ND	0.24J	ND	ND	0.51	ND	ND	ND	ND
41-BRIDLEP-R4	41 Bridle Path	12	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-CARL-R1	7 Carmen Lane	NA	ND	1	ND	ND	2	1	**9**	ND	ND
7-CARL-R2	7 Carmen Lane	NA	ND	0.7J	ND	ND	1	0.6J	4	ND	ND
7-CARL-R4	7 Carmen Lane	NA	ND	0.29J	ND	ND	0.69	0.29J	1.3	ND	ND
15-CARL-R1	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
15-CARL-R2	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-CARL-R4	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
19-CARL-R1	19 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
19-CARL-R2	19 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
19-CARL-R4	19 Carmen Lane	NA	ND	ND	ND	ND	0.17J	0.11J	ND	ND	ND
21-CARL-R1	21 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	0.6J	ND	ND
3-CORD-R1	3 Cordwood Path	NA	ND	0.3J	ND	ND	1	ND	0.9J	ND	ND
8-FELLS-R1	8 Fells Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-FELLS-R1	12 Fells Way	NA	ND	ND	1	ND	1	ND	ND	ND	ND
12-FELLS-R2	12 Fells Way	NA	ND	ND	4	ND	1	1	2	ND	ND
1-FOXRUN-R4	1 Fox Run	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
5-FOXR-R4	5 Fox Run	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-FOXR-R4	6 Fox Run	NA	ND	0.31J	ND	ND	0.88	ND	ND	ND	ND
2-FRIENW-R1	2 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-FRIENW-R2	3 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
3-FRIENW-R4	3 Friends Way	NA	ND	ND	ND	ND	ND	ND	0.12J	ND	ND
4-FRIENW-R2	4 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-GATER-R2	3 Gate Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HARBH-R2	12 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	1	ND	ND
28-HARBH-R1	28 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
35-HARBH-R2	35 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
42-HARBH-R1	42 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
50-HARBH-R1	50 Harbor Hill Road	NA	0.6J	ND	ND	ND	**5**	ND	ND	ND	ND
21-HARBL-R1	21 Harbor Lane	1	ND	0.8J	ND	ND	ND	ND	ND	ND	ND
22-HARBL-R2	22 Harbor Lane	3	ND	0.6J	2	ND	ND	ND	**5**	ND	ND
22-HARBL-R4	22 Harbor Lane	3	ND	0.77	1.7	ND	ND	0.32J	2.6	ND	ND
24-HARBL-R1	24 Harbor Lane	1	ND	ND	ND	ND	0.7J	ND	2	ND	ND
26-HARBL-R1	26 Harbor Lane	7	ND	ND	ND	ND	0.8J	0.5J	0.6J	ND	ND
26-HARBL-R2	26 Harbor Lane	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
26-HARBL-R4	26 Harbor Lane	7	ND	0.2J	ND	ND	0.54	0.26J	0.44J	0.14J	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
28-HARBL-R1	28 Harbor Lane	8	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
31-HARBL-R1	31 Harbor Lane	11	ND	ND	ND	ND	ND	ND	ND	ND	ND
32-HARBL-R2	32 Harbor Lane	12	ND	0.6J	ND	ND	0.9J	ND	3	ND	ND
32-HARBL-R4	32 Harbor Lane	12	ND	0.43J	ND	ND	0.77	0.28J	1.9	ND	ND
3-HARBR-R1	3 Harbor Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
3-HARBR-R2	3 Harbor Road	NA	ND	ND	ND	ND	ND	ND	3	ND	ND
3-HARBR-R4	3 Harbor Road	NA	ND	ND	ND	ND	0.22J	0.16J	**5.1**	ND	ND
8-HARBR-R1	8 Harbor Road	NA	ND	ND	ND	ND	0.7J	ND	3	ND	ND
8-HARBR-R2	8 Harbor Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
8-HARBR-R4	8 Harbor Road	NA	ND	ND	ND	ND	0.36J	0.22J	2.7	ND	ND
12-HARBR-R1	12 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HARBR-R4	12 Harbor Road	NA	ND	ND	ND	ND	0.24J	0.12J	0.85	ND	ND
18-HARBR-R1	18 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
18-HARBR-R4	18 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
20-HARBR-R1	20 Harbor Road	NA	ND	ND	ND	ND	0.7J	2	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
27-HARBR-R1	27 Harbor Road	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND
27-HARBR-R2	27 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
27-HARBR-R4	27 Harbor Road	NA	ND	ND	ND	ND	0.39J	ND	0.1J	ND	ND
34-HARBR-R1	34 Harbor Road	NA	ND	ND	ND	ND	2	ND	ND	ND	ND
1-HIGH-R1	1 Highwoods Court	NA	ND	2	ND	ND	2	2	ND	ND	ND
9-HIGH-R1	9 Highwoods Court	NA	ND	ND	1	ND	ND	ND	1	ND	ND
9-HIGH-R2	9 Highwoods Court	NA	ND	ND	0.9J	ND	ND	ND	1	ND	ND
12-HIGH-R1	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HIGH-R2	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HIGH-R4	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	0.21J	ND	ND
15-HIGH-R1	15 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-HIGH-R2	15 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-HIGH-R4	15 Highwoods Court	NA	ND	ND	ND	ND	ND	0.1J	0.41J	ND	ND
24-HIGH-R1	24 Highwoods Court	NA	ND	0.8J	ND	ND	1	ND	ND	ND	ND
27-HIGH-R1	27 Highwoods Court	NA	ND	ND	0.6J	ND	0.7J	0.6J	3	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
27-HIGH-R2	27 Highwoods Court	NA	ND	ND	ND	ND	0.6J	0.7J	1	ND	ND
27-HIGH-R4	27 Highwoods Court	NA	ND	0.34J	0.27J	ND	0.94J	2J	2.8J	ND	ND
33-HIGH-R1	33 Highwoods Court	NA	ND	ND	2	ND	4	ND	**43**	ND	ND
33-HIGH-R2	33 Highwoods Court	NA	ND	ND	0.4J	ND	0.9J	ND	**17**	ND	0.9J
16-MORI-R1	16 Moriches Road	???	0.5J	2	3	ND	3	1	3	ND	ND
538-MORI-R1	538 Moriches Road	324	ND	2	ND	ND	ND	1	ND	ND	ND
537-MORI-R1	537 Moriches Road	NA	ND	ND	ND	ND	0.6J	0.7J	ND	ND	ND
546-MORI-R2	546 Moriches Road	NA	ND	0.3J	ND	ND	0.4J	0.9J	ND		1
615-MORI-R4	615 Moriches Road	27A	ND	ND	0.38J	ND	0.24J	ND	0.18J	ND	ND
625-MORI-R3	625 Moriches Road	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
625-MORI-R4	625 Moriches Road	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
300-OMR-R1	300 Old Mill Road	212	ND	0.6J	ND	ND	1	0.7J	1	ND	ND
300-OMR-R2	300 Old Mill Road	212	ND	1	ND	ND	2	0.7J	1	ND	ND
300-OMR-R4	300 Old Mill Road	212	ND	0.24J	ND	ND	0.57	0.29J	0.49J	ND	ND
302-OMR-R1	302 Old Mill Road	261A	ND	0.7J	2	ND	0.9J	ND	1	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
325-OMR-R1	325 Old Mill Road	262S	1	2	**6**	ND	**6**	3	3	ND	ND
315-OMR-R1	315 Old Mill Road	262A	ND	0.6J	ND	ND	ND	ND	3	ND	ND
315-OMR-R2	315 Old Mill Road	262A	ND	ND	ND	ND	ND	ND	ND	ND	ND
315-OMR-R4	315 Old Mill Road	262A	ND	0.43J	25D	ND	0.9	4.1	1J	ND	ND
320-OMR-R1	320 Old Mill Road	245K	ND	0.6J	ND	ND	2	0.7J	4	ND	ND
320-OMR-R2	320 Old Mill Road	245K	ND	0.6J	ND	ND	2	0.5J	**5**	ND	ND
320-OMR-R4	320 Old Mill Road	245K	0.59	0.53	0.32J	ND	1.3	0.21J	**5.2**	ND	ND
322-OMR-R1	322 Old Mill Road	245	ND	4	ND	ND	**6**	2	ND	ND	ND
322-OMR-R2	322 Old Mill Road	245	ND	ND	ND	ND	ND	ND	3	ND	ND
322-OMR-R4	322 Old Mill Road	245	ND	0.11J	ND	ND	0.19J	0.21J	3.9	ND	ND
323-OMR-R3	323 Old Mill Road	262M	0.69	2.5	**5.7**	ND	3.6	1.7	2.5	ND	ND
323-OMR-R4	323 Old Mill Road	262M	ND	2	**7.2**	ND	3.8	1.9	3.3	ND	ND
326-OMR-R1	326 Old Mill Road	245A	ND	ND	ND	ND	0.6J	ND	3	ND	ND
326-OMR-R2	326 Old Mill Road	245A	2	4.9	0.54	ND	9.3	3.4	ND	ND	ND
326-OMR-R4	326 Old Mill Road	245A	ND	4.9	0.14J	ND	16J	4J	0.5J	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
327-OMR-R1	327 Old Mill Road	262B	2	3	0.9J	ND	8	2	1	ND	ND
327-OMR-R2	327 Old Mill Road	262B	1	2	2	ND	5	2	1	ND	ND
327-OMR-R4	327 Old Mill Road	262B	ND	ND	ND	ND	ND	ND	0.34J	ND	ND
329-OMR-R1	329 Old Mill Road	262J	0.5J	1	6	ND	2	2	4	ND	ND
329-OMR-R2	329 Old Mill Road	262J	ND	0.7J	20	ND	2	4	**8**	ND	ND
3-OMP-R2	3 Old Mill Path	261D	ND	0.9J	ND	ND	1	0.6J	ND	ND	ND
3-OMP-R3	3 Old Mill Path	261D	ND	0.53	ND	ND	0.75	0.3J	ND	ND	ND
3-OMP-R4	3 Old Mill Path	261D	ND	0.5	ND	ND	0.66	0.3J	ND	ND	ND
4-OMP-R1	4 Old Mill Path	261T	ND	ND	3	ND	0.7J	ND	1	ND	ND
4-OMP-R2	4 Old Mill Path	261T	ND	ND	1	ND	0.5J	ND	0.6J	ND	ND
4-OMP-R4	4 Old Mill Path	261T	ND	ND	0.23J	ND	0.62	ND	0.17J	ND	ND
5-OMP-R1	5 Old Mill Path	261R	ND	ND	ND	ND	0.6J	0.5J	ND	ND	ND
5-OMP-R2	5 Old Mill Path	261R	ND	0.7J	ND	ND	0.6J	0.6J	ND	ND	ND
5-OMP-R4	5 Old Mill Path	261R	ND	0.23J	0.59J	ND	0.49J	0.68	1.9	ND	ND
2-OPL-R1	2 Old Post Lane	259A	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
2-OPL-R2	2 Old Post Lane	259A	ND	2	ND	ND	4	ND	0.9J	ND	ND
2-OPL-R4	2 Old Post Lane	259A	ND	0.57	ND	ND	0.93J	ND	ND	R	ND
4-OPL-R1	4 Old Post Lane	259B	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-OPL-R2	4 Old Post Lane	259B	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
4-OPL-R4	4 Old Post Lane	259B	ND	0.39J	ND	ND	0.58J	ND	0.12J	ND	ND
5-OPL-R1	5 Old Post Lane	255	1	**5**	ND	ND	5	7	0.6J	ND	ND
5-OPL-R2	5 Old Post Lane	255	ND	4	ND	ND	4	4	0.7J	ND	ND
5-OPL-R4	5 Old Post Lane	255	ND	2.7	ND	ND	3.3	2.3	0.5	ND	ND
3-PART-R1	3 Partridge Lane	NA	ND	0.8J	ND	ND	ND	0.7J	ND	ND	ND
8-PART-R1	8 Partridge Lane	NA	ND	0.6J	ND	ND	0.6J	0.9J	ND	ND	ND
8-PART-R2	8 Partridge Lane	NA	ND	0.3J	ND	ND	0.4J	0.4J	ND	ND	ND
8-PART-R4	8 Partridge Lane	NA	ND	0.21J	ND	ND	0.24J	0.25J	ND	ND	ND
9-PART-R1	9 Partridge Lane	NA	ND	0.7J	0.6J	ND	1	ND	0.9J	ND	ND
3-PIN-R1	3 Pin Oak Lane	NA	ND	ND	**25**	0.6J	2	4	**11**	ND	ND
7-PIN-R1	7 Pin Oak Lane	NA	16	ND	4J	ND	**76**	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
17-PIN-R1	17 Pin Oak Lane	NA	1	ND	ND	ND	**8**	ND	ND	ND	ND
17-PIN-R2	17 Pin Oak Lane	NA	ND	ND	ND	ND	**6.3**	ND	ND	ND	ND
17-PIN-R4	17 Pin Oak Lane	NA	ND	ND	ND	ND	**5.4**	ND	ND	ND	ND
19-PIN-R1	19 Pin Oak Lane	NA	ND	ND	ND	ND	3	ND	ND	ND	ND
31-QUAIL-R1	31 Quail Path	1	ND	0.5J	ND	ND	ND	ND	ND	ND	ND
33-QUAIL-R1	33 Quail Path	2	ND	0.8J	ND	ND	2	ND	ND	ND	ND
37-QUAIL-R1	37 Quail Path	4	ND	0.8J	ND	ND	2	ND	ND	ND	ND
41-QUAIL-R1	41 Quail Path	11	ND	0.7J	0.8J	ND	1	ND	1	ND	ND
44-QUAIL-R1	44 Quail Path	12	0.6J	2	2	ND	3	2	2	ND	ND
42-QUAIL-R1	42 Quail Path	14	ND	0.8J	2	ND	1	ND	ND	ND	ND
38-QUAIL-R1	38 Quail Path	16	ND	0.8J	ND	ND	1	ND	0.7J	ND	ND
35-QUAIL-R1	35 Quail Path	5	ND	0.6J	ND	ND	1	ND	ND	ND	ND
35-QUAIL-R2	35 Quail Path	5	ND	0.7J	ND	ND	1	0.6J	ND	ND	ND
35-QUAIL-R4	35 Quail Path	5	ND	0.41J	ND	ND	0.68	0.47J	ND	ND	ND
40-QUAIL-R1	40 Quail Path	15	ND	1	3	ND	1	0.9J	2	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
40-QUAIL-R2	40 Quail Path	15	0.6J	1	2	ND	2	0.8J	2	ND	ND
428-RIVER-R1	428 River Road	194A	ND	ND	3	ND	0.8J	ND	2	ND	ND
419-RIVER-R1	419 River Road	198	ND	ND	ND	ND	ND	ND	ND	ND	ND
418-RIVER-R1	418 River Road	199	ND	ND	ND	ND	ND	ND	ND	ND	ND
417-RIVER-R1	417 River Road	199A	ND	ND	ND	ND	ND	ND	0.5J	ND	ND
3-RIVER-R1	3 River Road	211	ND	ND	ND	ND	0.5J	ND	0.4J	ND	ND
405-RIVER-R1	405 River Road	211A	ND	0.5J	ND	ND	1	1	ND	ND	ND
407-RIVER-R1	407 River Road	211C	ND	0.6J	ND	ND	0.7J	0.9J	ND	ND	ND
264-RIVER-R1	264 River Road	264A	ND	ND	ND	ND	ND	ND	ND	ND	ND
264-RIVER-R2	264 River Road	264A	ND	ND	ND	ND	ND	ND	ND	ND	ND
264-RIVER-R4	264 River Road	264A	ND	ND	ND	ND	R	R	R	R	ND
318-RIVER-R2	318 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
318-RIVER-R4	318 River Road	NA	ND	R	ND	ND	ND	ND	ND	R	ND
322-RIVER-R1	322 River Road	NA	ND	ND	ND	ND	0.6J	ND	2	ND	ND
322-RIVER-R2	322 River Road	NA	ND	ND	ND	ND	0.6J	ND	2	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
322-RIVER-R4	322 River Road	NA	ND	ND	ND	ND	0.12J	ND	ND	ND	ND
326-RIVER-R1	326 River Road	NA	ND	0.3J	ND	ND	0.5J	ND	0.8J	ND	ND
337-RIVER-R1	337 River Road	NA	ND	ND	ND	ND	0.9J	ND	1	ND	ND
337-RIVER-R2	337 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
337-RIVER-R4	337 River Road	NA	ND	0.27J	ND	ND	0.66	ND	ND	ND	ND
339-RIVER-R1	339 River Road	NA	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
339-RIVER-R2	339 River Road	NA	ND	ND	ND	ND	ND	ND	0.7J	ND	ND
339-RIVER-R4	339 River Road	NA	0.27J	ND	ND	ND	0.38J	ND	0.73	0.25J	ND
343-RIVER-R1	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
343-RIVER-R2	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
343-RIVER-R4	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
400-RIVER-R1	400 River Road	211B	ND	ND	ND	ND	ND	ND	1	ND	ND
400-RIVER-R2	400 River Road	211B	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
400-RIVER-R4	400 River Road	211B	ND	0.34J	ND	ND	0.42J	ND	0.27J	ND	ND
401-RIVER-R1	401 River Road	208	ND	ND	1	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
401-RIVER -R2	401 River Road	208	ND	2	2	ND	2	1	1	ND	ND
401-RIVER-R4	401 River Road	208	ND	0.62	2.6	ND	0.42J	0.26J	0.38J	ND	ND
414-RIVER-R1	414 River Road	201	ND	ND	ND	ND	ND	ND	ND	ND	ND
414-RIVER-R2	414 River Road	201	ND	ND	ND	ND	ND	ND	ND	ND	ND
414-RIVER-R4	414 River Road	201	ND	0.19J	ND	ND	0.2J	0.16J	0.42J	ND	ND
423-RIVER-R1	423 River Road	197S	ND	ND	ND	ND	ND	ND	ND	ND	ND
423-RIVER-R2	423 River Road	197S	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R1	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R2	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R4	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
270-SACHP-R1	270 Sachem Hill Place	NA	0.7J	2	3	ND	3	0.8J	**9**	ND	ND
1-SMITHL-R4	1 Smith Lane	48	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-SMITHL-R4	2 Smith Lane	60A	ND	ND	ND	ND	ND	ND	ND	ND	ND
31-SMITHL-R4	31 Smith Lane	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-SPRHILL-R3	8 Spring Hill Road	35C	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
8-SPRHILL-R4	8 Spring Hill Road	35C	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-SPRINGH-R4	6 Spring Hollow Road	41	ND	ND	ND	ND	1.8	ND	0.52	ND	ND
7-SPRINGH-R3	7 Spring Hollow Road	32	ND	ND	ND	ND	0.41J	ND	ND	ND	ND
7-SPRINGH-R4	7 Spring Hollow Road	32	ND	ND	ND	ND	0.36J	ND	ND	ND	ND
9-SPRINGH-R4	9 Spring Hollow Road	33	ND	ND	ND	ND	ND	ND	ND	ND	ND
20-SPRINGH-R4	20 Spring Hollow Road	34	ND	ND	ND	ND	0.17J	ND	ND	ND	ND
3-STEEPB-R4	3 Steep Bank Road	205	ND	ND	ND	ND	ND	0.19J	0.64	ND	ND
15-STONE-R1	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-STONE-R2	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-STONE-R4	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
17-STONE-R1	17 Stone Gate Road	247	ND	2	ND	ND	2	0.8J	0.5J	ND	ND
17-STONE-R2	17 Stone Gate Road	247	ND	3	ND	ND	4	1	0.8J	ND	ND
17-STONE-R3	17 Stone Gate Road	247	0.69	1.6	ND	ND	2.5	0.71	0.61	ND	ND
17-STONE-R4	17 Stone Gate Road	247	0.79	1.2	ND	ND	1.9	0.48J	0.37J	ND	ND
11-STONE-R1	11 Stone Gate Road	246A	ND	ND	ND	ND	ND	ND	0.5J	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
19-STONE-R1	19 Stone Gate Road	247A	ND	0.9J	ND	ND	ND	0.5J	ND	ND	ND
4-SWAN-R1	4 Swan Place	NA	0.7J	1	ND	ND	3	ND	ND	ND	ND
9-SWAN-R1	9 Swan Place	NA	ND	ND	ND	ND	1	ND	ND	ND	ND
9-SWAN-R2	9 Swan Place	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-SWAN-R4	9 Swan Place	NA	ND	ND	ND	ND	0.2J	ND	ND	ND	ND
2-SWEETH-R4	2 Sweet Hollow Court	NA	ND	0.4J	ND	ND	1	ND	ND	ND	ND
3-SWEETH-R4	3 Sweet Hollow Court	NA	ND	ND	ND	ND	0.44J	ND	0.22J	ND	0.15J
3-TEAL-R2	3 Teal Way	17	0.4J	1	0.5J	ND	2	0.7J	0.8J	ND	ND
8-TEAL-R1	8 Teal Way	20	ND	1	3	ND	2	0.9J	4	ND	ND
8-TEAL-R2	8 Teal Way	20	ND	0.9J	6	ND	2	0.7J	**5**	ND	ND
8-TEAL-R4	8 Teal Way	20	ND	0.4J	3.2	ND	0.6	1.2	4.3	ND	ND
9-TEAL-R1	9 Teal Way	19	0.6J	2	0.3J	ND	3	2	0.7J	ND	ND
9-TEAL-R2	9 Teal Way	19	ND	1	ND	ND	2	1	0.8J	ND	ND
9-TEAL-R4	9 Teal Way	19	1.3	1.3	0.12J	ND	3.6	0.98	1.4	ND	ND
7-TEAL-R1	7 Teal Way	18	0.7J	2	ND	ND	2	1	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
6-TEAL-R1	6 Teal Way	21	ND	2	0.7J	ND	3	2	ND	ND	ND
4-TEAL-R1	4 Teal Way	22	0.6J	2	ND	ND	2	0.8J	0.6J	ND	ND
2-TEAL-R1	2 Teal Way	24	ND	0.6J	ND	ND	1	ND	0.6J	ND	ND
31-THOM-R1	31 Thompson Lane	NA	2	**5**	ND	ND	0.6J	3	ND	ND	ND
31-THOM-R2	31 Thompson Lane	NA	2	**6**	ND	ND	**8**	3	ND	ND	ND
31-THOM-R3	31 Thompson Lane	NA	0.74	4.5	ND	ND	**6.6**	2.7	0.33J	ND	ND
31-THOM-R4	31 Thompson Lane	NA	2.7	4.1	ND	ND	**8.6J**	2.5J	0.33J	ND	ND
3-TIDEL-R1	3 Tide Mill Lane	NA	ND	ND	ND	ND	0.8J	ND	4	ND	ND
3-TIDEL-R2	3 Tide Mill Lane	NA	ND	ND	ND	ND	0.7J	ND	2	ND	ND
3-TIDEL-R3	3 Tide Mill Lane	NA	ND	0.5	ND	ND	0.82J	ND	3.9	ND	ND
3-TIDEL-R4	3 Tide Mill Lane	NA	ND	0.18J	ND	ND	0.45J	ND	1.3	ND	ND
4-TIDEL-R1	4 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	0.7J	ND	ND
5-TIDEL-R1	5 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDEL-R1	6 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDEL-R2	6 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
3-TIDER-R1	3 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-TIDER-R1	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-TIDER-R2	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-TIDER-R4	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDER-R2	6 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDER-R4	6 Tide Mill Road	NA	ND	0.13J	ND	ND	0.31J	ND	0.98	ND	ND
9-TIDER-R1	9 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-TIDER-R2	9 Tide Mill Road	NA	ND	0.3J	0.4J	ND	0.4J	ND	2	ND	1
9-TIDER-R4	9 Tide Mill Road	NA	ND	ND	ND	ND	R	R	R	R	ND
1-TRACKL-R4	1 Tracklot Road	53	ND	0.3J	ND	ND	0.26J	ND	ND	ND	ND
6-TRACKL-R4	6 Tracklot Road	57	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
10-TURTCR-R2	10 Turtle Crossing Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-TURTCR-R4	10 Turtle Crossing Road	NA	ND	ND	ND	ND	ND	ND	ND	0.1J	ND
2-WATER-R1	2 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-WATER-R1	3 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	140	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
5-WATER-R1	5 Watercrest Court	NA	ND	ND	ND	ND	0.4J	ND	0.3J	ND	ND
5-WATER-R2	5 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-WATER-R1	8 Watercrest Court	NA	ND	0.7J	2	ND	0.9J	**6**	**8**	**7**	ND
8-WATER-R2	8 Watercrest Court	NA	ND	ND	1	ND	0.6J	**5**	0.6	6	ND
8-WATER-R4	8 Watercrest Court	NA	ND	0.23J	ND	ND	ND	ND	ND	1.7	ND
9-WATER-R1	9 Watercrest Court	NA	ND	0.5J	0.7J	ND	2	0.9J	2	ND	ND
11-WATER-R1	11 Watercrest Court	NA	ND	ND	0.5J	ND	ND	2	1	ND	ND
14-WATER-R1	14 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-WATER-R1	16 Watercrest Court	NA	ND	ND	ND	ND	0.7J	2	0.7J	2	ND
16-WATER-R2	16 Watercrest Court	NA	ND	ND	ND	ND	ND	0.8J	ND	0.8J	ND
1-WETHL-R1	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-WETHL-R2	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-WETHL-R4	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-WETHL-R1	4 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-WETHL-R2	4 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4-14
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
4-WETHL-R4	4 Wetherill Lane	NA	ND	R	ND	ND	0.23J	R	0.12J	ND	ND
5-WETHL-R1	5 Wetherill Lane	NA	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
7-WETHL-R2	7 Wetherill Lane	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND
7-WETHL-R4	7 Wetherill Lane	NA	ND	ND	ND	ND	0.42J	0.28J	ND	ND	ND
8-WETHL-R2	8 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-WETHL-R4	8 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-WOODCR-R4	10 Woodcrest Drive	44	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-WOODCR-R4	12 Woodcrest Drive	43A	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-WOODCR-R4	16 Woodcrest Drive	41	ND	ND	ND	ND	ND	ND	ND	ND	ND
22-WOODCR-R4	22 Woodcrest Drive	45	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-WOODCUT-R4	11 Woodcutters Path	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Units in micrograms/liter (ug/L)
bold = exceeds screening criteria
Abbreviations: 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; trans1,2DCE = trans-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; TCE = trichloroethene; PCE = tetrachloroethene; 1,2-DCA = 1,2-dichloroethane; NA = not applicable; UNK = unknown; ND = non-detect; J = estimated value; D = diluted sample

Table 4-15
Volatile Organic Compound Results in Surface Water
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number		Ace-tone	1,1-DCE	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	TCE	PCE
Screening Criteria (ug/L) (1)	Salinity (%)	NS	NS	5 (2)	5 (2)	5 (2)	40	1
Spring/Seep Surface Water Samples								
Dunton Spring								
DSW-001	NA	ND	ND	ND	ND	ND	ND	**2**
Stony Brook Harbor								
SWS-001	NA	ND	ND	ND	ND	ND	ND	ND
SWS-002	NA	ND	ND	ND	ND	ND	ND	0.3 J
SWS-003	NA	ND	ND	ND	ND	ND	ND	ND
SWS-005	NA	ND	ND	ND	ND	ND	ND	ND
SWS-006	NA	ND	ND	ND	ND	ND	ND	ND
SWS-007	NA	ND	ND	ND	ND	ND	ND	ND
Nissoquogue River								
SWS-008	0	ND	ND	0.5 J	0.5 J	0.4 J	0.4 J	ND
SWS-009	0	ND	ND	ND	ND	ND	ND	ND
SWS-010	0	ND	ND	ND	ND	ND	ND	ND
SWS-011	0	9 J	ND	ND	ND	ND	ND	ND
SWS-012	0	ND	ND	ND	ND	ND	ND	ND
Wetland Surface Water Samples								
SWW-001	0.2	ND	ND	0.4 J	ND	2	ND	**3**
SWW-002	0.2	ND	ND	ND	ND	1	ND	**2**
SWW-003	0.1	15 J	ND	0.3 J	ND	2	ND	0.6 J

Table 4-15
Volatile Organic Compound Results in Surface Water
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number		**Ace-tone**	**1,1-DCE**	**1,1-DCA**	**cis-1,2-DCE**	**1,1,1-TCA**	**TCE**	**PCE**
Screening Criteria (ug/L) (1)	**Salinity (%)**	**NS**	**NS**	**5 (2)**	**5 (2)**	**5 (2)**	**40**	**1**
SWW-004	0	ND	0.5 J	0.4 J	ND	3	ND	ND
SWW-005	0	ND	ND	ND	ND	1	ND	ND
SWW-006	0	ND	0.3 J	0.4 J	ND	2	ND	0.9 J
SWW-007	0	ND	0.4 J	0.4 J	ND	3	ND	ND
SWW-008	0	ND	0.5 J	0.3 J	ND	3	ND	ND
SWW-009	0	ND	1	0.4 J	ND	**5**	ND	ND

All values in micrograms/liter (ug/L)
bold = equals or exceeds screening criteria
Abbreviations:
NS = No Standard; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1,-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; TCE = trichloroethene; PCE = tetrachloroethene; NA = not available; ND = non-detect; J = estimated value; DSW = Dunton Spring surface water sample; SWS = surface water seep; SWW = surface water wetland

Notes:
1: Screening criteria - New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Saline Waters
2. Fresh water criteria

Table 4-16
Summary of Surface Water Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Alumi-num	Barium	Cal-cium	Chro-mium	Cop-per	Iron	Lead	Magne-sium	Manga nese	Nickel	Potass-ium	Sodium	Zinc	Cyan-ide
Screening Criteria	**100 (1)**	**1000(1)**	**NS**	**54**	**3.4**	**300 (1)**	**8**	**35,000 (1)**	**300 (1)**	**8.2**	**NS**	**NS**	**66**	**1**
Spring/Seep Surface Water Samples														
Dunton Spring														
DSW-001	**109BE**	19.5 B	19,200	ND	**13 B**	77BNJ	ND	8,580	ND	ND	1390BE	12700EJ	NA	NA
Stony Brook Harbor														
SWS-001	**169 B**	17.3 B	51,800	ND	**3.5 B**	232	ND	**136,000**	103 J	ND	63400 J	1350000	7.8 B	**6.7 B**
SWS-002	**135 B**	46.2 B	17,900	1.7 B	1.8 B	143	ND	9,350	6.2 B	ND	2440B	24000	2.6 B	**5.8 B**
SWS-003	88.1 B	3.2 B	7,380	0.6 B	ND	44.9 B	ND	7,810	5 B	ND	3310B	55500	3.3 B	**2.3 B**
SWS-005	85.1 B	10.9 B	12,500	ND	1.2 B	31.1 B	ND	7,720	2.7 B	ND	2130B	34300	4.4 B	**3.8 B**
SWS-006	72.9 B	8.1 B	19,100	ND	ND	84.3 B	ND	29,700	69.2 J	ND	9690J	231000	2.4 B	**2.3 B**
SWS-007	**115 B**	ND	11,500	ND	**3.7 B**	85.2 B	ND	34,600	4 B	ND	19000J	381000	5.8 B	**3.7 B**
Nissoquogue River														
SWS-008	**1340 EJ**	27 B	25,400	5.1 B	**8.3 B**	**1900NJ**	**22.3NJ**	11,100	110 J	3.7 B	2820BE	26400EJ	44.8	NA
SWS-009	79.2BE	4.6 B	12,300	ND	**16.4 B**	59.7BN J	ND	7,020	2.6 B	ND	1630BE	20500EJ	40.1	NA

Table 4-16
Summary of Surface Water Inorganic Analyte Results
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Alumi-num	Barium	Cal-cium	Chro-mium	Cop-per	Iron	Lead	Magne-sium	Manga nese	Nickel	Potass-ium	Sodium	Zinc	Cyan-ide
Screening Criteria	**100 (1)**	**1000(1)**	**NS**	**54**	**3.4**	**300 (1)**	**8**	**35,000 (1)**	**300 (1)**	**8.2**	**NS**	**NS**	**66**	**1**
SWS-010	**663EJ**	2.4 B	13,400	2 B	**6.2 B**	**1110NJ**	3.5NJ	21,000	42.3	1.8 B	10100EJ	175000EJ	34.6	NA
SWS-011	**114BE**	2.7 B	14,600	ND	**5.4 B**	47.3BNJ	ND	9,010	1.7 B	ND	1840BE	22600EJ	27.4	**19.5**
SWS-012	**467 EJ**	7.7 B	14,300	1.4 B	**10.1 B**	**911NJ**	6.8NJ	12,100	39.9	2.2 B	6650EJ	82500EJ	40.3	NA
Wetland Surface Water Samples														
SWW-001	ND	15.4 B	24,600	ND	ND	ND	ND	34,700	6.6 B	ND	12200	292000	14.7B	**1.6 B**
SWW-002	ND	18 B	23,900	0.85 B	0.78 B	ND	ND	26,100	4.9 B	ND	8430	188000	5.3 B	**1.7 B**
SWW-003	ND	15.5 B	22,100	0.92 B	0.86 B	ND	ND	25,300	6.3 B	ND	8670	196000	5.5 B	ND
SWW-004	ND	15.3 B	21,200	0.8 B	2.4 B	ND	1.6 BJ	23,000	7.7 B	ND	7450	166000	12.3B	**2 B**
SWW-005	ND	18.8 B	19,500	ND	1.5 B	229	ND	8,900	14.3 B	ND	1730B	23600	6 B	**1.3BJ**
SWW-006	ND	14.9 B	20,000	0.8 B	0.82 B	91 B	ND	18,800	6.1 B	ND	6140J	125000	3.4 B	**1.6BJ**
SWW-007	ND	14.2 B	20,200	ND	1.4 B	127	ND	20,800	8.4 B	ND	7220J	150000	4.5 B	**1.4BJ**
SWW-008	ND	16.6 B	18,100	ND	1.6 B	ND	ND	12,700	5.6 B	ND	3810B	67600	3.9 B	**1.2BJ**
SWW-009	ND	14.4 B	15,000	ND	0.95 B	ND	ND	11,200	2.7 B	ND	3570B	63200	3.4 B	**1.6BJ**

All units in micrograms/Liter (µg/L). Abbreviations: NS = No Standards; ND = Non-Dètect; NA = Not available; B = value between contract detection limit and instrument detection limit;; E = estimated due to interference; NA = data not available; **bold** = exceeds screening criteria. Note 1 - Freshwater value

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A			SDW-001-B			SDW-002-A			SDW-002-B		
		Sample Name												
		Sample Date	4/12/2001			4/12/2001			4/12/2001			4/12/2001		
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	27.2			8.44			6.49			2.68		
TOC	Total organic carbon	%OC	2.72%			0.84%			0.65%			0.27%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
	Volatile Organic Compounds													
71-55-6	1,1,1-Trichloroethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
79-34-5	1,1,2,2-Tetrachloroethane	0.3	8.16	24	UJ	2.532	20	U	1.947	20	U	0.804	12	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	24	UJ	NL	20	UJ	NL	20	UJ	NL	12	UJ
79-00-5	1,1,2-Trichloroethane	0.6	16.32	24	UJ	5.064	20	U	3.894	20	U	1.608	12	U
75-34-3	1,1-Dichloroethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
75-35-4	1,1-Dichloroethene	0.02	0.544	24	UJ	0.1688	20	U	0.1298	20	U	0.0536	12	U
120-82-1	1,2,4-Trichlorobenzene	91	2475.2	24	UJ	768.04	20	U	590.59	20	U	243.88	12	U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
106-93-4	1,2-Dibromoethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
95-50-1	1,2-Dichlorobenzene	12	326.4	24	UJ	101.28	20	U	77.88	20	U	32.16	12	U
107-06-2	1,2-Dichloroethane	0.7	19.04	24	UJ	5.908	20	U	4.543	20	U	1.876	12	U
78-87-5	1,2-Dichloropropane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
541-73-1	1,3-Dichlorobenzene	12	326.4	24	UJ	101.28	20	U	77.88	20	U	32.16	12	U
106-46-7	1,4-Dichlorobenzene	12	326.4	24	UJ	101.28	20	U	77.88	20	U	32.16	12	U
78-93-3	2-Butanone	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
591-78-6	2-Hexanone	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
108-10-1	4-Methyl-2-pentanone	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	1	J
67-64-1	Acetone	NL	NL	25	UJ	NL	20	U	NL	20	U	NL	20	U
71-43-2	Benzene	0.6	16.32	24	UJ	5.064	20	U	3.894	20	U	1.608	12	U
75-27-4	Bromodichloromethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
75-25-2	Bromoform	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
74-83-9	Bromomethane	NL	NL	24	UJ	NL	20	UJ	NL	20	UJ	NL	12	UJ
75-15-0	Carbon Disulfide	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
56-23-5	Carbon Tetrachloride	0.6	16.32	24	UJ	5.064	20	UJ	3.894	20	UJ	1.608	12	UJ
108-90-7	Chlorobenzene	3.5	95.2	24	UJ	29.54	20	U	22.715	20	U	9.38	12	U
75-00-3	Chloroethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
67-66-3	Chloroform	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
74-87-3	Chloromethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
156-59-2	cis-1,2-Dichloroethene	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
110-82-7	Cyclohexane	NL	NL	24	UJ	NL	20	UJ	NL	20	UJ	NL	12	UJ
124-48-1	Dibromochloromethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
75-71-8	Dichlorodifluoromethane	NL	NL	24	UJ	NL	20	UJ	NL	20	UJ	NL	12	UJ
100-41-4	Ethylbenzene	6.4	174.08	24	UJ	54.016	20	U	41.536	20	U	17.152	12	U
98-82-8	Isopropylbenzene	12	326.4	24	UJ	101.28	20	U	77.88	20	U	32.16	12	U
79-20-9	Methyl Acetate	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
75-09-2	Methylene Chloride	NL	NL	70	UJ	NL	24	UJ	NL	20	UJ	NL	13	UJ
108-87-2	Metylcyclohexane	NL	NL	24	UJ	NL	20	UJ	NL	20	UJ	NL	12	UJ
100-42-5	Styrene	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
127-18-4	Tetrachloroethene	0.8	21.76	24	UJ	6.752	20	U	5.192	20	U	2.144	12	U
108-88-3	Toluene	45	1224	24	UJ	379.8	2	J	292.05	20	U	120.6	1	J
156-60-5	trans-1,2-Dichloroethene	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
10061-02-6	trans-1,3-Dichloropropene	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
79-01-6	Trichloroethene	2	54.4	24	UJ	16.88	20	U	12.98	20	U	5.36	12	U
75-69-4	Trichlorofluoromethane	NL	NL	24	UJ	NL	20	U	NL	20	U	NL	12	U
75-01-4	Vinyl Chloride	0.07	1.904	24	UJ	0.5908	20	U	0.4543	20	U	0.1876	12	U
1330-20-7	Xylenes (total)	27	734.4	24	UJ	227.88	20	U	175.23	20	U	72.36	12	U
	Semi-Volatile Organics													
92-52-4	1,1'-Biphenyl	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	7000	U	NL	6000	UJ	NL	13000	UJ	NL	1100	UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
120-83-2	2,4-Dichlorophenol	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
105-67-9	2,4-Dimethylphenol	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
51-28-5	2,4-Dinitrophenol	NL	NL	7000	U	NL	6000	UJ	NL	13000	UJ	NL	1100	UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	2800	U	NL	2400	UJ	NL	5100	UJ	NL	450	UJ

		SDW-003-A			SDW-003-B			SDW-004-A			SDW-004-B			SDW-005-A			SDW-
		4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/13/2001			4/13
Cas Rn	Chemical Name	0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 t
TOC	Total organic carbon	83.3			54.5			80			74.3			108			5
TOC	Total organic carbon	8.33%			5.45%			8.00%			7.43%			10.80%			5 1
		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)
	Volatile Organic Compounds																
71-55-6	1,1,1-Trichloroethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
79-34-5	1,1,2,2-Tetrachloroethane	24.99	43	UJ	16.35	43	UJ	24	48	UJ	22.29	61	UJ	32.4	74	UJ	15.42
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
79-00-5	1,1,2-Trichloroethane	49.98	43	UJ	32.7	43	UJ	48	48	UJ	44.58	61	UJ	64.8	74	UJ	30.84
75-34-3	1,1-Dichloroethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-35-4	1,1-Dichloroethene	1.666	43	UJ	1.09	43	UJ	1.6	48	UJ	1.486	61	UJ	2.16	74	UJ	1.028
120-82-1	1,2,4-Trichlorobenzene	7580.3	43	UJ	4959.5	43	UJ	7280	48	UJ	6761.3	61	UJ	9828	74	UJ	4677.4
96-12-8	1,2-Dibromo-3-chloropropane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
106-93-4	1,2-Dibromoethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
95-50-1	1,2-Dichlorobenzene	999.6	43	UJ	654	43	UJ	960	48	UJ	891.6	61	UJ	1296	74	UJ	616.8
107-06-2	1,2-Dichloroethane	58.31	43	UJ	38.15	43	UJ	56	48	UJ	52.01	61	UJ	75.6	74	UJ	35.98
78-87-5	1,2-Dichloropropane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
541-73-1	1,3-Dichlorobenzene	999.6	43	UJ	654	43	UJ	960	48	UJ	891.6	61	UJ	1296	74	UJ	616.8
106-46-7	1,4-Dichlorobenzene	999.6	43	UJ	654	43	UJ	960	48	UJ	891.6	61	UJ	1296	74	UJ	616.8
78-93-3	2-Butanone	NL	440	J	NL	160	J	NL	48	UJ	NL	61	UJ	NL	570	J	NL
591-78-6	2-Hexanone	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
108-10-1	4-Methyl-2-pentanone	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
67-64-1	Acetone	NL	120	UJ	NL	71	UJ	NL	48	UJ	NL	72	UJ	NL	95	UJ	NL
71-43-2	Benzene	49.98	43	UJ	32.7	43	UJ	48	48	UJ	44.58	61	UJ	64.8	74	UJ	30.84
75-27-4	Bromodichloromethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-25-2	Bromoform	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
74-83-9	Bromomethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-15-0	Carbon Disulfide	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	38	J	NL	74	UJ	NL
56-23-5	Carbon Tetrachloride	49.98	43	UJ	32.7	43	UJ	48	48	UJ	44.58	61	UJ	64.8	74	UJ	30.84
108-90-7	Chlorobenzene	291.55	43	UJ	190.75	43	UJ	280	48	UJ	260.05	61	UJ	378	74	UJ	179.9
75-00-3	Chloroethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
67-66-3	Chloroform	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
74-87-3	Chloromethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
156-59-2	cis-1,2-Dichloroethene	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
10061-01-5	cis-1,3-Dichloropropene	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
110-82-7	Cyclohexane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
124-48-1	Dibromochloromethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-71-8	Dichlorodifluoromethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
100-41-4	Ethylbenzene	533.12	43	UJ	348.8	43	UJ	512	48	UJ	475.52	61	UJ	691.2	74	UJ	328.96
98-82-8	Isopropylbenzene	999.6	43	UJ	654	43	UJ	960	48	UJ	891.6	61	UJ	1296	74	UJ	616.8
79-20-9	Methyl Acetate	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
1634-04-4	Methyl Tert-Butyl Ether	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-09-2	Methylene Chloride	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	65	UJ	NL	130	UJ	NL
108-87-2	Metylcyclohexane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
100-42-5	Styrene	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
127-18-4	Tetrachloroethene	66.64	43	UJ	43.6	43	UJ	64	48	UJ	59.44	61	UJ	86.4	74	UJ	41.12
108-88-3	Toluene	3748.5	43	UJ	2452.5	43	UJ	3600	48	UJ	3343.5	7	J	4860	74	UJ	2313
156-60-5	trans-1,2-Dichloroethene	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
10061-02-6	trans-1,3-Dichloropropene	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
79-01-6	Trichloroethene	166.6	43	UJ	109	43	UJ	160	48	UJ	148.6	61	UJ	216	74	UJ	102.8
75-69-4	Trichlorofluoromethane	NL	43	UJ	NL	43	UJ	NL	48	UJ	NL	61	UJ	NL	74	UJ	NL
75-01-4	Vinyl Chloride	5.831	43	UJ	3.815	43	UJ	5.6	48	UJ	5.201	61	UJ	7.56	74	UJ	3.598
1330-20-7	Xylenes (total)	2249.1	43	UJ	1471.5	43	UJ	2160	48	UJ	2006.1	61	UJ	2916	74	UJ	1387.8
	Semi-Volatile Organics																
92-52-4	1,1'-Biphenyl	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
95-95-4	2,4,5-Trichlorophenol	NL	13000	UJ	NL	12000	UJ	NL	34000	UJ	NL	4800	UJ	NL	19000	UJ	NL
88-06-2	2,4,6-Trichlorophenol	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
120-83-2	2,4-Dichlorophenol	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
105-67-9	2,4-Dimethylphenol	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
51-28-5	2,4-Dinitrophenol	NL	13000	UJ	NL	12000	UJ	NL	34000	UJ	NL	4800	UJ	NL	19000	UJ	NL
121-14-2	2,4-Dinitrotoluene	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL
606-20-2	2,6-Dinitrotoluene	NL	5200	UJ	NL	5000	UJ	NL	14000	UJ	NL	1900	UJ	NL	7400	UJ	NL

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A		SDW-001-B		SDW-002-A		SDW-002-B		SDW-003-A		SDW-003-B		SDW-004-A		SDW-004-B		SDW-005-A		SDW-
		Sample Name																			
		Sample Date	4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/13/2001		4/13
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 t
TOC	Total organic carbon	gOC/kg	27.2		8.44		6 49		2.68		83.3		54.5		80		74.3		108		5
TOC	Total organic carbon	%OC	2.72%		0.84%		0.65%		0.27%		8.33%		5.45%		8.00%		7.43%		10.80%		5.1
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
95-57-8	2-Chlorophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
91-57-6	2-Methylnaphthalene	30	816	2800 U	253 2	2400 UJ	194.7	5100 UJ	80.4	450 UJ	2499	5200 UJ	1635	5000 UJ	2400	14000 UJ	2229	1900 UJ	3240	7400 UJ	1542
95-48-7	2-Methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
88-74-4	2-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ	NL
88-75-5	2-Nitrophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
91-94-1	3,3'-Dichlorobenzidine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
99-09-2	3-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ	NL
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ	NL
101-55-3	4-Bromophenyl-phenylether	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
59-50-7	4-Chloro-3-methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
106-47-8	4-Chloroaniline	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
106-44-5	4-Methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
100-01-6	4-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ	NL
100-02-7	4-Nitrophenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ	NL
83-32-9	Acenaphthene	240	6528	2800 U	2025.6	2400 UJ	1557 6	5100 UJ	643.2	450 UJ	19992	5200 UJ	13080	5000 UJ	19200	14000 UJ	17832	1900 UJ	25920	7400 UJ	12336
208-96-8	Acenaphthylene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
98-86-2	Acetophenone	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
120-12-7	Anthracene	107	2910.4	2800 U	903.08	2400 UJ	694.43	5100 UJ	286.76	450 UJ	8913 1	5200 UJ	5831.5	5000 UJ	8560	14000 UJ	7950.1	1900 UJ	11556	7400 UJ	5499.8
1912-24-9	Atrazine	NL	NL	2800 UJ	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
100-52-7	Benzaldehyde	NL	NL	690 J	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	270 J	NL	1100 J	NL
56-55-3	Benzo(a)anthracene	12	326.4	2800 U	101.28	2400 UJ	77.88	5100 UJ	32.16	450 UJ	999.6	5200 UJ	654	5000 UJ	960	14000 UJ	891.6	1900 UJ	1296	7400 UJ	616.8
50-32-8	Benzo(a)pyrene	0.7	19.04	2800 U	5.908	2400 UJ	4.543	**600** J	1.876	**56** J	58.31	5200 UJ	38.15	5000 UJ	56	14000 UJ	52.01	1900 UJ	75.6	7400 UJ	35.98
205-99-2	Benzo(b)fluoranthene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
191-24-2	Benzo(g,h,i)perylene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
207-08-9	Benzo(k)fluoranthene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
111-44-4	bis(2-Chloroethyl)ether	0.03	0.816	2800 U	0.2532	2400 UJ	0.1947	5100 UJ	0.0804	450 UJ	2 499	5200 UJ	1.635	5000 UJ	2.4	14000 UJ	2.229	1900 UJ	3.24	7400 UJ	1 542
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	5426.4	2800 U	1683.78	2400 UJ	1294.755	5100 UJ	534.66	450 UJ	16618.35	5200 UJ	10872.75	5000 UJ	15960	14000 UJ	14822.85	1900 UJ	21546	7400 UJ	10254.3
85-68-7	Butylbenzylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
105-60-2	Caprolactam	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
86-74-8	Carbazole	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
218-01-9	Chrysene	NL	NL	2800 U	NL	2400 UJ	NL	560 J	NL	46 J	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
53-70-3	Dibenz(a,h)anthracene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
132-64-9	Dibenzofuran	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
84-66-2	Diethylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
131-11-3	Dimethylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
84-74-2	Di-n-butylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
117-84-0	Di-n-octylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
206-44-0	Fluoranthene	1340	36448	2800 U	11309.6	2400 UJ	8696.6	690 J	3591.2	71 J	111622	5200 UJ	73030	5000 UJ	107200	14000 UJ	99562	1900 UJ	144720	7400 UJ	68876
86-73-7	Fluorene	38	1033.6	2800 U	320.72	2400 UJ	246 62	5100 UJ	101.84	450 UJ	3165.4	5200 UJ	2071	5000 UJ	3040	14000 UJ	2823.4	1900 UJ	4104	7400 UJ	1953.2
118-74-1	Hexachlorobenzene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
87-68-3	Hexachlorobutadiene	0.3	8.16	2800 U	2.532	2400 UJ	1.947	5100 UJ	0.804	450 UJ	24.99	5200 UJ	16.35	5000 UJ	24	14000 UJ	22.29	1900 UJ	32.4	7400 UJ	15.42
77-47-4	Hexachlorocyclopentadiene	0.7	19.04	2800 U	5.908	2400 UJ	4.543	5100 UJ	1.876	450 UJ	58.31	5200 UJ	38.15	5000 UJ	56	14000 UJ	52.01	1900 UJ	75.6	7400 UJ	35.98
67-72-1	Hexachloroethane	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
78-59-1	Isophorone	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
91-20-3	Naphthalene	38	1033.6	2800 U	320 72	2400 UJ	246.62	5100 UJ	101.84	450 UJ	3165.4	5200 UJ	2071	5000 UJ	3040	14000 UJ	2823.4	1900 UJ	4104	7400 UJ	1953 2
98-95-3	Nitrobenzene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
86-30-6	N-Nitrosodiphenylamine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
87-86-5	Pentachlorophenol	40	1088	7000 U	337.6	6000 UJ	259.6	13000 UJ	107.2	1100 UJ	3332	13000 UJ	2180	12000 UJ	3200	34000 UJ	2972	4800 UJ	4320	19000 UJ	2056
85-01-8	Phenanthrene	160	4352	2800 U	1350.4	2400 UJ	1038.4	5100 UJ	428.8	450 UJ	13328	5200 UJ	8720	5000 UJ	12800	14000 UJ	11888	1900 UJ	17280	7400 UJ	8224
108-95-2	Phenol	0.6	16.32	2800 U	5.064	2400 UJ	3.894	5100 UJ	1.608	450 UJ	49.98	5200 UJ	32 7	5000 UJ	48	14000 UJ	44.58	1900 UJ	64.8	7400 UJ	30.84
129-00-0	Pyrene	NL	NL	2800 U	NL	2400 UJ	NL	670 J	NL	58 J	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ	NL
	Pestcide/PCB Organics																				
72-54-8	4,4'-DDD	0.01	0.272	5.6 U	0.0844	4.8 UJ	0.0649	5.1 UJ	0.0268	4.5 UJ	0 833	**38** J	0.545	**180** DJ	0.8	**21** J	0.743	**95** J	1.08	15 UJ	0.514
72-55-9	4,4'-DDE	0.01	0.272	5.6 U	0.0844	4.8 UJ	0.0649	5.1 UJ	0.0268	4.5 UJ	0.833	**20** J	0.545	**63** J	0.8	**17** J	0.743	**96** J	1.08	15 UJ	0.514

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A			SDW-001-B			SDW-002-A			SDW-002-B			SDW-003-A			SDW-003-B			SDW-004-A			SDW-004-B			SDW-005-A			SDW-
		Sample Name																												
		Sample Date	4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/13/2001			4/13
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 t
TOC	Total organic carbon	gOC/kg	27.2			8.44			6.49			2.68			83.3			54.5			80			74.3			108			5
TOC	Total organic carbon	%OC	2.72%			0.84%			0.65%			0.27%			8.33%			5.45%			8.00%			7.43%			10.80%			5.1
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)
50-29-3	4,4'-DDT	0.01	0.272	5.6	U	0.0844	4.8	UJ	0.0649	5.1	UJ	0.0268	4.5	UJ	0.833	10	UJ	0.545	9.9	UJ	0.8	14	UJ	0.743	19	UJ	1.08	15	UJ	0.514
309-00-2	Aldrin	0.1	2.72	2.9	U	0.844	2.5	UJ	0.649	2.6	UJ	0.268	2.3	UJ	8.33	5.3	UJ	5.45	5.1	UJ	8	7.1	UJ	7.43	9.8	UJ	10.8	7.7	UJ	5.14
319-84-6	alpha-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ	1.542
5103-71-9	alpha-Chlordane	0.001	0.0272	2.9	U	0.00844	2.5	UJ	0.00649	2.6	UJ	0.00268	2.3	UJ	0.0833	5.3	UJ	0.0545	5.1	UJ	0.08	7.2		0.0743	9.8	UJ	0.108	7.7	UJ	0.0514
12674-11-2	Aroclor-1016	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
11104-28-2	Aroclor-1221	0.0008	0.02176	110	U	0.006752	97	UJ	0.005192	100	UJ	0.002144	92	UJ	0.06664	210	UJ	0.0436	200	UJ	0.064	280	UJ	0.05944	390	UJ	0.0864	300	UJ	0.04112
11141-16-5	Aroclor-1232	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
53469-21-9	Aroclor-1242	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
12672-29-6	Aroclor-1248	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
11097-69-1	Aroclor-1254	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
11096-82-5	Aroclor-1260	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ	0.04112
319-85-7	beta-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ	1.542
319-86-8	delta-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ	1.542
60-57-1	Dieldrin	0.1	2.72	5.6	U	0.844	4.8	UJ	0.649	5.1	UJ	0.268	4.5	UJ	8.33	10	UJ	5.45	0	R	8	14	UJ	7.43	19	UJ	10.8	15	UJ	5.14
959-98-8	Endosulfan I	0.004	0.1088	2.9	U	0.03376	2.5	UJ	0.02596	2.6	UJ	0.01072	2.3	UJ	0.3332	5.3	UJ	0.218	5.1	UJ	0.32	7.1	UJ	0.2972	9.8	UJ	0.432	7.7	UJ	0.2056
33213-65-9	Endosulfan II	0.004	0.1088	5.6	U	0.03376	4.8	UJ	0.02596	5.1	UJ	0.01072	4.5	UJ	0.3332	10	UJ	0.218	9.9	UJ	0.32	14	UJ	0.2972	19	UJ	0.432	15	UJ	0.2056
1031-07-8	Endosulfan sulfate	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ	NL
72-20-8	Endrin	0.73	19.856	5.6	U	6.1612	4.8	UJ	4.7377	5.1	UJ	1.9564	4.5	UJ	60.809	10	UJ	39.785	9.9	UJ	58.4	14	UJ	54.239	19	UJ	78.84	15	UJ	37.522
7421-93-4	Endrin aldehyde	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ	NL
53494-70-5	Endrin ketone	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ	NL
58-89-9	gamma-BHC (Lindane)	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ	1.542
5103-74-2	gamma-Chlordane	0.001	0.0272	2.9	U	0.00844	2.5	UJ	0.00649	2.6	UJ	0.00268	2.3	UJ	0.0833	5.3	UJ	0.0545	5.1	UJ	0.08	7.1	UJ	0.0743	9.8	UJ	0.108	7.7	UJ	0.0514
76-44-8	Heptachlor	0.0008	0.02176	2.9	U	0.006752	2.5	UJ	0.005192	2.6	UJ	0.002144	2.3	UJ	0.06664	5.3	UJ	0.0436	5.1	UJ	0.064	7.1	UJ	0.05944	9.8	UJ	0.0864	7.7	UJ	0.04112
1024-57-3	Heptachlor epoxide	0.0008	0.02176	2.9	U	0.006752	2.5	UJ	0.005192	2.6	UJ	0.002144	2.3	UJ	0.06664	5.3	UJ	0.0436	5.1	UJ	0.064	7.1	UJ	0.05944	9.8	UJ	0.0864	7.7	UJ	0.04112
72-43-5	Methoxychlor	0.6	16.32	29	U	5.064	25	UJ	3.894	26	UJ	1.608	23	UJ	49.98	53	UJ	32.7	51	UJ	48	71	UJ	44.58	98	UJ	64.8	77	UJ	30.84
8001-35-2	Toxaphene	0.01	0.272	290	U	0.0844	250	UJ	0.0649	260	UJ	0.0268	230	UJ	0.833	530	UJ	0.545	510	UJ	0.8	710	UJ	0.743	980	UJ	1.08	770	UJ	0.514

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	005-B	SDW-006-A		SDW-006-B		SDW-007-A		SDW-007-B		SDW-008-A		SDW-008-B		SDW-009-A		SDW-009-B	
		Sample Name																	
		Sample Date	/2001	4/13/2001		4/13/2001		4/16/2001		4/16/2001		4/16/2001		4/16/2001		4/17/2001		4/17/2001	
Cas Rn	Chemical Name	Depth	o 24	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon	gOC/kg	1.4	16.4		28.9		59.5		102		123		129		87.2		50.9	
TOC	Total organic carbon	%OC	4%	1.64%		2.89%		5.95%		10.20%		12.30%		12.90%		8.72%		5.09%	
		Screening Criteria (ug/gOC)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds																		
71-55-6	1,1,1-Trichloroethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	51 UJ	4.92	17 U	8.67	27 U	17.85	40 UJ	30.6	43 UJ	36	54 UJ	36	45 UJ	26.16	38 UJ	15.27	39 UJ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	51 UJ	NL	17 UJ	NL	27 UJ	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
79-00-5	1,1,2-Trichloroethane	0.6	51 UJ	9.84	17 U	17.34	27 U	35.7	40 UJ	61.2	43 UJ	72	54 UJ	72	45 UJ	52.32	38 UJ	30.54	39 UJ
75-34-3	1,1-Dichloroethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-35-4	1,1-Dichloroethene	0.02	51 UJ	0.328	17 U	0.578	27 U	1.19	40 UJ	2.04	43 UJ	2.4	54 UJ	2.4	45 UJ	1.744	38 UJ	1.018	39 UJ
120-82-1	1,2,4-Trichlorobenzene	91	51 UJ	1492.4	17 U	2629.9	27 U	5414.5	40 UJ	9282	43 UJ	10920	54 UJ	10920	45 UJ	7935.2	38 UJ	4631.9	39 UJ
96-12-8	1,2-Dibromo-3-chloropropane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
106-93-4	1,2-Dibromoethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
95-50-1	1,2-Dichlorobenzene	12	51 UJ	196.8	17 U	346.8	27 U	714	40 UJ	1224	43 UJ	1440	54 UJ	1440	45 UJ	1046.4	38 UJ	610.8	39 UJ
107-06-2	1,2-Dichloroethane	0.7	51 UJ	11.48	17 U	20.23	27 U	41.65	40 UJ	71.4	43 UJ	84	54 UJ	84	45 UJ	61.04	38 UJ	35.63	39 UJ
78-87-5	1,2-Dichloropropane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
541-73-1	1,3-Dichlorobenzene	12	51 UJ	196.8	17 U	346.8	27 U	714	40 UJ	1224	43 UJ	1440	54 UJ	1440	45 UJ	1046.4	38 UJ	610.8	39 UJ
106-46-7	1,4-Dichlorobenzene	12	51 UJ	196.8	17 U	346.8	27 U	714	40 UJ	1224	43 UJ	1440	54 UJ	1440	45 UJ	1046.4	38 UJ	610.8	39 UJ
78-93-3	2-Butanone	NL	290 J	NL	17 U	NL	27 UJ	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	100 J	NL	38 UJ	NL	39 UJ
591-78-6	2-Hexanone	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
108-10-1	4-Methyl-2-pentanone	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
67-64-1	Acetone	NL	100 UJ	NL	23 U	NL	27 U	NL	78 UJ	NL	50 UJ	NL	170 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
71-43-2	Benzene	0.6	51 UJ	9.84	17 U	17.34	27 U	35.7	40 UJ	61.2	43 UJ	72	54 UJ	72	45 UJ	52.32	38 UJ	30.54	39 UJ
75-27-4	Bromodichloromethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-25-2	Bromoform	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
74-83-9	Bromomethane	NL	51 UJ	NL	17 UJ	NL	27 UJ	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-15-0	Carbon Disulfide	NL	51 UJ	NL	15 J	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
56-23-5	Carbon Tetrachloride	0.6	51 UJ	9.84	17 UJ	17.34	27 U	35.7	40 UJ	61.2	43 UJ	72	54 UJ	72	45 UJ	52.32	38 UJ	30.54	39 UJ
108-90-7	Chlorobenzene	3.5	51 UJ	57.4	17 U	101.15	27 U	208.25	40 UJ	357	43 UJ	420	54 UJ	420	45 UJ	305.2	38 UJ	178.15	39 UJ
75-00-3	Chloroethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
67-66-3	Chloroform	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
74-87-3	Chloromethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
156-59-2	cis-1,2-Dichloroethene	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
10061-01-5	cis-1,3-Dichloropropene	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
110-82-7	Cyclohexane	NL	51 UJ	NL	17 UJ	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
124-48-1	Dibromochloromethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-71-8	Dichlorodifluoromethane	NL	51 UJ	NL	17 UJ	NL	27 UJ	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
100-41-4	Ethylbenzene	6.4	51 UJ	104.96	17 U	184.96	27 U	380.8	40 UJ	652.8	43 UJ	768	54 UJ	768	45 UJ	558.08	38 UJ	325.76	39 UJ
98-82-8	Isopropylbenzene	12	51 UJ	196.8	17 U	346.8	27 U	714	40 UJ	1224	43 UJ	1440	54 UJ	1440	45 UJ	1046.4	38 UJ	610.8	39 UJ
79-20-9	Methyl Acetate	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
1634-04-4	Methyl Tert-Butyl Ether	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-09-2	Methylene Chloride	NL	89 UJ	NL	19 UJ	NL	52 UJ	NL	48 UJ	NL	52 UJ	NL	75 UJ	NL	45 UJ	NL	41 UJ	NL	57 UJ
108-87-2	Metylcyclohexane	NL	51 UJ	NL	17 UJ	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
100-42-5	Styrene	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
127-18-4	Tetrachloroethene	0.8	51 UJ	13.12	17 U	23.12	27 U	47.6	4 J	81.6	43 UJ	96	54 UJ	96	45 UJ	69.76	38 UJ	40.72	39 UJ
108-88-3	Toluene	45	51 UJ	738	2 J	1300.5	3 J	2677.5	40 UJ	4590	43 UJ	5400	54 UJ	5400	45 UJ	3924	38 UJ	2290.5	39 UJ
156-60-5	trans-1,2-Dichloroethene	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
10061-02-6	trans-1,3-Dichloropropene	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
79-01-6	Trichloroethene	2	51 UJ	32.8	17 U	57.8	27 U	119	40 UJ	204	43 UJ	240	54 UJ	240	45 UJ	174.4	38 UJ	101.8	39 UJ
75-69-4	Trichlorofluoromethane	NL	51 UJ	NL	17 U	NL	27 U	NL	40 UJ	NL	43 UJ	NL	54 UJ	NL	45 UJ	NL	38 UJ	NL	39 UJ
75-01-4	Vinyl Chloride	0.07	51 UJ	1.148	17 U	2.023	27 U	4.165	40 UJ	7.14	43 UJ	8.4	54 UJ	8.4	45 UJ	6.104	38 UJ	3.563	39 UJ
1330-20-7	Xylenes (total)	27	51 UJ	442.8	17 U	780.3	27 U	1606.5	40 UJ	2754	43 UJ	3240	54 UJ	3240	45 UJ	2354.4	38 UJ	1374.3	39 UJ
	Semi-Volatile Organics																		
92-52-4	1,1'-Biphenyl	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
95-95-4	2,4,5-Trichlorophenol	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
88-06-2	2,4,6-Trichlorophenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
120-83-2	2,4-Dichlorophenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
105-67-9	2,4-Dimethylphenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
51-28-5	2,4-Dinitrophenol	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
121-14-2	2,4-Dinitrotoluene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
606-20-2	2,6-Dinitrotoluene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	-005-B	SDW-006-A		SDW-006-B		SDW-007-A		SDW-007-B		SDW-008-A		SDW-008-B		SDW-009-A		SDW-009-B	
		Sample Name																	
		Sample Date	/2001	4/13/2001		4/13/2001		4/16/2001		4/16/2001		4/16/2001		4/16/2001		4/17/2001		4/17/2001	
Cas Rn	Chemical Name	Depth	o 24	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon	gOC/kg	1.4	16.4		28.9		59.5		102		123		129		87.2		50.9	
TOC	Total organic carbon	%OC	4%	1.64%		2.89%		5.95%		10.20%		12.30%		12.90%		8.72%		5.09%	
		Screening Criteria (ug/gOC)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
95-57-8	2-Chlorophenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
91-57-6	2-Methylnaphthalene	30	4500 UJ	492	560 UJ	867	850 UJ	1785	4200 UJ	3060	960 UJ	3600	5900 UJ	3600	5200 UJ	2616	4400 UJ	1527	860 UJ
95-48-7	2-Methylphenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
88-74-4	2-Nitroaniline	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
88-75-5	2-Nitrophenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
99-09-2	3-Nitroaniline	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
101-55-3	4-Bromophenyl-phenylether	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
59-50-7	4-Chloro-3-methylphenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
106-47-8	4-Chloroaniline	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
106-44-5	4-Methylphenol	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
100-01-6	4-Nitroaniline	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
100-02-7	4-Nitrophenol	NL	11000 UJ	NL	1400 UJ	NL	2100 UJ	NL	11000 UJ	NL	2400 UJ	NL	15000 UJ	NL	13000 UJ	NL	11000 UJ	NL	2200 UJ
83-32-9	Acenaphthene	240	4500 UJ	3936	560 UJ	6936	850 UJ	14280	4200 UJ	24480	960 UJ	28800	5900 UJ	28800	5200 UJ	20928	4400 UJ	12216	860 UJ
208-96-8	Acenaphthylene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
98-86-2	Acetophenone	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
120-12-7	Anthracene	107	4500 UJ	1754.8	560 UJ	3092.3	850 UJ	6366.5	4200 UJ	10914	960 UJ	12840	5900 UJ	12840	5200 UJ	9330.4	4400 UJ	5446.3	860 UJ
1912-24-9	Atrazine	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
100-52-7	Benzaldehyde	NL	0 R	NL	0 R	NL	0 R	NL	730 J	NL	0 R	NL	0 R	NL	0 R	NL	4400 UJ	NL	89 J
56-55-3	Benzo(a)anthracene	12	4500 UJ	196.8	560 UJ	346.8	230 J	714	4200 UJ	1224	100 J	1440	5900 UJ	1440	5200 UJ	1046.4	4400 UJ	610.8	860 UJ
50-32-8	Benzo(a)pyrene	0.7	4500 UJ	11.48	560 UJ	20.23	**210** J	41.65	4200 UJ	71.4	**100** J	84	5900 UJ	84	5200 UJ	61.04	4400 UJ	35.63	860 UJ
205-99-2	Benzo(b)fluoranthene	NL	4500 UJ	NL	560 UJ	NL	200 J	NL	4200 UJ	NL	140 J	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	90 J
191-24-2	Benzo(g,h,i)perylene	NL	4500 UJ	NL	560 UJ	NL	100 J	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
207-08-9	Benzo(k)fluoranthene	NL	4500 UJ	NL	560 UJ	NL	230 J	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	95 J
111-91-1	bis(2-Chloroethoxy)methane	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	4500 UJ	0.492	560 UJ	0.867	850 UJ	1.785	4200 UJ	3.06	960 UJ	3.6	5900 UJ	3.6	5200 UJ	2.616	4400 UJ	1.527	860 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	4500 UJ	3271.8	560 UJ	5765.55	850 UJ	11870.25	4200 UJ	20349	960 UJ	23940	5900 UJ	23940	5200 UJ	17396.4	4400 UJ	10154.55	860 UJ
85-68-7	Butylbenzylphthalate	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
105-60-2	Caprolactam	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
86-74-8	Carbazole	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
218-01-9	Chrysene	NL	4500 UJ	NL	560 UJ	NL	290 J	NL	4200 UJ	NL	140 J	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
53-70-3	Dibenz(a,h)anthracene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
132-64-9	Dibenzofuran	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
84-66-2	Diethylphthalate	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
131-11-3	Dimethylphthalate	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
84-74-2	Di-n-butylphthalate	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
117-84-0	Di-n-octylphthalate	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
206-44-0	Fluoranthene	1340	4500 UJ	21976	560 UJ	38726	610 J	79730	4200 UJ	136680	220 J	160800	5900 UJ	160800	5200 UJ	116848	4400 UJ	68206	150 J
86-73-7	Fluorene	38	4500 UJ	623.2	560 UJ	1098.2	850 UJ	2261	4200 UJ	3876	960 UJ	4560	5900 UJ	4560	5200 UJ	3313.6	4400 UJ	1934.2	860 UJ
118-74-1	Hexachlorobenzene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
87-68-3	Hexachlorobutadiene	0.3	4500 UJ	4.92	560 UJ	8.67	850 UJ	17.85	4200 UJ	30.6	960 UJ	36	5900 UJ	36	5200 UJ	26.16	4400 UJ	15.27	860 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	4500 UJ	11.48	560 UJ	20.23	850 UJ	41.65	4200 UJ	71.4	960 UJ	84	5900 UJ	84	5200 UJ	61.04	4400 UJ	35.63	860 UJ
67-72-1	Hexachloroethane	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	4500 UJ	NL	560 UJ	NL	120 J	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
78-59-1	Isophorone	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
91-20-3	Naphthalene	38	4500 UJ	623.2	560 UJ	1098.2	850 UJ	2261	4200 UJ	3876	960 UJ	4560	5900 UJ	4560	5200 UJ	3313.6	4400 UJ	1934.2	860 UJ
98-95-3	Nitrobenzene	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
86-30-6	N-Nitrosodiphenylamine	NL	4500 UJ	NL	560 UJ	NL	850 UJ	NL	4200 UJ	NL	960 UJ	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	860 UJ
87-86-5	Pentachlorophenol	40	11000 UJ	656	1400 UJ	1156	2100 UJ	2380	11000 UJ	4080	2400 UJ	4800	15000 UJ	4800	13000 UJ	3488	11000 UJ	2036	2200 UJ
85-01-8	Phenanthrene	160	4500 UJ	2624	560 UJ	4624	350 J	9520	4200 UJ	16320	120 J	19200	5900 UJ	19200	5200 UJ	13952	4400 UJ	8144	860 UJ
108-95-2	Phenol	0.6	4500 UJ	9.84	560 UJ	17.34	850 UJ	35.7	4200 UJ	61.2	960 UJ	72	5900 UJ	72	5200 UJ	52.32	4400 UJ	30.54	860 UJ
129-00-0	Pyrene	NL	4500 UJ	NL	560 UJ	NL	460 J	NL	4200 UJ	NL	200 J	NL	5900 UJ	NL	5200 UJ	NL	4400 UJ	NL	130 J
	Pestcide/PCB Organics																		
72-54-8	4,4'-DDD	0.01	**160** DJ	0.164	5.5 UJ	0.289	8.6 UJ	0.595	**150** DJ	1.02	9.6 UJ	1.2	12 UJ	1.2	**96** J	0.872	8.8 UJ	0.509	8.7 UJ
72-55-9	4,4'-DDE	0.01	**83** J	0.164	5.5 UJ	0.289	8.6 UJ	0.595	**76** J	1.02	9.6 UJ	1.2	**16** J	1.2	**66** J	0.872	8.8 UJ	0.509	8.7 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	-005-B		SDW-006-A			SDW-006-B			SDW-007-A		
		Sample Name											
		Sample Date	/2001		4/13/2001			4/13/2001			4/16/2001		
Cas Rn	Chemical Name	Depth	o 24		0 to 6			18 to 24			0 to 6		
TOC	Total organic carbon	gOC/kg	1.4		16.4			28.9			59.5		
TOC	Total organic carbon	%OC	4%		1.64%			2.89%			5.95%		
		Screening Criteria (ug/gOC)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	9.2	UJ	0.164	5.5	UJ	0.289	8.6	UJ	0.595	8.4	UJ
309-00-2	Aldrin	0.1	4.7	UJ	1.64	2.9	UJ	2.89	4.4	UJ	5.95	4.3	UJ
319-84-6	alpha-BHC	0.03	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ
5103-71-9	alpha-Chlordane	0.001	4.7	UJ	0.0164	2.9	UJ	0.0289	4.4	UJ	0.0595	4.3	UJ
12674-11-2	Aroclor-1016	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
11104-28-2	Aroclor-1221	0.0008	190	UJ	0.01312	110	UJ	0.02312	180	UJ	0.0476	170	UJ
11141-16-5	Aroclor-1232	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
53469-21-9	Aroclor-1242	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
12672-29-6	Aroclor-1248	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
11097-69-1	Aroclor-1254	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
11096-82-5	Aroclor-1260	0.0008	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ
319-85-7	beta-BHC	0.03	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ
319-86-8	delta-BHC	0.03	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ
60-57-1	Dieldrin	0.1	**19**	J	1.64	5.5	UJ	2.89	8.6	UJ	5.95	17	J
959-98-8	Endosulfan I	0.004	4.7	UJ	0.0656	2.9	UJ	0.1156	4.4	UJ	0.238	4.3	UJ
33213-65-9	Endosulfan II	0.004	9.2	UJ	0.0656	5.5	UJ	0.1156	8.6	UJ	0.238	8.4	UJ
1031-07-8	Endosulfan sulfate	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ
72-20-8	Endrin	0.73	9.2	UJ	11.972	5.5	UJ	21.097	8.6	UJ	43.435	8.4	UJ
7421-93-4	Endrin aldehyde	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ
53494-70-5	Endrin ketone	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ
58-89-9	gamma-BHC (Lindane)	0.03	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ
5103-74-2	gamma-Chlordane	0.001	4.7	UJ	0.0164	2.9	UJ	0.0289	4.4	UJ	0.0595	4.3	UJ
76-44-8	Heptachlor	0.0008	4.7	UJ	0.01312	2.9	UJ	0.02312	4.4	UJ	0.0476	4.3	UJ
1024-57-3	Heptachlor epoxide	0.0008	4.7	UJ	0.01312	2.9	UJ	0.02312	4.4	UJ	0.0476	4.3	UJ
72-43-5	Methoxychlor	0.6	47	UJ	9.84	29	UJ	17.34	44	UJ	35.7	43	UJ
8001-35-2	Toxaphene	0.01	470	UJ	0.164	290	UJ	0.289	440	UJ	0.595	430	UJ

		SDW-007-B			SDW-008-A			SDW-008-B			SDW-009-A			SDW-009-B		
		4/16/2001			4/16/2001			4/16/2001			4/17/2001			4/17/2001		
Cas Rn	Chemical Name	18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	102			123			129			87.2			50.9		
TOC	Total organic carbon	10.20%			12.30%			12.90%			8.72%			5.09%		
		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	1.02	9.6	UJ	1.2	12	UJ	1.2	16		0.872	8.8	UJ	0.509	8.7	UJ
309-00-2	Aldrin	10.2	4.9	UJ	12	6	UJ	12	5.4	UJ	8.72	4.5	UJ	5.09	4.5	UJ
319-84-6	alpha-BHC	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
5103-71-9	alpha-Chlordane	0.102	4.9	UJ	0.12	6	UJ	0.12	5.4	UJ	0.0872	4.5	UJ	0.0509	4.5	UJ
12674-11-2	Aroclor-1016	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11104-28-2	Aroclor-1221	0.0816	190	UJ	0.096	240	UJ	0.096	210	UJ	0.06976	180	UJ	0.04072	180	UJ
11141-16-5	Aroclor-1232	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
53469-21-9	Aroclor-1242	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
12672-29-6	Aroclor-1248	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11097-69-1	Aroclor-1254	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11096-82-5	Aroclor-1260	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
319-85-7	beta-BHC	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
319-86-8	delta-BHC	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
60-57-1	Dieldrin	10.2	9.6	UJ	12	12	UJ	12	**12**	J	8.72	8.8	UJ	5.09	8.7	UJ
959-98-8	Endosulfan I	0.408	4.9	UJ	0.48	6	UJ	0.48	5.4	UJ	0.3488	4.5	UJ	0.2036	4.5	UJ
33213-65-9	Endosulfan II	0.408	9.6	UJ	0.48	12	UJ	0.48	10	UJ	0.3488	8.8	UJ	0.2036	8.7	UJ
1031-07-8	Endosulfan sulfate	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
72-20-8	Endrin	74.46	9.6	UJ	87.6	12	UJ	87.6	10	UJ	63.656	8.8	UJ	37.157	8.7	UJ
7421-93-4	Endrin aldehyde	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
53494-70-5	Endrin ketone	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
58-89-9	gamma-BHC (Lindane)	3.06	4.9	UJ	3.6	**6**	J	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
5103-74-2	gamma-Chlordane	0.102	4.9	UJ	0.12	6	UJ	0.12	5.4	UJ	0.0872	4.5	UJ	0.0509	4.5	UJ
76-44-8	Heptachlor	0.0816	4.9	UJ	0.096	6	UJ	0.096	5.4	UJ	0.06976	4.5	UJ	0.04072	4.5	UJ
1024-57-3	Heptachlor epoxide	0.0816	4.9	UJ	0.096	6	UJ	0.096	5.4	UJ	0.06976	4.5	UJ	0.04072	4.5	UJ
72-43-5	Methoxychlor	61.2	49	UJ	72	60	UJ	72	54	UJ	52.32	45	UJ	30.54	45	UJ
8001-35-2	Toxaphene	1.02	490	UJ	1.2	600	UJ	1.2	540	UJ	0.872	450	UJ	0.509	450	UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-010-A		SDW-010-B		SDW-011-A		SDW-011-B		SDW-012-A		SDW-012-B		SDW-013-A		SDW-013-B		SDW-014-A		SDW-014-B	
		Sample Name																				
		Sample Date	4/17/2001		4/17/2001		4/18/2001		4/18/2001		4/18/2001		4/18/2001		4/19/2001		4/19/2001		4/19/2001		4/19/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon	gOC/kg	152		163		118		154		40.7		47.9		152		118		201		205	
TOC	Total organic carbon	%OC	15.20%		16.30%		11.80%		15.40%		4.07%		4.79%		15.20%		11.80%		20.10%		20.50%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds																					
71-55-6	1,1,1-Trichloroethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	36	78 UJ	36	78 UJ	35.4	78 UJ	36	68 UJ	12.21	19 UJ	14.37	23 UJ	36	85 UJ	35.4	81 UJ	36	130 UJ	36	120 UJ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
79-00-5	1,1,2-Trichloroethane	0.6	72	78 UJ	72	78 UJ	70.8	78 UJ	72	68 UJ	24.42	19 UJ	28.74	23 UJ	72	85 UJ	70.8	81 UJ	72	130 UJ	72	120 UJ
75-34-3	1,1-Dichloroethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-35-4	1,1-Dichloroethene	0.02	2.4	78 UJ	2 4	78 UJ	2.36	78 UJ	2.4	68 UJ	0.814	19 UJ	0.958	23 UJ	2.4	85 UJ	2.36	81 UJ	2.4	130 UJ	2.4	120 UJ
120-82-1	1,2,4-Trichlorobenzene	91	10920	78 UJ	10920	78 UJ	10738	78 UJ	10920	68 UJ	3703.7	19 UJ	4358.9	23 UJ	10920	85 UJ	10738	81 UJ	10920	130 UJ	10920	120 UJ
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
106-93-4	1,2-Dibromoethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
95-50-1	1,2-Dichlorobenzene	12	1440	78 UJ	1440	78 UJ	1416	78 UJ	1440	68 UJ	488.4	19 UJ	574.8	23 UJ	1440	85 UJ	1416	81 UJ	1440	130 UJ	1440	120 UJ
107-06-2	1,2-Dichloroethane	0.7	84	78 UJ	84	78 UJ	82.6	78 UJ	84	68 UJ	28.49	19 UJ	33.53	23 UJ	84	85 UJ	82.6	81 UJ	84	130 UJ	84	120 UJ
78-87-5	1,2-Dichloropropane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
541-73-1	1,3-Dichlorobenzene	12	1440	78 UJ	1440	78 UJ	1416	78 UJ	1440	68 UJ	488.4	19 UJ	574.8	23 UJ	1440	85 UJ	1416	81 UJ	1440	130 UJ	1440	120 UJ
106-46-7	1,4-Dichlorobenzene	12	1440	78 UJ	1440	78 UJ	1416	78 UJ	1440	68 UJ	488.4	19 UJ	574.8	23 UJ	1440	85 UJ	1416	81 UJ	1440	130 UJ	1440	120 UJ
78-93-3	2-Butanone	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
591-78-6	2-Hexanone	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
108-10-1	4-Methyl-2-pentanone	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
67-64-1	Acetone	NL	NL	78 UJ	NL	78 UJ	NL	200 UJ	NL	110 UJ	NL	38 UJ	NL	79 UJ	NL	160 J	NL	170 J	NL	270 J	NL	330 J
71-43-2	Benzene	0.6	72	78 UJ	72	78 UJ	70.8	78 UJ	72	68 UJ	24.42	19 UJ	28.74	23 UJ	72	85 UJ	70.8	81 UJ	72	130 UJ	72	120 UJ
75-27-4	Bromodichloromethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-25-2	Bromoform	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
74-83-9	Bromomethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-15-0	Carbon Disulfide	NL	NL	78 UJ	NL	78 UJ	NL	33 J	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	80 J	NL	63 J
56-23-5	Carbon Tetrachloride	0.6	72	78 UJ	72	78 UJ	70.8	78 UJ	72	68 UJ	24.42	19 UJ	28.74	23 UJ	72	85 UJ	70.8	81 UJ	72	130 UJ	72	120 UJ
108-90-7	Chlorobenzene	3.5	420	78 UJ	420	78 UJ	413	78 UJ	420	68 UJ	142.45	19 UJ	167.65	23 UJ	420	85 UJ	413	81 UJ	420	130 UJ	420	120 UJ
75-00-3	Chloroethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
67-66-3	Chloroform	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
74-87-3	Chloromethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
156-59-2	cis-1,2-Dichloroethene	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
10061-01-5	cis-1,3-Dichloropropene	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
110-82-7	Cyclohexane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
124-48-1	Dibromochloromethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-71-8	Dichlorodifluoromethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
100-41-4	Ethylbenzene	6.4	768	78 UJ	768	78 UJ	755.2	78 UJ	768	68 UJ	260.48	19 UJ	306.56	23 UJ	768	85 UJ	755.2	81 UJ	768	130 UJ	768	120 UJ
98-82-8	Isopropylbenzene	12	1440	78 UJ	1440	78 UJ	1416	78 UJ	1440	68 UJ	488.4	19 UJ	574.8	23 UJ	1440	85 UJ	1416	81 UJ	1440	130 UJ	1440	120 UJ
79-20-9	Methyl Acetate	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-09-2	Methylene Chloride	NL	NL	94 UJ	NL	94 UJ	NL	150 UJ	NL	170 UJ	NL	30 UJ	NL	32 UJ	NL	160 UJ	NL	140 UJ	NL	260 J	NL	220 J
108-87-2	Metylcyclohexane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
100-42-5	Styrene	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
127-18-4	Tetrachloroethene	0.8	96	78 UJ	96	78 UJ	94.4	4 J	96	25 J	32.56	19 UJ	38.32	23 UJ	96	85 UJ	94.4	81 UJ	96	130 UJ	96	120 UJ
108-88-3	Toluene	45	5400	78 UJ	5400	78 UJ	5310	2 J	5400	16 J	1831.5	19 UJ	2155.5	23 UJ	5400	85 UJ	5310	81 UJ	5400	3 UJ	5400	120 UJ
156-60-5	trans-1,2-Dichloroethene	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
10061-02-6	trans-1,3-Dichloropropene	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
79-01-6	Trichloroethene	2	240	78 UJ	240	78 UJ	236	78 UJ	240	18 J	81.4	19 UJ	95.8	23 UJ	240	85 UJ	236	81 UJ	240	130 UJ	240	120 UJ
75-69-4	Trichlorofluoromethane	NL	NL	78 UJ	NL	78 UJ	NL	78 UJ	NL	68 UJ	NL	19 UJ	NL	23 UJ	NL	85 UJ	NL	81 UJ	NL	130 UJ	NL	120 UJ
75-01-4	Vinyl Chloride	0.07	8.4	78 UJ	8.4	78 UJ	8.26	78 UJ	8.4	68 UJ	2.849	19 UJ	3.353	23 UJ	8.4	85 UJ	8.26	81 UJ	8.4	130 UJ	8.4	120 UJ
1330-20-7	Xylenes (total)	27	3240	78 UJ	3240	78 UJ	3186	78 UJ	3240	68 UJ	1098.9	19 UJ	1293.3	23 UJ	3240	85 UJ	3186	81 UJ	3240	130 UJ	3240	120 UJ
	Semi-Volatile Organics																					
92-52-4	1,1'-Biphenyl	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
120-83-2	2,4-Dichlorophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
105-67-9	2,4-Dimethylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
51-28-5	2,4-Dinitrophenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-010-A		SDW-010-B		SDW-011-A		SDW-011-B		SDW-012-A		SDW-012-B		SDW-013-A		SDW-013-B		SDW-014-A		SDW-014-B	
		Sample Name																				
		Sample Date	4/17/2001		4/17/2001		4/18/2001		4/18/2001		4/18/2001		4/18/2001		4/19/2001		4/19/2001		4/19/2001		4/19/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon	gOC/kg	152		163		118		154		40.7		47.9		152		118		201		205	
TOC	Total organic carbon	%OC	15.20%		16.30%		11.80%		15.40%		4.07%		4.79%		15.20%		11.80%		20.10%		20.50%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
95-57-8	2-Chlorophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
91-57-6	2-Methylnaphthalene	30	3600	7100 UJ	3600	1600 UJ	3540	1600 UJ	3600	1600 UJ	1221	5000 UJ	1437	3100 UJ	3600	17000 UJ	3540	16000 UJ	3600	11000 UJ	3600	13000 UJ
95-48-7	2-Methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
88-74-4	2-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
88-75-5	2-Nitrophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
99-09-2	3-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
106-47-8	4-Chloroaniline	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
106-44-5	4-Methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
100-01-6	4-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
100-02-7	4-Nitrophenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 UJ
83-32-9	Acenaphthene	240	28800	7100 UJ	28800	1600 UJ	28320	1600 UJ	28800	1600 UJ	9768	5000 UJ	11496	3100 UJ	28800	17000 UJ	28320	16000 UJ	28800	11000 UJ	28800	13000 UJ
208-96-8	Acenaphthylene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
98-86-2	Acetophenone	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
120-12-7	Anthracene	107	12840	7100 UJ	12840	1600 UJ	12626	1600 UJ	12840	220 J	4354.9	5000 UJ	5125.3	3100 UJ	12840	17000 UJ	12626	16000 UJ	12840	11000 UJ	12840	13000 UJ
1912-24-9	Atrazine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
100-52-7	Benzaldehyde	NL	NL	7100 UJ	NL	960 J	NL	380 J	NL	250 J	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
56-55-3	Benzo(a)anthracene	12	1440	7100 UJ	1440	1600 UJ	1416	220 J	1440	380 J	488.4	5000 UJ	574.8	3100 UJ	1440	17000 UJ	1416	16000 UJ	1440	11000 UJ	1440	13000 UJ
50-32-8	Benzo(a)pyrene	0.7	84	7100 UJ	84	**170** J	82.6	**180** J	84	**240** J	28.49	5000 UJ	33.53	3100 UJ	84	17000 UJ	82.6	16000 UJ	84	11000 UJ	84	13000 UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	7100 UJ	NL	280 J	NL	220 J	NL	390 J	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	7100 UJ	NL	190 J	NL	310 J	NL	380 J	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	3.6	7100 UJ	3.6	1600 UJ	3.54	1600 UJ	3.6	1600 UJ	1.221	5000 UJ	1.437	3100 UJ	3.6	17000 UJ	3.54	16000 UJ	3.6	11000 UJ	3.6	13000 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	23940	7100 UJ	23940	1600 UJ	23541	1600 UJ	23940	1600 UJ	8119.65	5000 UJ	9556.05	3100 UJ	23940	17000 UJ	23541	16000 UJ	23940	11000 UJ	23940	13000 UJ
85-68-7	Butylbenzylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
105-60-2	Caprolactam	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
86-74-8	Carbazole	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
218-01-9	Chrysene	NL	NL	7100 UJ	NL	200 J	NL	290 J	NL	390 J	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
132-64-9	Dibenzofuran	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
84-66-2	Diethylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
131-11-3	Dimethylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
84-74-2	Di-n-butylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
117-84-0	Di-n-octylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
206-44-0	Fluoranthene	1340	160800	7100 UJ	160800	330 J	158120	600 J	160800	1800 J	54538	5000 UJ	64186	3100 UJ	160800	17000 UJ	158120	16000 UJ	160800	11000 UJ	160800	13000 UJ
86-73-7	Fluorene	38	4560	7100 UJ	4560	1600 UJ	4484	1600 UJ	4560	1600 UJ	1546.6	5000 UJ	1820.2	3100 UJ	4560	17000 UJ	4484	16000 UJ	4560	11000 UJ	4560	13000 UJ
118-74-1	Hexachlorobenzene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
87-68-3	Hexachlorobutadiene	0.3	36	7100 UJ	36	1600 UJ	35.4	1600 UJ	36	1600 UJ	12.21	5000 UJ	14.37	3100 UJ	36	17000 UJ	35.4	16000 UJ	36	11000 UJ	36	13000 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	84	7100 UJ	84	1600 UJ	82.6	1600 UJ	84	1600 UJ	28.49	5000 UJ	33.53	3100 UJ	84	17000 UJ	82.6	16000 UJ	84	11000 UJ	84	13000 UJ
67-72-1	Hexachloroethane	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
78-59-1	Isophorone	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
91-20-3	Naphthalene	38	4560	7100 UJ	4560	1600 UJ	4484	1600 UJ	4560	1600 UJ	1546.6	5000 UJ	1820.2	3100 UJ	4560	17000 UJ	4484	16000 UJ	4560	11000 UJ	4560	13000 UJ
98-95-3	Nitrobenzene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
87-86-5	Pentachlorophenol	40	4800	18000 UJ	4800	4100 UJ	4720	4100 UJ	4800	3900 UJ	1628	13000 UJ	1916	7900 UJ	4800	43000 UJ	4720	41000 UJ	4800	27000 UJ	4800	32000 UJ
85-01-8	Phenanthrene	160	19200	7100 UJ	19200	1600 UJ	18880	1600 UJ	19200	1600 UJ	6512	5000 UJ	7664	3100 UJ	19200	17000 UJ	18880	16000 UJ	19200	11000 UJ	19200	13000 UJ
108-95-2	Phenol	0.6	72	7100 UJ	72	1600 UJ	70.8	1600 UJ	72	1600 UJ	24.42	5000 UJ	28.74	3100 UJ	72	17000 UJ	70.8	16000 UJ	72	11000 UJ	72	13000 UJ
129-00-0	Pyrene	NL	NL	7100 UJ	NL	290 J	NL	530 J	NL	1400 J	NL	5000 UJ	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 UJ
	Pesticide/PCB Organics																					
72-54-8	4,4'-DDD	0.01	1.2	14 UJ	1.2	16 UJ	1.18	16 UJ	1.2	**92** J	0.407	**18** J	0.479	6.3 UJ	1.2	**25** J	1.18	**24** J	1.2	22 UJ	1.2	25 UJ
72-55-9	4,4'-DDE	0.01	1.2	**17** J	1.2	**23** J	1.18	16 UJ	1.2	**120** J	0.407	**13** J	0.479	6.3 UJ	1.2	17 UJ	1.18	**18**	1.2	22 UJ	1.2	25 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-010-A			SDW-010-B			SDW-011-A			SDW-011-B			SDW-012-A		
		Sample Name															
		Sample Date	4/17/2001			4/17/2001			4/18/2001			4/18/2001			4/18/2001		
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			0 to 6			18 to 24			0 to 6		
TOC	Total organic carbon	gOC/kg	152			163			118			154			40.7		
TOC	Total organic carbon	%OC	15.20%			16.30%			11.80%			15.40%			4.07%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	1.2	14	UJ	1.2	16	UJ	1.18	16	UJ	1.2	16	UJ	0.407	5	UJ
309-00-2	Aldrin	0.1	12	7.3	UJ	12	8.4	UJ	11.8	8.4	UJ	12	8	UJ	4.07	2.6	UJ
319-84-6	alpha-BHC	0.03	3.6	7.3	UJ	3.6	8.4	UJ	3.54	8.4	UJ	3.6	8	UJ	1.221	2.6	UJ
5103-71-9	alpha-Chlordane	0.001	0.12	7.3	UJ	0.12	8.4	UJ	0.118	8.4	UJ	0.12	8	UJ	0.0407	2.6	UJ
12674-11-2	Aroclor-1016	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
11104-28-2	Aroclor-1221	0.0008	0.096	290	UJ	0.096	330	UJ	0.0944	330	UJ	0.096	320	UJ	0.03256	100	UJ
11141-16-5	Aroclor-1232	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
53469-21-9	Aroclor-1242	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
12672-29-6	Aroclor-1248	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
11097-69-1	Aroclor-1254	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
11096-82-5	Aroclor-1260	0.0008	0.096	140	UJ	0.096	160	UJ	0.0944	160	UJ	0.096	160	UJ	0.03256	50	UJ
319-85-7	beta-BHC	0.03	3.6	7.3	UJ	3.6	8.4	UJ	3.54	8.4	UJ	3.6	8	UJ	1.221	2.6	UJ
319-86-8	delta-BHC	0.03	3.6	7.3	UJ	3.6	8.4	UJ	3.54	8.4	UJ	3.6	8	UJ	1.221	2.6	UJ
60-57-1	Dieldrin	0.1	12	14	UJ	12	16	UJ	11.8	16	UJ	12	16	UJ	4.07	5	UJ
959-98-8	Endosulfan I	0.004	0.48	7.3	UJ	0.48	8.4	UJ	0.472	8.4	UJ	0.48	8	UJ	0.1628	2.6	UJ
33213-65-9	Endosulfan II	0.004	0.48	14	UJ	0.48	16	UJ	0.472	16	UJ	0.48	16	UJ	0.1628	5	UJ
1031-07-8	Endosulfan sulfate	NL	NL	14	UJ	NL	16	UJ	NL	16	UJ	NL	16	UJ	NL	5	UJ
72-20-8	Endrin	0.73	87.6	14	UJ	87.6	16	UJ	86.14	16	UJ	87.6	16	UJ	29.711	5	UJ
7421-93-4	Endrin aldehyde	NL	NL	14	UJ	NL	16	UJ	NL	16	UJ	NL	16	UJ	NL	5	UJ
53494-70-5	Endrin ketone	NL	NL	14	UJ	NL	16	UJ	NL	16	UJ	NL	16	UJ	NL	5	UJ
58-89-9	gamma-BHC (Lindane)	0.03	3.6	7.3	UJ	3.6	8.4	UJ	3.54	8.4	UJ	3.6	8	UJ	1.221	2.6	UJ
5103-74-2	gamma-Chlordane	0.001	0.12	7.3	UJ	0.12	8.4	UJ	0.118	8.4	UJ	0.12	8	UJ	0.0407	2.6	UJ
76-44-8	Heptachlor	0.0008	0.096	7.3	UJ	0.096	8.4	UJ	0.0944	8.4	UJ	0.096	8	UJ	0.03256	2.6	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.096	7.3	UJ	0.096	8.4	UJ	0.0944	8.4	UJ	0.096	8	UJ	0.03256	2.6	UJ
72-43-5	Methoxychlor	0.6	72	73	UJ	72	84	UJ	70.8	84	UJ	72	80	UJ	24.42	26	UJ
8001-35-2	Toxaphene	0.01	1.2	730	UJ	1.2	840	UJ	1.18	840	UJ	1.2	800	UJ	0.407	260	UJ

		Sample Code	SDW-012-B			SDW-013-A			SDW-013-B			SDW-014-A			SDW-014-B		
		Sample Name															
		Sample Date	4/18/2001			4/19/2001			4/19/2001			4/19/2001			4/19/2001		
Cas Rn	Chemical Name	Depth	18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	47.9			152			118			201			205		
TOC	Total organic carbon	%OC	4.79%			15.20%			11.80%			20.10%			20.50%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	0.479	6.3	UJ	1.2	17	UJ	1.18	17	UJ	1.2	22	UJ	1.2	25	UJ
309-00-2	Aldrin	0.1	4.79	3.3	UJ	12	8.8	UJ	11.8	8.5	UJ	12	11	UJ	12	13	UJ
319-84-6	alpha-BHC	0.03	1.437	3.3	UJ	3.6	8.8	UJ	3.54	8.5	UJ	3.6	11	UJ	3.6	13	UJ
5103-71-9	alpha-Chlordane	0.001	0.0479	3.3	UJ	0.12	8.8	UJ	0.118	8.5	UJ	0.12	11	UJ	0.12	13	UJ
12674-11-2	Aroclor-1016	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
11104-28-2	Aroclor-1221	0.0008	0.03832	130	UJ	0.096	350	UJ	0.0944	340	UJ	0.096	440	UJ	0.096	510	UJ
11141-16-5	Aroclor-1232	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
53469-21-9	Aroclor-1242	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
12672-29-6	Aroclor-1248	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
11097-69-1	Aroclor-1254	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
11096-82-5	Aroclor-1260	0.0008	0.03832	63	UJ	0.096	170	UJ	0.0944	170	UJ	0.096	220	UJ	0.096	250	UJ
319-85-7	beta-BHC	0.03	1.437	3.3	UJ	3.6	8.8	UJ	3.54	8.5	UJ	3.6	11	UJ	3.6	13	UJ
319-86-8	delta-BHC	0.03	1.437	3.3	UJ	3.6	8.8	UJ	3.54	8.5	UJ	3.6	11	UJ	3.6	13	UJ
60-57-1	Dieldrin	0.1	4.79	6.3	UJ	12	17	UJ	11.8	17	UJ	12	22	UJ	12	25	UJ
959-98-8	Endosulfan I	0.004	0.1916	3.3	UJ	0.48	8.8	UJ	0.472	8.5	UJ	0.48	11	UJ	0.48	13	UJ
33213-65-9	Endosulfan II	0.004	0.1916	6.3	UJ	0.48	17	UJ	0.472	17	UJ	0.48	22	UJ	0.48	25	UJ
1031-07-8	Endosulfan sulfate	NL	NL	6.3	UJ	NL	17	UJ	NL	17	UJ	NL	22	UJ	NL	25	UJ
72-20-8	Endrin	0.73	34.967	6.3	UJ	87.6	17	UJ	86.14	17	UJ	87.6	22	UJ	87.6	25	UJ
7421-93-4	Endrin aldehyde	NL	NL	6.3	UJ	NL	17	UJ	NL	17	UJ	NL	22	UJ	NL	25	UJ
53494-70-5	Endrin ketone	NL	NL	6.3	UJ	NL	17	UJ	NL	17	UJ	NL	22	UJ	NL	25	UJ
58-89-9	gamma-BHC (Lindane)	0.03	1.437	3.3	UJ	3.6	8.8	UJ	3.54	8.5	UJ	3.6	11	UJ	3.6	13	UJ
5103-74-2	gamma-Chlordane	0.001	0.0479	3.3	UJ	0.12	8.8	UJ	0.118	8.5	UJ	0.12	11	UJ	0.12	13	UJ
76-44-8	Heptachlor	0.0008	0.03832	3.3	UJ	0.096	8.8	UJ	0.0944	8.5	UJ	0.096	11	UJ	0.096	13	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.03832	3.3	UJ	0.096	8.8	UJ	0.0944	8.5	UJ	0.096	11	UJ	0.096	13	UJ
72-43-5	Methoxychlor	0.6	28.74	33	UJ	72	88	UJ	70.8	85	UJ	72	110	UJ	72	130	UJ
8001-35-2	Toxaphene	0.01	0.479	330	UJ	1.2	880	UJ	1.18	850	UJ	1.2	1100	UJ	1.2	1300	UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-015-A		SDW-015-B		SDW-003-B-DUP		SDW-011-B-DUP		SSS-001		SSS-002		SSS-003		SSS-004		SSS-005		SSS-006	
		Sample Name					SDW-020-B		SDW-021-B													
		Sample Date	4/19/2001		4/19/2001		4/12/2001		4/18/2001		4/10/2001		4/9/2001		4/9/2001		4/9/2001		4/11/2001		4/11/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		18 to 24		18 to 24													
TOC	Total organic carbon	gOC/kg	140		168		54		110		0.544		0.283		0.34		1.25		61.1		1 34	
TOC	Total organic carbon	%OC	14.00%		16.80%		5.40%		11.00%		0.05%		0.03%		0.03%		0.13%		6.11%		0 13%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds																					
71-55-6	1,1,1-Trichloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	36	70 UJ	36	90 UJ	16.2	50 UJ	33	75 UJ	0.1632	12 U	0.0849	10 U	0.102	11 U	0.375	12 U	18.33	23 UJ	0.402	11 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
79-00-5	1,1,2-Trichloroethane	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 UJ	0.1698	10 UJ	0.204	11 UJ	0.75	12 UJ	36.66	23 UJ	0.804	11 UJ
75-34-3	1,1-Dichloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-35-4	1,1-Dichloroethene	0.02	2.4	70 UJ	2.4	90 UJ	1.08	50 UJ	2.2	75 UJ	0.01088	12 U	0.00566	10 U	0.0068	11 U	0.025	12 U	1.222	23 UJ	0.0268	11 U
120-82-1	1,2,4-Trichlorobenzene	91	10920	70 UJ	10920	90 UJ	4914	50 UJ	10010	75 UJ	49.504	12 U	25.753	10 U	30.94	11 U	113.75	12 U	5560.1	23 UJ	121.94	11 U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
106-93-4	1,2-Dibromoethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	35 U	NL	21 U	NL	21 U	NL	38 U	NL	23 UJ	NL	35 UJ
95-50-1	1,2-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	11 J	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
107-06-2	1,2-Dichloroethane	0.7	84	70 UJ	84	90 UJ	37.8	50 UJ	77	75 UJ	0.3808	12 U	0.1981	10 U	0.238	11 U	0.875	12 U	42.77	23 UJ	0.938	11 U
78-87-5	1,2-Dichloropropane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	20 UJ	NL	19 UJ	NL	21 UJ	NL	22 UJ	NL	65 UJ	NL	52 UJ
541-73-1	1,3-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
106-46-7	1,4-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
78-93-3	2-Butanone	NL	NL	70 UJ	NL	90 UJ	NL	170 J	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
591-78-6	2-Hexanone	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
108-10-1	4-Methyl-2-pentanone	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 UJ
67-64-1	Acetone	NL	NL	140 J	NL	110 J	NL	100 UJ	NL	150 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
71-43-2	Benzene	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 U	0.1698	10 U	0.204	11 U	0.75	12 U	36.66	23 UJ	0 804	11 U
75-27-4	Bromodichloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
75-25-2	Bromoform	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
74-83-9	Bromomethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-15-0	Carbon Disulfide	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
56-23-5	Carbon Tetrachloride	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 U	0.1698	10 U	0.204	11 U	0.75	12 U	36.66	23 UJ	0.804	11 U
108-90-7	Chlorobenzene	3.5	420	70 UJ	420	90 UJ	189	50 UJ	385	75 UJ	1.904	12 UJ	0.9905	10 UJ	1.19	11 UJ	4.375	12 UJ	213.85	23 UJ	4.69	11 U
75-00-3	Chloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
67-66-3	Chloroform	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
74-87-3	Chloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
156-59-2	cis-1,2-Dichloroethene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
110-82-7	Cyclohexane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
124-48-1	Dibromochloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-71-8	Dichlorodifluoromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
100-41-4	Ethylbenzene	6.4	768	70 UJ	768	90 UJ	345.6	50 UJ	704	75 UJ	3.4816	12 U	1.8112	10 U	2.176	11 U	8	12 U	391.04	23 UJ	8.576	11 U
98-82-8	Isopropylbenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
79-20-9	Methyl Acetate	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-09-2	Methylene Chloride	NL	NL	130 UJ	NL	190 J	NL	50 UJ	NL	160 J	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
108-87-2	Metylcyclohexane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
100-42-5	Styrene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
127-18-4	Tetrachloroethene	0.8	96	70 UJ	96	90 UJ	43.2	50 UJ	88	26 J	0.4352	12 U	0.2264	10 U	0.272	11 U	1	12 U	48.88	23 UJ	1.072	11 U
108-88-3	Toluene	45	5400	2 J	5400	90 UJ	2430	50 UJ	4950	5 J	24.48	12 U	12.735	10 U	15.3	11 U	56.25	12 U	2749.5	23 UJ	60.3	11 U
156-60-5	trans-1,2-Dichloroethene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
10061-02-6	trans-1,3-Dichloropropene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
79-01-6	Trichloroethene	2	240	70 UJ	240	90 UJ	108	50 UJ	220	20 J	1.088	12 U	0.566	10 U	0.68	11 U	2.5	12 U	122 2	23 UJ	2.68	11 U
75-69-4	Trichlorofluoromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-01-4	Vinyl Chloride	0.07	8.4	70 UJ	8.4	90 UJ	3.78	50 UJ	7.7	75 UJ	0.03808	12 U	0.01981	10 U	0.0238	11 U	0.0875	12 U	4.277	23 UJ	0 0938	11 U
1330-20-7	Xylenes (total)	27	3240	70 UJ	3240	90 UJ	1458	50 UJ	2970	75 UJ	14.688	12 U	7.641	10 U	9.18	11 U	33.75	12 U	1649.7	23 UJ	36.18	11 U
	Semi-Volatile Organics																					
92-52-4	1,1'-Biphenyl	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	120 J	NL	6600 UJ	NL	470 UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
120-83-2	2,4-Dichlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
105-67-9	2,4-Dimethylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
51-28-5	2,4-Dinitrophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

Cas Rn	Chemical Name	Sample Code	SDW-015-A		SDW-015-B		SDW-003-B-DUP		SDW-011-B-DUP		SSS-001		SSS-002		SSS-003		SSS-004		SSS-005		SSS-006	
		Sample Name					SDW-020-B		SDW-021-B													
		Sample Date	4/19/2001		4/19/2001		4/12/2001		4/18/2001		4/10/2001		4/9/2001		4/9/2001		4/9/2001		4/11/2001		4/11/2001	
		Depth	0 to 6		18 to 24		18 to 24		18 to 24													
TOC	Total organic carbon	gOC/kg	140		168		54		110		0.544		0.283		0.34		1.25		61.1		1.34	
TOC	Total organic carbon	%OC	14.00%		16.80%		5.40%		11.00%		0.05%		0.03%		0.03%		0.13%		6.11%		0.13%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
95-57-8	2-Chlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
91-57-6	2-Methylnaphthalene	30	3600	7800 UJ	3600	9100 UJ	1620	6900 UJ	3300	1700 UJ	16.32	430 UJ	8.49	400 UJ	10.2	420 UJ	37.5	420 UJ	1833	6600 UJ	40.2	470 UJ
95-48-7	2-Methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
88-74-4	2-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
88-75-5	2-Nitrophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
99-09-2	3-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
106-47-8	4-Chloroaniline	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
106-44-5	4-Methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
100-01-6	4-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
100-02-7	4-Nitrophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
83-32-9	Acenaphthene	240	28800	7800 UJ	28800	9100 UJ	12960	6900 UJ	26400	1700 UJ	130.56	430 UJ	67.92	400 UJ	81.6	420 UJ	300	420 UJ	14864	6600 UJ	321.6	470 UJ
208-96-8	Acenaphthylene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
98-86-2	Acetophenone	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
120-12-7	Anthracene	107	12840	7800 UJ	12840	9100 UJ	5778	6900 UJ	11770	1700 UJ	58.208	1100 UJ	30.281	1000 UJ	36.38	1100 UJ	133.75	1100 UJ	6537.7	16000 UJ	143.38	1200 UJ
1912-24-9	Atrazine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
100-52-7	Benzaldehyde	NL	NL	7800 UJ	NL	9100 UJ	NL	0 R	NL	280 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
56-55-3	Benzo(a)anthracene	12	1440	7800 UJ	1440	9100 UJ	648	6900 UJ	1320	240 J	6.528	430 UJ	3.396	400 UJ	4.08	420 UJ	15	420 UJ	733.2	6600 UJ	16.08	470 UJ
50-32-8	Benzo(a)pyrene	0.7	84	7800 UJ	84	9100 UJ	37.8	6900 UJ	77	1700 UJ	0.3808	430 UJ	0.1981	400 UJ	0.238	420 UJ	0.875	420 UJ	42.77	6600 UJ	0.938	470 UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	350 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	48 J	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	3.6	7800 UJ	3.6	9100 UJ	1.62	6900 UJ	3.3	1700 UJ	0.01632	430 UJ	0.00849	400 UJ	0.0102	420 UJ	0.0375	420 UJ	1.833	6600 UJ	0.0402	470 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	23940	7800 UJ	23940	9100 UJ	10773	6900 UJ	21945	1700 UJ	108.528	430 UJ	56.4585	400 UJ	67.83	420 UJ	249.375	420 UJ	12189.45	6600 UJ	267.33	470 UJ
85-68-7	Butylbenzylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
105-60-2	Caprolactam	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
86-74-8	Carbazole	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
218-01-9	Chrysene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	290 J	NL	69 J	NL	400 UJ	NL	420 UJ	NL	79 J	NL	6600 UJ	NL	470 UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	51 J	NL	400 UJ	NL	420 UJ	NL	70 J	NL	6600 UJ	NL	470 UJ
132-64-9	Dibenzofuran	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
84-66-2	Diethylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
131-11-3	Dimethylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
84-74-2	Di-n-butylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	53 J	NL	6600 UJ	NL	470 UJ
117-84-0	Di-n-octylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	66 J	NL	6600 UJ	NL	470 UJ
206-44-0	Fluoranthene	1340	160800	7800 UJ	160800	9100 UJ	72360	6900 UJ	147400	990 J	728.96	430 UJ	379.22	400 UJ	455.6	420 UJ	1675	420 UJ	81874	6600 UJ	1795.6	470 UJ
86-73-7	Fluorene	38	4560	7800 UJ	4560	9100 UJ	2052	6900 UJ	4180	1700 UJ	20.672	430 UJ	10.754	400 UJ	12.92	420 UJ	47.5	420 UJ	2321.8	6600 UJ	50.92	470 UJ
118-74-1	Hexachlorobenzene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	52 J	NL	6600 UJ	NL	470 UJ
87-68-3	Hexachlorobutadiene	0.3	36	7800 UJ	36	9100 UJ	16.2	6900 UJ	33	1700 UJ	0.1632	430 UJ	0.0849	400 UJ	0.102	420 UJ	0.375	420 UJ	18.33	6600 UJ	0.402	470 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	84	7800 UJ	84	9100 UJ	37.8	6900 UJ	77	1700 UJ	0.3808	430 UJ	0.1981	400 UJ	0.238	420 UJ	0.875	420 UJ	42.77	6600 UJ	0.938	470 UJ
67-72-1	Hexachloroethane	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	44 J	NL	6600 UJ	NL	470 UJ
78-59-1	Isophorone	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
91-20-3	Naphthalene	38	4560	7800 UJ	4560	9100 UJ	2052	6900 UJ	4180	1700 UJ	20.672	430 UJ	10.754	400 UJ	12.92	420 UJ	47.5	420 UJ	2321.8	6600 UJ	50.92	470 UJ
98-95-3	Nitrobenzene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200 UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	47 J	NL	6600 UJ	NL	470 UJ
87-86-5	Pentachlorophenol	40	4800	20000 UJ	4800	23000 UJ	2160	17000 UJ	4400	4400 UJ	21.76	430 UJ	11.32	400 UJ	13.6	420 UJ	50	420 UJ	2444	6600 UJ	53.6	470 UJ
85-01-8	Phenanthrene	160	19200	7800 UJ	19200	9100 UJ	8640	6900 UJ	17600	1700 UJ	87.04	430 UJ	45.28	400 UJ	54.4	420 UJ	200	420 UJ	9776	6600 UJ	214.4	470 UJ
108-95-2	Phenol	0.6	72	7800 UJ	72	9100 UJ	32.4	6900 UJ	66	1700 UJ	0.3264	430 UJ	0.1698	400 UJ	0.204	420 UJ	0.75	420 UJ	36.66	6600 UJ	0.804	470 UJ
129-00-0	Pyrene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	810 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470 UJ
	Pesticide/PCB Organics																					
72-54-8	4,4'-DDD	0.01	1.2	17 J	1.2	24 J	0.54	300	1.1	29 J	0.00544	2.2 UJ	0.00283	2 UJ	0.0034	2.2 UJ	0.0125	2.2 UJ	0.611	3.4 UJ	0.0134	2.4 UJ
72-55-9	4,4'-DDE	0.01	1.2	23 J	1.2	24 J	0.54	100 J	1.1	32 J	0.00544	2.2 UJ	0.00283	2 UJ	0.0034	2.2 UJ	0.0125	2.2 UJ	0.611	3.4 UJ	0.0134	2.4 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-015-A		SDW-015-B		SDW-003-B-DUP		SDW-011-B-DUP		SSS-001		SSS-002		SSS-003		SSS-004		SSS-005		SSS-006	
		Sample Name					SDW-020-B		SDW-021-B													
		Sample Date	4/19/2001		4/19/2001		4/12/2001		4/18/2001		4/10/2001		4/9/2001		4/9/2001		4/9/2001		4/11/2001		4/11/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		18 to 24		18 to 24													
TOC	Total organic carbon	gOC/kg	140		168		54		110		0.544		0.283		0.34		1.25		61.1		1.34	
TOC	Total organic carbon	%OC	14.00%		16.80%		5.40%		11.00%		0.05%		0.03%		0.03%		0.13%		6.11%		0.13%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
50-29-3	4,4'-DDT	0.01	1.2	16 UJ	1.2	18 UJ	0.54	14 UJ	1.1	17 UJ	0.00544	2.2 UJ	0.00283	2 UJ	0.0034	2.2 UJ	0.0125	2.2 UJ	0.611	3.4 UJ	0.0134	2.4 UJ
309-00-2	Aldrin	0.1	12	8 UJ	12	9.3 UJ	5.4	7.1 UJ	11	9 UJ	0.0544	2.2 UJ	0.0283	2 UJ	0.034	2.2 UJ	0.125	2.2 UJ	6.11	3.4 UJ	0.134	2.4 UJ
319-84-6	alpha-BHC	0.03	3.6	8 UJ	3.6	9.3 UJ	1.62	7.1 UJ	3.3	9 UJ	0.01632	2.2 UJ	0.00849	2 UJ	0.0102	2.2 UJ	0.0375	2.2 UJ	1.833	3.4 UJ	0.0402	2.4 UJ
5103-71-9	alpha-Chlordane	0.001	0.12	8 UJ	0.12	9.3 UJ	0.054	7.1 UJ	0.11	9 UJ	0.000544	2.2 UJ	0.000283	2 UJ	0.00034	2.2 UJ	0.00125	2.2 UJ	0.0611	3.4 UJ	0.00134	2.4 UJ
12674-11-2	Aroclor-1016	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	2.2 UJ	0.0002264	2 UJ	0.000272	2.2 UJ	0.001	2.2 UJ	0.04888	3.4 UJ	0.001072	2.4 UJ
11104-28-2	Aroclor-1221	0.0008	0.096	320 UJ	0.096	370 UJ	0.0432	280 UJ	0.088	350 UJ	0.0004352	2.2 UJ	0.0002264	2 UJ	0.000272	2.2 UJ	0.001	2.2 UJ	0.04888	3.4 UJ	0.001072	2.4 UJ
11141-16-5	Aroclor-1232	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	4.3 UJ	0.0002264	4 UJ	0.000272	4.2 UJ	0.001	4.2 UJ	0.04888	6.6 UJ	0.001072	4.7 UJ
53469-21-9	Aroclor-1242	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	4.3 UJ	0.0002264	4 UJ	0.000272	4.2 UJ	0.001	4.2 UJ	0.04888	7.3 J	0.001072	4.7 UJ
12672-29-6	Aroclor-1248	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	4.3 UJ	0.0002264	4 UJ	0.000272	4.2 UJ	0.001	4.2 UJ	0.04888	6.6 UJ	0.001072	4.7 UJ
11097-69-1	Aroclor-1254	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	4.3 UJ	0.0002264	4 UJ	0.000272	4.2 UJ	0.001	4.2 UJ	0.04888	6.6 UJ	0.001072	4.7 UJ
11096-82-5	Aroclor-1260	0.0008	0.096	160 UJ	0.096	180 UJ	0.0432	140 UJ	0.088	170 UJ	0.0004352	4.3 UJ	0.0002264	4 UJ	0.000272	4.2 UJ	0.001	4.2 UJ	0.04888	6.6 UJ	0.001072	4.7 UJ
319-85-7	beta-BHC	0.03	3.6	8 UJ	3.6	9.3 UJ	1.62	7.1 UJ	3.3	9 UJ	0.01632	4.3 UJ	0.00849	4 UJ	0.0102	4.2 UJ	0.0375	4.2 UJ	1.833	6.6 UJ	0.0402	4.7 UJ
319-86-8	delta-BHC	0.03	3.6	8 UJ	3.6	9.3 UJ	1.62	7.1 UJ	3.3	9 UJ	0.01632	4.3 UJ	0.00849	4 UJ	0.0102	4.2 UJ	0.0375	4.2 UJ	1.833	12 J	0.0402	4.7 UJ
60-57-1	Dieldrin	0.1	12	16 UJ	12	18 UJ	5.4	0 R	11	17 UJ	0.0544	22 UJ	0.0283	20 UJ	0.034	22 UJ	0.125	22 UJ	6.11	34 UJ	0.134	24 UJ
959-98-8	Endosulfan I	0.004	0.48	8 UJ	0.48	9.3 UJ	0.216	7.1 UJ	0.44	9 UJ	0.002176	4.3 UJ	0.001132	4 UJ	0.00136	4.2 UJ	0.005	4.2 UJ	0.2444	6.6 UJ	0.00536	4.7 UJ
33213-65-9	Endosulfan II	0.004	0.48	16 UJ	0.48	18 UJ	0.216	14 UJ	0.44	17 UJ	0.002176	4.3 UJ	0.001132	4 UJ	0.00136	4.2 UJ	0.005	4.2 UJ	0.2444	6.6 UJ	0.00536	4.7 UJ
1031-07-8	Endosulfan sulfate	NL	NL	16 UJ	NL	18 UJ	NL	14 UJ	NL	17 UJ	NL	2.2 UJ	NL	2 UJ	NL	2.2 UJ	NL	2.2 UJ	NL	7.6 J	NL	2.4 UJ
72-20-8	Endrin	0.73	87.6	16 UJ	87.6	18 UJ	39.42	14 UJ	80.3	17 UJ	0.39712	2.2 UJ	0.20659	2 UJ	0.2482	2.2 UJ	0.9125	2.2 UJ	44.603	5.8 J	0.9782	2.4 UJ
7421-93-4	Endrin aldehyde	NL	NL	16 UJ	NL	18 UJ	NL	14 UJ	NL	17 UJ	NL	220 UJ	NL	200 UJ	NL	220 UJ	NL	220 UJ	NL	340 UJ	NL	240 UJ
53494-70-5	Endrin ketone	NL	NL	16 UJ	NL	18 UJ	NL	14 UJ	NL	17 UJ	NL	43 UJ	NL	40 UJ	NL	42 UJ	NL	42 UJ	NL	66 UJ	NL	47 UJ
58-89-9	gamma-BHC (Lindane)	0.03	3.6	8 UJ	3.6	9.3 UJ	1.62	7.1 UJ	3.3	9 UJ	0.01632	88 UJ	0.00849	80 UJ	0.0102	85 UJ	0.0375	86 UJ	1.833	130 UJ	0.0402	95 UJ
5103-74-2	gamma-Chlordane	0.001	0.12	8 UJ	0.12	9.3 UJ	0.054	7.1 UJ	0.11	9 UJ	0.000544	43 UJ	0.000283	40 UJ	0.00034	42 UJ	0.00125	42 UJ	0.0611	66 UJ	0.00134	47 UJ
76-44-8	Heptachlor	0.0008	0.096	8 UJ	0.096	9.3 UJ	0.0432	7.1 UJ	0.088	9 UJ	0.0004352	43 UJ	0.0002264	40 UJ	0.000272	42 UJ	0.001	42 UJ	0.04888	66 UJ	0.001072	47 UJ
1024-57-3	Heptachlor epoxide	0.0008	0.096	8 UJ	0.096	9.3 UJ	0.0432	7.1 UJ	0.088	9 UJ	0.0004352	43 UJ	0.0002264	40 UJ	0.000272	42 UJ	0.001	42 UJ	0.04888	66 UJ	0.001072	47 UJ
72-43-5	Methoxychlor	0.6	72	80 UJ	72	93 UJ	32.4	71 UJ	66	89 UJ	0.3264	43 UJ	0.1698	40 UJ	0.204	42 UJ	0.75	42 UJ	36.66	66 UJ	0.804	47 UJ
8001-35-2	Toxaphene	0.01	1.2	800 UJ	1.2	930 UJ	0.54	710 UJ	1.1	890 UJ	0.00544	43 UJ	0.00283	40 UJ	0.0034	42 UJ	0.0125	42 UJ	0.611	66 UJ	0.0134	47 UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

Cas Rn	Chemical Name	Sample Code	SSS-007		SSS-008		SSS-009		SSS-010		SSS-011		SSS-012		SSS-001-DUP	
		Sample Name													SSS-020	
		Sample Date	4/12/2001		4/23/2001		4/23/2001		4/24/2001		4/26/2001		4/24/2001		4/10/2001	
		Depth														
TOC	Total organic carbon	gOC/kg	3.36		4.32		17.9		1.58		29		6.56		0.467	
TOC	Total organic carbon	%OC	0.34%		0.43%		1.79%		0.16%		2.90%		0.66%		0.05%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds															
71-55-6	1,1,1-Trichloroethane	NL	NL	13 UJ	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	1.008	13 U	1.296	13 U	5.37	12 U	0.474	13 U	8.7	35 UJ	1.968	12 U	0.1401	13 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
79-00-5	1,1,2-Trichloroethane	0.8	2.016	13 UJ	2.592	13 U	10.74	12 U	0.948	13 U	17.4	35 UJ	3.936	12 U	0.2802	13 UJ
75-34-3	1,1-Dichloroethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
75-35-4	1,1-Dichloroethene	0.02	0.0672	13 U	0.0864	13 U	0.358	12 U	0.0316	2 J	0.58	14 J	0.1312	12 UJ	0.00934	13 U
120-82-1	1,2,4-Trichlorobenzene	91	305.76	13 U	393.12	13 U	1628.9	12 U	143.78	13 U	2639	35 UJ	596.96	12 U	42.497	13 U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 UJ
106-93-4	1,2-Dibromoethane	NL	NL	17 UJ	NL	13 UJ	NL	12 UJ	NL	13 UJ	NL	10 J	NL	12 UJ	NL	29 U
95-50-1	1,2-Dichlorobenzene	12	40.32	13 U	51.84	13 U	214.8	12 U	18.96	13 U	348	35 UJ	78.72	12 U	5.604	10 J
107-06-2	1,2-Dichloroethane	0.7	2.352	13 U	3.024	13 U	12.53	12 U	1.106	13 U	20.3	35 UJ	4.592	12 U	0.3269	13 U
78-87-5	1,2-Dichloropropane	NL	NL	52 UJ	NL	13 U	NL	12 U	NL	14 U	NL	35 UJ	NL	12 U	NL	28 UJ
541-73-1	1,3-Dichlorobenzene	12	40.32	13 U	51.84	13 U	214.8	12 U	18.96	13 U	348	35 UJ	78.72	12 U	5.604	13 U
106-46-7	1,4-Dichlorobenzene	12	40.32	13 U	51.84	13 U	214.8	12 U	18.96	13 U	348	35 UJ	78.72	12 U	5.604	13 U
78-93-3	2-Butanone	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
591-78-6	2-Hexanone	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
108-10-1	4-Methyl-2-pentanone	NL	NL	13 UJ	NL	13 UJ	NL	12 UJ	NL	13 UJ	NL	35 UJ	NL	12 UJ	NL	13 U
67-64-1	Acetone	NL	NL	13 U	NL	1 J	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
71-43-2	Benzene	0.6	2.016	13 U	2.592	2 J	10.74	12 U	0.948	13 U	17.4	35 UJ	3.936	12 U	0.2802	13 U
75-27-4	Bromodichloromethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 UJ
75-25-2	Bromoform	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 UJ
74-83-9	Bromomethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
75-15-0	Carbon Disulfide	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
56-23-5	Carbon Tetrachloride	0.6	2.016	13 U	2.592	13 U	10.74	12 U	0.948	13 U	17.4	35 UJ	3.936	12 U	0.2802	13 U
108-90-7	Chlorobenzene	3.5	11.76	13 U	15.12	13 U	62.65	12 U	5.53	13 U	101.5	35 UJ	22.96	12 U	1.6345	13 UJ
75-00-3	Chloroethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
67-66-3	Chloroform	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
74-87-3	Chloromethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
156-59-2	cis-1,2-Dichloroethene	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
110-82-7	Cyclohexane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
124-48-1	Dibromochloromethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
75-71-8	Dichlorodifluoromethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
100-41-4	Ethylbenzene	6.4	21.504	13 U	27.648	13 U	114.56	12 U	10.112	13 U	185.6	35 UJ	41.984	12 U	2.9888	13 U
98-82-8	Isopropylbenzene	12	40.32	13 U	51.84	13 U	214.8	12 U	18.96	13 U	348	35 UJ	78.72	12 U	5.604	13 U
79-20-9	Methyl Acetate	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
75-09-2	Methylene Chloride	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
108-87-2	Metylcyclohexane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
100-42-5	Styrene	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
127-18-4	Tetrachloroethene	0.8	2.688	13 U	3.456	13 U	14.32	12 U	1.264	13 U	23.2	35 UJ	5.248	12 U	0.3736	13 U
108-88-3	Toluene	45	151.2	13 U	194.4	13 U	805.5	12 U	71.1	13 U	1305	35 UJ	295.2	12 U	21.015	13 U
156-60-5	trans-1,2-Dichloroethene	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
10061-02-6	trans-1,3-Dichloropropene	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
79-01-6	Trichloroethene	2	6.72	13 U	8.64	13 U	35.8	12 U	3.16	13 U	58	35 UJ	13.12	12 U	0.934	13 U
75-69-4	Trichlorofluoromethane	NL	NL	13 U	NL	13 U	NL	12 U	NL	13 U	NL	35 UJ	NL	12 U	NL	13 U
75-01-4	Vinyl Chloride	0.07	0.2352	13 U	0.3024	13 U	1.253	12 U	0.1106	13 U	2.03	35 UJ	0.4592	12 U	0.03269	13 U
1330-20-7	Xylenes (total)	27	90.72	13 U	116.64	13 U	483.3	12 U	42.66	13 U	783	35 UJ	177.12	12 U	12.609	13 U
	Semi-Volatile Organics															
92-52-4	1,1'-Biphenyl	NL	NL	440 UJ	NL	410 UJ	NL	400 UJ	NL	380 UJ	NL	1800 UJ	NL	420 UJ	NL	440 UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
120-83-2	2,4-Dichlorophenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
105-67-9	2,4-Dimethylphenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
51-28-5	2,4-Dinitrophenol	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ

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Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SSS-007			SSS-008			SSS-009			SSS-010			SSS-011			SSS-012			SSS-001-DUP		
		Sample Name																			SSS-020		
		Sample Date	4/12/2001			4/23/2001			4/23/2001			4/24/2001			4/26/2001			4/24/2001			4/10/2001		
Cas Rn	Chemical Name	Depth																					
TOC	Total organic carbon	gOC/kg	3.38			4.32			17.9			1.58			29			6.56			0.467		
TOC	Total organic carbon	%OC	0.34%			0.43%			1.79%			0.16%			2.90%			0.66%			0.05%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
91-58-7	2-Chloronaphthalene	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	110	J	NL	84	J	NL	440	UJ
95-57-8	2-Chlorophenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
91-57-6	2-Methylnaphthalene	30	100.8	440	U	129.6	410	U	537	400	U	47.4	380	U	870	1800	UJ	196.8	420	U	14.01	440	UJ
95-48-7	2-Methylphenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
88-74-4	2-Nitroaniline	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
88-75-5	2-Nitrophenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	440	U	NL	53	J	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
99-09-2	3-Nitroaniline	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
106-47-8	4-Chloroaniline	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	440	U	NL	130	J	NL	400	U	NL	380	U	NL	120	J	NL	420	U	NL	440	UJ
106-44-5	4-Methylphenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	180	J	NL	21	J	NL	440	UJ
100-01-6	4-Nitroaniline	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
100-02-7	4-Nitrophenol	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
83-32-9	Acenaphthene	240	806.4	440	U	1036.8	410	U	4296	400	U	379.2	380	U	6960	0	R	1574.4	420	U	112.08	440	UJ
208-96-8	Acenaphthylene	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
98-86-2	Acetophenone	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
120-12-7	Anthracene	107	359.52	1100	U	462.24	1000	U	1915.3	1000	U	169.06	950	U	3103	4600	UJ	701.92	1000	U	49.969	1100	UJ
1912-24-9	Atrazine	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
100-52-7	Benzaldehyde	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
56-55-3	Benzo(a)anthracene	12	40.32	440	U	51.84	410	U	214.8	400	U	18.96	380	U	348	1800	UJ	78.72	420	U	5.604	440	UJ
50-32-8	Benzo(a)pyrene	0.7	2.352	440	U	3.024	410	U	12.53	400	U	1.106	380	U	20.3	1800	UJ	4.592	420	U	0.3269	440	UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	440	UJ	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	440	U	NL	1200		NL	400	U	NL	380	U	NL	340	J	NL	31	J	NL	440	UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	160	J	NL	420	U	NL	440	UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	0.1008	440	U	0.1296	410	UJ	0.537	400	UJ	0.0474	380	UJ	0.87	1800	UJ	0.1968	420	UJ	0.01401	440	UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	670.32	440	U	861.84	240	J	3571.05	400	U	315.21	380	U	5785.5	220	J	1308.72	420	U	93.1665	440	UJ
85-68-7	Butylbenzylphthalate	NL	NL	440	U	NL	110	J	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
105-60-2	Caprolactam	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
86-74-8	Carbazole	NL	NL	440	U	NL	50	J	NL	400	U	NL	38	J	NL	1800	UJ	NL	37	J	NL	440	UJ
218-01-9	Chrysene	NL	NL	440	U	NL	1900		NL	400	U	NL	380	U	NL	370	J	NL	65	J	NL	440	UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	440	U	NL	1700		NL	400	U	NL	380	U	NL	350	J	NL	65	J	NL	440	UJ
132-64-9	Dibenzofuran	NL	NL	440	U	NL	410	UJ	NL	400	UJ	NL	380	UJ	NL	1800	UJ	NL	420	UJ	NL	440	UJ
84-66-2	Diethylphthalate	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
131-11-3	Dimethylphthalate	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
84-74-2	Di-n-butylphthalate	NL	NL	440	U	NL	810		NL	400	U	NL	380	U	NL	210	J	NL	33	J	NL	440	UJ
117-84-0	Di-n-octylphthalate	NL	NL	440	U	NL	860		NL	400	U	NL	380	U	NL	190	J	NL	47	J	NL	440	UJ
206-44-0	Fluoranthene	1340	4502.4	1600		5788.8	74	J	23986	400	U	2117.2	380	U	38860	1800	UJ	8790.4	51	J	625.78	440	UJ
86-73-7	Fluorene	38	127.68	440	U	164.16	410	U	680.2	400	U	60.04	380	U	1102	1800	UJ	249.28	420	U	17.746	440	UJ
118-74-1	Hexachlorobenzene	NL	NL	440	U	NL	600		NL	400	U	NL	380	U	NL	130	J	NL	60	J	NL	440	UJ
87-68-3	Hexachlorobutadiene	0.3	1.008	440	U	1.296	410	U	5.37	400	U	0.474	380	U	8.7	1800	UJ	1.968	420	U	0.1401	440	UJ
77-47-4	Hexachlorocyclopentadiene	0.7	2.352	440	U	3.024	410	U	12.53	400	U	1.106	380	U	20.3	1800	UJ	4.592	420	U	0.3269	440	UJ
67-72-1	Hexachloroethane	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	440	U	NL	750		NL	400	U	NL	380	U	NL	130	J	NL	420	U	NL	440	UJ
78-59-1	Isophorone	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
91-20-3	Naphthalene	38	127.68	440	U	164.16	410	U	680.2	400	U	60.04	380	U	1102	1800	UJ	249.28	420	U	17.746	440	UJ
98-95-3	Nitrobenzene	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	200	J	NL	420	U	NL	440	UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	440	U	NL	740		NL	400	U	NL	380	U	NL	150	J	NL	32	J	NL	440	UJ
87-86-5	Pentachlorophenol	40	134.4	440	U	172.8	480		716	400	U	63.2	380	U	1160	100	J	262.4	420	U	18.68	440	UJ
85-01-8	Phenanthrene	160	537.6	440	U	691.2	200	J	2864	400	U	252.8	380	U	4640	1800	UJ	1049.6	420	U	74.72	440	UJ
108-95-2	Phenol	0.6	2.016	440	U	2.592	100	J	10.74	400	U	0.948	380	U	17.4	1800	UJ	3.936	420	U	0.2802	440	UJ
129-00-0	Pyrene	NL	NL	440	U	NL	600		NL	400	U	NL	380	U	NL	100	J	NL	26	J	NL	440	UJ
	Pesticide/PCB Organics																						
72-54-8	4,4'-DDD	0.01	0.0336	2.3	U	0.0432	2.1	UJ	0.179	2.1	UJ	0.0158	1.9	UJ	0.29	4.7	UJ	0.0656	2.1	UJ	0.00467	2.3	UJ
72-55-9	4,4'-DDE	0.01	0.0336	2.3	U	0.0432	2.1	UJ	0.179	2.1	UJ	0.0158	1.9	UJ	0.29	4.7	UJ	0.0656	2.1	UJ	0.00467	2.3	UJ

Table 4-17
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SSS-007			SSS-008			SSS-009			SSS-010			SSS-011			SSS-012			SSS-001-DUP		
		Sample Name																			SSS-020		
		Sample Date	4/12/2001			4/23/2001			4/23/2001			4/24/2001			4/26/2001			4/24/2001			4/10/2001		
Cas Rn	Chemical Name	Depth																					
TOC	Total organic carbon	gOC/kg	3.36			4.32			17.9			1.58			29			6.56			0.467		
TOC	Total organic carbon	%OC	0.34%			0.43%			1.79%			0.16%			2.90%			0.86%			0.05%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	0.0336	2.3	U	0.0432	2.1	UJ	0.179	2.1	UJ	0.0158	1.9	UJ	0.29	4.7	UJ	0.0656	2.1	UJ	0.00467	2.3	UJ
309-00-2	Aldrin	0.1	0.336	2.3	U	0.432	2.1	UJ	1.79	2.1	UJ	0.158	1.9	UJ	2.9	4.7	UJ	0.656	2.1	UJ	0.0467	2.3	UJ
319-84-6	alpha-BHC	0.03	0.1008	2.3	U	0.1296	2.5	UJ	0.537	2.1	UJ	0.0474	1.9	UJ	0.87	8.4	J	0.1968	2.1	UJ	0.01401	2.3	UJ
5103-71-9	alpha-Chlordane	0.001	0.00336	2.3	U	0.00432	2.1	UJ	0.0179	2.1	UJ	0.00158	1.9	UJ	0.029	4.7	UJ	0.00656	2.1	UJ	0.000467	2.3	UJ
12674-11-2	Aroclor-1016	0.0008	0.002688	2.3	U	0.003456	2.1	UJ	0.01432	2.1	UJ	0.001264	1.9	UJ	0.0232	4.7	UJ	0.005248	2.1	UJ	0.0003736	2.3	UJ
11104-28-2	Aroclor-1221	0.0008	0.002688	2.3	U	0.003456	2.1	UJ	0.01432	2.1	UJ	0.001264	1.9	UJ	0.0232	4.7	UJ	0.005248	2.1	UJ	0.0003736	2.3	UJ
11141-16-5	Aroclor-1232	0.0008	0.002688	4.4	U	0.003456	4.2	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
53469-21-9	Aroclor-1242	0.0008	0.002688	4.4	U	0.003456	1.2	J	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
12672-29-6	Aroclor-1248	0.0008	0.002688	4.4	U	0.003456	4.1	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
11097-69-1	Aroclor-1254	0.0008	0.002688	4.4	U	0.003456	4.1	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
11096-82-5	Aroclor-1260	0.0008	0.002688	4.4	U	0.003456	1.3	J	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
319-85-7	beta-BHC	0.03	0.1008	4.4	U	0.1296	4.1	UJ	0.537	4	UJ	0.0474	3.8	UJ	0.87	9.1	UJ	0.1968	4.1	UJ	0.01401	4.5	UJ
319-86-8	delta-BHC	0.03	0.1008	4.4	U	0.1296	3.2	J	0.537	4	UJ	0.0474	3.8	UJ	0.87	9.1	UJ	0.1968	4.1	UJ	0.01401	4.5	UJ
60-57-1	Dieldrin	0.1	0.336	23	U	0.432	21	UJ	1.79	21	UJ	0.158	19	UJ	2.9	47	UJ	0.656	21	UJ	0.0467	23	UJ
959-98-8	Endosulfan I	0.004	0.01344	4.4	U	0.01728	4.1	UJ	0.0716	4	UJ	0.00632	3.8	UJ	0.116	9.1	UJ	0.02624	4.1	UJ	0.001868	4.5	UJ
33213-65-9	Endosulfan II	0.004	0.01344	4.4	U	0.01728	4.1	UJ	0.0716	4	UJ	0.00632	3.8	UJ	0.116	9.1	UJ	0.02624	4.1	UJ	0.001868	4.5	UJ
1031-07-8	Endosulfan sulfate	NL	NL	2.3	U	NL	5.1	NJ	NL	2.1	UJ	NL	1.9	UJ	NL	4.7	UJ	NL	2.1	UJ	NL	2.3	UJ
72-20-8	Endrin	0.73	2.4528	2.3	U	3.1536	6.5	J	13.067	2.1	UJ	1.1534	1.9	UJ	21.17	5	NJ	4.7888	2.1	UJ	0.34091	2.3	UJ
7421-93-4	Endrin aldehyde	NL	NL	230	U	NL	210	UJ	NL	210	UJ	NL	190	UJ	NL	470	UJ	NL	210	UJ	NL	230	UJ
53494-70-5	Endrin ketone	NL	NL	44	U	NL	41	UJ	NL	40	UJ	NL	38	UJ	NL	91	UJ	NL	41	UJ	NL	45	UJ
58-89-9	gamma-BHC (Lindane)	0.03	0.1008	89	U	0.1296	84	UJ	0.537	81	UJ	0.0474	77	UJ	0.87	180	UJ	0.1968	84	UJ	0.01401	91	UJ
5103-74-2	gamma-Chlordane	0.001	0.00336	44	U	0.00432	41	UJ	0.0179	40	UJ	0.00158	38	UJ	0.029	91	UJ	0.00656	41	UJ	0.000467	45	UJ
76-44-8	Heptachlor	0.0008	0.002688	44	U	0.003456	41	UJ	0.01432	40	UJ	0.001264	38	UJ	0.0232	91	UJ	0.005248	41	UJ	0.0003736	45	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.002688	44	U	0.003456	41	UJ	0.01432	40	UJ	0.001264	38	UJ	0.0232	91	UJ	0.005248	41	UJ	0.0003736	45	UJ
72-43-5	Methoxychlor	0.6	2.016	44	U	2.592	41	UJ	10.74	40	UJ	0.948	38	UJ	17.4	91	UJ	3.936	41	UJ	0.2802	45	UJ
8001-35-2	Toxaphene	0.01	0.0336	44	U	0.0432	41	UJ	0.179	40	UJ	0.0158	38	UJ	0.29	91	UJ	0.0656	41	UJ	0.00467	45	UJ

Table 4-18
Inorganic Analyte Results in Spring/Seep Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SSS 001	SSS 002	SSS 003	SSS 004	SSS 005	SSS 006	SSS 007	SSS 008	SSS 009	SSS 010	SSS 011	SSS 012
Aluminum	NS	2710J	1130	807	808	1710J	1450	916	1880	2050	1830	2930	1340
Arsenic	6	ND	1.5B	0.77B	1.1B	1.5BJ	ND	0.79B	ND	1.7B	2.7	2.9B	ND
Barium	NS	1.8B	2.7B	32.B	1.5B	8.4BJ	5.7B	2.4B	6B	5.6B	5.1B	7.3B	4.5B
Beryllium	NS	ND	ND	ND	ND	ND	ND	ND	0.14B	0.12B	0.09B	0.16B	0.03B
Calcium	NS	801B	197B	182B	211B	1550BJ	257B	432B	5410	285B	351B	641B	369B
Chromium	26	2.7	3.8	3.3	2.3B	6.8J	5.4	3.1	15.4J	6.1J	6.2J	10J	3.8J
Cobalt	NS	0.83B	1.7B	0.81B	0.59B	2.1BJ	2.1B	0.7B	1.6B	1.1B	1.4B	2B	0.68B
Copper	16	2.3B	3.3B	2.6B	1.9B	**16.2J**	5B	5.2B	10.2	5B	6.6	**16.1**	8.2B
Iron	20,000	1540	4010	2730	2030	4370J	3730	1670	3930	3510	3990	4770	2780
Lead	31	3.9	**39.2**	11.3	3.4	12.8J	8	4.7	**47.6**	11	6.5	14.3	7.8
Magnesium	NS	214B	357B	239B	562B	983BJ	632B	518B	2970	511B	630B	1410B	491B
Manganese	460	25.3	74.5	42.6	45.2	164J	130	25.2	68	38.4	47.7	63.9	51.4
Nickel	16	6.3B	2.3B	2B	1.6B	4.1BJ	2.6B	1.6B	3.9B	2.3B	2.9B	4.6B	2.6B
Potassium	NS	157B	166B	150B	214B	326BJ	324B	258B	178BE	150BE	145BE	592BE	163BE
Sodium	NS	622BJ	694BJ	201BJ	1290J	265BJ	196BJ	683BJ	82.1B	ND	68.9B	624B	72.4B
Vanadium	NS	2B	4.8B	3.2B	3.7B	10.4BJ	4.6B	2.7B	9.6B	5.2B	6.4B	9.2B	4.7B

Table 4-18
Inorganic Analyte Results in Spring/Seep Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SSS 001	SSS 002	SSS 003	SSS 004	SSS 005	SSS 006	SSS 007	SSS 008	SSS 009	SSS 010	SSS 011	SSS 012
Zinc	120	7.8	7.9	7.9	7.3	17.7J	9.1	10.6	26.2	13.3	16	**35**	15.2
Cyanide	NS	ND	ND	0.14BJ	0.09BJ	ND	0.2BJ	ND	NA	ND	NA	ND	NA

Units: milligrams/kilogram (mg/Kg)

Bold = exceeds screening criteria

Abbreviations: ND = non-detect; B = detected between contract required detection limit and instrument detection limit; J = estimated value; D = diluted sample; R = rejected data; E = data estimated due to the presence of interference; NA = not available

Table 4-19
Inorganic Analyte Results in Wetland Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SDW 001B	SDW 002A	SDW 002B	SDW 003A	SDW 003B	SDW 004A	SDW 004B	SDW 005A	SDW 005B	SDW 006A	SDW 006B	SDW 007A
Aluminum	NS	3620	1560	1500	5920 J	4360 J	10200J	9550J	12000J	9700J	3960	3820J	5130J
Antimony	2	ND	ND	ND	ND	ND	**2.1 BJ**	ND	ND	ND	ND	ND	ND
Arsenic	6	0.92B	1.2 B	ND	4.9 BJ	4.3 BJ	5 BJ	4.5 BJ	**14.4 J**	5.5 J	2.3 B	2.8 BJ	7.6J
Barium	NS	15.7 B	4 B	8 B	14 BJ	12 BJ	27.4 BJ	26.3 BJ	36.7 BJ	25 BJ	8.7 B	8.8 BJ	13.1BJ
Beryllium	NS	ND	ND	ND	ND	0.3 BJ	ND	0.32 BJ	0.58 BJ	0.27 BJ	0.17 B	0.27 BJ	0.25BJ
Cadmium	0.6	ND	ND	ND	ND	ND	ND	ND	ND	0.19 BJ	0.23 B	ND	0.27BJ
Calcium	NS	725 B	2080 J	320 B	1650 BJ	1580 BJ	2300BJ	2110BJ	3220BJ	1590BJ	426B	1010BJ	2350BJ
Chromium	26	18.4	6.3	4.8	23 J	17.3 J	**49.1 J**	**42.1 J**	**49.3 J**	**48.3 J**	13.5	13.6 J	**26.2J**
Cobalt	NS	2.2 B	1.1 B	1.2 B	4.2 BJ	3.2 BJ	7.1 BJ	5.9 BJ	8.9 BJ	4.8 BJ	3.5 B	2.7 BJ	2.1BJ
Copper	16	**23.2 J**	9.9 J	6 B	**44.8 J**	**39.1 J**	**89.4 J**	**92 J**	**83.6 J**	**101 J**	**22.2 J**	**18.3 J**	**33 J**
Iron	20,000	4540	3430	3210	10400 J	8240 J	18500J	14900J	23600J	15700J	8690	7360J	8110J
Lead	31	29.1	7.4	7.5	**65.4 J**	**80.9 J**	**83.3 J**	**71.3 J**	**68 J**	**60.1 J**	19.9	23.6 J	**62.4J**
Magnesium	NS	1410 B	992 B	747 B	3560 J	3270 BJ	6120 J	5990 J	7460 J	4450 J	1920 J	2640 J	3040J
Manganese	460	53 B	37.4	26.5	104 J	64.7 J	213 J	193 J	**1740 J**	161 J	85.4	105 J	136J
Mercury	0.15	ND	ND	ND	**0.17 BJ**	**0.24 BJ**	**0.22BJ**	**0.24BJ**	ND	**0.23BJ**	ND	ND	ND
Nickel	16	5.6 B	3.1 B	2.8 B	12 BJ	9.3 BJ	**21.4BJ**	**17.6BJ**	**23.8BJ**	**17BJ**	9.9B	7.6BJ	9.4BJ
Potassium	NS	770 B	476 B	657 B	1900BJ	1560BJ	3550BJ	3320BJ	4190J	2650J	1090B	1490BJ	1290BJ

Table 4-19
Inorganic Analyte Results in Wetland Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SDW 001B	SDW 002A	SDW 002B	SDW 003A	SDW 003B	SDW 004A	SDW 004B	SDW 005A	SDW 005B	SDW 006A	SDW 006B	SDW 007A
Selenium	NS	ND	ND	ND	ND	ND	ND	2BJ	3.8BJ	2.1BJ	ND	ND	1.7BJ
Silver	1	ND	ND	ND	ND	0.47 BJ	1 BJ	0.5BJ	**1.7BJ**	1BJ	0.51B	0.39BJ	ND
Sodium	NS	468BJ	1850J	1320BJ	9390J	11600J	14500J	16300J	16300J	2740J	3440	9040J	5080J
Thallium	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	NS	9 B	5.5 B	5.7 B	28 J	20.4 BJ	47.6J	38.4BJ	50.2J	39.9J	16.5	17.3BJ	18.8BJ
Zinc	120	26.6	16.5	16.6	59.9 J	68.4 J	105J	93.2J	96.9J	50.8J	35.9J	28.4J	42.7J
Cyanide	NS	ND	ND	ND	ND	ND	ND	ND	0.44BJ	0.16BJ	0.11B	ND	0.21BJ
Inorganic Analyte	**Criteria (mg/Kg)**	**SDW 007B**	**SDW 008A**	**SDW 008B**	**SDW 009A**	**SDW 009B**	**SDW 010A**	**SDW 010B**	**SDW 011A**	**SDW 011B**	**SDW 012A**	**SDW 012B**	**SDW 013A**
Aluminum	NS	7940J	9720J	7780J	5920J	5740J	7770J	9260J	5980J	5530J	1420	3560J	7660J
Antimony	2	ND	ND	ND	ND	ND	ND	ND	**3.6BJ**	**4.5BJ**	ND	1.7BJ	ND
Arsenic	6	**8.4J**	**9.4J**	**6.6BJ**	4.2BJ	**6.6J**	5.9BJ	**8.6BJ**	**12.6J**	**17.8J**	1.3B	2.9BJ	6BJ
Barium	NS	14.7BJ	23.3BJ	15.3BJ	13BJ	11.3BJ	24.3BJ	20.6BJ	12.9BJ	12BJ	3.5B	7.8BJ	16.2BJ
Beryllium	NS	0.35BJ	0.53BJ	0.43BJ	0.23BJ	0.26BJ	0.39BJ	0.49BJ	0.34BJ	0.27BJ	ND	0.2BJ	0.48BJ
Cadmium	6	0.88BJ	0.34BJ	0.73BJ	0.32BJ	0.23BJ	ND	0.75BJ	ND	ND	ND	ND	0.41BJ
Calcium	NS	2400BJ	3580BJ	2710BJ	2000BJ	1720BJ	8680J	4310BJ	3870BJ	3020BJ	566B	1260BJ	4110BJ
Chromium	26	**37.2J**	**54.9J**	**47.2J**	**27.1J**	23.3J	**49.3J**	**58.6J**	**32.3J**	**30.9J**	8.2	21.1J	**51.2J**

Table 4-19
Inorganic Analyte Results in Wetland Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SDW 007B	SDW 008A	SDW 008B	SDW 009A	SDW 009B	SDW 010A	SDW 010B	SDW 011A	SDW 011B	SDW 012A	SDW 012B	SDW 013A
Cobalt	NS	3.1BJ	5.4BJ	4.3BJ	2.4BJ	2.4BJ	3.3BJ	4.2BJ	3.3BJ	2.8 BJ	0.61B	1.8BJ	3.4BJ
Copper	16	**29.7J**	**77.2J**	**72.2J**	**36.3J**	**24.2J**	**64.1J**	**81.1J**	**41.3J**	**26.8BJ**	12.5J	**31.1J**	**71.8J**
Iron	20,000	13100	19100J	14500J	7030J	8820J	14100J	15500J	15400J	14200J	3040	7720J	15300J
Lead	31	**59.5J**	**103J**	**131J**	**54.9J**	**56.5J**	**91.1J**	**119J**	**90.1J**	**87.1J**	17.8J	**49J**	**107J**
Magnesium	NS	3430J	6210J	4640J	3860J	3410J	5130J	5840J	4030BJ	3030BJ	971B	2310J	5430J
Manganese	460	90.1J	**608J**	89.8J	79.5J	62.8J	264J	139J	69.1J	52.3J	43.8	62.3J	131J
Mercury	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12BJ	**0.33BJ**
Nickel	16	12.7BJ	**21.1BJ**	**26.2BJ**	10.5BJ	10.8BJ	**16.9BJ**	**22.2BJ**	**16.8BJ**	**15.5BJ**	3.3B	9.2BJ	**19.1BJ**
Potassium	NS	1380BJ	3100BJ	2190BJ	2030BJ	1720BJ	2450BJ	2650BJ	1380BJ	1120BJ	477B	1130BJ	2240BJ
Selenium	NS	3.9J	2.6BJ	2.7BJ	2.1BJ	1.8BJ	3.6BJ	ND	3.5BJ	ND	ND	ND	ND
Silver	1	ND	**1.2BJ**	0.73BJ	ND	ND	**1.2BJ**	1BJ	0.88BJ	1BJ	ND	0.38BJ	0.88BJ
Sodium	NS	5350J	15600J	13400J	12900J	11500J	12700J	11100J	6880J	6000J	2830J	6010J	9960J
Thallium	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	NS	29.8BJ	38.2J	43J	21.4BJ	20.1BJ	27BJ	38BJ	41.8BJ	31.5BJ	6.2B	17.4BJ	29.3BJ
Zinc	120	50.1J	82J	117J	35.9J	37.5J	97.7J	77.7J	67.3J	61.7J	34.6	43.9J	96.1J
Cyanide	NS	0.29BJ	0.73BJ	ND	ND	0.2BJ	0.38BJ	1.2BJ	ND	0.34BJ	0.14BJ	0.2BJ	0.57BJ

Table 4-19
Inorganic Analyte Results in Wetland Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	**Criteria (mg/Kg)**	**SDW 013B**	**SDW 014A**	**SDW 014B**	**SDW 015A**	**SDW 015B**							
Aluminum	NS	3910J	5700J	R	7530J	6260J							
Antimony	2	ND	**4.3BJ**	R	**2.9BJ**	ND							
Arsenic	6	3.4BJ	5.3BJ	R	5BJ	**6.2BJ**							
Barium	NS	8.3BJ	14.1BJ	R	15.2BJ	13.8BJ							
Beryllium	NS	0.23BJ	0.39BJ	R	0.47BJ	0.39BJ							
Cadmium	6	0.23BJ	ND	R	ND	0.33BJ							
Calcium	NS	2180BJ	4810BJ	R	3590BJ	3840BJ							
Chromium	26	25.6J	**46.6J**	R	**51.8J**	**45.7J**							
Cobalt	NS	1.7BJ	2BJ	R	2.9BJ	2.2BJ							
Copper	16	**33.3J**	**65.3J**	R	**68.7J**	**54J**							
Iron	20,000	8110J	13600J	R	11400J	17100J							
Lead	31	**52.4J**	**104J**	R	**119J**	**104J**							
Magnesium	NS	2400BJ	4820BJ	R	4900J	4460BJ							
Manganese	460	66.1J	142J	R	118J	81.5J							
Mercury	0.15	0.15BJ	ND	R	**0.29BJ**	**0.25BJ**							
Nickel	16	9.6BJ	**16.3BJ**	R	**17.5BJ**	**17BJ**							
Potassium	NS	1020BJ	1680BJ	R	2050BJ	1680BJ							

Table 4-19
Inorganic Analyte Results in Wetland Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Inorganic Analyte	Criteria (mg/Kg)	SDW 013B	SDW 014A	SDW 014B	SDW 015A	SDW 015B							
Selenium	NS	ND	ND	R	ND	ND							
Silver	1	0.49BJ	ND	R	0.9BJ	**1.1BJ**							
Sodium	NS	4100J	6050BJ	R	9390J	8980J							
Thallium	NS	ND	ND	R	ND	ND							
Vanadium	NS	14.3BJ	24.2BJ	R	31.2BJ	26.8BJ							
Zinc	120	47.7J	73.1J	R	63.2J	74.4J							
Cyanide	NS	0.16BJ	0.61BJ	R	0.42BJ	0.48BJ							

Units: milligrams/kilogram (mg/Kg)

Bold = exceeds screening criteria

Abbreviations: ND = non-detect; B = detected between contract required detection limit and instrument detection limit; J = estimated value; D = diluted sample; R = rejected data

Table 4-20
Compound and Analyte Results in Storm Drain Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	SDS 001	SDS 002	SDS 003	SDS 004	SDS 005	SDS 006	SDS 007	SDS 008	SDS 009	SDS 010	SDS 011	SDS 012	SDS 013
Volatile Organic Compounds													
Trichlorofluoromethane	ND	ND	ND	ND	1 J	4 J	6 J	4 J	2 J	8 J	9 J	1 J	ND
Acetone	ND	ND	ND	ND	ND	ND	6 J	ND	ND	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3 J
Methyl acetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10 J	ND
Chloroform	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	20 J	ND	ND	7 J
Cyclohexane	ND	ND	ND	26	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metylcyclohexane	ND	ND	ND	64	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7 J	ND	100
Methyl tert butyl ether	ND	ND	ND	73	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	110	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	320	2 J	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ND	ND	ND	8 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds													
Benzaldehyde	1200J	ND	520J	ND	120J	260J	700J	190J	ND	ND	ND	ND	ND
4-Methylphenol	ND	ND	ND	160J	100J	ND	ND	ND	ND	ND	ND	20J	ND

Table 4-20
Compound and Analyte Results in Storm Drain Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	SDS 001	SDS 002	SDS 003	SDS 004	SDS 005	SDS 006	SDS 007	SDS 008	SDS 009	SDS 010	SDS 011	SDS 012	SDS 013
Naphthalene	130J	190J	410J	5300	ND	190J	47J	ND	ND	ND	ND	24J	ND
2-Methylnaphthalene	ND	180J	730J	5900	ND	180J	52J	ND	ND	ND	ND	57J	ND
1,1'-Biphenyl	ND	ND	240J	100J	ND	55J	ND	ND	ND	ND	ND	29J	ND
Acenaphthylene	ND	150J	ND	ND	ND	44J	81J	ND	ND	390J	ND	ND	ND
Acenaphthene	240J	49J	2200J	50J	ND	570J	230J	150J	67J	1200J	1000J	210J	270J
Dibenzofuran	ND	ND	1300J	ND	ND	390J	160J	81J	45J	720J	670J	110J	160 J
Fluorene	250J	150J	2400J	83J	ND	690J	300J	ND	97J	1900J	1300J	230J	390J
Phenanthrene	3700	430J	19000	340J	170J	4600	4300	2200	1300	23000J	10000J	1900	3500
Anthracene	580J	250J	3700	72J	ND	880	620J	430J	170J	4300J	1500J	340J	550J
Carbazole	460J	100J	3100	57J	ND	700J	730J	240J	180J	3000J	950J	240J	500J
Fluoranthene	7500	360J	23000D	650J	230J	5600	7800D	3700	2100	40000J D	14000J	2100	4900
Pyrene	6000	340J	17000	560J	200J	4400	6400	3200	1700	35000J	11000J	1700	3800
Benzo(a)anthracene	2900	160J	8900	250J	89J	2100	2800	1700	800	17000J	4800J	770	1600J
Chrysene	3300	190J	10000	370J	150J	2400	3700	1900	1100	20000J	6800J	830	2000J
bis(2-ethylnexyl)phthalat	ND	ND	ND	ND	ND	ND	ND	ND	ND	2200J	1600J	50J	230J
Benzo(b)fluoranthene	3300	160J	7600	330J	98J	3800	3200	1400	1100	21000J	5900J	780	1900J
Benzo(k)fluoranthene	2300J	100J	8100	210J	91J	ND	2700	1300	650J	16000J	4600J	530	1300 J

Table 4-20
Compound and Analyte Results in Storm Drain Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	SDS 001	SDS 002	SDS 003	SDS 004	SDS 005	SDS 006	SDS 007	SDS 008	SDS 009	SDS 010	SDS 011	SDS 012	SDS 013
Benzo(a)pyrene	2900	130J	8600	270J	90J	2100	3100	1500	870	16000J	4700J	640	1500J
Indeno(1,2,3-cd)pyrene	2100J	83J	5600	180J	60J	1400	1900	980	590J	11000J	3200J	440	1000J
Dibenz(a,h)anthracene	910J	ND	2400J	69J	ND	620J	840J	480J	280J	5200J	1500J	230J	540J
Benzo(g,h,i)perylene	2400J	95J	6400	220J	86J	1500	2200	970	620J	12000J	3300J	490	1100J
Pesticides/PCBs													
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13J	ND	ND
Dieldrin	3.7J	ND	ND	ND	ND	ND	ND	ND	ND	20J	13J	ND	ND
4,4'DDE	110DE	ND	ND	ND	ND	ND	ND	ND	ND	71J	90J	4.7J	5.4J
Endrin	ND	ND	ND	2.3J	ND	ND	2J	1.5J	ND	ND	ND	4.5J	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	2.4J	ND	ND	ND	ND
4,4'DDD	90J	ND	ND	ND	ND	ND	ND	ND	ND	71J	15J	5.8	22J
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	1.7J	ND	ND	ND	ND
4,4'DDT	550DJ	17J	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.6J	ND
Methoxychlor	ND	ND	ND	20J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	4.8J	ND	ND	ND	ND	ND	ND	ND	12	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.5J	4.4J	ND	ND
alpha-Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND	80J	11J	ND	ND

Table 4-20
Compound and Analyte Results in Storm Drain Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	SDS 001	SDS 002	SDS 003	SDS 004	SDS 005	SDS 006	SDS 007	SDS 008	SDS 009	SDS 010	SDS 011	SDS 012	SDS 013
gamma Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND	70J	ND	12	13
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	210J	ND	ND
Aroclor-1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	360J	ND	ND
Inorganic Analytes													
Aluminum	7880	1040	2690	2420	1380	2000	3600	1750	1240	9950J	10500J	581	2410
Arsenic	**8**	1.9B	3.5	1.6B	2.3B	ND	2.3B	1.6B	1.5B	5.8J	6.6BJ	ND	2.2B
Barium	46B	4.9B	21B	10.1B	8B	10B	17.2B	7.2B	5.3B	54.3BJ	41.3BJ	2.6B	9.4B
Beryllium	0.45B	0.1B	0.16B	0.14B	0.09B	0.09B	0.21B	0.1B	0.09B	0.58BJ	0.51BJ	0.02B	0.1B
Cadmium	0.44B	ND	0.23B	ND	ND	ND	0.31B	ND	ND	0.7BJ	1BJ	ND	ND
Calcium	11400	18700	16100	14600	1590	15300	18300	15800	31200	17400J	21100J	1560	1750
Chromium	39.6J	3.3J	6.4J	7.2J	7.3J	3.7J	6.6J	4.6J	2.4J	17.4J	24.1J	2.5J	2.6B
Cobalt	6.4B	1.7B	2.9B	2B	1.5B	1.2B	3.1B	1.2B	1.5B	6.3BJ	6.3BJ	0.48B	2.9B
Copper	30.7	6	15.8	10.7	9.9	6.4	12.8	5.2B	5.4B	76.4J	38.7J	5.6B	39.6
Iron	13800	2670	5590	3440	2630	2920	6360	3740	3110	12500J	10000J	1450	6190
Lead	86.4	3.7	20.6	44.1	4.9	8.8	67	5.6	6	76.2J	110J	5.8	10.5
Magnesium	5050	11400	9210	8730	765B	4230	10600	9270	18900	8650J	11700J	920B	1080B
Manganese	904	125	730	5103	50.2	111	475	99.7	116	434J	228J	34.7	57.1

Table 4-20
Compound and Analyte Results in Storm Drain Sediment Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	SDS 001	SDS 002	SDS 003	SDS 004	SDS 005	SDS 006	SDS 007	SDS 008	SDS 009	SDS 010	SDS 011	SDS 012	SDS 013
Nickel	20	2.8B	8.1B	5.6B	4.9B	3.7B	12.6	3.3B	2.9B	23.2J	26.8BJ	1.4B	4.1B
Potassium	623BE	150BE	262BE	249BE	133BE	186BE	361BE	175BE	190BE	604BE J	739BE J	53.1BE	181BE
Selenium	ND	ND	ND	ND	ND	ND	2.1	ND	ND	ND	ND	ND	ND
Sodium	101B	58B	183B	ND	110B	98.6B	78.3B	87.9B	66.6B	283BJ	326BJ	ND	320B
Vanadium	49.3	3.3B	16.9	13.7B	7.6B	9.1B	28.6	7.5B	8.9B	53.1J	71.2J	4.2B	14.7
Zinc	126	ND	204	51.8	38.1	50	91	26.7	21.4	228J	318J	15.5	36.3
Cyanide	ND	ND	ND	0.69B	ND	ND	ND	ND	ND	ND	2J	3	ND

Units: VOCs/SVOCs/Pesticides/PCBs - micrograms/kilogram (ug/Kg); Inorganic Analytes - milligrams/kilogram (mg/Kg)
Abbreviations: ND = non-detect; B = detected between contract required detection limit and instrument detection limit; J = estimated value; D = diluted sample; R = rejected data; E = data is estimated due to the presence of interference

Table 4-21
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
Volatile Organic Compounds (ug/L) Screening Criteria - 1,000 ug/L total VOCs										
Chloromethane	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	10	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	5 J	ND	ND	ND	ND	3 J	ND	ND	3 J	2 J
Acetone	43	35	130	140	7 J	44	340	82	23	130
Methylene chloride	2 J	ND	ND	ND	ND	ND	5 J	ND	ND	ND
2-Butanone	14	9 J	15	5 J	3 J	9 J	11	ND	4 J	3 J
Chloroform	26	ND	ND	3 J	ND	ND	24	ND	ND	ND
Toluene	320	32	7 J	5 J	30	180	85	ND	58	120
Tetrachloroethene	5	ND	ND	12	ND	ND	47	ND	5 J	52
Vinyl chloride	ND	ND	ND	4 J	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	ND	ND	ND	140	ND	ND	29	170	ND	ND
Trichloroethene	ND	ND	ND	9 J	ND	ND	190	12	ND	ND
Methyl-Tert-Butyl-Ether	ND	ND	ND	ND	61	ND	ND	ND	75	ND
Cyclohexane	ND	ND	ND	ND	3 J	ND	ND	ND	3 J	ND
Methylcyclohexane	ND	ND	ND	ND	3 J	ND	ND	ND	4 J	ND
ethylbenzene	ND	ND	ND	ND	5 J	ND	ND	ND	ND	11

Table 4-21
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
m,p-xylene	ND	ND	ND	ND	25	ND	ND	ND	10	41
o-xylene	ND	ND	ND	ND	11	ND	ND	ND	7	11
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	5 J	ND	ND	ND	ND
Total VOCs	445	76	152	318	148	241	731	264	192	370
Semi-Volatile Organic Compounds										
Benzaldehyde	21	9J	ND	4.8	ND	62	ND	4J	ND	ND
Phenol	18J	27	6.5	11	22	51	37	8.3	79	20J
4-Methylphenol	220	ND	69	29	94	580	200	12	340	220
Diethylphthalate	5J	12J	5.9	50	ND	17J	6.7	13	ND	5.4
Di-n-butylphthalate	ND	ND	4	4J	ND	ND	4.6	ND	ND	2J
Fluoranthene	ND	ND	1J	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	4J	14	ND	ND	2J	ND	ND	ND
Bis(2-ethylhexyl)phthalate	66	26	12	28	9J	ND	20	7.8	12J	8.4
Di-n-octylphthalate	ND	ND	ND	4J	ND	ND	ND	ND	ND	ND
Pesticides/PCBs - None Detected										
Inorganic Analytes (ug/L)										
Aluminum	220J	410J	242J	684J	378J	4450J	604J	376J	213J	194BJ
Antimony	ND	ND	ND	ND	ND	ND	8.9B	ND	ND	ND

Table 4-21
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
Barium	6.7B	6.5B	4.9B	6.5B	7.4B	82.3B	16.7B	11.7B	25B	10.1B
Beryllium	ND	ND	ND	ND	ND	0.2B	0.37B	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	0.47B	0.74B	ND	0.66B	0.37B
Calcium	23,100	18,800	19,800	20,700	19,800	57,500	22300	18000	28800	20800
Chromium	1.7B	3.6B	1.1B	3.9B	3.3B	42J	7.1B	0.73B	1.5B	2.4B
Cobalt	ND	ND	ND	ND	ND	1.6B	6.2B	ND	ND	ND
Copper	183	92.7	33.9	44.9	88.5	157	44.6	56.6	90.9	50.8
Iron	433J	2200J	400J	355J	628J	6770J	700J	443J	476J	354J
Lead	ND	3	ND	ND	11.8	17	2.9B	ND	ND	6
Magnesium	5520	4770B	4670B	5130	5800	8330	7230	4930B	7090	4840B
Manganese	25.5EJ	18.6EJ	18.3EJ	13.6BE	19.2EJ	136EJ	30.5EJ	26.4EJ	42.9EJ	19.6EJ
Mercury	ND	0.15BJ	0.31J	ND	ND	0.56	0.13BJ	ND	ND	ND
Nickel	ND	4.3B	ND	2B	1.5B	11.7B	6.9B	ND	ND	1.7B
Potassium	13800EJ	8,510EJ	7,250EJ	9,880EJ	19100EJ	20300EJ	12100EJ	5990EJ	37300EJ	18300EJ
Silver	ND	ND	1.1B	ND	ND	1.2B	7.2B	ND	ND	ND
Sodium	68000EJ	26500EJ	49600EJ	63700EJ	29800EJ	53000EJ	63200EJ	14600EJ	65600EJ	42900EJ
Vanadium	ND	ND	ND	ND	ND	ND	7.5B	0.95B	0.75B	ND
Zinc	57.6	75.8	24J	34.9	93.4	1250	42.9	20.2	90.8	66

Table 4-21
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
Cyanide	R	R	R	R	R	R	R	R	R	R

Abbreviations: ug/L = micrograms per liter; VOC = volatile organic compounds; ND = non-detect; J = estimated value; E = Estimated value because of interference; R = rejected data
Locations:
WW-1 - 256 Lake Avenue (Gene's French Cleaners)
WW-2 - 483 Lake Avenue (Avenue Cleaners)
WW-3 - 561 Lake Avenue (St. James Cleaners)
WW-4 - No wastewater present, so no sample was collected at 617-621 Lake Avenue (Sal's Auto Body)
WW-5 - 556 North Country Road (Polo French Cleaners)
WW-6 - Edgewood Avenue (Smithtown School District Administration Building)
WW-7 - 400 North Country Road (Four Seasons Cesspool)
WW-8 - 430-11 North Country Road (North Country Cleaners)
WW-9 - 437 North Country Road (The Cleaners)
WW-10 - 525 North Country Road (St. James Exxon Center)
WW-11 - 545 North Country Road (Penney's St. James Garage)

Table 4-22
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Volatile Organic Compounds (ug/Kg)										
Acetone	**	470	160	14	280	34	2,800	2,600	43	62
2-Butanone	NS	110J	18	3 J	98	3 J	1,200	320	11 J	16 J
Toluene	3,000	1,500	7 J	5 J	730	11 J	**28,000**	**30,000**	220	110
Tetrachloroethene	2,800	29 J	ND	440	15 J	ND	48 J	1,100	ND	41
Carbon disulfide	NS	ND	5 J	ND	750	ND	ND	ND	13 J	17 J
Methyl acetate	NS	ND	4 J	ND	ND	ND	160,000	ND	ND	5 J
Trichloroethene	1,400	ND	ND	3 J	ND	ND	ND	440	ND	ND
Cis-1,2-dichloroethene	600	ND	ND	ND	200	ND	ND	490	ND	15 J
1,4-Dichlorobenzene	15,000	ND	ND	ND	3,400	ND	2,100	1,600	ND	ND
Methyl-Tert-Butyl-Ether	1,200	ND	ND	ND	ND	15	ND	ND	29	ND
Ethylbenzene	11,000	ND	ND	ND	ND	5 J	160 J	110 J	110	10 J
m,p-xylene	2,400*	ND	ND	ND	ND	25	230	290	470	42
o-xylene	2,400*	ND	ND	ND	ND	11 J	91 J	290	190	ND
1,1,1-Trichloroethane	1,600	ND	ND	ND	ND	ND	72 J	ND	ND	ND
Chloroform	600	ND	ND	ND	ND	ND	110 J	250 J	ND	ND
Methylcyclohexane	NS	ND	ND	ND	ND	ND	ND	160 J	15	5 J

Table 4-22
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Chlorobenzene	3,400	ND	ND	ND	ND	ND	ND	63 J	ND	ND
Isopropylbenzene	5,200	ND	ND	ND	ND	ND	ND	500	8 J	ND
Cyclohexane	NS	ND	ND	ND	ND	ND	ND	ND	8 J	ND
Semi-Volatile Organic Compounds (ug/Kg)										
Benzaldehyde	NS	2,800J	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	NS	ND	ND	ND	ND	ND	45,000	ND	ND	7,000J
4-Chloroaniline	NS	ND	ND	ND	ND	ND	62,000J	ND	ND	ND
Diethylphthalate	NS	ND	280J	220J	ND	260J	18,000J	ND	ND	ND
Di-n-butylphthalate	NS	ND	240J	270J	ND	300J	9,100J	ND	ND	ND
Butylbenzylphthalate	NS	ND	ND	ND	ND	ND	25,000J	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	45,000	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (ug/Kg)										
Dieldrin	NS	ND	ND	8.6J	ND	ND	ND	ND	ND	ND
4,4'DDE	NS	ND	ND	130	ND	ND	ND	ND	ND	ND
4,4'DDD	NS	ND	ND	430	ND	ND	ND	ND	ND	ND
4,4'DDT	NS	ND	ND	430	ND	ND	ND	ND	ND	ND
alpha-Chlordane	NS	ND	ND	3.7	ND	ND	ND	ND	ND	ND

Table 4-22
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Inorganic Analytes (mg/Kg)										
Aluminum	NS	3040J	694	1730	3480	697	1500J	346J	2400	244J
Antimony	NS	1.4BJ	ND	ND	ND	ND	4BJ	ND	ND	ND
Arsenic	25	ND	ND	ND	1.9B	ND	ND	ND	ND	ND
Barium	NS	24BJ	4.1B	15.9B	22.7B	1.7B	219J	168BJ	9.4B	2.8B
Beryllium	8	0.08BJ	0.05B	0.09B	0.06B	0.04B	ND	ND	0.11B	ND
Cadmium	10	0.38BJ	ND	0.11B	1.3B	ND	1.6BJ	0.88BJ	0.12B	0.09B
Calcium	NS	1950BJ	297BJ	6740J	21000J	108BJ	1010BJ	1090BJ	897BJ	181BJ
Chromium	100	9.6J	2.8	6.9	6.1	1.6B	13.9J	5.5BJ	3.3	1.3B
Cobalt	NS	1.5BJ	0.36B	1.1B	1B	0.51B	ND	ND	0.9B	ND
Copper	500	442EJ	12.7EJ	8.9EJ	95EJ	7.9EJ	**659EJ**	411EJ	16.1EJ	8.6EJ
Iron	NS	8540J	1910	3700	3260	2500	1600J	379J	2940	584
Lead	400	21J	2.5	12.2J	11.7J	1.7	61.6J	30.5J	7.6J	2.8J
Magnesium	NS	711BJ	243BJ	3720J	12500J	203BJ	285BJ	226BJ	601BJ	74.8BJ
Manganese	NS	28NJ	5.6NJ	45.4NJ	24NJ	29.1NJ	11.9NJ	3.8BNJ	25NJ	3.4BNJ
Mercury	2	0.14BJ	**4.1**	ND	0.24	ND	**2.1J**	0.94J	ND	ND
Nickel	1,000	5BJ	0.99B	3B	3.7B	1.2B	6.4BJ	3.8BJ	2.2B	0.6B

Table 4-22
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Potassium	NS	292BJ	129B	155B	200B	126B	278BJ	299BJ	192B	130B
Selenium	NS	ND	ND	ND	ND	ND	6.6J	ND	ND	ND
Silver	100	0.61BJ	1.7B	0.21B	0.41B	0.14B	4.5BJ	8.1BJ	ND	ND
Sodium	NS	685BJ	323B	236B	403B	257B	1130BJ	1810BJ	314B	355B
Vanadium	NS	11.9BJ	3.5B	4.9B	5.4B	2.2B	4.2BJ	1.5BJ	4.8B	1.1B
Zinc	NS	208J	17.1	32	51.4	9.3	310J	74.7J	20.4	16.9J

Abbreviations: NS = no standard; ug/Kg = micrograms per kilogram; mg/Kg = milligrams per kilogram; ND = non-detect; J = estimated value; B = result between instrument detection limit and contract required detection limit; E = data estimated due to interference

Locations:
SL-1 - 256 Lake Avenue (Gene's French Cleaners)
SL-2 - No sample collected at 483 Lake Avenue (Avenue Cleaners)
SL-3 - 561 Lake Avenue (St. James Cleaners)
SL-4 - No wastewater present, so no sample was collected at 617-621 Lake Avenue (Sal's Auto Body)
SL-5 - 556 North Country Road (Polo French Cleaners)
SL-6 - Edgewood Avenue (Smiththown School District Administration Building)
SL-7 - 400 North Country Road (Four Seasons Cesspool)
SL-8 - 430-11 North Country Road (North Country Cleaners)
SL-9 - No sample collected at 437 North Country Road (The Cleaners)
SL-10 - 525 North Country Road (St. James Exxon Center)
SL-11 - 545 North Country Road (Penney's St. James Garage)

Table 5-1
Field Measured Groundwater Parameters
Smithtown Groundwater Contamination Site
Smithtown, New York

Well	Pump Depth (ft bgs)	Pump Depth (msl)	pH (SU)	Specific Conduct. (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Tempera-ture (°C)	Redox Potential (mV)
MW-1S-R1	105	-2.25	6.03	0.253	10.0	11.14	14.23	174
MW-1S-R2	105	-2.25	6.11	0.221	20.1	10.90	15.30	209.4
MW-1I-R1	145	-45.18	6.54	0.077	18.1	7.05	11.23	81
MW-1I-R2	145	-45.18	6.44	0.061	9	0.65	12.5	201
MW-2-R1	185	-17.57	6.14	0.250	38.6	8.85	14.69	164
MW-2-R2	185	-17.57	5.82	0.171	8	10.2	12.5	241
MW-3S-R1	172	-3.83	5.53	0.167	36.3	8.91	12.4	208
MW-3S-R2	172	-3.83	5.77	0.163	1.91	11.24	14.76	208.7
MW-3I-R1	202	-34.47	5.89	0.249	20.6	8.55	12.4	215
MW-3I-R2	202	-34.47	5.90	0.266	29	9.92	13.34	230
MW-4S-R1	175	3.7	6.28	0.237	109	7.48	13.8	188
MW-4S-R2	175	3.7	6.32	0.257	46	10.78	16.08	165.1
MW-4I-R1	205	-26.85	5.50	0.229	70.2	11.68	12.47	210
MW-4I-R2	205	-26.85	5.63	0.233	31	10.7	13.7	236

Table 5-1
Field Measured Groundwater Parameters
Smithtown Groundwater Contamination Site
Smithtown, New York

Well	Pump Depth (ft bgs)	Pump Depth (msl)	pH (SU)	Specific Conduct. (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Tempera-ture (°C)	Redox Potential (mV)
MW-4D-R1	245	-66.64	6.74	0.236	80.2	11.54	12.94	166
MW-4D-R2	245	-66.64	6.83	0.205	4.91	11.49	13.32	162.0
MW-5S-R1	45	-32.16	7.33	0.430	10.8	8.58	11.10	127
MW-5S-R2	45	-32.16	6.93	0.343	15	7.62	12.10	174
MW-5I-R1	115	-101.16	6.15	0.364	169	6.68	10.1	256
MW-5I-R2	115	-101.16	6.18	0.325	84.7	8.42	12.12	179.2
MW-5D-R1	165	-151.69	5.78	0.341	95.3	7.74	10.7	285
MW-5D-R2	165	-151.69	5.86	0.307	50	7.46	14.49	229.6
MW-6S-R1	193	-17.36	5.9	0.254	159	7.07	13.7	246
MW-6S-R2	193	-17.36	5.92	0.224	8.3	8.20	13.7	226
MW-6I-R1	225	-49.55	8.07	0.242	116.0	8.21	12.54	84
MW-6I-R2	225	-49.55	7.78	0.234	280	1.15	11.8	162
MW-7-R2	129	25.15	5.54	0.261	12.7	10.65	18.86	261.3
MW-A-R1	133	0.58	6.17	0.189	4.3	9.30	15.51	160
MW-A-R2	133	0.58	6.39	0.172	77.3	9.20	15.40	177.8

Table 5-1
Field Measured Groundwater Parameters
Smithtown Groundwater Contamination Site
Smithtown, New York

Well	Pump Depth (ft bgs)	Pump Depth (msl)	pH (SU)	Specific Conduct. (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Tempera-ture (°C)	Redox Potential (mV)
MW-C-R1	170	-8.49	5.68	0.203	20.2	7.58	15.6	232
MW-C-R2	170	-8.49	5.90	0.207	16.9	11.34	12.98	196.0
MW-D-R1	90	4.17	6.98	0.175	26.6	6.25	12.51	59
MW-D-R2	90	4.17	6.81	0.140	9.7	1.52	12.2	191
MW-E-R1	225	-63.87	7.56	0.302	51.6	7.26	12.9	109
MW-E-R2	225	-63.87	7.75	0.293	32.5	9.98	12.93	107.1
MW-F-R1	192	-45.72	8.26	0.242	144	2.11	14.5	156
MW-F-R2	192	-45.72	7.59	0.232	55.9	4.97	16.23	380.2
MW-G-R1	295	-133.93	6.46	0.113	49.5	8.44	12.73	104
MW-G-R2	295	-133.93	6.28	0.081	18	2.33	12.3	168

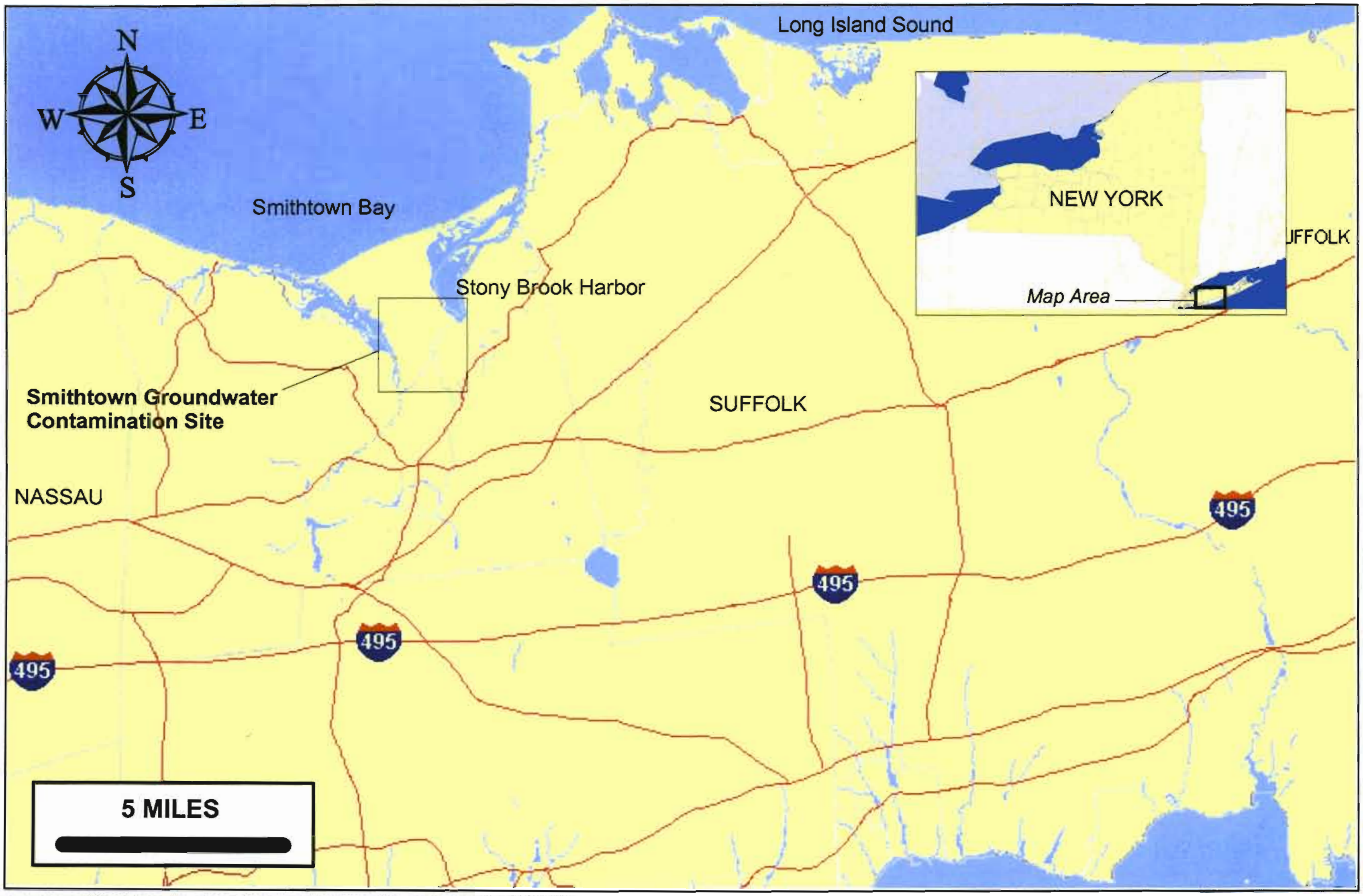
Abbreviations: ft bgs = feet below ground surface; msl = mean sea level; SU = standard units; mS/cm = milliSiemens/centimeter; NTU = Nephelometric Turbidity Units; mg/L = milligrams/liter; °C = degrees centigrade; mV = millivolts

Table 5-2
Fate and Transport Properties for Organic Contaminants
Smithtown Groundwater Contamination Site
Smithtown, New York

CONTAMINANT	Molec. Weight (g/mole)	Water Solubility @25 deg. C (mg/l)	Vapor Pressure @25 deg. C (mm Hg)	Henry's Law Constant (atm-m ^3/mol)	Koc (ml/gm)	log Kow	Kd (cc/gm)	Rf	Adsorption	Volatilization from Water	Mobility
TCL Volatile Organics											
Acetone	58	1.0E+06	2.7E+02	4.0E-05	2.2E+00	-0.2	1.3E-05	1.0E+00	High	High	Low
Chlorobenzene	113	4.7E+02	1.2E+01	3.7E-03	3.3E+02	2.8	2.0E-03	1.0E+00	Low	High	High
Chloroethane	65	5.7E+03	1.0E+03	8.5E-03	1.7E+01	1.4	1.0E-04	1.0E+00	High	High	Low
Chloroform	119	8.2E+03	1.5E+02	2.9E-03	3.1E+01	1.97	1.9E-04	1.0E+00	Low	High	High
1,1-Dichloroethane	99	5.5E+03	1.8E+02	4.3E-03	3.0E+01	1.8	1.8E-04	1.0E+00	Low	High	High
1,1-Dichloroethene	97	2.3E+03	6.0E+02	2.0E-02	6.5E+01	2.1	3.9E-04	1.0E+00	Low	High	High
1,2-Dichloroethane	99	8.5E+03	6.4E+01	9.8E-04	1.4E+01	1.5	8.4E-05	1.0E+00	Low	Moderate	High
1,2-Dichloroethene - cis	97	3.5E+03	2.1E+02	7.6E-03	1.4E+02	1.9	8.4E-04	1.0E+00	Low	High	High
1,2-Dichloroethene - trans	97	6.3E+03	3.2E+02	6.6E-03	1.8E+02	2.1	1.1E-03	1.0E+00	Low	High	High
Ethylbenzene	106	1.5E+02	1.0E+01	6.4E-03	1.1E+03	3.2	6.6E-03	1.0E+00	Low	High	High
Methyl Tert-butyl benzene	88	5.0E-01	2.5E+02	5.9E-04	4.6E+01	1.24	2.8E-04	1.0E+00	Low	Moderate	High
1,1,2,2-Tetrachloroethane	168	2.9E+03	5.0E+00	3.8E-04	1.2E+02	2.4	7.2E-04	1.0E+00	Low	Moderate	High
Tetrachloroethene	166	1.5E+02	1.8E+01	1.8E-02	3.6E+02	2.6	2.2E-03	1.0E+00	Low	High	High
Toluene	92	5.4E+02	2.8E+01	6.4E-03	3.0E+02	2.7	1.8E-03	1.0E+00	High	High	Low
Trichloroethene	131	1.1E+03	5.8E+01	9.1E-03	1.3E+02	2.4	7.8E-04	1.0E+00	Low	High	High
1,1,1-Trichloroethane	133	1.5E+03	1.2E+02	1.4E-02	1.5E+02	2.5	9.0E-04	1.0E+00	Low	High	High
1,1,2-Trichloroethane	133	4.5E+03	3.0E+01	1.2E-03	5.6E+01	2.5	3.4E-04	1.0E+00	Low	High	High
Vinyl Chloride	63	2.7E+03	2.7E+03	8.2E-02	5.7E+01	1.4	3.4E-04	1.0E+00	Low	High	High
Xylenes (Total)	106	2.0E+02	1.0E+01	5.0E-03	2.4E+02	3.3	1.4E-03	1.0E+00	Low	High	High
TCL Semi-Volatile Organics											
Dibenz(a,h)anthrancene	278	5.0E-04	1.0E-10	7.3E-09	7.9E+01	6.8	4.7E-04	1.0E+00	Low	Low	High
Phenanthrene	178	1.2E+00	6.8E-04	2.6E-05	6.2E+01	4.5	3.7E-04	1.0E+00	Low	Moderate	High
Indeno(1,2,3-cd)pyrene	276	6.2E-02	1.0E-10	7.0E-08	8.7E+01	6.2	5.2E-04	1.0E+00	Low	Low	High
Benzo(a)anthracene	228	9.0E-03	1.0E-10	3.4E-09	1.4E+05	5.6	8.4E-01	5.8E+00	Moderate	Low	High
Benzo(k)fluoranthene	252	4.3E-03	5.1E-07	3.9E-05	5.5E+05	6.1	3.3E+00	2.0E+01	High	Moderate	Moderate
Benzo(a)pyrene	252	1.2E-03	5.6E-09	1.6E-06	5.5E+06	6.1	3.3E+01	1.9E+02	High	Moderate	Moderate
Benzo(b)fluoranthene	252	1.4E-02	5.0E-07	1.2E-05	5.5E+05	6.1	3.3E+00	2.0E+01	High	Moderate	Moderate
Bis (2-Ethylhexyl) Phthalate	391	3.4E-01	3.4E-07	2.5E-07	7.6E+04	5.3	4.6E-01	3.6E+00	Low	Moderate	High
VARIABLES											
Fraction Organic Carbon, foc =	0.0%										
Soil Bulk Density, Rho_b =	1.7	gm/cc	(sandy)								
Effective Porosity, Eta_e =	30%										

Table 5-2
Fate and Transport Properties for Organic Contaminants
Smithtown Groundwater Contamination Site
Smithtown, New York

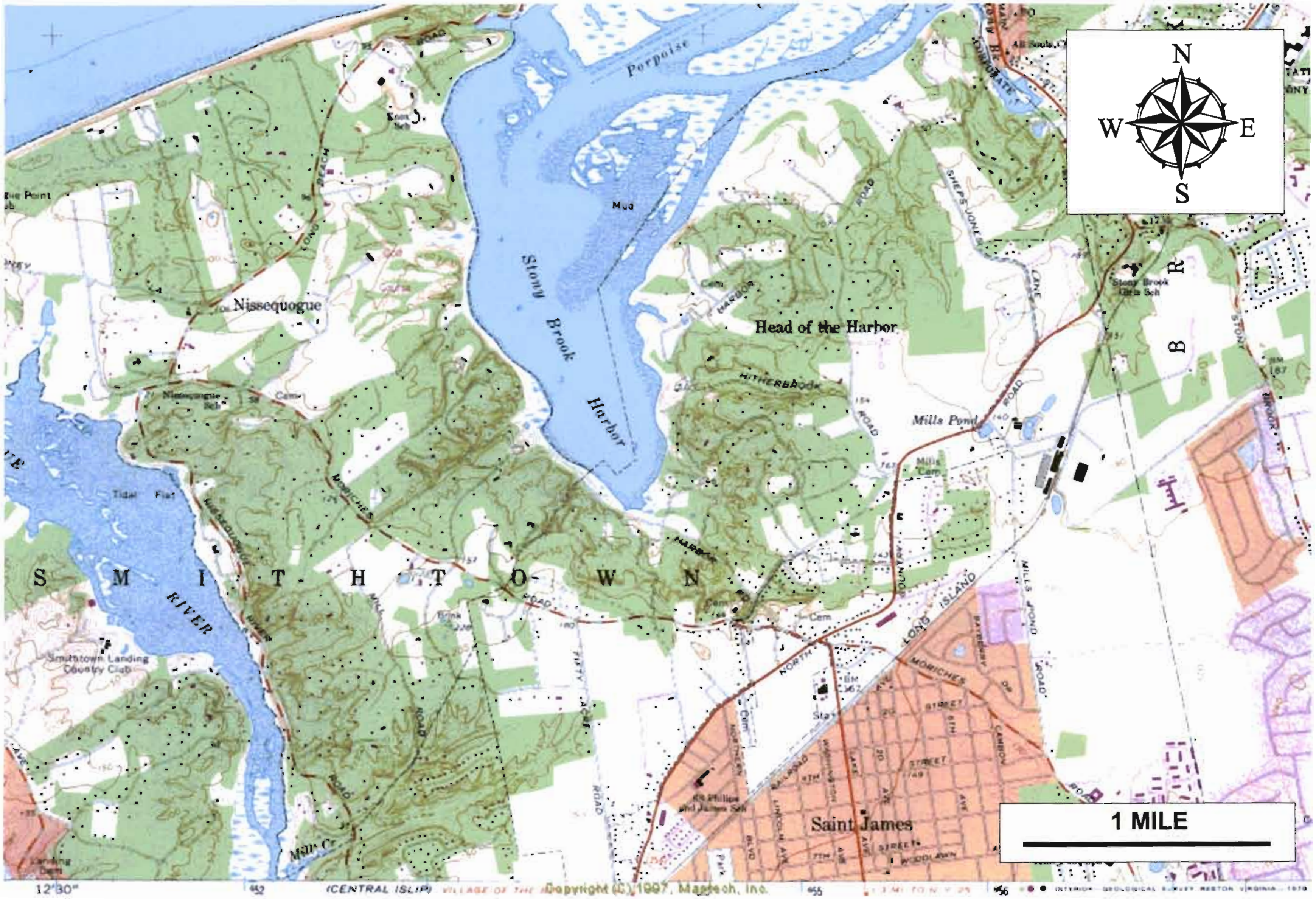
		Water	Vapor								
CONTAMINANT	Molec.	Solubility	Pressure	Henry's Law	Koc	log Kow	Kd	Rf	Adsorption	Volatilization	Mobility
	Weight	@25 deg. C	@25 deg. C	Constant						from Water	
	(g/mole)	(mg/l)	(mm Hg)	(atm-m ^3/mol)	(ml/gm)		(cc/gm)				
Adsorption is	"Low"	if Kd <	0.5								
	"High"	if Kd >	2								
	"Moderate"	if Kd is in-between									
Volatilization from Water is	"Low"	if H <	1.0E-07								
	"High"	if H >	1.0E-03								
	"Moderate"	if H is in-between									
Mobility is	"High"	if Rf <	1.0E+01								
	"Low"	if Rf >	1.0E+03								
	"Moderate"	if Rf is in-between									
NOTATION											
Koc = Soil Organic Carbon/Water Partition Coefficient, cc/gm											
Kow = n-Octanol/Water Partition Coefficient, dimensionless											
Kd = Soil/Water Partition Coefficient [= Koc X foc for organics], cc/gm											
Rf = Retardation Factor = 1 + (Rho_b X Kd / Eta_e), dimensionless											



adapted from NYSDEC Interactive Mapping Gateway: http://www.nysgis.state.ny.us/gateway/index.html

CDM.

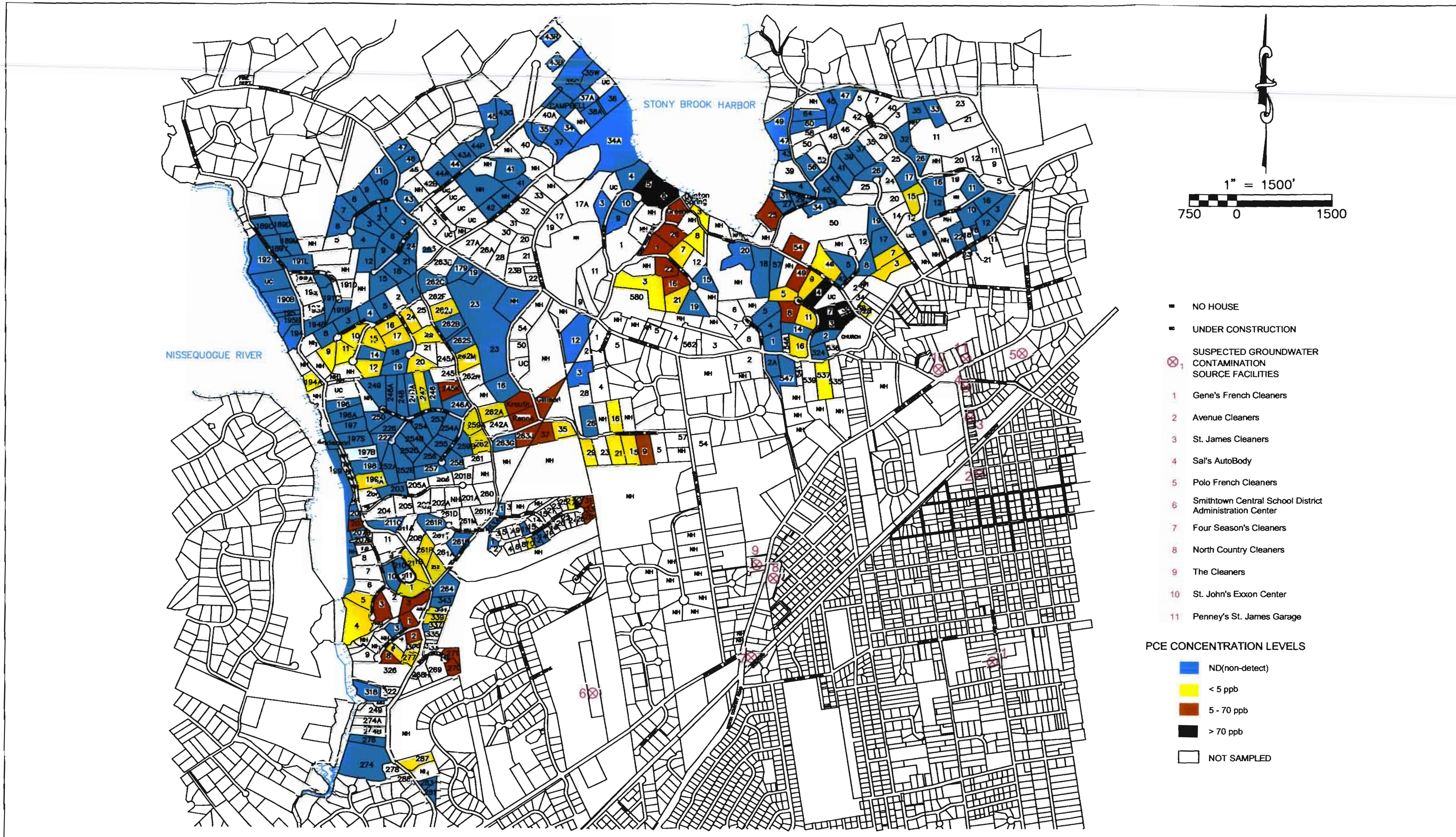
Figure 1-1
Site Location Map
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



from USGS Saint James 7.5 minute Quadrangle, New York, dated 1967

CDM.

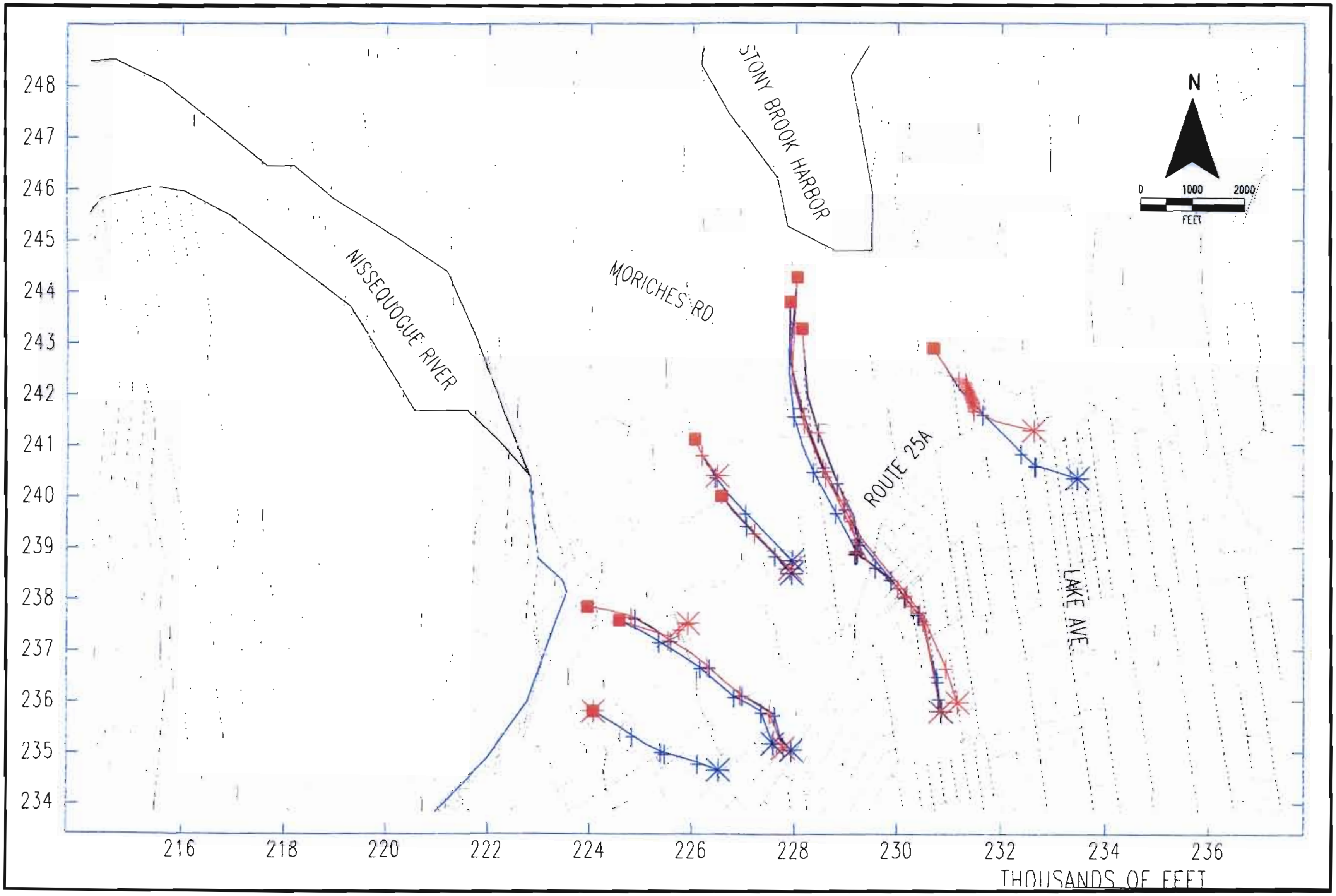
Figure 1-2
Site Map
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 1-3
1998 RESIDENTIAL PCE CONCENTRATION MAP
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

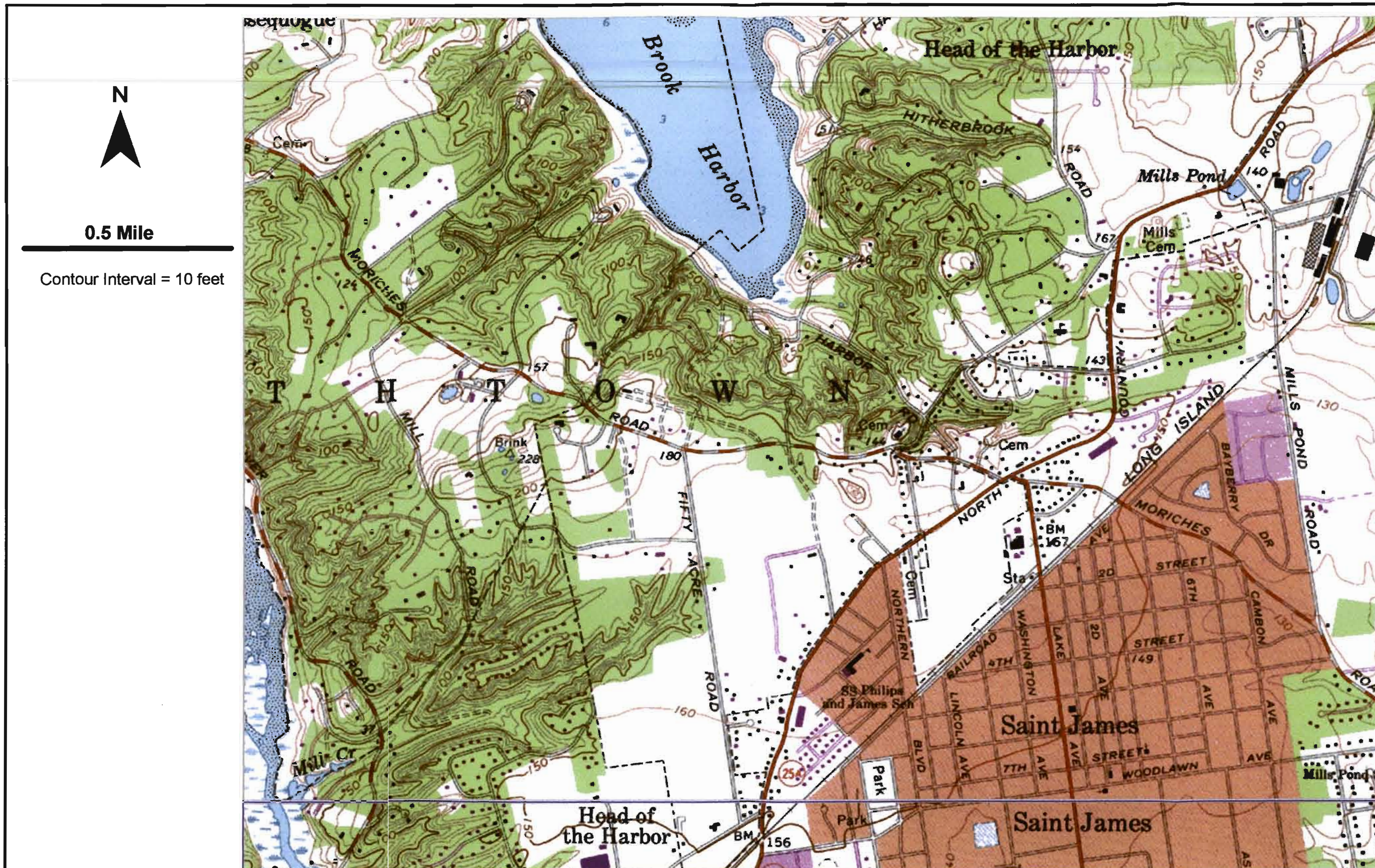


from CDM (2000)

CDM

Note:
Tick marks denote 2 year intervals
Red = 20 feet below water table
Blue = 40 feet below water table

Figure 1-4
Particle Backtracks
from Selected Private Wells
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

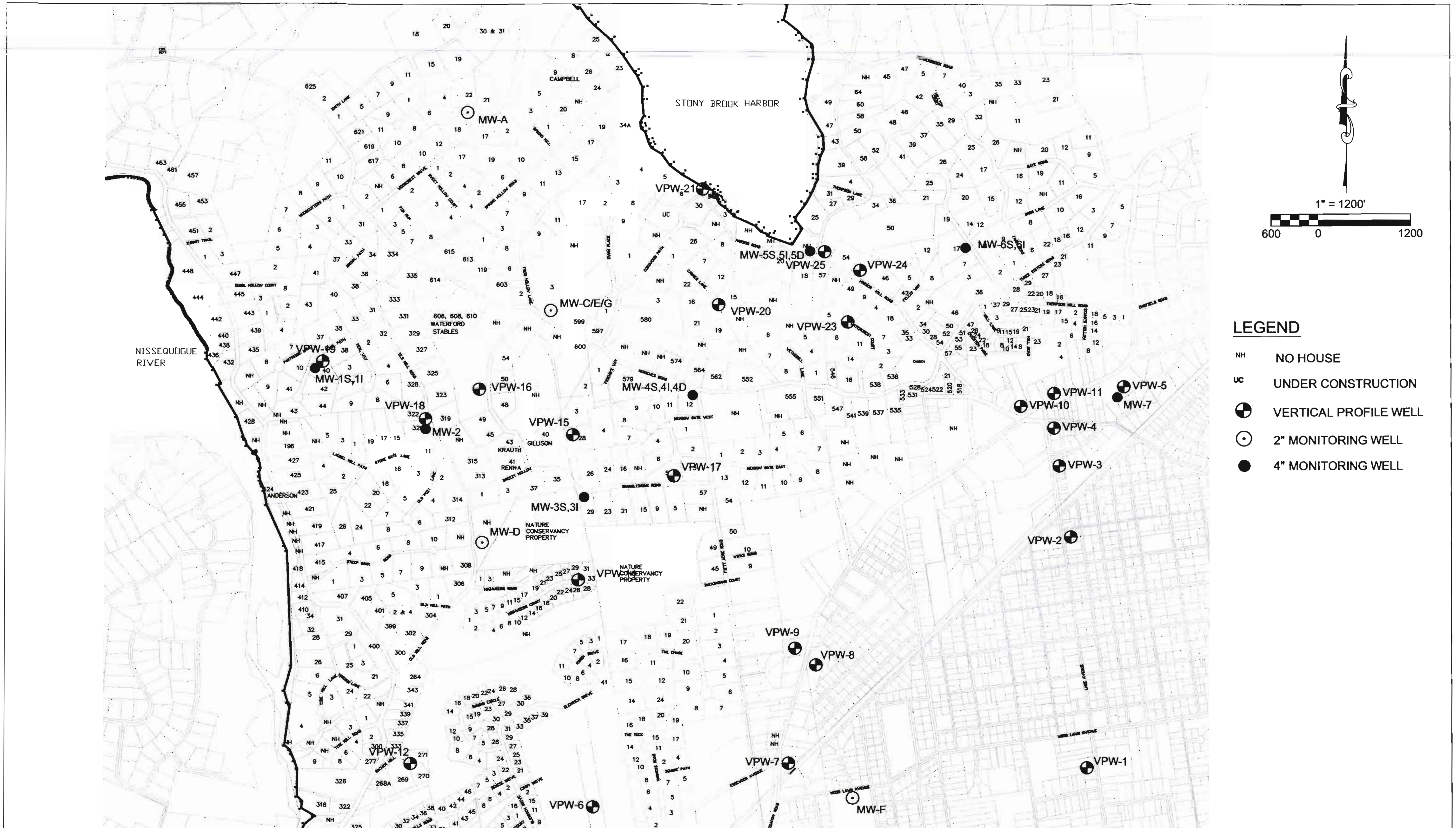


from USGS 1:24,000 scale topographic maps: St. James & Central Islip (both sheets created 1967; revised 1979)

Figure 1-5
Topographic Map of the Smithtown Site

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

CDM



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 2-1
VERTICAL PROFILE WELL/MONITORING WELL LOCATION MAP
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 2-2
SEEP/SPRING SURFACE WATER/SEDIMENT, WETLAND SURFACE WATER/SEDIMENT
SEPTIC SLUDGE/WASTEWATER STORM DRAIN SEDIMENT SAMPLING LOCATIONS
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

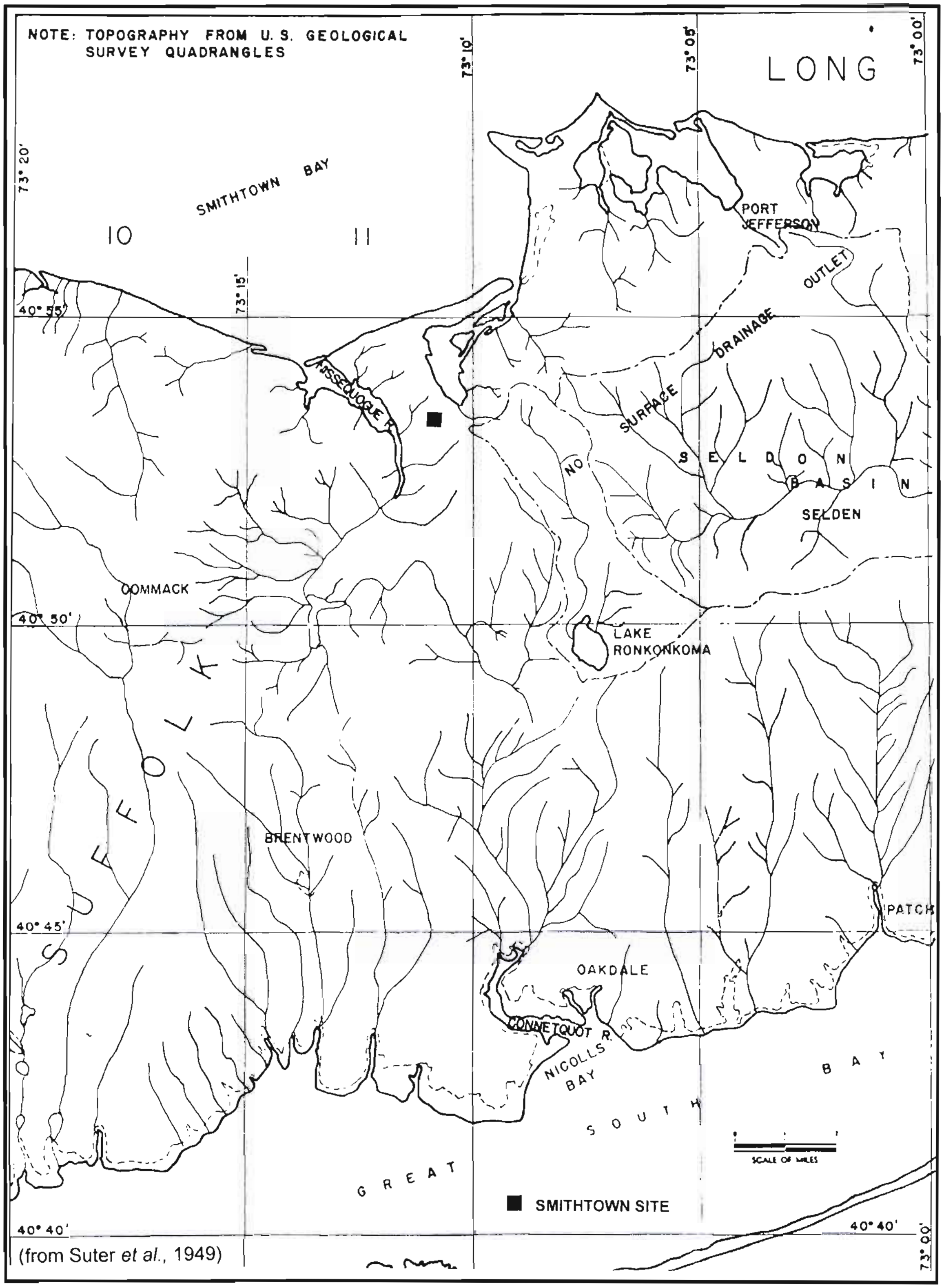
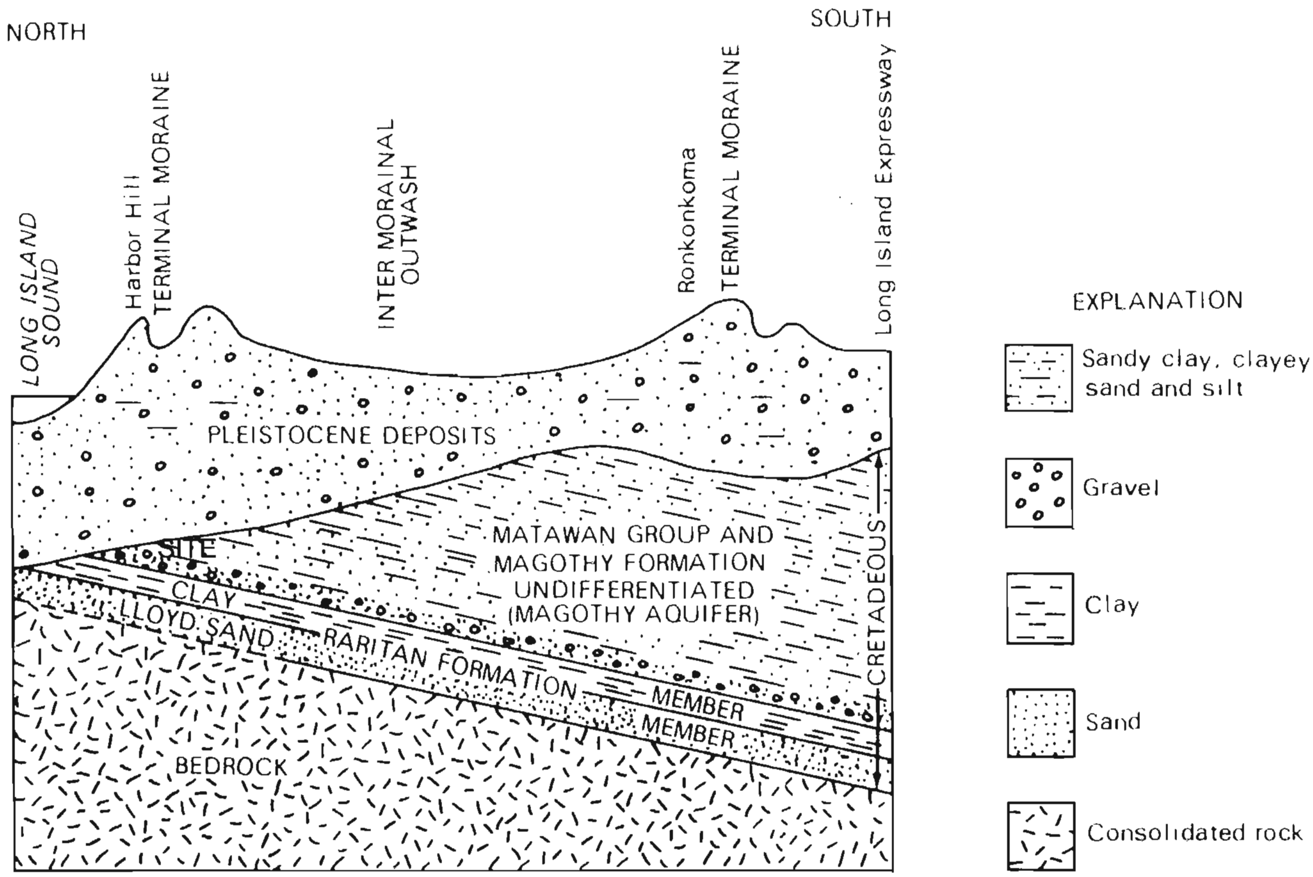


Figure 3-1
Surface Drainage of Suffolk County

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

CDM



(from Cohen et al., 1968)

NOT TO SCALE

CDM

Figure 3-2
Generalized Geologic Cross Section of
North-Central Suffolk County

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

System	Series	Stratigraphic unit	Thickness (feet)	Character of deposits	Water-bearing properties
Quaternary	Recent	Recent deposits Artificial fill, marsh deposits, beach deposits, and surficial soil.	0–20±	Sand, gravel, silt, and clay; organic mud, peat, loam, and shells. Colors are brown, yellow and gray.	Sandy and gravelly beach deposits may locally yield small supplies of fresh to brackish water to wells. Marine silt and clay in north-shore harbors retard salt-water encroachment and confine underlying aquifers.
Quaternary	Pleistocene	Upper Pleistocene deposits.	0–300±	Till composed of unassorted clay, sand, and boulders as ground moraine in area north of Harbor Hill terminal moraine and possibly as buried ground moraine of the Ronkonkoma ice. Outwash deposits of brown well-stratified sand and gravel—predominantly quartzose but containing biotite and other dark minerals and igneous and metamorphic rock fragments—including advance outwash, channel and valley-fill, and outwash-plain deposits. Ice-contact deposits of crudely stratified sand and gravel and isolated masses of till in the Ronkonkoma and Harbor Hill terminal moraines. Glaciolacustrine deposits of brown and gray silt and clay intercalated with outwash deposits in buried valleys.	Till, relatively impermeable; commonly causes perched-water bodies to form locally and impedes recharge from precipitation. Outwash and ice-contact deposits are moderately to highly permeable. Wells screened in outwash deposits generally at depths of less than 250 ft yield as much as 1,700 gpm. Specific capacities of public-supply wells range from 22 to 222 gpm per ft of drawdown. Water is generally fresh and unconfined. Chief source of water for domestic, public-supply, industrial, and irrigation wells in project area. Glaciolacustrine deposits of silt and clay are relatively impermeable and locally retard movement of water between adjacent water-bearing beds in Pleistocene and Cretaceous deposits.
		---Unconformity?---			
Quaternary	Pleistocene	Pleistocene deposits undifferentiated.	0–400±	Sand, gravel, clay, and silt. Lignite present in some silt or clay layers. Colors are brown and gray. These deposits are present in deep buried valleys and may include equivalents of the Gardiners clay and the Jameco gravel found elsewhere on Long Island. This unit may include some Pliocene(?) deposits, but evidence is scanty.	Coarser sand and gravel beds are permeable and would presumably yield moderate to large supplies to properly constructed wells. One well, 816,137, screened in these deposits yields 1,400 gpm, and has a specific capacity of 46 gpm per ft of drawdown. Silt and clay beds confine water in adjacent water-bearing beds.
		---Unconformity?---			
Tertiary(?)	Pliocene(?)	Mannetto gravel	0–300±	Stratified sand and gravel and scattered clay lenses; unit is predominantly quartzose; igneous and metamorphic rock fragments are scarce. Colors are pale to yellowish brown. Caps hills in western part of Huntington and locally present in buried valleys.	Deposits are moderately to highly permeable but generally lie above the zone of saturation. Locally, water supplies for domestic use are obtained from these deposits, such as at wells 84, 8208 and 8927. No large public-supply or industrial wells were screened in these deposits in 1960.
		--- Unconformity ---			
Cretaceous	Upper Cretaceous	Magothy(?) formation	0–800±	Sand, clayey, with silt, clay, and some gravel. Colors are white, gray, brown, yellow, and red. The upper part of the formation commonly includes interbedded clay, fine to medium sand, silt, and some lignite; the lower part is largely coarse sand, gravel, and some clay.	Generally ranges from moderately to highly permeable. The lower part of the formation is more permeable than the upper part. Several public-supply wells screened in the basal zone have yields ranging from 1,000 to 1,500 gpm and specific capacities from 30 to 90 gpm per ft of drawdown. Water is generally of excellent quality. Second most important source of water to wells. Unconfined conditions are common in uppermost part of formation, but confined conditions prevail in the lower part; some wells flow.
		--- Unconformity ---			
Cretaceous	Upper Cretaceous	Raritan formation: Clay member	0(?)–188±	Clay and silt, and a few layers of sand. Lignite and pyrite concretions are common. Colors are mostly gray, white, and red.	Relatively impermeable. Acts as a confining bed, which retards but does not prevent movement of water between the Magothy(?) formation and the Lloyd sand member.
Cretaceous	Upper Cretaceous	Raritan formation: Lloyd sand member	200–265±	Sand, fine to coarse, and gravel, mixed with some clay and some layers of silt and clay. Colors are white to pale yellow.	Moderately permeable. Not extensively developed. Several public-supply and industrial wells yield as much as 250 gpm in northern Huntington, but potential yields from properly constructed wells are much greater. Water is confined and some wells flow. Water is generally of excellent quality, but on Eaton Neck it is brackish.
		--- Unconformity ---			
Precambrian to lower Paleozoic		Bedrock		Crystalline metamorphic and igneous rocks.	Relatively impermeable. Forms the floor of the ground-water reservoir.

(adapted from Lubke,1964)

CDM

Figure 3-3
Generalized Regional Stratigraphy

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

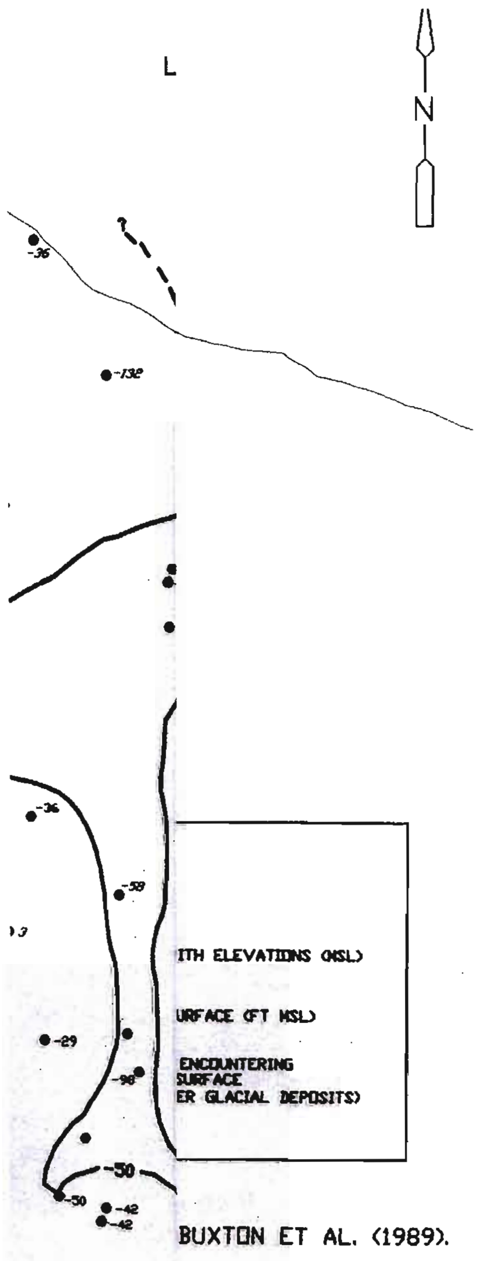


Figure 3-4
) Map of the Post-Cretaceous Unconformity Surface in the Smithtown Area

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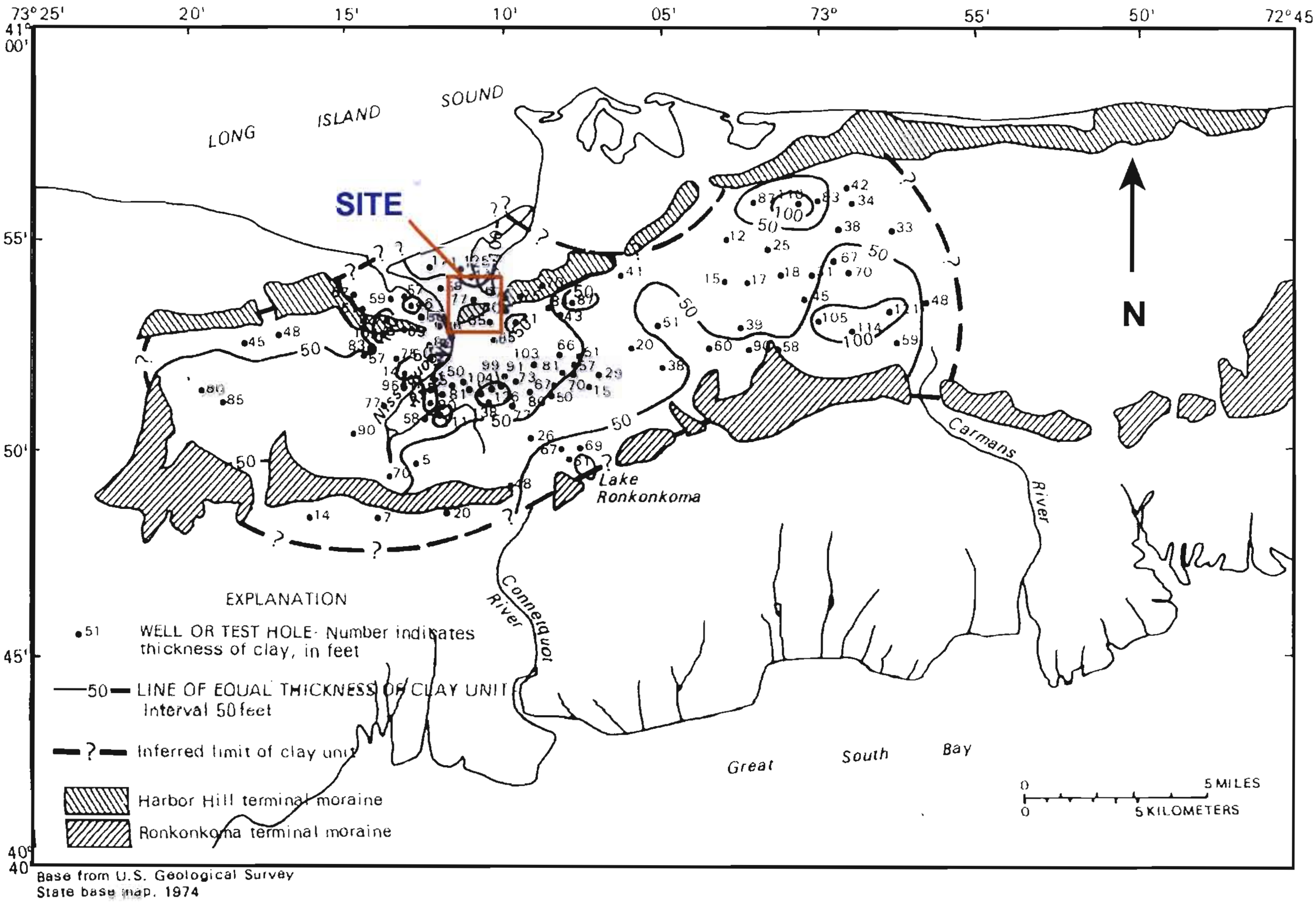
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



(from Koszalka, 1984)

Figure 3-5
Regional Thickness of the Smithtown Clay Unit, West Suffolk County, New York

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

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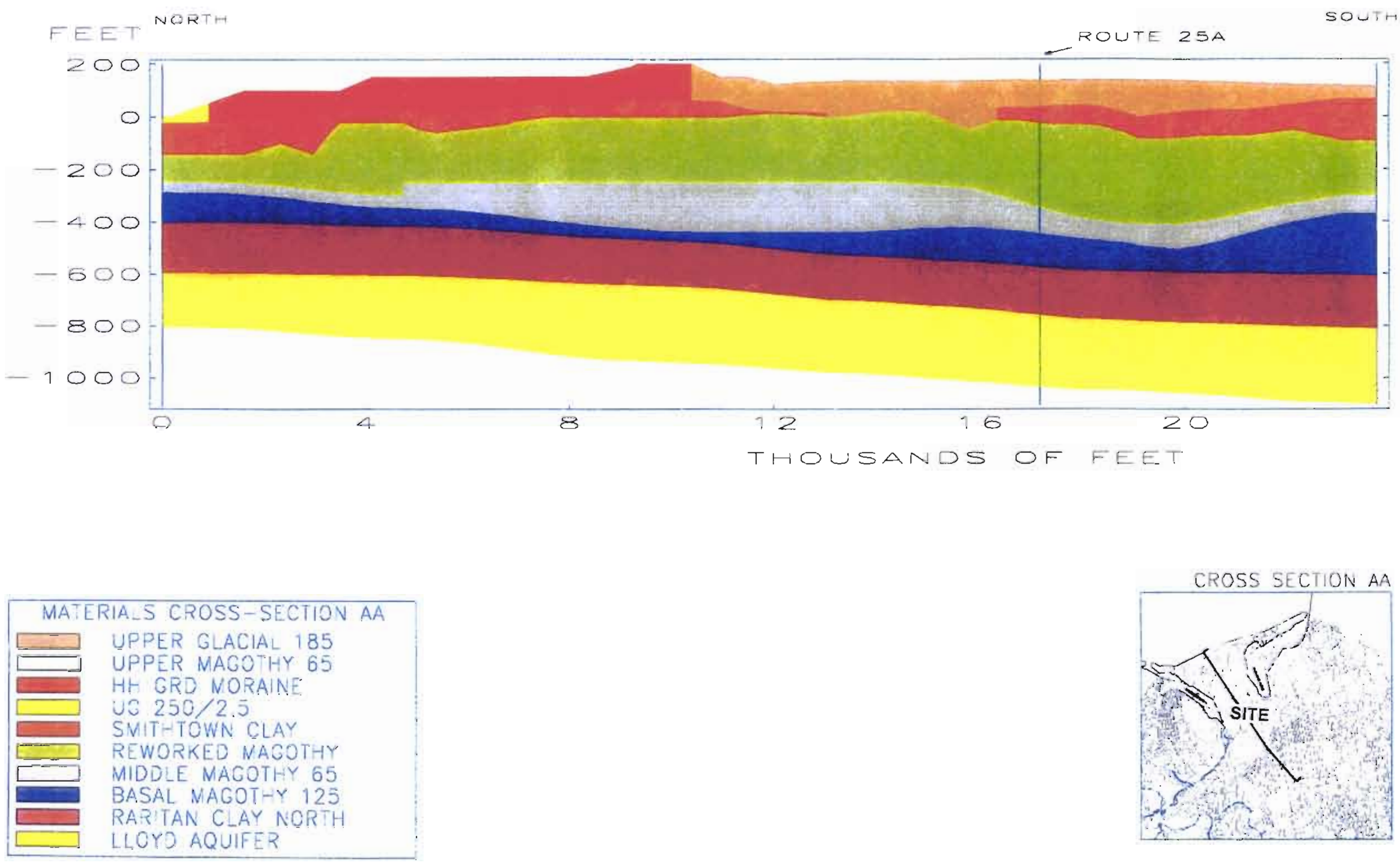
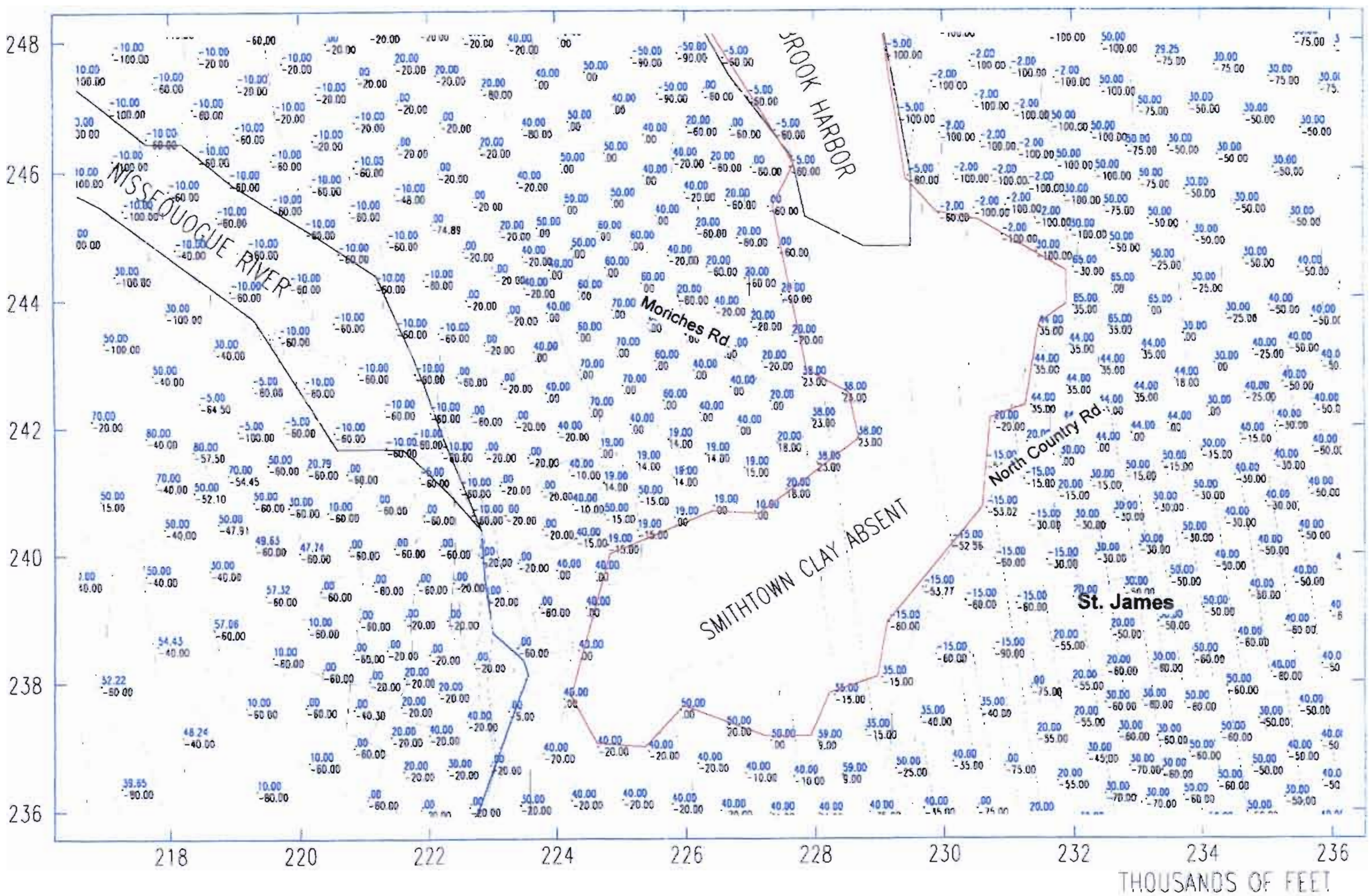


from CDM (2000)

CDM

Figure 3-6
North-South Geological Cross Section Across the Smithtown Groundwater Contaminantion Site
West Suffolk County, New York

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

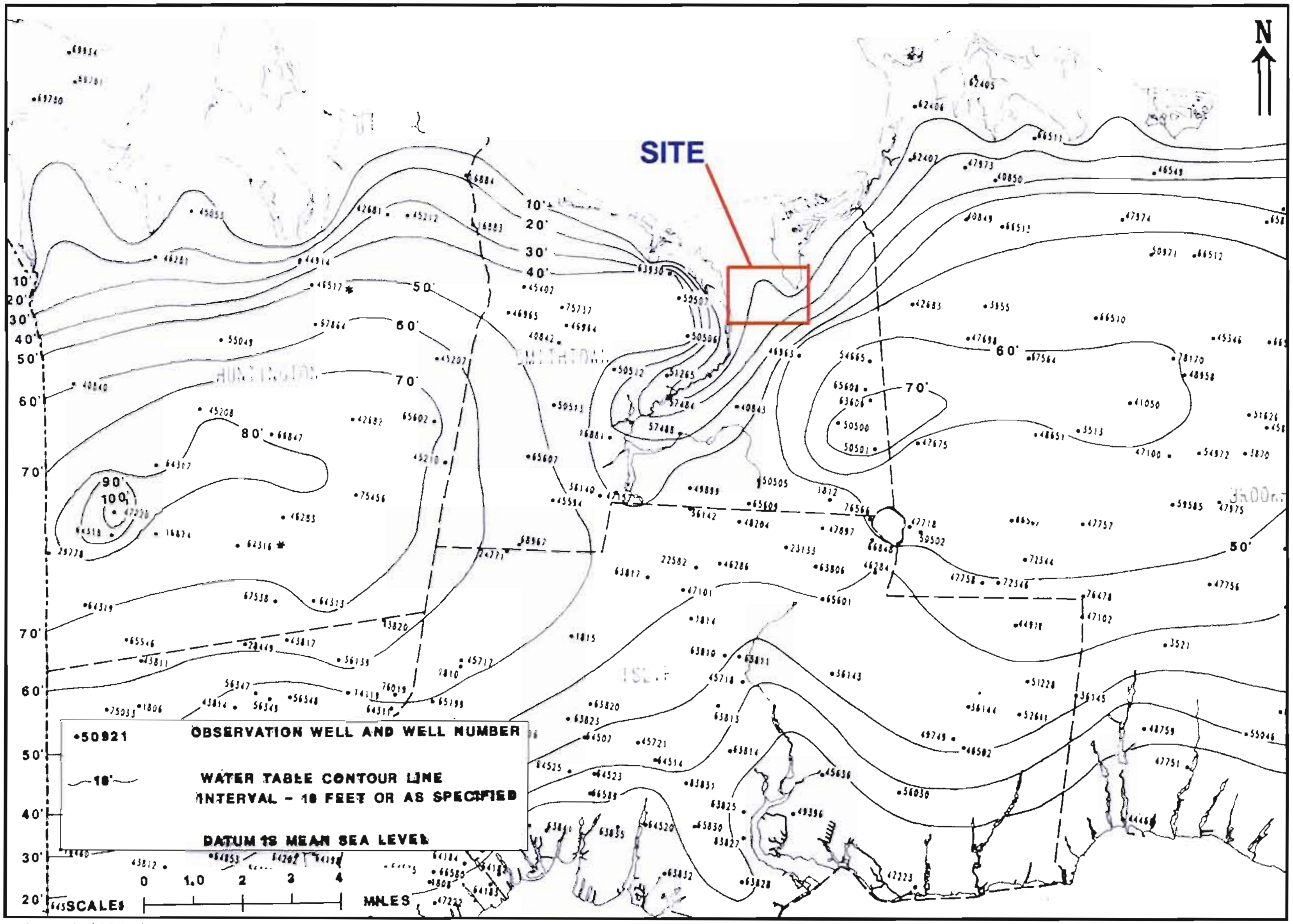


from CDM (2000)

Note: Elevations of Top (Blue) and Bottom (Black) of the Smithtown Clay are in Feet amsl

Figure 3-7
Elevation and Extent of the Smithtown Clay Across the Smithtown Groundwater Contaminantion Site West Suffolk County, New York

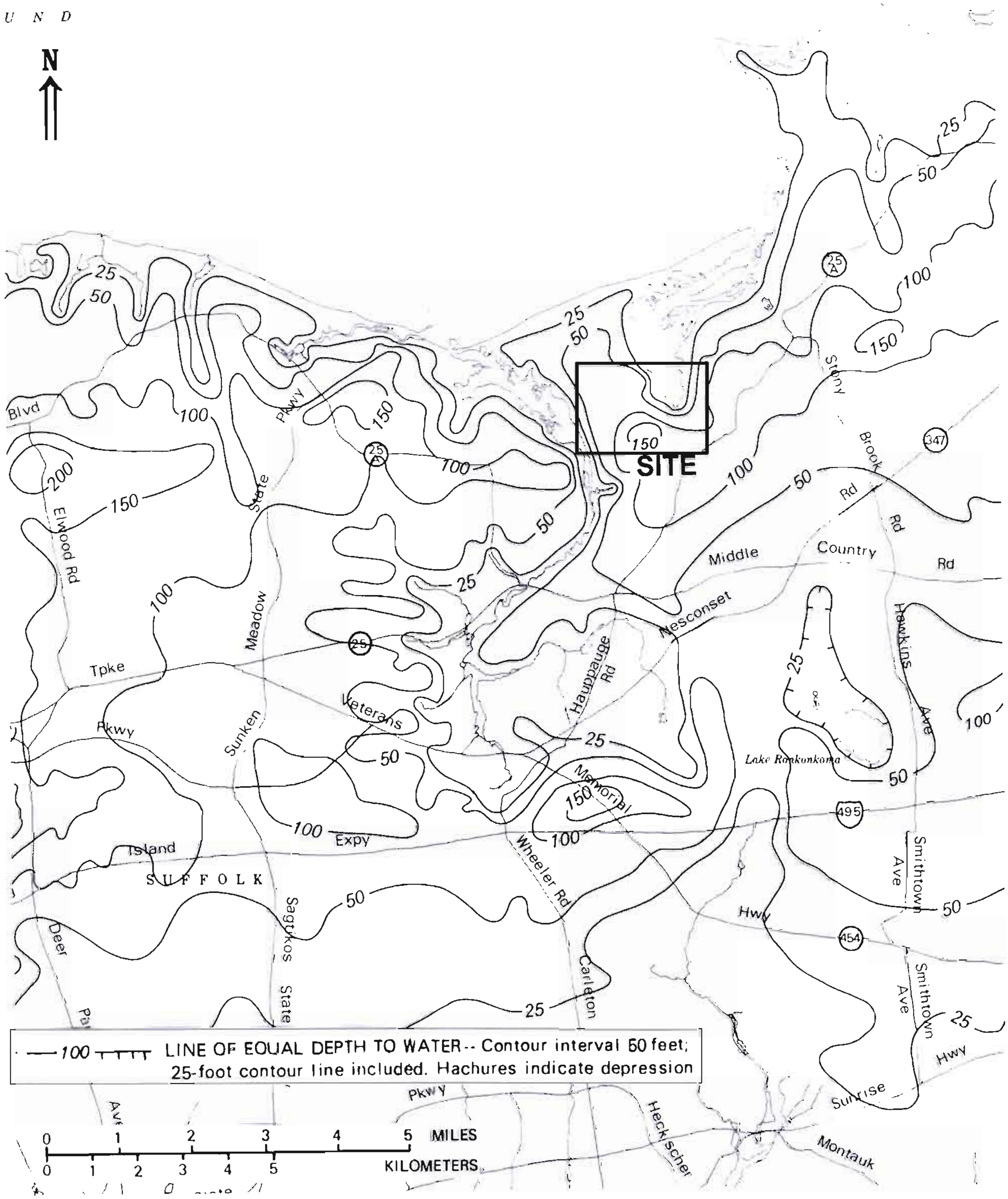
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



from Hibbard et al. (1993)

CDM

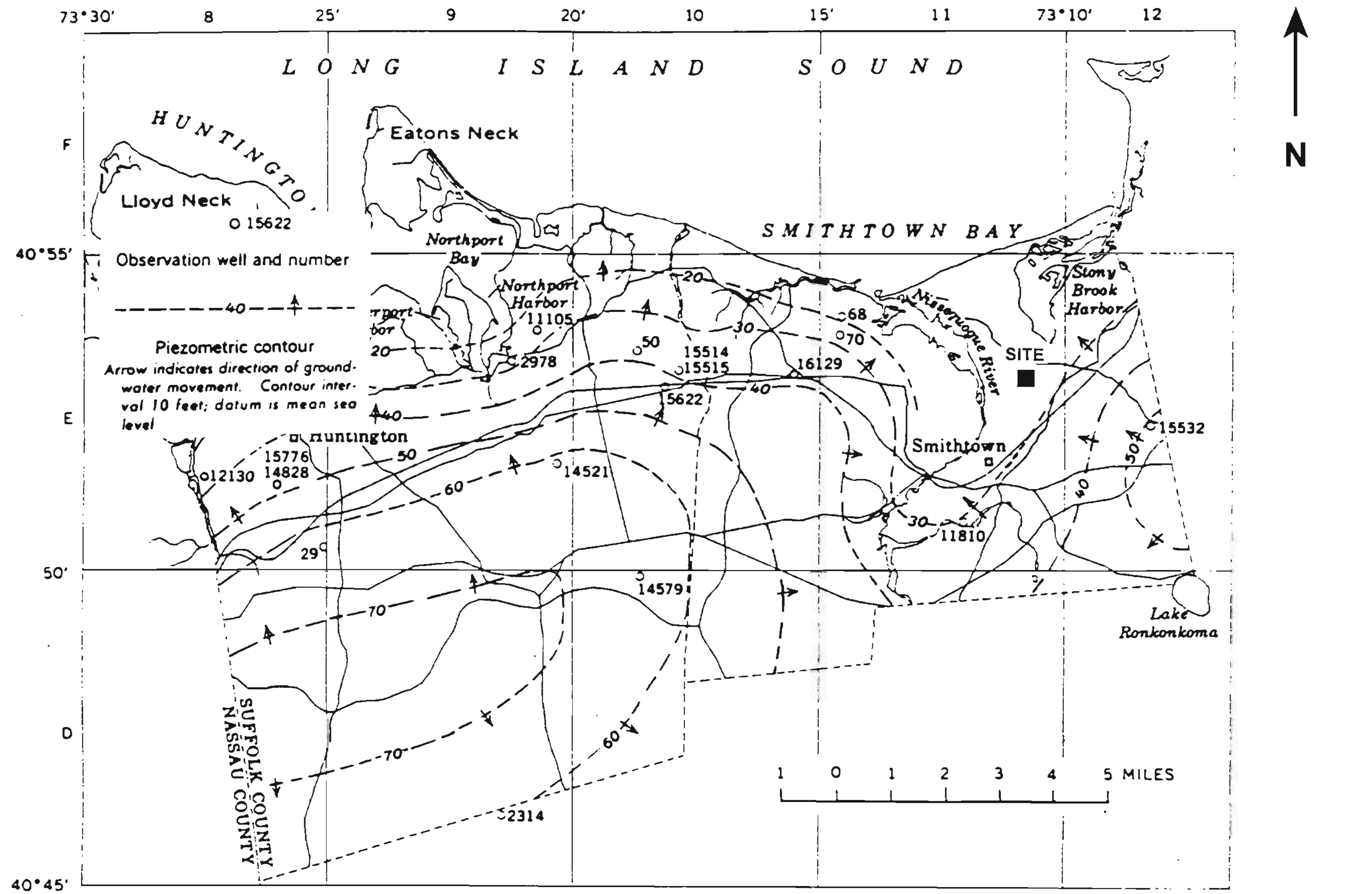
Figure 3-8
Water Table Elevation Contour Map
West Suffolk County, New York
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



(from Simmons, 1988)

Figure 3-9
Depth to Water Table Contour Map,
Northwest Suffolk County

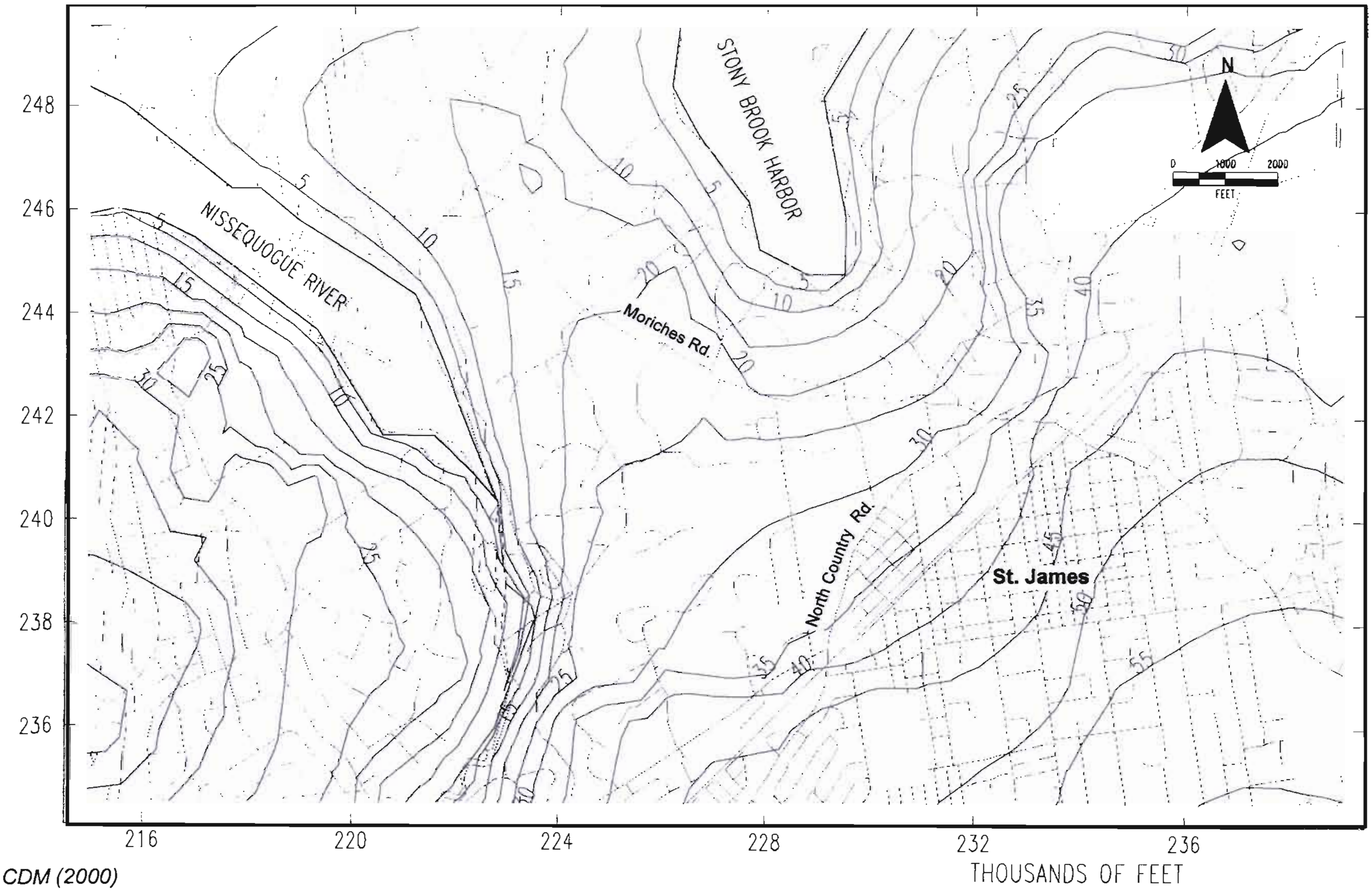
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



(from Lubke, 1964)

CDM

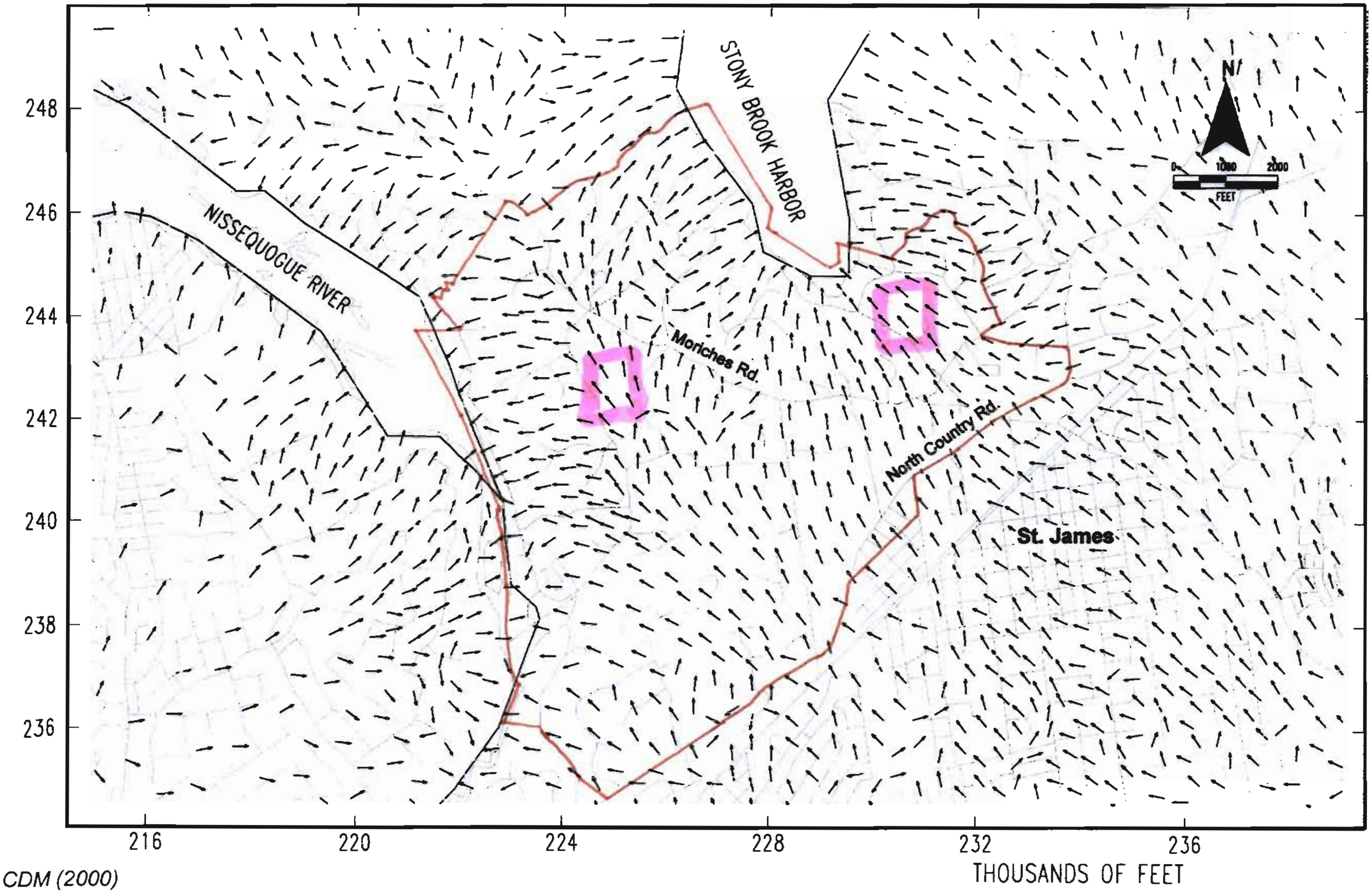
Figure 3-10
Approximate Elevation of the Intermediate Aquifer
Piezometric Surface, Northwest Suffolk County, New York
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



from CDM (2000)

Figure 3-11
Simulated 5-foot Head Contours for the Upper Glacial Aquifer

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



from CDM (2000)

CDM

Figure 3-12
Simulated Direction of Groundwater Flow for the Upper Glacial Aquifer

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

File Path: c:\egis\smithtown\smith1apr.apr

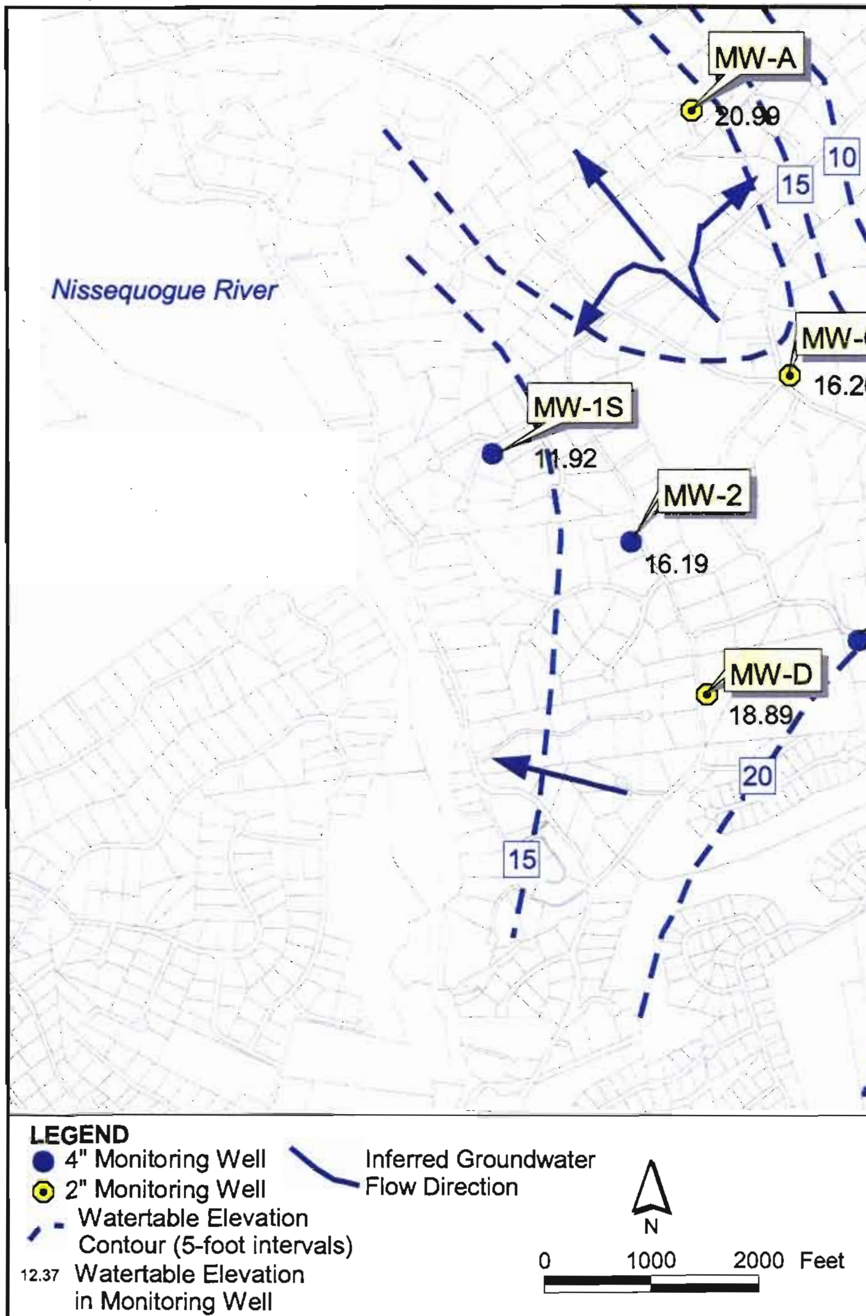


Figure 3-13
Water Table Elevation Map (March 19, 2002)

Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

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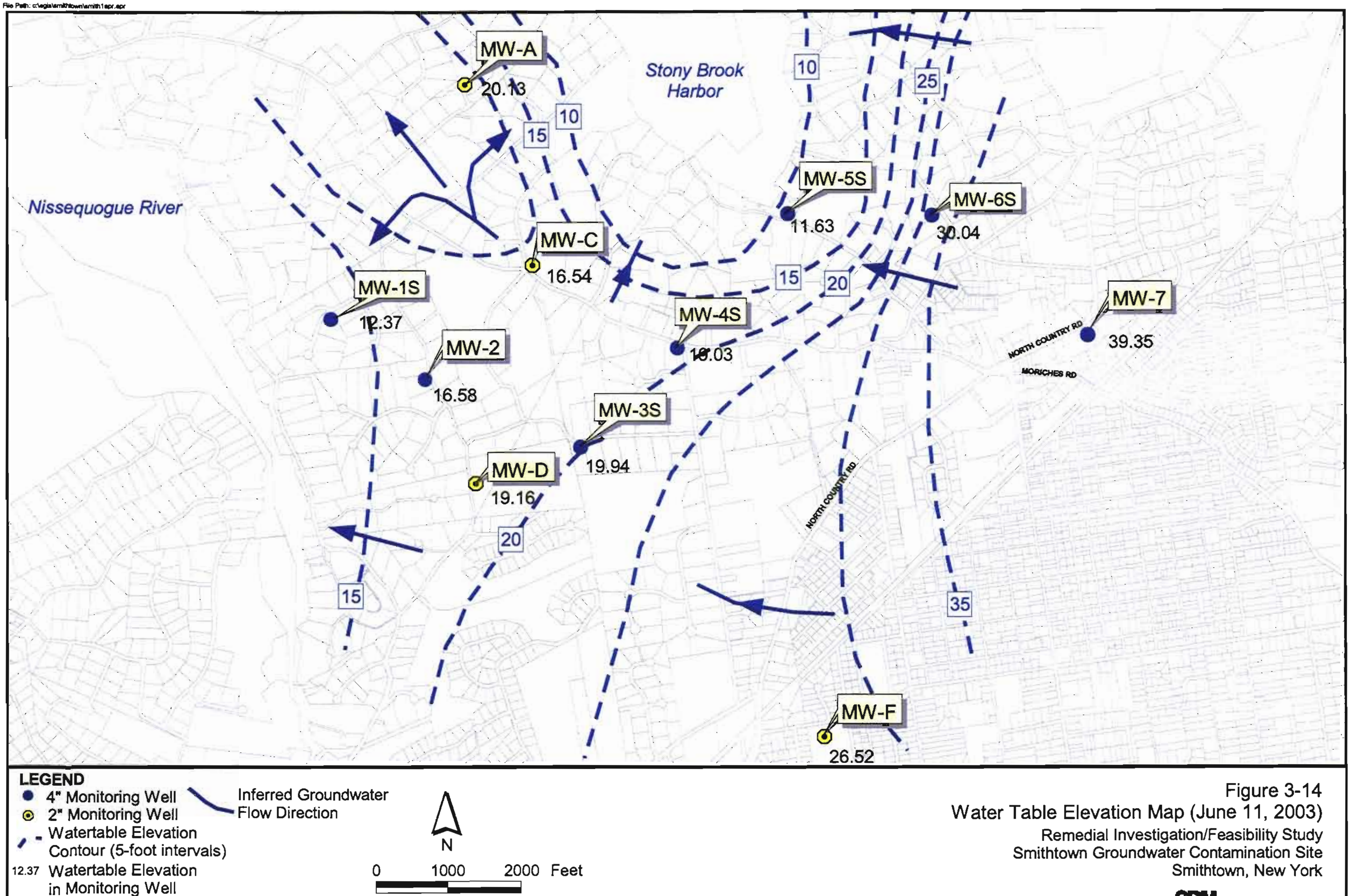

Figure 3-14
Water Table Elevation Map (June 11, 2003)
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York
CDM

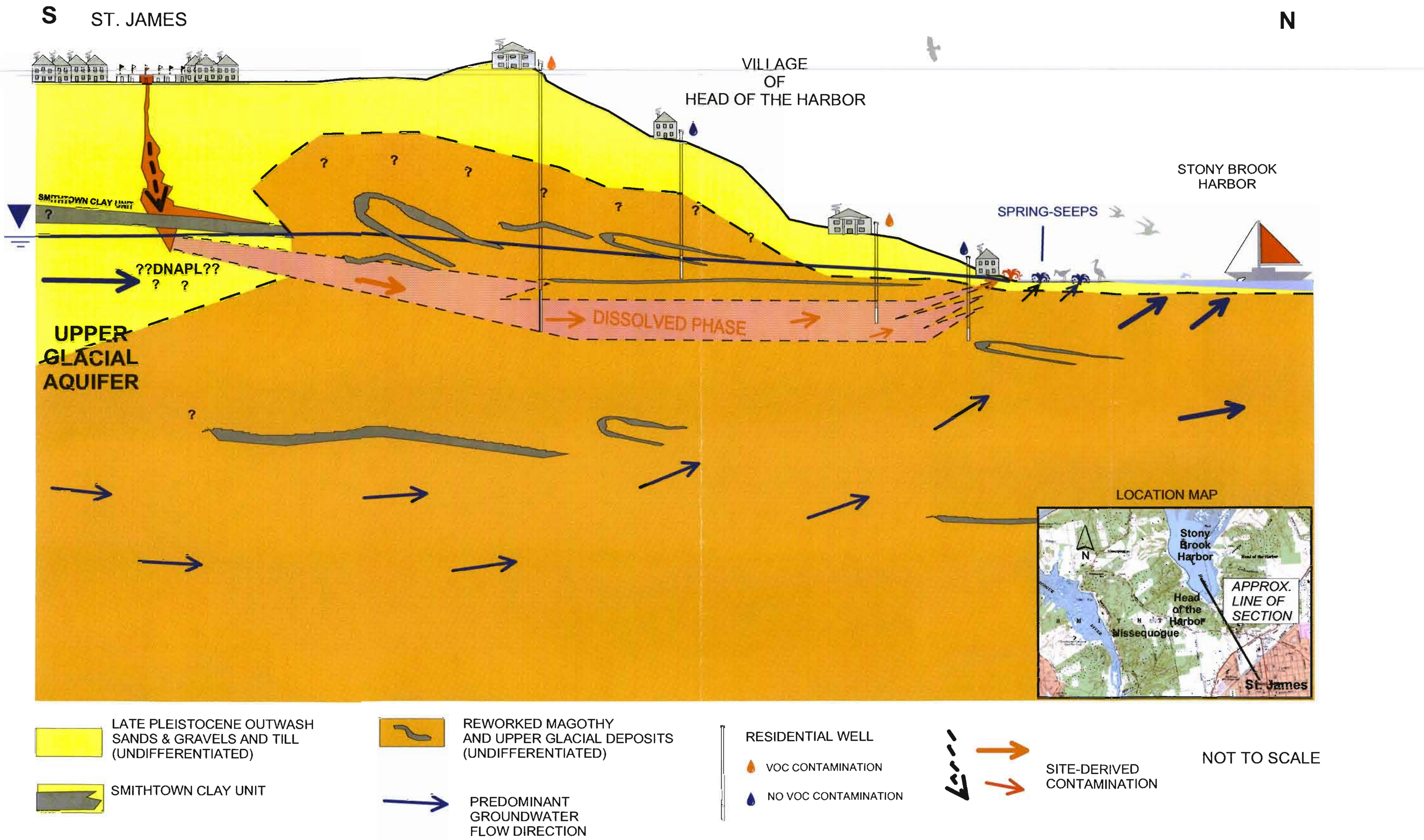

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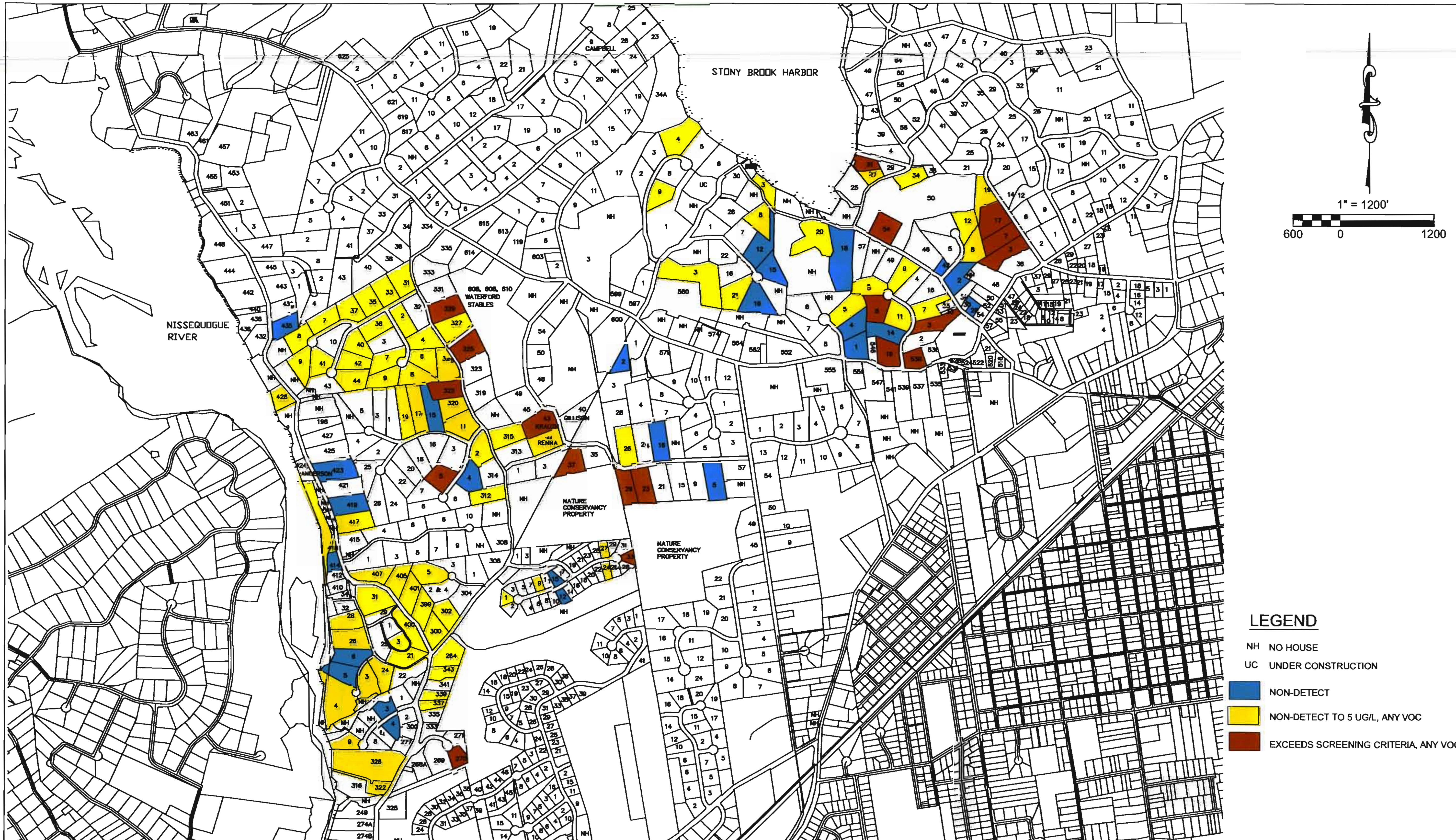
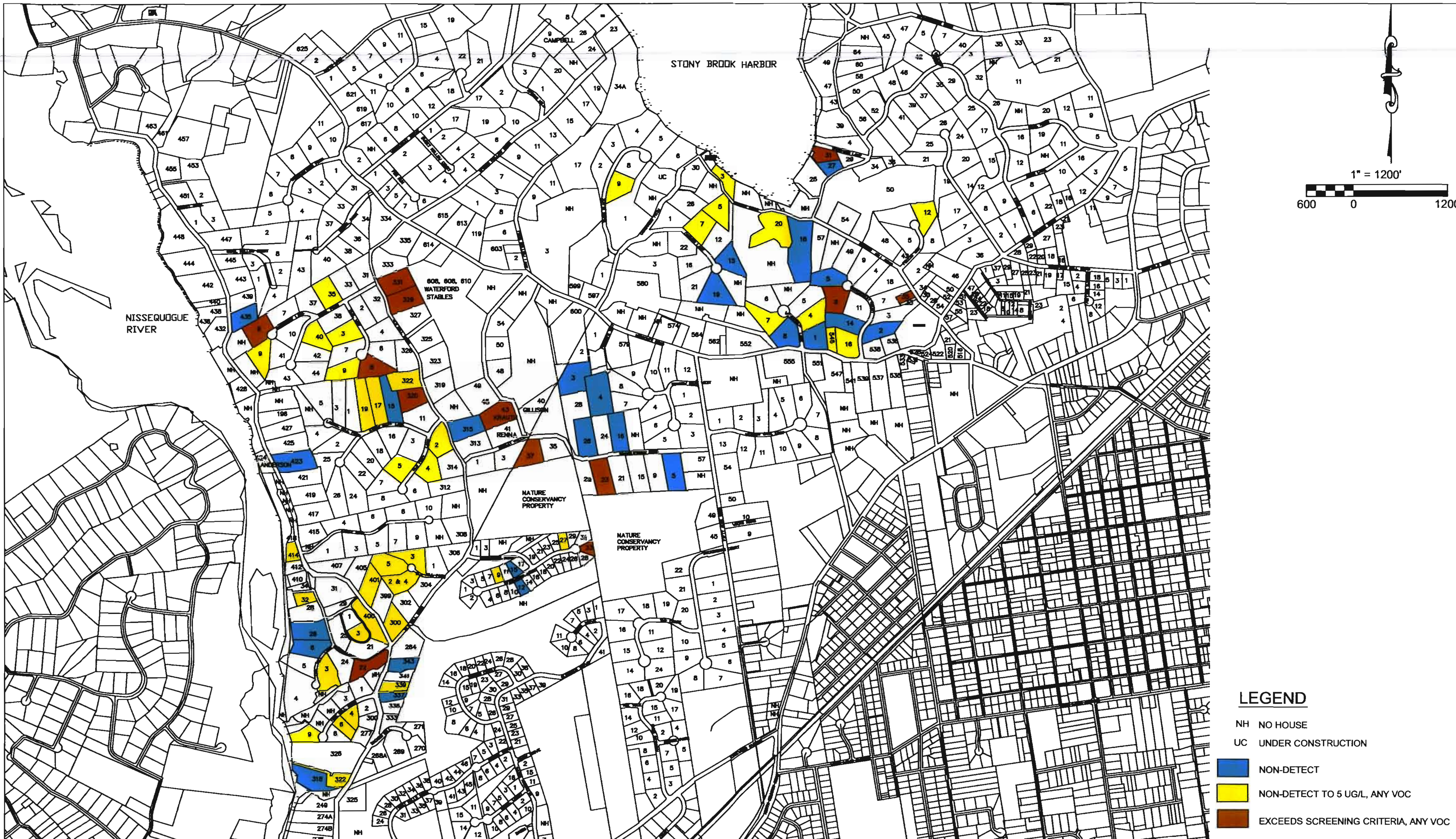
Figure 3-15
Conceptual Site Model
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

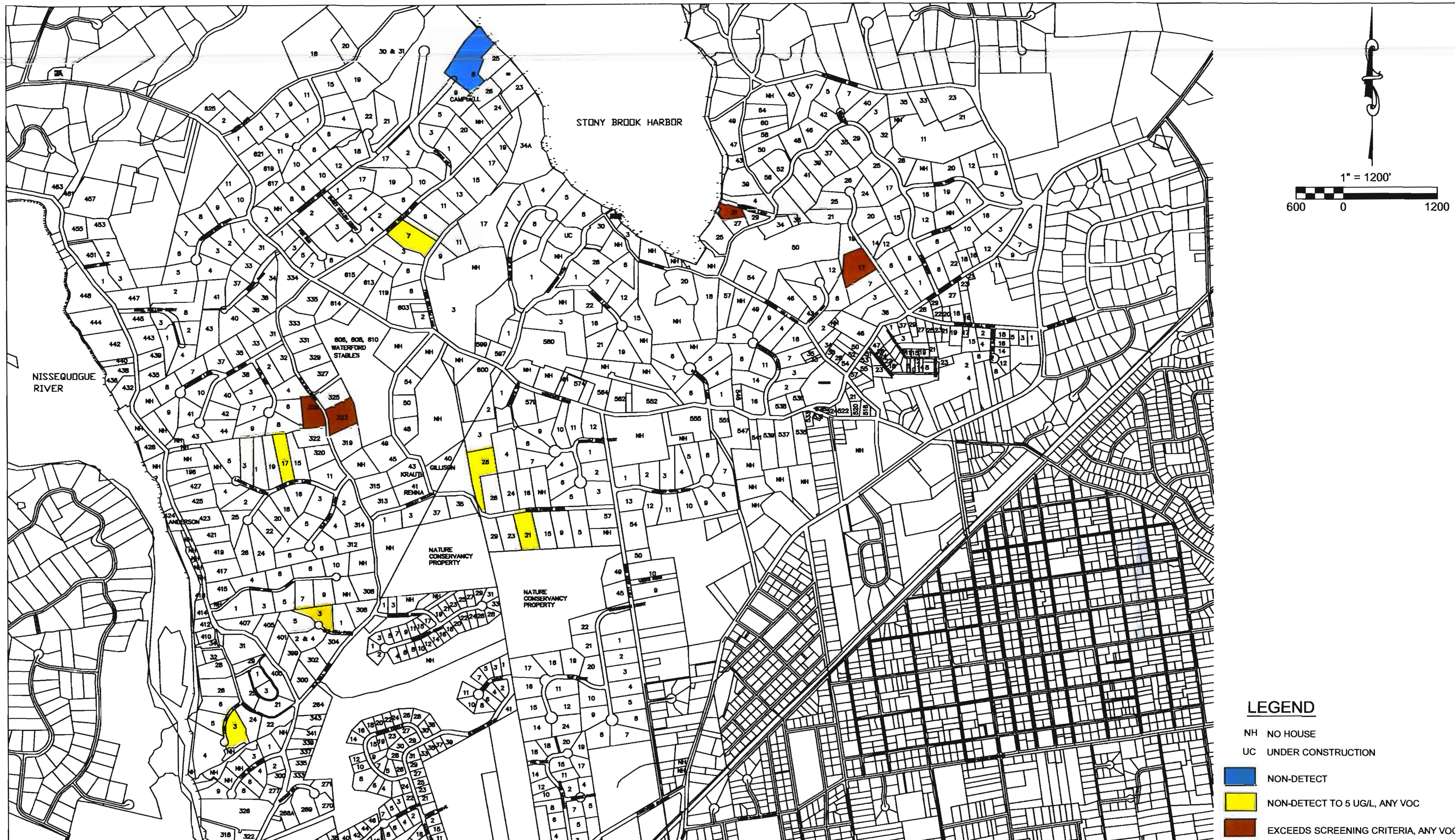
Figure 4-6
RESIDENTIAL ROUND ONE - VOCS EXCEEDING SCREENING CRITERIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 4-7
RESIDENTIAL ROUND TWO - VOCS EXCEEDING SCREENING CRITERIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 4-8
RESIDENTIAL ROUND THREE - VOCS EXCEEDING SCREENING CRITERIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

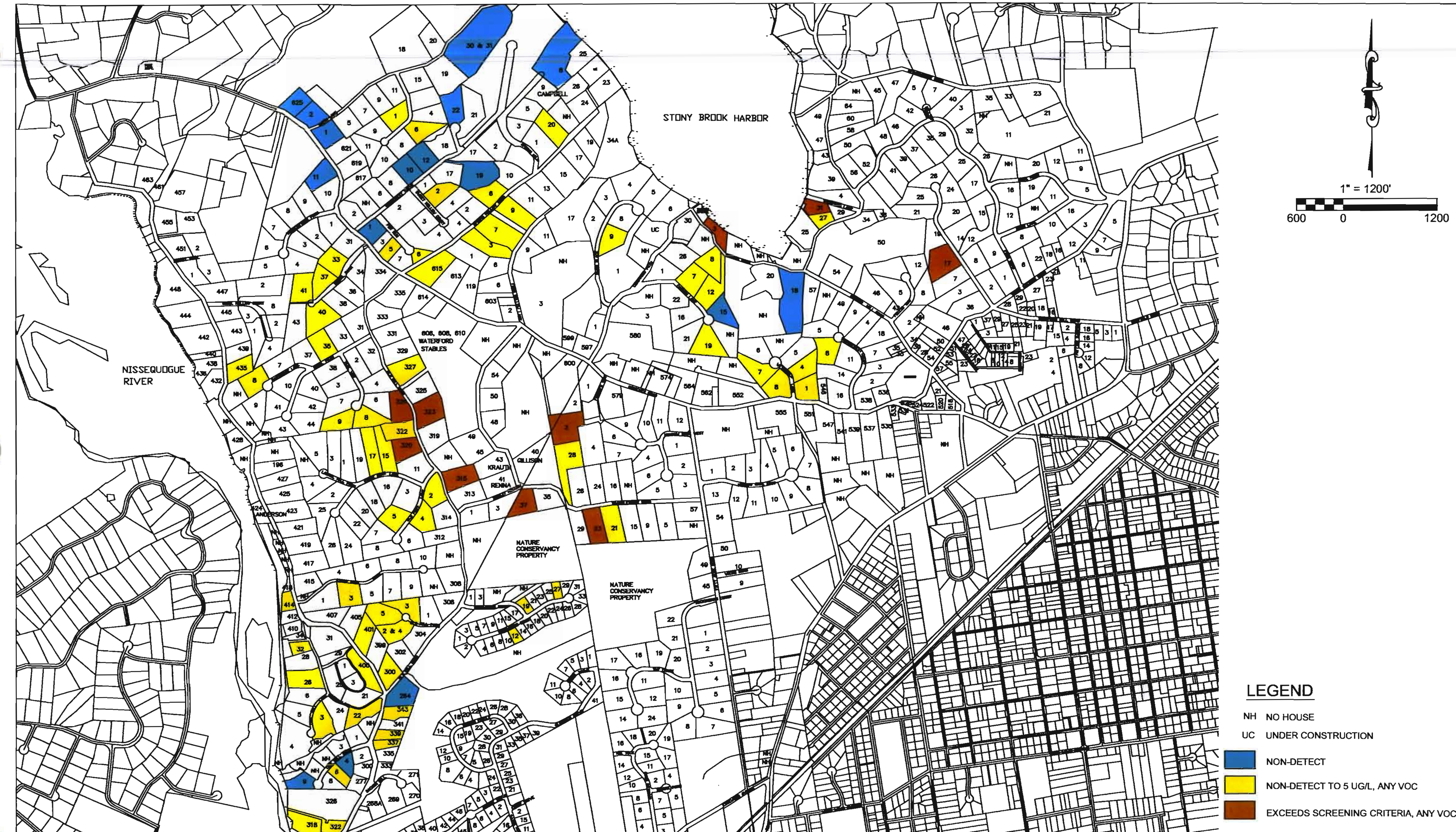


Figure 4-9
RESIDENTIAL ROUND FOUR - VOCS EXCEEDING SCREENING CRITERIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

CDM

Figure 4-10
1998 ROUND AND RESIDENTIAL ROUNDS ONE THROUGH FOUR
VOCS EXCEEDING SCREENING CRITERIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

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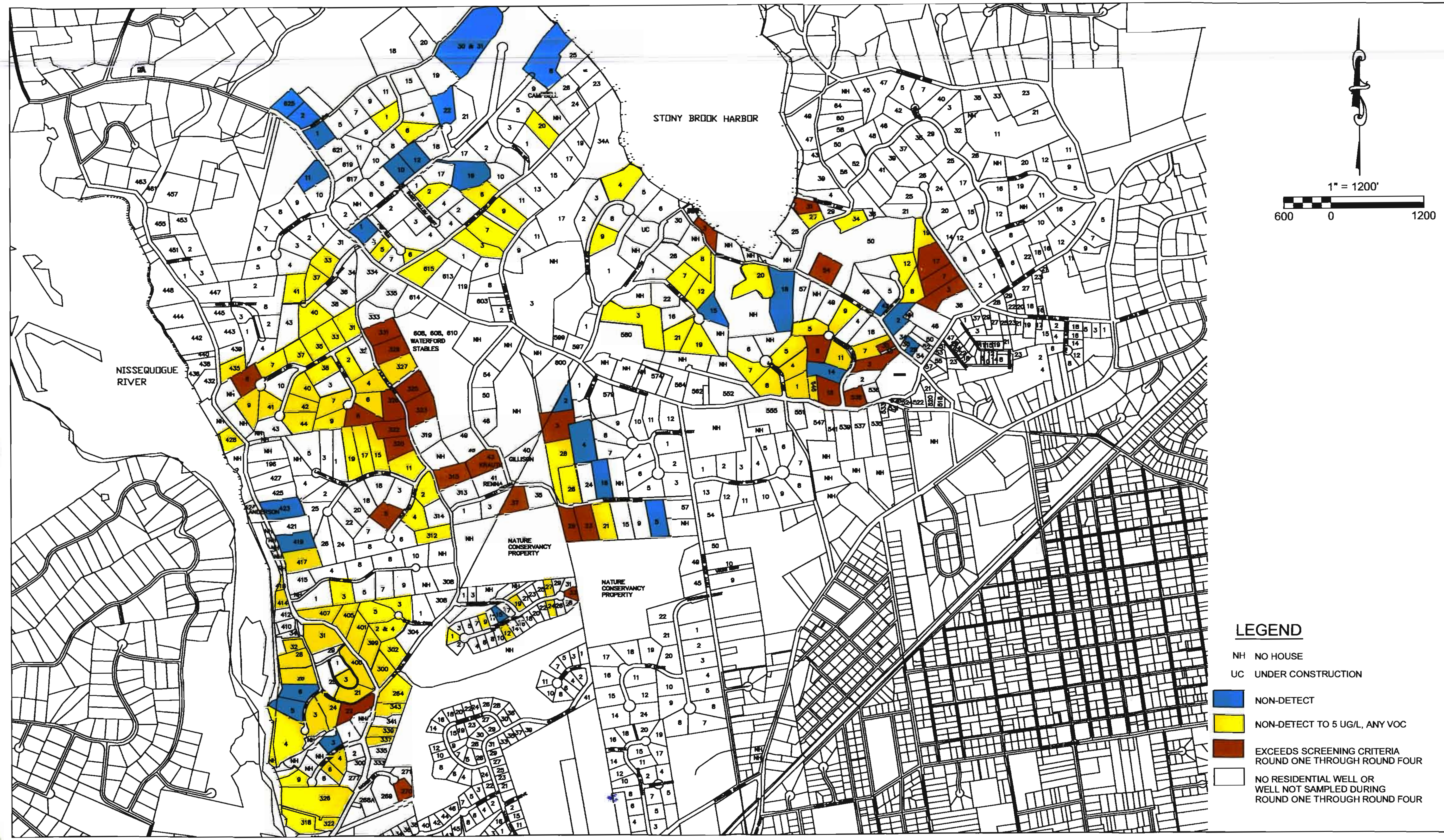

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SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 4-11
ROUND ONE THROUGH ROUND FOUR RESIDENTIAL MAXIMUM VOC CONCENTRATION DETECTED DURING ANY ROUND
REMEDIAL INVESTIGATION/FEASIBILITY STUDY