3627

INTERNATIONAL TECHNOLOGY CORPORATION

SUMMARY OF HYDROGEOLOGICAL INVESTIGATION AND REMEDIAL ACTION

IT PROJECT 530029
MARCH 1993

Prepared For:

Kraft General Foods Inc.
Skokie, Illinois 60077

Prepared By:

IT Corporation
Shrewsbury, Massachusetts

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

RDMS 106736

SUMMARY OF HYDROGEOLOGICAL INVESTIGATION AND REMEDIAL ACTION

SYNTHETIC PRODUCTS COMPANY SITE
STRATFORD, CONNECTICUT
IT PROJECT NO 530029

Prepared For:

Romer Wilsek
Kraft General Foods Inc.
5401 Old Orchard Road
Skokie, Illinois 60077

Prepared By:

IT Corporation
240-B Cherry Street
Shrewsbury, Massachusetts 01545
(508) 842-5643

Submitted By:

Dan Gravelding
IT Corporation
Project Manager/Hydrogeologist

Reviewed By:

Raymond Ball, Ph.D., P.E. and John M. Pietz, P.E.
IT Corporation
Shrewsbury, Massachusetts 01545

Date of Report:

March 17, 1993

Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii

1.0 Introduction 1
1.1 Background 1
1.2 Objective 2

2.0 Site Conditions 4
2.1 Site Location 4
2.2 Site Description 4
2.3 Topography, Stream Drainage, Sewerage 5

3.0 Site Investigation 6

4.0 Site Geology and Hydrogeology 11
4.1 Regional Geology 11
4.2 Regional Hydrogeology 11
4.3 Local Geology 12
4.4 Local Hydrogeology 13

5.0 Remedial Action 15
5.1 Groundwater Recovery and Treatment System 15
5.2 Groundwater Quality 17

6.0 Conclusions 20

References

List of Tables

Table	Title
1	Monitoring Well Construction Details
2	Summary of Groundwater Analytical Results, Raymark Facility, June,1983 through October, 1987
3	Separate - Phase Hydrocarbon Recovery
4	Groundwater Treatment System - Influent Volatile Organic Concentration
5	Groundwater Analytical Results, Synthetic Products, April, 1988 and July, 1988

List of Figures

Figure	Title
1	Site Location Map
2	Area Site Plan
3	Summary Map of Soil Borings, Surficial Soil Samples, and Monitoring Well Locations
4	Off-Site Potential Sources of Contamination
5	USGS Geologic Quadrangle Map
6	Water Quality Classification Map, State of Connecticut
7	Geologic Cross Section
8	Site Groundwater Contour Map
9	Area Groundwater Contour Map
10	Recovery Trench
11	Groundwater Treatment System

List of Appendices

Appendices

Appendix A Boring Logs

1.0 INTRODUCTION

1.1 Background

The project site, formerly known as Ware Chemical (Dart Industries, Inc.) and operated by Dart Industries, is currently owned and operated by the Synthetic Products Company (Synpro) located at 375 Barnum Avenue in Stratford, Connecticut. IT Corporation (IT) was retained by Dart & Kraft General Foods, Inc. (Kraft) to remove a dry well leaching system located below grade in the paved area between the Synthetic Products Company plant and warehouse. This system was formerly used for disposal of unreacted chemicals generated in a polymer manufacturing batch process, and was a suspected source of separate-phase hydrocarbons consistently detected by IT in existing monitoring well, OW-9B, from July 22, 1986 to April 12, 1989 during routine maintenance of the existing groundwater treatment system.

The groundwater recovery and treatment system was installed to recover separate-phase organics observed in existing monitoring wells and the dry wells by Wehran Engineering Corporation as discussed in the report on "Hydrogeological Investigation and Remedial Action", dated November 12, 1980 prepared for Dart Industries, Inc., by Wehran Engineering Corporation. NEPCCO (now owned by IT Corporation) was retained by Dart Industries, Inc. to install a groundwater recovery and treatment system in 1983. The groundwater recovery and treatment system was installed by NEPCCO and started on June 18, 1983. The system consisted of a 24-inch diameter recovery well installed to 30 feet below grade and screened from 4 feet to 30 feet below grade. The recovery well was designed for 70 gpm and utilized a "filter scavenger" with a double diaphragm pump to recover separate-phase organics that were pumped to a 550 gallon recovery tank. The groundwater was then pumped through an air stripping tower (24-inch diameter by 20 feet high) prior to discharge into the sanitary sewer. In April 1986, NEPCCO installed a recovery trench that was 4 feet wide, 10 feet deep, and 100 feet long to increase the separate-phase recovery rate. The trench was filled with crushed stone and intersected the recovery well. In October 1987, chemical injection with sodium hypochlorite and acrylic acid was added to the treatment system to minimize clogging problems related to biological growth and iron precipitation, respectively.

In 1989, hydrocarbons (i.e., benzene, toluene) originally disposed in the dry well leaching system were detected by IT in the surrounding soil. Subsequently, IT excavated and disposed of the dry well leaching system and hydrocarbon containing soil between July 2, 1990 and August 9, 1990. The details of the excavation of the dry well leaching system are discussed in the report by IT Corporation entitled "Excavation and Disposal of Dry Well Leaching System and Soil", April 20, 1992.

The Raymark Industries (Raymark) site is located hydraulically upgradient from the subject site, and is on the opposite side of Barnum Avenue. The Raymark site is under investigation by United States Environment Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) personnel. This report discusses the results of the hydrogeological investigations conducted on the Synpro site, and provides information from USEPA RCRA file on the Raymark Industries site.

1.2 Objective

The objective of this report is to summarize and discuss the hydrogeological information and analytical data pertaining to the subject site. In addition, file review information from the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) file in the EPA Region I office in Boston, Massachusetts is provided on site conditions on adjacent properties; primarily those properties that are hydraulically upgradient.

Reports and data reviewed in the preparation of this report included the following:

1) All monitoring and recovery data associated with the groundwater treatment system from June 13, 1983 to present.
2) "Hydrogeological Investigation and Remedial Action Report" prepared for Dart Industries, Inc. by Wehran Engineering Corporation and RECRA Research, Inc., November 12, 1980.
3) "Investigative Summary" prepared for Dart Industries, Inc. by NEPCCO, Inc., December 16, 1982.
4) "Recovery Operations Assessment prepared for Kraft General Foods, Inc. by IT Corporation, June 10, 1987.
5) Monitoring well analytical data obtained on December 9, 1982; April 25, 1988; and July 13, 1988, by IT Corporation.

6) "Excavation and Disposal of Dry Well Leaching System and Soil", Synthetic Products Company, Stratford, Connecticut, by IT Corporation, April 20, 1992.

and a USEPA RCRA file review of all information relative to the Raymark Industries site.

2.0 SITE CONDITIONS

2.1 Site Location

The site is located at 375 Barnum Avenue in Stratford, Connecticut and is approximately one acre in size. A site location map is presented in Figure 1. Barnum Avenue and Raymark Industries, Inc. (previously known as Raybestos-Manhattan) are located north of the property.

The Raymark site is about 34 acres in size and was the location of previous manufacturing operations for asbestos and non-asbestos brake materials, phenol-formaldehyde resins, and various adhesives for automotive and industrial use. In 1985, Raymark sold certain brake manufacturing operations to Brake Systems, Inc. (BSI), a subsidiary of Echlin, Inc.. Currently the Raymark site is abandoned and under investigation by USEPA Region I RCRA division.

As presented in the Area Site Plan in Figure 2, an embankment and Ferry Boulevard are located to the east, and Hampford Research, Inc., a chemical manufacturer, is located south of the property. The Veterans of Foreign Wars (VFW) Post 9460 building is located northwest of the site. Also, Contract Plating Company is located approximately 1,200 feet northwest of the site, and uses hazardous chemicals to electroplate automotive parts. Further west of the site is a shopping mall that was previously occupied by an unknown rubber tire manufacturing facility and a roofing manufacturing facility known as Tilo Roofing.

2.2 Site Description

Ware Chemical produced reactive monomers at the site until the late 1970's using an esterification process. The reactive monomers were esters of methyl acrylic acid and acrylic acid, specifically TMPTMA (trimethylolpropane, trimethylacrylate) and TMPTA, (trimethylolpropane, triacrylate). A solvent mixture containing primarily heptane, benzene, and toluene was used to keep the reactants in solution during the esterification process. During operation of the batch reactor, the overhead vapor containing the solvents was recovered and recycled. After the reaction was completed, partially reacted batches of monomer mixed with solvent that did not completely react were discharged to a dry well leaching system. The production of reactive monomers and discharge to the dry well was discontinued and other chemical processes were initiated in the late 1970's.

The dry well leaching system consisted of four, concrete sumps placed in a bed of 3/4-inch crushed stone, and a leaching field consisting of black sewer pipe surrounded with crushed stone. The dry well leaching field was located approximately three (3) feet below grade. The dry well and surrounding soil were excavated and disposed at a secure landfill by IT Corporation as discussed in the report "Excavation and Disposal of Dry Well Leaching System and Soil" prepared by IT Corporation dated April 20, 1992.

Currently, two one-story buildings are located at the site and comprise the physical plant as shown in the Summary Map of Figure 3. The building located nearest Barnum Avenue is a production building for the production of resins and monomers, and the other building located south of the production building is used as a warehouse, office, and laboratory. Five (5) 5,000-gallon underground storage tanks containing unknown feed stock chemicals are located adjacent to the production building to the west. Several aboveground storage tanks used in the manufacture of resins and monomers are located along the southern wall within the production building. The size, contents, and type of tank construction is not known.

The groundwater treatment system is located within a fence on the southeast corner of the warehouse. The area between the two buildings is paved, as is most of the site.

2.3 Topography, Storm Drainage, Sewerage

The topography in the area surrounding the site slopes to the south. To the south-southeast of the site is a 5 to 10 feet high road embankment for Ferry Boulevard, which is parallel to the Connecticut Turnpike or I-95. Another embankment approximately 20 feet high associated with the Connecticut Turnpike is located approximately 60 feet east of the Ferry Boulevard.

Surface drainage is provided by storm drains located along Barnum Avenue and Ferry Boulevard that collect runoff and discharge it to the Housatonic River located approximately 1,500 feet to the south-southeast of the subject site as previously shown in Figure 1.

A sewer trunkline approximately five feet in diameter and located three feet below grade with a gravel subbase crosses the subject site between the two buildings. The sewer crosses the Raymark property and Barnum Avenue prior to crossing the subject site. The sewer is sloped to the south, and therefore drains to the south. The ultimate discharge location for this sewer has not been determined.

3.0 SITE INVESTIGATION

Site investigation activities have included excavation of four test pits, collection of numerous surficial soil samples, twenty soil borings, and installation seventeen monitoring and two recovery wells. Of the seventeen monitoring wells, ten have been either destroyed or paved over. Construction details of all existing and abandoned monitoring wells are presented in Table 1. All soil borings and monitoring wells are located as previously shown in Figure 3.

The following listing is a chronology of site investigation activities from 1980 to the present:

Date	Action Item
May, 1980	Wehran Engineering Corporation (Wehran) was retained by Dart Industries to perform a preliminary hydrogeological investigation to assess the extent of separate-phase on the groundwater surface. Wehran excavated four test pits and installed one two inch diameter monitoring well in each test pit (TP/W1 through TP/W4). Wehran also sampled and analyzed the groundwater in the four observation wells on May 28, 1980. Groundwater samples were analyzed for total organic carbon (TOC), chemical oxygen demand, Ph, specific conductance, total recoverable phenolics, soluble copper and nickel, halogenated organics scan, gas chromatography/flame ionization detector organic scan by hephtalene standard, heptane, toluene, and xylenes.
June, 1980	On June 21, 1980, Wehran performed a groundwater pump test for a continuous period of about 2.5 hours at flow rates ranging from 7.5-10.5 gallons per minute (gpm). The groundwater was pumped to the maximum drawdown in the pumping well and the pumping rate was measured at frequent intervals. However, drawdown in the observation wells could not be induced through this method. Additionally, a slug

test was performed in each of the four existing wells to determine hydraulic conductivity.

November, 1982 — During the period of November 15-19, 1982, NEPCCO installed eight new monitoring wells (OW-1 through OW-8). The four inch diameter wells were installed to a depth ranging from 16 to 30 feet. During the construction of a recovery trench on the site by NEPCCO in April, 1985, well number OW-7 was destroyed.

December, 1982 — In December, 1982, NEPCCO analyzed the eight newly installed wells for benzene and toluene.

May, 1983 — A 24 inch diameter recovery well, RW-1, was installed by NEPCCO in May, 1983 to a depth of thirty feet to recover total fluids and control potential off- site migration. A groundwater treatment system consisting of pretreatment with acrylic acid for iron control and sodium hypochlorite for biological fouling, an oil/water separator, and an air stripping tower (36 inch by 20 feet) with discharge to the sanitary sewer was installed.

April, 1986 — A lateral trench was installed to intersect with the recovery well, RW-1, previously installed by NEPCCO to enhance separate-phase recovery. Additional wells OW-9A and OW-9B were installed in the recovery trench during construction.

On April 11, 1987, three additional wells were installed at the site (OW-10, OW-11, and OW-12). Monitoring well OW-4 was covered by gravel and fill in September 1986, and rediscovered in February 1992. It was then identified at OW-13. Monitoring well OW-9B was destroyed during excavation work in August, 1990.

April, 1988 — After installation of the groundwater recovery and treatment system, weekly monitoring was established. Monitoring on a weekly basis was continued until the system was shutdown in July, 1990. Since then,

monitoring and sampling has continued twice a month. The reporting was performed on a monthly basis.

April, 1988 - July, 1988	On April 23 and July 13, 1988, IT Corporation tested the groundwater in all existing on-site wells for purgeable volatile organics by EPA Method 624.
June, 1988	On June 29, 1988, IT performed a six-hour pump test to evaluate the aquifer physical properties using recovery well, RW-1.
June, 1990	Twenty exploratory borings at an average depth of ten feet below grade were drilled to delineate the most highly contaminated unsaturated zone soil and to assess the vertical and horizontal extent of separate- phase hydrocarbons. Based upon visual staining, one split spoon soil sample was obtained from a depth ranging from four to ten feet below grade from each soil boring.
July, 1990	Groundwater treatment system was shutdown during excavation of the dry well leaching system and soil. The treatment system will not been brought into operation until additional hydrogeological investigation at the site and in the area has been completed.
July, 1990	Recovery well, RW-2, was installed by IT to further enhance recovery of separate-phase hydrocarbons discovered to be migrating in the gravel subbase of the sewer line that crosses the site. The recovery well was 24 inches in diameter and eight to ten feet deep, and was installed adjacent to the gravel subbase of the sanitary sewer line.
July,1990 - August,1990	IT excavated the dry well leaching system and unsaturated zone soil in the area between the two buildings. This material was disposed at the Envirosafe secure landfill in Indiana.

March, 1991	On March 15, 1991, IT performed a file search at Connecticut Department of Environmental Protection (CTDEP) of the neighboring Raymark property to identify of any past spills or hazardous releases at the site. The following sections were examined in the CTDEP Hazardous Materials Management Unit: • Hazardous Waste • Underground Storage Tanks • Oil and Chemical Spills The Water Compliance Unit and the Solid Waste Unit files were also reviewed.
January,1992 - December,1992	IT has performed monthly monitoring of the wells for depth to groundwater and separate-phase thickness.
August, 1992	IT conducted a regulatory file search at USEPA Region I RCRA Division files on the Raymark site.

The file review performed in March, 1991 by IT at CTDEP indicated that the Raymark property is under CTDEP order number 3539 dated August 2, 1983 due to groundwater and soil contamination resulting from improper oil and chemical storage, handling and disposal activities. In correspondence from the CTDEP to Raymark, a reference to a leaking underground storage tank containing toluene was made. Toluene, naphtha and other solvents were used in product manufacturing at Raymark for many years. Some of the contaminants present in subsurface soil and groundwater at the Synthetic Products Company site are: benzene, toluene, chloroform, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-dichloroethane, ethylbenzene, 1,1,1-trichloroethane, trichloroethylene, and xylenes.
All but four (4) of these contaminants present at the Synthetic Products facility were also found at the Raymark facility. Groundwater analyses at the Raymark facility indicates the presence of: vinyl chloride, 1,1-dichloroethene, 1,1-dichloroethane, trans-1,2-dichloroethane, trichloroethane, chlorobenzene, chloroethane, chloroform, methylene chloride, ethylbenzene, 1,1,1-trichloroethane, benzene and toluene. A summary of the groundwater analytical data at the Raymark facility has been compiled and is presented in Table 2.

A comprehensive file search of USEPA Region I CERCLA, CTDEP Water Management Bureau Files, and CTDEP Hazardous Material Bureau files on Superfund, underground storage tanks, oil and chemical spill, and CTDEP solid waste division files has not been performed.

A file review conducted by IT at USEPA Region I RCRA division files in Boston, Massachusetts indicates several sources of contamination at the Raymark site that are hydraulically upgradient of the Synthetic Products site. These potential contributing sources of contamination to the Synthetic Products site are presented in Figure 4.

4.0 SITE GEOLOGY AND HYDROGEOLOGY

4.1. Regional Geology

The site lies within the southeastern part of the Western Highland Region of Connecticut, along the Long Island Sound coastline. The bedrock geology of this area consists of a sequence of metasedimentary and metavolcanic rocks of Paleozoic age. The bedrock has been mapped as the Derby Hill Schist (Od), (Fritts, 1962a, 1962b), and was not encountered during drilling or excavation. The Derby Hill Schist is classified as a medium to fine grained, thinly laminated, greenish-gray to medium dark-gray chlorotic muscovite schist. The Milford, Connecticut U.S. Geological Survey Geologic Quadrangle Map of Bedrock Geology is presented in Figure 5. Boring log information obtained from the CTDEP files on the Raymark site indicates that bedrock has been encountered at a depth of 56 feet below grade.

The surficial soil consists mainly of glacial till containing sand, gravel and boulders; and silt layers. Swamp deposits such a peat, organic rich clay and silt have accumulated in many shallow basins in the glacial drift. The reference used for surficial geology is the Surficial Geology map of the Ansonia and Milford Quadrangles prepared in 1968 by the Geological and Natural History Survey, State of Connecticut.

4.2 Regional Hydrogeology

The regional hydrogeology consists of a surficial aquifer and a bedrock aquifer. The regional direction of groundwater flow in the surficial aquifer is towards the Housatonic River, which is east-southeast of the site. The subject site is located at the southern end of the Housatonic River drainage basin; the location of lowest hydraulic head. The "Water Resources Inventory for the Lower Housatonic River Basin," prepared by the United States Geological Survey (USGS) and the CTDEP indicates that the saturated thickness of the stratified drift deposits in this area may range from 40 to 80 feet. The "Water Resources Inventory for the Lower Housatonic River Basin" also indicates that the hydraulic conductivity in the surficial sediments in the region ranges from 0.1 foot per day (ft./day) for silt and clay to 0.87 feet per day for gravelly deposits.

The Housatonic River is located approximately 1,200 feet to the southeast of the site. The river is classified as a Class C inland surface water by CTDEP and presented on the

Connecticut Water Quality Classification Map. See Figure 6. Class C surface water meets water quality criteria for supporting certain fish and wildlife habitat, and for certain recreational activities, agricultural, and industrial uses, and cannot be used for potable water without treatment.

Groundwater in the area of the site is classified as GB by CTDEP with a designated use for industrial process water and cooling water, and is not useable for human consumption without treatment. The goal of the CTDEP for class GB groundwater is to prevent further degradation by preventing any additional discharge that would cause irreversible contamination as referenced in the CTDEP Water Compliance Unit groundwater classification map dated February, 1987 and shown in Figure 6.

The Derby Hill Schist bedrock modt likely underlies the surficial deposits at the subject site. Groundwater flow typically occurs in bedrock fractures within the upper 200 feet below the overburden-bedrock interface. The median yield of bedrock wells in this type of bedrock is typically 5-6 gallons per minute. Bedrock well yields are typically greater when stratified drift overlies bedrock as opposed to less permeable till as encountered at the subject site.

4.3 Local Geology

The surficial geology of the Synthetic Products site as presented in the geologic cross section of Figure 7 running west-east consists mainly of fill material in the upper six (6) to eight (8) feet. Based upon observations during excavation and soil borings, this fill is described as dark brown, fine to course grained sand and silt with trace boulders ranging in size form four (4) to twelve (12) inches in diameter. In observation well OW-5, the top of a clay layer was documented at 7 to 8 feet below grade. The clay layer was encountered at 15 feet below grade in observation wells OW-1 and OW-2 due to the higher elevation of the ground surface as a result of the highway embankment. This clay layer was confirmed by an IT geologist below the fill layer over much of the area that was excavated by IT during the removal of the dry well leaching system. The continuity or thickness of this organic clay layer across the site is not known. Most of the surficial material below the organic rich clay is considered to be glacial till consisting of a brown to gray medium sand with gravel and trace cobbles.

4.4 Local Hydrogeology

Based on soil boring and well installation logs included in Appendix A, the average depth to groundwater varied from 3 to 8 feet below grade with the exception of OW-1 to OW-3 where groundwater was discovered at a depth ranging from 12.5 to 16 feet below grade, because these wells are located approximately 10 feet higher in elevation.

Examination of the boring logs reveals that the surficial (1-20 feet below grade) water-bearing soils are of moderate to low permeability (10^{-3} to 10^{-5} cm/s). Sustainable yields from RW-1 of approximately 25 gallons per minute indicate the presence of higher permeability sands in this well at a depth of approximately 30 feet. Although the boring log for this recovery well is not available, the inferred higher permeability is probably the result of beach sand which is likely to be convoluted. This is borne out by other boring logs, which show the presence of convoluted higher permeability material at depths of 15 to 30 feet below grade.

An organic rich clay layer (peat or meadow matt) of 1 to 2 feet in thickness appears at a depth of approximately 8 to 10 feet below grade. The clay layer was also encountered during excavation of the leach field area, at which time it was observed to be laterally extensive across the area of the excavation. Due to the presence of this layer of relatively lower permeability, vertical movement of groundwater and water-borne contaminants have been inhibited. It is likely that this layer is fairly continuous across the site.

In general, the water-bearing soils below the clay layer are of a higher relative permeability than soils above the clay layer. Confined or semi-confined conditions may therefore exist for the water-bearing soils beneath the clay layer. Slug tests performed by Wehran in four observation wells, TP/W-1 through TP/W-4, were used to obtain the hydraulic conductivity for the lower water bearing unit. The slug test results from three of the four wells were within the range expected for sandy and gravelly soils. The hydraulic conductivity ranged from 4.57×10^{-4} cm/sec to 5.57×10^{-3} cm/sec, which is indicative of silty sand and clean sand.

Pump test data collected by IT and Wehran support the presence of a highly variable, heterogeneous subsurface. These tests reported sustainable yields in the 7 to 30 gallons per minute range for RW-1, with however inconsistent drawdown observed in the observation wells. For wells screened in the upper water-bearing unit (above the clay layer), the lack

of drawdown indicates the absence of significant hydraulic communication between the upper and lower water-bearing units.

Based on monitoring well data the local groundwater flow direction at the subject site as shown in Figure 8 is generally toward the south, southwest with a hydraulic gradient ranging from 0.003 to 0.013 across the site. The southwesterly groundwater flow direction is influenced by the presence of compacted fill material used as embankment for the I-95 Expressway (see Figure 9). The weight of this 30-foot elevation embankment has most likely compacted the soil.

No exploration of the bedrock or the bedrock aquifer at the site has been made. Based on the data from soil boring operations at the Raymark site located 600 feet north of the subject site, bedrock groundwater was found at a depth of 70 to 80 feet below grade. It is difficult to speculate about depth to bedrock on the subject site due to the very irregular bed configuration of Derby Hill Schist formation that is described by FRITTS (1965) and FLINT (1968) in Geology of the Stratford Area.

5.0 REMEDIAL ACTION

5.1 Groundwater Recovery and Treatment System

As previously mentioned, preliminary hydrogeologic investigations conducted in 1980 by Wehran Engineering Corp. and RECRA Research, Inc. confirmed the presence of separate-phase hydrocarbons in the subsurface. Additional investigation was then performed by NEPCCO to further delineate the extent of subsurface contamination. These investigations consisted primarily of the installation of groundwater monitoring wells and analyses of groundwater samples. As a result of the NEPCCO investigation, NEPPCO recommended the installation of a groundwater pump and treat system to recover the separate-phase and dissolved-phase hydrocarbons from groundwater. The system was in operation from June, 1983 to July, 1990. During this time, the recovery system complied with all terms and conditions of the pertinent operational and discharge permits. Operation of the system was terminated in July 1990 after consultations with the Connecticut DEP.

A 24 inch diameter recovery well, RW-1, was installed in June, 1983 for groundwater recovery. The recovery system consisted of a Floating Filter Scavenger for separate-phase recovery and a groundwater table depression pump. A location plan of the recovery well is shown in Figure 10, and a schematic of the treatment system is shown in Figure 11. The recovery and treatment system has a hydraulic capacity of 70 gallons per minute. Separate-phase hydrocarbons are collected in an aboveground 550 gallon storage tank and ultimate disposal of the collected material is at the DuPont Waste Treatment facility in Wilmington, Delaware. Groundwater is pumped to an on-site air stripping tower prior to discharge to the local sanitary sewer. The air stripping tower was used for reduction of volatile organic compounds and has dimensions of 36 inches diameter by 20 feet height. It was filled with Lanpack packing. A 10 horsepower blower was used to provide aeration in the tower. A pretreatment system for the addition of acrylic acid and hypochlorite was later added to reduce the iron precipitation and biological fouling, respectively, on the internal surfaces.

A lateral recovery trench was designed and installed in April, 1986 by NEPCCO to enhance separate-phase recovery and groundwater flow to recovery well RW-1. The location of the recovery trench is shown in Figure 10. The trench was ten feet deep, four feet wide, and 100 feet long, and was filled with three-quarter inch crushed stone, without a horizontal collection pipe. Design drawings for the trench are not available. Two observation wells,

OW-9A and OW-9B, were installed in the recovery trench. Soil boring logs for these wells were not recorded.

During April 1987, NEPCCO installed three additional monitoring wells (OW-10, OW-11 and OW-12) to assess the extent of separate-phase hydrocarbons found in OW-6, OW-8 and OW-9A. During routine operation and maintenance in 1988, a decrease in flow rate within the recovery trench was noted. The observation wells within the trench were redeveloped by purging and a six-hour pump test was performed on June 29, 1988 to assess aquifer hydraulic properties. A surface mounted centrifugal pump was used to pump 30 gallons per minute from the recovery well, RW-1, and depth to water elevations were recorded at the observation wells.

A second recovery well, RW-2, was installed in August, 1990 (when the dry well leaching system was excavated) adjacent to the sewer line and intersecting with the gravel subbase of the sewer line to collect separate-phase hydrocarbon migrating through the gravel subbase. Recovery well RW-2 does not intersect with the recovery trench. The trench was not disturbed during the excavation of the dry well leaching system in 1990.

A five year discharge permit, #DEP/WPC-138-039, was obtained from CTDEP to operate the groundwater treatment system on July 19, 1983, although it expired on July 19, 1988. A discharge permit was also obtained from the Town of Stratford, Connecticut, Office of Public Works on March 28, 1983 for a term of one year. The permits were later modified to include the addition of pretreatment. An application for extension of the permit was filed in August, 1988 with CTDEP Water Compliance Division, but has not been acted upon. In the interim, the treatment system has been operated under the conditions of the original permit from 1983. Based upon the original CTDEP permit, it is required that the effluent from the groundwater treatment system be sampled monthly for benzene, toluene, heptane, ph, and flowrate. The discharge permit for the Town of Stratford required the following discharge conditions: maximum flow is 60 gallons per minute, maximum biochemical oxygen demand is 300 milligrams per liter, maximum suspended solids is 350 milligrams per liter, and ph must be within 5.5 to 9.0 . A permit for storage of hazardous waste in the separate-phase collection tank was not required by the Fire Marshal for the Town of Stratford. When the treatment system was in operation from July, 1983 to June, 1990 weekly site visits were made to check operation of the system and to monitor the monitoring wells for

separate-phase thickness. Effluent samples were collected monthly as required, along with samples for chlorine, which were analyzed in the field, to evaluate the effectiveness of the pretreatment.

All system operational records are maintained by IT Corporation. When the system was in operation, all compliance conditions, as detailed in the pertinent operating permits, were fulfilled. Monthly reports continue to be sent to the Connecticut DEP regarding the system's terminated operational status.

Following the confirmation of a clay peat layer (meadow matt) in June 1990 during leachfield excavation, operation of the recovery system was terminated. A consensus with the Connecticut DEP was reached regarding the adverse potential of drawing surficial contaminants through the clay layer if pumping were to be continued. Recovery well RW-1 penetrates the clay layer and is in contact with higher permeability sands. An additional concern involved the potential of induced offsite contaminant migration onto the site, particularly via the sanitary sewer line that crosses the Raymark site before entering the Synpro site.

5.2 Ground Water Quality

5.2.1 Separate-Phase Hydrocarbons

Separate-phase hydrocarbons were first recorded during the preliminary investigation by Wehran. The separate-phase hydrocarbons were analyzed and found to contain 70 percent heptane, 20 percent monomers, and 10 percent miscellaneous solvent compounds and water. Separate-phase hydrocarbons were also discovered by Wehran in test pits and in observation wells as referenced in "Hydrogeological Investigation and Remedial Action Report" dated November 12, 1980. In November 1982, separate-phase hydrocarbon was discovered in monitoring wells OW-7 and OW-8 with a maximum thickness of 0.89 feet as referenced in "Investigative Summary" dated December 16, 1982.

Based upon the monthly monitoring reports from June, 1983 to January, 1985, approximately 2,472 gallons of separate-phase hydrocarbons have been recovered by the groundwater recovery and treatment system. See Table 3. The separate-phase hydrocarbon was primarily removed during first two years system operation.

Initially, the greatest thickness of separate-phase hydrocarbons was measured in wells OW-4, OW-6, OW-7, OW-8, OW-9A, OW-9B, OW-10,OW-12,OW-13,RW-1,RW-2. The average thickness of separate-phase hydrocarbons varied from 0.5-1.5 feet. In April, 1986, a significant amount of separate-phase hydrocarbon was discovered during installation of the recovery trench. This material was removed with a vac-truck during recovery trench construction and later by bailing the monitoring wells during the weekly monitoring schedule.

During excavation of the dry well and leaching field from July, 1990 through August, 1990 the recovery sump, RW-2, previously shown in Figure 3, was used to recover separate-phase hydrocarbons that were discovered to be leaching from the gravel subbase under the sewer line. Approximately, 300 gallons of separate-phase hydrocarbons mixed with water were removed and disposed.

Separate-phase hydrocarbons were detected intermittently in the recovery trench and observation wells from 1986 to 1989. From 1986 to 1987, separate-phase thicknesses of approximately 1 foot were detected in wells OW-6, OW9A and OW-9B. By January 1988, maximum separate-phase thicknesses in any well had decreased to less than 0.2 feet. By April 1989, all separate-phase thicknesses had been reduced to an occasional sheen. From September 1989 to December 1992 separate-phase hydrocarbon, including films or sheens, were not detected in any site wells.

5.2.2 Dissolved-Phase Hydrocarbons

Dissolved-phase hydrocarbons were first detected in four observation wells by Wehran on May 28, 1980 as referenced in "Hydrogeological Investigation and Remedial Action Report". As referenced in the report by Wehran, the total organic carbon concentration in groundwater varied from 930 milligrams per liter (mg/l) to 5,320 mg/l. Organic scan (FID) as carbon in naphthalene standard concentration varied from 180,000 ppm to 690,000 ppm. Total halogenated organics as chlorine in carbon tetrachloride standard varied from nondetectable at 10 ppb to 170 ppb.

After installation of the groundwater recovery and treatment system by NEPCCO in June, 1983, influent volatile organic compound concentration was analyzed monthly by both EPA Methods 601 and 602 from June, 1983 to July,1990 to assess the overall groundwater quality. The results are presented in Table 4. VOC concentration remained relatively high at levels ranging from 30 micrograms per liter (ug/l) to a high value of 9,390 ug/l for volatile organics by EPA Method 602, and 71 ug/l to 14,547 ug/l for halogenated organics by EPA Method 601. Based upon this data, no trend is apparent.

Groundwater samples were collected by IT from several monitoring wells on three occasions (December 1982, April 1988, and July 1988). The most recent analytical results as presented in Table 5 indicate that dissolved phase hydrocarbons are generally present on the groundwater across the site and consist primarily of benzene and toluene and other halogenated compounds. Groundwater analytical results from April 23, 1988 and July 7-13, 1988, indicate that the total concentration of halogenated organics varied from nondetect to 258 ug/l in wells OW-1, OW-3, OW-8, and OW-11. Total volatiles organics varied from nondetectable in wells OW-1, OW-2, OW-3, to 240,625 ug/l in well OW-9B. No other sampling event for all wells was performed.

6.0 CONCLUSIONS

Based on data presented in this report and the referenced reports, the following conclusions can be drawn:

1) The primary reason for initiating the hydrogeological investigation at the Synthetic Products Company site in 1980 was the presence of separate-phase hydrocarbons in the subsurface. Approximately 2,472 gallons of separate-phase hydrocarbons have been removed from subgrade by total fluids recovery from recovery wells and a recovery trench; by soil excavation, bailing, and; by disposal of underground storage tanks, buried drums, dry wells, and a leaching field.

2) The dry well leaching field and unsaturated zone contaminated soil between the two buildings was excavated and disposed to limit the contribution of separate-phase hydrocarbons to the groundwater. An unknown volume of contaminated soil may still exist around the foundations of the two buildings. The soil immediately surrounding the building foundations could not be excavated without causing a disturbance to the buildings or foundations.

3) Groundwater recovery and treatment for both separate-phase and dissolved-phase hydrocarbons in groundwater occurred from July, 1983 to June, 1990. Monitoring well data from 1989 to 1992 indicates that the separate-phase hydrocarbons are not present in wells OW-5,OW-6,OW-8,OW-9A,OW-10,OW-12,OW-13,RW-1,RW-2. Volatile organic compound analyses of the influent to the groundwater treatment system indicates that there is no specific trend either upward or downward in volatile organic compound concentration.

4) The horizontal and vertical extent of residual dissolved-phase hydrocarbons in groundwater at the Synthetic Products Company site is not known. It is likely that vertical hydrocarbon migration has been limited by the presence of a organic rich clay layer that lies approximately 8 to 10 feet below grade.

5) Based upon boring logs and aquifer testing, the subsurface consists of glacial till, marsh remnants and convoluted beach sands, creating a water-bearing subsurface of highly variable permeability.

6) A comprehensive environmental file search for all contributing sources of groundwater contamination in the area surrounding the site has not been performed.

7) Based upon information obtained from a USEPA RCRA file review conducted by IT for the Raymark site, the Synthetic Products Company site is hydraulically downgradient and contaminant transport onto the site is most likely occurring by groundwater flow.

8) Based upon observations during excavation of a test pit installation of recovery well, RW-2, adjacent to the sewer line crossing the Synthetic Products site, the gravel subbase of the sewer may be acting as a conduit for separate-phase migration onto the subject site from the Raymark site or some other hydraulically upgradient source.

References

Hydrogeological Investigation and Remedial Action Report, prepared by Wehran Engineering Corp. and Recra Research Inc., November 12, 1980

Investigative Summary , Dart Industries, Ware Chemical Division, Barnum Avenue Plant, Stratford, Connecticut, prepared by New England Pollution Control Co., Inc., December 16, 1982

BCM Engineers, Project No. 00-4579-09 Project Drawings, February,1984, USEPA RCRA File, Boston, Massachusetts

BCM Engineers, Project No. 00-4579-29, October,1986 , USEPA RCRA File, Boston, Massachusetts

Hydrocarbon Evaluation, Synthetic Products Company, Stratford, Connecticut, prepared by IT Corp., May, 1991

Hydrogeological Reassessment, Synthetic Products Facility, Stratford, Connecticut, prepared by New England Pollution Control Co., Inc., June 10, 1987

Project Update, Groundwater Cleanup Program, Synthetic Products, Stratford, Connecticut, prepared by IT Corp., January 24, 1989

IPC Project No. 1645-01-1 Project Drawings, October, 1990, USEPA RCRA File, Boston, Massachusetts

Leggette, Brashears and Grahm, Inc. Project Notes, July, 1990, USEPA RCRA File, Boston, Massachusetts.

Excavation and Disposal of Dry Well Leaching System and Soil, Synthetic Products Facility, Stratford, Connecticut, prepared by IT Corporation, April 20, 1992.

Table 1

Monitoring Well Construction Details

Synthetic Products Facility
Stratford, Connecticut

Well Number	Date Installed	Screened Section Depth (feet)	Well Casing Elevation (feet)	Remarks
TP/W1	5/17/80	4-9	N/A	Test pit wells-backfilled
TP/W2	5/17/80	4-9	N/A	Test pit wells-backfilled
TP/W3	5/17/80	4-10	N/A	Test pit wells-backfilled
TP-W4	5/17/80	4-7	N/A	Test pit wells-backfilled
OW1	11/15/82	10-30	106.11	Paved Over by Ct. DOT
OW2	11/15/82	10-30	107.31	Paved Over by Ct. DOT
OW3	11/17/82	1-16.0	106.54	Paved Over by Ct. DOT
OW4	11/17/82	0-20	N/A	Lost and recovered in 1991 as OW-13
OW5	11/17/82	0-20	98.76	
OW6	11/18/82	0-20	99.26	
OW7	11/18/82	0-20	N/A	Destroyed prior to 1988
OW8	11/19/82	0-20	98.71	
OW9A	April/86	8	98.94	
OW9B	April/86	8	99.64	Destroyed

OW10	04/11/87	7-10	97.71	
OW11	04/11/87	3.5-10	99.58	Destroyed
OW12	04/11/87	5-10	99.10	
RW1	May, 1983	0-30	98.76	24 inch diameter Recovery Well
RW2	July, 1990	0-10	99.10	24 inch diameter Recovery Well

Notes:
1) N/A - not available
2) All wells are 4 inch diameter wells except for the two recovery wells.

Table 5

Groundwater Analytical Results
April, 1988; July 1988
Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

Monitoring Wells

Parameter	OW-1	OW-2	OW-5	OW-6	OW-8	OW-9A	OW-9B	OW-10	OW-11	OW-12
PH	6.36	5.40	7.66	5.50	6.68	6.82	6.49	6.13	7.2	7.36
Benzene	ND<15	ND<15	.188	102676	15.319	50.781	184.875	26.456	1.228	15.813
Chlorophorm	ND	ND	ND	.018	ND	.126	.235	.085	ND	ND
1,1, Dichloro-ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichloro-ethylene	ND	ND	.031	ND	ND	ND	ND	.154	ND	ND
Trans-1,2-Dichloro-ethane	ND	ND	ND	ND	ND	.029	.028	0.090	ND	.040
Ethyl-benzene	ND	ND	ND	ND	ND	ND	ND	.026	ND	ND
Toluene	ND	ND	ND	9.532	3.147	24.431	55.750	15.300	.010	9.510
1,1,1-Trichloro-ethylene	ND	ND	ND	ND	ND	.023	.013	.040	ND	ND
Trichloro-ethylene	ND	ND	ND	.028	ND	.103	0.225	.021	ND	.096
Xylenes	ND	ND	ND	.073	.007	.075	ND	ND	ND	ND

INTERNATIONAL TECHNOLOGY CORPORATION

Table 5 (Continued)
Groundwater Analytical Results
April, 1988; July, 1988
Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

Monitoring Wells

Parameter	OW-1	OW-2	OW-5	OW-6	OW-8	OW-9A	OW-9B	OW-10	OW-11	OW-12
Total Halo-genated	ND	ND	.031	.046	ND	.258	.235	.315	ND	.256
Total Volatile	ND	ND	.188	20.281	18.473	75.287	240.625	41.782	1.238	25.323

Notes:
1) Analytical results are reported in milligrams/liter (parts per million). OW-6, OW-9A & B, OW-10, OW-11, and OW-12 were sampled 4/23/88. OW-1, OW-2 and OW-5 were sampled on 7/14/88. OW-3 did not contain sufficient water for sample collection on either date.

2) ND = Not Detected

Reference:
1) Project Update Report by IT Corporation, January 24, 1989

Table 4
Groundwater Treatment System
Influent Volatile Organic Concentration
Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

DATE	EPA Method 601 Halogenated Organics	EPA Method 602 Volatile Organics
06/83	271+	2634
08/83	---+	337
09/83	1150+	1627
10/83	---+	615**
11/87	---	2843**
12/83	2007*	9390**
01/84	---	4560**
02/84	2629*	4940
03/84	---	7443**
04/84	---	6275**
04/84	---	1460
05/84	---	2590
06/84	---	960*
07/84	---	620
08/84	---	205
09/84	---	96
11/84	---	540
12/84	---	390
02/85	---	1806
03/85	---	1552
05/85	---	5811
07/85	---	3459
08/85	---	906
09/85	---	4127
09/85	---	2977
10/85	---	3062**
11/85	---	2601
01/86	---	231
02/86	---	5710
05/86	---	7956
08/86	---	3746**
10/86	---	3468

Table 4
Groundwater Treatment System
Influent Volatile Organic Concentration
Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

DATE	EPA Method 601 Halogenated Organics	EPA Method 602 Volatile Organics
04/87	---	2751
07/87	823	1708
09/87	476	2249
10/87	---	12591*
12/87	114	253
01/88	14547	1350
03/88	7102	400
08/88	5220	1800
12/88	7593	780
06/89	2303	5163
07/89	1020	9095
09/89	1833	ND
10/89	2541	2580
12/89	5355	390
01/90	5400	110
02/90	4980	1270
03/90	5280	30
04/90	3462	35
05/90	6855	2735
06/90	6240	1330
07/90	71.1	11423.3

Notes: + includes:
1,1,1-Trichloroethane Only
* includes:
Methylene Chloride
1,1,1-Trichloroethane
Chloroform
Trichloroethylene
** includes:
Heptane
Analytical results reported in micrograms per liter.

References:
1) Monthly Monitoring Reports, IT Corporation

Table 3
Separate-Phase Hydrocarbon Recovery

Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

Date	Recovery During Previous Week Gallons	Total Recovery Gallons
06/18/83	N/A	238
06/24/83	124	362
07/01/83	138	500
07/08/83	160	660
07/12/83	N/A	677
07/15/83	21	681
07/22/83	3	684
07/29/83	0	684
08/05/83	11	695
08/12/83	0	695
08/19/83	296	991
08/30/83	8	999
09/06/83	0	999
09/13/83	0	999
09/20/83	0	999
09/27/83	0	999
10/06/83	12	1011
10/11/83	3	1014
10/18/83	---	----
10/25/83	178	1192
11/01/83	8	1200
11/08/83	0	1200

Table 3
Separate-Phase Hydrocarbon Recovery

Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

Date	Recovery During Previous Week Gallons	Total Recovery Gallons
11/15/83	7	1207
11/22/83	14	1221
11/29/83	7	1228
12/06/83	14	1242
12/14/83	42	1284
12/20/83	244	1526
12/27/83	369	1895
01/10/84	41	1936
01/17/84	52	1988
01/24/84	42	2030
01/31/84	0	2030
02/07/84	0	2030
02/14/84	13	2043
02/21/84	3	2046
02/28/84	0	2046
03/06/84	11	2057
03/13/84	14	2071
03/20/84	10	2081
03/27/84	26	2107
04/03/84	126	2233
04/40/84	50	2283
04/17/84	34	2317
04/24/84	0	2317
05/01/84	0	2317
05/22/84	52	2309
06/12/84	23	2392
06/26/84	26	2418
07/03/84	15	2433
08/07/84	5	2438
08/28/84	25	2463
10/02/84	0	2463

Table 3
Separate-Phase Hydrocarbon Recovery

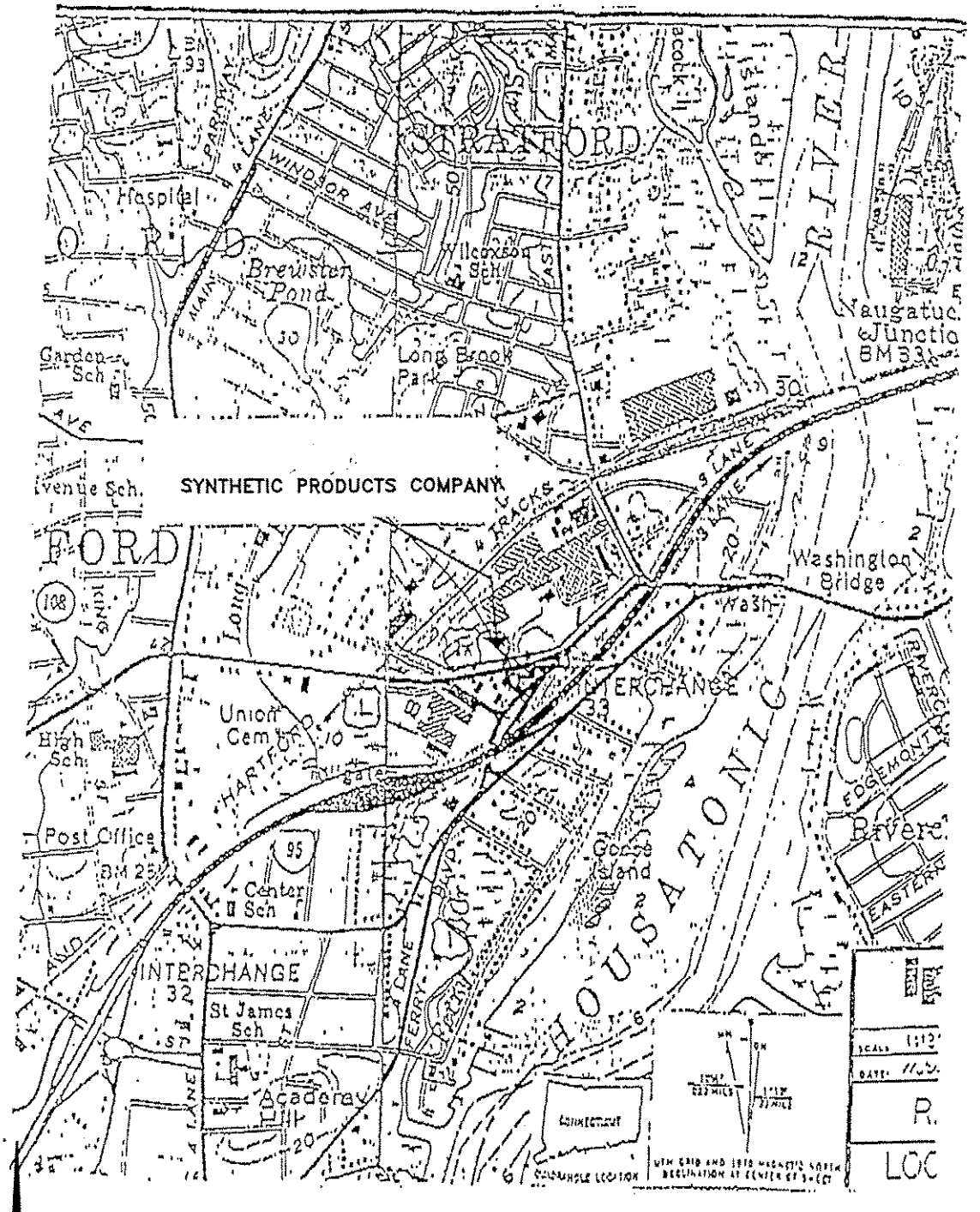
Synthetic Products Company
Stratford, Connecticut
IT Project Number 530029

Date	Recovery During Previous Week Gallons	Total Recovery Gallons
10/30/84	0	2463
11/27/84	0	2463
12/18/84	6	2469

Note:
1) N/A = not available

References:

1) Project Update Report, prepared by IT Corporation, January 24, 1989
2) Weekly Monitoring Reports, prepared by IT Corporation



SOURCE: REPRINTED FROM IPC REPORT, 10/20/88

DRAWN BY	MOP 10/06/92	CHECKED BY / APPROVED BY		DRAWING NUMBER	A-BLANK1

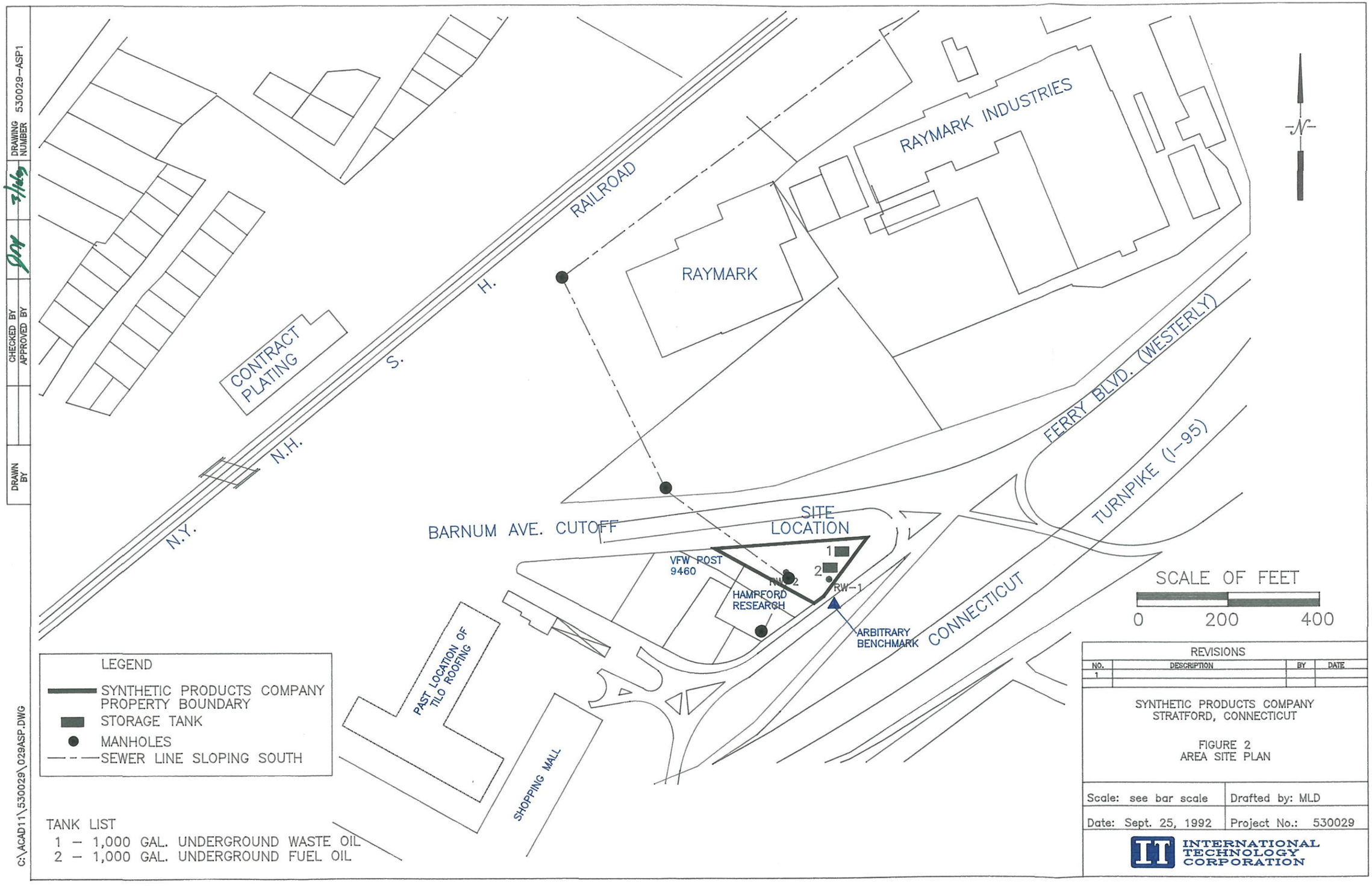
C:\ACAD11\530029\A-BLANK

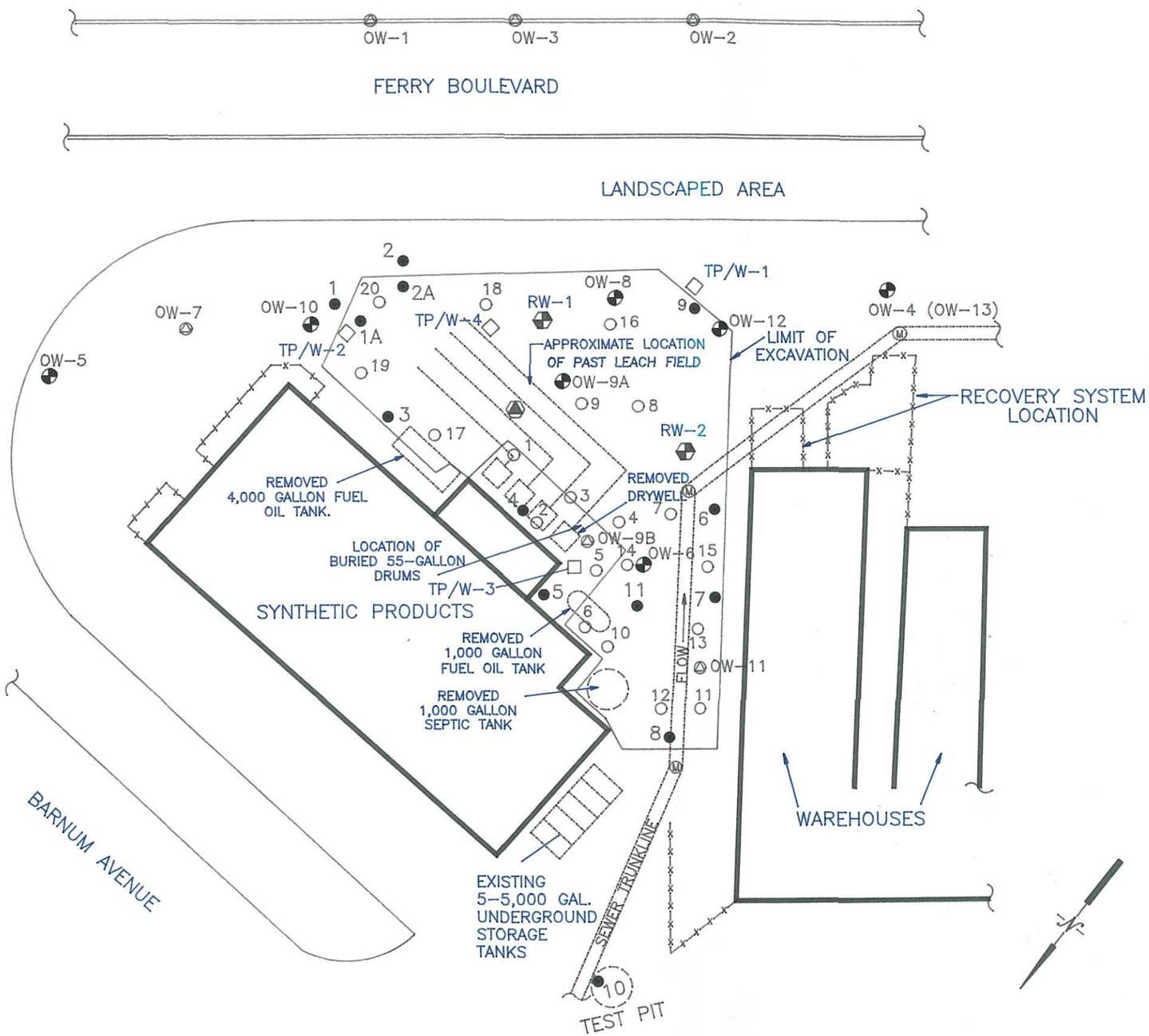
SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

FIGURE 1
SITE LOCATION MAP

Scale: as shown	Drafted by: MOP
Date: Sept. 25, 1992	Project no.: 530029

INTERNATIONAL TECHNOLOGY CORPORATION


N.Y. N.H. RAILROAD
CONTRACT PLATING
RAYMARK
RAYMARK INDUSTRIES
FERRY BLVD. (WESTERLY)
TURNPIKE (I-95)
CONNECTICUT
BARNUM AVE. CUTOFF
SITE LOCATION
1
2
VFW POST 9460
MW-2
RW-1
HAMPFORD RESEARCH
ARBITRARY BENCHMARK
PAST LOCATION OF TILO ROOFING
SHOPPING MALL
N
SCALE OF FEET
0 200 400
LEGEND
SYNTHETIC PRODUCTS COMPANY PROPERTY BOUNDARY
STORAGE TANK
MANHOLES
SEWER LINE SLOPING SOUTH
TANK LIST
1 – 1,000 GAL. UNDERGROUND WASTE OIL
2 – 1,000 GAL. UNDERGROUND FUEL OIL
REVISIONS
NO. DESCRIPTION BY DATE
1
SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT
FIGURE 2
AREA SITE PLAN
Scale: see bar scale
Drafted by: MLD
Date: Sept. 25, 1992
Project No.: 530029
INTERNATIONAL TECHNOLOGY CORPORATION
DRAWING NUMBER 530029-ASP1
CHECKED BY
APPROVED BY
DRAWN BY
C:\ACAD11\530029\029ASP.DWG



LEGEND

- CHAINLINK FENCE
- OBSERVATION WELL
- RECOVERY WELL
- ABANDONED WELL
- SURFICIAL SOIL SAMPLE POINT
- SOIL BORING
- ABANDONED SUMPWELL
- EXISTING RECOVERY WELL
- ABANDONED TEST PIT WELLS
- MANHOLE

NOTE:
1) OBSERVATION WELL OW-4 AND OW-13 ARE THE SAME. THE WELL WAS COVERED OVER AND THEN RECLAIMED.

SCALE OF FEET
0 30 60

REVISIONS

NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

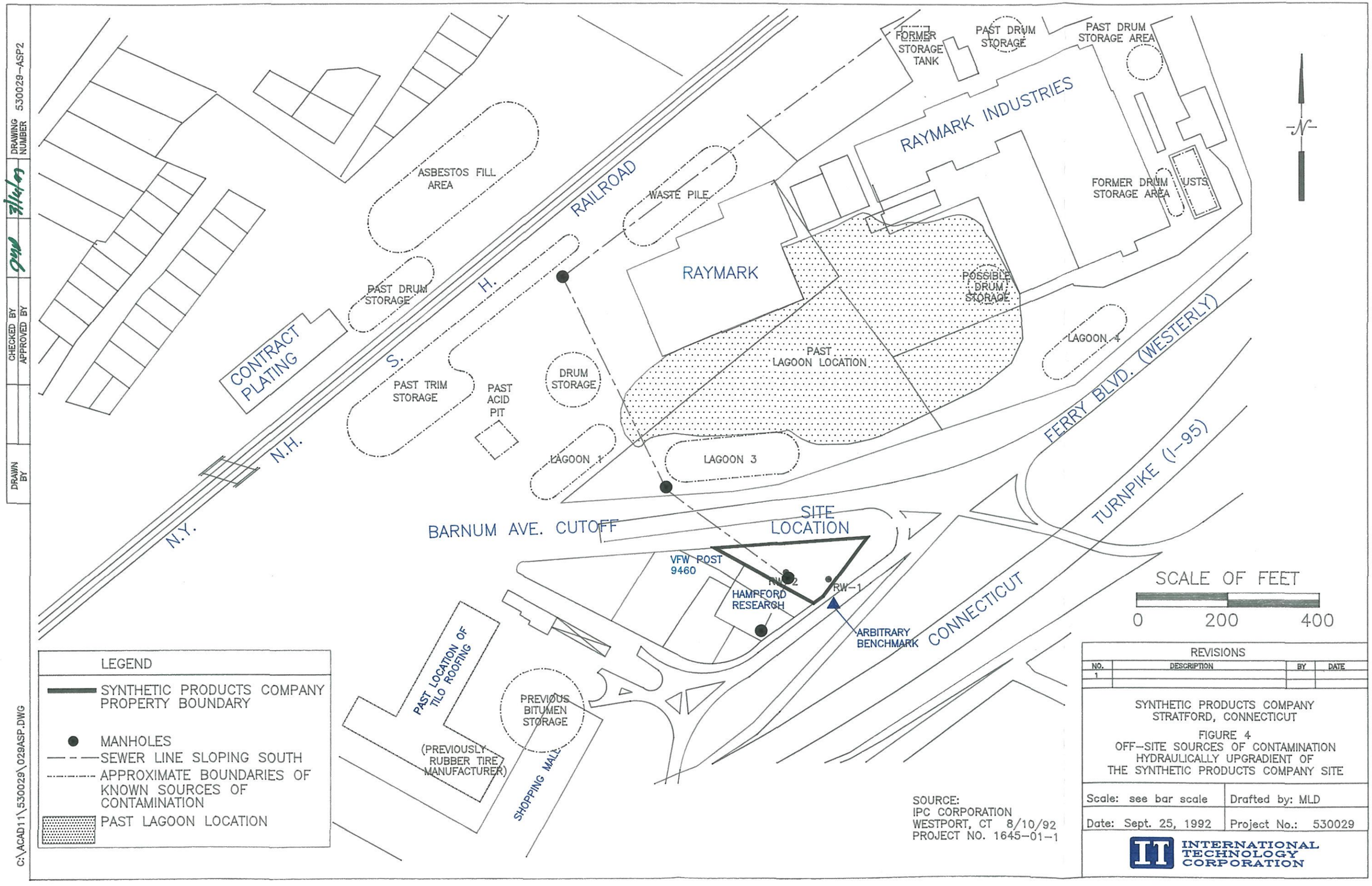
FIGURE 3
SUMMARY MAP OF SOIL BORINGS, SURFICIAL SOIL SAMPLES, AND MONITORING WELLS

Scale: see bar scale	Drafted by: MLD
Date: 11 February 1992	Project No.: 530029

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY	M. DAUDERIS 2/11/92	CHECKED BY / APPROVED BY		DRAWING NUMBER 530029-2

C:\ACAD11\2252\029\LEACH.DWG



REVISIONS

NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

FIGURE 4
OFF-SITE SOURCES OF CONTAMINATION
HYDRAULICALLY UPGRADIENT OF
THE SYNTHETIC PRODUCTS COMPANY SITE

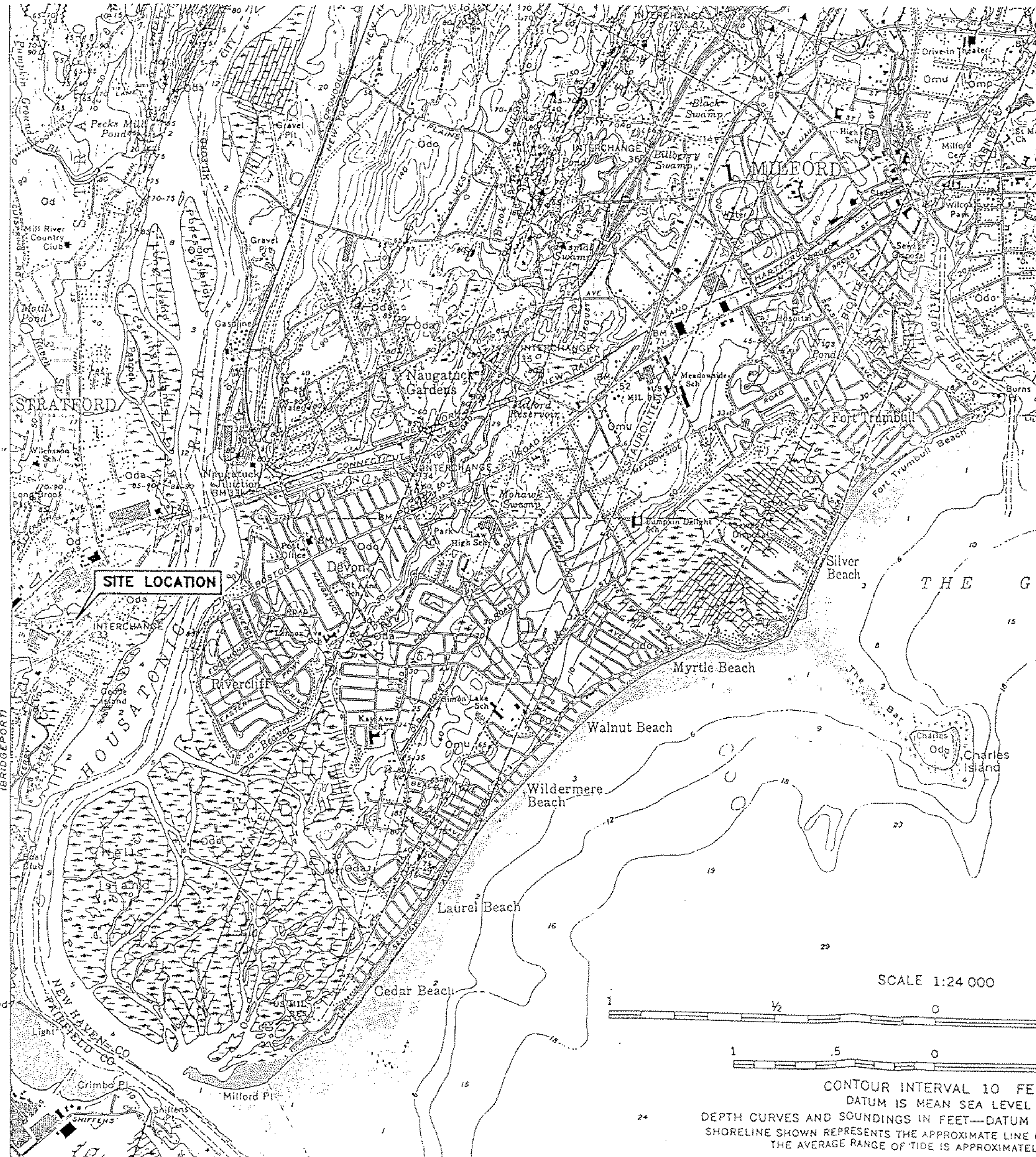
Scale: see bar scale	Drafted by: MLD
Date: Sept. 25, 1992	Project No.: 530029

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY	MOP 10/06/92
CHECKED BY	
APPROVED BY	
DRAWING NUMBER	530029-BLANK

C:\ACAD11\530029\BLANK

SOURCE:
USGS GEOLOGICAL QUADRANGLE MAP
BEDROCK GEOLOGY
MILFORD QUADRANGLE, CONNECTICUT
GQ-427

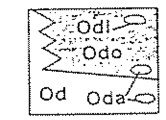


SCALE 1:24 000

1 — ½ — 0 — 1 MILE

1 — .5 — 0 — 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 6.5 FEET



Derby Hill Schist

Od, *mainly medium- to fine-grained, thinly laminated, greenish-gray to medium dark-gray chloritic muscovite schist west of Milford and phyllite to east; composed mainly of quartz, muscovite, chlorite, sodic plagioclase, and accessory ilmenite, rutile, tourmaline, zircon, and dustlike carbon; contains staurolite, garnet, minor biotite, and accessory magnetite northeast of Pecks Mill Pond in Stratford. Alternate quartz-rich and muscovite-rich laminae generally less than 5 mm thick. Also contains minor bands of quartz-rich paragneiss as much as 1 foot thick similar to predominant rocks of Oronoque Member; boundary generalized between units*

Odo, *Oronoque Member; mainly slabby to thinly laminated, medium- to fine-grained, greenish-gray to medium dark-gray quartz-rich and albitic paragneiss with schistose to phyllitic partings and layers containing abundant muscovite and chlorite; in some places in western part of area contains green or brown biotite and a little garnet; at least one schistose band north of Devon also contains staurolite and kyanite, but these minerals not characteristic; accessory minerals are ilmenite, magnetite, rutile, sphene, apatite, tourmaline, zircon, pyrite, and dustlike carbon. Quartz-rich layers from 1 mm to several feet thick are much more abundant than in underlying unit, especially in western half of quadrangle. Upper part of member also contains minor unmapped epidote-rich greenschists and amphibolites similar to those characteristic of undivided Maltby Lakes Volcanics*

Odl, *fine-grained, light- to medium-gray crystalline limestone containing streaks, lenses, pods, and bands of moderate yellowish-green to dusky yellow-green serpentine and abundant accessory magnetite*

Oda, *amphibolite mineralogically similar to that characteristic of Maltby Lakes Volcanics in staurolite and kyanite zones*

REVISIONS

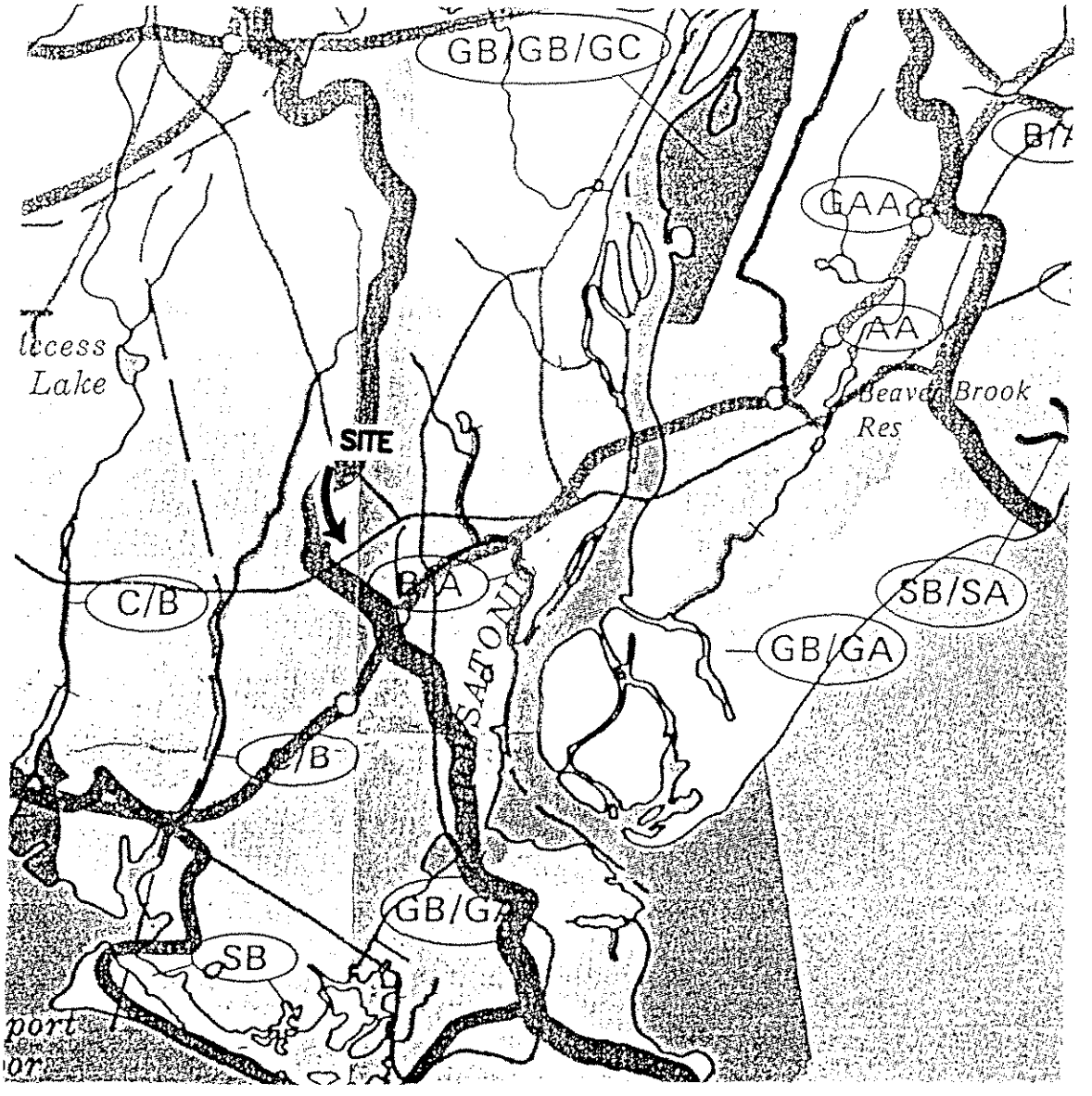
NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

FIGURE 5
USGS GEOLOGIC QUADRANGLE MAP

Scale: as shown	Drafted by: MOP
Date: 4 April 1991	Project No.:530029

INTERNATIONAL TECHNOLOGY CORPORATION



APPROXIMATE SCALE OF MILES

1 0 1

SOURCE:
WATER COMPLIANCE UNIT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF CONNECTICUT
1987

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNETICUT

FIGURE 6
WATER QUALITY CLASSIFICATION MAP

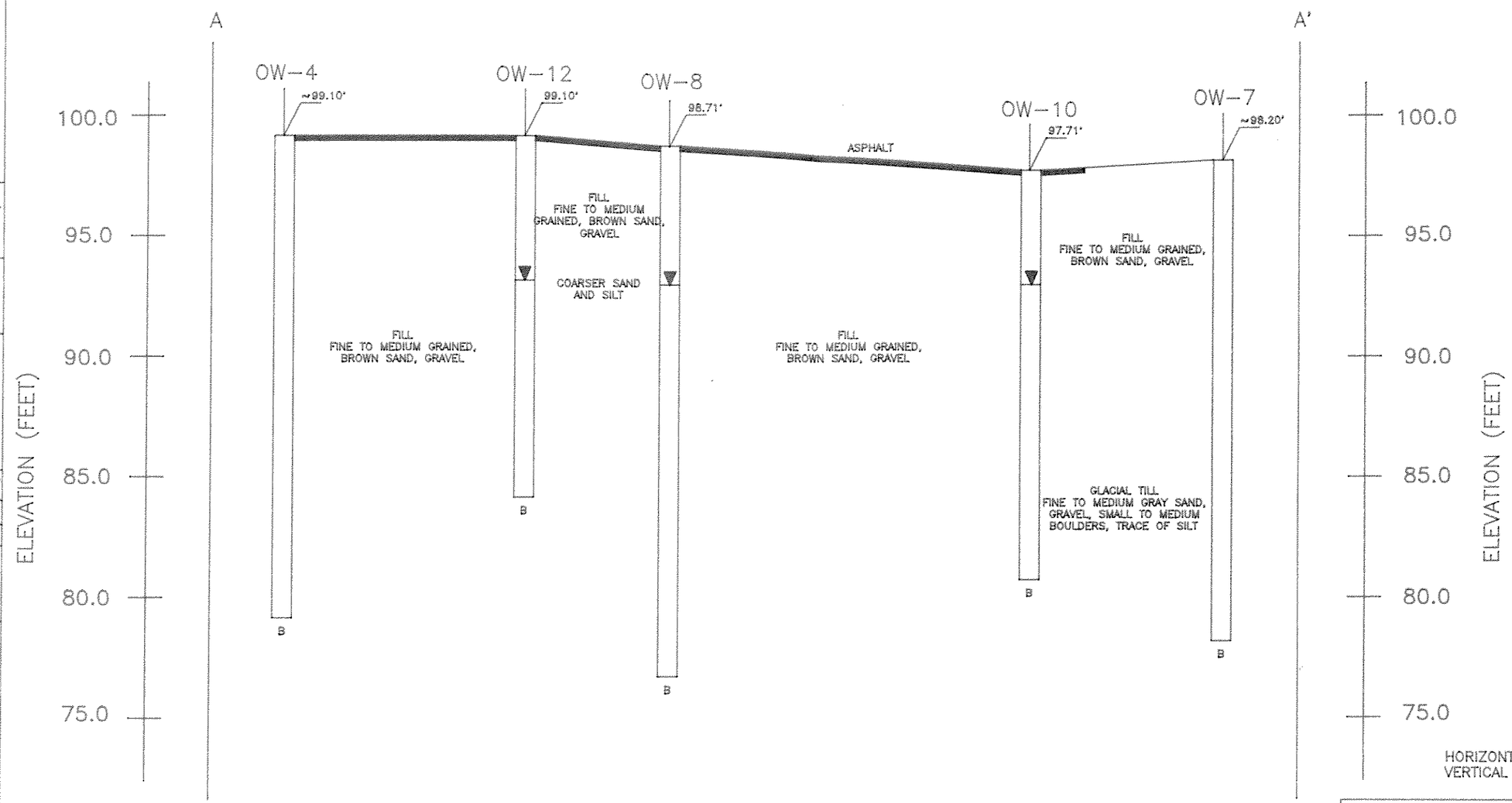
Scale: see bar scale	Drafted by: MOP
Date: October 6, 1992	Project no.: 530029

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWING NUMBER 530029-WCM1

DRAWN BY MOP 10/06/92 | CHECKED BY | APPROVED BY

C:\ACAD11\530029\029WCM



HORIZONTAL SCALE 1" = 100'
VERTICAL SCALE 1" = 5'

NOTE :

1) BEDROCK WAS NOT PENETRATED; BUT IS ASSUMED TO BE DERBY HILL SCHIST, AND ESTIMATED DEPTH IS 40–50 FEET BELOW GRADE.

2) CROSS SECTION A–A' RUNS WEST TO EAST

3) THE SEASONAL VARIATION IN GROUDWATER DEPTH ACROSS THE SITE, VARIES FROM 1 TO 8 FEET BELOW GRADE DEPENDING UPON THE SEASON.

4) CLAY LAYER MAY ACT AS A SEMI–CONFINING OR CONFINING UNIT. BASED UPON OBSERVATION DURING TRENCH CONSTRUCTION AND LEACHING FIELD EXCAVATION, IT APPARENTLY VARIES FROM 2–3 FEET IN THICKNESS WITH THE TOP OF THE CLAY LAYER BEGINNING AT A DEPTH OF 7–15 FEET BELOW GRADE.

5) GROUNDWATER ELEVATION BASED UPON DATA FROM JULY 1, 1992

6) CASING ELEVATION FOR WELLS OW–4 AND OW–7 IS ESTIMATED AND MUST BE SURVEYED.

LEGEND

OW–8 WELL BORING NUMBER

98.71' TOP OF CASING ELEVATION

GROUNDWATER ELEVATION

B BOTTOM OF BORING

REVISIONS

NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

FIGURE 7
GEOLOGIC CROSS SECTION A–A'

Scale: AS SHOWN	Drafted by: M. PEROZA
Date: 12/14/92	Project No.: 530029

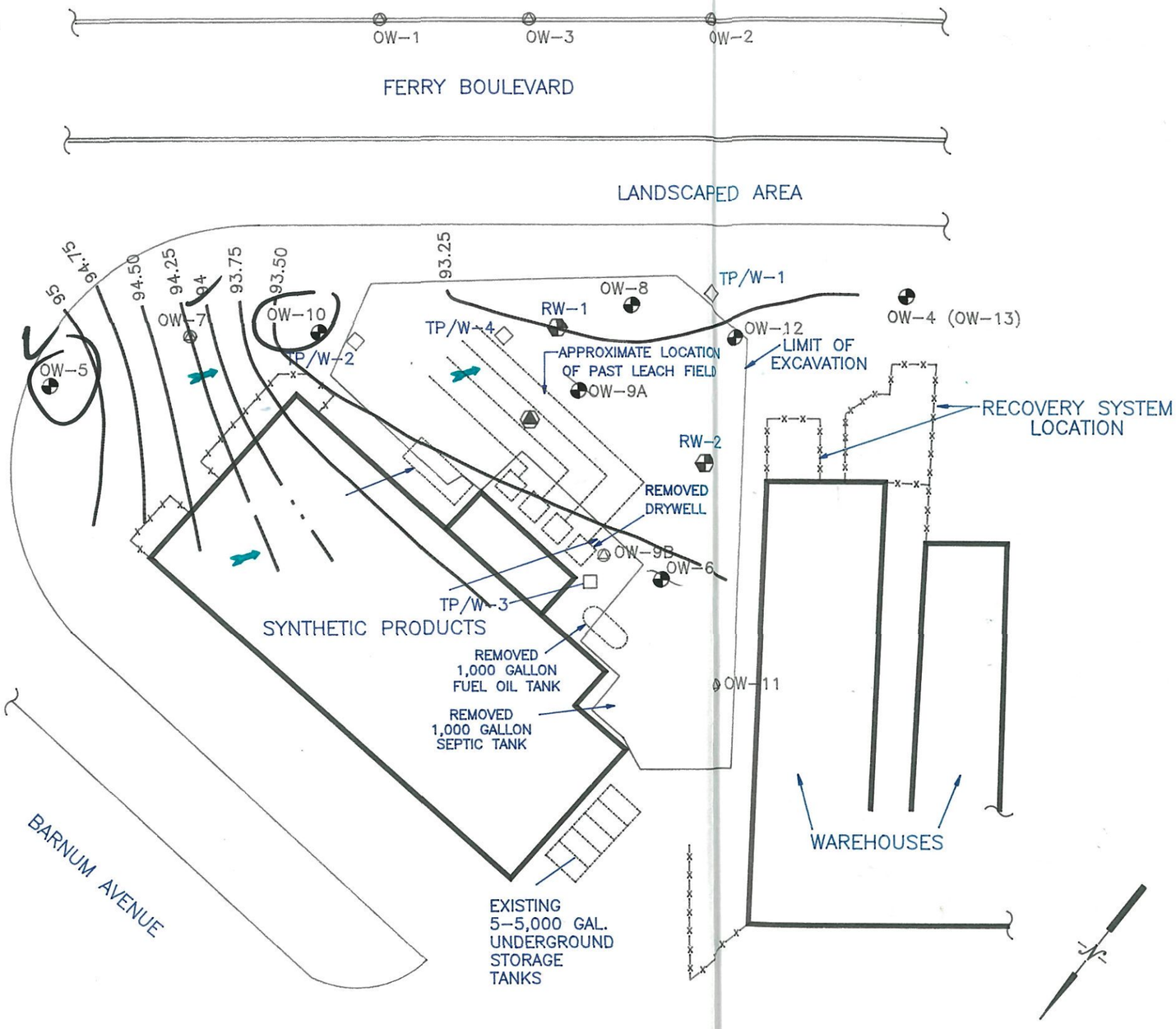
INTERNATIONAL TECHNOLOGY CORPORATION

DRAWING NUMBER 029XSECT-1

CHECKED BY
APPROVED BY

M. PEROZA 10/19/92
DRAWN BY

C:\ACAD11\530029\029SECT



LEGEND

- CHAINLINK FENCE
- OBSERVATION WELL
- RECOVERY WELL
- ABANDONED WELL
- SURFICIAL SOIL SAMPLE POINT
- SOIL BORING
- ABANDONED SUMPWELL
- EXISTING RECOVERY WELL
- ABANDONED TEST PIT WELLS
- 93.50 GROUNDWATER CONTOUR (FEET)
- GROUNDWATER FLOW DIRECTION

WELL #	RELATIVE ELEV. (FT)
OW-5	95.54
OW-6	93.57
OW-8	93.20
OW-9A	93.25
OW-10	93.29
OW-12	93.24

NOTE:
1) OBSERVATION WELL OW-4 AND OW-13 ARE THE SAME. THE WELL WAS COVERED OVER AND THEN RECLAIMED.

SCALE OF FEET
0 30 60

REVISIONS

NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

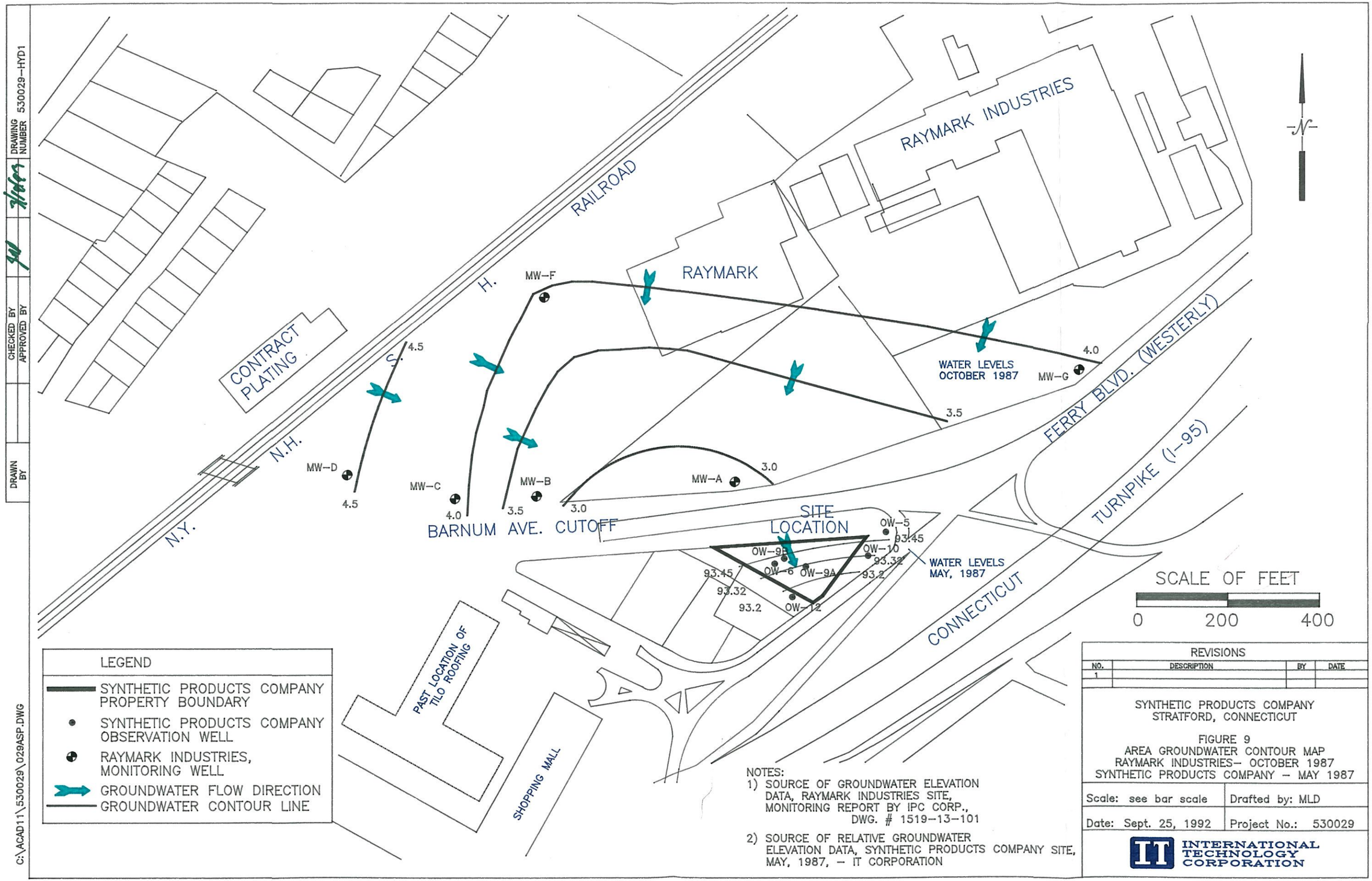
FIGURE 8
GROUNDWATER CONTOUR MAP FOR SYNTHETIC PRODUCTS COMPANY SITE
SEPTEMBER 1, 1992

Scale: see bar scale	Drafted by: MLD
Date: 11 February 1992	Project No.: 530029

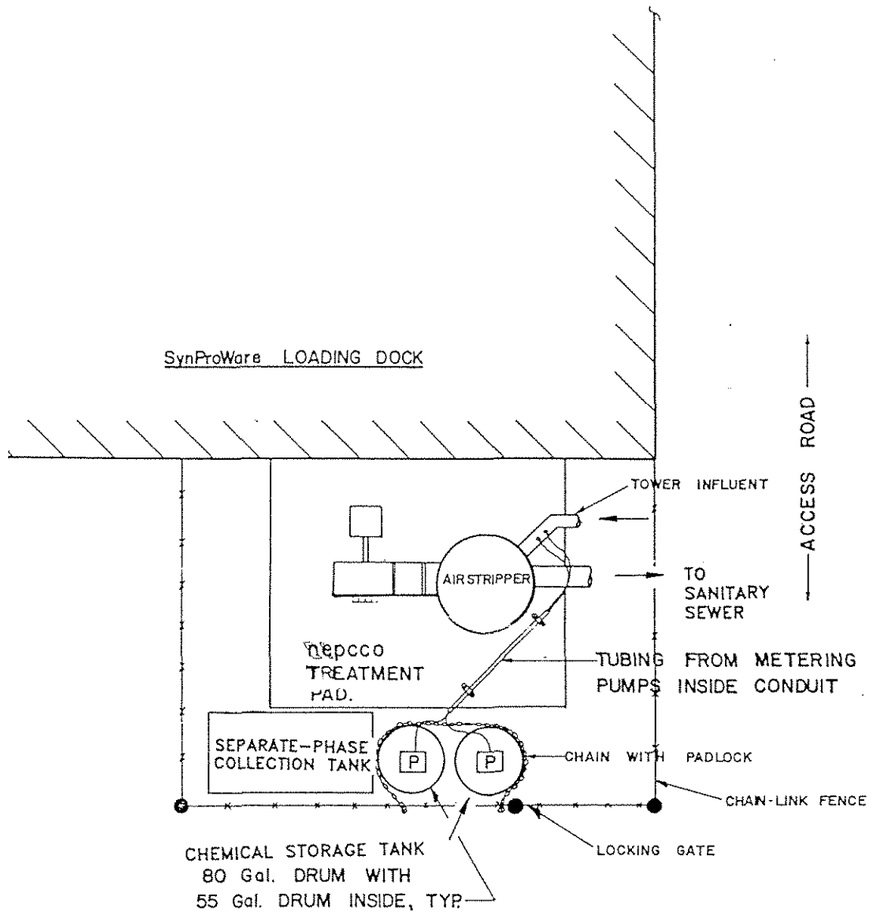
INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY	M. DAUDERIS 2/11/92	CHECKED BY / APPROVED BY		DRAWING NUMBER	530029-2

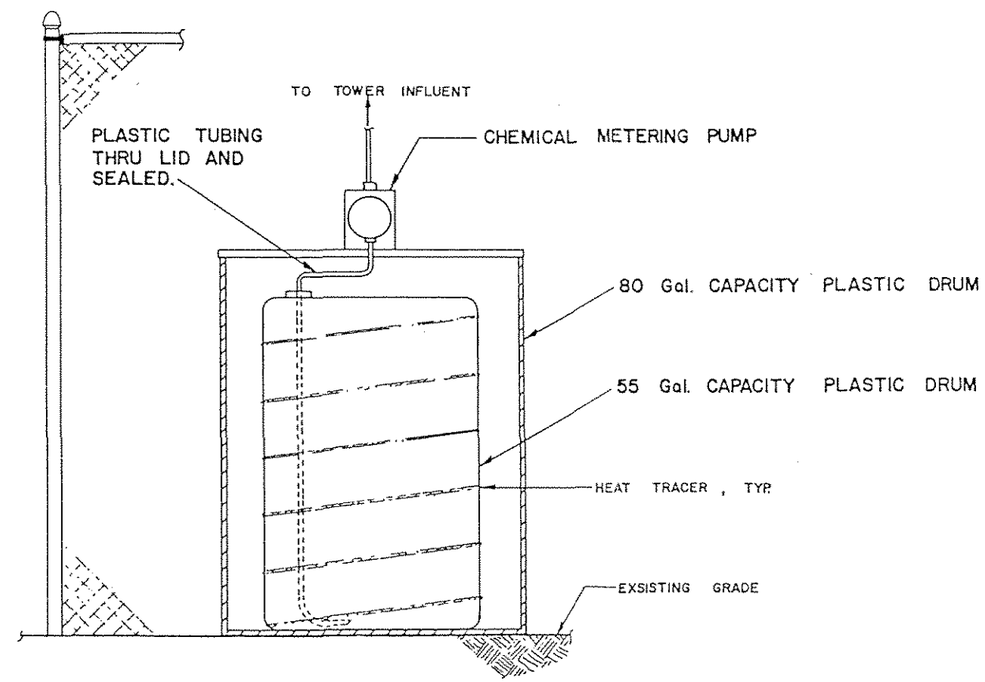
C:\ACAD11\2252\029\LEACH.DWG


RAYMARK INDUSTRIES
RAILROAD
RAYMARK
CONTRACT PLATING
N.H.
N.Y.
H.
S.
MW-F
MW-G
MW-D
MW-C
MW-B
MW-A
4.5
4.0
3.5
3.0
WATER LEVELS OCTOBER 1987
BARNUM AVE. CUTOFF
SITE LOCATION
OW-5
OW-10
OW-9B
OW-6
OW-9A
OW-12
93.45
93.32
93.2
WATER LEVELS MAY, 1987
FERRY BLVD. (WESTERLY)
TURNPIKE (I-95)
CONNECTICUT
PAST LOCATION OF TILO ROOFING
SHOPPING MALL
N
SCALE OF FEET
0
200
400
LEGEND
SYNTHETIC PRODUCTS COMPANY PROPERTY BOUNDARY
SYNTHETIC PRODUCTS COMPANY OBSERVATION WELL
RAYMARK INDUSTRIES, MONITORING WELL
GROUNDWATER FLOW DIRECTION
GROUNDWATER CONTOUR LINE
NOTES:
1) SOURCE OF GROUNDWATER ELEVATION DATA, RAYMARK INDUSTRIES SITE, MONITORING REPORT BY IPC CORP., DWG. # 1519-13-101
2) SOURCE OF RELATIVE GROUNDWATER ELEVATION DATA, SYNTHETIC PRODUCTS COMPANY SITE, MAY, 1987, - IT CORPORATION
REVISIONS
NO. DESCRIPTION BY DATE
1
SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT
FIGURE 9
AREA GROUNDWATER CONTOUR MAP
RAYMARK INDUSTRIES- OCTOBER 1987
SYNTHETIC PRODUCTS COMPANY - MAY 1987
Scale: see bar scale
Drafted by: MLD
Date: Sept. 25, 1992
Project No.: 530029
INTERNATIONAL TECHNOLOGY CORPORATION
DRAWING NUMBER 530029-HYD1
CHECKED BY
APPROVED BY
DRAWN BY
C:\ACAD11\530029\029ASP.DWG

NOTES: 1. DRAWING NOT TO SCALE
2. ALL DRUMS TO BE D.O.T. APPROVED, CHEMICAL RESISTANT CONTAINERS.
3. METERING PUMPS TO BE CONTROLLED BY A FLOW SENSING SWITCH ON TOWER INFLUENT.



PLAN VIEW



CHEMICAL STORAGE DETAIL VIEW

REVISIONS			
NO.	DESCRIPTION	BY	DATE
1			

SYNTHETIC PRODUCTS COMPANY
STRATFORD, CONNECTICUT

FIGURE 11
GROUNDWATER TREATMENT SYSTEM

Scale: as shown	Drafted by: MOP
Date: 4 April 1991	Project No.: 530029

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWING NUMBER 530029-BLANK
CHECKED BY / APPROVED BY
DRAWN BY MOP 10/06/92
C:\ACAD11\530029\BLANK

Appendix A

Boring Logs

Reference: Project Update Report, January 24,1989

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

- ☑ EAST NORWALK, CT. 203/853-1990
- ☐ NEW HAVEN, CT. 203/777-1339
- ☐ TRENTON, N.J. 609/259-3333
- ☐ NEWARK, N.J. 201/589-1282
- ☐ PHILADELPHIA, PA. 215/245-6929

INTERNATIONAL ECOLOGY CORP.

Page _____ of _____

Date Mon. Nov 15, 1982

Job No. 2588

Job Address Uase Chemical Division. Stratford CT.

Boring No. 1,2.

Fixed Datum used is _____

Ground Surface this boring is _____

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
3"	4"	Asphalt.	H		1	3'-5'		AUGER				18" Drop
4"	1'-6"	Misc Fill, Wood, large	O		2	5'-7'		AUGER				300lb Hammer
		Trap Rock, Etc.	L		3	10'-12'	2	2	4	5		3" split Spoon
1'-6"	3'	Fine to MED Brown	L		4	15'-17'	2	3	5	5		Sample
		Sand, Trace Coarse	O		5	17'-20'		AUGER				
		Gravel.	W		6	20'-22'		WATER				
3'	5'	Brown Grey Fine to MED	S		6A	20'-22'	7	8	8	9		
		Sand, w/Trace Coarse Gravel	T		7	25'-27'	9	7	21	12		
5'	10'	Light Grey Fine Sand	E	A	8	30'-32'	10	11	10	16		
		w/Slight Trace of organic	M	U								
		Traces of Seashells.		G								
10'	12'	Fine Grey Sand w/		E								
		Traces of organics		R								
		Changing to Dark Brown										
		Sand w/Traces of Coarse Gravel										
12'	15'	MED to Dark Brown Sand, Traces of Coarse Gravel.										
		Also Heavy Chemical ODOR.										
15'	17'	MEADOW MATT, Dark Brown Clay										
		Grey Sand, Coarse Gravel, organic Fibers										
		Chemical odor										
18'	22'	Fine to MED Brown Sand, Trace of Silt, Coarse Gravel										
		Small to MED Boulders.										
22'	30'	Coarse Gravel, Fine to MED Brown Silty Sand,										
		Traces of MED to Large Boulders, noticed										
		while Drilling										
30'	32'	Grey Silty Sand, Coarse Gravel, Traces of Small Boulders										

Ground Surface to 30 ft. used 10'-of 4" Solid Casing (Black Pipe) 20'-of 4" Johnson Well Screen casing.

Driller G. Brochard

Water level is 16 ft. below Ground surface 1/2 hrs. after completion

Helper M. Greenwood, B. Walker

Water level is 17'-6" ft. below Ground surface 2 hrs. after completion

Rig. No. 100

Boring stopped by Job Requirements

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

INTERNATIONAL TECHNOLOGY CORPORATION

- ☑ EAST NORWALK, CT. 203/853-1990
- ☐ NEW HAVEN, CT. 203/777-0339
- ☐ TRENTON, N.J. 609/259-3333
- ☐ NEWARK, N.J. 201/589-1282
- ☐ PHILADELPHIA, PA. 215/245-6929

Page _____ of _____

Date WED NOV. 17. 1982.

Job No. 2588

Job Address WASE CHEMICAL DIVISION, STRATFORD. CT

Boring No. 3

Fixed Datum used is _____

Ground Surface this boring is _____

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
2"	4"	Asphalt	H									
4"	4'	Dark Brown Fine to MED	O									
		Sand, Coarse Gravel	L									
		TRACE Small Boulders	L									
4'	6'	Fine to MED Light Brown	O									
		Sand, Coarse Gravel	W									
6'	10'	Dark Black Fine to MED										
		Sand, W/TRACE Coarse	S									
		Gravel, Slight TRACE	T									
		of silt.	E									
10'	16'	Dark Black Fine to MED	M									
		Sand W/TRACE Coarse										
		Gravel, Slight TRACE	A									
		of silt, and TRACE	U									
		of Small Boulders	G									
			E									
		* No Product odor	R									
		Noticed while Drilling	S									
		* Installed well to										
		a Depth of 16'										
		using 15' of 4"										
		Slotted and 1' of										
		4" Solid PVC well										
		Pipe										

Ground Surface to 16 ft. used 4" casing.

Water level is 13 ft. below Ground surface 1 hrs. after completion

Water level is 13 ft. below Ground surface 18 hrs. after completion

Boring stopped by Job Requirements

Driller G. Burchard

Helper M. Greenwood, B. Walker

Rig. No. 1101

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

INTERNATIONAL TECHNOLOGY CORPORATION

- ☐ EAST NORWALK, CT. 203/853-1990
- ☐ NEW HAVEN, CT. 203/777-0339
- ☐ TRENTON, N.J. 609/259-3333
- ☐ NEWARK, N.J. 201/589-1282
- ☐ PHILADELPHIA, PA. 215/245-6929

Page _____ of _____

Date WED NOV 17, 1982.

Job No. 2588

Job Address Uniroyal Chemical Division, STRATFORD CT

Boring No. 4

Fixed Datum used is

Ground Surface this boring is

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
0"	4"	Asphalt										
4"	1'	Temp Rock										
1'	4'	Fine to med Brown										
		Sand, Coarse Gravel										
		Small Boulders										
4'	12'	Very Fine to med										
		Light Grey Sand										
		Some Coarse Gravel										
12'	20'	Very fine to med										
		Light Grey Sand										
		Coarse Gravel, Trace										
		Small Boulders										
		Trace of Silt										
		* Installed well to										
		a Depth of 20' using										
		4" Johnson well										
		Screen.										
		* Water Table Approx										
		9' while Drilling										
		* No noticeable Product										
		odor noticed while										
		Drilling										

Ground Surface to 20 ft. used 4" casing.

Driller G. Bochard

Water level is 6 ft. below Ground surface 12 hrs. after completion

Helper M. Greenwood B. Walker

Water level is _____ ft. below Ground surface _____ hrs. after completion

Rig. No. 100

Boring stopped by Job Requirements

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

☐ EAST NORWALK, CT. 203/853-1990
☐ NEW HAVEN, CT. 203/777-1039
☐ TRENTON, N.J. 609/259-3333
☐ NEWARK, N.J. 201/589-1282
☐ PHILADELPHIA, PA. 215/245-6929

INTERNATIONAL ECOLOGY CORPORATION

Page _____ of _____

Date WED NOV 17, 1982.

Job No. 2588

Job Address WARE CHEMICAL DIVISION, STRATFORD CT

Boring No. 5

Fixed Datum used is _____

Ground Surface this boring is _____

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
0"	2'	Large Trap Rock	H									
2'	4'	Fine to med Brown	O									
		Sand, Coarse Gravel	L									
		Small Boulders	L									
4'	8'	Fine to med Grey Sand	O									
		Coarse Gravel	W									
8'	10'	MEADOW MATT	S									
		Dark Black Sand	T									
		Coarse Gravel, Sandy	E									
		Clay w/organic Fibers	M									
10'	13'	Dark Black, Fine to										
		med Sand, Coarse	A									
		Gravel	V									
13'	20'	Fine to med Dark	G									
		Grey Sand, Coarse	E									
		Gravel, Trace of	R									
		Silt	S									
		* INSTALLED WELL to a Depth of 20' using 4" Slotted Johnson well Screen										* Slight Product odor noticed while Drilling
		* Water Table Appear 5' Bellow Ground Surface while Drilling										

Ground Surface to 20 ft. used 4" casing.

Water level is 5 ft. below Ground surface 1/2 hrs. after completion

Water level is 4 ft. below Ground surface 1.2 hrs. after completion

Boring stopped by Job Requirements

Driller G. Bischard

Helper M. Greenwood B. Walker

Rig. No. 1101

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

INTERNATIONAL TECHNOLOGY CORPORATION

- ☑ EAST NORWALK, CT. 203/853-1990
- ☐ NEW HAVEN, CT. 203/777-0339
- ☐ TRENTON, N.J. 609/259-3333
- ☐ NEWARK, N.J. 201/589-1282
- ☐ PHILADELPHIA, PA. 215/245-6929

Page _____ of _____

Date Thurs. Nov 18. 1982

Job No. 2588

Job Address UOSC CHEMICAL, STRATFORD CT.

Boring No. 7

Fixed Datum used is _____

Ground Surface this boring is _____

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
0"	5'	Fine to MED Brown	H									
		Sand, Coarse	O									
		Gravel, Small	L									
		Boulders	L									
5'	10'	Fine to MED	O									
		Grey Sand, MED	W									
		to Coarse Gravel	S									
		Small Boulders	T									
10'	20'	Fine to MED Grey	E									
		Sand, med to	M									
		Coarse Gravel,										
		Small to MED	A									
		Boulders, Trace	U									
		of Silt, and	G									
		Traces of large	E									
		Boulders	R									
			S									

* Installed well to a depth of 20' using 4" Johnson well screen.

* Slight Product odor noticed while Drilling

Ground Surface to 20 ft. used 4' casing.

Water level is 6 ft. below Ground surface 1/2 hrs. after completion

Water level is _____ ft. below Ground surface _____ hrs. after completion

Boring stopped by Job Requirements

Driller G. Bischard

Helper B. Walker M. Greenwood

Rig. No. 1101

NEW ENGLAND POLLUTION CONTROL CO., INC.

7 EDGEWATER PLACE
EAST NORWALK, CT 06855

24 HOUR SERVICE
POLLUTION CONTROL SUPPLIES & SERVICE

INTERNATIONAL TECHNOLOGY CORPORATION

- ☑ EAST NORWALK, CT. 203/853-1990
- ☐ NEW HAVEN, CT. 203/777-0389
- ☐ TRENTON, N.J. 609/259-3333
- ☐ NEWARK, N.J. 201/589-1282
- ☐ PHILADELPHIA, PA. 215/245-6929

Page _____ of _____

Date Fri, Nov 19, 1982

Job No. 2588

Job Address Waste Chemical, Stratford CT.

Boring No. 8

Fixed Datum used is

Ground Surface this boring is

DEPTH From	DEPTH To	CLASSIFICATION Be Careful and Accurate	CASING BLOWS 0-27	CASING BLOWS 28-54	SAMPLE No.	Depth	No. of 30" Blows on Spoon 1st 6"	2nd 6"	3rd 6"	4th 6"	Recovery In.	Lost Water * or Remarks
2"	4"	Asphalt	H		1	5'-7'	21	50				300lb Hammer
4"	3'	Black Fine to MED	O		2	10'-12'	9	9	7	8		18" Deep
		Sand, Coarse Gravel	L		3	15'-17'	9	10	21	25T		3" Split Spoon
		Small Boulders	L		4	20'-22'	21	23	23	25		Sample
3'	5'	MED Brown Sand	O									
		W/Coarse Gravel	W									
		Small Boulders	S									
5'	10'	Brown Sand, Coarse	T									
		Gravel, Small to	E									
		Large Boulders	M									
10'	12'	Fine to MED Brown										
		Sand, Coarse Gravel	A									
		Small Boulders	V									
15'	17'	Fine to MED Grey	G									
		Sand, Coarse Gravel	E									
		Small Boulders	R									
		Slight Trace Silt										
20'	22'	Fine to MED Grey										
		Sand, Coarse										
		Gravel, Small to										
		MED Boulders, Slight										
		Trace of silt										

* Heavy Product odor noticed while Drilling

* Water Table Approx 5' while Drilling

Ground Surface to 20 ft. used 4" casing.

Water level is 6 ft. below Ground surface 1/2 hrs. after completion

Water level is _____ ft. below Ground surface _____ hrs. after completion

Boring stopped by Job Requirements

Driller G. Bischard

Helper B. Walker K. Shields

Rig. No. 1101

☐ AVENEL, N.J. ☐ BATAVIA, N.Y. ☐ ROBBINSVILLE, N.J.
☐ DEERFIELD BEACH, FL.

Repcco INC.
A WHOLLY OWNED SUBSIDIARY OF International Technology Corporation
INTERNATIONAL TECHNOLOGY CORPORATION
7 EDGEWATER PLACE
NORWALK, CT 06855
203-835-1990

SOIL BORING/WELL LOG NO. OW-11

PROJECT NAME: Synthetic Products Co.		PROJECT NO.: 10127	PAGE 1/1
PROJECT LOCATION: Stratford, CT		PERMIT NO.:	
BORING LOCATION:		DATE COMPLETED: 04 / 11 / 87	
DRILLING EQUIPMENT: Mobile B-61 mud rotary	DRILLMASTER: Nelson	COMPLETED DEPTH: 13.5 ft.	
DRILLING METHOD: Auger	STAFF GEOLOGIST: Granata		

SAMPLE & TYPE	DEPTH FT.' — IN."	SOIL DESCRIPTION	BLOWS PER 6"	HNU (PPM)	MONITORING WELL CONSTRUCTION
	.25	Asphalt			TYPE: Johnson stainless steel .020 slotted
	1.0	Dark brown Sand, and Silt			
	2.0				
	3.0				WELL ELEVATION: 100.680
	4.0				
	5.0				REFERENCE POINT: center of recovery well
	6.0				
	7.0				
	8.0				DIAMETER: 4.0-inch
		Grey SILT, some fine Sand			
	9.0				
	10.0				
		Brown Silt, fine ⊕ Sand, some clay			SCREEN: 10.0 ft
	11.0				
	12.0				
	13.0				CASING: 3.5 ft.
	13.5				
	14.0	B.O.H.			
	15.0				WELL PACK:

Type of Sample

- **A** Auger (Disturbed)
- — Split Spoon Sampling —
- **LS** Liner Sample (Disturbed)
- **J** Jar Sample (Disturbed)
- **ST** Shelby Tube (Undisturbed)
- **RC** Rock Core
- **BS** Bag Sample

REMARKS:

GROUNDWATER OBSERVATIONS:

☐ AVENEL, N.J. ☐ BATAVIA, N.Y. ☐ ROBBINSVILLE, N.J.
☐ DEERFIELD BEACH, FL.

REPCO INC.
A WHOLLY OWNED SUBSIDIARY OF
International Technology Corporation
7 EDGEWATER PLACE
NORWALK, CT 06855
203-835-1990

INTERNATIONAL TECHNOLOGY CORPORATION

SOIL BORING/WELL LOG NO. OW-12

PROJECT NAME: Synthetic Products Co.		PROJECT NO.: 10127	PAGE 1/1
PROJECT LOCATION: Stratford, CT		PERMIT NO.:	
BORING LOCATION:		DATE COMPLETED: 04/11/87	
DRILLING EQUIPMENT: Mobile B-61 mud rotary	DRILLMASTER: Nelson	COMPLETED DEPTH: 15.0 ft.	
DRILLING METHOD: Auger	STAFF GEOLOGIST: Granata		

SAMPLE & TYPE	DEPTH FT.' — IN."	SOIL DESCRIPTION	BLOWS PER 6"	HNU (PPM)	MONITORING WELL CONSTRUCTION
	.25	ASPHALT			TYPE: Johnson stainless steel .020 slotted
	1.0	Dark Brown Sand, and silt, @ some organics			WELL ELEVATION: 100.156
	2.0				
	3.0				
	4.0				
	5.0	Brown Coarse to fine Sand, and @ Silt			REFERENCE POINT: center of recovery well
	6.0				
	7.0				
	8.0				DIAMETER: 4.0-inch
	9.0				
	10.0				SCREEN: 10.0 ft.
	11.0				
	12.0				
	13.0				CASING: 5.0 ft.
	14.0				
	15.0	B.O.H.			WELL PACK:

Type of Sample
- Auger (Disturbed)
- — Split Spoon Sampling —
- Liner Sample (Disturbed)
- Jar Sample (Disturbed)
- Shelby Tube (Undisturbed)
- RC Rock Core
- Bag Sample

REMARKS:

GROUNDWATER OBSERVATIONS: