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TASK II INVESTIGATION REPORT FOR THE

FORMER MANUFACTURED GAS PLANT SITE
Norwich, New York (NYSEG Code CGNO)

PREPARED FOR

NYSEG

NEW YORK STATE ELECTRIC & GAS
Binghamton, New York

PREPARED BY

ES
ENGINEERING-SCIENCE
Liverpool, New York

JULY 1992
SY236.10.01

TASK II INVESTIGATION REPORT

FORMER MANUFACTURED GAS PLANT SITE

NORWICH, NY

Submitted To:

NEW YORK STATE ELECTRIC & GAS COMPANY
4500 VESTAL PARKWAY EAST
P.O. BOX 3607
BINGHAMTON, N.Y. 13902-3607

Prepared by:

ENGINEERING-SCIENCE, INC.
290 Elwood Davis Road
Suite 312
Liverpool, New York 13088

JULY 1992

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SECTION I

EXECUTIVE SUMMARY

SITE BACKGROUND

A former manufactured gas plant (MGP) site is located at 20 Birdsall Street, in the City of Norwich, Chenango County, New York. The one acre site is bounded by a commercial warehouse facility to the north, a NYSEG electrical substation and residences to the east, residences and the Norwich Aero Products facility to the south and railroad tracks to the west. The former MGP site is owned by NYSEG and is used for equipment storage, and a portion (on the north side) is leased for use as a truck parking area by Victory Markets, Inc. The site location is shown on a portion of the U.S.G.S. Norwich, N.Y. 7-1/2-minute topographic quadrangle map (Figure I-1). Figure I-2 is a site plan which identifies important present and former MGP features. Figure I-3 identifies soil and groundwater sampling locations.

SITE ASSESSMENT

Results from Task II investigation activities are summarized in the following subsections.

Objectives

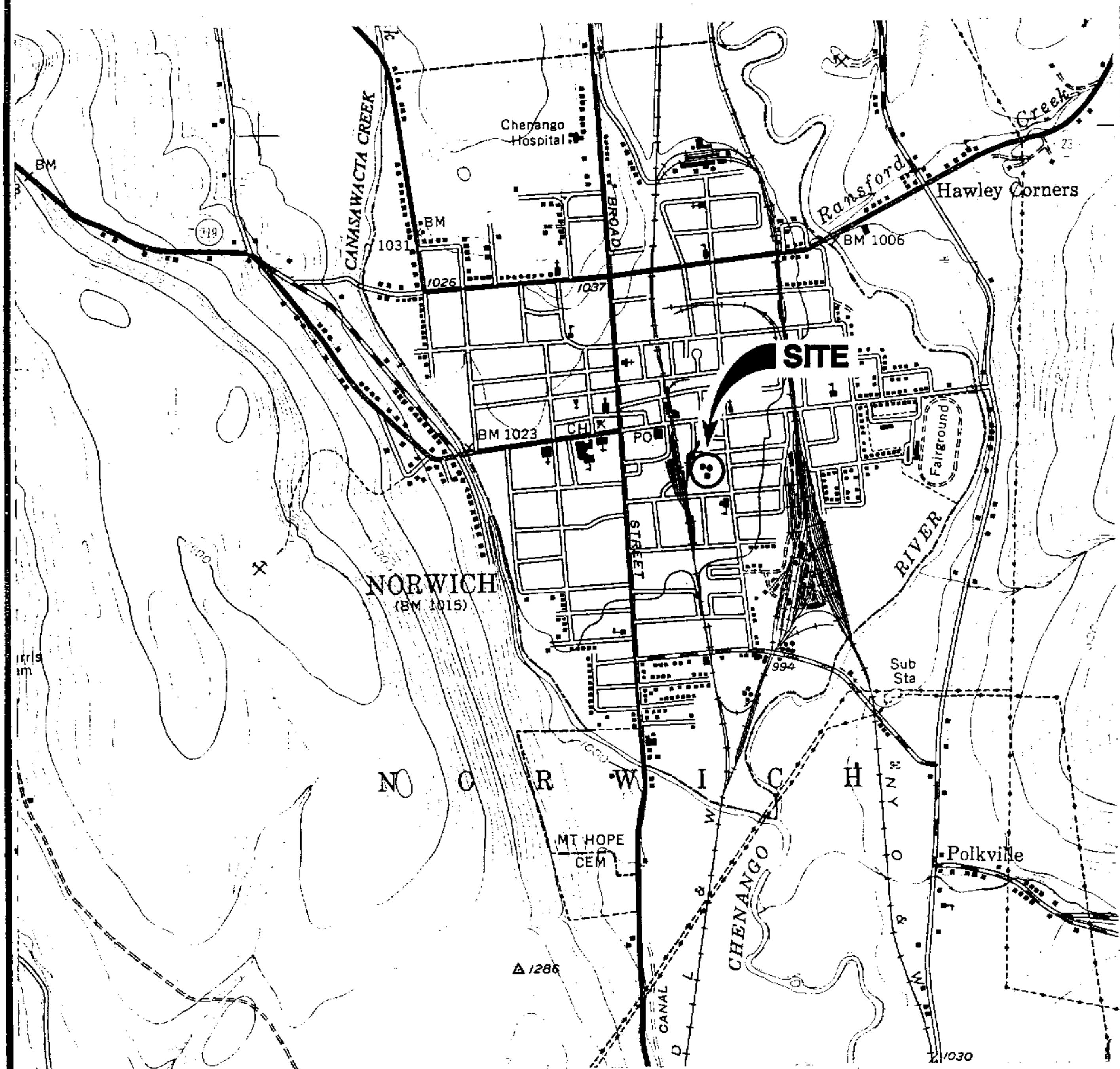
The objectives of the Task II investigation were to: 1) determine the extent of residue by-products in the on-site environment related to the operation of the former MGP, and determine if the residue presents a potential significant threat to human health or the environment, and; 2) delineate the presence of the former tar well and other former MGP structures which may be sources of MGP residue.

Hydrogeological Investigation Results

The geologic stratigraphy beneath the site can be characterized as one to six feet of soil and non-soil fill, over one to eight feet of alluvial sand and silt, over seven to 15 feet of outwash sand and gravel, over lacustrine silt and clay. Depths to water ranged from approximately seven to nine feet below ground surface. The groundwater flow direction is to the south-southeast.

Subsurface Soil Investigation Results

Benzene, toluene, ethylbenzene and total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs) and cyanide were detected in subsurface soils on-site at concentrations substantially above background. Based on the samples analyzed, the most highly contaminated soils occur at depths of one to six feet, beneath and immediately downgradient of the former relief and distribution holders, tar well and



SOURCE: U.S.G.S. 7.5 SERIES TOPOGRAPHIC MAP. NORWICH QUADRANGLE N.Y. - CHENANGO CO. 1943

QUADRANGLE LOCATION

LATITUDE: 42°31'46"
LONGITUDE: 75°31'11"

SCALE

0 | 2000 | 4000 FT.

2000 FT.

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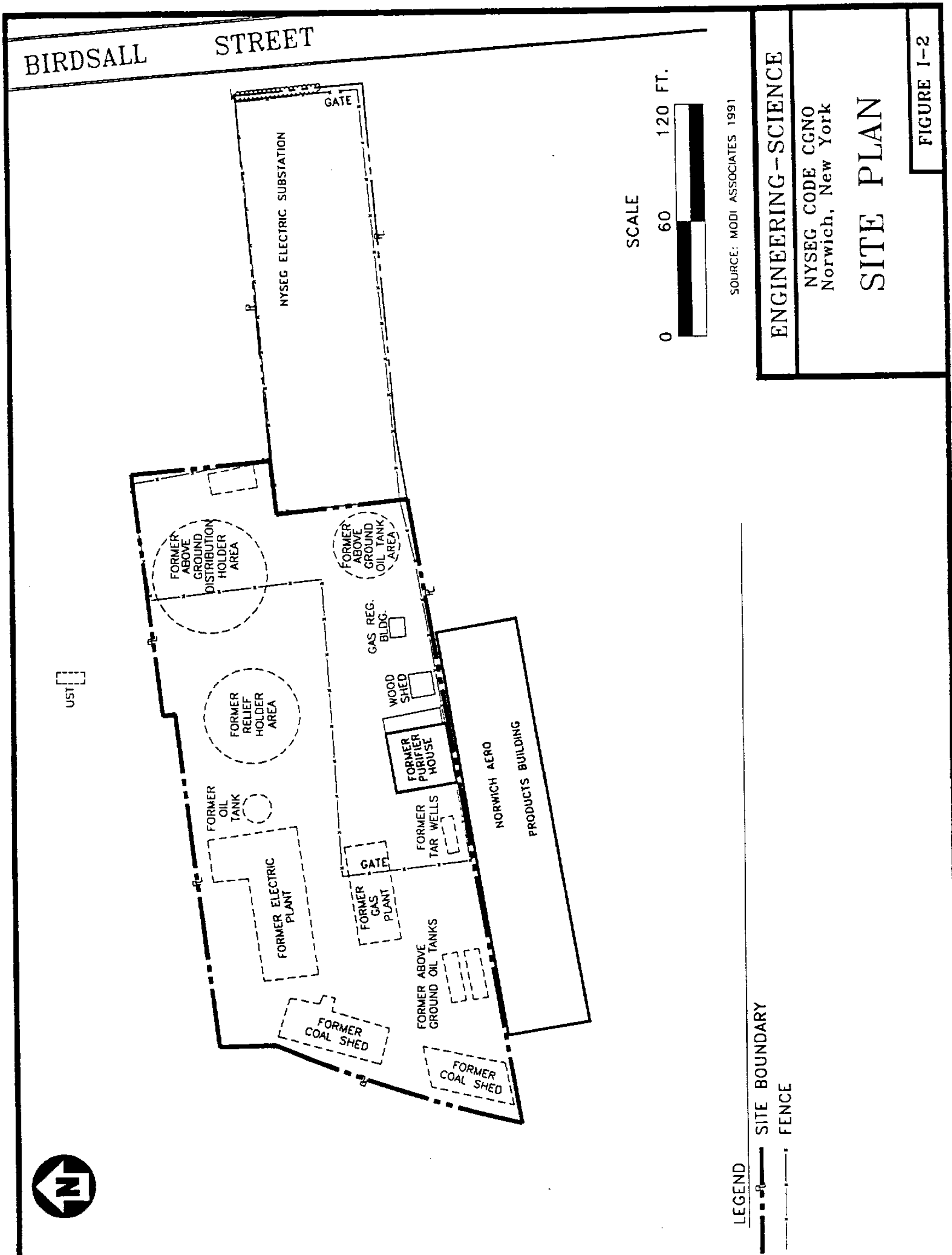
NORWICH, NEW YORK

SITE LOCATION MAP

FIGURE I-1



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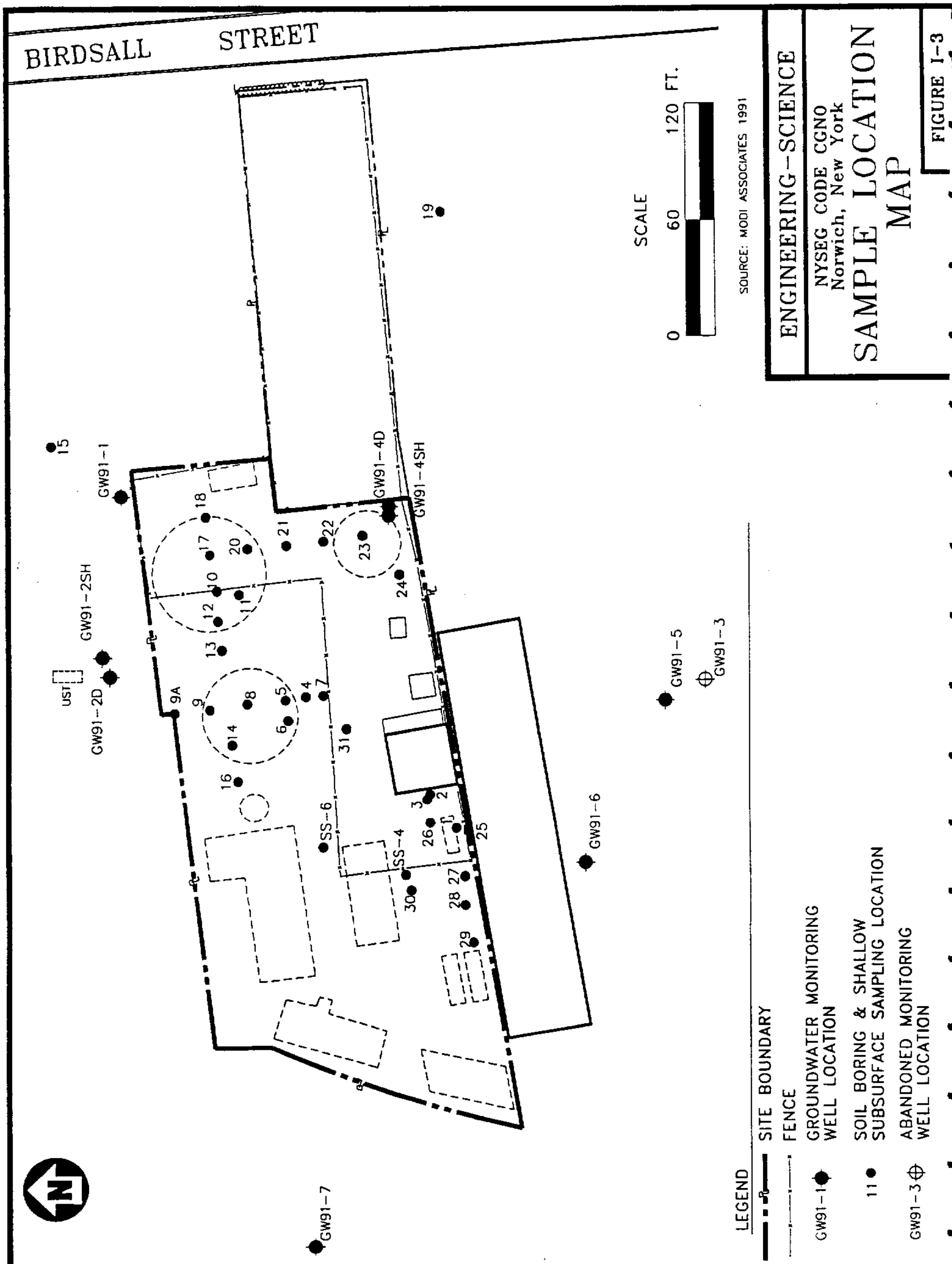
REVISED: 6/29/92



BIRDSALL STREET
ENGINEERING-SCIENCE
NYSEG CODE CGNO
Norwich, New York
SAMPLE LOCATION MAP
FIGURE I-3
SCALE
0 60 120 FT.
SOURCE: MODI ASSOCIATES 1991
LEGEND
SITE BOUNDARY
FENCE
GW91-1 GROUNDWATER MONITORING WELL LOCATION
11 SOIL BORING & SHALLOW SUBSURFACE SAMPLING LOCATION
GW91-3 ABANDONED MONITORING WELL LOCATION
GW91-1
GW91-2SH
GW91-2D
GW91-3
GW91-4D
GW91-4SH
GW91-5
GW91-6
GW91-7
UST
SS-4
SS-6
9A
N

former above ground oil tank areas. The boring logs indicate visual evidence of contamination exists at greater depths in other on-site borings (Appendix C).

One composite soil sample was collected from the roll-off dumpster, where all auger cuttings and excess split spoon samples were placed during Task II field activities. The sample was analyzed by the toxicity characteristic leaching procedure (TCLP) and for Waste Characteristics. The sample was found to be non-corrosive, non-ignitable, non-reactive and is considered non-hazardous.

Groundwater Investigation Results

Groundwater was sampled on January 30, 1992 (Round 1) and April 24, 1992 (Round 2). Site-related BTEX, PAHs, and cyanide were detected above Class GA groundwater standards in samples collected from the Task II monitoring wells during both sampling rounds. Upgradient off-site monitoring well GW91-2D contained BTEX and PAHs which may be attributed to an upgradient source. An abandoned underground storage tank (UST) was discovered immediately upgradient of the well during the drilling of GW91-2D.

The groundwater contamination observed in on-site and off-site monitoring wells was consistent with the contaminants present in the subsurface soils, and indicate that the former relief and distribution holders, tar well and former above ground oil storage tank are source areas for groundwater contamination.

Preliminary Qualitative Risk Assessment

Despite the presence of soil and groundwater contamination, no imminent health or environmental threats were identified during the Task II investigation. The lack of an imminent health risk is based on a remote potential for exposure to the contaminated subsurface soils and groundwater. The most highly contaminated soils which were analyzed on-site are one to six feet below ground, and groundwater is not known to be used immediately downgradient of the site. The area is served by the municipal water system which has its source located several thousand feet upgradient of the site. The nearest well in use, the Victory Markets supply well, was sampled and found to be nondetectable for VOCs and SVOCs.

There are possible, though remote, scenarios for exposure to occur. Workers conducting excavations at the site would be at risk of possible exposure and precautions should be considered. The potential for contaminated groundwater to flood basements during high groundwater periods, or vapors venting into basements via floor drains or sumps, should be assessed.

RECOMMENDATIONS

A Task III investigation is recommended to supplement Task II information and to fill identified data gaps.

A supplemental soil investigation is recommended, which includes surface soil sampling, test pit excavations, and additional soil borings. Surface soil samples are recommended to evaluate for the presence of MGP residues in backyards adjoining the south side of the site. Test pit excavations on-site are recommended to more precisely determine the location, size, and configuration of former MGP subsurface structures, and the quantity of source material present. Additional deep borings are recommended to further define the topography of the clay layer, to determine whether contaminants are migrating along the top of the clay, and to determine whether the clay is an effective barrier to downward migration.

A supplemental groundwater investigation is recommended to characterize the lateral and vertical extent of contamination in the uppermost waterbearing zone. The recommended wells will fill gaps in well coverage to the south and north.

ORGANIZATION OF THIS REPORT

The following sections and appendices provide details of the Task II investigation objectives (Section II), the scope of work (Section III), the investigation results (Section IV), the preliminary qualitative risk assessment (Section V) and recommendations for additional work (Section VI).

The appendices to this report present details of the methods and data collected for various Task II activities, including the geophysical investigation (Appendix A), the soil vapor survey (Appendix B), and hydrogeologic data (Appendix C). Miscellaneous analytical results are presented in Appendix D. Due to the volume of the analytical reporting packages, a complete set of analytical reports have been provided to NYSEG as a separate deliverable. Appendix E presents historical maps used to compile a site history.

SECTION II

PURPOSE

The objectives of this Task II investigation are to: determine the extent of MGP residue by-products in the on-site environment related to the operation of the former Norwich MGP; determine if the residue presents a potentially significant threat to human health or the environment, and; delineate the extent of contamination in the former relief holder and tar well areas so that remedial actions may be designed.

This Task II investigation consisted of an expanded historical search, a soil vapor survey, a geophysical investigation, soil investigation, hydrogeologic investigation, groundwater investigation, and preliminary risk assessment to meet the objectives described above and to provide data necessary to prepare a site investigation report.

The following summary of the MGP site history is the basis for the Task II investigation. The Norwich MGP site was purchased in 1863 and subsequently operated until the MGP was converted to natural gas distribution and subsequently retired in 1953. The plant was used to manufacture coal gas, water gas, and carburetted water gas (CWG). An electric plant was added sometime prior to 1917. Early Sanborn map information also identifies coal storage, coke storage, a 35,000-cubic foot gas storage vessel (gasometer), a production building containing six retorts, tar well, and repair shop (Appendix E). Map information from 1917 identifies the addition of 26,000- and 100,000-cubic-foot steel gas holders and three 10,000-cubic foot oil tanks, a purifier building and additional coal storage. These gas holders have since been determined to be a relief holder and distribution holder, respectively, as shown on Figure I-2.

In 1990, ES assessed data from seven subsurface soil samples collected and analyzed in 1990 by NUS Corporation, under contract to the U.S. EPA. The soil samples contained benzene, toluene, ethylbenzene, total xylenes (BTEX), semivolatile organic compounds, most of which were PAHs, and 20 metals. The types and concentrations of contaminants detected in the subsurface soil samples suggest MGP residue sources may exist beneath the Norwich site.

The Task II investigation was designed by ES to address the potential presence of MGP residue sources in the subsurface and the potential for migration of MGP residue constituents to groundwater.

SECTION III

SCOPE OF WORK

INTRODUCTION

Field work for the Task II investigation at the Norwich MGP site began on November 13, 1991. The Task II Work Plan was prepared by ES and approved by NYSEG prior to commencing the field investigations. The Work Plan was later revised with NYSEG approval, based upon the preliminary findings of the field investigations and input from the NYSDEC. The Work Plan included a geophysical survey, installation of two monitoring well pairs and four single wells, and collection of soil samples from downgradient monitoring well borings and a minimum of thirty additional soil borings. The Task II Work Plan was provided to NYSDEC for review. At the suggestion of NYSDEC, NYSEG agreed to add a soil vapor survey to identify sources of volatile organic compounds (VOCs).

TASK II SITE INVESTIGATION

The scope of the investigation is summarized in Table III-1 and is described below. All field work was performed or supervised by qualified ES staff in accordance with the NYSEG-approved Quality Assurance Project Plan and Health and Safety Project Plan.

Expanded Historical Search

An expanded historical search was conducted to determine the chronology of property ownership for the former MGP site, and the sequence of operations at the site. The property ownership and operations information was used to identify all possible MGP residue sources which could impact the on-site and surrounding environment. Other potential off-site sources of contamination not associated with the MGP site were identified by locating and reviewing deeds for the former MGP site property to identify possible industrial or commercial land uses which could have served as contaminant sources. Any identified environmental impacts and public health risks attributable to those sources must be distinguished from those attributable to the MGP residue sources.

Sanborn maps and historical aerial photographs were also reviewed to identify industrial/commercial land uses in the vicinity which could be sources of contamination. Residences in the site vicinity with groundwater wells were identified to assess the possibility that groundwater may be an exposure pathway. This was accomplished by reviewing Chenango County Health Department records, the New York State Department of Health (NYSDOH) Atlas of Community Water System Sources, and the United States Geological Survey database of water wells.

TABLE III-1

TASK II SCOPE OF WORK SUMMARY
NORWICH MGP SITE

Task	Objective	Activity
Expanded Historical Search	Determine chronology of site ownership and operations at the former MGP.	Located and reviewed deeds for MGP site reviewed aerial photographs, and historical maps.
Geophysical Investigation	Determine the presence of former MGP structures, buried utilities, conductive contaminant plumes, and subsurface MGP residue sources.	EM-31 survey over former MGP site.
Soil Investigation	Determine the presence of MGP residue in surface and subsurface soils on-site. Confirm locations of former MGP structures.	Conducted thirty-four soil borings over MGP site and collected surface and subsurface soil samples. Nine additional soil samples were collected from monitoring well borings. Selected samples were analyzed for BTEX, PAHs, and cyanide.
Hydrogeologic Investigation	Determine depth to water table, aquifer thickness, groundwater flow gradient, direction and velocity, and physical characteristics of aquifer materials.	Installed eight monitoring wells around the site at upgradient and downgradient locations. Two well pairs were installed to determine vertical gradients. Slug tests were performed. Monthly water level measurements have been taken in all wells.

TABLE III-1-CONTINUED

TASK II SCOPE OF WORK SUMMARY NORWICH MGP SITE

Task	Objective	Activity
Groundwater Investigation	Determine groundwater quality characteristics and presence of MGP residue constituents.	Sampled groundwater from eight monitoring wells and analyzed for BTEX, PAHs and cyanide. Monitor quarterly for seasonal variations.
Soil Vapor Survey	Determine the presence of volatile organic compounds in the unsaturated zone beneath the site.	A total of 47 soil vapor samples were collected from across the former MGP site and around its perimeter.
Air Monitoring	Determine the presence of volatile organic compounds in the breathing zone during on-site activities.	Monitored on-site breathing zone for VOCs during field activities using a MicroTIP.
Preliminary Risk Assessment	Determine the presence and magnitude of risks from exposure to MGP residues present in soil, groundwater and air at the site.	Used existing and Task II data to develop a preliminary risk assessment to identify imminent and high-level risks of exposure. Performed land use survey of site vicinity.
Report Preparation	Present Task II investigation results, interpretations, conclusions and recommendations	Prepare a Task II report in accordance with a NYSEG-approved Phase II format.

Geophysical Investigation

A geophysical survey utilizing electromagnetic (EM) methods was conducted on November 13 and 14, 1991 at the Norwich MGP site. The objective of the survey was to identify MGP-related structures, such as relief holder foundations and the tar well, and to determine if conductive contaminant plumes exist. The EM survey was also used to determine whether buried utilities exist beneath the site or in downgradient areas. Power lines, metal buildings, metal fences, and an underground gas line on the south side of the site caused interferences in the EM response, making it difficult to interpret the data in that area.

The EM survey was performed with a Geonics EM-31 unit. The survey was conducted over a 20- by 20-foot grid referenced to a permanent location on-site. Conductivity readings were taken at two orientations at each grid node. An off-site station was established for instrument calibration and background readings. The EM survey was not extended off-site. Results of the EM-31 survey are presented in Appendix A.

Soil Vapor Survey

A soil vapor survey (SVS) was conducted from December 4 to 11, 1991 by ES at the Norwich MGP site. The objective of the soil vapor survey was to determine the presence of BTEX in the unsaturated zone beneath the site and to determine if a BTEX groundwater plume exists and its lateral extent. The data obtained from the SVS were used to aid placement of groundwater monitoring wells within possible source areas.

A total of 47 samples were collected on-site and around its perimeter using hollow, vented, stainless steel probes. Soil vapors were drawn through TYGON™ tubing attached to the stainless steel probes using a vacuum pump. Soil vapors were retained in TEDLAR™ bags for analysis using a Photovac 10S50 gas chromatograph with a photoionization detector (PID) having a 10.6 electron volt (eV) bulb. Collection probes were decontaminated by steam cleaning between sampling points. The sample train was purged of soil vapors between samples. The sample train was decontaminated using Alconox detergent, a potable water rinse, a distilled water rinse and air drying, daily or more frequently as needed. Three samples were submitted to Galson Laboratories for analysis to confirm field results. SVS methods and results are presented in Appendix B.

Soil Investigation

Thirty-four borings were drilled during the period November 18 to November 26, 1991 to determine the presence of visible MGP residues in surface and subsurface soils on-site, to confirm the limits of former MGP structures in the subsurface, to assess associated migration pathways, to determine soil physical characteristics and depth to the water table, and to obtain soil samples for chemical analysis. The analytical results determined whether MGP residues or contaminated soils present a human health or environmental risk, and were used to locate groundwater monitoring wells downgradient of contaminated areas.

A truck-mounted Minute Man tripod rig was used to drill all borings, except background boring B91-15 which was drilled with a hand auger. The Minute Man tripod rig was used to advance two-inch diameter stainless steel split spoon samplers which were 18 or 24 inches long. Sampling depths ranged from six inches to eleven feet. Boring B91-15 was advanced to 3.5 feet using the stainless steel hand auger. Table III-2 summarizes the boring locations, sample depths, stratigraphy, sample type, analyses, and sample number. Figure III-1 identifies boring locations. Boring logs are provided in Appendix C.

Two borings were conducted off-site to establish background conditions. Boring B91-15 was located in a back yard adjacent to the Victory Markets trailer parking area, northeast of the site. This location was considered upgradient of the MGP site. Samples were collected from 0.5 to 1 foot and 3 to 3.5 feet for laboratory analysis. Boring B91-19 was located in the back yard at #26 Birdsall St., adjacent to the NYSEG substation. Soil samples from 3 to 4.5 feet were submitted for laboratory analysis.

Thirty-two borings were located on the Norwich MGP site. Five borings (1,2,3,25,26) were drilled between the former purifier house (now the NYSEG storage building) and the western fence to locate the former tar well. Four additional borings (27,28,29,30) were located west of the fence to delineate potential MGP contamination identified in the tar well area. Six borings (4,5,6,8,9,14) were drilled within or adjacent to the former relief holder to identify the holder limits. Three additional borings (7,9A,16) were conducted outside the former holder to delineate potential MGP contamination. Five borings (10,11,12,17,20) were located within or beneath the former gas distribution holder, located east of the relief holder. Three additional borings (13,18,21) were conducted outside the former distribution holder to delineate potential MGP contamination. Three borings (22,23,24) were conducted in the vicinity of the former above ground oil tank located west of the NYSEG substation. One boring (31) was conducted along the fence north of the purifier house to sample the area allegedly used for purifier chip disposal. Two shallow subsurface samples (SS-4, SS-6) were collected outside the fenced area to evaluate the potential direct contact risk. Two additional shallow subsurface soil samples were collected during the drilling of borings 4 and 10.

All auger cuttings and excess split spoon soil samples were placed in a roll-off dumpster. A composite soil sample from the roll-off dumpster was analyzed for TCLP and waste characteristics.

Split spoon samplers and hand augers were steam cleaned prior to use and between borings using a potable water source.

Samples for laboratory analyses were submitted to the NYSEG lab in Binghamton, N.Y. following appropriate chain of custody procedures. NYSEG transferred the samples to their contract laboratory, Recra Environmental, Inc. in Amherst, N.Y. Soil samples from each discrete MGP residue source were analyzed for BTEX, PAHs, and cyanide. Samples from adjacent borings were analyzed for PAHs only. The soil sample analyses utilized the methods and Category B reporting

TABLE III-2
TASK II SAMPLING AND ANALYSIS SUMMARY
NORWICH MGP

Boring Number	Boring Location	Boring Depth	Stratigraphic Summary*	Sample Designation	Sample Depth	Sample Type	Analysis
B91-01	West of purifier house, east of fence, N10, E182.	0-10'	0-6' Dk gy-blk cndrs, tr cl-sk, 6-10' tan sd, sm gr.	SB91-5	0-4'	Delineation	BTEX
B91-02	West of purifier house, close to bldg., N22, E200.	0-3'	0-3' sltysd, sm cl, tr ash, cndrs, 2.5-3' oily, stained.	SB91-1	2.5-3'	Waste	BTEX, PAH, CN
B91-03	NW of B91-2 three ft., N23, E198.	0-9.5'	0-2' tan-brn sk, sm blk stain, 2-4.6' dk gy-blk cndrs, ash, sm sk 4.6-5' ylw cl, 5-9.5' sd & gr, stained bands, wet @ 6', oily stain 8-9.5'.	-	-	Delineation	-
B91-04	North of fence, south edge of holder, N80, E260.	0-1.5'	0-12" sk-sd, sm gr, tr coal, cl, brk, 16-18" stained, PID 70 ppm. Holder wall?	SS91-7	6-12"	Random Surf.	BTEX, PAH, CN
B91-05	Inside south end of holder, N90, E260.	0-3.1'	0-7" gr, 7"-3.1' sk, sm gr, ltl cl, tr brk, ash. Stain, odor, PID 246 ppm.	SB91-2	1.5-3'	Random	BTEX, PAH, CN
B91-06	West of B91-5, N90, E248.	0-1.1'	Tan slt, sm gr, tar odor, refusal @ 1.1'.	-	-	-	-
B91-07	Along north side of fence, N70, E260.	0-10.5'	0-4' slt, sm gr, ltl cl, stain, 4-10.5' slt & sd, wet, oily, stain, PID 405 ppm.	SB91-3	4-5.5'	Random	BTEX,PAH,CN
				SB91-4	9-10.5'	Waste	PAH
B91-08	Center of holder, N110, E260.	0-6'	0-4' Slt-sd, sm gr, tr brk, 4-6' gr, sm sd, 3-6' stain, oily, wet, PID 770ppm.	SB91-6	4-6'	Random	PAH
B91-09	North of B91-8, north of holder edge, N130, E260.	0-10.5'	0-10.5' Slt-sd, sm gr, tr cl, 7.5-10.5' oily lt brn, odor, wet, PID 1110 ppm.	SB91-7	6-9'	Random	PAH
B91-9A	North of holder, near property line, N148, E260.	0-11'	0-0.1' asphalt, 0.1-9' Slt-sd, sm gr, tr gr, brk, coal, 9-11' gr, sm sd, 'tan-brn stain, oily sheen, PID 67 ppm, wet.	SB91-8	5.5-7'	Random	PAH
B91-10	Center of large holder, west of fence, N118, E320.	0-2.5'	Slty-sd, sm gr, tr coal, brk. Duplicate sample SS91-8 and MS,MSD, MSB.	SS91-5, SS91-8	0.5-1'	Random Surf.	BTEX, PAH, CN
B91-11	In large holder, SW of B91-10, N120, E358.	0-2.5'	0-2.5' Slty sd, sm gr, tr coal, brk, 2-2.5' tar stain.	SB91-9	1.5-2.5'	Delineation	PAH
B91-12	Near west edge of large gas holder, N120, E305.	0-9'	0-9' slty-sd, sm gr, tr coal, 2-4' blk stain, 4-9' tan brn oil, odor, PID 429 ppm.	SB91-10	4-6'	Random	BTEX, PAH, CN
B91-13	Between holders, west of B91-12, N120, E290.	0-7.5'	0-4 slt-sd, sm gr, 4-6' gr sm sd, 6-7.5' med sd, sm gr, wet @ 2', odor @ 6'.	SB91-11	3.5-6'	Random	PAH
B91-14	NW edge of western holder, N120, E240.	0-6'	0-0.25' asphalt, 0.25-4' slt-sd, sm gr, tr brk, tar residue, sm stain, 4-6' gr, 6" clay lense, 5.5-6' gr, sm slt, blk coal tar, viscous, saturated.	SB91-12	4-6'	Random	BTEX, PAH, CN
				SB91-17	4-6'	WASTE	BTEX, PAH, CN
B91-15	NE of site, in back yard, E of Vetry Mkts. trailers.	0-3.5'	0-3.5' dk brn slt, sm gr. Duplicate sample of SS91-3 submitted.	SS91-3 & DUP	0.5-1'	Background	BTEX, PAH, CN
				SS91-2	3-3.5'	Background	BTEX, PAH, CN
B91-16	West of holder & B91-14, in pkng lot, N120, E220.	0-10.5'	0-4.25' slt-sd, sm gr, 4.25-6.75' sk, sm cl, 6.75-10.5' slt-sd, sm gr, 7.5-10.5' oily, blk stain, grains coated, odor, PID 655 ppm.	SB91-13	4-6'	Random	PAH
B91-17	E-center of large holder, inside fence, N120, E340.	0-2.25'	Brn gr, sk, sd, ltl cndrs, refusal @ 2.25'.	-	-	Random	-
B91-18	East edge of holder, N120, E360.	0-9'	0-3' slt, sm gr, tr cl, brk, mrtr, cndrs, 3-9' slt-sd, ltl-sm gr, 0-2' PID 958 ppm.	SB91-14	1-2'	Random	PAH
B91-19	In back yard, off parking pad at #26 Birdsall St.	0-4.5'	0-4.5' slt-sd, sm gr, sm cl.	SS91-1	3-4.5'	Background	BTEX, PAH, CN
B91-20	In large holder, SE, N100, E340.	0-2.1'	0-2.1' slt-sd, sm gr, tar odor, refusal.	SB91-15	0-2'	Random	PAH
B91-21	South of large holder, N80, E340.	0-5'	0-5' slt-sd, sm gr, tr brk, 2-3.5' tr-ltl stn, 3.5-4.4' sm stn, 4.4-5' stn, odor.	SB91-16	3.5-5'	Random	BTEX, PAH, CN
B91-22	N edge of small holder, W of Substa., N60, E340.	0-9'	0-7.5' sltysd, sm gr, tr-ltl stn, 7.5-9' gr, 7-9' stn tan-brn, oily, wet.	SB91-18	5-7.5'	Random	PAH
B91-23	Center of small holder, N40, E340.	0-9'	0-2' slt sm gr, sd & coal, 2-3.5' ash-cndrs, 3.5-9' slt sm gr, 8-9' stn, odor, wet, PID 109 ppm.	SB91-19	7.5-9'	Random	BTEX, PAH, CN
B91-24	Southeast of small holder, N23, E317.	0-9.5'	0-6' slt sm gr, cndrs, coal, 6-9.5' sk sm gr, stain, odor, wet, PID 92 ppm.	SB91-20	8-9.5'	Random	PAH
B91-25	Bet. W fence & Purif. Hse., along S fence, N5, E178.	0-6'	0-4' slt, sm gr, 4-6' wood chips, 1.75-6' blk stn, tarry, odor, PID 238 ppm.	SB91-21	3-6'	Waste	BTEX, PAH, CN
B91-26	West of B91-3, West of Purif. Hse., N25, E185.	0-9'	0-3.5' slt, sm gr, cndrs, brk, 3.5-4.5 sk sm cl, 4.5-9' sd, blk stn, oily, wet, 42 ppm.	SB91-22	5.5-7.5'	Delineation	PAH
B91-27	Outside fence near Aero Bldg., N10, E155.	0-7.5'	0-5' slt-sd, sm gr, 5-7.5' cl, sd, sm sk, wd chips, 4-7.5' blk stn, odr, oily, 55ppm.	SB91-23	4-6'	Delineation	PAH
B91-28	West of B91-27, near Aero Bldg., N12, E140.	0-6'	0-2' slt-sd, sm gr, 2-4' gr, sm sk, 4-6' sk sm gr, wood, tr cl, oily, odor, 30ppm.	-	-	Delineation	-
B91-29	West of B91-28, near Aero Bldg., N08, E120.	0-5.5'	0-2' gr sm slt, coal, sd, tr brk, 2-4' cndrs, tr odor, 4-5.5' sk, sm cl, tr oil, sm stn.	SB91-24	4-5.5'	Delineation	BTEX, PAH, CN
B91-30	West of fence, North of B91-27, N38, E152.	0-10'	0-4' slt-sd, sm gr, brk, 4-10' wd chips, brk frag., oily, prod., wet, PID 87 ppm.	SB91-25	6-8'	Delineation	PAH
B91-31	N of NE crnr of Purif Hse, along fence, N60, E240.	0-4'	0-4' slt, sm gr, tr brk, cndrs, scattered dk stn. MS, MSD, MSB, Sample collected.	SB91-26	0-4'	Random	BTEX, PAH, CN
SS91-4	Outside fence, near gate, N40, E160.	0.5-1'	0-1' sd & gr, sm ash, tr coal, tr brk.	SS91-4	0.5-1'	Random Surf.	BTEX, PAH, CN
SS91-6	Outside fence, north of gate, N80, E180.	0.5-1'	0-1' slty-sd, sm gr, tr brk, coal, sm dk stn, PID 0.0 ppm.	SS91-6	0.5-1'	Random Surf.	BTEX, PAH, CN

*Legend: cl=clay, sd=sand, sk=silt, gr=gravel, cndrs=cinders, brk=brick, mrtr=morter, wd=wood, stn=stain, brn=brown, blk=black, wt=white, gy=gray, dk=dark, lt=light, sm=some, ltl=little, tr=trace, mst=moist, ref=refusal.

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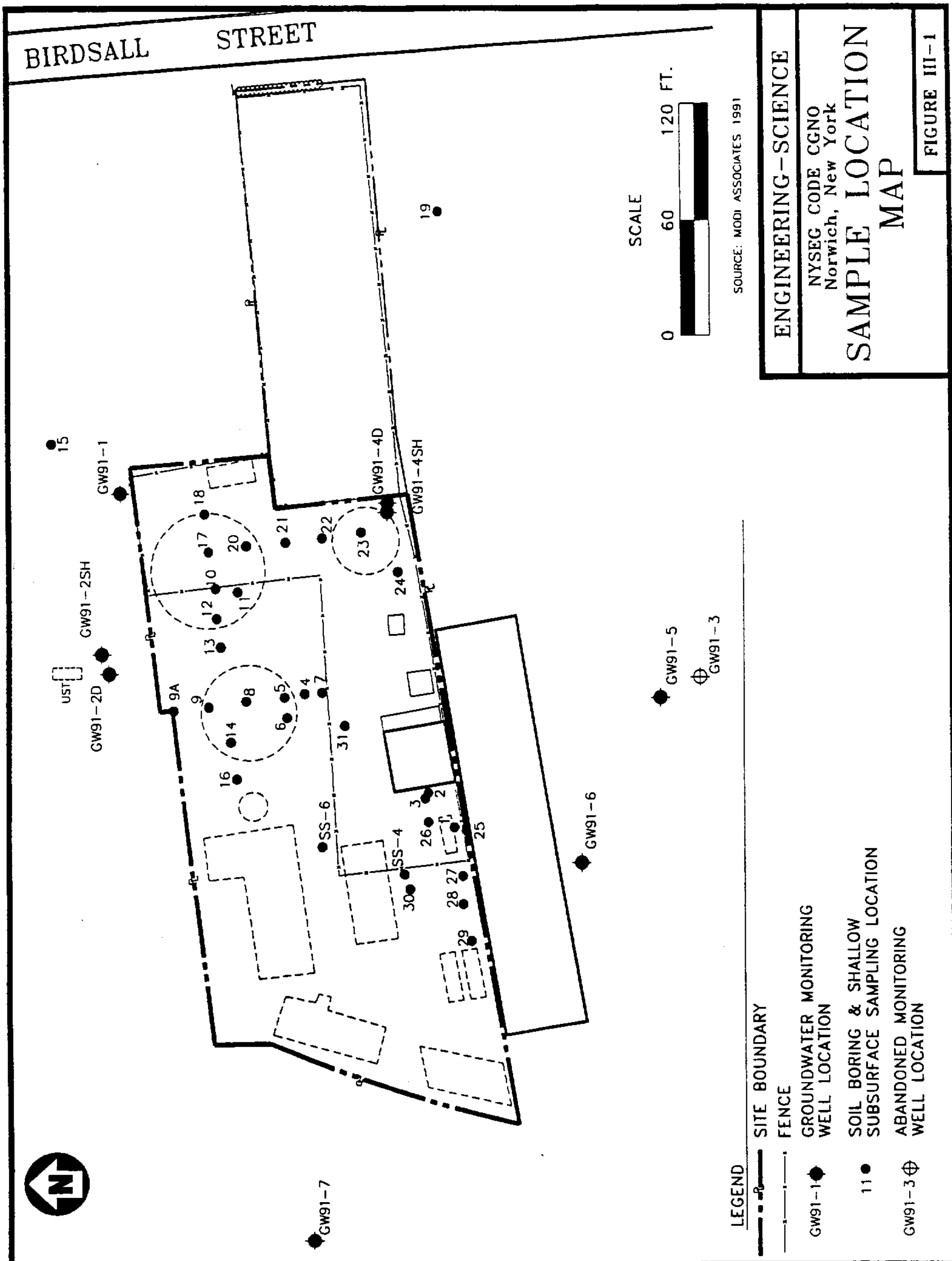

BIRDSALL STREET
SCALE
0 60 120 FT.
SOURCE: MODI ASSOCIATES 1991
ENGINEERING-SCIENCE
NYSEG CODE CGNO
Norwich, New York
SAMPLE LOCATION MAP
FIGURE III-1
LEGEND
SITE BOUNDARY
FENCE
GW91-1 GROUNDWATER MONITORING WELL LOCATION
11 SOIL BORING & SHALLOW SUBSURFACE SAMPLING LOCATION
GW91-3 ABANDONED MONITORING WELL LOCATION
GW91-1
GW91-2SH
GW91-2D
GW91-4D
GW91-4SH
GW91-5
GW91-3
GW91-6
GW91-7
UST
SS-4
SS-6
9A

requirements of the NYSDEC Analytical Services Protocols dated September 1989 (NYSDEC ASP).

Hydrogeologic Investigation

Eight monitoring wells were installed upgradient of and around the Norwich MGP site to characterize the uppermost aquifer in terms of the depth to water, groundwater flow direction, gradient and velocity, aquifer thickness, depth to confining layer, and the physical characteristics of the aquifer materials. The eight borings were installed between December 23, 1991 and January 7, 1992 by American Auger and Ditching Company, Inc. These data were used to determine the potential for MGP residue constituents to migrate to the water table, and the direction and speed with which dissolved constituents may migrate off-site. Water level elevations in well pairs were compared to determine vertical gradients. These data were also used to assess the potential risks of exposure to residents downgradient of the site who may use groundwater from residential wells for domestic use. The locations of the monitoring wells are shown in Figure III-1. A summary of the monitoring well locations and specifications are provided on Table III-3. A summary of groundwater use in the site vicinity is provided in Section IV.

The wells were drilled in accordance with NYSEG guidelines. Split spoon samples were collected continuously throughout the depth of each deep well boring. Where well pairs were installed, the shallow wells were only sampled in the screened zone. Split spoon samples were monitored for the presence of volatile organic compounds with a PID. Soil samples corresponding to the screened zones were analyzed for volatile organic compounds, semivolatile organic compounds, and total and amenable cyanide (Table III-4). Soil samples corresponding to the screened zones within each well boring were submitted for grain size characteristics. Results are presented in Appendix C.

Upon completion of the soil borings, monitoring wells were constructed in the boreholes with two-inch inside diameter, threaded, flush-joint stainless steel pipe and 0.010-inch slotted prepacked well screens, except GW91-2SH which used 0.010-inch slot standard stainless steel well screen. Bentonite pellet seals isolate the screened sections from above. Water levels were measured prior to and after well development, and were subsequently measured on a monthly basis.

Monitoring wells were developed using dedicated polyethylene tubing connected to centrifugal pumps. Foot valve assemblies were attached to the bottom of each polyethylene tube to prevent siphoning of water back into the wells. The foot valve was also used to manually prime the pump system with formation water and to surge the wells. All wells were developed until the discharge water was visibly sediment free or until pH, conductivity and temperature had stabilized. Development was discontinued when no improvement in visible water quality was detected with additional pumping. All development water was retained and placed in 55-gallon drums.

Monitoring wells were sealed with locking, expandable well caps and covered by locking, flush-mounted galvanized steel curb boxes. In traffic areas, steel manhole cover-type curb boxes were used to protect the monitoring wells. Boring logs and

TABLE III-3

MONITORING WELL LOCATIONS AND SPECIFICATIONS
NYSEG NORWICH MGP

Number	Unit Screened	Location	Top of Screen Depth (Feet)*	Top of Screen Elevation (Feet)**	Bottom of Screen Depth (Feet)*	Bottom of Screen Elevation (Feet)**
GW91-1	Alluvial sand & silt;Outwash sand & gravel; Lacustrine silt & clay	Upgradient	6	997.32	16	987.32
GW91-2D	Outwash sand & gravel; Lacustrine silt & clay	Upgradient	21	982.44	26	977.44
GW91-2SH	Alluvial sand & silt; Outwash sand & gravel	Upgradient	7.5	995.83	12.5	990.83
GW91-4D	Outwash sand and gravel	Downgradient	15	989.21	20	984.21
GW91-4SH	Outwash sand and gravel	Downgradient	8	996.00	13	991.00
GW91-5	Outwash sand & gravel; Lacustrine silt & clay.	Downgradient	6	995.50	16	985.50
GW91-6	Outwash sand and gravel	Downgradient	7	994.79	17	984.79
GW91-7	Outwash sand & gravel; Lacustrine silt & clay.	Upgradient	6	998.22	11	993.22

*Depths in feet below ground surface.
** Elevations in feet above mean sea level.

TABLE III–4

SPLIT SPOON SAMPLE LOCATIONS
MONITORING WELL BORINGS
NORWICH MGP

Sample ID	Well	Matrix	Sample Depth (ft.)*	Parameter	Location
NOVUXX–9101C	GW91–1	Soil	8–16	VOA,SemiVOA,Cn–	Upgradie
NOVUD–9102C	GW91–2D	Soil	20–26	"	Upgradien
NOVUSH–9102C	GW91–2SH	Soil	6.5–12.5	"	Upgradie
NOVDXX–9103C	GW91–3**	Soil	8–16	"	Downgradi
NOVDSH–9104G	GW91–4SH	Soil	8–12	"	Downgradi
NOVDXX–9105C	GW91–5	Soil	10–16	"	Downgradi
NOVDXX–9106C	GW91–6	Soil	8–16	"	Downgradient
NOVUXX–9107C	GW91–7	Soil	4–12	"	Upgradie

*Depths in feet below ground surface.
**Boring not completed as monitoring well.

well schematics are included in Appendix C. Analytical results for soil samples collected from the well borings are discussed in Section IV.

Slug tests were conducted in monitoring wells at the Norwich site on January 27 and 28, 1992 to estimate the hydraulic conductivity of the uppermost water bearing unit and to calculate groundwater velocities.

The slug tests were performed by inserting or withdrawing a stainless steel slug, which displaced a volume of water. The response of the water bearing unit was quantified by measuring the water level drop or rise to pre-test levels. Measurements were taken using a Hermit 2000 data logger and pressure transducers. Water level measurements were also taken using an electronic water level indicator to confirm the Hermit readings. A computer program (Duffield, G.M. and Rumbaugh, J.O., III, 1991) based on an equation by Bouwer and Rice (1976) was used to analyze the slug test data. The slope of a straight line matched to the data points representing residual drawdown versus time was used to calculate the hydraulic conductivity. The Bouwer and Rice (1976) method assumes that unconfined conditions are prevalent in the aquifer. Based on soil boring descriptions, groundwater elevation measurements, and the straight line curve matches attained, the uppermost aquifer is under unconfined conditions.

Groundwater Investigation

Groundwater sampling was conducted on January 30, 1992 and April 24, 1992 to characterize groundwater quality in the uppermost aquifer, and to determine whether MGP residue constituents are migrating into and within the groundwater. Upgradient and downgradient concentrations were compared to identify impacts on groundwater quality attributable to the former MGP. Results were also compared to New York State Class GA groundwater standards. These data were also used in the preliminary risk assessment to evaluate the potential health risk to any potential downgradient groundwater users.

Groundwater samples were collected more than fourteen days after initial well development to allow stabilization within the aquifer. Prior to well purging, groundwater levels and the total length of the water column were measured in all wells. All monitoring wells were purged of a minimum of three well volumes of water, or until dry, using high density polyethylene tubing and foot valves or disposable polyethylene bailers. All purge water was retained in 55-gallon drums on-site. The tubing and disposable bailers were removed from all wells after purging was completed. Water levels in all wells were allowed to stabilize prior to sampling (sampling records are provided in Appendix D).

Groundwater samples were removed from each Task II well using dedicated stainless steel bailers and polyethylene rope. A water sample was also collected from the Victory Markets well located 120 feet north of the site, via a tap in the well house. The Victory Markets well was sampled because of its commercial use for making ice cubes and its close proximity to the site. A separate aliquot from each monitoring well was collected and analyzed in the field for pH, temperature, and specific conductivity. Groundwater samples were sealed, labeled, packed in ice and delivered to Galson Laboratories in Syracuse, New York under chain of custody protocols. Samples were analyzed for VOCs using EPA Method 8240 modified for low detection limits, semivolatile organic compounds using EPA Method 8270, and cyanide using NYSDEC CLP-M methods. A trip blank was also analyzed for VOCs, and quality control matrix spike and matrix spike duplicate samples were collected from monitoring well GW91-1. The second round of groundwater samples was additionally analyzed for PCBs (by EPA Method 8080) and for Target Analyte List Metals.

Each dedicated bailer was initially cleaned using an Alconox detergent wash, potable water rinse, distilled water rinse and finally a methanol rinse. All bailers were allowed to fully air dry between cleaning and initial insertion in each well.

Air Monitoring

A Photovac MicroTIP PID was used to measure volatile organic compounds present in the air. This monitoring was performed as a health and safety measure during on-site field work. Air in the breathing zone (four to five feet above ground level) was monitored during drilling and sampling activities. Soil samples were screened, as was the head space over each monitoring well, as a preliminary means of determining the presence of volatile organic compounds.

The Photovac was calibrated daily to a standard of 100 ppm isobutylene. The Photovac is equipped with a 10.6 eV lamp, suitable for detecting most volatile organic compounds such as toluene, xylene, ethylbenzene, etc. Because the Photovac is not calibrated to all of these specific compounds, it provides readings of total ionizables present (i.e. volatile organic compounds with a ionization potential at or below 10.6 eV) relative to the isobutylene standard. The readings that the MicroTIP provides are best used for background/downgradient comparisons. No readings in the breathing zone were above background levels.

The selection of soil samples for laboratory analysis was based on several factors, including Photovac screening of split spoon samples. This screening was accomplished by holding the Photovac intake over the split spoon as it was opened, or by analyzing the headspace in a glass jar containing the soil sample. The Photovac readings were recorded on the boring logs (Appendix C).

When used in this manner, the Photovac readings can be a useful indicator of relative differences in VOC levels between samples. However, the absolute value of the Photovac reading should not be considered an accurate or representative VOC concentration, because the Photovac provides readings relative to an isobutylene standard and does not provide actual concentrations of VOCs. The Photovac readings presented on the boring logs are not indicative of actual VOC concentrations, but rather are indicative of relative differences in VOC levels between samples.

SECTION IV

SITE ASSESSMENT

SITE HISTORY AND BACKGROUND

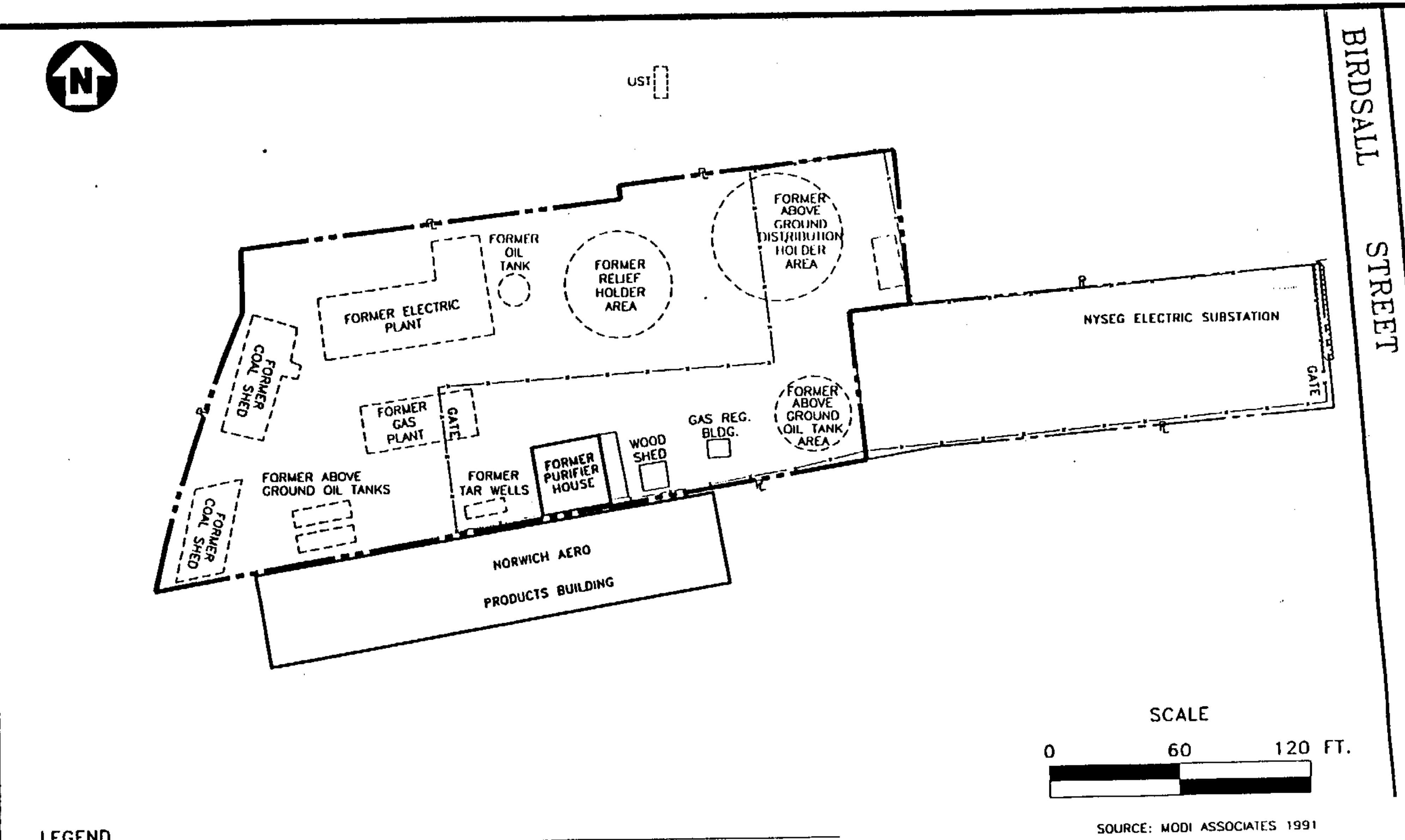
Based on existing Sanborn map information and the deed search, the MGP site at Norwich was purchased in 1863 and was situated just east of the Chenango Canal. The actual facility start-up date cannot be determined on the basis of existing information. The Gas Works are present on the 1887 Sanborn map (Appendix E). The Chenango Canal ceased operation in 1878 and is not present on the 1887 Sanborn map. The facility, under the name Norwich Gas Light Company, consisted of a large coal storage area, a 35,000-cubic-foot gas storage vessel (gasometer), and the main production building situated over a tar well (see 1887 map in Appendix E). It is not known whether the tar well under the building referred to on the map is the same as the tar wells reported to be located west of the former purifier house (Figure IV-1). The facility contained six retorts on two "benches", along with a repair shop. Coke storage facilities were also present along with several other buildings.

On the 1892 Sanborn map, the facility was unchanged except it was now called the Norwich Illuminating Company. On the 1903 map, ownership of the facility was the same, but minor modifications to on-site structures had been made. The map notations are not clear enough to determine the nature of these modifications.

By 1917, map information indicates the facility was operating under the name Norwich Gas and Electric Company. Major expansions had been made to the facility by this time. Both a water gas plant and an electric plant were noted on the map.

Modifications to the plant shown on the 1926 map included construction of two steel gas holders (26,000 and 100,000 cubic feet), three oil tanks (approximately 10,000 gallons each), wells, a purifier building and additional coal storage along the railroad siding. The 1926 map and an updated 1937 map show the plant owned by the New York Gas and Electric Co. Additional oil storage capacity had also been added at the southeast corner of the property.

By 1939, the site was identified as NYSEG property (Brown Crosby & Co., Inc. map dated June 1939). The updated map from September 1947 confirms the existence of a tar pit on the west side of the purifier building. Map notes for the purifier building document oxide storage, indicating that the gas cleansing process was used. In 1953, the MGP was reportedly retired and the gas plant structures were subsequently razed.



ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SITE PLAN

FIGURE IV-1

001631|D:\SY236\SY236001.DWG

REVISED: 6/29/92

The site is currently being used by NYSEG, primarily for equipment storage (Figures IV-1 and IV-2). The eastern portion of the property is now a NYSEG substation (Figure IV-3). Based on historical maps, it appears that the substation is adjacent to the former MGP and is not constructed over any of the former MGP facilities.

Years of Operation

The plant was in operation prior to 1887, although the exact date cannot be determined. It is likely that plant capacity expanded substantially through 1917, when mapping information documents past major facility expansion. Actual gas production operations reportedly continued until 1953. A report on gas production in New York State by Radian shows no data for the Norwich site after 1930.

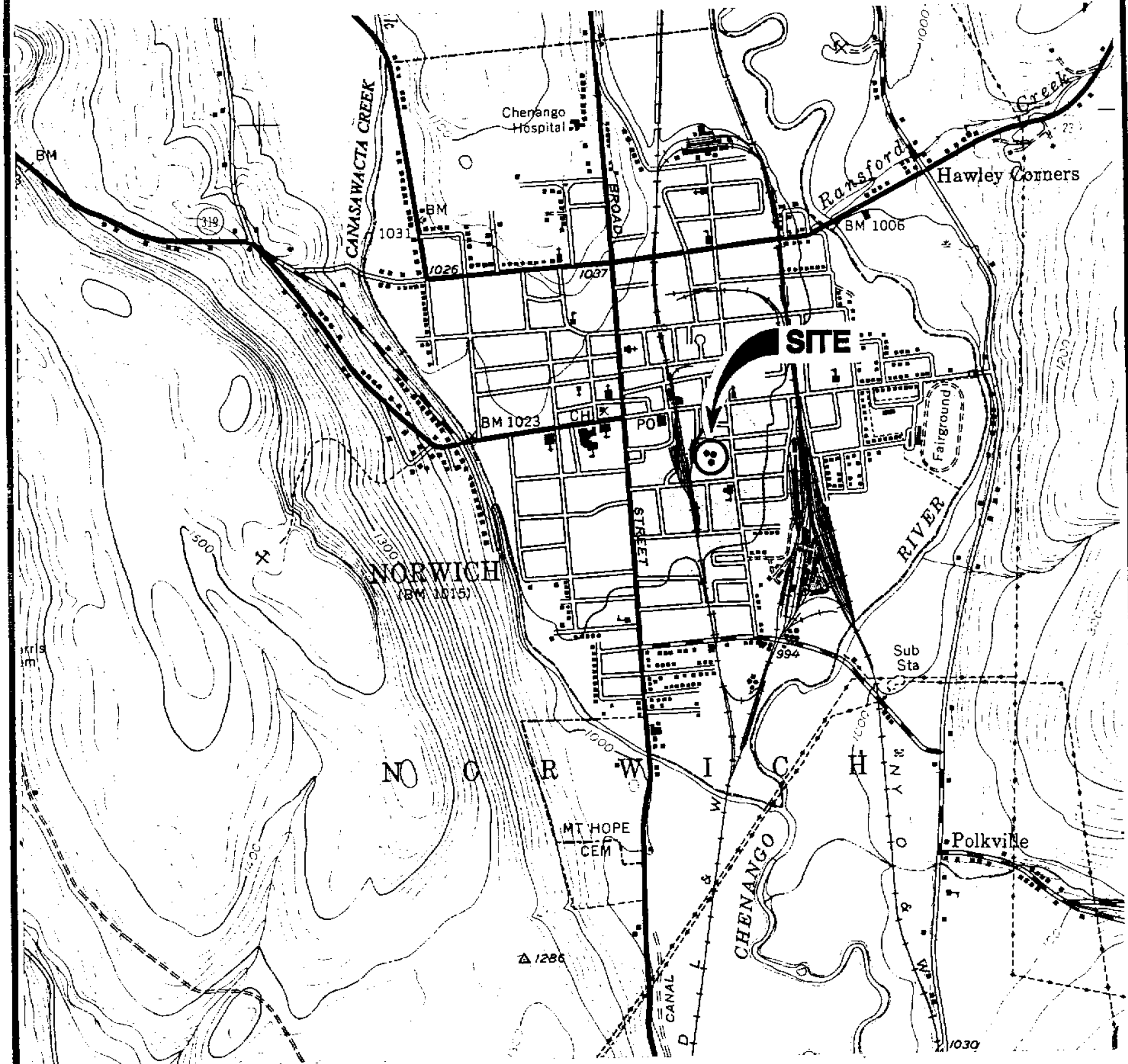
Processes Used

Early maps indicate both coal and coke storage on-site, indicating that coal gas, water gas, or carburetted water gas (CWG) was being produced. A 1917 Sanborn map specifies a water gas plant. This map also shows a carburetor in the producer building and substantial oil storage on-site. There is no documentation of by-product disposal on the property, however a tar well is shown on historical Sanborn maps, and a purifier chip disposal area was identified by NUS Corporation through an interview with a former employee.

Historical Land Usage

Historical land usage is also important in evaluating environmental impacts at and near the site (Figure IV-4). Copies of historical maps are presented in Appendix E. Standard Oil operated a storage tank north of the site (Sanborn Map, 1903). It's current status is unknown. On the southwestern corner of the Standard Oil lot is a depot building. That building is identified as the W.H. Dunns warehouse on another map (date unknown). Just north of the Standard Oil lot was a wood lot. Between 1917 and 1937 the Norwich Ice Manufacturers is identified where the wood lot was previously located. Farther north was the H. Thompson and Company Foundry (Chenango County Map, date unknown). The 1887 through 1937 Sanborn maps show the R.E. Rindge Coal House and yard to the northwest of the site. On the 1937 map, the Norwich Ice Manufacturers is called the Pure Ice Cream Company. The Victory Markets warehouse is presently located where the Pure Ice Cream facility was. Victory Markets has an active underground diesel fuel storage tank between the Victory Markets warehouse and the NYSEG MGP site. Victory Markets also leases a portion of the former MGP for trailer parking. During the Task II field investigation, a black oily puddle was observed north of the NYSEG fence in the area used for trailer parking.

Businesses south (downgradient) of the site included Norwich Aero Products (recent), a laundry and carpet cleaning business and bottling company (Sanborn Map, 1917), and the Mid York Press Inc. (Sanborn Map, 1937). The bottling company and Mid York Press Inc. formerly occupied part of the current Norwich Aero products property. These operations may have used solvents, cleaning products, and petroleum lubricants.



SOURCE: U.S.G.S. 7.5 SERIES TOPOGRAPHIC MAP. NORWICH QUADRANGLE N.Y. - CHENANGO CO. 1943

QUADRANGLE LOCATION

LATITUDE: 42°31'46"
LONGITUDE: 75°31'11"

SCALE

0 2000 4000 FT.

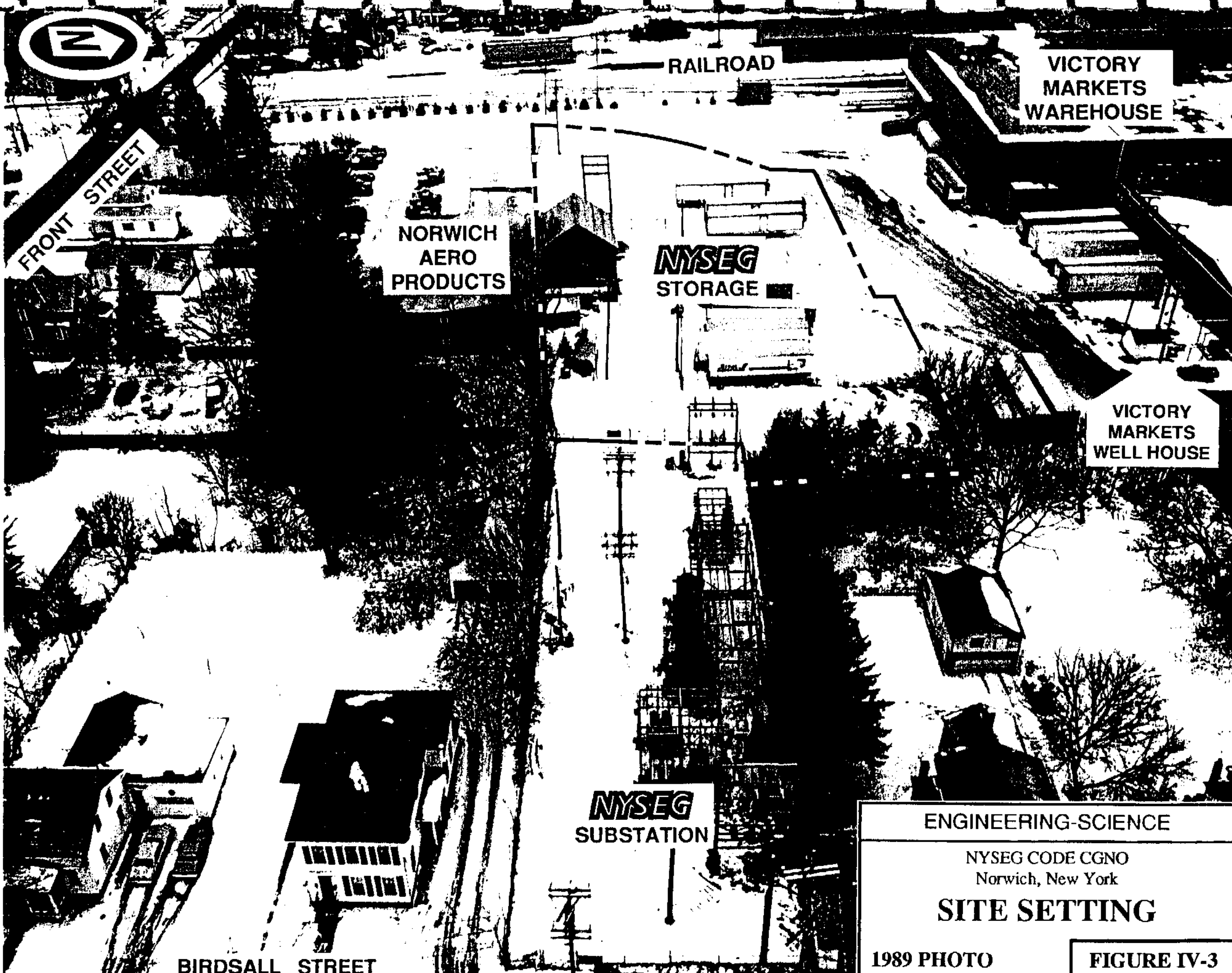
2000 FT.

ENGINEERING-SCIENCE

NYSEG CODE CGNO
NORWICH, NEW YORK

SITE LOCATION MAP

FIGURE IV-2

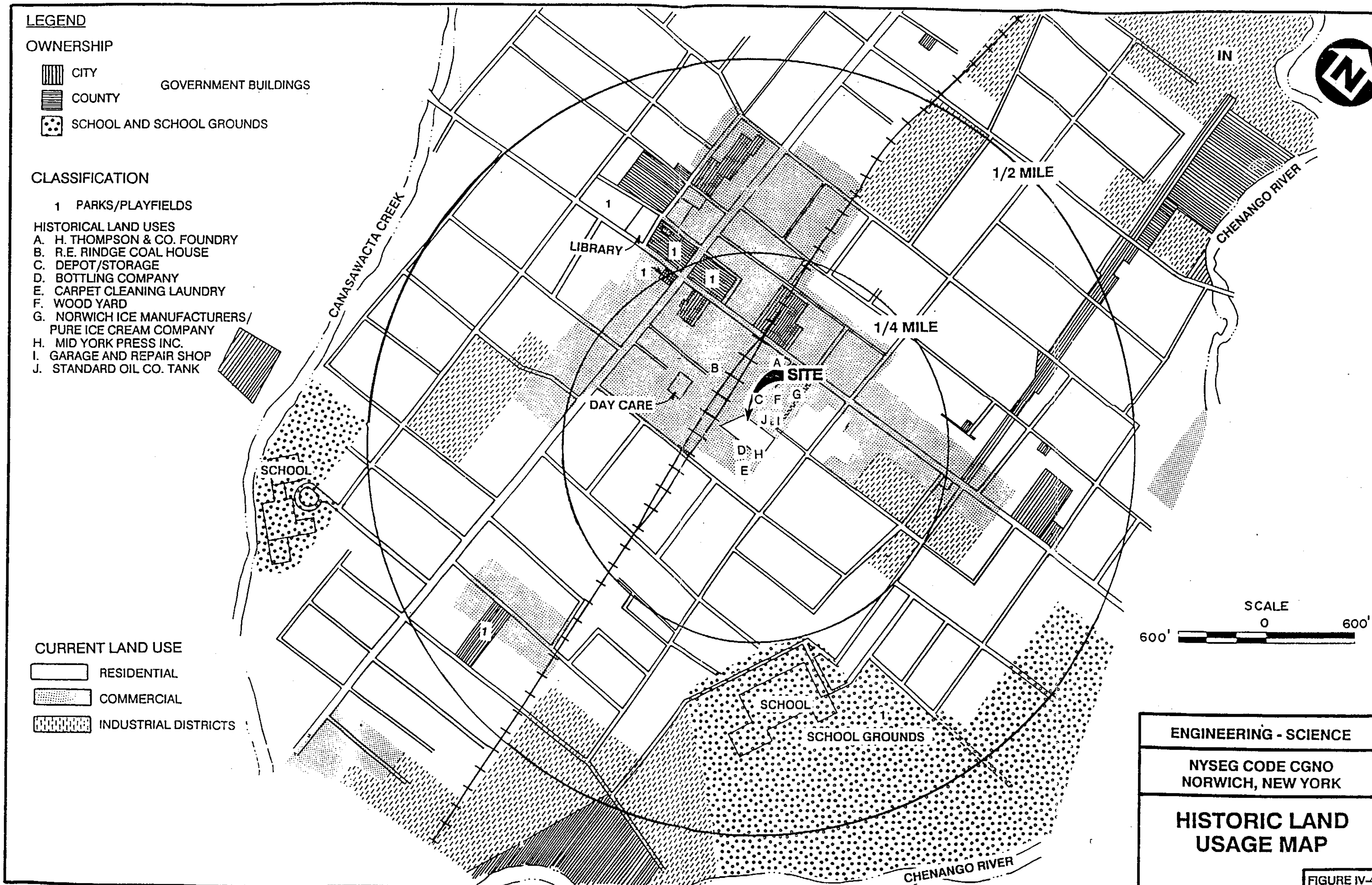


ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SITE SETTING

1989 PHOTO | FIGURE IV-3



ENGINEERING - SCIENCE

NYSEG CODE CGNO
NORWICH, NEW YORK

HISTORIC LAND USAGE MAP

FIGURE IV-4

SY 236.10.01

The area can be characterized as residential and light commercial/industrial throughout its history. The site is presently used by NYSEG for equipment storage, and the easternmost portion of the property, adjacent to the former MGP facilities, is an electrical substation.

RESULTS OF PREVIOUS INVESTIGATIONS

In 1990, ES performed an assessment of data previously collected by NUS Corporation for the Norwich MGP site. The ES assessment was presented in a Task I report finalized in 1991. In June 1990, NUS Corporation, under contract to the U.S. EPA, collected seven subsurface soil samples to determine whether a potential release of contaminants attributable to the site could occur to groundwater and to determine if a potential existed for direct contact with contaminants in the soil. Five samples were collected near a former tar well and two samples were collected in the suspected location of a purifier chip disposal area. The sample depths ranged from less than one foot to 4.5 feet below ground surface.

Benzene, toluene, ethylbenzene, and total xylenes are principal constituents of MGP tar residues and were present in the subsurface soil samples at elevated levels. The highest concentrations were present in samples collected nearest to the former tar well.

Twenty-one semivolatile organic compounds were detected in the soil samples. Most were PAHs typically associated with MGP residues. The total concentration of PAHs ranged from 228.2 parts per million (ppm) to 3,010.5 ppm. Samples collected near the underground tar well contained the highest concentrations.

Twenty metals were detected in the soil samples, however none of the metals concentrations exceeded the naturally-occurring ranges for New York State soils. Total and amenable cyanide were detected in all the soil samples.

The types and concentrations of contaminants detected in subsurface soil samples collected near the former tar well suggested that MGP residue sources may exist beneath the site. An imminent direct contact threat was not identified because the ground surface was covered with gravel and most of the site was surrounded by a fence which limited access to the area. The possibility of contaminant migration to local groundwater was noteworthy because groundwater is a drinking water source for the city and surrounding area.

The Task II investigation was subsequently designed by ES to address the potential presence of MGP residue sources in the subsurface and the potential migration of MGP residue constituents to groundwater.

REGIONAL SETTING

Regional Geology

The Norwich MGP site is located in the Allegheny Plateau physiographic province of New York State. The site vicinity is underlain by upper Wisconsin age glacial lacustrine sands (Muller, E.H. and Cadwell, D.H., 1986). The lacustrine sands are generally well sorted, stratified deposits associated with large bodies of water. Regionally, the lacustrine sands range from six to 65 feet in thickness (Muller, E.H., and Cadwell, D.H., 1986).

In the site vicinity, bedrock consists of upper Devonian Unadilla Formation shale and sand, the Genesee Group sand and shale, the Tully limestone and the Hamilton Group shale, sand and limestone (Rickard, L.V. and Fisher, D.W., Isachsen, Y.W. et al, 1991). Bedrock in the Allegheny Plateau is gently tilted to the south. Progressively older rock is exposed to the north. The thickness of the sedimentary section increases to the south into the Appalachian Basin.

Regional Hydrology

The Norwich site is 2,500 feet northwest of the Chenango River and 2,800 feet east of Canasawacta Creek. Canasawacta Creek joins the Chenango River 4,400 feet south of the Norwich MGP site. The Chenango River and Canasawacta Creek generally flow to the south. The Chenango River flows 37 miles southwest from the intersection of Canasawacta Creek to its intersection with the Susquehanna River at Binghamton, New York. The Susquehanna River flows through Pennsylvania and Maryland and empties into the Atlantic Ocean via Chesapeake Bay. Downstream of the site the Chenango River and Canasawacta Creek are Class B, suitable for bathing, fishing and fish propagation. Surface water is not used as a drinking source within three miles downstream of the site.

SITE SETTING

Topography

The City of Norwich sits in a valley between the Chenango River and Canasawacta Creek. The tops of the adjacent hills are approximately 500 feet above the valley floor (Figure IV-2). The topography of the former MGP site and adjacent areas is nearly flat, based on a site topographic map prepared by Modi Associates as part of the Task I investigation (ES, 1991). The Chenango River and Canasawacta Creek are the two water bodies closest to the site. The Chenango River passes within 2,500 feet of the site, to the southeast, and Canasawacta Creek passes within 2,800 feet of the site, to the west.

Access to most of the site is limited by a chain-link fence. Another chain link fence separates the site from railroad tracks which run along the western edge of the site. The site is nearly entirely paved or covered with compacted gravel.

Land Usage in the Site Vicinity

The Norwich MGP site is located at 20 Birdsall Street, in the City of Norwich, Chenango County, New York (Figure IV-2). The one acre former MGP site is bounded by the Victory Markets warehouse facility to the north, a NYSEG electrical substation and residences to the east, residences and the inactive Norwich Aero Products facility to the south, and railroad tracks and a freight station/warehouse to the west (Figure IV-3). The nearest commercial properties are the Victory Markets warehouse located approximately 120 feet north of the site and the inactive Norwich Aero Products facility located immediately south of the site. Northwest of the site is the Norwich Pharmacy Company warehouse Number

20. It is not known whether that building was always used as a warehouse or if it was used for manufacturing at some time.

The nearest school is approximately 1,350 feet southeast of the site on Midland Street. A day care facility is approximately 450 feet west of the site, on the opposite side of the railroad tracks (Figure IV-4). The center of the City of Norwich is approximately 1,200 feet northwest of the site, and includes restaurants, stores, offices, small businesses, and Chenango County offices.

Groundwater Usage in the Site Vicinity

Groundwater occurs locally in the glacial lacustrine and outwash deposits. The Norwich municipal water supply uses groundwater. The nearest municipal well is located 4,000 feet northeast (upgradient) of the site, and on the opposite side of the Chenango River.

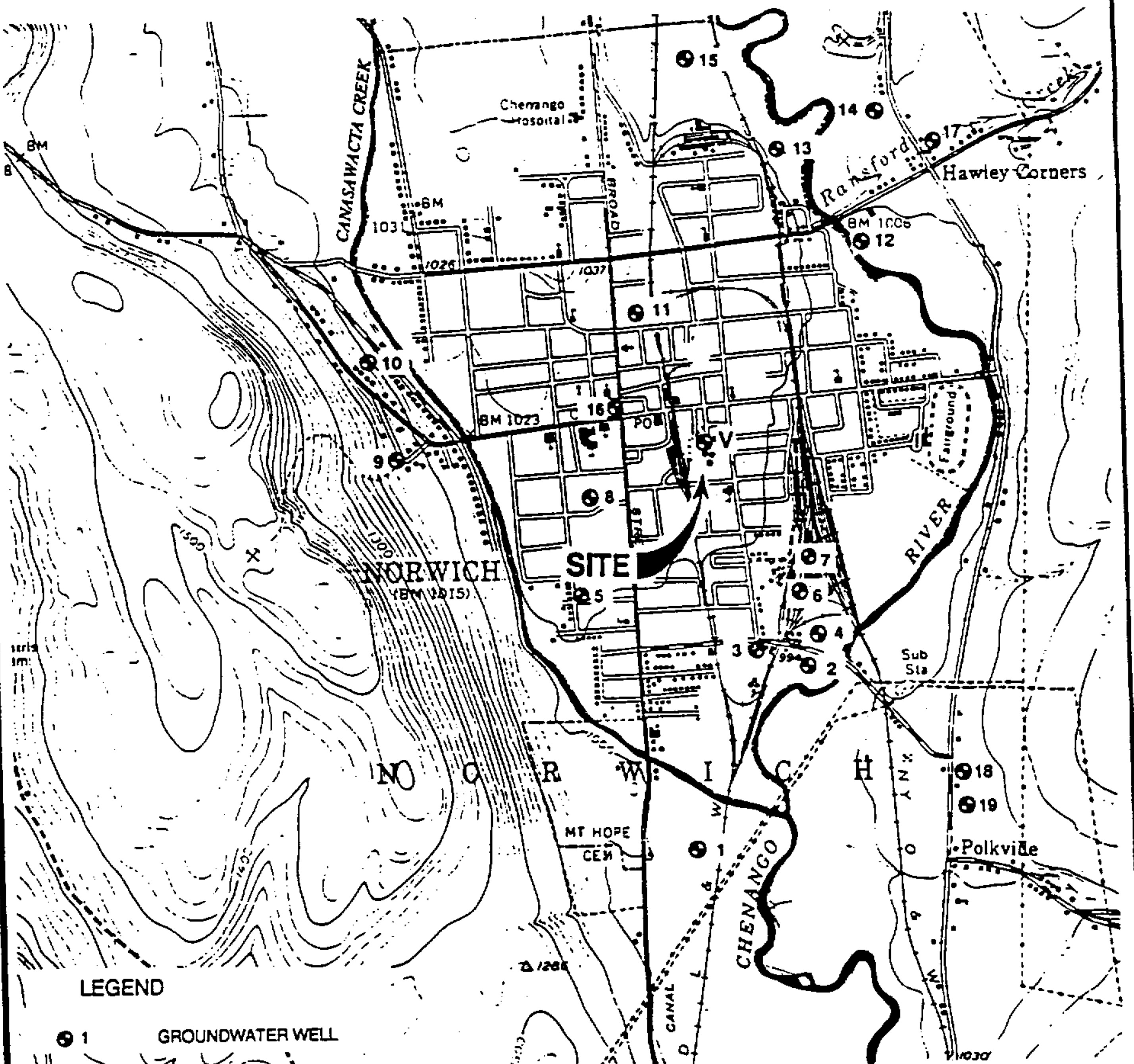
A USGS well data base search (1992), review of the NYSDOH Atlas of Community Water System Sources (NYSDOH, 1982) and a telephone interview with the Norwich Water Department identified twenty wells within a one mile radius of the Norwich MGP site. Wells are identified on Figure IV-5 and described in Table IV-1. Ten of these wells are downgradient of the site. Downgradient well usage is listed as commercial/non-manufacturing (well 1), industrial (well 3 and 8), irrigation (well 5), trailer park public supply (wells 18, 19) and as unknown (wells 2, 4, 6, and 7). The trailer park supply wells are located east of the Chenango River, indicating these wells are separated from the MGP site by a groundwater discontinuity. The City of Norwich water supply is served by three wells located upgradient of the MGP site (two wells at 12 and one at 15). The City of Norwich mandated that residents switch to the City water supply system approximately 100 years ago. Each city residence should be supplied with water by the city water system. The well closest to the site is at Victory Markets, and is used for manufacturing ice. The well is approximately 120 feet north (upgradient) of the site.

Soils

This discussion of the site soils is based on the Soil Survey of Chenango County, New York (USDA, 1985) and soil borings conducted on-site as part of this investigation (ES, 1991).

The original surface soils at the site have been covered with varying thicknesses and mixes of asphalt, compacted gravel, and fill material consisting of cinders, ash, brick, wood chips, silt and sand (ES, 1991). This fill material has raised the site ground surface approximately 2 to 3 feet above the elevation of properties to the east and south of the site. Most of the site is either paved or covered by compacted gravel. Only small areas of exposed surface soil exist along the southern site boundary.

The soils beneath the site and beyond the limits of the site are mapped as Howard gravelly loam, which is described as deep, nearly level and well drained (USDA, Sheet #45, 1985). The Howard gravelly loam soils are described as permeable (USDA, 1985).



SOURCE: U.S.G.S. 7.5 SERIES TOPOGRAPHIC MAP. NORWICH QUADRANGLE N.Y. - CHENANGO CO. 1943

QUADRANGLE LOCATION

N

LATITUDE: 42°31'46"
LONGITUDE: 75°31'11"

SCALE

0 2000 4000 FT.

2000 FT.

ENGINEERING-SCIENCE

NYSEG CODE CGNO
NORWICH, NEW YORK

WELL LOCATION MAP

FIGURE IV-5

TABLE IV-1
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
GROUNDWATER USAGE
WITHIN ONE MILE RADIUS

WELL NUMBER	WELL LOCATION	DISTANCE FROM SITE (ft)	WELL DEPTH (ft)	BOTTOM OF CASING (ft)	AQUIFER	DISCHARGE (GPM)	USE OF WATER	OWNER
1	D	4,875	229	229	QUATERNARY	500	COM./BUS./NON-MANUFACTURING	RECREATION FSP
2	D	2,875	57	-	QUATERNARY	-	USE NOT KNOWN	-
3	D	2,450	418	373	QUATERNARY	125	INDUSTRIAL	MCREESE
4	D	2,575	67	-	QUATERNARY	-	USE NOT KNOWN	CITY OF NORWICH
5	D	2,400	230	230	QUATERNARY	-	IRRIGATION	CHARLES ALLYN
6	D	2,000	72	-	QUATERNARY	-	USE NOT KNOWN	-
7	D	1,700	102	-	QUATERNARY	-	USE NOT KNOWN	-
8	D	1,625	375	-		150	INDUSTRIAL	NORWICH PHARMACEUTICAL
9	U	4,050	300	30	BEDROCK	-	DOMESTIC	LIBBY
10	U	4,600	300	14	BEDROCK	1.5	DOMESTIC	BARROWCLOUGH, C.
11	U	2,100	460	-	BEDROCK	7	DOMESTIC	NASSAR, AL
12	U	3,400	33	22	QUATERNARY	170	PUBLIC SUPPLY	CITY OF NORWICH
13	U	4,075	31	21	QUATERNARY	1,000	USE NOT KNOWN	BORDEN MILK CO.
14	U	4,925	257	257	-	30	DOMESTIC	BARRETT, ERNEST
15	U	5,125	233	204	QUATERNARY	1,020	PUBLIC SUPPLY	CITY OF NORWICH
16	U	1,450	-	-	-	-	AIR CONDITIONING/TOILETS	BLUEBIRD DINER
17	U	5,000	-	-	-	-	PUBLIC SUPPLY	MILLER'S TRAILER PK.
18	D	5,050	-	-	-	-	PUBLIC SUPPLY	MAPLE GROVE E. TRLR. PK.
19	D	5,250	-	-	-	-	PUBLIC SUPPLY	MAPLE GROVE W. TRLR. PK.
V	U	120	-	-	-	-	MANUFACTURE OF ICE	VICTORY MARKETS

- INFORMATION NOT AVAILABLE. WELL LOCATION: D-DOWNGRADIENT, U-UPGRADIENT.
SOURCES OF INFORMATION: USGS GROUNDWATER WELL DATA BASE; NYSDOH NYS ATLAS OF COMMUNITY WATER SYSTEM SOURCES, 1982; NORWICH WATER DEPT.
Note: Domestic use has not been verified with well owner.

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SITE HYDROGEOLOGY

The information presented in this subsection was derived from eight monitoring well borings, 32 soil borings, a USGS topographic map (1943), the Geological Map of New York Finger Lakes Sheet (Rickard, L.V., and Fisher, D.W., 1970), Surficial Geology of New York Finger Lakes Sheet (Muller, E.H. and Cadwell, D.H., 1986), New York State Geological Highway Map (Rogers, W.B.; Isachsen, Y.W.; Mock, T.D.; Nyahay, R.E., 1990) and the New York State Atlas Community Water System Sources (NYSDOH, 1982).

Geology

As part of the site investigation activities, nine monitoring well borings were drilled. Table IV-2 summarizes the stratigraphy described in the monitoring well boring logs. Eight monitoring wells were installed at the site (Figure IV-6). Thirty-two soil borings were also drilled and 35 split spoon samples were chemically analyzed for site characterization purposes. Table IV-3 summarizes boring locations, depths, soil descriptions, sampling depths, analyses, and gives a cross reference between boring numbers and sample numbers. The site subsurface stratigraphy is summarized as approximately six inches of asphalt or gravel; one to six feet of fill consisting of brown to black medium sand, gravel, silt, brick and glass; one to eight feet of alluvial sand and silt; seven to 15 feet of glacial outwash sand and gravel; and an undetermined thickness of glacial lacustrine silt and clay. All borings were terminated within the upper four feet of the lacustrine layer or above it. Geologic cross sections A-A' and B-B' are located on Figure IV-7 and are presented in Figures IV-8 and IV-9, respectively. Boring logs are presented in Appendix C, as are grain-size analyses results for each well boring.

Well boring GW91-1 was drilled to a depth of 18 feet at an upgradient location northeast of the site, on the Victory Markets trailer parking area. Boring GW91-1 encountered a 4.25-foot fill layer, 3.75-foot alluvial layer, 7.5-foot outwash layer, and a 2.5-foot lacustrine layer. Well borings GW91-2D, GW91-2SH, and GW91-7 were also drilled at upgradient locations. These other upgradient monitoring well borings encountered materials similar to those in boring GW91-1, however the depth to the lacustrine layer varied. Figure IV-10 is a contour map of the elevation of the top of the lacustrine layer. The elevation of the lacustrine layer was highest to the west of the site but was also high east of the site. The elevation of the lacustrine layer is lowest near the center of the site, and varied by as much as 15.78 feet across the site. The precision of the contour map presented on Figure IV-10 was limited by the relatively small number of data points available.

No on-site borings fully penetrated the lacustrine layer. The depth to bedrock on-site was not determined during this Task II investigation. Based on the Geologic Map of New York State Finger Lakes Sheet (Rickard, L.V. and Fisher, D.W., 1970), the site is underlain by upper Devonian Unadilla Formation shale and sand and Genessee Group sand and shale. The nearest bedrock outcrops are approximately 3,600 to 4,000 feet east and west of the site in the valley walls. The depth to bedrock is over 373 feet in places within the Norwich valley area (USGS, 1992).

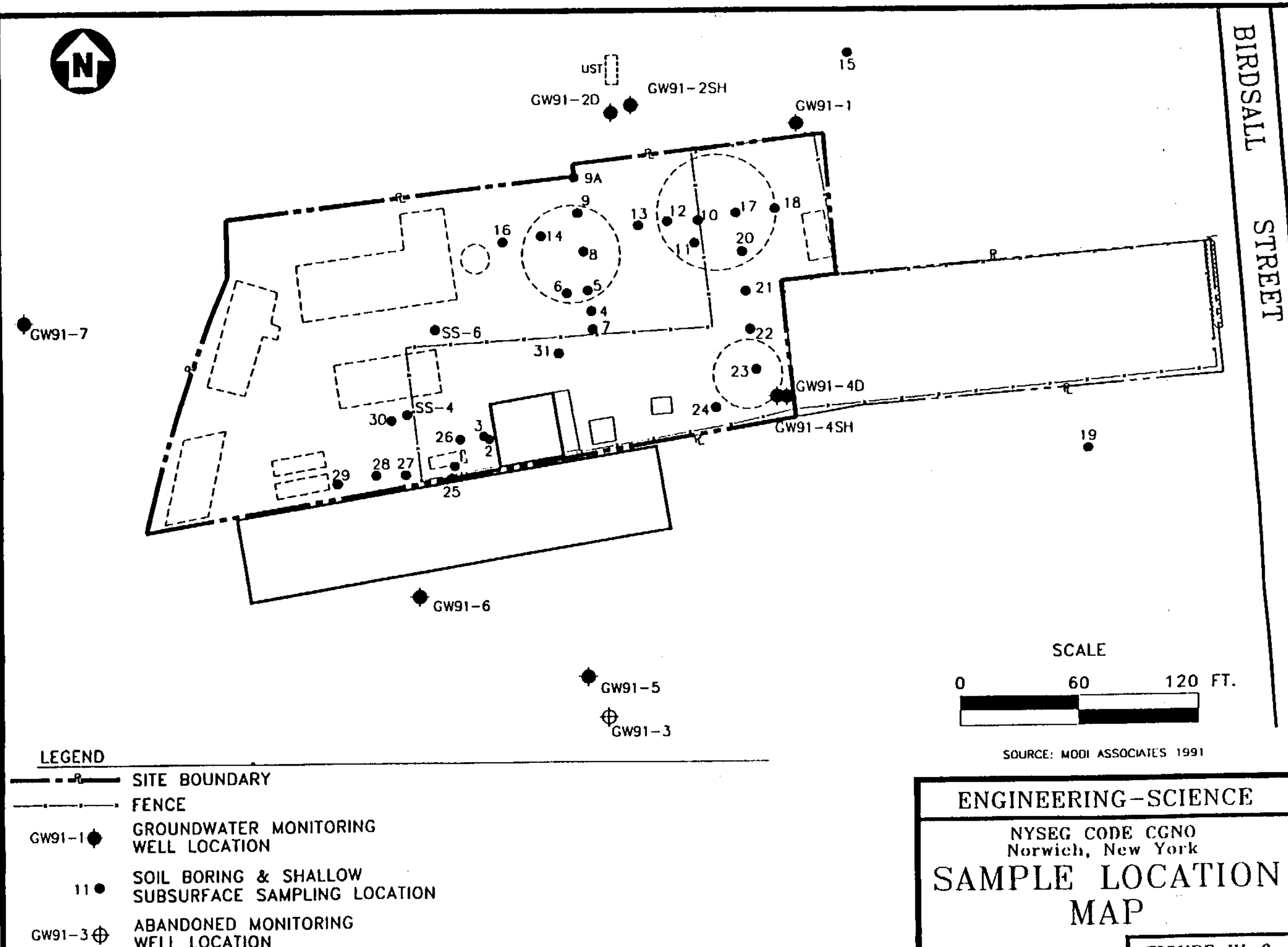
TABLE IV-2
STRATIGRAPHIC SUMMARY
WELL BORINGS
NYSEG NORWICH
(DEPTHS IN FEET BELOW GROUND SURFACE)

Stratigraphic Unit	GW91-1	GW91-2D	GW91-3**	GW91-4D	GW91-5	GW91-6	GW91-7
Asphalt	–	0-0.5'	–	–	0-0.5'	0-0.5'	–
Fill*	0-4.25'	0.5-3.25'	0-1.5'	0-6'	0.5-2'	0.5-2'	0-1'
Alluvial Sand & Silt	4.25-8'	3.25-10'	2-4'	–	2-6'	2-10'	1-2'
Outwash Sand & Gravel	8-15.5'	10-25'	4-15.5'	6-20'	6-15'	10-17'	2-10'
Lacustrine Silt & Clay	15.5-18'	25-28'	15.5-18'	20-24'	15-18'	17-20'	10-14'

*Fill–brown to black sand, brick, stone, glass, coal, cinders, ash, and wood chips.

**Not completed as a monitoring well.

NOTE:GW91-2SH and GW91-4SH were drilled as twins to GW91-2D and GW91-4D.



ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SAMPLE LOCATION MAP

FIGURE IV-6

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REVISED: 6/2/92

TABLE IV-3
TASK II SAMPLING AND ANALYSIS SUMMARY
NORWICH MGP

Boring Number	Boring Location	Boring Depth	Stratigraphic Summary*	Sample Designation	Sample Depth	Sample Type	Analysis
B91-01	West of purifier house, east of fence, N10, E182.	0-10'	0-6' Dk gy-blk cndrs, tr cl-sk, 6-10' tan sd, sm gr.	SB91-5	0-4'	Delineation	BTEX
B91-02	West of purifier house, close to bldg., N22, E200.	0-3'	0-3' slty sd, sm cl, tr ash, cndrs, 2.5-3' oily, stained.	SB91-1	2.5-3'	Waste	BTEX, PAH, CN
B91-03	NW of B91-2 three ft., N23, E198.	0-9.5'	0-2' tan-brn sk, sm blk stain, 2-4.6' dk gy-blk cndrs, ash, sm sk 4.6-5' ylw cl, 5-9.5' sd & gr, stained bands, wet @ 6', oily stain 8-9.5'.	-	-	Delineation	-
B91-04	North of fence, south edge of holder, N80, E260.	0-1.5'	0-12" sk-sd, sm gr, tr coal, cl, brk, 16-18" stained, PID 70 ppm. Holder wall?	SS91-7	6-12"	Random Surf.	BTEX, PAH, CN
B91-05	Inside south end of holder, N90, E260.	0-3.1'	0-7" gr, 7"-3.1' sk, sm gr, ltl cl, tr brk, ash. Stain, odor, PID 246 ppm.	SB91-2	1.5-3'	Random	BTEX, PAH, CN
B91-06	West of B91-5, N90, E248.	0-1.1'	Tan slt, sm gr, tar odor, refusal @ 1.1'.	-	-	-	-
B91-07	Along north side of fence, N70, E260.	0-10.5'	0-4' slt, sm gr, ltl cl, stain, 4-10.5' slt & sd, wet, oily, stain, PID 405 ppm.	SB91-3	4-5.5'	Random	BTEX,PAH,CN
				SB91-4	9-10.5'	Waste	PAH
B91-08	Center of holder, N110, E260.	0-6'	0-4' Slt-sd, sm gr, tr brk, 4-6' gr, sm sd, 3-6' stain, oily, wet, PID 770ppm.	SB91-6	4-6'	Random	PAH
B91-09	North of B91-8, north of holder edge, N130, E260.	0-10.5'	0-10.5' Slt-sd, sm gr, tr cl, 7.5-10.5' oily lt brn, odor, wet, PID 1110 ppm.	SB91-7	6-9'	Random	PAH
B91-9A	North of holder, near property line, N148, E260.	0-11'	0-0.1' asphalt, 0.1-9' Slt-sd, sm gr, tr gr, brk, coal, 9-11' gr, sm sd, 'tan-brn stain, oily sheen, PID 67 ppm, wet.	SB91-8	5.5-7'	Random	PAH
B91-10	Center of large holder, west of fence, N118, E320.	0-2.5'	Slty-sd, sm gr, tr coal, brk. Duplicate sample SS91-8 and MS,MSD, MSB.	SS91-5, SS91-8	0.5-1'	Random Surf.	BTEX, PAH, CN
B91-11	In large holder, SW of B91-10, N120, E358.	0-2.5'	0-2.5' Slty sd, sm gr, tr coal, brk, 2-2.5' tar stain.	SB91-9	1.5-2.5'	Delineation	PAH
B91-12	Near west edge of large gas holder, N120, E305.	0-9'	0-9' slty-sd, sm gr, tr coal, 2-4' blk stain, 4-9' tan brn oil, odor, PID 429 ppm.	SB91-10	4-6'	Random	BTEX, PAH, CN
B91-13	Between holders, west of B91-12, N120, E290.	0-7.5'	0-4 slt-sd, sm gr, 4-6' gr sm sd, 6-7.5' med sd, sm gr, wet @ 2', odor @ 6'.	SB91-11	3.5-6'	Random	PAH
B91-14	NW edge of western holder, N120, E240.	0-6'	0-0.25' asphalt, 0.25-4' slt-sd, sm gr, tr brk, tar residue, sm stain, 4-6' gr, 6" clay lense, 5.5-6' gr, sm slt, blk coal tar, viscous, saturated.	SB91-12	4-6'	Random	BTEX, PAH, CN
				SB91-17	4-6'	WASTE	BTEX, PAH, CN
B91-15	NE of site, in back yard, E of Vctry Mkts. trailers.	0-3.5'	0-3.5' dk brn slt, sm gr. Duplicate sample of SS91-3 submitted.	SS91-3 & DUP	0.5-1'	Background	BTEX, PAH, CN
				SS91-2	3-3.5'	Background	BTEX, PAH, CN
B91-16	West of holder & B91-14, in pkng lot, N120, E220.	0-10.5'	0-4.25' slt-sd, sm gr, 4.25-6.75' sk, sm cl, 6.75-10.5' slt-sd, sm gr, 7.5-10.5' oily, blk stain, grains coated, odor, PID 655 ppm.	SB91-13	4-6'	Random	PAH
B91-17	E-center of large holder, inside fence, N120, E340.	0-2.25'	Brn gr, sk, sd, ltl cndrs, refusal @ 2.25'.	-	-	Random	-
B91-18	East edge of holder, N120, E360.	0-9'	0-3' slt, sm gr, tr cl, brk, mrtr, cndrs, 3-9' slt-sd, ltl-sm gr, 0-2' PID 958 ppm.	SB91-14	1-2'	Random	PAH
B91-19	In back yard, off parking pad at #26 Birdsall St.	0-4.5'	0-4.5' slt-sd, sm gr, sm cl.	SS91-1	3-4.5'	Background	BTEX, PAH, CN
B91-20	In large holder, SE, N100, E340.	0-2.1'	0-2.1' slt-sd, sm gr, tar odor, refusal.	SB91-15	0-2'	Random	PAH
B91-21	South of large holder, N80, E340.	0-5'	0-5' slt-sd, sm gr, tr brk, 2-3.5' tr-ltl stn, 3.5-4.4' sm stn, 4.4-5' stn, odor.	SB91-16	3.5-5'	Random	BTEX, PAH, CN
B91-22	N edge of small holder, W of Substa., N60, E340.	0-9'	0-7.5' slty sd, sm gr, tr-ltl stn, 7.5-9' gr, 7-9' stn tan-brn, oily, wet.	SB91-18	5-7.5'	Random	PAH
B91-23	Center of small holder, N40, E340.	0-9'	0-2' slt sm gr, sd & coal, 2-3.5' ash-cndrs, 3.5-9' slt sm gr, 8-9' stn, odor, wet, PID 109 ppm.	SB91-19	7.5-9'	Random	BTEX, PAH, CN
B91-24	Southeast of small holder, N23, E317.	0-9.5'	0-6' slt sm gr, cndrs, coal, 6-9.5' sk sm gr, stain, odor, wet, PID 92 ppm.	SB91-20	8-9.5'	Random	PAH
B91-25	Bet. W fence & Purif. Hse., along S fence, N5, E178.	0-6'	0-4' slt, sm gr, 4-6' wood chips, 1.75-6' blk stn, tarry, odor, PID 238 ppm.	SB91-21	3-6'	Waste	BTEX, PAH, CN
B91-26	West of B91-3, West of Purif. Hse., N25, E185.	0-9'	0-3.5' slt, sm gr, cndrs, brk, 3.5-4.5 sk sm cl, 4.5-9' sd, blk stn, oily, wet, 42 ppm.	SB91-22	5.5-7.5'	Delineation	PAH
B91-27	Outside fence near Aero Bldg., N10, E155.	0-7.5'	0-5' slt-sd, sm gr, 5-7.5' cl, sd, sm sk, wd chips, 4-7.5' blk stn, odr, oily, 55ppm.	SB91-23	4-6'	Delineation	PAH
B91-28	West of B91-27, near Aero Bldg., N12, E140.	0-6'	0-2' slt-sd, sm gr, 2-4' gr, sm sk, 4-6' sk sm gr, wood, tr cl, oily, odor, 30ppm.	-	-	Delineation	-
B91-29	West of B91-28, near Aero Bldg., N08, E120.	0-5.5'	0-2' gr sm slt, coal, sd, tr brk, 2-4' cndrs, tr odor, 4-5.5' sk, sm cl, tr oil, sm stn.	SB91-24	4-5.5'	Delineation	BTEX, PAH, CN
B91-30	West of fence, North of B91-27, N38, E152.	0-10'	0-4' slt-sd, sm gr, brk, 4-10' wd chips, brk frag., oily, prod., wet, PID 87 ppm.	SB91-25	6-8'	Delineation	PAH
B91-31	N of NE crnr of Purif Hse, along fence, N60, E240.	0-4'	0-4' slt, sm gr, tr brk, cndrs, scattered dk stn. MS, MSD, MSB, Sample collected.	SB91-26	0-4'	Random	BTEX, PAH, CN
SS91-4	Outside fence, near gate, N40, E160.	0.5-1'	0-1' sd & gr, sm ash, tr coal, tr brk.	SS91-4	0.5-1'	Random Surf.	BTEX, PAH, CN
SS91-6	Outside fence, north of gate, N80, E180.	0.5-1'	0-1' slty-sd, sm gr, tr brk, coal, sm dk stn, PID 0.0 ppm.	SS91-6	0.5-1'	Random Surf.	BTEX, PAH, CN

*Legend: cl=clay, sd=sand, sk=silt, gr=gravel, cndrs=cinders, brk=brick, mrtr=morter, wd=wood, stn=stain, brn=brown, blk=black, wt=white, gy=gray, dk=dark, lt=light, sm=some, ltl=little, tr=trace, mst=moist, ref=refusal.

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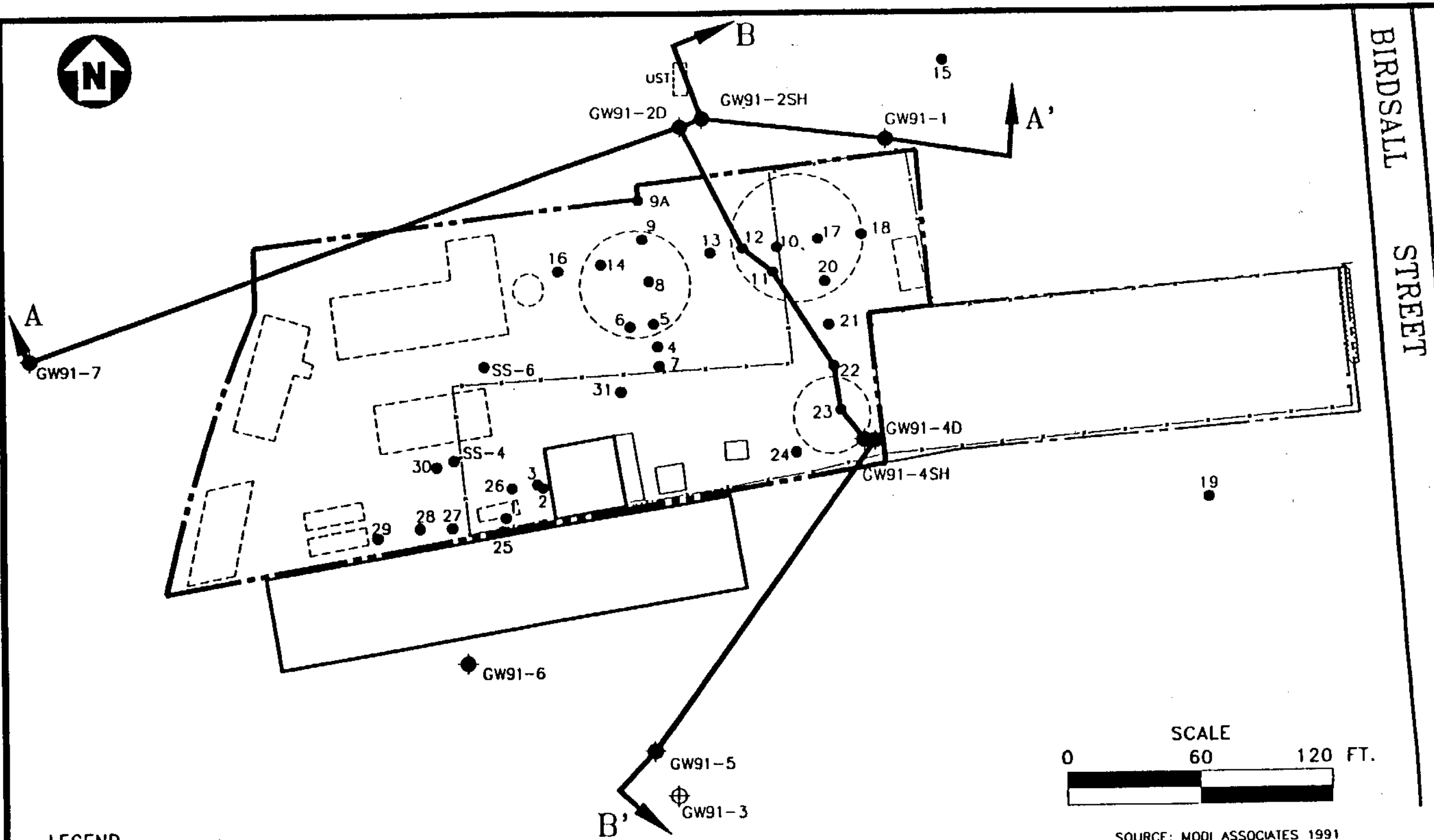

LEGEND

SITE BOUNDARY

FENCE

GW91-1 GROUNDWATER MONITORING WELL LOCATION

11 SOIL BORING & SHALLOW SUBSURFACE SAMPLING LOCATION

GW91-3 ABANDONED MONITORING WELL LOCATION

CROSS SECTION LINE

NOTE:
RELIEF HOLDER PROJECTED ONTO CROSS SECTION A - A'
(SEE FIGURE IV-8)

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BORING & CROSS SECTION LOCATION MAP

FIGURE IV-7

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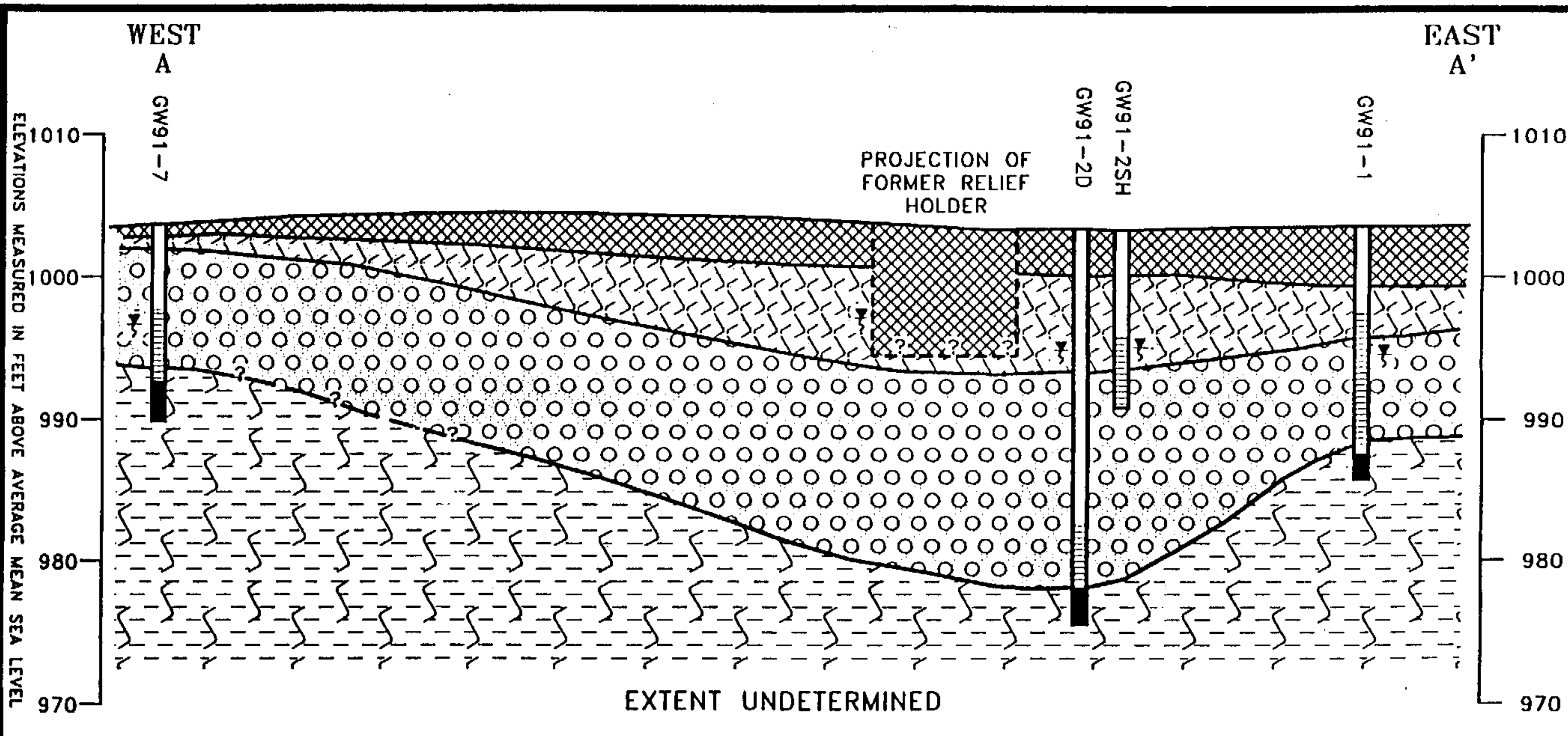


LEGEND

INFERRED BOUNDARY

FILL – SAND, SILT, STONE COAL AND ASH

ALLUVIAL SAND AND SILT

OUTWASH SAND AND GRAVEL

LACUSTRINE SILT AND CLAY

WATER LEVELS AS MEASURED ON 1/13/92

WELL SCREEN

BACKFILL

NOTE:
FORMER RELIEF HOLDER PROJECTED 60 FEET NORTHEAST ONTO CROSS SECTION. LATERAL DIMENSIONS BASED ON HISTORICAL SANBORN MAPS. ELEVATION OF BASE OF RELIEF HOLDER UNDETERMINED. WATER ELEVATION LEVEL IN RELIEF HOLDER BASED ON MOISTURE IN SOIL SAMPLES.

HORIZONTAL SCALE
50 0 50 FT.

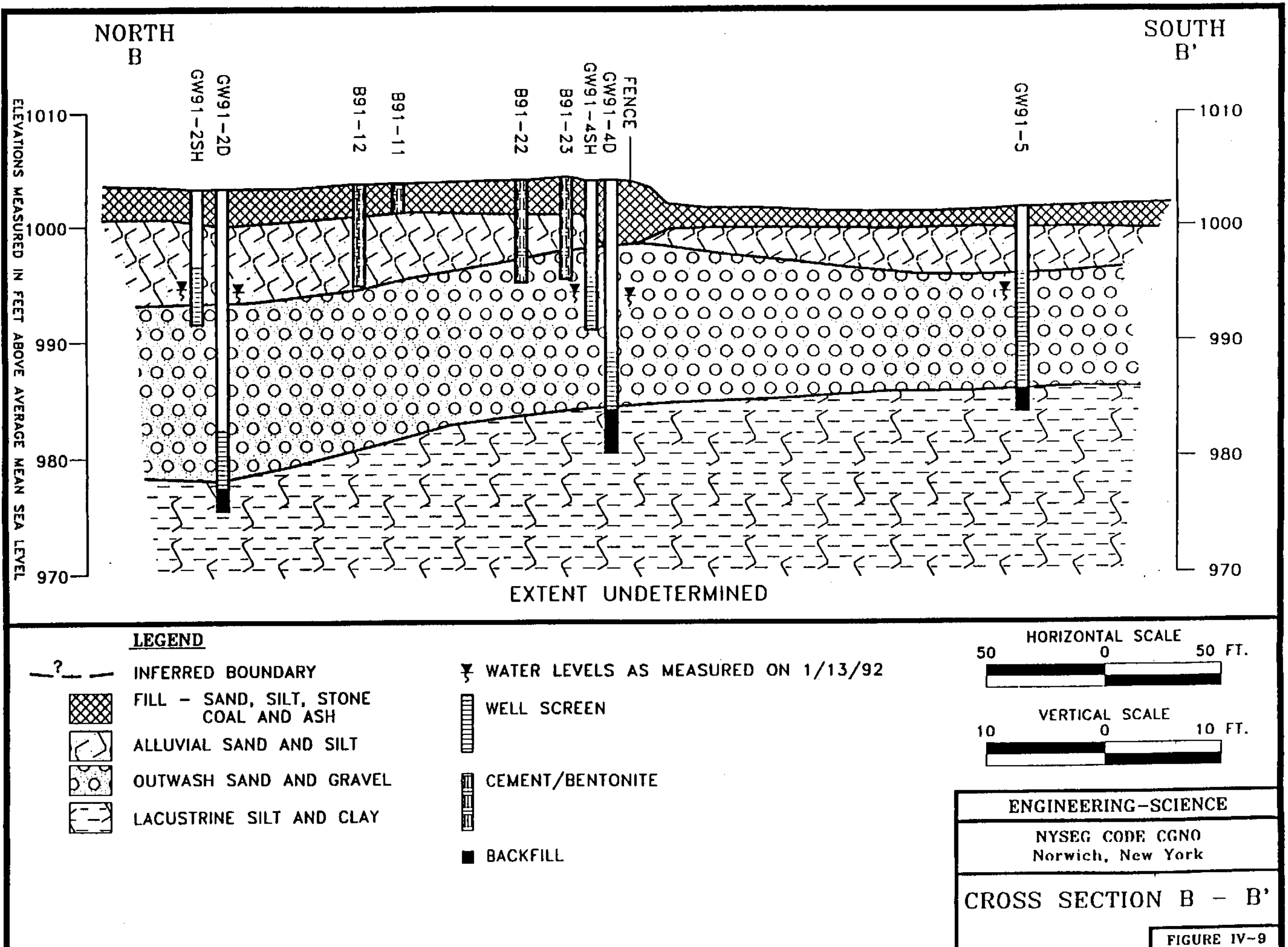
VERTICAL SCALE
10 0 10 FT.

ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

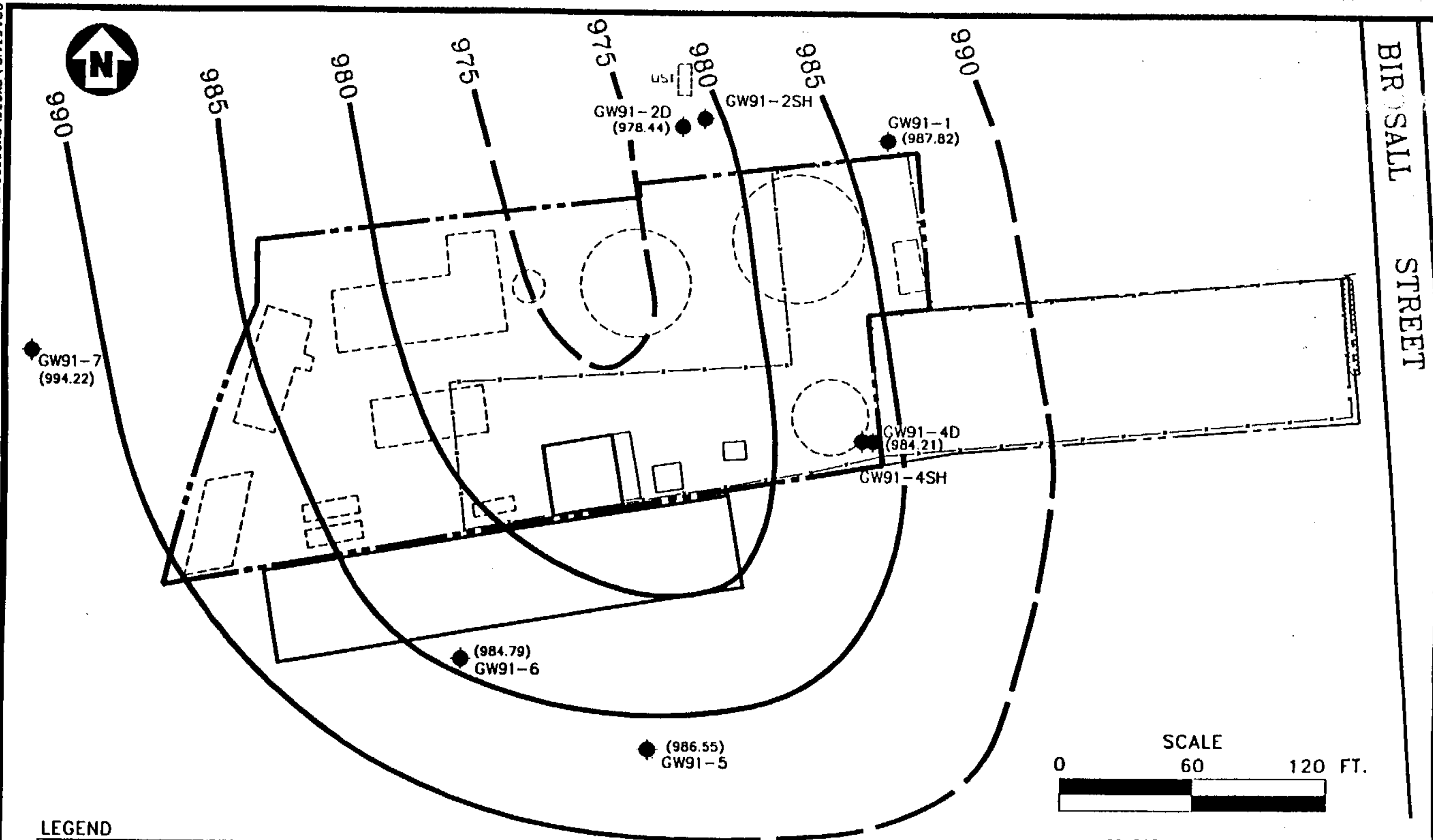
CROSS SECTION A – A'

FIGURE IV-8



CROSS SECTION B - B'

FIGURE IV-9



LEGEND

SITE BOUNDARY

FENCE

GW91-1 GROUNDWATER MONITORING WELL LOCATION

(986.55) TOP OF CLAY ELEVATION (IN FEET ABOVE MEAN SEA LEVEL)

985 LINE OF EQUAL ELEVATION FOR TOP OF CLAY ZONE

ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

ELEVATION- TOP OF CONFINING SILT/CLAY ZONE

FIGURE IV-10

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Groundwater Hydrogeology

Eight groundwater monitoring wells were installed around the Norwich MGP site to determine the groundwater flow direction and to characterize groundwater quality. The locations of monitoring wells are shown of Figure IV-6. Monitoring well construction and water level data are presented on Table IV-4.

The wells at the Norwich site monitor the uppermost waterbearing zone within the outwash sand and gravel layer. The glacial lacustrine silt and clay forms the base of the uppermost waterbearing zone. Off-site monitoring wells GW91-7, GW91-1, GW91-2SH and GW91-2D are upgradient of the site. Well screens in monitoring wells GW91-1, GW91-5, GW91-6 and GW91-7 cover or nearly cover the entire thickness of the uppermost water bearing zone. The thickness of the waterbearing zone was not great enough to justify well pairs at those locations. Well screens in well pairs GW91-2 and GW91-4 intercept the top and bottom of the water bearing zone to detect contaminants which may be lighter (BTEX) or heavier (PAHs) than water. Well screens were five feet long in monitoring well pairs GW91-2 and GW91-4 and in monitoring well GW91-7. Well screens are ten feet long in monitoring wells GW91-1, GW91-5, and GW91-6.

A contour map of groundwater elevations measured on January 29, 1992 is presented on Figure IV-11. The map shows local groundwater flow to the south or southeast.. Contour maps of groundwater elevations measured on other dates showed a similar pattern (Appendix C). Hydrographs of groundwater elevation variations versus time are presented in Figure IV-12, and show generally consistent patterns between wells.

Comparison of water levels in well pairs GW91-2 and GW91-4 show no significant differences in elevations between the shallow and deep wells in each pair. This indicates a significant upward or downward component of groundwater flow does not exist within the uppermost water bearing zone at these locations.

A maximum hydraulic gradient of 0.01 ft/ft was calculated at the Norwich site using groundwater elevations measured on January 29, 1992. Groundwater elevations for wells GW91-6 and GW91-7 were used directly in the calculation of hydraulic gradient because a straight line connecting the wells was coincident with the steepest groundwater flow path (perpendicular to groundwater elevation contour lines). The highest measured groundwater elevation was 995.98 feet above mean sea level (AMSL) in well GW91-7 and the lowest groundwater elevation was 993.54 feet AMSL in GW91-6. The groundwater elevation difference was 2.44 feet. The horizontal distance between GW91-6 and GW91-7 was 250 feet.

Analysis of slug test data provided estimates of the horizontal hydraulic conductivity of the unconsolidated sediments using a computer program based on an equation by Bouwer and Rice (1976). Slug test plots are included in Appendix C. The calculated hydraulic conductivities ranged from a maximum of 153 ft/day to a minimum of 4.22 ft/day with a geometric mean of 25.8 ft/day and an arithemtic mean of 51.2 ft/day (Table IV-5). These values fall within the published range for clean sand deposits (Freeze and Cherry, 1979). Hydraulic conductivities were all within the same order of magnitude with the exception of GW91-5 (153 ft/day) and

TABLE IV-4
WATER LEVEL DATA
NYSEG NORWICH MGP SITE

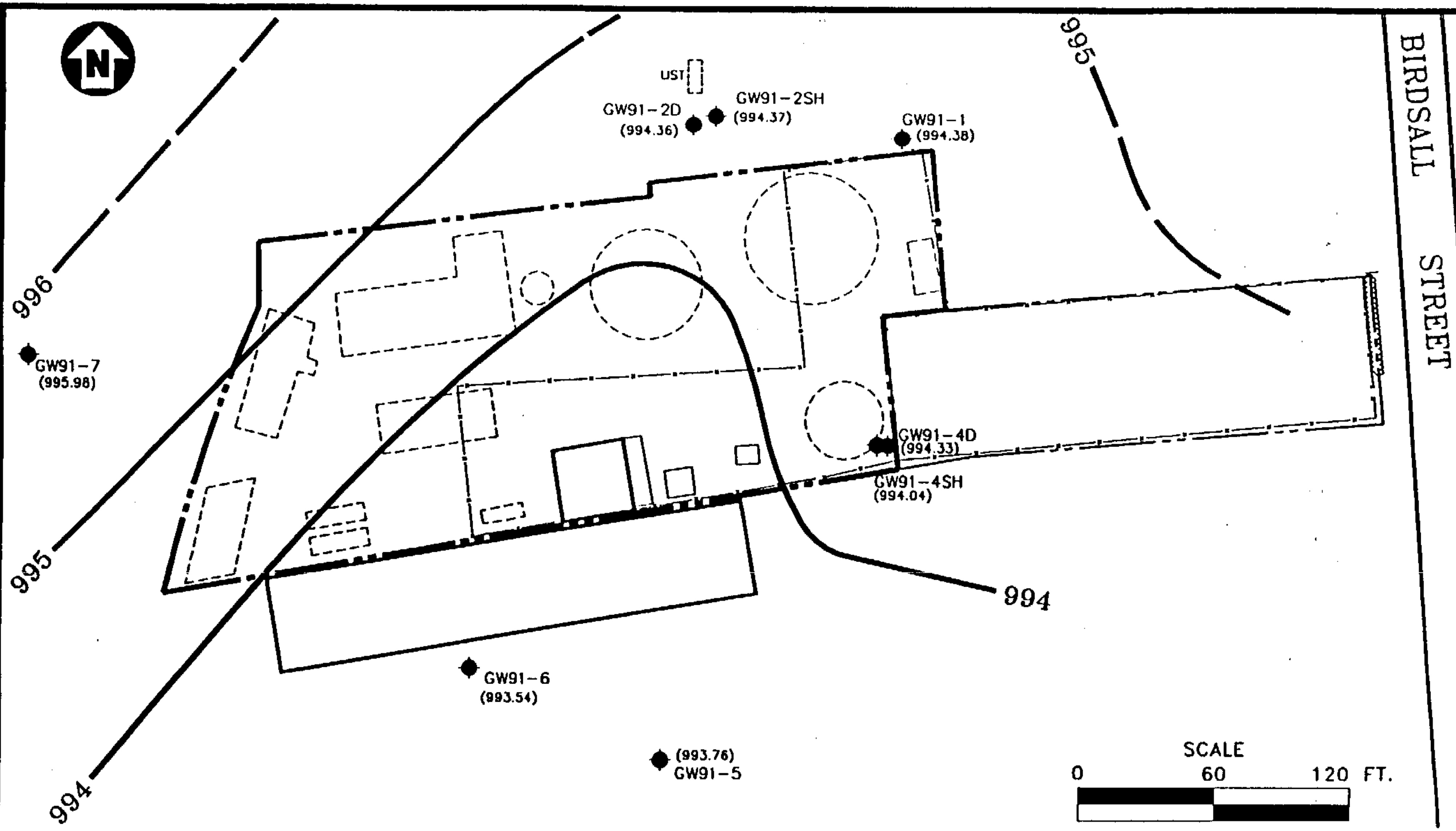
WELL NUMBER	GROUND SURFACE ELEVATION ((feet)*	TOP OF WELL PIPE ELEVATION ((feet)*	WELL SCREEN INTERVAL DEPTH ((feet)**	DATE: 1/13/92 DEPTH TO WATER LEVEL ((feet)**	DATE: 1/13/92 WATER LEVEL ELEVATION ((feet)*	DATE: 1/29/92 DEPTH TO WATER LEVEL ((feet)**	DATE: 1/29/92 WATER LEVEL ELEVATION ((feet)*	DATE: 2/27/92 DEPTH TO WATER LEVEL ((feet)**	DATE: 2/27/92 WATER LEVEL ELEVATION ((feet)*	DATE: 3/25/92 DEPTH TO WATER LEVEL ((feet)**	DATE: 3/25/92 WATER LEVEL ELEVATION ((feet)*	DATE: 4/24/92 DEPTH TO WATER LEVEL ((feet)**	DATE: 4/24/92 WATER LEVEL ELEVATION ((feet)*
GW91-1	1003.32	1002.54	6-16	8.72	994.60	8.94	994.38	8.73	994.59	8.65	994.67	8.22	995.10
GW91-2D	1003.44	1003.11	21-26	8.87	994.57	9.08	994.36	8.85	994.59	8.68	994.76	8.33	995.11
GW91-2SH	1003.33	1002.82	7.5-12.5	8.74	994.59	8.96	994.37	8.74	994.59	8.57	994.76	8.23	995.10
GW91-4D	1004.21	1003.75	15-20	9.64	994.57	9.88	994.33	9.62	994.59	9.46	994.75	8.12	996.09
GW91-4SH	1004.00	1003.42	8-13	9.44	994.56	9.96	994.04	9.43	994.57	9.28	994.72	8.90	995.10
GW91-5	1001.55	1000.89	6-16	7.63	993.92	7.79	993.76	7.51	994.04	7.39	994.16	7.09	994.46
GW91-6	1001.79	1001.09	7-17	7.88	993.91	8.25	993.54	7.79	994.00	7.74	994.05	7.38	994.41
GW91-7	1004.22	1003.41	6-11	8.10	996.12	8.24	995.98	8.00	996.22	7.81	996.41	7.91	996.31

* Elevation in feet above sea level.
**Depth in feet below ground surface.

TABLE IV-4 (continued)
WATER LEVEL DATA
NYSEG NORWICH MGP SITE

WELL NUMBER	GROUND SURFACE ELEVATION ((fsl))*	TOP OF WELL PIPE ELEVATION ((fsl))*	WELL SCREEN INTERVAL DEPTH ((fsl))**	DATE: 5/26/92 DEPTH TO WATER LEVEL ((fsl))**	DATE: 5/26/92 WATER LEVEL ELEVATION ((fsl))*	DATE: 6/25/92 DEPTH TO WATER LEVEL ((fsl))**	DATE: 6/25/92 WATER LEVEL ELEVATION ((fsl))*
GW91-1	1003.32	1002.54	6-16	8.82	994.50	9.10	994.22
GW91-2D	1003.44	1003.11	21-26	8.94	994.50	8.93	994.51
GW91-2SH	1003.33	1002.82	7.5-12.5	8.82	994.51	9.41	993.92
GW91-4D	1004.21	1003.75	15-20	9.73	994.48	9.76	994.45
GW91-4SH	1004.00	1003.42	8-13	9.54	994.46	10.12	993.88
GW91-5	1001.55	1000.89	6-16	7.74	993.81	7.96	993.59
GW91-6	1001.79	1001.09	7-17	7.99	993.80	8.24	993.55
GW91-7	1004.22	1003.41	6-11	8.10	996.12	8.05	996.17

* Elevation in feet above sea level.
**Depth in feet below ground surface.



SOURCE: MODI ASSOCIATES 1991

LEGEND

- SITE BOUNDARY
- FENCE
- GW91-1 GROUNDWATER MONITORING WELL LOCATION
- (994.04) TOP OF GROUNDWATER ELEVATION (IN FEET ABOVE MEAN SEA LEVEL)
- 985 LINE OF EQUAL GROUNDWATER ELEVATION

ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

GROUNDWATER ELEVATION CONTOUR MAP

WATER LEVEL ON 1/29/92

FIGURE IV-11

001631|D:\SY236\SY236001.DWG

REVISED: 7/9/92

FIGURE IV-12
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
HYDROGRAPHS OF GROUNDWATER

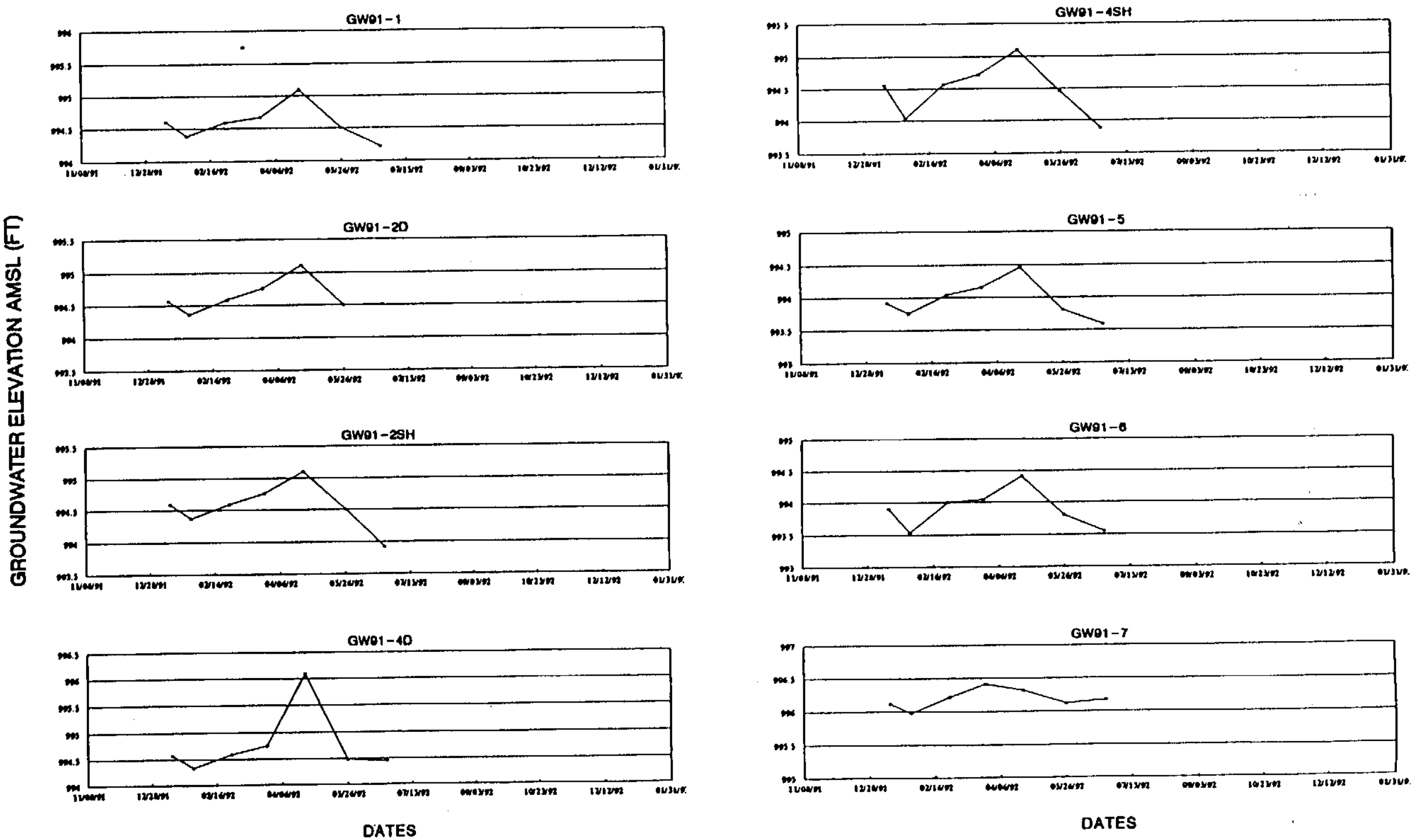


Table IV–5
New York State Electric & Gas
Norwich, New York
Slug Test Results

Well	Method	Type Test	Hydraulic Conductivity (ft/min)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Groundwater Velocity* (ft/year)
GW91–1	BR	Withdrawal	6.38E–2	9.19E+1	3.24E–2	1.12E+3
GW91–4SH	BR	Withdrawal	8.90E–3	1.28E+1	4.53E–3	1.55E+2
GW91–4D	BR	Withdrawal	2.33E–2	3.35E+1	1.18E–2	4.08E+2
GW91–5	BR	Withdrawal	1.06E–1	1.53E+2	5.39E–2	1.86E+3
GW91–6	BR	Withdrawal	8.01E–3	1.15E+1	4.07E–3	1.40E+2
GW91–7	BR	Withdrawal	2.93E–3	4.22E+0	1.49E–3	5.13E+1
		Maximum	1.06E–1	1.53E+2	5.39E–2	1.86E+3
		Minimum	2.93E–3	4.22E+0	1.49E–3	5.13E+1
		Arithmetic Mean	3.55E–2	5.12E+1	1.80E–2	6.22E+2
		Geometric Mean	1.79E–2	2.58E+1	9.10E–3	3.13E+2

BR–Bouwer and Rice

* Calculation used maximum hydraulic gradient value (0.01 ft/ft) and estimated porosity of 30 %.

A:\NO–SLUG.WK3
SBD/7:6:92/4:00

GW91-7 (4.22 ft/day). The lower hydraulic conductivity in GW91-7 is attributed to finer material in the screened zone. The reason for the higher than average hydraulic conductivity in GW91-5 is less obvious; lithologic variations such as slightly more gravel or higher effective permeabilities may be responsible.

Hydraulic conductivity values and the maximum hydraulic gradient value (0.01 ft/ft) were used to calculate groundwater flow velocities. A porosity of 30 percent was assumed for the outwash sand and gravel layer containing the shallow groundwater (Fetter, C.W. 1988; Todd, D.K., 1980). Calculated groundwater flow velocities ranged from 51.3 to 1860 feet per year. The geometric mean of calculated flow velocities was 313 feet per year, the arithetic mean was 622 feet per year (Table IV-5). The geometric mean is considered more representative because it is less sensitive to data outliers. The geometric mean is also considered a more representative description of the average hydraulic conductivity of a hydrologic unit (Fetter, C.W., 1988).

WASTE CHARACTERIZATION

The former relief holder, gas distribution holder, above ground oil tank, and tar well areas represent potential MGP waste sources (Figure IV-1). An area north of the former purifier house (storage building) reportedly received spent purifier chips.

Dense petroleum compounds and PAHs condensed out of the gas and accumulated in the bottom of the relief holder. Relief holders often extended below grade to near the top of the water table. The below grade walls and foundation were often brick and the bottom of the holder often coincided with the water table. Borings drilled in the presumed location of the relief holder encountered the water table at about nine feet below ground surface. Historical maps (Appendix E) indicate the relief holder was approximately 52 feet in diameter. Borings drilled in the vicinity of the relief holder encountered brick fragments (B91-5, B91-8, and B91-14). Boring B91-4 was drilled into the south side of the relief holder foundation. Brick and mortar (which appeared to be the foundation wall of the holder) was encountered at 16 to 18 inches below grade, prior to split-spoon refusal. Boring logs are presented in Appendix C.

A geophysical survey utilizing a Geonics EM-31 was conducted to identify foundations and remaining MGP structures which may be sources of MGP residues. Ground penetrating radar was considered for the site, but interferences associated with overhead power lines and the chain link fence precluded its use. Overhead power lines and buried gas lines also interfered with EM measurements in the southern portion of the site, including the former tar well area. No definitive conductivity anomalies were identified in the northern half of the site.

A soil vapor survey was conducted to determine the presence of BTEX in the unsaturated zone and whether a contaminant plume exists. Results and methods are presented in Appendix B. A total of 47 samples were collected from across the site. An area of elevated BTEX concentrations was identified west and northwest of the former relief holder, with another area coincident with the former relief holder. Total BTEX concentrations ranged from zero to 64.74 ppm (Appendix B).

Previous and current land use north and west of the site may also represent potential off-site sources of contamination. An abandoned underground storage tank was found during the installation of off-site monitoring well pair GW91-2, located on Victory Markets property (Figure IV-1). Laboratory analysis by Buck Environmental Laboratories Inc., of the tank contents identified n-butylbenzene, p-isopropyltoluene, naphthalene, 1,3,5-trimethylbenzene, acenaphthalene, fluorene, and lead. Petroleum hydrocarbon "fingerprinting" identified the liquid as water contaminated with predominantly #2 fuel oil (1,480 ug/l) with some gasoline (33 ug/l) (Appendix D). Victory Markets took responsibility for the tank removal. Victory Markets also has an active underground diesel fuel storage tank located between the Victory Markets warehouse and the NYSEG MGP site.

TASK II INVESTIGATION CONTAMINATION ASSESSMENT

The following subsections summarize the results of the Task II investigation sampling and analyses activities. Whenever possible, samples were collected upgradient of the site to establish background conditions. These levels were compared to those found on-site and downgradient of the site to determine whether contaminants attributable to the site are migrating off-site.

The analytical results have been compared to applicable New York State standards or guidance values which have been compiled in the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values (November 15, 1991). Soil results have been compared to published naturally-occurring ranges in New York State or conterminous United States soils (USGS, 1984), or to upgradient/background concentrations.

All analyses have been conducted in accordance with the Quality Assurance Project Plan; analytical reporting deliverables conform to the NYSDEC ASP Category B requirements. All data packages were checked to ensure they contain all required deliverables, should a complete data validation be necessary in the future. Any deficiencies in the reporting packages were addressed with the laboratory and corrections were subsequently submitted by the lab. Due to the volume of material, the complete analytical reporting packages have been submitted as a separate deliverable to NYSEG.

The analytical results in this section have also been validated by reviewing the sample holding times, and evaluating laboratory blank samples. Sample holding time refers to the time between sample receipt by the laboratory and sample extraction and analysis. Maximum sample holding times are specified in the NYSDEC ASP methods. The analytical data summary tables found in this section identify the violations of sample holding times. In those cases the data are considered valid, but the concentrations are considered to be estimated values, likely to be biased low. This includes nine samples analyzed for amendable cyanide during the second groundwater sampling event, and two soil samples (SB91-15 and SB91-18) for PAH analysis.

Data validation also includes an evaluation of laboratory blank results. If a compound is detected in one or more blank samples, the maximum concentrations reported in the blank(s) are used to validate the field sample concentrations. The presence of a compound in a field sample is considered attributable to laboratory contamination if the concentration in the field sample is less than five times the blank sample concentration. For common laboratory contaminants (methylene chloride, acetone, toluene, 2-butanone, and common phthalate esters) the criterion is ten times the blank sample concentration.

Soil Contamination Assessment

The subsurface soil results have been grouped by sample depth: shallow subsurface (0 to one foot) and subsurface (one to four feet, four to six feet, six to ten feet and greater than 10 feet). Summary tables (IV-6 through IV-10) list only those compounds that were detected in one or more samples, and are organized by sample depth. Figures IV-13 through IV-17 are also organized by sample depth, and present the total BTEX, total PAH and total cyanide results. Because more than one sample was collected from some borings, the sample designations do not always match the boring designations.

In summary, BTEX, PAH compounds, and cyanide were detected in subsurface soil samples collected at the Norwich MGP site. Of the samples collected for analysis, the concentrations of total BTEX and total PAHs were clearly highest at depths of one to four feet and four to six feet below ground surface. The boring logs indicate visual evidence of contamination in deeper samples does exist on-site (Appendix C). The highest concentrations of BTEX and PAHs were associated with the former relief holder, distribution holder, and tar well area, and were several orders of magnitude above background. Lower concentrations of BTEX and PAHs were also detected immediately downgradient of the former holders and tar well area. Cyanide was detected at slightly above background concentrations in the suspected purifier chip disposal area and near the former oil tanks, holders and tar well area. Low levels of off-site BTEX and PAH contamination exist.

Shallow Subsurface Soil Results (Sample Depth 0 to 1 foot)

Seven soil samples were collected to characterize shallow subsurface soil contamination on and near the site. One sample and one field duplicate were collected at depths of 0.5 to one foot beneath the center of the former distribution holder (B91-10), one sample from the edge of the former relief holder (B91-4), and two samples from near the gate and outside the fence which surrounds the NYSEG storage area (SS91-4 and SS91-6, respectively). Sample SS91-3 (and the field duplicate SS91-3DUP) were collected from boring B91-15 in a backyard east-northeast of the site, adjacent to the Victory Markets trailer parking area. All samples were analyzed for BTEX, PAHs, and cyanide. The results indicate concentrations of total BTEX and total PAHs are above background in samples associated with the former relief and distribution holders.

Analytical results for the shallow subsurface soil samples are summarized in Table IV-6 and are plotted on Figure IV-13. BTEX compounds were detected in on-site and off-site samples at low concentrations, below the analytical detection

TABLE IV-6
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
SHALLOW SUBSURFACE SOIL RESULTS (ppm)
SAMPLES FROM DEPTHS OF 0-1'

Parameter	Boring # / Depth / Sample ID	B91-04 0.5-1' SS91-7	B91-10 0.5-1' SS91-5	B91-10 0.5-1' SS91-8**	B91-15(SH) 0.5-1' SS91-3*	B91-15(SH) 0.5-1' SS91-3DUP*	SS91-4 0.5-1' SS91-4	SS91-6 0.5-1' SS91-6
BTEX (ppm)								
Benzene		-	0.002 J	-	0.002 J	0.003 J	0.005 J	-
Toluene		0.001 J	0.002 J	-	0.001 J	0.002 J	-	-
Ethylbenzene		0.002 J	0.001 J	0.0003 J	-	0.0006 J	-	-
Xylene		0.005 J	0.005 J	-	-	-	-	-
Total BTEX		0.008	0.01	0.0003	0.003	0.0056	0.005	0
PAH (ppm)								
Benzo(a)anthracene ©		11	7.5	17	0.63 J	0.57 J	2.6	9.7
Chrysene ©		7.5	6.9	14	0.78 J	0.64 J	2	7.2
Benzo(b)fluoranthene ©		20 E	10	19	0.96	0.7 J	4.9	20 E
Benzo(a)pyrene ©		15 E	7.7	16	0.62 J	0.55 J	2.8	13 E
Indeno(1,2,3-cd)pyrene ©		3.4	2.4	6.1	0.34 J	0.38 J	1.3	4.1
Dibenzo(a,h)anthracene ©		0.78 J	0.48 J	1.3 J	-	0.081 J	0.25 J	0.24 J
Napthalene		0.94	3	8.8	-	-	0.6 J	1.2
2-Methylnapthalene		0.4 J	3.2	8.5	-	-	0.47 J	0.68 J
Acenapthylene		3.9	1.5	3.9	-	-	1.7	3
Acenapthene		0.38 J	1.5	2.9	-	0.041 J	0.14 J	0.27 J
Fluorene		1.5	4.2	8.2	-	-	0.32 J	0.84
Phenanthrene		5.6	16 E	36	1	0.77	1.4	4.9
Anthracene		3.6	3.9	8.7	0.077 J	0.11 J	0.63 J	2
Fluoranthene		13	13 E	31	1.5	1.1	2.7	10
Pyrene		23 E	15 E	34	1.6	1.2	5	14 E
Benzo(k)fluoranthene		5.9	3.9	9	0.36 J	0.3 J	2.1	5.8
Benzo(g,h,i)perylene		2.1	1.4	4.4	0.3 J	0.34 J	1.1	2.6
Total Carcinogenic PAH		57.68	34.98	73.4	3.33	2.921	13.85	54.24
Total PAH		118	101.58	228.8	8.167	6.782	30.01	99.53
CYANIDE (ppm)								
Total Cyanide		0.0159	-	-	0.0222	0.0216	-	0.0115
Amenable Cyanide		-	-	-	-	-	-	0.0087

Data Qualifiers:

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

Other Footnotes:

NA - No analysis

- Compound not detected

* - Background sample from off-site location.

** - Duplicate sample of SS91-5

© - Carcinogenic PAH

TABLE IV-7
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
SUBSURFACE SOIL RESULTS (ppm)
SAMPLES FROM DEPTHS OF 1-4'

Boring #	B91-01	B91-02	B91-05	B91-07	B91-11	B91-15D	B91-18	B91-19	B91-20	B91-31
Depth	0-4'	2.5-3'	1.5-3'	4-5.5'	1.5-2.5'	3-3.5'	1-2'	3-4.5'	0-2'	0-4'
Parameter / Sample ID	SB91-5	SB91-1	SB91-2	SB91-3	SB91-9	SS91-2*	SB91-14	SS91-1*	SB91-15	SB91-26
BTEX (ppm)										
Benzene	0.008	1.6	48	0.27 J	NA	0.003 J	NA	–	NA	–
Toluene	0.006	5	120	8	NA	0.004 J	NA	0.001 J	NA	–
Ethylbenzene	–	62 E	75	16	NA	–	NA	–	NA	0.003 J
Xylene	–	280 E	110	44	NA	–	NA	–	NA	–
Total BTEX	0.014	348.6	353	68.27	NA	0.007	NA	0.001	NA	0.003
PAH (ppm)										
Benzo(a)anthracene ©	NA	130	32	35	1100	–	18 E	0.12 J	24 I	1.3
Chrysene ©	NA	110	21	21	860	–	140 E	0.14 J	27 I	1.1
Benzo(b)fluoranthene ©	NA	140	24	23	1000	0.17 J	130 E	0.14 J	70 I	2.6
Benzo(a)pyrene ©	NA	140	27	27	1000	–	59 E	0.089 J	46 I	2.9
Indeno(1,2,3-cd)pyrene ©	NA	50	11	8.9	230	–	36 E	–	25 I	1.1
Dibenzo(a,h)anthracene ©	NA	3.9 J	2.1 J	0.75 J	40 J	–	9.4	–	3.7 J I	0.18 J
Napthalene	NA	480 E	260 E	330 E	10000 E	–	6.4	–	94 I	0.14 J
2-Methylnapthalene	NA	500 E	210 E	230 E	3000	–	2.3	–	28 I	0.23 J
Acenapthylene	NA	130	68 E	100 E	1400	–	32 E	–	46 I	1
Acenapthene	NA	45	13	15	1800	–	1.2	–	2.6 J I	–
Fluorene	NA	110	45	56	1800	–	6.2	–	15 I	–
Phenanthrene	NA	260 E	110 E	130 E	5700 E	–	93 E	0.18 J	38 I	0.36 J
Anthracene	NA	280 E	40	46	1900	–	–	–	15 I	0.19 J
Fluoranthene	NA	170	50	53	2700	–	81 E	0.25 J	34 I	1.1
Pyrene	NA	270 E	81 E	91 E	4100 E	–	210 E	0.28 J	100 I	2.1
Benzo(k)fluoranthene	NA	76	9.9	9.1	410	0.056 J	17 E	0.067 J	17 I	1.1
Benzo(g,h,i)perylene	NA	37	9	7.2	150 J	–	26 E	0.049 J	21 I	0.93
Total Carcinogenic PAH	NA	573.9	117.1	115.65	4230	0.17	392.4	0.489	195.7	9.18
Total PAH	NA	2931.9	1013	1184.95	37190	0.226	867.5	1.315	606.3	16.33
CYANIDE (ppm)										
Total Cyanide	NA	0.026	0.0888	–	NA	–	NA	–	NA	0.0174
Amenable Cyanide	NA	–	0.0477	–	NA	–	NA	–	NA	–

Data Qualifiers:

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate

I: Laboratory holding time exceeded.

Other Footnotes:

NA – No analysis

– Compound not detected

* – Background sample from off-site location.

© – Carcinogenic PAH

TABLE IV-8
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
SUBSURFACE SOIL RESULTS (ppm)
SAMPLES FROM DEPTHS OF 4-6'

Parameter	Boring # / Depth / Sample ID	B91-08 4-6' SB91-6	B91-12 4-6' SB91-10	B91-13 3.5-6' SB91-11	B91-14 4-5.5' SB91-12	B91-14 5.5-6' SB91-17	B91-16 4-6' SB91-13	B91-21 3.5-5' SB91-16	B91-25 3-6' SB91-23	B91-27 4-6' SB91-23	B91-29 4-5.5' SB91-12
BTEX (ppm)											
Benzene		NA	0.22 J	NA	23	2500 E	NA	7.4	14	NA	0.003 J
Toluene		NA	4.5	NA	53 E	4000 E	NA	74 E	53 E	NA	–
Ethylbenzene		NA	45 E	NA	34 E	580	NA	180 E	150 E	NA	0.005 J
Xylene		NA	39 E	NA	84 E	3200	NA	250 E	270 E	NA	0.006
Total BTEX		NA	88.72	NA	194	10280	NA	511.4	487	NA	0.014
PAH (ppm)											
Benzo(a)anthracene ©		420	110	2.9	26	800 J	0.23 J	56 E	260	23	0.13 J
Chrysene ©		300	78	2.8	19	530 J	0.17 J	37	160	15	0.14 J
Benzo(b)fluoranthene ©		350	100	4.5	20	550 J	0.14 J	60 E	210	25	0.21 J
Benzo(a)pyrene ©		310	110	2.9	23	590 J	0.15 J	51 E	220	20	0.18 J
Indeno(1,2,3-cd)pyrene ©		–	30	1.4	7.4 J	–	–	14	40	4.7	0.15 J
Dibenzo(a,h)anthracene ©		9.3 J	1.4 J	0.27 J	1.5 J	–	–	1 J	3.8 J	0.38 J	–
Napthalene		9600 E	1300 E	12	360 E	13000	170 E	500 E	2500 E	93 E	–
2-Methylnapthalene		3700 E	380 E	2.5	210 E	6500	51 E	510 E	2700 E	130 E	–
Acenapthylene		1300 E	76	1	79	2400	8.9	110 E	720 E	14	–
Acenapthene		150	280 E	0.15 J	11 J	230 J	1.2	22	330	37 E	–
Fluorene		730 E	170 E	0.45 J	41	1200	1.4	58 E	190	11	–
Phenanthrene		2000 E	520 E	2.1	110	4000	2.8	180 E	1300 E	120 E	0.24 J
Anthracene		530	140 E	0.5 J	39	1200	0.42 J	61 E	1300 E	130 E	0.049 J
Fluoranthene		730	240 E	4.7	46	1400	0.8 J	93 E	450 E	82 E	–
Pyrene		1200 E	330 E	7.3	76	2600	0.94	130 E	790 E	51 E	–
Benzo(k)fluoranthene		150	40	2	7.4 J	210 J	0.075 J	23	77	10	0.12 J
Benzo(g,h,i)perylene		77	20	1.1	6.4 J	150 J	–	10	9.5 J	3.1	0.11 J
Total Carcinogenic PAH		1389.3	429.4	14.77	96.9	2470	0.69	219	893.8	88.08	0.81
Total PAH		21556.3	3925.4	48.57	1082.7	35360	238.225	1916	11260.3	769.18	1.329
CYANIDE (ppm)											
Total Cyanide		NA	–	NA	0.014	0.0162	NA	0.287	2.91	NA	–
Amenable Cyanide		NA	–	NA	–	0.0116	NA	0.011	–	NA	–

Data Qualifiers:
J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.
E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

Other Footnotes:
NA – No analysis
– Compound not detected
© – Carcinogenic PAH

TABLE IV–9
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
SUBSURFACE SOIL RESULTS (ppm)
SAMPLES FROM DEPTHS OF 6–10'

Parameter	Boring #	B91–07	B91–09	B91–9A	B91–22	B91–23	B91–24	B91–26	B91–30	GW91–2SH	GW91–7
	Depth	9–10.5'	6–9'	5.5–7'	5–7.5'	7.5–9'	8–9.5'	5.5–7.5'	6–8'	6.6–12.5'	4–12'
	Sample ID	SB91–4	SB91–7	SB91–8	SB91–18	SB91–19	SB91–20	SB91–22	SB91–25		
Methylene Chloride		–	–	–	–	–	–	–	–	0.008 B	0.001 BJ
Tetrachloroethene		–	–	–	–	–	–	–	–	0.001 J	–
BTEX (ppm)											
Benzene		NA	NA	NA	NA	–	NA	NA	NA	–	–
Toluene		NA	NA	NA	NA	–	NA	NA	NA	–	–
Ethylbenzene		NA	NA	NA	NA	1.9	NA	NA	NA	–	–
Xylene		NA	NA	NA	NA		NA	NA	NA	–	
Total BTEX		NA	NA	NA	NA	1.9	NA	NA	NA	0	0
Bis(2–ethyhexyl)phthalate		–	–	–	–	–	–	–	–	0.24 J	150 J
PAH (ppm)											
Benzo(a)anthracene ©		30	22	–	16 I	14	25	1.1	19	0.27 J	–
Chrysene ©		18	14	–	13 I	12	19	0.88	12	0.26 J	–
Benzo(b)fluoranthene ©		21	13	0.059 J	11 I	12	25	0.66 J	20	0.29 J	–
Benzo(a)pyrene ©		24	14	–	13 I	14	24	0.91	13	0.18 J	–
Indeno(1,2,3–cd)pyrene ©		7.5	3.5 J	0.32 J	5.1 JI	6.9	9.5	0.32 J	5.4	0.15 J	–
Dibenzo(a,h)anthracene ©		1.4 J	0.42 J	–	0.97 JI	0.31 J	2 J	0.076 J	1.2 J	0.028 J	–
Napthalene		250 E	180 E	–	83 I	24	14	–	110 E	–	–
2–Methylnapthalene		200 E	110 E	–	100 I	4.7	7.7	–	88 E	0.5 J	–
Acenapthylene		50	11	0.14 J	32 I	9.1	18	0.21 J	30 E	–	–
Acenapthene		58	63 E	–	19 I	10	6.3	0.059 J	6.2	–	–
Fluorene		48	35	–	23 I	12	13	0.1 J	17	–	–
Phenanthrene		120 E	73 E	–	62 I	55	51	0.67 J	43 E	0.41 J	–
Anthracene		42	31	–	18 I	15	27	0.38 J	14	0.098 J	–
Fluoranthene		45	29	–	29 I	34	39	1.4	25	0.52 J	–
Pyrene		78 E	55	–	55 I	56	68 E	3.3	39 E	0.51 J	–
Benzo(k)fluoranthene		7.4	4.4	–	4.1 JI	4.9	8.8	0.28 J	14	0.13 J	–
Benzo(g,h,i)perylene		5.8	2.7 J	0.27 J	4.8 JI	6.7	6.6	0.38 J	4.3	0.12 J	–
Total Carcinogenic PAH		101.9	68.92	0.379	59.07	59.21	104.5	3.946	70.6	1.158	0
Total PAH		1003.9	661.02	0.789	488.97	290.61	361.9	10.725	463.1	3.444	0
CYANIDE (ppm)											
Total Cyanide		NA	NA	NA	NA	–	NA	NA	NA	–	–
Amenable Cyanide		NA	NA	NA	NA	–	NA	NA	NA	–	–

Data Qualifiers:

B: Compound is also found in a laboratory blank sample; its presence in the sample is attributed to laboratory contamination.

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

Other Footnotes:

NA – No analysis

I: Semivolatile holding time exceeded by laboratory.

– Compound not detected

GW91–7 is considered an upgradient / background sample.

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TABLE IV-10
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
SUBSURFACE SOIL RESULTS (ppm)
SAMPLES FROM DEPTHS BELOW 10'

Parameter	Boring # Depth Sample ID	GW91-1	GW91-2D	GW91-3	GW91-4SH	GW91-5	GW91-6
Methylene Chloride		0.078	0.0007 BJ	0.006	–	–	–
Styrene		–	–	–	0.002 J	–	–
Tetrachloroethene		–	–	–	–	–	–
BTEX (ppm)							
Benzene		–	–	–	0.001 J	–	0.045
Toluene		–	–	–	0.006	–	0.007
Ethylbenzene		–	–	–	0.033	–	0.4 E
Xylene		–	–	–	0.048	–	0.27
Total BTEX		**0**	**0**	**0**	**0.088**	**0**	**0.722**
Phenol		0.4 J	–	–	–	–	–
2-Methylphenol		0.27 J	–	–	–	–	–
4-Methylphenol		1.1	–	–	–	–	–
2,4,-Methylphenol		0.66 J	–	–	–	–	–
Benzoic Acid		–	–	–	0.25 J	–	–
Dibenzofuran		3.2	–	–	0.78	–	–
Bis(2-ethylhexyl)phthalate		0.29 J	0.36 J	0.64 J	0.48 J	0.35 J	0.6 J
PAH (ppm)							
Benzo(a)anthracene ©		24 E	–	0.36 J	5.3	0.45 J	0.53 J
Chrysene ©		16 E	–	0.47 J	4.3	0.42 J	0.52 J
Benzo(b)fluoranthene ©		23 E	–	0.4 J	10	0.29 J	0.64 J
Benzo(a)pyrene ©		12	–	0.35 J	8.5	0.3 J	0.79
Indeno(1,2,3-cd)pyrene ©		4.7	–	0.26 J	2.7	–	0.68
Dibenzo(a,h)anthracene ©		0.35 J	–	–	0.38 J	–	–
Napthalene		2.1	0.098 J	–	13 E	–	4.9
2-Methylnapthalene		3.4	–	–	5.2	–	1.5
Acenapthylene		5.3	–	0.24 J	3.9	0.23 J	0.48 J
Acenapthene		0.83	–	–	1.1	0.14 J	1.1
Fluorene		5.1	–	–	4	–	0.5 J
Phenanthrene		28 E	–	0.34 J	12 E	1.1	1.3
Anthracene		6	–	–	3.2	0.36 J	0.58 J
Fluoranthene		30 E	–	0.61 J	7.6	0.72 J	0.9
Pyrene		37 E	–	0.92	14 E	1.3	1.3
Benzo(k)fluoranthene		9.3	–	0.19 J	4.1	0.1 J	0.32 J
Benzo(g,h,i)perylene		3.3	–	0.32 J	2.3	–	0.69
Total Carcinogenic PAH		**80.05**	**0**	**1.84**	**31.18**	**1.46**	**3.16**
Total PAH		**210.38**	**0.098**	**4.46**	**101.58**	**5.41**	**16.73**
CYANIDE (ppm)							
Total Cyanide		0.0021	–	–	0.0569	–	0.0026
Amenable Cyanide		0.0021	–	–	0.0328	–	–

Data Qualifiers:

B: Compound is also found in a laboratory blank sample; its presence in the sample is attributed to laboratory contamination.

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

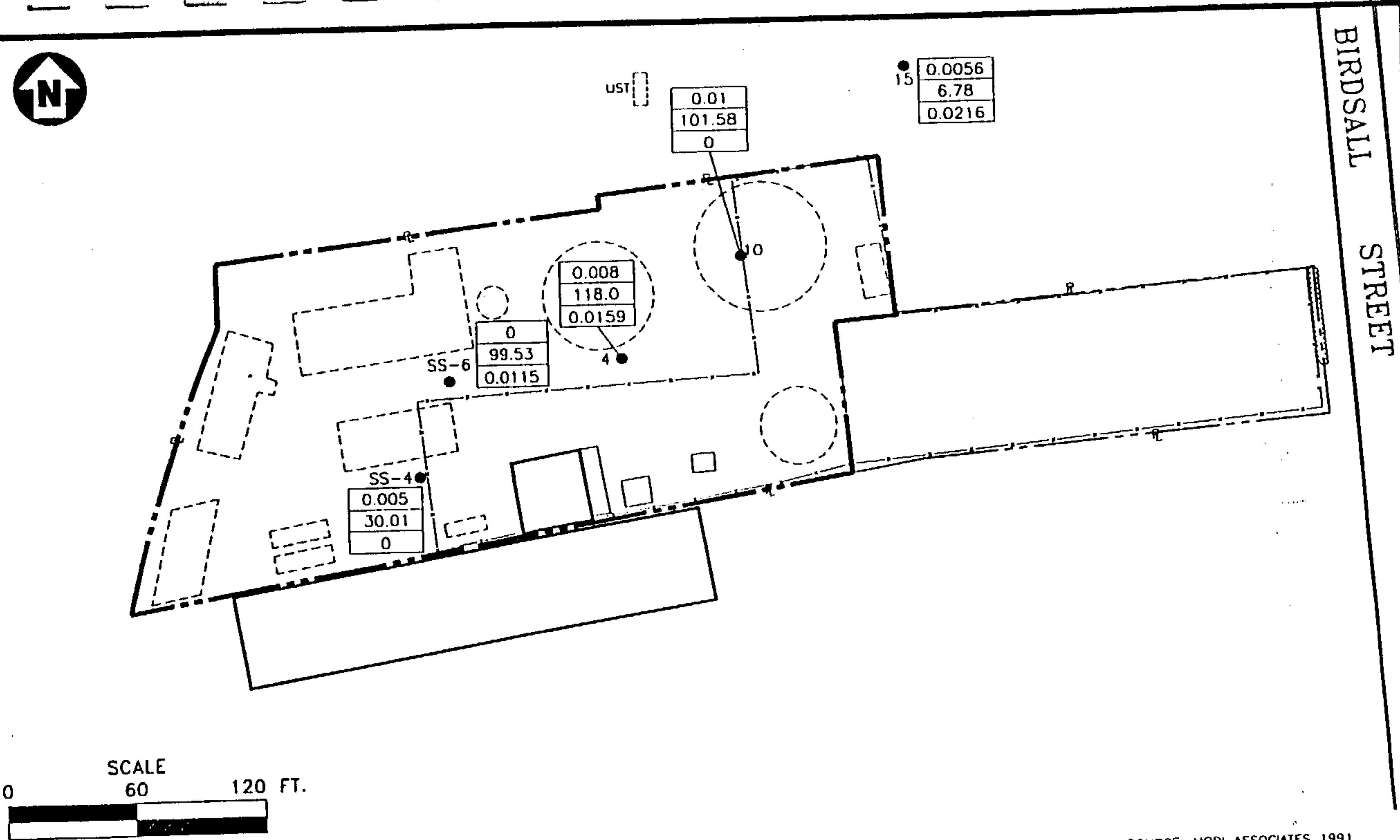
E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

Other Footnotes:

NA – No analysis

– Compound not detected

© – Carcinogenic PAH



LEGEND

- SITE BOUNDARY
- FENCE
- 15 ● SOIL BORING AND SURFACE SAMPLING LOCATION

0.005	= TOTAL BTEX CONCENTRATION (PPM)
30.01	= TOTAL PAH CONCENTRATION (PPM)
0	= TOTAL CYANIDE CONCENTRATION (PPM)

ND = VALUE BELOW ANALYTICAL DETECTION LIMITS

NA = NO ANALYSIS

MAP SOURCE: MODI ASSOCIATES 1991

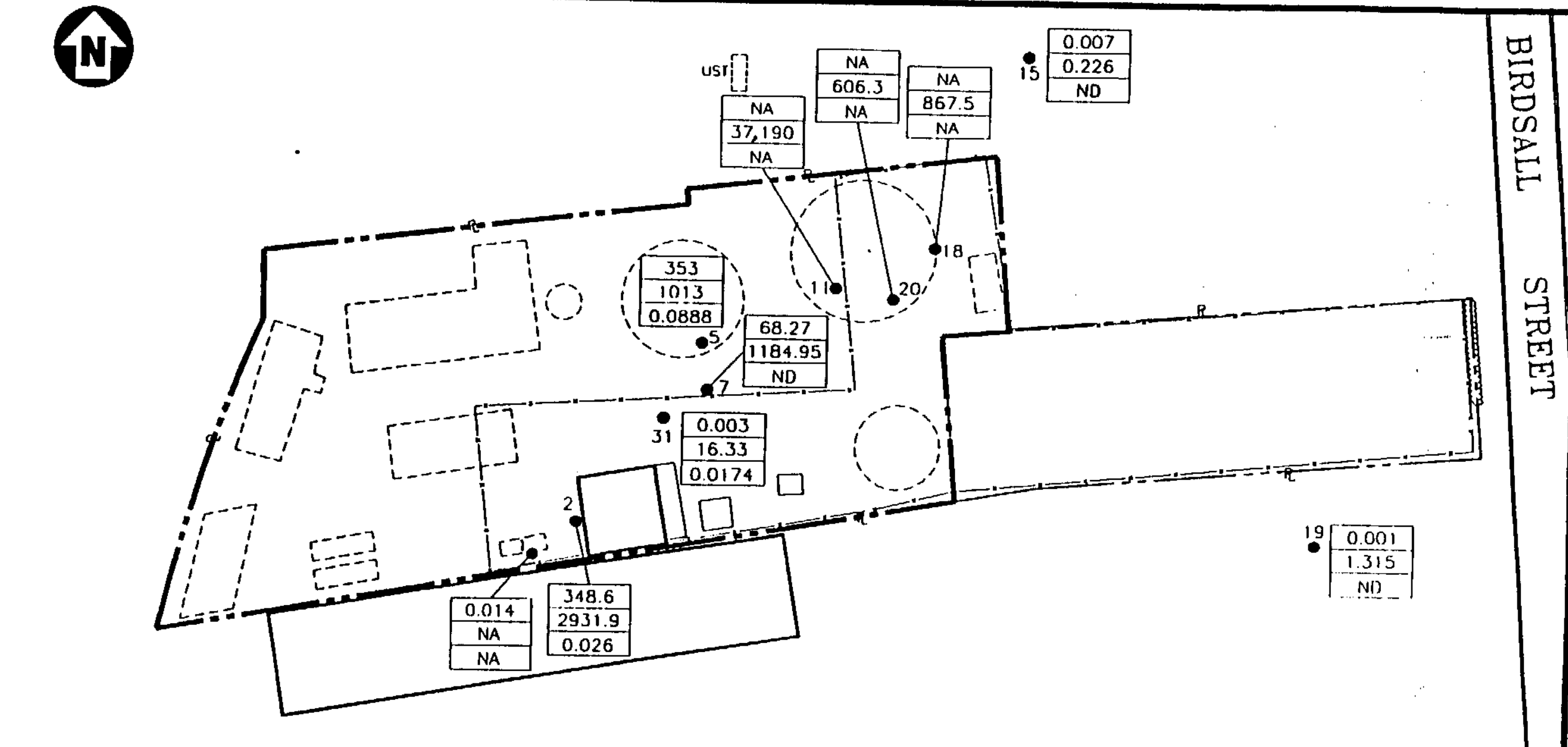
ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SUBSURFACE SOIL SAMPLE RESULTS (0 TO 1 FOOT)

FIGURE IV-13

REVISED: 7/8/92



SCALE

0 60 120 FT.

LEGEND

SITE BOUNDARY

FENCE

15 ● SOIL BORING AND SURFACE SAMPLING LOCATION

348.6	= TOTAL BTEX CONCENTRATION (PPM)
2931.9	= TOTAL PAH CONCENTRATION (PPM)
0.026	= TOTAL CYANIDE CONCENTRATION (PPM)

ND = VALUE BELOW ANALYTICAL DETECTION LIMITS

NA = NO ANALYSIS

MAP SOURCE: MODI ASSOCIATES 1991

ENGINEERING-SCIENCE

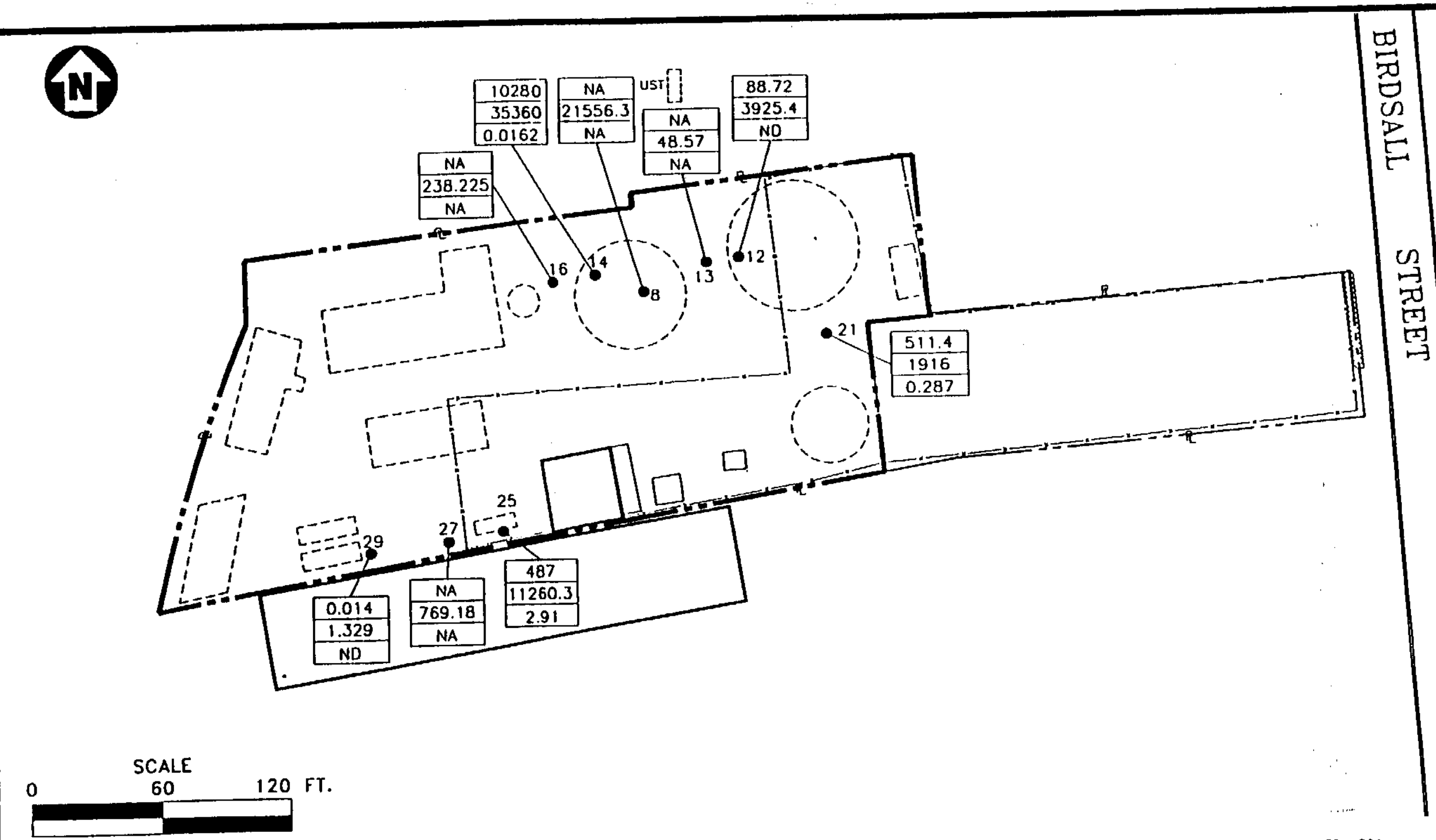
NYSEG CODE CGNO
Norwich, New York

SUBSURFACE SOIL SAMPLE RESULTS (1 TO 4 FEET)

FIGURE IV-14

001631|D:\SY236\SY236007.DWG

REVISED: 7/8/92



NOTE:
FOR BORING-14, THE RESULTS SHOWN ARE FOR THE 5.5 TO 6 FEET SAMPLE; THE CONCENTRATIONS FOR THE 4.0 TO [illegible] FEET [illegible]PLE [illegible] SIG[illegible]NTLY [illegible]VER.

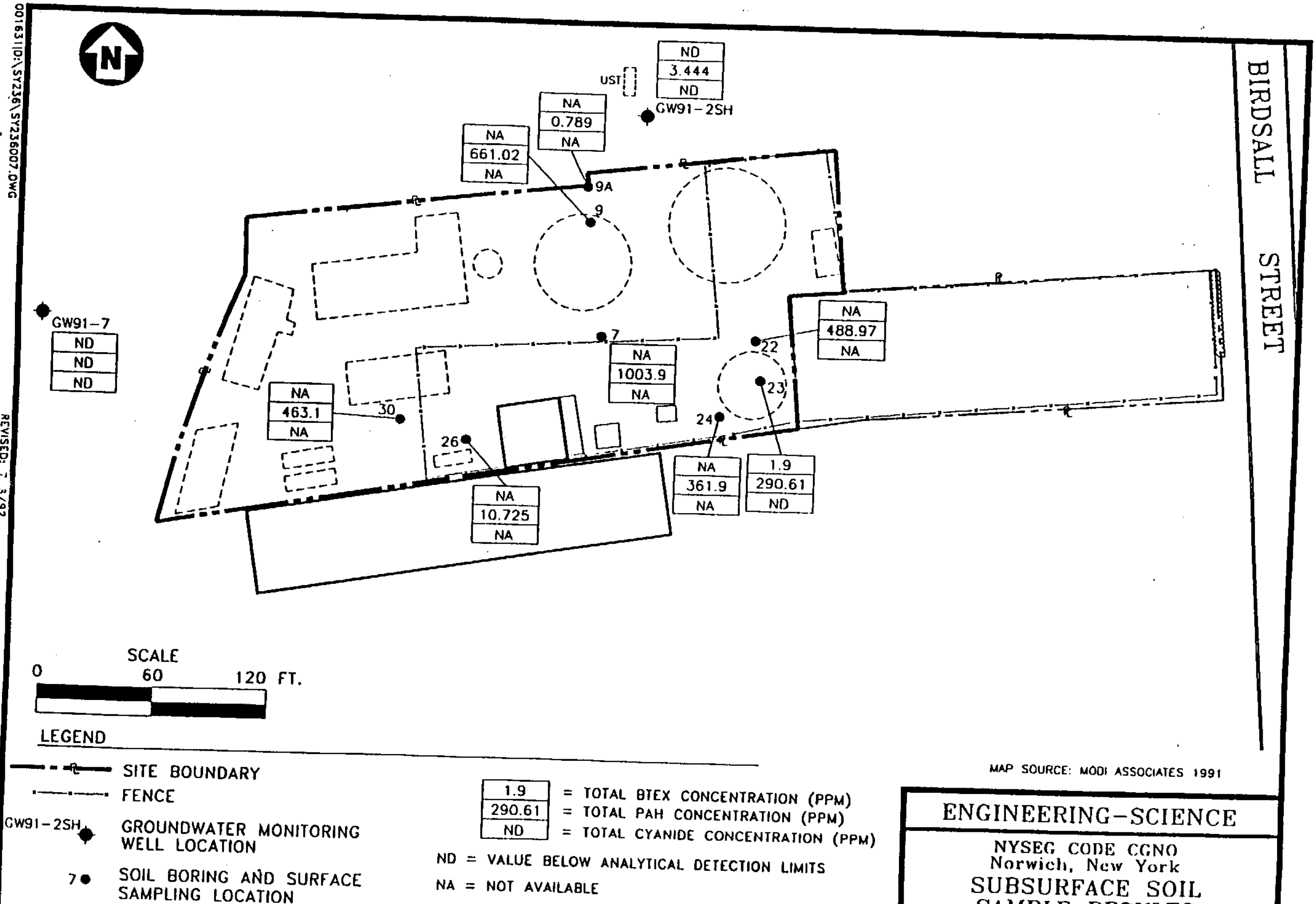
ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SUBSURFACE SOIL SAMPLE RESULTS (4 TO 6 FEET)

IGU[illegible] IV-[illegible]

REVISED: 7/8/92



ENGINEERING-SCIENCE

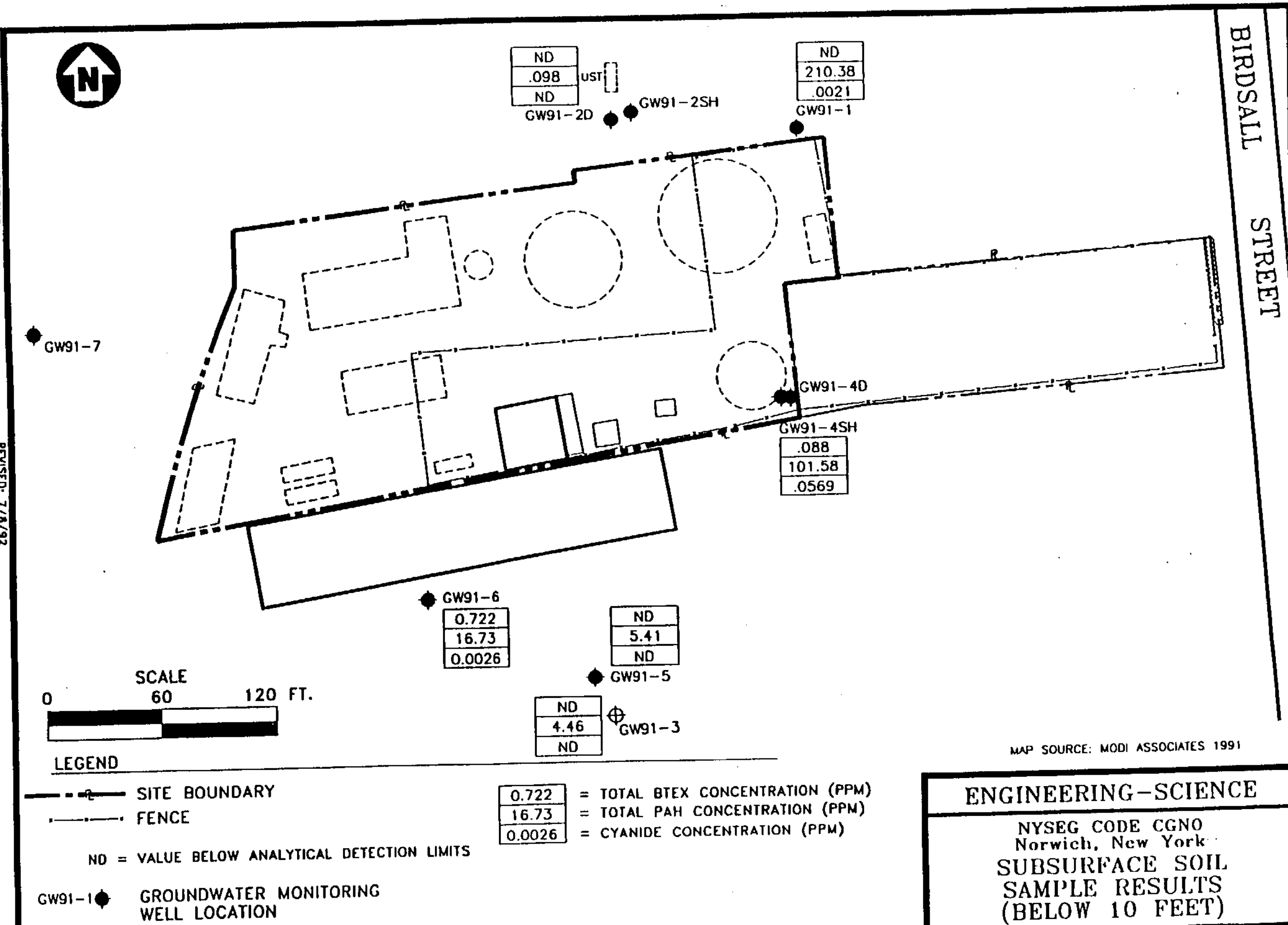
NYSEG CODE CGNO
Norwich, New York

SUBSURFACE SOIL SAMPLE RESULTS (6 TO 10 FEET)

FIGURE IV-16

001631|D:\SY236\SY236007.DWG

REVISED: 7 3/92



ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

SUBSURFACE SOIL SAMPLE RESULTS (BELOW 10 FEET)

FIGURE IV-

001631ID:\SY236\SY236007.DWG

REVISED: 7/8/92

limits. The concentrations of BTEX in samples SS91-7 and SS91-5 were slightly above background levels, however the duplicate of sample SS91-5 (designated SS91-8) was below the background level, indicating BTEX contamination is not consistent within the matrix. The elevated BTEX concentrations were in samples from outside the former relief holder and beneath the former distribution holder.

The shallow subsurface soil samples were also analyzed for PAHs. Thirteen PAH compounds were detected in background samples, with total PAH concentrations ranging from 6.782 ppm in sample SS91-3 DUP to 8.167 ppm in sample SS91-3. Seventeen PAH compounds were detected in shallow subsurface soil samples collected on-site. Concentrations ranged from 30 ppm in sample SS91-4 to 228.8 ppm in sample SS91-8 (from boring B91-10). The samples with the highest concentrations were collected in or near the former distribution and relief holders, and are one to two orders of magnitude above background.

Shallow subsurface soil samples were also analyzed for cyanide and amenable cyanide. The highest cyanide concentrations were detected in background samples SS91-3 (0.0222 ppm) and SS91-3DUP (0.0216) from boring B91-15. Cyanide was detected in two on-site shallow subsurface soil samples, SS91-6 (from boring SS91-6) and SS91-7 (from boring B91-4), below the background concentrations.

Subsurface Soil Results (Sample Depth 1 to 4 feet)

Ten soil samples from this depth were collected during drilling of the soil borings. Nine of the samples were analyzed for PAHs, six were also analyzed for BTEX and cyanide. One sample (SB91-5) scheduled for PAH analysis was mistakenly analyzed for BTEX by the lab.

The sample results for this depth are substantially higher than the shallow subsurface soil results. The highest concentrations of total BTEX and total PAHs are in samples associated with the former relief and distribution holders and the tar well area.

The sample concentrations are plotted on Figure IV-14 and are listed on Table IV-7. Two background samples are referenced for comparison purposes; one from boring B91-15 located east-northeast of the site and one from boring B91-19 located east-southeast of the site. Total BTEX concentrations in the background samples ranged from 0.001 (B91-19) to 0.007 ppm (B91-15D). On-site BTEX concentrations ranged from 0.003 ppm in boring B91-31 to 353 ppm in boring B91-05. The highest concentrations were associated with the former relief holder (B91-05) and in the vicinity of the tar well (B91-02).

Background concentrations of total PAHs ranged from 0.226 ppm in boring B91-15D to 1.315 ppm in boring GW91-19. On-site total PAH concentrations ranged from 16.33 ppm in boring B91-31 to 37,190 ppm in boring B91-11. The highest total PAH concentrations were associated with the former distribution and relief holders and the tar well area. The sample data also show that elevated BTEX and PAH concentrations extend to the south of the former relief holder (SB91-07) and to the east of the tar well (SB91-02).

Total cyanide concentrations in both background samples were nondetectable. Total cyanide concentrations in on-site subsurface soils ranged from nondetectable (in boring B91-07) to 0.0888 ppm (in B91-05). Of the three samples where total cyanide was detected, two were nondetectable for amendable cyanide (SB91-02 and SB91-31).

Subsurface Soil Results (Sample Depth 4 to 6 Feet)

Ten samples from this depth were collected and analyzed for PAHs. Six samples were additionally analyzed for BTEX and cyanide. Sample results from this depth have been compared to the background samples from the one to four-foot depth (borings SB91-15D and SB91-19).

The sample concentrations are summarized on Table IV-8 and are presented graphically on Figure IV-15. The highest total BTEX and total PAH concentrations are associated with the former relief holder (SB91-14, SB91-08), distribution holder (SB91-12) and tar well (SB91-25). The sample results for boring SB91-21 indicate elevated BTEX (511.4 ppm) and PAH (1,916 ppm) concentrations extend beyond the former distribution holder, in the downgradient direction. The other samples from this depth indicate BTEX and/or PAH concentrations drop off rapidly to the west of the former distribution holder (SB91-13), relief holder (SB91-16) and the tar wells (SB91-27 and SB91-29). Cyanide was detected in the former relief holder (SB91-14) and downgradient of the former distribution holder (SB91-21) and tar wells (SB91-25). Amendable cyanide was detected only in the former relief holder and downgradient of the former distribution holder.

Subsurface Soil Results (Sample Depth 6 to 10 Feet)

Ten samples from this depth were analyzed for PAHs, three were additionally analyzed for BTEX and cyanide. The samples from monitoring well borings GW91-2SH and GW91-7 were analyzed for VOAs, SVOAs and cyanide. Sample results are summarized on Table IV-9 and presented on Figure IV-16. The results for this sample depth show total BTEX and total PAH concentrations are substantially lower than those at the sample depths of 1 to 4 and 4 to 6 feet. These results also show that elevated PAH concentrations extend beyond the former relief holder to the south (SB91-07), and to the north and southwest of the former above ground oil tank (SB91-22 and SB91-24, respectively).

Total BTEX concentrations ranged from nondetectable to 1.9 ppm, indicating BTEX is not a significant contaminant at this depth. Total PAH concentrations ranged from 0.789 ppm (SB91-9A) to 1003.9 ppm (SB91-07). Total cyanide was not detected in any of the samples analyzed at this depth.

Subsurface Soil Results (Sample Depths Greater Than 10 Feet)

Six samples were collected at this depth from the monitoring well borings. These samples were analyzed for VOAs, SVOAs and cyanide. In general these sample concentrations are lower than the sample results from 6 to 10 feet, and substantially lower than samples from 1 to 4 and 4 to 6 feet. It is noteworthy that all samples analyzed from this depth were from well borings around the perimeter of the site. There is no analytical data available for deep samples collected within or near the most likely MGP residue sources.

The sample results are summarized on Table IV-10 and presented on Figure IV-17. The most significant results are those for total BTEX and total PAHs. The other volatile compounds detected were at concentrations below analytical detection limits (styrene, tetrachloroethene) or was a common laboratory contaminant found in laboratory blank samples (methylene chloride). The other semivolatile compounds were also detected at very low concentrations, mostly below the analytical detection limits (bis(2-ethylhexyl)phthalate, dibenzofuran, benzoic acid and several phenolic compounds).

The results for this sample depth show relatively low concentrations of total BTEX (0.722 ppm) off-site, downgradient of the tar well (GW91-6). Low concentrations of total PAHs are present in off-site samples, downgradient of the site (GW91-6, GW91-5, and GW91-3). A relatively higher concentration of total PAHs was present in off-site sample GW91-1 (210.38 ppm), located upgradient of the site. Total cyanide was detected in three samples, including one which was off-site and downgradient of the tar well (GW91-6). Amendable cyanide was nondetectable in that sample.

Summary of Subsurface Soil Sample Results

The shallow subsurface soil sample results indicate that on-site concentrations of total BTEX, total PAHs and cyanide are above background. Of the samples analyzed, the highest concentrations occur between one and six feet below ground surface, and are generally associated with the former relief and distribution holders and the tar well area. The boring logs indicate visual evidence of contamination exists at greater depths in some on-site borings. Those concentrations are several orders of magnitude above background. Elevated concentrations were also present at those depths immediately downgradient of those suspected sources. Highly contaminated soil was not shown to be present at the surface, nor below depths of about six feet.

The subsurface soil results confirmed the presence of suspected MGP residue source areas beneath the former relief and distribution holders, the tar well and the former above ground oil tank in the southeast corner of the site. Soils immediately downgradient of these former features also have concentrations substantially above background, and may act as secondary sources of MGP residue.

One composite soil sample was collected from the roll-off dumpster where all auger cuttings and excess split spoon samples were placed during Task II field activities. The sample was analyzed for TCLP and Waste Characteristics and found to be non-hazardous. The sample was found to be non-corrosive (pH=7.9), non-ignitible, non-reactive and not characteristically toxic (Appendix D).

Groundwater Contamination Assessment

Eight groundwater wells were sampled on January 30, 1992 (Round 1) and April 24, 1992 (Round 2). Round 1 samples were analyzed for VOCs, SVOCs, and cyanide. Round 2 samples were analyzed for VOCs, SVOCs, metals, and cyanide.

The groundwater results for each round are discussed separately; the Round 2 discussion focuses on differences in the two rounds of results.

In summary, BTEX, PAH compounds and cyanide were detected in groundwater samples collected from the Task II groundwater monitoring wells. No BTEX, PAH compounds or cyanide were detected in the groundwater samples from GW91-7 or the upgradient Victory Markets well. Other off-site upgradient monitoring wells were contaminated with BTEX (GW91-2D) and SVOCs (GW91-1 and GW91-2D) indicating upgradient contaminant sources may exist. Low concentrations of several BTEX and PAH compounds were detected above Class GA groundwater standards in off-site downgradient monitoring wells. The extent of groundwater contamination downgradient of monitoring wells GW91-4D and GW91-4SH needs to be further defined.

Groundwater Sample Results: Round 1

Nine Round 1 groundwater samples, including one field duplicate, were collected from eight monitoring wells installed during the Task II field investigation. One additional groundwater sample was collected from the upgradient Victory Markets water supply well. The Victory Markets well was sampled because of its close proximity to the site and its use for the commercial production of ice cubes. Definitive information on the well depth and screened interval is not available. Groundwater samples for Round 1 were analyzed for VOCs, SVOCs and cyanide. The analytical results for both sampling rounds are summarized by well on Tables IV-11 through IV-19.

GW91-7 is the most upgradient monitoring well and represents background conditions for the northwest corner of the site. No BTEX, PAH compounds or cyanide were detected in the groundwater samples from GW91-7 or the Victory Markets well. Up to nine VOCs were detected in other groundwater samples. Only BTEX compounds were above Class GA standards. The other VOCs detected were either common laboratory contaminants (methylene chloride) found in the blanks, or were below the applicable groundwater standards.

Total BTEX concentrations are plotted on Figure IV-18. BTEX was not detected in background well GW91-7 or in off-site upgradient wells GW91-1 and GW91-2SH. BTEX was detected (0.381 ppm) in off-site monitoring well GW91-2D, located downgradient of an abandoned underground storage tank (UST) which was discovered on the Victory Markets property during the Task II investigation. The abandoned UST is upgradient of the MGP site and well GW91-2D. BTEX constituent concentrations were above Class GA standards in GW91-2D, in off-site monitoring well GW91-6 (downgradient of the former tar well area), and in monitoring wells GW91-4SH and GW91-4D (downgradient of the former above ground oil tank).

SVOC analytical data are summarized in Tables IV-11 through IV-19 and total PAH concentrations are plotted on Figure IV-18. No SVOCs were detected in background well GW91-7 or in the Victory Markets well, however two SVOCs were detected in off-site upgradient well GW91-1 and eleven SVOCs were detected in

Table IV-11
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-1	4/24/92 CGNO GW91-1
VOLATILE ORGANICS			
Methylene Chloride	0.005	0.0004 JB	-
1,1-Dichloroethane	0.005	-	-
Chloroform	0.007	-	-
1,1,1-Trichloroethane	0.005	-	-
Tetrachloroethene	0.005	-	-
BTEX			
Benzene	0.0007	-	-
Toluene	0.005	-	-
Ethylbenzene	0.005	-	0.0003 J
Total Xylenes	0.005	-	0.0006 J
Total BTEX		0.000	0.0009
SEMIVOLATILES			
2-Methylphenol	0.001	-	-
Dibenzofuran	NS	-	-
Phenol	0.005	-	-
Bis(2-EH)phthalate	0.05	-	-
PAHs			
Naphthalene	0.01a	-	-
2-Methylnaphthalene	NS	-	-
Acenaphthylene	NS	-	-
Acenaphthene	0.02a	-	-
Fluorene	0.05a	-	-
Phenanthrene	0.05a	-	-
Anthracene	0.05a	-	-
Fluoranthene	0.05a	0.001 J	0.002 J
Pyrene	0.05a	0.001 J	0.002 J
Chrysene ©	0.000002a	-	-
Benzo(b)fluoranthene ©	0.000002a	-	-
Benzo(k)fluoranthene	0.000002a	-	-
Benzo(a)pyrene ©	ND	-	-
Indeno(1,2,3,-cd)pyrene ©	0.000002a	-	-
Benzo(g,h,i)perylene	NS	-	-
Total Carcinogenic PAH		0.000	0.000
Total PAHs		0.002	0.004
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	285
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.150 N
Barium	1	NA	2.130
Beryllium	0.003a	NA	0.015
Cadmium	0.010	NA	0.010
Calcium	NS	NA	95.8
Chromium	0.050	NA	0.786
Cobalt	NS	NA	0.235
Copper	0.200	NA	0.730
Iron	0.300	NA	695
Lead	0.025	NA	0.350 S
Magnesium	35.000a	NA	81.200
Manganese	0.300	NA	55.100
Mercury	0.002	NA	0.0019
Nickel	NS	NA	0.678
Potassium	NS	NA	45.700
Selenium	0.010	NA	0.022 BN
Silver	0.050	NA	0.021
Sodium	20.000	NA	38.000
Thallium	NS	NA	- WN
Vanadium	NS	NA	0.406
Zinc	0.300	NA	1.680
Total Cyanide	0.1	-	0.030
Amenable Cyanide	0.1	NA	- !

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-12
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-2D	4/24/92 CGNO GW91-2D
VOLATILE ORGANICS			
Methylene Chloride	0.005	-	0.005 D
1,1-Dichloroethane	0.005	-	- D
Chloroform	0.007	-	- D
1,1,1-Trichloroethane	0.005	-	- D
Tetrachloroethene	0.005	-	- D
BTEX			
Benzene	0.0007	0.15	0.218 D
Toluene	0.005	0.11	0.373 D
Ethylbenzene	0.005	0.027	0.297 D
Total Xylenes	0.005	0.094	0.355 D
Total BTEX		0.381	1.243
SEMIVOLATILES			
2-Methylphenol	0.001	0.0006 J	-
Dibenzofuran	NS	0.001 J	0.002 J
Phenol	0.005	-	0.007 J
Bis(2-EH)phthalate	0.05	-	-
PAHs			
Naphthalene	0.01a	0.038	0.280
2-Methylnaphthalene	NS	0.016	0.072
Acenaphthylene	NS	0.016	0.043
Acenaphthene	0.02a	0.002 J	0.005 J
Fluorene	0.05a	0.003 J	0.005 J
Phenanthrene	0.05a	0.004 J	0.005 J
Anthracene	0.05a	0.0008 J	-
Fluoranthene	0.05a	0.0005 J	-
Pyrene	0.05a	0.0005 J	-
Chrysene ©	0.000002a	-	-
Benzo(b)fluoranthene ©	0.000002a	-	-
Benzo(k)fluoranthene	0.000002a	-	-
Benzo(a)pyrene ©	ND	-	-
Indeno(1,2,3,-cd)pyrene ©	0.000002a	-	-
Benzo(g,h,i)perylene	NS	-	-
Total Carcinogenic PAH		0.000	0.000
Total PAHs		0.081	0.410
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	200
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.109 N
Barium	1	NA	1.220
Beryllium	0.003a	NA	0.013
Cadmium	0.010	NA	0.058
Calcium	NS	NA	224
Chromium	0.050	NA	0.506
Cobalt	NS	NA	0.145
Copper	0.200	NA	0.439
Iron	0.300	NA	329
Lead	0.025	NA	0.171
Magnesium	35.000a	NA	97.600
Manganese	0.300	NA	11.200
Mercury	0.002	NA	0.00082
Nickel	NS	NA	0.536
Potassium	NS	NA	42.600
Selenium	0.010	NA	0.011 BN
Silver	0.050	NA	0.012
Sodium	20.000	NA	63.800
Thallium	NS	NA	- WN
Vanadium	NS	NA	0.308
Zinc	0.300	NA	0.964
Total Cyanide	0.1	-	-
Amenable Cyanide	0.1	NA	NA

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
I: Sample holding time was exceeded.
NS: No Standard.

Table IV-13
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-2SH	4/24/92 CGNO GW91-2SH
VOLATILE ORGANICS			
Methylene Chloride	0.005	0.001	-
1,1-Dichloroethane	0.005	-	-
Chloroform	0.007	0.0002 J	-
1,1,1-Trichloroethane	0.005	-	-
Tetrachloroethene	0.005	0.0005 J	0.0008 J
BTEX			
Benzene	0.0007	-	-
Toluene	0.005	-	-
Ethylbenzene	0.005	-	-
Total Xylenes	0.005	-	-
Total BTEX		0.000	0.000
SEMIVOLATILES			
2-Methylphenol	0.001	-	-
Dibenzofuran	NS	-	-
Phenol	0.005	-	-
Bis(2-EH)phthalate	0.05	-	-
PAHs			
Naphthalene	0.01a	-	-
2-Methylnaphthalene	NS	-	-
Acenaphthylene	NS	-	-
Acenaphthene	0.02a	-	-
Fluorene	0.05a	-	-
Phenanthrene	0.05a	-	-
Anthracene	0.05a	-	-
Fluoranthene	0.05a	-	-
Pyrene	0.05a	-	-
Chrysene ©	0.000002a	-	-
Benzo(b)fluoranthene ©	0.000002a	-	-
Benzo(k)fluoranthene	0.000002a	-	-
Benzo(a)pyrene ©	ND	-	-
Indeno(1,2,3,-cd)pyrene ©	0.000002a	-	-
Benzo(g,h,i)perylene	NS	-	-
Total Carcinogenic PAH		0.000	0.000
Total PAHs		0.000	0.000
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	507
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.250 N
Barium	1	NA	3.060
Beryllium	0.003a	NA	0.043
Cadmium	0.010	NA	0.133
Calcium	NS	NA	128
Chromium	0.050	NA	1.070
Cobalt	NS	NA	0.438
Copper	0.200	NA	1.460
Iron	0.300	NA	122
Lead	0.025	NA	0.645
Magnesium	35.000a	NA	164.000
Manganese	0.300	NA	47.200
Mercury	0.002	NA	0.0032
Nickel	NS	NA	1.080
Potassium	NS	NA	68.700
Selenium	0.010	NA	0.014 BWN
Silver	0.050	NA	-
Sodium	20.000	NA	55.500
Thallium	NS	NA	- WN
Vanadium	NS	NA	0.783
Zinc	0.300	NA	2.910
Total Cyanide	0.1	-	0.010
Amenable Cyanide	0.1	NA	0.010 !

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-14
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-4D	4/24/92 CGNO GW91-4D
VOLATILE ORGANICS			
Methylene Chloride	0.005	-	0.0045 JD
1,1-Dichloroethane	0.005	-	- D
Chloroform	0.007	-	- D
1,1,1-Trichloroethane	0.005	-	0.0025 JD
Tetrachloroethene	0.005	-	- D
BTEX			
Benzene	0.0007	0.003	- D
Toluene	0.005	0.003	- D
Ethylbenzene	0.005	-	0.010 D
Total Xylenes	0.005	0.194	0.120 D
Total BTEX		0.200	0.130
SEMIVOLATILES			
2-Methylphenol	0.001	-	- D
Dibenzofuran	NS	0.026 JD	0.29 JD
Phenol	0.005	-	- D
Bis(2-EH)phthalate	0.05	-	- D
PAHs			
Naphthalene	0.01a	0.99 D	14.00 D
2-Methylnaphthalene	NS	0.51 D	12.00 D
Acenaphthylene	NS	0.19 D	4.00 D
Acenaphthene	0.02a	0.049 D	0.910 D
Fluorene	0.05a	0.08 D	2.300 D
Phenanthrene	0.05a	0.17 D	7.00 D
Anthracene	0.05a	0.044 JD	2.300 D
Fluoranthene	0.05a	0.041 JD	2.50 D
Pyrene	0.05a	0.063 D	4.0 D
Chrysene ©	0.000002a	0.012 JD	0.880 D
Benzo(b)fluoranthene ©	0.000002a	0.011 JD	0.770 D
Benzo(k)fluoranthene	0.000002a	0.004 JD	0.340 JD
Benzo(a)pyrene ©	ND	0.013 JD	1.00 D
Indeno(1,2,3,-cd)pyrene ©	0.000002a	-	0.430 JD
Benzo(g,h,i)perylene	NS	0.005 JD	- D
Total Carcinogenic PAH		0.036	3.080
Total PAHs		2.182	52.430
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	139
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.0562 SN
Barium	1	NA	0.869
Beryllium	0.003a	NA	0.010
Cadmium	0.010	NA	0.005
Calcium	NS	NA	120
Chromium	0.050	NA	0.247
Cobalt	NS	NA	0.107
Copper	0.200	NA	0.303
Iron	0.300	NA	238
Lead	0.025	NA	0.180
Magnesium	35.000a	NA	62.700
Manganese	0.300	NA	4.010
Mercury	0.002	NA	0.0003
Nickel	NS	NA	0.296
Potassium	NS	NA	30.600
Selenium	0.010	NA	- N
Silver	0.050	NA	0.011
Sodium	20.000	NA	22.500
Thallium	NS	NA	- N
Vanadium	NS	NA	0.206
Zinc	0.300	NA	0.781
Total Cyanide	0.1	0.29	0.950
Amenable Cyanide	0.1	0.024	0.400 !

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-15
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-4SH	4/24/92 CGNO GW91-4SH
VOLATILE ORGANICS			
Methylene Chloride	0.005	-	0.0015
1,1-Dichloroethane	0.005	0.0004 J	-
Chloroform	0.007	-	-
1,1,1-Trichloroethane	0.005	0.0004 J	-
Tetrachloroethene	0.005	-	-
BTEX			
Benzene	0.0007	0.012	-
Toluene	0.005	0.011	-
Ethylbenzene	0.005	0.051	0.0014
Total Xylenes	0.005	0.18	0.0047
Total BTEX		0.254	0.0061
SEMIVOLATILES			
2-Methylphenol	0.001	-	-
Dibenzofuran	NS	0.018 JD	0.010 J
Phenol	0.005	-	-
Bis(2-EH)phthalate	0.05	-	-
PAHs			
Naphthalene	0.01a	0.65 D	0.009 J
2-Methylnaphthalene	NS	0.038 JD	0.010 J
Acenaphthylene	NS	0.041 JD	0.020
Acenaphthene	0.02a	0.22 D	0.120
Fluorene	0.05a	0.094 D	0.056
Phenanthrene	0.05a	0.19 D	0.098
Anthracene	0.05a	0.036 JD	0.025
Fluoranthene	0.05a	0.051 D	0.034
Pyrene	0.05a	0.068 D	0.050
Chrysene ©	0.000002a	0.013 JD	0.008 J
Benzo(b)fluoranthene ©	0.000002a	0.011 JD	-
Benzo(k)fluoranthene	0.000002a	0.004 JD	-
Benzo(a)pyrene ©	ND	0.015 JD	-
Indeno(1,2,3,-cd)pyrene ©	0.000002a	0.006 JD	-
Benzo(g,h,i)perylene	NS	0.007 JD	-
Total Carcinogenic PAH		0.045	0.008
Total PAHs		1.444	0.430
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	146
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.123 SN
Barium	1	NA	0.718
Beryllium	0.003a	NA	0.010
Cadmium	0.010	NA	0.013
Calcium	NS	NA	105
Chromium	0.050	NA	0.270
Cobalt	NS	NA	0.140
Copper	0.200	NA	0.642
Iron	0.300	NA	246
Lead	0.025	NA	0.341 S
Magnesium	35.000a	NA	60.300
Manganese	0.300	NA	5.180
Mercury	0.002	NA	0.00088
Nickel	NS	NA	0.362
Potassium	NS	NA	27.300
Selenium	0.010	NA	- WN
Silver	0.050	NA	0.009
Sodium	20.000	NA	10.100
Thallium	NS	NA	- N
Vanadium	NS	NA	0.244
Zinc	0.300	NA	1.420
Total Cyanide	0.1	0.3	0.930
Amenable Cyanide	0.1	0.013	0.770 !

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-16
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-5	4/24/92 CGNO GW91-5
VOLATILE ORGANICS			
Methylene Chloride	0.005	0.0014	-
1,1-Dichloroethane	0.005	-	-
Chloroform	0.007	-	-
1,1,1-Trichloroethane	0.005	-	-
Tetrachloroethene	0.005	-	-
BTEX			
Benzene	0.0007	-	-
Toluene	0.005	0.0002 J	-
Ethylbenzene	0.005	0.0002 J	-
Total Xylenes	0.005	0.001	-
Total BTEX		0.0014	0.000
SEMIVOLATILES			
2-Methylphenol	0.001	-	-
Dibenzofuran	NS	-	-
Phenol	0.005	-	-
Bis(2-EH)phthalate	0.05	-	-
PAHs			
Naphthalene	0.01a	-	-
2-Methylnaphthalene	NS	0.003 J	0.003 J
Acenaphthylene	NS	0.006 J	0.002 J
Acenaphthene	0.02a	0.006 J	0.003 J
Fluorene	0.05a	0.008 J	0.003 J
Phenanthrene	0.05a	0.008 J	0.005 J
Anthracene	0.05a	0.006 J	0.002 J
Fluoranthene	0.05a	0.012	0.008 J
Pyrene	0.05a	0.019	0.018 J
Chrysene ©	0.000002a	0.005 J	0.004 J
Benzo(b)fluoranthene ©	0.000002a	0.004 J	-
Benzo(k)fluoranthene	0.000002a	0.001 J	-
Benzo(a)pyrene ©	ND	0.006 J	-
Indeno(1,2,3,-cd)pyrene ©	0.000002a	0.004 J	-
Benzo(g,h,i)perylene	NS	0.006 J	-
Total Carcinogenic PAH		0.019	0.004
Total PAHs		0.094	0.048
Total PCB's		NA	ND
METALS & Ca-			
Aluminum	NS	NA	241
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.157 N
Barium	1	NA	1.280
Beryllium	0.003a	NA	0.016
Cadmium	0.010	NA	0.017
Calcium	NS	NA	98
Chromium	0.050	NA	0.829
Cobalt	NS	NA	0.177
Copper	0.200	NA	0.757
Iron	0.300	NA	400
Lead	0.025	NA	0.393 S
Magnesium	35.000a	NA	96.400
Manganese	0.300	NA	4.440
Mercury	0.002	NA	0.00085
Nickel	NS	NA	0.700
Potassium	NS	NA	35.600
Selenium	0.010	NA	0.019 BN
Silver	0.050	NA	0.012
Sodium	20.000	NA	33.500
Thallium	NS	NA	- N
Vanadium	NS	NA	0.355
Zinc	0.300	NA	1.340
Total Cyanide	0.1	0.08	0.120
Amenable Cyanide	0.1	0.039	0.040

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-17
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW-5DUP	4/24/92 CGNO GW-5DUP
VOLATILE ORGANICS			
Methylene Chloride	0.005	–	–
1,1-Dichloroethane	0.005	–	–
Chloroform	0.007	–	–
1,1,1-Trichloroethane	0.005	–	–
Tetrachloroethene	0.005	–	–
BTEX			
Benzene	0.0007	–	–
Toluene	0.005	–	–
Ethylbenzene	0.005	0.0004 J	–
Total Xylenes	0.005	0.002	–
Total BTEX		0.0024	0.000
SEMIVOLATILES			
2-Methylphenol	0.001	–	–
Dibenzofuran	NS	–	–
Phenol	0.005	–	–
Bis(2-EH)phthalate	0.05	–	–
PAHs			
Naphthalene	0.01a	–	–
2-Methylnaphthalene	NS	0.005 J	0.003 J
Acenaphthylene	NS	0.006 J	0.002 J
Acenaphthene	0.02a	0.006 J	0.004 J
Fluorene	0.05a	0.008 J	0.004 J
Phenanthrene	0.05a	0.01 J	0.005 J
Anthracene	0.05a	0.007 J	0.003 J
Fluoranthene	0.05a	0.013	0.008 J
Pyrene	0.05a	0.019	0.013
Chrysene ©	0.000002a	0.005 J	–
Benzo(b)fluoranthene ©	0.000002a	0.004 J	–
Benzo(k)fluoranthene	0.000002a	0.001 J	–
Benzo(a)pyrene ©	ND	0.006 J	–
Indeno(1,2,3,-cd)pyrene ©	0.000002a	0.004 J	–
Benzo(g,h,i)perylene	NS	0.005 J	–
Total Carcinogenic PAH		0.019	0.000
Total PAHs		0.099	0.042
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	267
Antimony	0.003a	NA	– WN
Arsenic	0.025	NA	0.196 N
Barium	1	NA	1.440
Beryllium	0.003a	NA	0.018
Cadmium	0.010	NA	0.019
Calcium	NS	NA	108
Chromium	0.050	NA	0.833
Cobalt	NS	NA	0.210
Copper	0.200	NA	0.887
Iron	0.300	NA	585
Lead	0.025	NA	0.394
Magnesium	35.000a	NA	112.000
Manganese	0.300	NA	5.210
Mercury	0.002	NA	0.001
Nickel	NS	NA	0.752
Potassium	NS	NA	33.200
Selenium	0.010	NA	0.012 BN
Silver	0.050	NA	0.016
Sodium	20.000	NA	33.200
Thallium	NS	NA	– N
Vanadium	NS	NA	0.389
Zinc	0.300	NA	1.580
Total Cyanide	0.1	0.08	0.100
Amenable Cyanide	0.1	0.018	– I

Qualifiers

NA: Sample was not analyzed for particular compound.
–: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B:Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
I: Sample holding time was exceeded.
NS: No Standard.

Table IV-18
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

Compound	NYS Class GA Standards	1/30/92 CGNO GW91-6	4/24/92 CGNO GW91-6
VOLATILE ORGANICS			
Methylene Chloride	0.005	-	- D
1,1-Dichloroethane	0.005	-	- D
Chloroform	0.007	-	- D
1,1,1-Trichloroethane	0.005	-	- D
Tetrachloroethene	0.005	-	- D
BTEX			
Benzene	0.0007	0.15 E	0.448 D
Toluene	0.005	0.044	0.039 D
Ethylbenzene	0.005	0.033	0.138 D
Total Xylenes	0.005	0.1	0.566 D
Total BTEX		0.327	1.191
SEMIVOLATILES			
2-Methylphenol	0.001	- D	- D
Dibenzofuran	NS	0.006 JD	0.010 JD
Phenol	0.005	- D	- D
Bis(2-EH)phthalate	0.05	- D	- D
PAHs			
Naphthalene	0.01a	-	1.00 D
2-Methylnaphthalene	NS	0.16 D	0.240 D
Acenaphthylene	NS	0.006 JD	0.009 JD
Acenaphthene	0.02a	0.001 JD	0.180 D
Fluorene	0.05a	0.025 D	0.039 D
Phenanthrene	0.05a	0.026 D	0.059 D
Anthracene	0.05a	0.007 JD	0.011 JD
Fluoranthene	0.05a	0.004 JD	0.007 JD
Pyrene	0.05a	0.005 JD	0.008 JD
Chrysene ©	0.000002a	- D	- D
Benzo(b)fluoranthene ©	0.000002a	- D	- D
Benzo(k)fluoranthene	0.000002a	- D	- D
Benzo(a)pyrene ©	ND	- D	- D
Indeno(1,2,3,-cd)pyrene ©	0.000002a	- D	- D
Benzo(g,h,i)perylene	NS	- D	- D
Total Carcinogenic PAH		0.000	0.000
Total PAHs		0.234	1.553
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	159
Antimony	0.003a	NA	- WN
Arsenic	0.025	NA	0.0105 N
Barium	1	NA	1.050
Beryllium	0.003a	NA	0.010
Cadmium	0.010	NA	0.006
Calcium	NS	NA	94.7
Chromium	0.050	NA	0.573
Cobalt	NS	NA	0.126
Copper	0.200	NA	0.462
Iron	0.300	NA	292
Lead	0.025	NA	0.320
Magnesium	35.000a	NA	60.500
Manganese	0.300	NA	6.080
Mercury	0.002	NA	0.00062
Nickel	NS	NA	0.613
Potassium	NS	NA	26.200
Selenium	0.010	NA	0.010 BN
Silver	0.050	NA	0.011
Sodium	20.000	NA	44.000
Thallium	NS	NA	- N
Vanadium	NS	NA	0.230
Zinc	0.300	NA	0.977
Total Cyanide	0.1	0.023	0.050
Amenable Cyanide	0.1	-	- !

Qualifiers

NA: Sample was not analyzed for particular compound.
-: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B: Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
!: Sample holding time was exceeded.
NS: No Standard.

Table IV-19
New York State Electric & Gas
Norwich New York
Groundwater
Analytical Data (ppm)

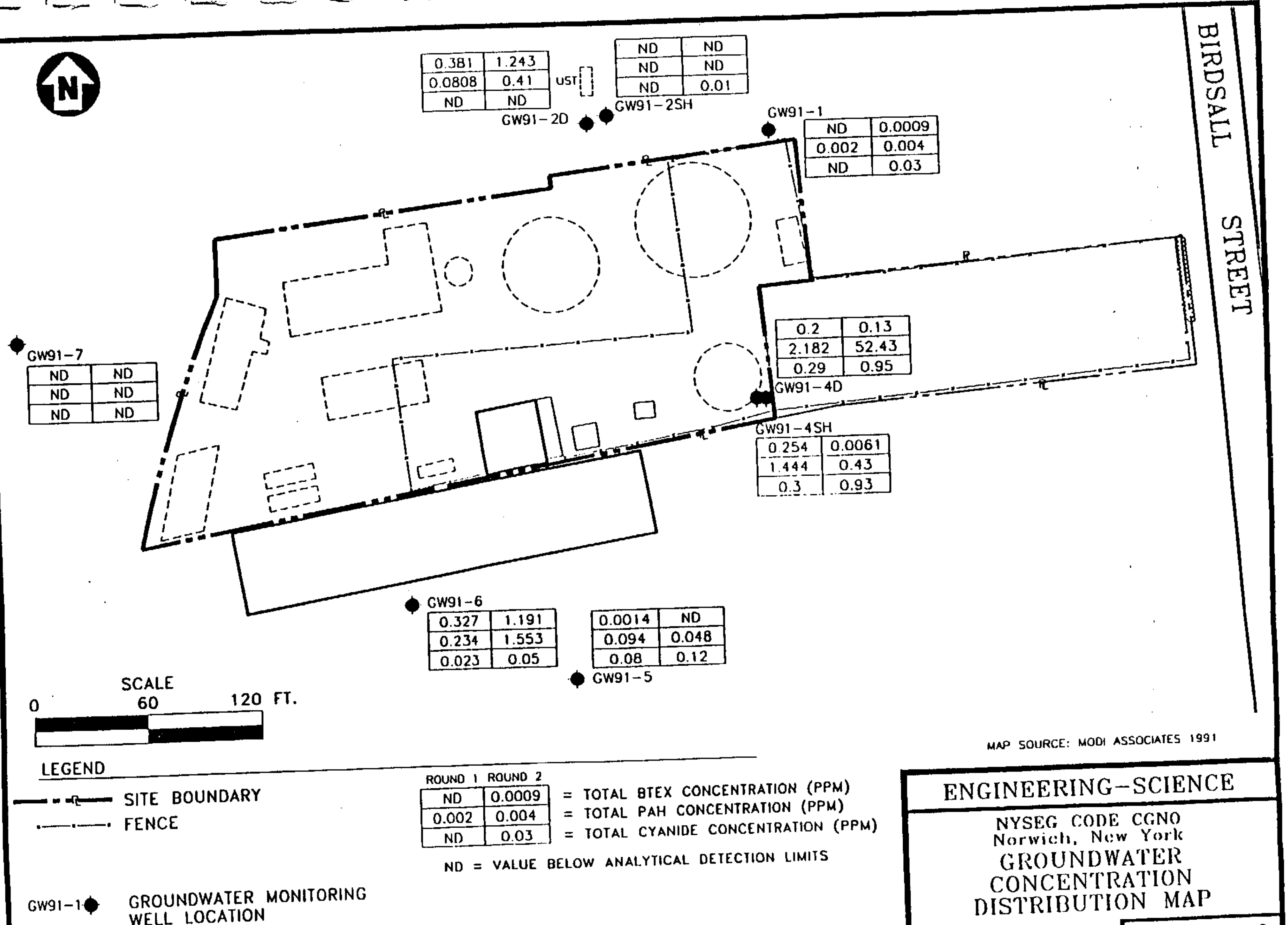
Compound	NYS Class GA Standards	1/30/92 CGNO GW91-7*	4/24/92 CGNO GW91-7*
VOLATILE ORGANICS			
Methylene Chloride	0.005	–	–
1,1-Dichloroethane	0.005	–	–
Chloroform	0.007	0.0009 J	–
1,1,1-Trichloroethane	0.005	–	–
Tetrachloroethene	0.005	–	–
BTEX			
Benzene	0.0007	–	–
Toluene	0.005	–	–
Ethylbenzene	0.005	–	–
Total Xylenes	0.005	–	–
Total BTEX		0.000	0.000
SEMIVOLATILES			
2-Methylphenol	0.001	–	–
Dibenzofuran	NS	–	–
Phenol	0.005	–	–
Bis(2-EH)phthalate	0.05	–	0.020
PAHs			
Naphthalene	0.01a	–	–
2-Methylnaphthalene	NS	–	–
Acenaphthylene	NS	–	–
Acenaphthene	0.02a	–	–
Fluorene	0.05a	–	–
Phenanthrene	0.05a	–	–
Anthracene	0.05a	–	–
Fluoranthene	0.05a	–	–
Pyrene	0.05a	–	–
Chrysene ©	0.000002a	–	–
Benzo(b)fluoranthene ©	0.000002a	–	–
Benzo(k)fluoranthene	0.000002a	–	–
Benzo(a)pyrene ©	ND	–	–
Indeno(1,2,3,-cd)pyrene ©	0.000002a	–	–
Benzo(g,h,i)perylene	NS	–	–
Total Carcinogenic PAH		0.000	0.000
Total PAHs		0.000	0.000
Total PCB's		NA	ND
METALS & Cn-			
Aluminum	NS	NA	27.2
Antimony	0.003a	NA	0.0036 BWN
Arsenic	0.025	NA	0.0129 N
Barium	1	NA	0.173 B
Beryllium	0.003a	NA	0.002 B
Cadmium	0.010	NA	0.003 B
Calcium	NS	NA	42.5
Chromium	0.050	NA	0.209
Cobalt	NS	NA	0.020 B
Copper	0.200	NA	0.081
Iron	0.300	NA	42.4
Lead	0.025	NA	0.0292 S
Magnesium	35.000a	NA	13.600
Manganese	0.300	NA	1.050
Mercury	0.002	NA	–
Nickel	NS	NA	0.188
Potassium	NS	NA	8.540
Selenium	0.010	NA	0.0068 SN
Silver	0.050	NA	–
Sodium	20.000	NA	177.000
Thallium	NS	NA	– WN
Vanadium	NS	NA	0.038 B
Zinc	0.300	NA	0.147
Total Cyanide	0.1	–	–
Amenable Cyanide	0.1	NA	NA

Qualifiers

NA: Sample was not analyzed for particular compound.
–: Analyte was analyzed for but not detected.
©: Carcinogenic PAH
a: Guidance Value

Organic
J: Indicates an estimated value for tentativly identified compounds where the result is less than the specified quantitation limit.
B:Analyte found in the blank, as well as a sample.
D: All compounds identified at a secondary dilution.

Metals
W: Post-digestion spike for Furnace AA analysis is out of control limits (85–115%), while sample absorbance is less than 50% of spike absorbance.
N: Spike sample recovery not within control limits.
S: Reported value determined by the Method of Standard Additions.
B: Reading was less than the CRDL, but greater than the IDL.
I: Sample holding time was exceeded.
NS: No Standard.



ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

GROUNDWATER CONCENTRATION DISTRIBUTION MAP

FIGURE IV-18

REVISED: 7/8/92

off-site upgradient well GW91-2D, indicating an upgradient contaminant source may exist.

Sixteen SVOCs, including fifteen PAH compounds, were detected in one or more downgradient groundwater samples. The only non-PAH compound, dibenzofuran, was present in three samples, however there is no applicable Class GA standard. Eleven PAH compounds were detected above Class GA standards in at least one well. Total PAH concentrations were highest in monitoring wells GW91-4D (2.182 ppm) and GW91-4SH (1.444 ppm). Monitoring wells GW91-4SH and GW91-4D are immediately adjacent to the former above ground oil storage tank and downgradient of the former distribution and relief holders. The PAH concentrations in off-site wells GW91-5 and GW91-6 are relatively low, and those compounds which exceed Class GA standards were present at concentrations below the analytical detection limits, and are considered estimated values.

Cyanide results are summarized in Table IV-15 and are plotted on Figure IV-19. Cyanide was not detected in the upgradient wells, but was above Class GA standards in GW91-4D and GW91-4SH.

Groundwater Sample Results: Round 2

Nine groundwater samples, including one field duplicate, were collected during the Round 2 sampling of Task II monitoring wells. Groundwater samples were collected on April 24, 1992 and analyzed for VOCs, SVOCs, PCBs, metals, and cyanide.

No VOCs and only one SVOC were detected in the groundwater sample from GW91-7. The SVOC was bis(2-ethylhexyl)phthalate, a common laboratory contaminant, which was detected below the groundwater standard. Six metals (antimony, chromium, iron, lead, manganese and sodium) were detected above groundwater standards or guidance values. The elevated metals concentrations are likely attributable to turbidity in the groundwater sample. Well development and sampling were hampered by the low yield of this well and the amount of silt and clay present in the formation.

Total BTEX concentrations from Round 2 samples are plotted next to Round 1 results on Tables IV-11 through IV-19 and Figure IV-18. Total BTEX concentrations range from nondetectable (wells GW91-2SH, GW91-6 and GW91-5) to 1.243 ppm (well GW91-2D). Concentrations of three other detected VOCs were below groundwater standards. One or more BTEX compounds were above Class GA standards in monitoring wells GW91-2D, GW91-4D, and GW91-6.

Compared to Round 1 results, Round 2 total BTEX concentrations were higher in samples from wells GW91-2D, GW91-6 and GW91-1. This may be attributed to spring snow melt and increased precipitation causing greater infiltration and percolation of groundwater through contaminated soils.

Seventeen SVOCs were detected in the Round 2 monitoring well samples. Fourteen of the SVOCs are PAH compounds. The non-PAH SVOCs were below applicable Class GA standards. Total PAH concentrations ranged from nondetectable (GW91-2SH and GW91-7) to 52.43 ppm (GW91-4D). Twelve of the

PAHs were detected above Class GA standards in at least one well. An upgradient source of PAHs may be present based on the presence of PAHs in off-site upgradient wells GW91-1 and GW91-2D. Ten PAH compounds were detected in downgradient wells GW91-5 and GW91-6. One of the PAHs in GW91-5 and four of the PAHs in GW91-6 were above Class GA standards. Compared to Round 1 results, total PAH concentrations were higher in Round 2 samples from wells GW91-1, GW91-2D, GW91-4D, and GW91-6. The greatest increase was from 2.182 ppm to 52.43 ppm in well GW91-4D.

Round 2 groundwater samples were additionally analyzed for PCBs and metals. PCBs were not detected in any of the samples. Twenty-two metals were detected in the Round 2 samples. Six of the twenty metals detected in background sample GW91-7 were at concentrations above Class GA standards or guidance values. Elevated metals concentrations are likely due to turbidity in the sample.

Up to 22 metals were detected in the other groundwater samples. Each sample had 10 (GW91-4SH) to 14 (GW91-2SH) metals detected above Class GA standards or guidance values. Fifteen (GW91-4D and GW91-6) to 18 (GW91-5) metals were detected above background concentrations for GW91-7. However, off-site upgradient samples GW91-1, GW91-2D, and GW91-2SH had metals concentrations which were higher than downgradient samples GW91-4D, GW91-4SH, and GW91-6. The variability in metals concentrations is likely related to the turbidity of the groundwater samples, making it difficult to assess contamination sources and impacts. In addition, no obvious upgradient or on-site source of metals contamination has been identified.

Round 2 cyanide results are plotted on Figure IV-18. Cyanide concentrations are higher in Round 2 samples than in Round 1 samples for all wells except GW91-7. Downgradient cyanide concentrations are higher than upgradient concentrations for both sampling rounds. Cyanide contamination is apparently attributable to the former MGP. The increased cyanide concentrations in Round 2 samples may be attributed to increased infiltration and percolation due to higher spring precipitation.

Task II Contamination Assessment Summary

The subsurface soil sample results showed contamination with BTEX, PAHs and cyanide is greatest at depths of one to six feet in areas beneath and downgradient of the former relief holder, former distribution holder, former above ground oil tank and tar well areas.

Upgradient soil and groundwater samples had detectable concentrations of BTEX and PAHs, indicating upgradient sources may exist. A review of historical maps identified land uses which could have contributed contamination to the area. An abandoned UST was discovered during the drilling of off-site monitoring well pair GW91-2SH and GW91-2D. The UST was directly upgradient of this well pair.

Downgradient groundwater concentrations of BTEX, PAH compounds and cyanide were above background levels and above Class GA groundwater standards during both rounds. Compounds detected in downgradient groundwater samples were consistent with those detected in subsurface soil samples on-site. Concentrations were generally higher in Round 2 samples, probably due to greater infiltration and percolation from snow melt and increased spring precipitation. Many metals were detected above Class GA standards or guidance values during Round 2. The elevated metals concentrations are likely attributable to turbidity in the groundwater samples caused by low well yields and silt and clay in the formation.

Soil vapor survey results generally agree with subsurface soil sample results in the former relief and distribution holder areas; elevated concentrations of BTEX were identified during both investigation tasks. Soil boring results also confirmed MGP structures (i.e. a holder foundation) exist beneath fill material at the site.

Contaminant sources in the MGP site area include the on-site MGP sources, and may include the UST upgradient of the site. The on-site MGP contaminant sources include the former relief holder, distribution holder, tar well area and the area around the former above ground oil storage tank. Based on the existing data, the extent of highly contaminated material is limited to the immediate area of those former MGP structures.

The density of soil borings identified the principal MGP residue source locations and approximate extent of contamination, but did not allow full delineation of former MGP structures beneath the fill and the precise quantity of highly contaminated soil. The extent of contamination detected near the southern edge of the MGP site was not fully determined, as it appears to extend off-site, particularly in the vicinity of the tar well. Additional upgradient and downgradient soil and groundwater characterization is necessary to determine whether other upgradient contaminant sources exist, and to determine the downgradient extent of groundwater contamination attributable to the site. A more complete description of the additional characterization work required is provided in Section VI.

SECTION V

PRELIMINARY QUALITATIVE RISK ASSESSMENT

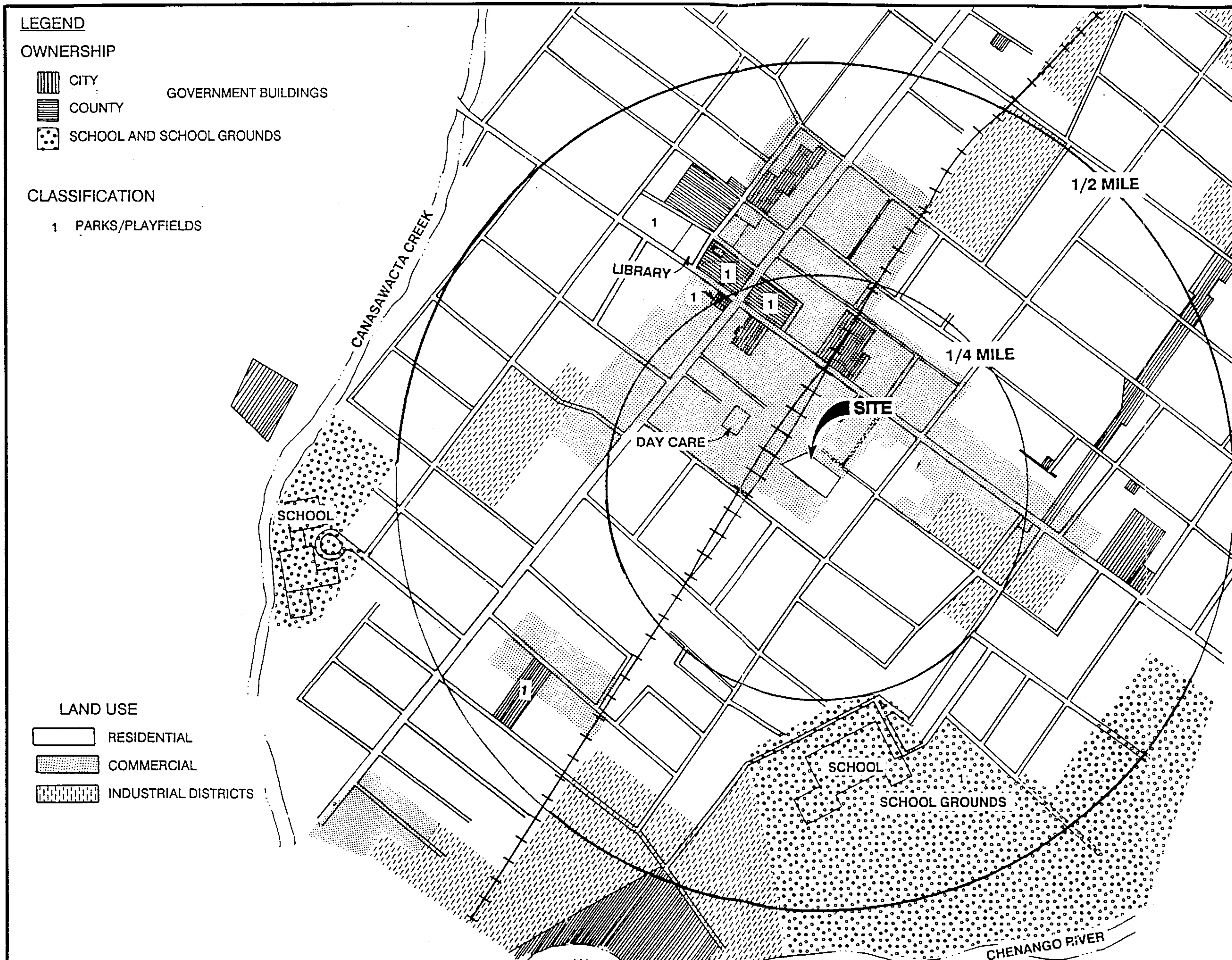
Environmental conditions and contaminants detected during the Task II investigation have been discussed in Section IV. Section V will relate those findings to known land and groundwater usage to determine if an imminent health or environmental threat exists. Figure V-1 identifies land usage within one-half mile of the site. Figure V-2 identifies known groundwater wells within one mile of the site and Table V-1 describes known information about the wells.

In summary, based on the existing data, the levels of BTEX, PAHs, phenolic compounds and cyanide do not pose an imminent risk to human health because concentrations are low and/or the potential for exposure is low. For instance, the most highly contaminated soils on-site are one to six feet below ground surface, and the likelihood of direct contact or other exposure to these subsurface soils is remote. Similarly, groundwater immediately downgradient of the site is not known to be used for drinking or other purposes; the area is served by municipal water wells which are located several thousand feet upgradient of the site. A more detailed qualitative risk assessment is provided in the following paragraphs.

BTEX, PAH compounds and cyanide were detected in subsurface soil and groundwater samples. PAH compounds were also detected in shallow subsurface soil samples. Four phenolic compounds (phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol) were detected in one subsurface soil sample. Concentrations of all of the phenolic compounds, except 4-methylphenol, are considered estimated values because the concentrations are below the detection limits. Dibenzofuran and 2-methylphenol were also detected in groundwaters samples, but the concentration of 2-methylphenol was below the Class GA standard and no Class GA standard exists for dibenzofuran. Table V-2 identifies the individual compounds of interest detected during the Task II investigation, the matrices containing the contaminants, and a description of the toxicological and carcinogenic properties of the compounds.

BTEX compounds are components in gasoline, lacquer thinners, paint solvents and in degreasing and cleaning agents. BTEX compounds are also present in automobile exhaust and cigarette smoke (Sittig, 1980). The levels of BTEX compounds found in the subsurface soils and groundwater do not pose an imminent health risk.

PAH compounds are constituents in petroleum and coal tars. They are formed by incomplete combustion due to limited amounts of oxygen. Approximately 50 percent of urban exposure to PAHs is from automobile exhaust. PAH compounds are produced by cigarettes, charcoal grills, refuse burning and are constituents in moth balls and insecticides (Sittig, 1980). The levels of PAH compounds found in



ENGINEERING - SCIENCE

NYSEG CODE CGNO
NORWICH, NEW YORK

LAND USAGE MAP

FIGURE V-1

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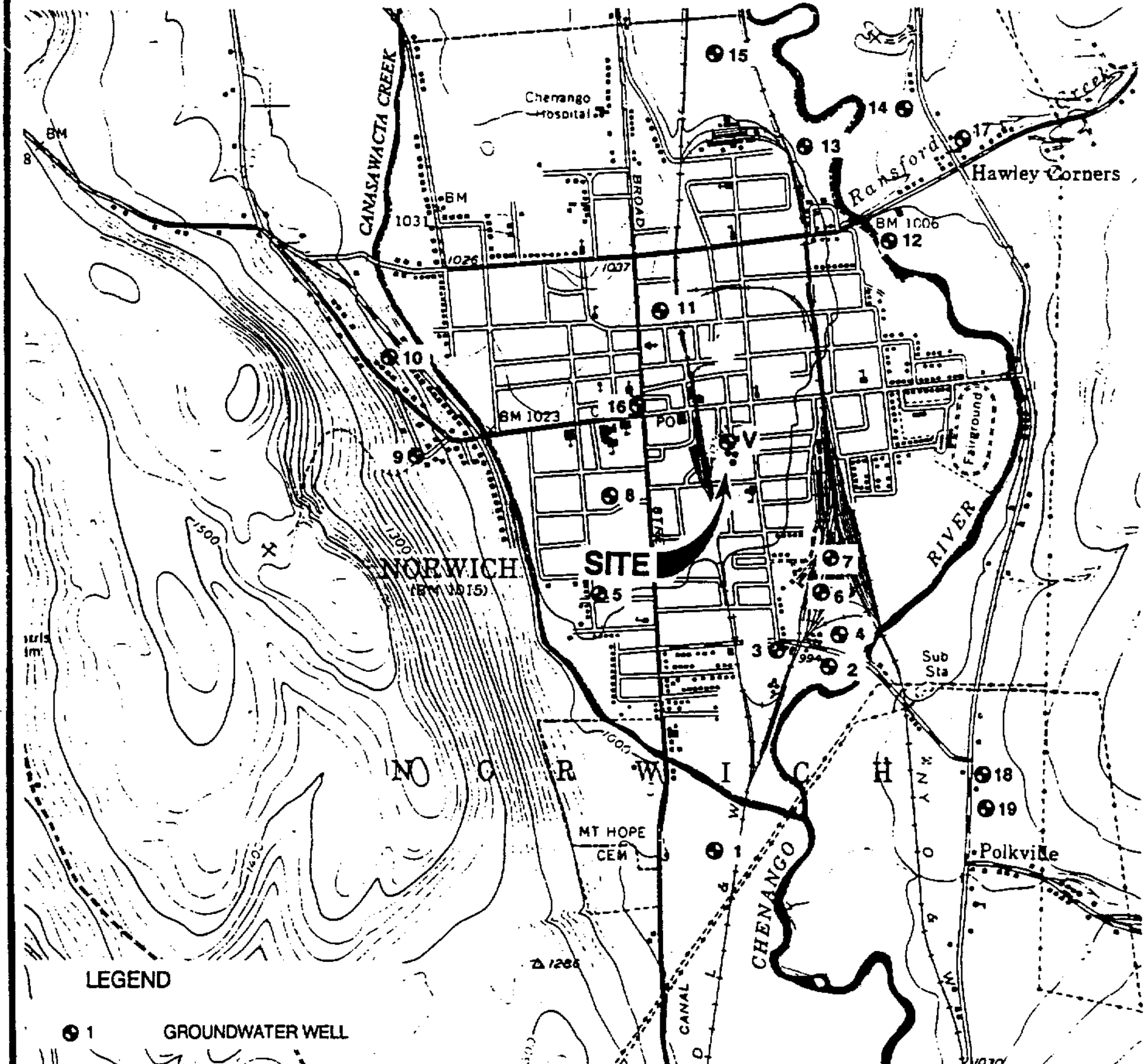

SOURCE: U.S.G.S. 7.5 SERIES TOPOGRAPHIC MAP. NORWICH QUADRANGLE N.Y. - CHENANGO CO. 1943

LATITUDE: 42°31'46"
LONGITUDE: 75°31'11"

SCALE

0 2000 4000 FT.

2000 FT.

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NYSEG CODE CGNO
NORWICH, NEW YORK

WELL LOCATION MAP

FIGURE V-2

TABLE V–1
NEW YORK STATE ELECTRIC AND GAS
NORWICH, NEW YORK
GROUNDWATER USAGE
WITHIN ONE MILE RADIUS

WELL NUMBER	WELL LOCATION	DISTANCE FROM SITE (ft)	WELL DEPTH (ft)	BOTTOM OF CASING (ft)	AQUIFER	DISCHARGE (GPM)	USE OF WATER	OWNER
1	D	4,875	229	229	QUATERNARY	500	COM./BUS./NON–MANUFACTURING	RECREATION FSP
2	D	2,875	57	–	QUATERNARY	–	USE NOT KNOWN	–
3	D	2,450	418	373	QUATERNARY	125	INDUSTRIAL	MCREESE
4	D	2,575	67	–	QUATERNARY	–	USE NOT KNOWN	CITY OF NORWICH
5	D	2,400	230	230	QUATERNARY	–	IRRIGATION	CHARLES ALLYN
6	D	2,000	72	–	QUATERNARY	–	USE NOT KNOWN	–
7	D	1,700	102	–	QUATERNARY	–	USE NOT KNOWN	–
8	D	1,625	375	–		150	INDUSTRIAL	NORWICH PHARMACEUTICAL
9	U	4,050	300	30	BEDROCK	–	DOMESTIC	LIBBY
10	U	4,600	300	14	BEDROCK	1.5	DOMESTIC	BARROWCLOUGH, C.
11	U	2,100	460	–	BEDROCK	7	DOMESTIC	NASSAR, AL
12	U	3,400	33	22	QUATERNARY	170	PUBLIC SUPPLY	CITY OF NORWICH
13	U	4,075	31	21	QUATERNARY	1,000	USE NOT KNOWN	BORDEN MILK CO.
14	U	4,925	257	257	–	30	DOMESTIC	BARRETT, ERNEST
15	U	5,125	233	204	QUATERNARY	1,020	PUBLIC SUPPLY	CITY OF NORWICH
16	U	1,450	–	–	–	–	AIR CONDITIONING/TOILETS	BLUEBIRD DINER
17	U	5,000	–	–	–	–	PUBLIC SUPPLY	MILLER'S TRAILER PK.
18	D	5,050	–	–	–	–	PUBLIC SUPPLY	MAPLE GROVE E. TRLR. PK.
19	D	5,250	–	–	–	–	PUBLIC SUPPLY	MAPLE GROVE W. TRLR. PK.
V	U	120	–	–	–	–	MANUFACTURE OF ICE	VICTORY MARKETS

– INFORMATION NOT AVAILABLE. WELL LOCATION: D–DOWNGRADIENT, U–UPGRADIENT.
SOURCES OF INFORMATION: USGS GROUNDWATER WELL DATA BASE; NYSDOH NYS ATLAS OF COMMUNITY WATER SYSTEM SOURCES, 1982; NORWICH WATER DEPT.
Note: Domestic use has not been verified with well owner.

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the subsurface soils and groundwater may constitute a chronic health risk if exposure occurs repeatedly over a period of years. However, the levels of PAH compounds found in the groundwater, subsurface soils and shallow subsurface soils do not pose an acute, or imminent risk to human health.

Phenolic compounds are commonly used in the manufacture of chemicals and resins, disinfectants, solvents, pharmaceuticals, etc. and is an additive or constituent of lubricants and gasoline. Phenol is used in throat and skin medications (Sittig, 1980). The levels of phenolic compounds reported in the subsurface soils and groundwater do not pose an imminent health risk.

Cyanide is commonly found in paint sludges and residues and in high concentrations in rat poison. It is used in the steel, plastic, and chemical industries (Sittig, 1980). The levels of cyanide found in the subsurface soils and groundwater do not pose an imminent health risk.

Although the existing potential for exposure is remote, exposure pathways do exist and include air, dermal contact and ingestion of contaminated soil or groundwater. Contact or oral exposure to contaminated subsurface soils at the site is remote because the site is mostly covered by asphalt or compacted gravel fill. Inhalation of VOCs and the semivolatile PAH compounds from contaminated soils is similarly limited. During excavation work, however, the potential for exposure is increased, and work crews could be exposed to contaminants via the oral, inhalation, and dermal routes. Appropriate health and safety measures would be necessary.

One pathway that has not been fully investigated is exposure to groundwater contamination in homes where shallow groundwater may intermittently flood the basements, or where drains or sumps may act as vents into the homes. However, the levels of BTEX and PAHs presently detected in groundwater downgradient of the site do not suggest an imminent threat exists. Additional downgradient monitoring wells would be useful in identifying the limit of groundwater contamination and the associated risk. Groundwater flow is generally to the south and southeast, towards the Chenango River. There are five wells (wells 2, 3, 4, 6, and 7; Table V-1 and Figure V-2) that may be potentially impacted by groundwater flowing from the site toward the Chenango River. The closest well (well 7) is approximately 1700 feet southeast from the site. The water from well 3 is used industrially but the use for the other wells is not known. It is highly unlikely that any of these wells are or will be used for drinking water because the area is served by the Norwich municipal water system.

There are four wells listed on Table V-1 as being for domestic use (wells 9, 10, 11 and 14), and five wells are reportedly used for public supply (wells 12, 15, 17, 18 and 19). Although the present use of these wells has not been verified with the owners, all four domestic wells are located upgradient of the Norwich MGP site and would not be impacted by the site. Of the public supply wells, Numbers 12, 15 and 17 are also located upgradient of the MGP site and would not be impacted. Wells 18 and 19 are located on the south side of the Chenango River, and would not be impacted by the Norwich MGP site because shallow groundwater probably discharges to the river. Based on the existing data, it is anticipated that groundwater

TABLE V-2
TOXICOLOGICAL PROPERTIES OF SIGNIFICANT COMPOUND CLASSES IDENTIFIED IN VARIOUS MATRICIES
NYSEG NORWICH MGP SITE

Compound Class	Compound *	Matrices Containing Compound	Toxicological Properties
Volatile Organic Compounds	Benzene ©	GW, SB, SS	BTEX compounds are absorbed readily through the respiratory and gastrointestinal tracts and can be absorbed through the skin and eyes. Benzene is a potential carcinogen. Depending on the levels of exposure to BTEX, toxic effects of the liver and kidneys may occur. BTEX compounds also act as central nervous system depressants and respiratory irritants.
	Toluene	GW, SB, SS	
	Ethylbenzene	GW, SB, SS	
	Total Xylenes	GW, SB, SS	
Polynuclear Aromatic Hydrocarbons	Naphthalene	GW, SB, SS	PAH compounds vary in toxicity by individual compound. They are generally highly lipid-soluble and are absorbed through the respiratory and gastrointestinal tracts, and to a lesser extent through the skin. Many PAHs, but not all, are potentially carcinogenic. Acute toxicity and chronic toxicity of low level exposure are not well understood.
	2-Methylnaphthalene	GW, SB, SS	
	Acenaphthalene	GW, SB, SS	
	Acenaphthene	GW, SB, SS	
	Fluorene	GW, SB, SS	
	Phenanthrene	GW, SB, SS	
	Anthracene	GW, SB, SS	
	Fluoranthene	GW, SB, SS	
	Pyrene	GW, SB, SS	
	Benzo(a)anthracene ©	GW, SB, SS	
	Chrysene ©	GW, SB, SS	
	Benzo(b)fluoranthene ©	GW, SB, SS	
	Benzo(k)fluoranthene	GW, SB, SS	
	Benzo(a)pyrene ©	GW, SB, SS	
	Ideno(1,2,3,-cd)pyrene ©	GW, SB, SS	
	Dibenzo(a,h)anthracene ©	GW, SB, SS	
	Benzo(g,h,i)perylene	GW, SB, SS	
Phenolic Compounds	Phenol	SB	Phenolic compounds, depending on dosages, may produce liver and kidney toxicity and central nervous system effects. Phenolic compounds are respiratory and skin irritants.
	2-Methylphenol	GW,SB	
	4-Methylphenol	SB	
	2,4-Dimethylphenol	SB	
Inorganic Compounds	Cyanide	GW, SB, SS	Bioavailable cyanide at high levels can have toxic effects on the liver, kidneys, central nervous system, and cardiovascular system.
	Amenable Cyanide	GW, SB, SS	

Matrices: GW=Groundwater, SS=near surface soil, SB=subsurface soil

*=compounds were detected in various samples and matrices. Refer to summary tables in Section IV for detected concentration values.

©=known or suspected carcinogen.

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contamination originating from the MGP site would be diluted or degraded to nondetectable concentrations before reaching the Chenango River.

Given that a day care facility and two schools are located within a one-half mile radius of the site, access to the facility, especially during excavations, should be controlled. The existing chain-link fence should be maintained and sections replaced as needed.

SECTION VI

RECOMMENDATIONS

A Task III investigation is recommended to supplement Task II information and to fill identified data gaps. Soil contamination (i.e. levels substantially above background) was identified in subsurface samples collected near the south (downgradient) and north (upgradient) edges of the site boundaries. Groundwater contamination (i.e. levels substantially above background) was also identified in monitoring wells GW91-4SH and GW91-4D along the southern edge of the site, and to a lesser extent in off-site wells GW91-5 and GW91-6. Groundwater and soil contamination were also identified in upgradient monitoring wells GW91-1, GW91-2SH and GW91-2D. Additional groundwater and soil sample coverage is needed to define the limits of contamination. Additional deep on-site borings are needed to better define the topography of the clay layer which forms the base of the aquifer, and to develop a vertical profile of MGP residue contamination. Test pit excavations are recommended to further characterize the location, depth and configuration of former MGP structures and the limits of MGP residue source areas. A Task III report will present the new data and relate that data to the Task II findings. A brief description of the proposed Task III investigation is provided in the following paragraphs. A detailed scope of work and cost estimate for the Task III investigation has been provided to NYSEG under separate cover.

Supplemental Soil Investigation

A supplemental soil investigation is recommended, including surface soil sampling, test pit excavations, and additional soil borings.

Five surface soil samples are recommended to evaluate the presence of MGP residues in backyards adjoining the south and east sides of the site. Shallow subsurface soil samples collected off-site during the Task II investigation did not fully evaluate the presence of MGP residues and the associated direct contact risk. Three background surface soil samples are also recommended.

On-site test pit excavations in the vicinity of the former relief holder and tar wells are recommended to more precisely determine the location, size and configuration of former MGP subsurface structures. Excavations in the vicinity of the suspected purifier chip disposal area are recommended to confirm whether purifier wastes are present. The Task II borings identified the former MGP structures and associated contamination, however the borings did not fully determine the location, size, and configuration of the former MGP structures, particularly the purifier chip disposal area and tar well(s). The additional information can be collected during one day of on-site work, and will allow more definitive quantification of the volume of any residue present.

A deep soil boring near the former relief holder is also recommended. The boring will determine whether MGP residues are migrating downward to the top of the clay layer. Soil samples from above the clay layer and from at least twelve inches into it will determine whether the clay layer is an effective barrier to downward migration. Vertical permeability testing of the clay layer is also recommended to determine if the clay layer is an effective barrier to downward groundwater migration. Soil sample analyses for VOCs are recommended to investigate the detection of chlorinated VOCs by Task II soil vapor survey.

Four additional deep borings are recommended to the west of the MGP site. These borings will further define the topography of the clay layer. These borings will also help determine if MGP residues are migrating along the top of the clay.

Supplemental Groundwater Investigation

A supplemental groundwater investigation is recommended to characterize the lateral and vertical extent of contamination in the uppermost waterbearing zone. The additional three well pairs and three single wells will fill data gaps and extend well coverage to the north and south. Groundwater contamination was detected in monitoring wells GW91-4SH and GW91-4D, located near the southern MGP site boundary. Low-level groundwater contamination was also detected in off-site monitoring wells GW91-5 and GW91-6. Groundwater contamination was also detected in upgradient monitoring wells GW91-1 and GW91-2SH and GW91-2D. Seven additional downgradient and two upgradient wells are recommended to define the limits of groundwater contamination. An inspection of basements in residences adjacent to the site is recommended to identify potential exposure pathways to contaminated groundwater, such as sumps, drains or periodic flooding.

Soil sampling in Task III monitoring well borings is recommended to determine the presence and extent of contaminated soils. A sampling plan similar to that used during the Task II investigation is recommended.

Continued monthly water level measurements and quarterly groundwater sampling are recommended. Task III wells should be monitored and sampled for the same parameters and on the same schedule as the Task II wells.

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APPENDIX A

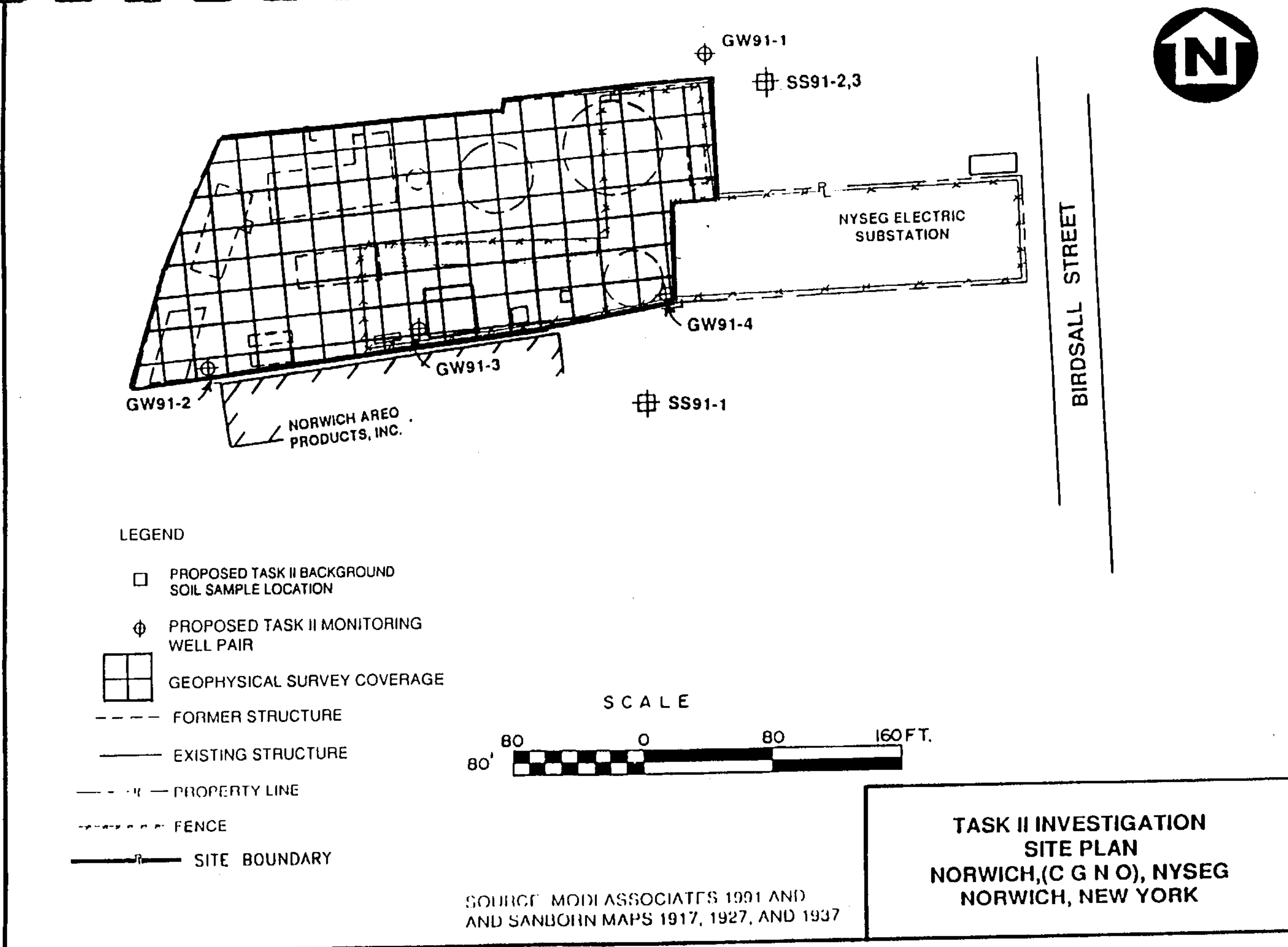
TASK II GEOPHYSICAL SURVEY METHODS AND RESULTS

GEOPHYSICAL SURVEY

An electromagnetic geophysical survey was performed at the Norwich MGP site with a Geonics EM-31 terrain conductivity meter. The survey was conducted to delineate possible buried structures or groundwater contamination associated with the MGP site. The survey area coverage was determined based on information provided by Sanborn maps and field observations. The survey covered a 160 by 370 foot area as shown in Figure 1.

A 20 by 20 foot survey grid was delineated in the field with the aid of a transit. Conductivity measurements were collected and recorded in two directions at each grid node during the geophysical survey. Conductivity was monitored between grid nodes. Significant changes in the conductivity were noted in the field book and the extent of each anomaly was delineated.

The results of the survey are presented in Table 1. The data was plotted using statistical krieging. The results are presented in Figure 2. Anomalous conductivity measurements resulting from recent site alterations were observed in the southern and northeastern portions of the site. A concrete truck pad with possible reinforcing steel bars resulted in anomalous measurements in the northeastern portion of the site. Overhead powerlines and gas lines trending east-west obscured measurements in the southern portion of the site. section of the site. Two areas of conductivity lows are present on Figure 2. The source of the low conductivity in these areas is not known.



TASK II INVESTIGATION
SITE PLAN
NORWICH,(C G N O), NYSEG
NORWICH, NEW YORK

FIGURE 2

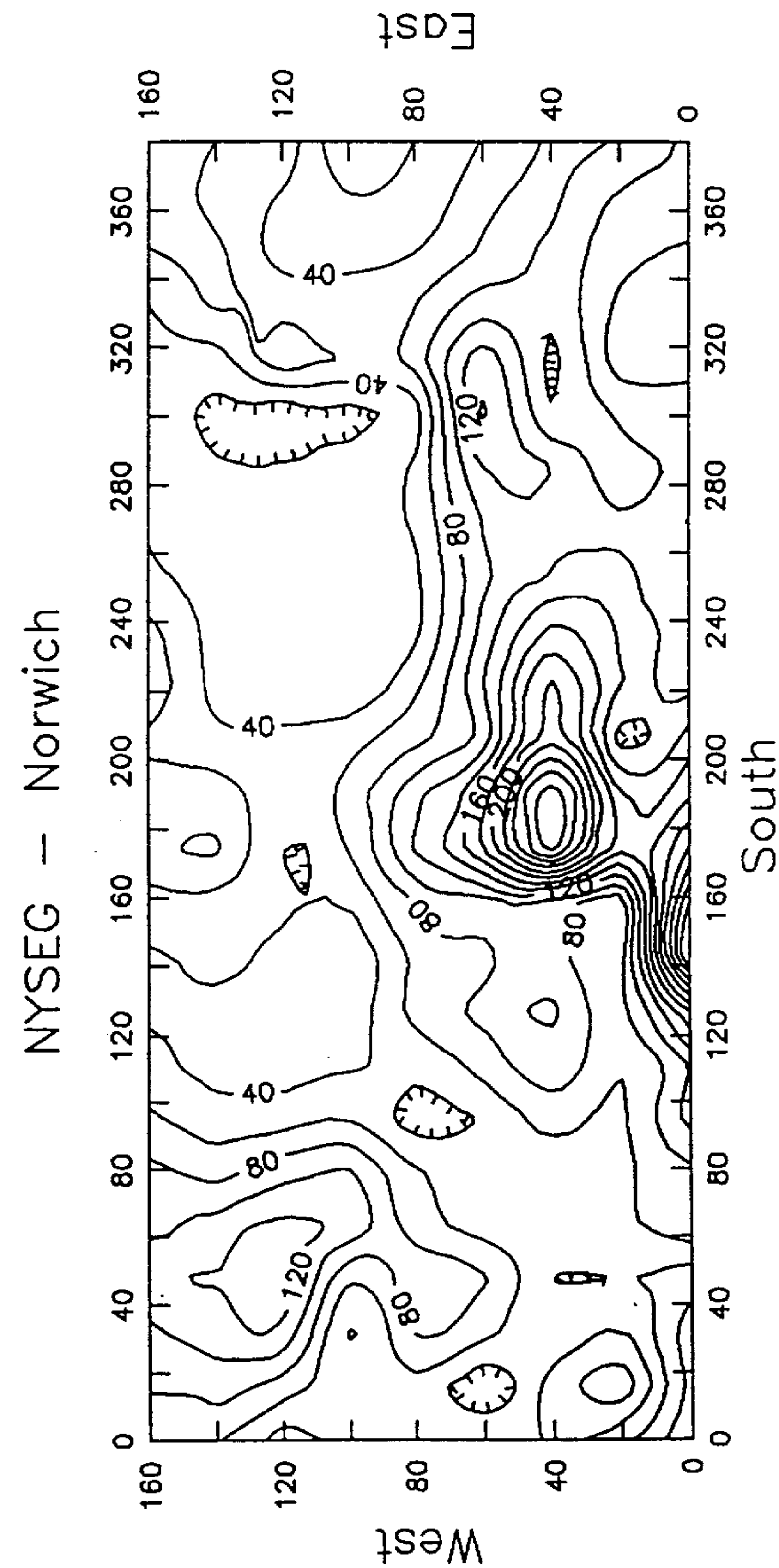

NYSEG — Norwich
East
West
South
0
40
80
120
160
200
240
280
320
360

TABLE 1

16

0,160	Victory Loading Docks Concrete Slabs			–	85	(100,160) 58	40	34	54
0,140				–	72	39	28.5	47	52 (90/180)
0,120	30	80	150	130	92	37	27	31	46
0,100	48	99	13	120	101	50	32	16	44
0,80	50	57	110	70	62	18	68	64	84
0,60	58	12	100	51	46	42	83	74	44
0,40	62	71	24	58	44	80	110	98	85
0,20	45	107	41	52	56	52	61	56	61
0,0	>1000	10	>1000	76	76	(100,0) 120	94	310	285

surface drain

Fence

17

(200,160) 78	51 (25)	75	65	36	38	(300,160) 36	38	N 38	84	(400,160) 68
98	48	33	31	29.5	24.5 / 12	12.5 / 33	32	82	48	60
31	48	31	29	27	31	1	92	25	37	53
62	64	21.5	24	27	31 / 11.5	65		38	25	–
135	83	55	29	32	42	25 / 71		45		
200	100	120	103	99	120	145	135	70		
380	240	210	160	105	130	80	67	86		
183	94				87		140	120		
(200,0)					(300,0)					(400,0)

Building

SUBSTATION

fence

9-inch metal [illegible]

(40,20) Varied 20 points with CM-31 [illegible]

EW-orientation ~~East-West~~ West to East

18

Victoria Loading Dock

PAD

					(100,160)					(200,160)				(300,160)					(400,160)
0,160				180	101	64	39	32	57	78	16	40	61	38	38	31	35	38 x	x	x
0,140				100	57	31	25	44 21	54 20,15	62	50	38	32	26.5	54	24.5	31	72	48	50
	-	-	-	155	105	35	30	24.5	31	31	50	32	24	22.5	31	16	60	37	37	40
0,100	50	52	39	120	94	56	30	33	40	89	94	33	25.5	31	31 ~~34~~ ~~17.4~~	34	64	40	32	72
0,80	50	72	130	94	55	26	1	32	48	73	100	58	31	31	44	21	97	46	47	
0,60	62	44	125	56	46	57	84	55	44	200	120	165	58					64	120	
0,40	75	99	58	56	52	82	44	34	73	180	125		76	88	61	64	~~44~~	72	35	
0,20	83	102	47	-	-	-	3.6	21	32	29.5	50			84		68	~~38~~ 61	50		
0,0						(100,0)				(200,0)				(300,0)					(400,0)

N

19

EM - Orientation ~~North - South~~ South to North

(320,20) inaccurate reading

Depart site 3:00 PM
11-14-91
ABW

APPENDIX B

SOIL VAPOR SURVEY METHODS AND RESULTS

NEW YORK STATE ELECTRIC & GAS CORPORATION
FORMER MANUFACTURED GAS PLANT
NORWICH, NEW YORK

SOIL VAPOR SURVEY METHODS AND RESULTS

Galson
Laboratories

6601 Kirkville Road
E. Syracuse, NY 13057
Tel: (315) 432-0506
1-800-950-0506

DOH ELAP # 10186

12-20-91

Mr. George Moreau
Engineering Science
290 Elwood Davis Rd.
Liverpool NY 13088

Client Account # 11166 Login # 6151

Dear Mr. Moreau:

Enclosed are the analytical results of the samples submitted to our laboratory 12-11-91.

As you requested, a GC/MS analysis and subsequent library search of the most abundant compounds present in each sample were performed. The estimated concentrations listed are based on the response of the fluorobenzene internal standard. Due to the nature of the samplers, complete transfer of each sample to the detector could not be achieved. It is evident that at least 25% of the sample remained in the vessel, although the use of the internal standard for quantitation should account for the sample size difference. Please be aware that the concentrations listed are estimations only; and these may differ significantly from values determined using individual calibration responses for each compound.

Please contact Nancy Ackerman, our Industrial Hygiene Client Services Manager, at (315) 432-0506 or (800) 950-0506 extension 305, if you require additional information regarding this report.

Sincerely,

Gale G. Sutton, CIH
Laboratory Director

LABORATORY ANALYSIS REPORT

Galson Laboratories

Client:	Engineering Science	**Sample ID:**	P-18
Site:	NYSEG Norwich	**Lab ID:**	6151-003
Project No:	54236.10.01	**Date Sampled:**	11-Dec-91
Account No.:	11166	**Date Received:**	11-Dec-91

Library Search Results

Compound	Estimated ug/m3	Estimated ppbv
Butane	1780	749
Pentane	350	119
2-Methyl hexane	322	79
3-Methyl hexane	1400	342
Heptane	1290	315
Benzene	113	35
Toluene	120	32
1,1,2-Trichloroethane	85	16
Tetrachloroethylene	133	20
Ethylbenzene	40	9
Xylenes	124	29
1,1,2,2-Tetrachloroethane	71	10

Results were quantified using the response of fluorobenzene.

Method:	Modified TO-14	**Submitted by:**	MK
Media:	Grab Sample	**Approved by:**	M. Kolyer
Date Analyzed:	12/15/91	**Date:**	18-Dec-91

ND = Not Detected NS = Not Specified

UG/M3 = Micrograms per Cubic Meter

PPB = Parts per Billion

LOD = Limit of Detection

LABORATORY ANALYSIS REPORT

Galson Laboratories

Client:	Engineering Science	Sample ID:	P-24
Site:	NYSEG Norwich	Lab ID:	6151-001
Project No:	54236.10.01	Date Sampled:	11-Dec-91
Account No.:	11166	Date Received:	11-Dec-91

Library Search Results

Compound	Estimated ug/m3	Estimated ppbv
2-Methyl hexane	415	102
3-Methyl hexane	2450	599
Heptane	2700	660
Benzene	510	160
Toluene	1190	316
1,1,2-Trichloroethane	93	17
Ethylbenzene	195	45
Xylenes	261	60
1,1,2,2-Tetrachloroethane	59	9

ults were quantified using the response of fluorobenzene.

Method:	Modified TO-14	Submitted by:	MK
Media:	Grab Sample	Approved by:	M. Kelsey
Date Analyzed:	12/15/91	Date:	18-Dec-91

ND = Not Detected NS = Not Specified PPB = Parts per Billion
UG/M3 = Micrograms per Cubic Meter LOD = Limit of Detection

LABORATORY ANALYSIS REPORT

Galson Laboratories

Client:	Engineering Science	**Sample ID:**	P-25
Site:	NYSEG Norwich	**Lab ID:**	6151-002
Project No:	54236.10.01	**Date Sampled:**	11-Dec-91
Account No.:	11166	**Date Received:**	11-Dec-91

Library Search Results

Compound	Estimated ug/m3	Estimated ppbv
2-Methyl hexane	331	81
3-Methyl hexane	1780	435
Heptane	2020	494
Benzene	191	60
Toluene	446	118
1,1,2-Trichloroethane	95	18
Ethylbenzene	52	12
Xylenes	184	42
1,1,2,2-Tetrachloroethane	40	6

Results were quantified using the response of fluorobenzene.

Method:	Modified TO-14	**Submitted by:**	MK
Media:	Grab Sample	**Approved by:**	M. Kelc...
Date Analyzed:	12/15/91	**Date:**	18-Dec-91

ND = Not Detected NS = Not Specified PPB = Parts per Billion

UG/M3 = Micrograms per Cubic Meter LOD = Limit of Detection

Chain of Custody Record

Page 1 of 1

Galson Laboratories
6601 Kirkville Road East
E. Syracuse, New York 13057
315-432-0506 or 800-950-0506

Company Name	Project Manager/Contact
ES	GEORGE MORWAU

Project No.	Project Name
SY276.10.71	NYSEG NORWICH

Special QA/QC Protocol (Circle)
EPA CLP — EPA SW 846
NYS DEC — NYS DOH
NJ TIER I — CALIFORNIA
NJ TIER II — OTHER (Specify)

SAMPLE LOCATION / SAMPLE ID	Date	Time	TYPE Comp.	TYPE Grab	Aqueous	Soil	Other	A–K	Laboratory ID Number	PARAMETERS FOR ANALYSIS: GC MS (VOLATILES)
P-24	12-11	1530		X			X	6151-001		X
P-25	↓	1439		X			X	6151-002		X
P-18	↓	1509		X			X	6151-003 P-18		X

Task No.

REMARKS:

SAMPLERS NAME: [signature] **SIGNATURE:**

SAMPLES RELINQUISHED BY:		SAMPLES RECEIVED BY:	
NAME: MARK J SCHUMACHER SIGNATURE: [signature]	DATE: 12-11-91 TIME: 1820	NAME: Anne Lee SIGNATURE: Anne Lee	DATE: 12/11/91 TIME: 1820
NAME: SIGNATURE:	DATE: TIME:	NAME: SIGNATURE:	DATE: TIME:
NAME: SIGNATURE:	DATE: TIME:	NAME: SIGNATURE:	DATE: TIME:

Received For Laboratory By: (Signature) [signature] DATE: 12/12/91 TIME: 8:00 AM

Custody Seal Intact?Sample ☐ Yes ☐ No ☐ N.A.

Shipment Complete? ☐ Yes ☐ No

LabStor. Location (Ref. #)	A	B	C	D	E	F	G	H	I	J	K	L

2/89

ATTACHMENT B

FIELD GC CHROMATOGRAMS

2) SET - UP

PHOTOVAC

~~OCT 15 1991 07:19~~ 12-2-91 ~07

FIELD: 01
FIELD: 20

PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

PHOTOVAC

START..............................
STOP # 3.3
SAMPLE LIBRARY 1 DEC 2 1991 10:38
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 10 SYRINGE AMBIENT

OFFSET 6.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 800.0 Sec
CYCLE TIME 0 Min

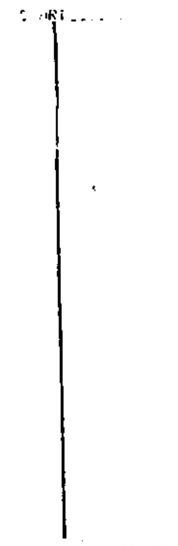
COMPOUND NAME PEAK R.T. AREA/PPM

MACHINE BLANK NO INJECTION

(5

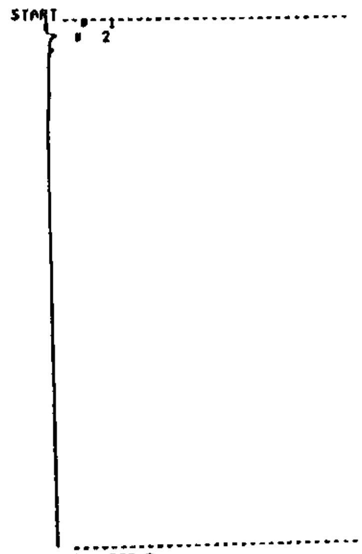
PHOTOVAC

START



STOP #

4) SYRINGE BLANK #1 (AMBIENT AIR   SYRING BLANK #2 / AMBIENT AIR   5

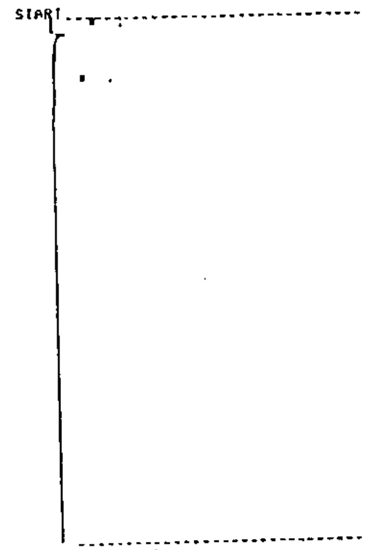


STOP @ 600.0
SAMPLE LIBRARY 1   DEC 2 1991 16:21
ANALYSIS # 3   NYSEG NORWICH
INTERNAL TEMP 28   SUS DEC 1991
GAIN 10   SYRINGE AMBIENT

OFFSET	0.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	600.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME   PEAK   R.T.   AREA/PPM

PHOTOVAC



STOP @ 600.0
SAMPLE LIBRARY 1   DEC 2 1991 16:32
ANALYSIS # 4   NYSEG NORWICH
INTERNAL TEMP 25   SUS DEC 1991
GAIN 10   SYRINGE AMBIENT

OFFSET	0.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	600.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	25.5	28.2 mVS

6

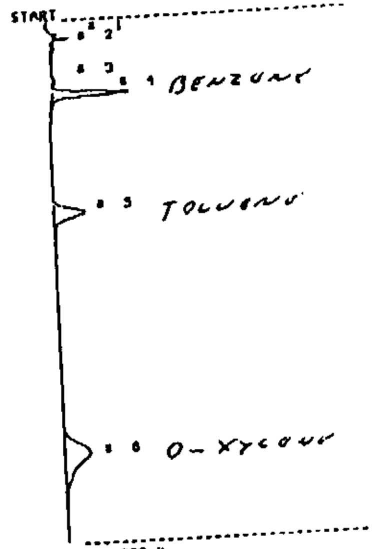
CAL / SET-UP

17

CALIBRATION

BTEX

PHOTOVAC



STOP @ 800.0
SAMPLE LIBRARY 1 DEC 3 1991 15:16
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 26 SUS DEC 1991
GAIN 20 BENZENE STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	33.8	81.1 mVS
UNKNOWN	3	101.5	20.7 mVS
BENZENE	4	122.8	434.3 PPB
UNKNOWN	5	304.3	1.6 VS
UNKNOWN	6	677.4	3.2 VS

PHOTOVAC

1 COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	122.8	1.000 PPM
TOLUENE	2	304.3	1.000 PPM
O-XYLENE	3	677.4	1.000 PPM

PHOTOVAC

CALIBRATED PEAK [illegible]

SAMPLE LIBRARY 1 DEC 3 1991 15:12
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP [illegible] [illegible] 1991
GAIN 20 [illegible]

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	33.8	81.1 mVS
UNKNOWN	3	101.5	20.7 mVS
BENZENE	4	122.8	510.0 PPB
TOLUENE	5	304.3	410.0 PPB
O-XYLENE	6	677.4	550.0 PPB

PHOTOVAC

1 COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	122.8	1.000 PPM
TOLUENE	2	304.3	1.000 PPM
O-XYLENE	3	677.4	1.000 PPM

PHOTOVAC

DEC 3 1991 15:16

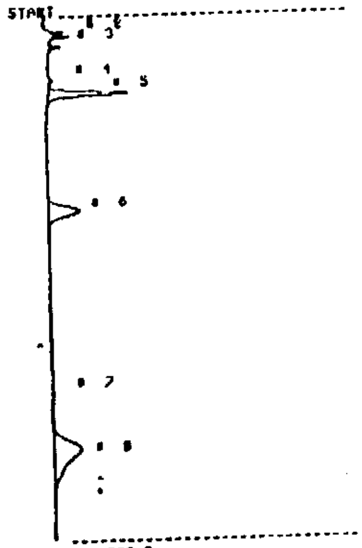
FIELD: 31
POWER: 36

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	120.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

8

CAL

PHOTOVAC



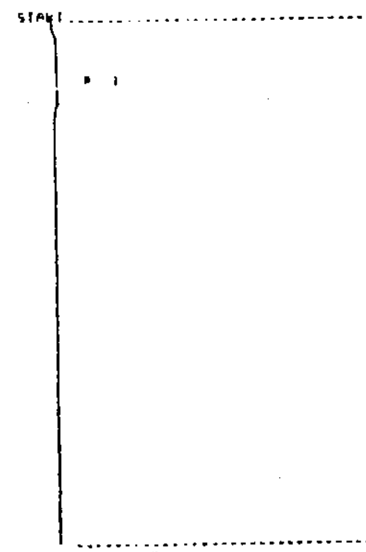
STOP @ 600.0
SAMPLE LIBRARY 1 DEC 3 1991 15:27
ANALYSIS # 14 NYSEG NORWICH
INTERNAL TEMP 26 SUS DEC 1991
GAIN 20 BENZENE STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	25.3	37.8 mVS
UNKNOWN	2	33.1	79.8 mVS
UNKNOWN	3	48.3	82.8 mVS
UNKNOWN	4	101.8	43.2 mVS
BENZENE	5	123.2	511.2 PPB
TOLUENE	6	325.1	410.8 PPB
UNKNOWN	7	578.0	51.6 mVS
O-XYLENE	8	675.1	600.6 PPB

17

MACHINE BLANK

PHOTOVAC



STOP @ 600.0
SAMPLE LIBRARY 1 DEC 3 1991 15:48
ANALYSIS # 15 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 BENZENE STD

COMPOUND NAME PEAK R.T. AREA/PPM

Finity
on 98

111

(111)

SET-UP

12-4-91

N-SEC

NORWICH / SUS

3mg8 / GC OPERATOR

WEATHER / 30° CLOUDY

WORK PLAN / START SUS

·GC CALIB

TO BTEX STD

PHOTOVAC

DEC 4 1991 10:?2

FIELD: 31
POWER: 35

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	150.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

SAMPLE LIBRARY 1 DEC 4 1991 10:30
ANALYSIS # 3 [illegible]
INTERNAL TEMP 23 SUS LEV [illegible]
GAIN 20 MACHINE [illegible]

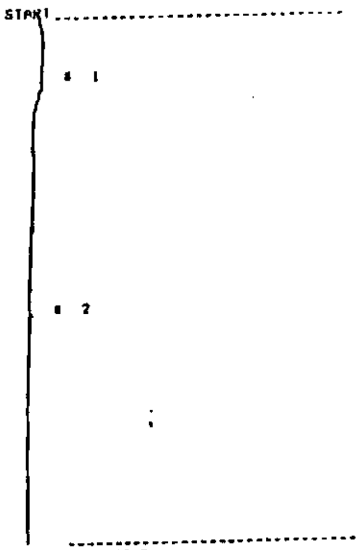
OFFSET	30.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 [illegible]
WINDOW +/-	10 Percent
MINIMUM AREA	20 [illegible]
TIMER DELAY	10.0 Sec
ANALYSIS TIME	800.0 Sec
CYCLE TIME	0 Min

12

MACHINE BLK

PHOTOVAC

START



STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 10:44
ANALYSIS # 4 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 MACHINE BLANK

OFFSET	23.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 16 6 uV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	50 uVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	800.0 Sec
CYCLE TIME	0 Min

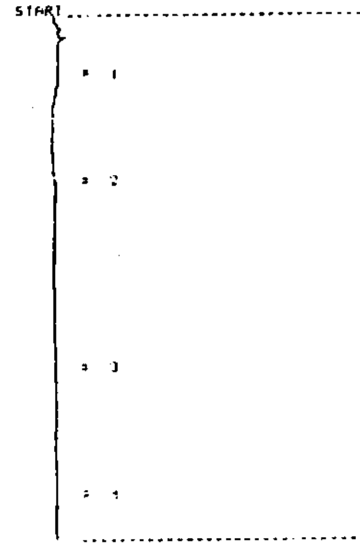
COMPOUND NAME PEAK R.T. AREA/PPM

113

SYRINGE BLANK

PHOTOVAC

START



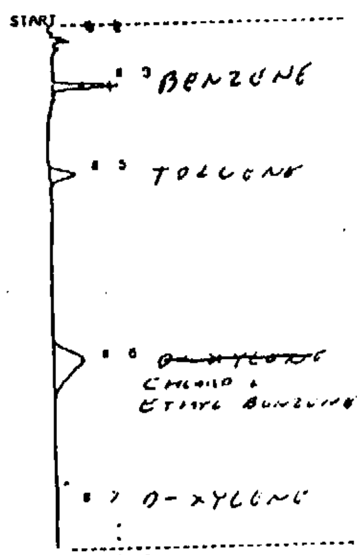
STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 [illegible]
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 20 SYRINGE BLANK

OFFSET	15.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 16 6 uV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	50 uVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	800.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

14) BTEX | CAC

PHOTOVAC



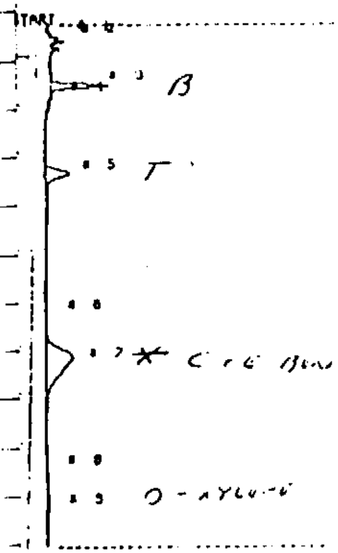
STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 11:10
ANALYSIS # 6 NYSEG NORWICH
INTERNAL TEMP 21 SUS DEC 1991
GAIN 20 SYRINGE BLANK

OFFSET 15.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 800.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.2	26.4 mVS
UNKNOWN	2	27.2	53.2 mVS
UNKNOWN	3	55.2	1.2 VS
UNKNOWN	5	234.6	1.1 VS
UNKNOWN	6	524.3	3.8 VS
UNKNOWN	7	745.3	761.5 mVS

BTEX CAC

PHOTOVAC



STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 11:32
ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 20 BTEX CAL

OFFSET 20.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 800.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.5	50.4 mVS
UNKNOWN	3	55.5	1.2 VS
UNKNOWN	5	235.8	1.1 VS
UNKNOWN	6	445.6	30.1 mVS
UNKNOWN	7	525.7	9.1 VS
UNKNOWN	9	743.1	200.8 mVS

113

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 DEC 4 1991 11:35
ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 20 BTEX CAL

OFFSET 21.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 800.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.5	50.4 mVS
BENZENE	3	55.5	510.0 PPB
TOLUENE	5	235.8	410.0 PPB
UNKNOWN	6	445.6	30.1 mVS
~~O-XYLENE~~	7	525.7	550.0 PPB
UNKNOWN	9	743.1	200.8 mVS

CHLORO + ETHYL BENZENE

PHOTOVAC

COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	55.5	1.000 PPM
TOLUENE	2	235.8	1.000 PPM
~~O-XYLENE~~	3	525.7	1.000 PPM

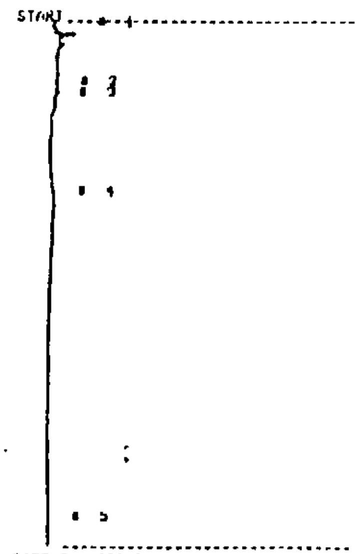
CHLORO + ETHYL BENZENE

1C

17

P-1

PHOTOVAC



STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 11:51
ANALYSIS # 8 NYSEG NORWICH
INTERNAL TEMP 23 SVS DEC 1991
GAIN 20 P-1

OFFSET 21.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 10 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 800.0 Sec
CYCLE TIME 0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.7	15.1 mVS
UNKNOWN	4	270.0	27.5 mVS
UNKNOWN	5	770.0	01.0 mVS

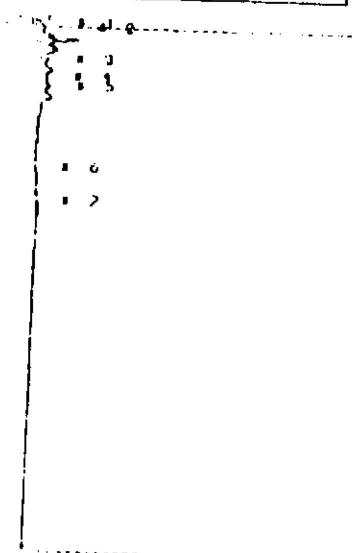
O-XYLENE

? TETRACHLORO-ETHYLENE

167 ppb

P-2

PHOTOVAC



@ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 12:5
ANALYSIS # 9 NYSEG NORWICH
INTERNAL TEMP 24 SVS DEC 1991
GAIN 20 P-2

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.3	138.1 mVS
UNKNOWN	3	65.9	65.7 mVS
BENZENE	4	95.5	27.63 PPB
UNKNOWN	5	110.0	34.0 mVS
TOLUENE	6	236.4	15.01 PPB
UNKNOWN	7	286.7	24.7 mVS

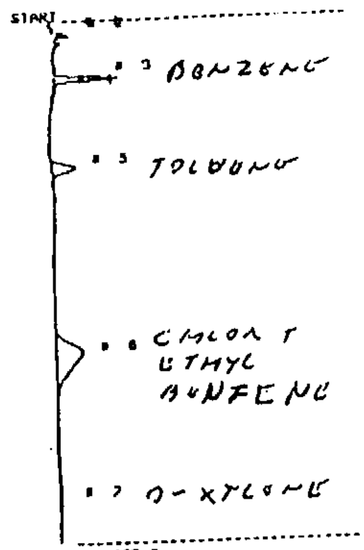
? 1,1,1 TCA

? TETRACHLORO-ETHYLENE

18

CAL BTEX

PHOTOVAC



STOP @ 803.7

SAMPLE LIBRARY	1	DEC 4 1991	12:28
ANALYSIS #	10	NYSEG NORWICH	
INTERNAL TEMP	24	SUS DEC 1991	
GAIN	20	BTEX CAL	

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.5	22.7 mUS
UNKNOWN	2	27.1	58.6 mUS
UNKNOWN	3	55.2	1.2 US
UNKNOWN	5	234.6	1.8 US
UNKNOWN	6	524.3	3.4 US
UNKNOWN	7	745.3	221.6 mUS

19

CAL BTEX

PHOTOVAC

CALIBRATION PEAK 3,BENZENE

SAMPLE LIBRARY	1	DEC 4 1991	12:24
ANALYSIS #	10	NYSEG NORWICH	
INTERNAL TEMP		SUS DEC 1991	
GAIN	20	BTEX CAL	

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.5	22.7 mUS
UNKNOWN	2	27.1	58.6 mUS
BENZENE	3	55.7	510.0 PPB
TOLUENE	5	234.6	410.0 PPB
CHLO ETHY BENZEN	6	524.3	710.0 PPB
O-XYLENE	7	745.3	550.0 PPB

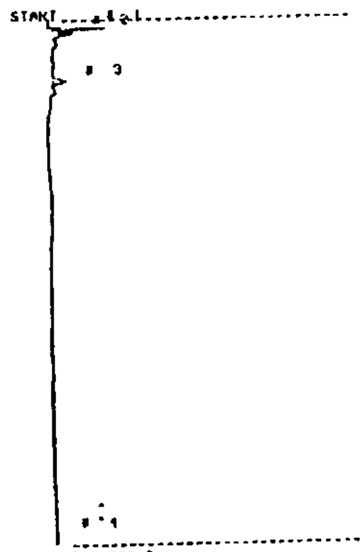
PHOTOVAC

COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	55.2	1.000 PPM
TOLUENE	2	234.6	1.000 PPM
CHLO ETHY BENZEN	3	524.3	1.000 PPM
O-XYLENE	4	745.3	1.000 PPM

20

P-3

PHOTOVAC

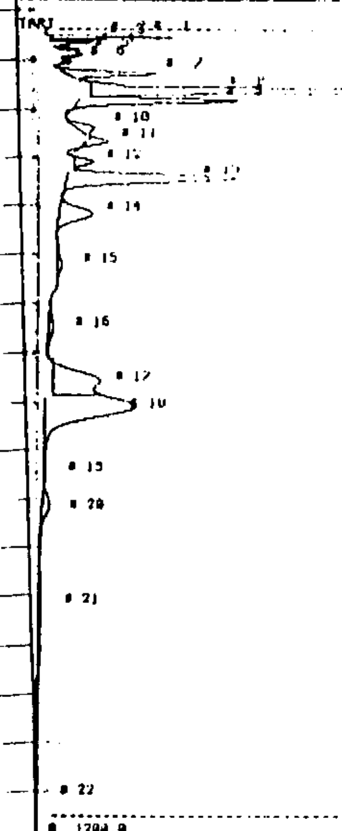


STOP @ 800.0
SAMPLE LIBRARY 1 DEC 4 1991 12:39
ANALYSIS # 11 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-3

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.8	205.6 mUS
UNKNOWN	2	21.5	34.4 mUS
BENZENE	3	95.5	93.79 PPB

P-4

PHOTOVAC



SAMPLE LIBRARY 1 DEC 4 1991
ANALYSIS # 12 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-4

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.4	504.0 mUS
UNKNOWN	2	18.1	300.7 mUS
UNKNOWN	3	21.9	219.9 mUS
UNKNOWN	4	34.5	67.2 mUS
UNKNOWN	6	53.1	159.8 mUS
UNKNOWN	7	69.5	2.0 US
BENZENE	8	93.9	7.275 PPM
UNKNOWN	9	118.2	4.5 US
UNKNOWN	10	152.8	619.0 mUS
UNKNOWN	11	175.2	874.3 mUS
UNKNOWN	12	208.2	1.0 US
TOLUENE	13	234.0	7.924 PPM
UNKNOWN	14	290.7	2.4 US
UNKNOWN	15	369.2	445.6 mUS
UNKNOWN	16	465.2	402.0 mUS
CHLO ETHY BENZEN	17	548.1	1.[illegible] PPM
UNKNOWN	18	567.6	10.7 US
O-XYLENE	20	743.4	1.508 PPM
UNKNOWN	21	851.9	23.5 mUS

22

P-5

PHOTOVAC

START

STOP @ 1000.0
S...E LIBRARY 1 DEC 4 1991 13:20
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-5

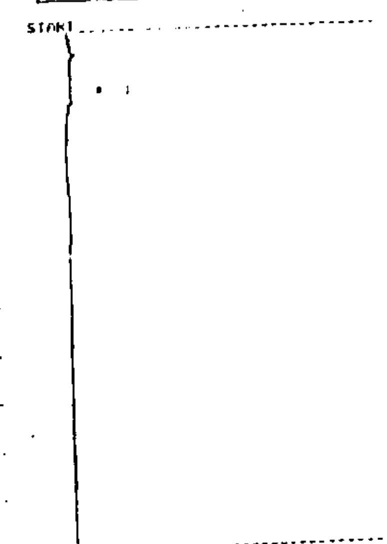
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.5	799.2 mVS
UNKNOWN	2	17.5	270.6 mVS
UNKNOWN	3	21.3	137.5 mVS
UNKNOWN	4	60.9	30.5 mVS
BENZENE	5	94.6	514.0 PPB
UNKNOWN	6	109.6	71.1 mVS
TOLUENE	8	233.4	146.8 PPB
UNKNOWN	9	265.9	100.0 mVS
CHLO ETHY BENZEN	10	545.3	91.00 PPB
UNKNOWN	11	584.8	575.5 mVS
O-XYLENE	12	743.4	205.9 PPB

21

SYRINGE BLANK

PHOTOVAC

START



STOP @ 801.0
S...E LIBRARY 1 DEC 4 1991 13:35
ANALYSIS # 14 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

Projects (continued)

12-2-91 NYSEG NORWICH

11

Mark J Schumacher - ES
GC OPERATOR

• PRE-USE CHECK OUT

CARRIER GAS / ULTRA ZERO AIR

FLOW RATES / 10 ml/min

CAL GAS / BTEX BLEND

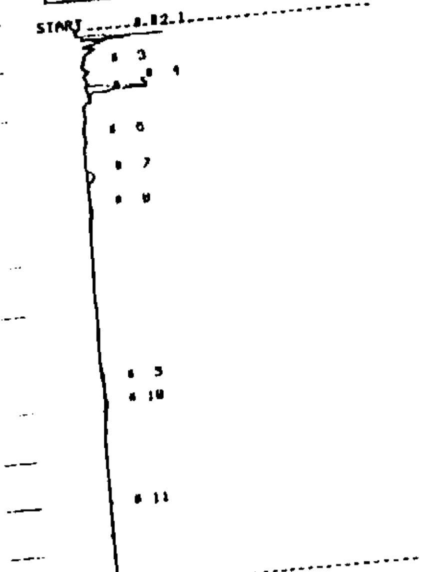
	BENZENE	0.51 ppm
	TOLUENE	0.41
CHANGE	ETHYLBENZENE	0.71, 0.49
	XYLENE	0.55

• MACHINE BLANK / NO INJECTION
• SYRINGE BLANK / INJECTION w/ ∅ AIR
• AMBIENT AIR BLANK / AMBIENT AIR INJ
• DECON BLK / AIR (AMBIENT) BLANK THROUGH PROBE & SAMPLE TRAIN

24

P-6

PHOTOVAC



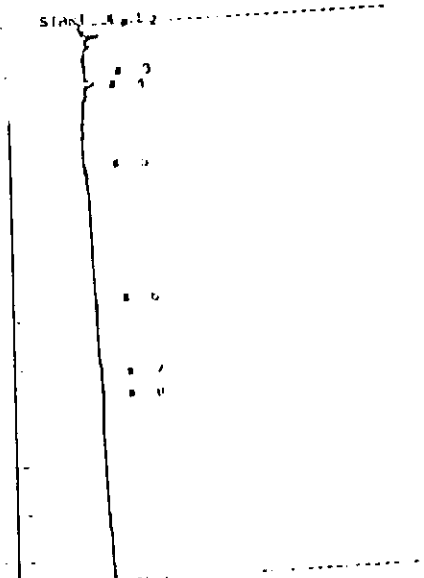
STOP # 850.0
SA[illegible]E LIBRARY 1 DEC 4 1991 13150
ANALYSIS # 15 NYSEG NORWICH
INTERNAL TEMP 22 SVS DEC 1991
GAIN 20 P-6

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.8	510.1 mVS
UNKNOWN	2	18.2	203.6 mVS
UNKNOWN	3	68.5	21.5 mVS
BENZENE	4	94.3	180.3 PPB
UNKNOWN	6	175.2	20.6 mVS
TOLUENE	7	233.4	127.6 PPB
UNKNOWN	8	286.7	129.5 mVS
CHLO ETHY BENZEN	5	548.1	16.19 PPB
UNKNOWN	10	584.0	155.8 mVS

P - 7

25

PHOTOVAC



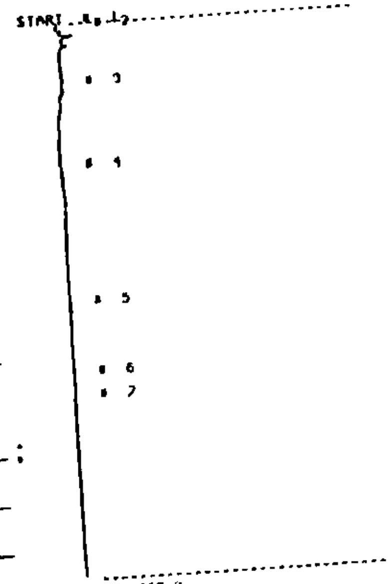
[illegible]
SAMPLE LIBRARY [illegible] DEC 4 1991 141 6
ANALYSIS # [illegible] NYSEG NORWICH
INTERNAL TEMP 2[illegible] SVS DEC 1991
GAIN [illegible] P-7

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	21.6	41.7 mVS
BENZENE	3	94.3	78.00 PPB
TOLUENE	5	234.6	15.54 PPB
UNKNOWN	6	440.0	65.0 mVS
CHLO ETHY BENZEN	7	550.5	6.033 PPB
UNKNOWN	8	583.3	67.8 mVS

2c

P-8

PHOTOVAC



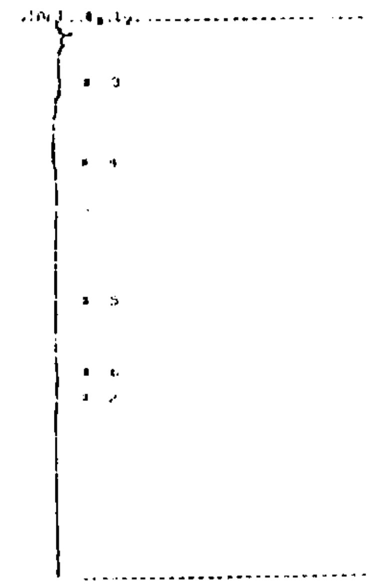
STOP # 850.0
[illegible] LIBRARY 1 DEC 4 1991 14:23
ANALYSIS # 17 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 P-8

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.0	38.5 mVS
TOLUENE	4	238.2	8.573 PPB
UNKNOWN	5	444.8	53.9 mVS
UNKNOWN	7	583.3	38.4 mVS

P-9

21

PHOTOVAC



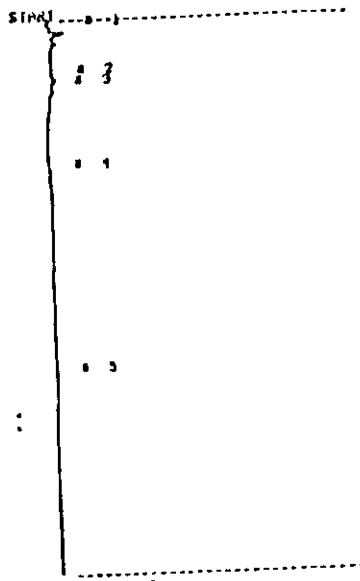
[illegible] # 850.0
[illegible] LIBRARY 1 DEC 4 1991 14:40
ANALYSIS # 18 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 P-9

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.0	32.9 mVS
TOLUENE	4	238.2	7.851 PPB
UNKNOWN	5	447.2	85.9 mVS
CHLO ETHY BENZEN	6	555.1	4.206 PPB

25

P-10

PHOTOVAC



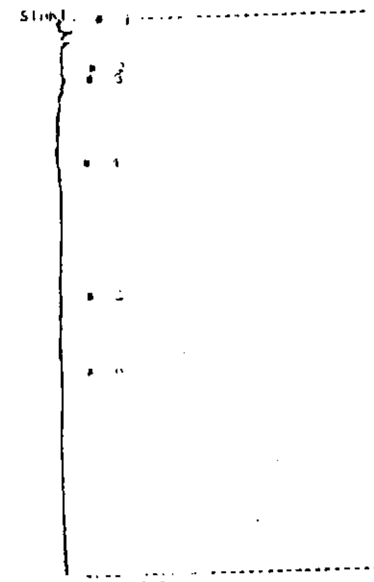
STOP @ 850.0
SAMPLE LIBRARY 1 DEC 4 1991 14:58
ANALYSIS # 19 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 P-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.0	37.4 mVS
BENZENE	2	55.0	20.18 PPB

(24

P-10 DUPLICATE

PHOTOVAC



STOP @ 850.0
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ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP [illegible] SUS DEC 1991
GAIN [illegible] P-10 DUPLICATE

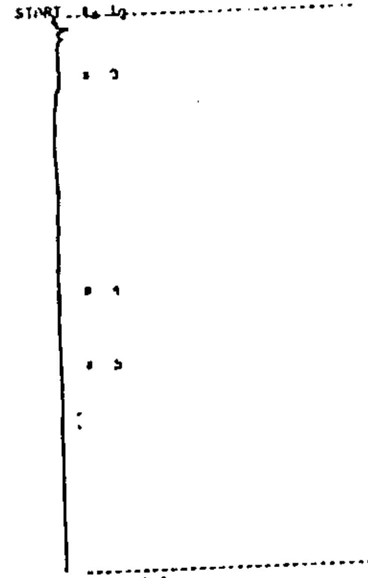
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.0	27.4 mVS
BENZENE	2	55.0	10.02 PPB
UNKNOWN	5	444.0	51.0 mVS

30

P-11

PHOTOVAC

START



STOP @ 850.0
SAMPLE LIBRARY 1 DEC 4 1991 15130
ANALYSIS # 22 NYSEG NORWICH
INTERNAL TEMP 21 SUS DEC 1991
GAIN 20 P-11

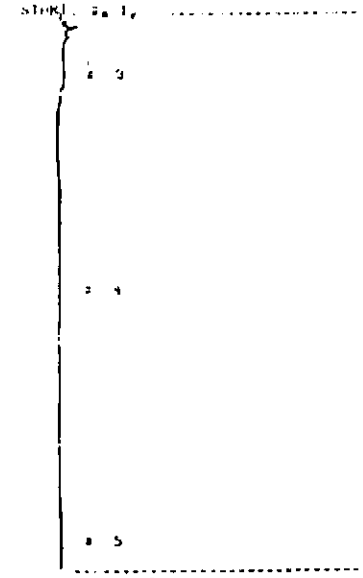
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.2	35.5 AUS
UNKNOWN	4	442.4	113.7 AUS

131

P-12

PHOTOVAC

START



STOP @ 850.0
SAMPLE LIBRARY 1 DEC 4 1991 15146
ANALYSIS # 24 NYSEG NORWICH
INTERNAL TEMP 19 SUS DEC 1991
GAIN 20 P-12

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	21.2	33.7 AUS

32

P-13

PHOTOVAC

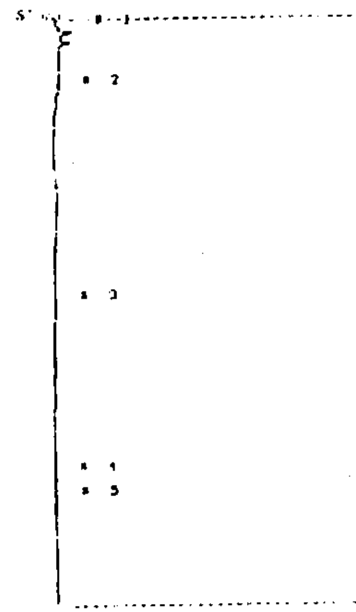
STOP @ 300.0
SAMPLE LIBRARY 1 DEC 4 1991 16:13
ANALYSIS # 25 NYSEG NORWICH
INTERNAL TEMP 20 SUS DEC 1991
GAIN 20 P-13

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	14.9	21.8 mUS
UNKNOWN	2	21.9	39.3 mUS
UNKNOWN	5	442.4	21.9 mUS
UNKNOWN	6	590.0	12.0 mUS

53

P-13 DUPLICATE

PHOTOVAC



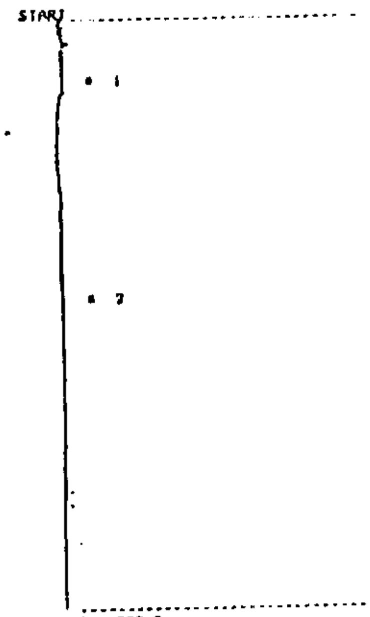
STOP @ 300.0
SAMPLE LIBRARY 1 DEC 4 1991 16:20
ANALYSIS # 26 NYSEG NORWICH
INTERNAL TEMP 21 SUS DEC 1991
GAIN 20 P-13 DUPLICATE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.9	35.7 mUS

34

SYRINGE BLANK

PHOTOVAC



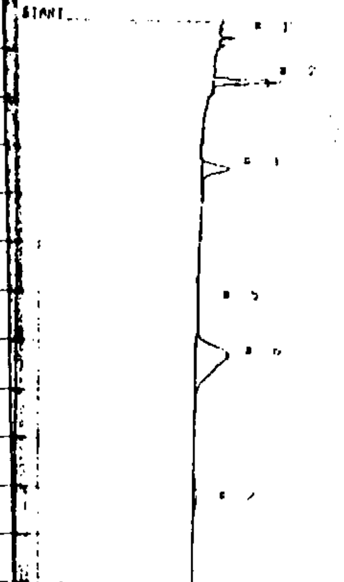
STOP @ 500.0
SAMPLE LIBRARY 1 DEC 4 1991 16:36
ANALYSIS # 27 NTSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

55

BTEX CAL / FINAL

PHOTOVAC



STOP @ 864.7
SAMPLE LIBRARY 1 DEC 4 1991 16:5?
ANALYSIS # 26 NTSEG NORWICH
INTERNAL TEMP 21 SUS DEC 1991
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	22.2	62.6 VS
BENZENE	2	94.9	560.? PPB
TOLUENE	4	235.2	469.1 PPB
CLO ETHY BENZEN	6	525.7	633.0 PPB
O-XYLENE	7	743.1	652.4 PPB

PHOTOVAC

1 COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	95.2	1.000 PPM
TOLUENE	2	234.6	1.000 PPM
CHLO ETHY BENZEN	3	524.3	1.000 PPM
O-XYLENE	4	745.3	1.000 PPM

MACHINE BLANK

OK mD8

LOST STRIP

FINISH
1730

[illegible]

12-5-91 NYSEG / NORWICH

mD8 / GC OPERATOR

WEATHER / 18° SUNNY
LT WIND

WORK PLAN / CONTINUE SVS
SURVEY

GC CALIBRATED TO
BTEX STD

FLOW RATES 10 ml/min

ULTRA 0 AIR / CARRIER

38

SET-UP

PHOTOVAC

DEC 5 1991 7:48

FILL: 31
POWER: 39

SAMPLE	0.0	10.0
CAL.	0.0	0.0
EVENT 3	0.0	170.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

PHOTOVAC

START
STOP # 2.1
SAMPLE LIBRARY 1 DEC 5 1991 8:26
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 10 MACHINE BLANK

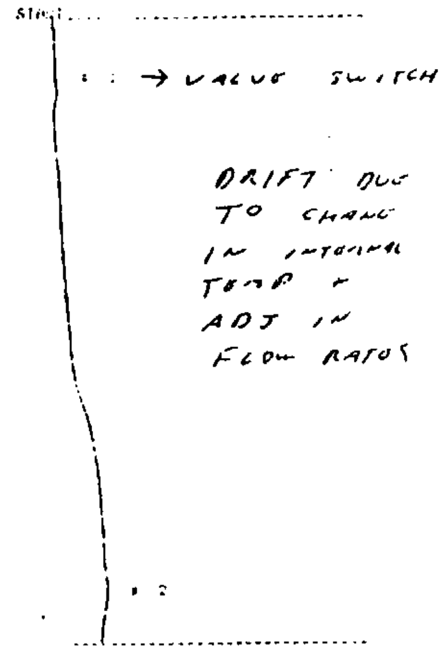
OFFSET 35.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 10 10 0 uV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 uVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

39

MACHINE BLANK

PHOTOVAC



STOP # 350.4
SAMPLE LIBRARY 1 DEC 5 1991 8:25
ANALYSIS # 4 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 10 MACHINE BLANK

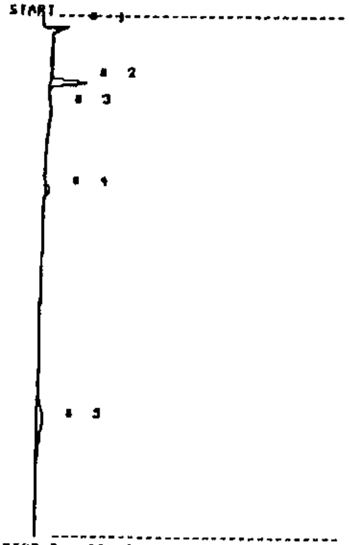
COMPOUND NAME PEAK R.T. AREA/PPM

102

BTEX CAL

PHOTOVAC

START



STOP @ 881.3

SAMPLE LIBRARY 1	DEC 11 1991	13:38
ANALYSIS # 20	NYSEG NORWICH	
INTERNAL TEMP 24	DEC 1991 SUS	
GAIN 20	P-48	

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.8	54.2 mVS
BENZENE	2	105.1	854.9 PPB
TOLUENE	4	274.5	352.2 PPB
C E BENZENE	5	831.9	638.7 PPB

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 1	DEC 11 1991	13:33
ANALYSIS # 20	NYSEG NORWICH	
INTERNAL TEMP 24	DEC 1991 SUS	
GAIN 20	P-48	

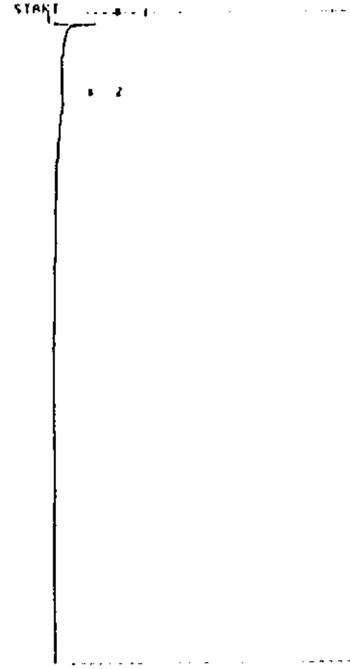
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.8	54.2 mVS
BENZENE	2	105.1	510.0 PPB
TOLUENE	4	274.5	410.0 PPB
C E BENZENE	5	831.9	210.0 PPB

P-47

MICROTIP PPM

PHOTOVAC

START



STOP @ 1000.0

SAMPLE LIBRARY 1	DEC 11 1991	13:53
ANALYSIS # 21	NYSEG NORWICH	
INTERNAL TEMP 25	DEC 1991 SUS	
GAIN 20	P-47	

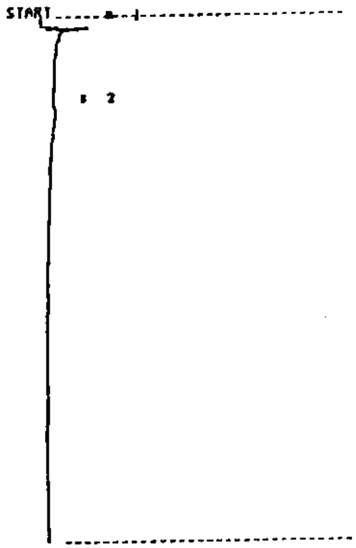
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	254.1 mVS

(104)

P-48

Micarri/e
open

PHOTOVAC



STOP 0 001.4
SAMPLE LIBRARY 1 DEC 11 1991 14:18
ANALYSIS 33 NYEED NORWICH
INTERNAL TEMP 33 DEC 1991 505
GAIN 20 P-48

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	10.1	210.5 mUS

(1..)

INTRODUCTION

A soil vapor survey (SVS) was conducted from December 4 to 11, 1991 by Engineering-Science, Inc. (ES) for the New York State Electric and Gas Corporation (NYSEG) at the former manufactured gas plant site (MGP) located in Norwich, New York. The objectives of the survey were to identify sources of volatile organic compound (VOC) contamination in the unsaturated zone beneath the site, and to determine if a groundwater contaminant plume is present, and if so, to determine its lateral extent. A total of 47 SVS samples were collected from across the former MGP site and around its perimeter.

SOIL VAPOR SURVEY METHODOLOGY

A soil vapor survey utilizes analyses of volatile organic gases collected from the pores of a soil matrix as an indicator of soil and/or groundwater contamination in the vicinity of the sampled point. The distribution of gaseous phase contaminants in the pore spaces of soils has been shown at some sites to correspond with the distribution of contamination in groundwater, however, it more often indicates the presence of VOC sources in the unsaturated zone. Soil vapor surveys are particularly well suited for detection of VOCs such as solvents and petroleum products, and serves as a cost effective screening method to aid in proper placement of soil borings, monitoring wells and remediation systems.

SOIL GAS COLLECTION

Soil gas samples were collected by driving a hollow, vented, stainless steel probe attached to a length of hollow stainless steel pipe into the soil with a demolition hammer. Following installation, the probe was connected to a vacuum pump, using TYGON^{tm} tubing, and purged for 20 to 30 seconds to remove ambient air from the system. Following purging, the probe and tubing were connected to a one-liter Tedlar^{tm} bag contained in a vacuum chamber. The vacuum pump was connected to the chamber, the chamber was sealed, and the vacuum pump was started. The vacuum pump created a vacuum inside the sealed chamber, which in turn, created a vacuum on the outside of the Tedlar^{tm} bag within it, causing the bag to fill. After the Tedlar^{tm} bag was filled, the vacuum pump was shut off, the sample chamber was opened and the Tedlar^{tm} bag valve was closed. The Tedlar^{tm} bag was subsequently removed from the sample train and labeled with the sample point location, date and time of collection. All samples were analyzed within 2 to 3 hours of collection.

Following the collection of a soil gas sample, the sample train was disconnected from the probe and purged with a vacuum pump for several minutes to remove residual soil gases from the sample train. The collection probes were subsequently removed with a truck jack and decontaminated by steam cleaning. The sample train was cleaned daily, or more often if necessary, by washing with Alconox detergent, successively rinsing with potable and distilled water, and air drying.

FIELD ANALYTICAL METHODS/GAS CHROMATOGRAPHY

The one-liter Tedlar™ bags used for sample collection are made of an analytically clean, nonporous polymer designed for high-purity gas sampling. Each bag is equipped with a cut-off valve for connection to the sample collection apparatus, and a septum for sample withdrawal. Soil gas samples are withdrawn with a gas-tight syringe and then injected into the Photovac portable GC.

Soil vapor samples were analyzed using a Photovac 10S50 Portable Gas Chromatograph (GC) with a photoionization detector (PID) equipped with a 10.6 electron volt (eV) bulb, a 9-meter capillary column (CPSiL-19,CB), a 1-meter precolumn/backflush system, and an isothermal oven. The PID is capable of detecting petroleum fuel hydrocarbons and chlorinated solvents in concentrations less than ten parts per billion (ppb). The PID uses an ultraviolet (UV) light source which is directed into a small chamber through which a calibration gas, pure air, inert gas or soil vapor sample passes. Photoionization will occur if the gas stream passing through the chamber contains constituents which have ionization potentials less than 10.6 eV. Pure air and inert gases, like nitrogen or helium, require UV energy greater than 11.0 eV before they can be ionized, which makes them ideal carrier gases. An electric potential of approximately 300 volts is maintained between two electrodes inside the chamber. This allows generation of an electric current by the ionized gases which is used to measure the concentration of ionizable gases present.

Compounds within the SVS samples are separated as the gas stream passes through the capillary column, which is packed with an absorptive powder or adhesive coating. Organic compounds are retained on these coatings for a specific period of time. The specific retention times for each compound are based on their specific chemical properties. As a result, the chromatogram provides measurable responses at different time intervals. The PID is able to detect each compound as it flows through the detector with the carrier gas and records the time it was retained on the column from the time of sample injection. The compounds can then be identified and quantified by comparing the retention times of each compound to the retention times of known compounds in a calibration standard.

GC CALIBRATION

The GC was calibrated daily (at the start, mid-day, end of day and if necessary at other times) with a commercially prepared standard gas which contained known concentrations of benzene (0.51 ppm), toluene (0.41 ppm), chlorobenzene (0.71 ppm), ethylbenzene (0.49 ppm) and O-xylene (0.55 ppm). All calibration data was stored in the GC library to serve as a reference for identification and quantification of compounds detected in the samples.

QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) for the survey included analyses of instrument blanks, syringe blanks, sample train decontamination blanks and duplicate samples. Instrument blanks were no-injection analyses which had only the high purity ("ultra zero air") carrier gas flowing through the instrument sampling loop. The instrument blanks were used to determine instrument stability and to check for possible residual column contamination. Syringe blanks were injections of ultra zero air into the sample loop which was used to check syringe decontamination. Sample train blanks were injections of ambient air drawn through the sampling apparatus. These blanks were used to measure possible residual contamination of the sample train and to indicate ambient air conditions. QA/QC samples (instrument blanks, syringe blanks, sample train blanks) were taken at regular intervals throughout each day. Duplicate samples were analyzed with every tenth sample.

SURVEY DESIGN

The SVS at the Norwich site focused on benzene, toluene, ethylbenzene and xylene (BTEX) because these compounds were previously detected in the subsurface soils at the site, at concentrations of up to 112 parts per million (ppm) total BTEX. The GC was specifically calibrated to BTEX because those compounds are readily detectable, easily identified and they are known to have been present in the subsurface soils. Therefore, BTEX was considered to be the "indicator compounds" for locating sources of VOCs. Because the SVS was used as a screening tool for VOC source identification, the survey objective was not to identify and quantify <u>all</u> detectable compounds, but rather, use BTEX as an indicator of VOC contamination. As a result, the only compounds which can be reliably identified and quantified are those compounds to which the GC was calibrated (i.e. BTEX).

As an external quality control check, three additional soil vapor samples were collected and packaged by ES, and analyzed by an analytical laboratory (Galson Laboratories). The objective of those analyses was to ensure that BTEX compounds were being properly identified by the field GC, and to identify some of the other VOCs which were present in the samples, but were not able to be identified by the field GC (because they were not specifically calibrated). ES collected soil vapor samples from three locations where BTEX concentrations were relatively high, transferred those samples into glass vessels and delivered them to the laboratory within several hours. Galson Laboratories used a GC/mass spectroscopy (MS) analysis and subsequent "library search" of the ten most abundant compounds present in each sample. The compound concentrations were estimated relative to a fluorobenzene internal standard. The laboratory specifically noted that their reported concentrations are estimates, and may differ significantly from values determined using individual, compound-specific calibrations.

The survey design for the field sample collection methods took into account the results of the soil borings conducted at the Norwich site, and weather considerations. All soil gas samples were collected at an approximate depth of three feet. This depth was chosen because the soil boring results indicated a shallow water table condition existed beneath the site; in some areas it was less than five feet below ground surface. Also, there was visual evidence (in the soil borings) of oily and tarry residues in the upper one to five feet of soil/fill above the water table.

The three-foot SVS sample depth was chosen to avoid advancing the probes into the water table, and to remain above visibly contaminated soil/fill whenever possible to allow a more accurate assessment of the VOCs present <u>in the soil pore spaces</u> as opposed to that present in the visibly contaminated soil/fill.

Before and during the SVS, air temperatures were below freezing, and the upper six inches of the ground surface was frozen. Although not initially present, a light snow (less than two inches) covered the ground before the SVS was completed. Given the prior frost condition, the snow cover had little or no impact on the SVS.

The field sample collection purposely avoided advancing the soil vapor probes into highly contaminated areas, such as the vicinity of the tar wells, to avoid grossly contaminating the equipment with tar or other residue which would be difficult or impossible to completely remove.

SVS RESULTS

The following tables and figures illustrate the compounds directly identified by the Photovac GC unit during the SVS. These identifications and concentration data are based on the calibration gas standards and field GC library data for each sample point. Table 1 lists the field analytical data. Figure 1 illustrates the SVS sampling locations across the facility and the total BTEX concentrations in parts per million (ppm). Figure 2 presents the same data, contoured through the use of computer software to show how the concentration distribution may appear. Table 2 presents the laboratory analysis results, and Attachment A presents the laboratory report. Attachment B provides copies of the chromatograms generated during the field GC analyses.

Analysis and interpretation of the soil vapor survey field analytical data indicates the following:

- Benzene, toluene, chlorobenzene, ethylbenzene and o-xylene were identified and quantified in the samples based on the field GC library data and in relation to standard gas concentrations. Benzene was detected in 21 samples at concentrations ranging from .011 ppm to 19.020 ppm. Toluene was detected in 21 samples at concentrations ranging from .008 ppm to 47.350 ppm. Chlorobenzene/Ethylbenzene was detected in 16 samples at concentrations ranging from .007 ppm to 5.193 ppm. Chlorobenzene and ethylbenzene are reported as combined because the retention times are nearly identical and cannot be individually identified. O-Xylene was detected in 13 samples at concentrations ranging from .088 ppm to 3.892 ppm (Table 1).
- Total BTEX readings ranged from 0 ppm to 64.736 ppm (Table 1 and Figure 1), with the highest readings occurring in the north-central portion of the site, on top of and slightly west of the former gas holders.
- Sample point 24, located at the north property line in the center of the site, had the highest total BTEX concentration. A line of sample points located about 50 feet north of that property line did not detect BTEX, indicating the

VOC source is localized, but may extend off-site to the north (Figure 1). The isoconcentration map shows concentrations extending to the north between points 24 and 36 only because the software infers a uniform gradient between points (Figure 2). Such a gradient does not necessarily exist.

- Three data points (Numbers 29, 32 and 33) detected BTEX off-site, south of the former Aero Products Building (Figures 1 and 2).
- The laboratory sample analysis results detected BTEX, chlorinated solvents, hexanes, heptane, butane and pentane. The highest concentrations were typically for the heptane, hexane and toluene compounds.

CONCLUSIONS

1) Based on the soil boring data, and visual evidence of residues, the soil gas concentrations are more likely to be a result of the presence of residue in the subsurface as opposed to groundwater contamination. The subsurface residue is probably more concentrated than any groundwater contamination beneath it.

2) The highest soil vapor concentrations are in areas where there was visual evidence of stained soil or oily residue on the soil vapor probes (upon extraction), or in the soil borings.

3) The steep concentration gradients inferred between sample points indicates the highest concentration VOC sources are relatively localized. The highest concentrations (at sample location Number 24 located on the north property boundary) extends less than 50 feet off-site, based on the next closest sampling point (Number 36) to the north. Very low BTEX concentrations (0.012 to 0.05 ppm) were detected in three SVS points (Numbers 29, 32 and 33) to the south of the Aero Products Building.

4) Heptane, hexane, pentane, butane and chlorinated solvents were present in the soil gas samples analyzed by Galson Laboratories. These compounds are not typically associated with MGP residues and may indicate sources other than the former MGP site are contributing to the observed contamination. The highest concentrations are from sample point Number 24, close to where trucks have been parked, and close to the area where an underground storage tank was found during the soil boring investigation.

5) The field GC results for BTEX and the laboratory results are not directly comparable; the analysis methods used are vastly different, and the laboratory concentrations were reported as estimates, because they were not determined using individual compound-specific calibrations. The field GC concentrations were based on compound-specific calibrations.

TABLE 1
NYSEG NORWICH
SOIL VAPOR SURVEY DATA
FIELD ANALYTICAL DATA

SAMPLE POINT	X-COORDINATE (FEET)	Y-COORDINATE (FEET)	BENZENE (PPM)	TOLUENE (PPM)	CHLORO / ETHYL-BENZENE (PPM)	O-XYLENE (PPM)	TOTAL BTEX (PPM)	TOTAL UNKNOWNS
1	120	0	ND	ND	ND	0.167	0.167	2
2	120	20	0.028	0.016	ND	ND	0.044	4
3	140	40	0.094	ND	ND	ND	0.094	2
4	140	60	7.775	2.974	1.105	1.508	13.362	15
5	160	60	0.345	0.149	0.092	0.210	0.796	7
6	180	60	0.480	0.128	0.016	ND	0.624	6
7	200	60	0.070	0.016	0.007	ND	0.093	3
8	240	60	ND	0.009	ND	ND	0.009	3
9	260	60	ND	0.008	ND	0.004	0.012	2
10	280	60	0.020	ND	ND	ND	0.020	1
10-DUP	280	60	0.018	ND	ND	ND	0.018	2
11	300	60	ND	ND	ND	ND	ND	2
12	340	60	ND	ND	ND	ND	ND	1
13	360	60	ND	ND	ND	ND	ND	4
13-DUP	360	60	ND	ND	ND	ND	ND	1
14	100	0	ND	ND	ND	ND	ND	1
15	100	20	ND	ND	ND	ND	ND	2
16	100	60	2.165	1.219	0.540	1.344	5.268	12
17	100	100	0.013	0.024	0.009	0.091	0.137	3
17-DUP	100	100	0.012	0.020	0.008	0.048	0.088	3
18	160	100	1.287	0.048	0.015	0.161	1.511	15
19	200	100	19.020	30.280	5.193	1.265	55.758	14
21	280	100	6.230	21.760	1.814	3.892	33.696	6
22	320	140	0.242	0.539	0.284	0.126	1.191	4
23	280	140	0.674	0.759	0.184	ND	1.617	3
24	240	140	12.120	47.350	4.179	1.087	64.736	12
25	260	0	0.214	0.830	0.304	0.147	1.495	2
26	280	0	0.049	1.701	0.203	ND	1.953	10
27	300	0	0.098	0.470	0.150	0.088	0.806	3
28	320	0	0.056	0.270	0.100	ND	0.426	3
29	160	-60	ND	0.027	ND	ND	0.027	0
30	180	-60	ND	ND	ND	ND	ND	0
31	200	-60	ND	ND	ND	ND	ND	0
32	260	-100	0.011	0.039	ND	ND	0.050	0
33	280	-120	0.012	ND	ND	ND	0.012	0
34	320	180	ND	ND	ND	ND	ND	0
35	280	180	ND	ND	ND	ND	ND	1
36	240	180	ND	ND	ND	ND	ND	0
37	200	180	ND	ND	ND	ND	ND	0
38	160	180	ND	ND	ND	ND	ND	0
38-DUP	160	180	ND	ND	ND	ND	ND	0
39	140	140	ND	ND	ND	ND	ND	0
40	100	140	ND	ND	ND	ND	ND	0
41	80	120	ND	ND	ND	ND	ND	0
42	60	100	ND	ND	ND	ND	ND	0
43	60	60	ND	ND	ND	ND	ND	0
44	60	20	ND	ND	ND	ND	ND	0
45	360	120	ND	ND	ND	ND	ND	0
46	360	160	ND	ND	ND	ND	ND	0
47	300	-20	ND	ND	ND	ND	ND	0
48	340	-20	ND	ND	ND	ND	ND	0

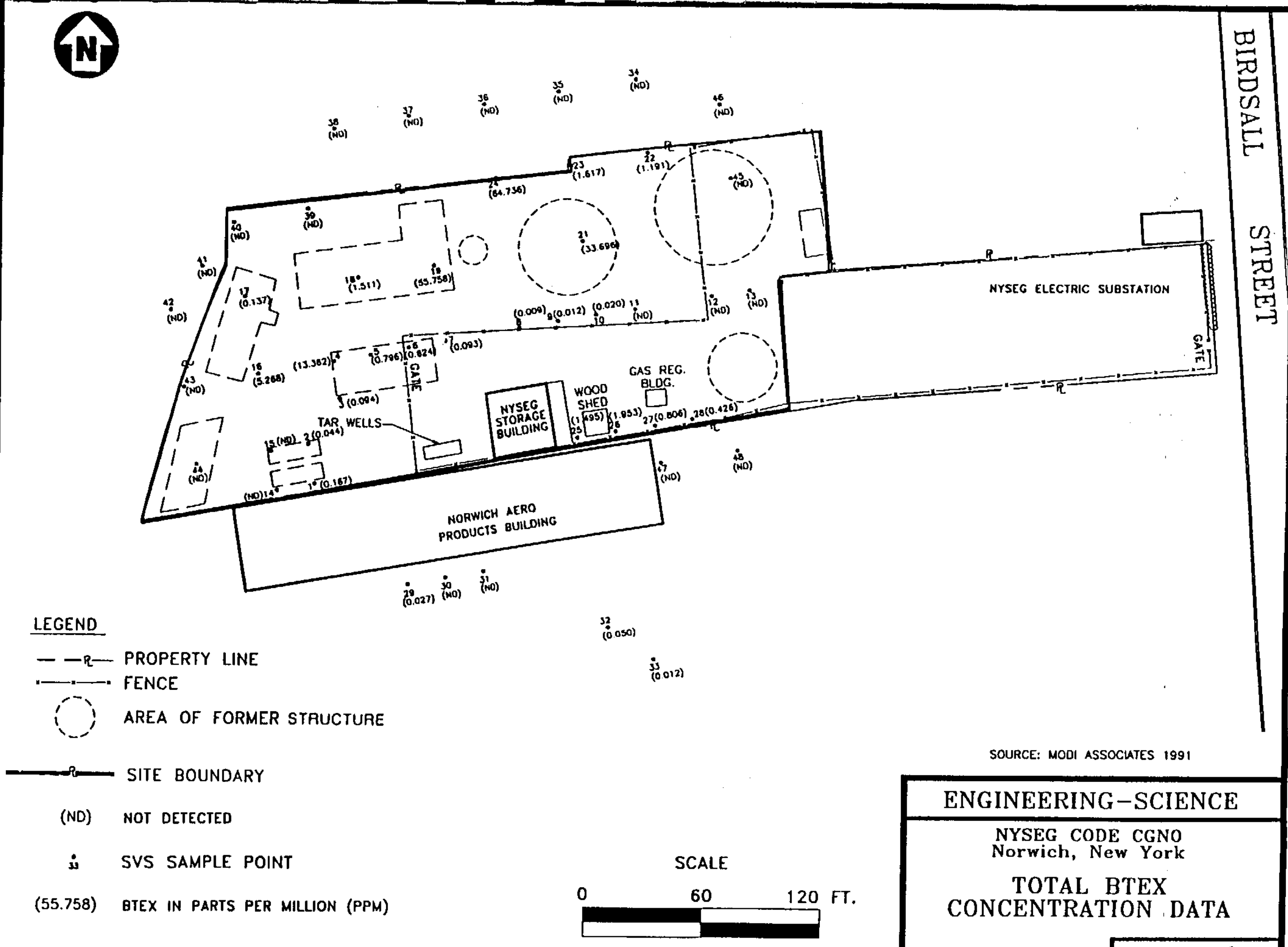
ND: NOT DETECTED

TABLE 2

NYSEG NORWICH
SOIL VAPOR SURVEY
LABORATORY SAMPLE RESULTS (PPM)

Compound	P-18	P-24	P-25
Butane	.749	ND	ND
Pentane	.119	ND	ND
2-Methylhexane	.079	.102	.081
3-Methylhexane	.342	.599	.435
Heptane	.315	.660	.494
Benzene	.035	.160	.060
Toluene	.032	.316	.118
1,1,2-Trichloroethane	.016	.017	.018
Tetrachloroethylene	.020	ND	ND
Ethylbenzene	.009	.045	.012
Xylenes	.029	.060	.042
1,1,2,2-Tetrachloroethane	.010	.009	.006

ND - Not detected

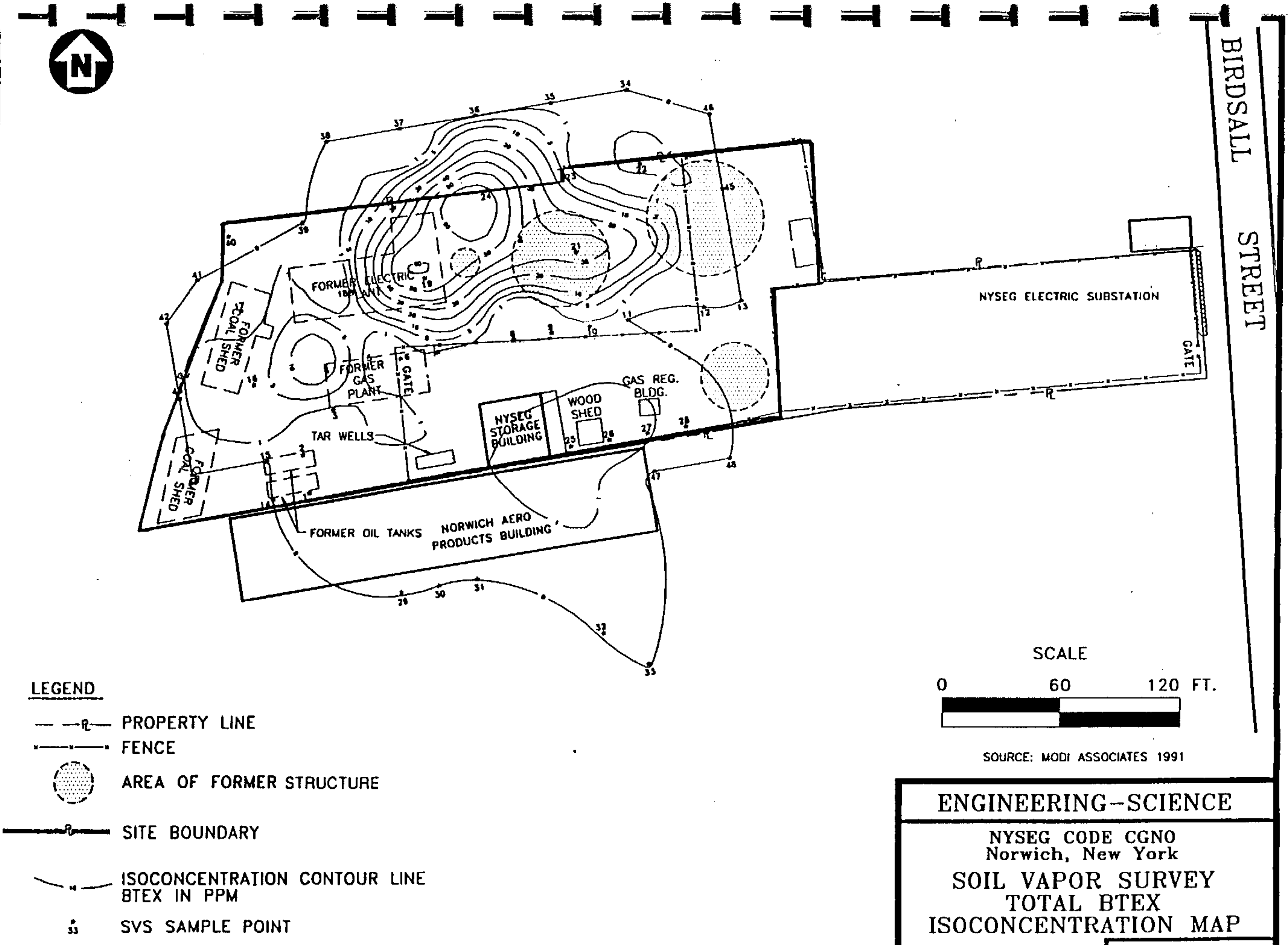


ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

TOTAL BTEX
CONCENTRATION DATA

FIGURE 1



ENGINEERING–SCIENCE

NYSEG CODE CGNO
Norwich, New York

SOIL VAPOR SURVEY
TOTAL BTEX
ISOCONCENTRATION MAP

FIGURE 2

ATTACHMENT A

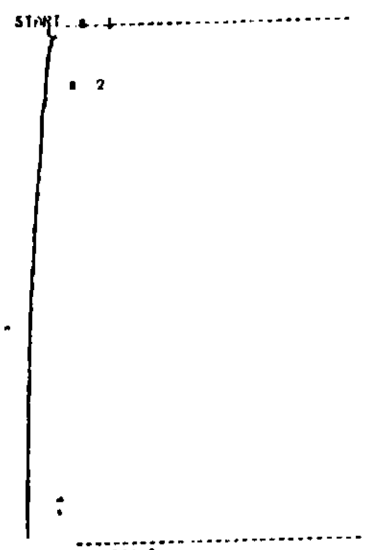
LABORATORY ANALYSIS REPORT

40

SYRING BLANK

PHOTOVAC

START



STOP @ 791.3
SAMPLE LIBRARY 1 DEC 5 1991 8:41
ANALYSIS # 6 NYSEG NORWICH
INTERNAL TEMP 24 SVS DEC 1991
GAIN 10 SYRINGE BLANK

OFFSET	33.0 mV
CHART SPEED	0.5 cm/Min
SLOPE SENS.	16 10 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	950.0 Sec
CYCLE TIME	0 Min

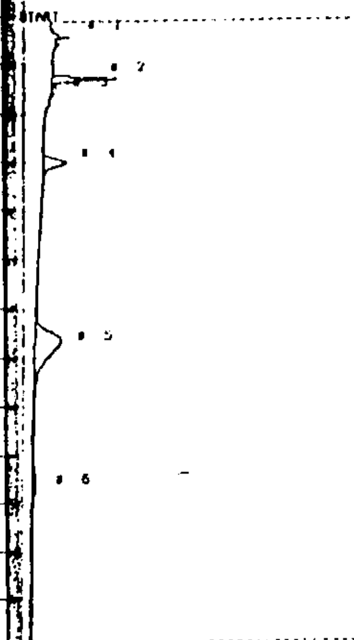
COMPOUND NAME PEAK R.T. AREA/PPM

41

BTEX CAL

PHOTOVAC

START



STOP @ 950.0
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ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 25 SVS DEC 1991
GAIN 20 BTEX CAL

OFFSET	25.0 mV
CHART SPEED	0.5 cm/Min
SLOPE SENS.	16 10 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	950.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	27.8	56.0 mVS
UNKNOWN	2	92.2	1.2 VS
UNKNOWN	4	221.4	1.1 VS
UNKNOWN	5	493.2	[illegible] VS
UNKNOWN	6	718.2	240.7 mVS

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 1 DEC 5 1991 [illegible]
ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 25 SVS DEC 1991
GAIN 20 BTEX CAL

OFFSET	20.0 mV
CHART SPEED	0.5 cm/Min
SLOPE SENS.	16 10 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	950.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	27.0	56.0 mVS
BENZENE	2	92.2	510.0 PPB
TOLUENE	4	221.4	410.0 PPB
CHLO ETHY BENZEN	5	439.2	710.0 PPB
O-XYLENE	6	718.2	530.0 PPB

PHOTOVAC

COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	92.2	1.000 PPM
TOLUENE	2	221.4	1.000 PPM
CHLO ETHY BENZEN	3	439.2	1.000 PPM
O-XYLENE	4	718.2	1.000 PPM

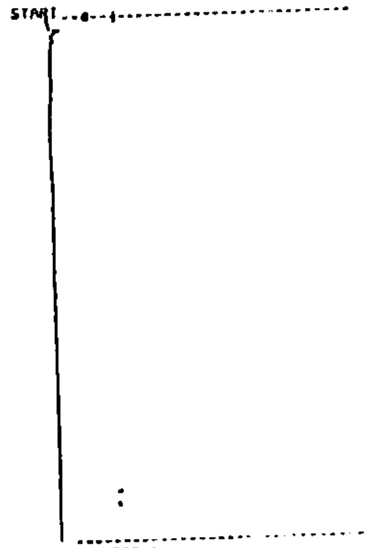
42

Decon Blank / Ambient Air Through Sample Train

P-14

(43)

PHOTOVAC

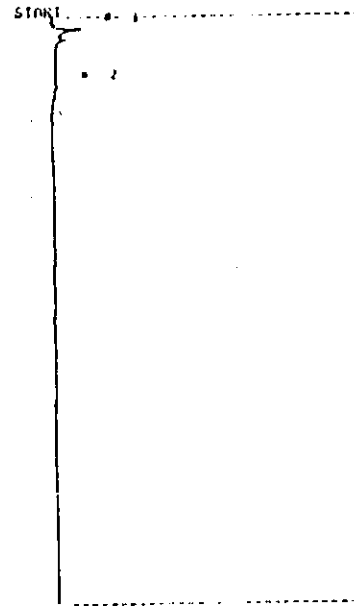


STOP @ 800.4
SAMPLE LIBRARY 1 DEC 5 1991 9:47
ANALYSIS # 12 NYSEG NORWICH
INTERNAL TEMP 22 SUS DEC 1991
GAIN 10 DECON BLANK

OFFSET 41.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 10 10 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 350.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.8	25.3 mVS

PHOTOVAC



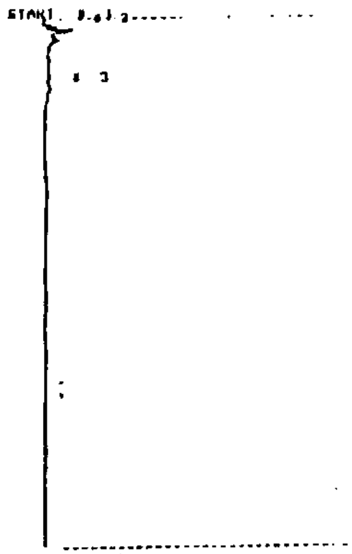
STOP @ 900.0
SAMPLE LIBRARY 1 DEC 5 1991 10:14
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 21 SUS DEC 1991
GAIN 20 P-14

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	21.2	65.9 mVS

44

P-15

PHOTOVAC



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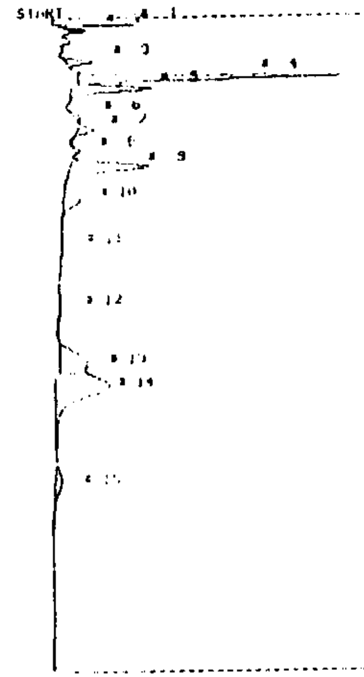
SAMPLE LIBRARY 1 DEC 5 1991 10:18
ANALYSIS # 14 NYSEG NORWICH
INTERNAL TEMP 23 SVS DEC 1991
GAIN 20 P-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.7	38.2 mVS
UNKNOWN	2	22.0	82.2 mVS

45

P-16

PHOTOVAC



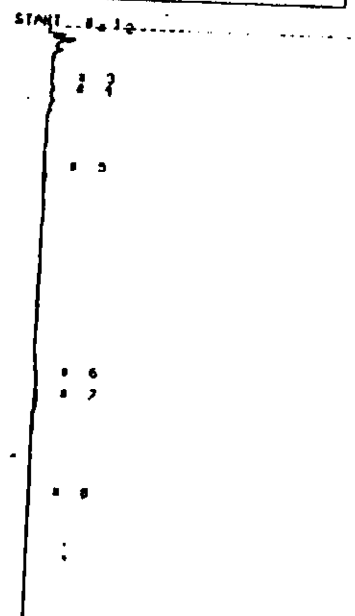
STOP @ 1330.0
SAMPLE LIBRARY 1 DEC 5 1991 10:36
ANALYSIS # 15 NYSEG NORWICH
INTERNAL TEMP 24 SVS DEC 1991
GAIN 20 P-16

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.0	464.6 mVS
UNKNOWN	2	21.0	40.5 mVS
UNKNOWN	3	69.7	582.3 mVS
BENZENE	4	95.7	2.165 PPB
UNKNOWN	5	110.5	2.3 VS
UNKNOWN	6	152.0	136.1 mVS
UNKNOWN	7	174.2	561.2 mVS
~~TOLUENE~~	8	206.4	55.98 PPB
TOLUENE	9	231.0	1.219 PPM
UNKNOWN	10	286.7	1.1 VS
UNKNOWN	11	353.2	35.7 mVS
UNKNOWN	12	457.0	255.0 mVS
CHLORO ETHYL BENZEN	13	535.7	540.1 PPB
UNKNOWN	14	575.0	5.9 VS
O-XYLENE	15	724.4	1.344 PPM

1/c

P-17

PHOTOVAC



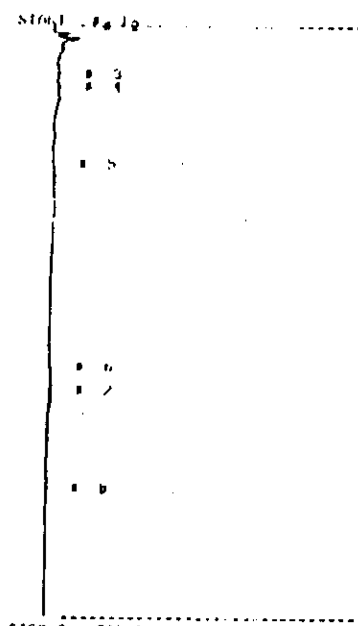
STOP @ 300.0
SAMPLE LIBRARY 1 DEC 5 1991 10:54
ANALYSIS # 16 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 P-17

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.4	53.1 mVS
UNKNOWN	2	21.9	55.3 mVS
BENZENE	3	55.5	13.29 PPB
TOLUENE	5	231.8	24.00 PPB
CHLO ETHY BENZEN	6	542.5	8.685 PPB
UNKNOWN	7	577.3	214.5 mVS
O-XYLENE	8	728.2	51.77 PPB

P-17 DUPLICATE

(11)

PHOTOVAC

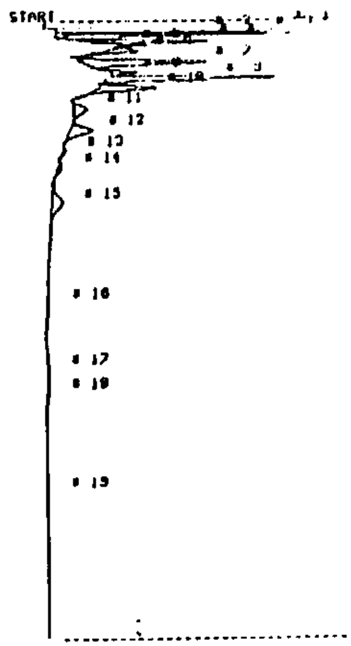


STOP @ 900.0
SAMPLE LIBRARY 1 DEC 5 1991 11:10
ANALYSIS # 17 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-17 DUPLICATE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.5	58.0 mVS
UNKNOWN	2	22.0	51.8 mVS
BENZENE	3	55.2	12.18 PPB
TOLUENE	5	232.2	19.94 PPB
CHLO ETHY BENZEN	6	541.1	8.039 PPB
UNKNOWN	7	577.3	170.1 mVS
O-XYLENE	8	726.3	47.94 PPB

P-18

PHOTOVAC

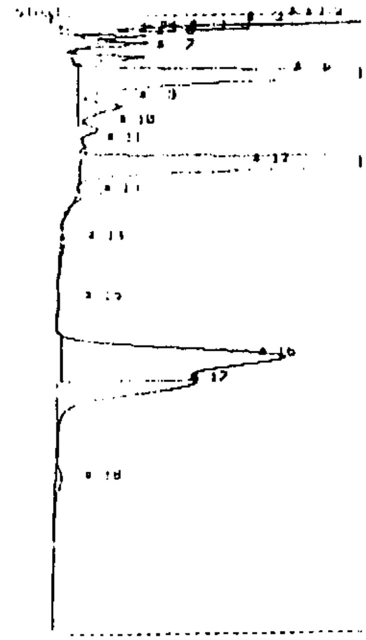


STOP @ 950.0
SAMPLE LIBRARY 1 DEC 5 1991 11:20
ANALYSIS # 18 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 ~~P-18~~ P-18 - 05

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	18.0	8.8	US
UNKNOWN	2	21.9	1.1	US
UNKNOWN	3	24.8	2.7	US
UNKNOWN	4	35.3	1.2	US
UNKNOWN	5	42.3	130.2	mUS
UNKNOWN	6	51.1	769.5	mUS
UNKNOWN	7	69.3	2.7	US
~~BENZENE~~	8	86.2	271.9	PPB
BENZENE	9	95.5	1.287	PPM
UNKNOWN	10	118.5	1.9	US
UNKNOWN	11	143.2	616.8	mUS
UNKNOWN	12	175.7	864.8	mUS
~~TOLUENE~~	13	208.4	38.14	PPB
TOLUENE	14	231.0	47.92	PPB
UNKNOWN	15	286.7	768.8	mUS
UNKNOWN	16	442.4	116.6	mUS
CHLO ETHY BENZEN	17	541.1	15.93	PPB
UNKNOWN	18	575.8	42.2	mUS
O-XYLENE	19	728.2	169.7	PPB

P-19

PHOTOVAC

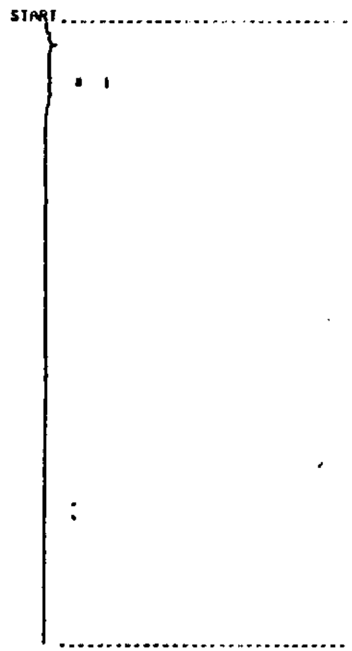


... 950.0
SAMPLE LIBRARY 1 DEC 5 1991 11:42
ANALYSIS # 19 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 P-19

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	15.2	4.5	US
UNKNOWN	2	18.0	3.2	US
UNKNOWN	3	25.5	7.2	US
UNKNOWN	4	35.4	572.8	mUS
UNKNOWN	5	42.5	125.0	mUS
UNKNOWN	6	46.7	1.1	US
UNKNOWN	7	68.5	1.5	US
BENZENE	8	95.4	19.02	PPM
UNKNOWN	9	142.8	2.5	US
UNKNOWN	10	177.7	886.2	mUS
~~TOLUENE~~	11	203.4	20.90	PPM
TOLUENE	12	230.2	30.28	PPM
UNKNOWN	13	263.5	324.2	mUS
UNKNOWN	14	350.3	233.6	mUS
UNKNOWN	15	440.4	129.3	mUS
CHLO ETHY BENZEN	16	530.3	5.197	PPM
UNKNOWN	17	574.3	12.0	US
O-XYLENE	18	726.3	1.265	PPM

SYRINGE BLANK

PHOTOVAC

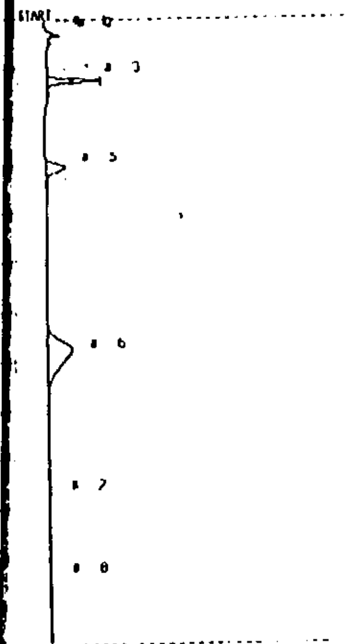


STOP @ 350.0
SAMPLE LIBRARY 1 DEC 5 1991 12:7
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

BTEX CALIBRATION

PHOTOVAC



STOP @ 350.0
SAMPLE LIBRARY 1 DEC 5 1991 12:26
ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.1	42.5 mVS
UNKNOWN	3	95.2	1.1 VS
UNKNOWN	5	231.6	1.0 VS
UNKNOWN	6	514.8	3.5 VS
UNKNOWN	7	728.2	350.2 mVS
UNKNOWN	8	853.9	14.8 mVS

PHOTOVAC

CALIBRATED LEVEL: 1.000 PPM

SAMPLE LIBRARY 1 DEC 5 1991 12:36
ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 BTEX CAL

OFFSET 0.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 13.0 Sec
ANALYSIS TIME 950.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.1	42.5 mVS
BENZENE	3	95.2	510.0 PPB
TOLUENE	5	231.6	410.0 PPB
CHLO ETHYL BENZE	6	514.6	710.0 PPB
O-XYLENE	7	728.2	550.0 PPB
UNKNOWN	8	853.9	14.8 mVS

PHOTOVAC

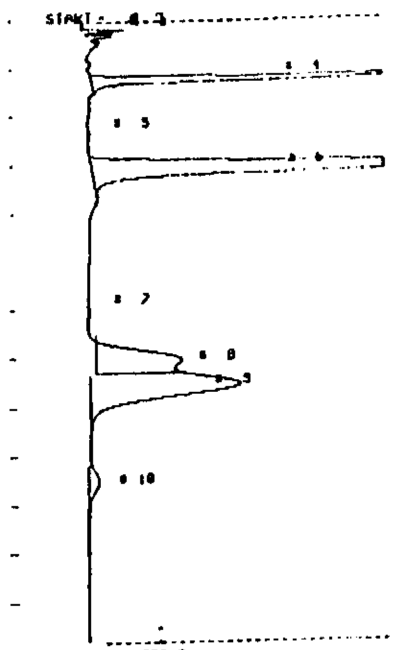
#	COMPOUND	ID #	R.T.	LIMIT
	BENZENE	1	95.2	1.000 PPM
	TOLUENE	2	231.6	1.000 PPM
	CHLO ETHYL BENZE	3	514.8	1.000 PPM
	O-XYLENE	4	728.2	1.000 PPM

52.

P-21

PHOTOVAC

START @ 0.3



STOP @ 550.0
SAMPLE LIBRARY 1 DEC 5 1991 12:54
ANALYSIS # 22 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-21

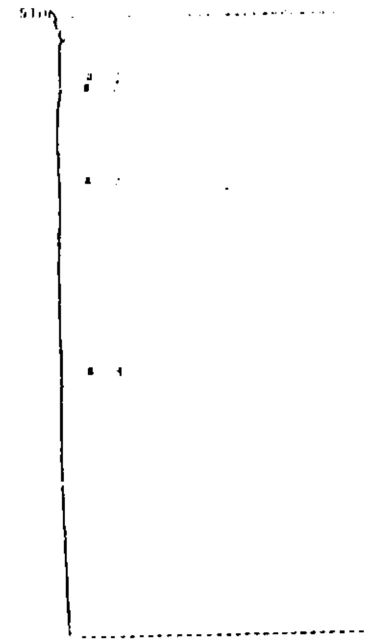
OFFSET 45.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 8 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 550.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.4	241.5 mVS
UNKNOWN	2	18.1	175.2 mVS
UNKNOWN	3	21.6	32.7 mVS
BENZENE	4	93.8	6.230 PPM
UNKNOWN	5	177.7	20.0 mVS
TOLUENE	6	228.3	21.76 PPM
UNKNOWN	7	410.0	75.1 mVS
CHLO ETHYL BENZE	8	535.5	1.034 PPM
UNKNOWN	9	572.8	17.2 VS
O-XYLENE	10	720.6	3.832 PPM

SYRINGE BLANK

PHOTOVAC

START



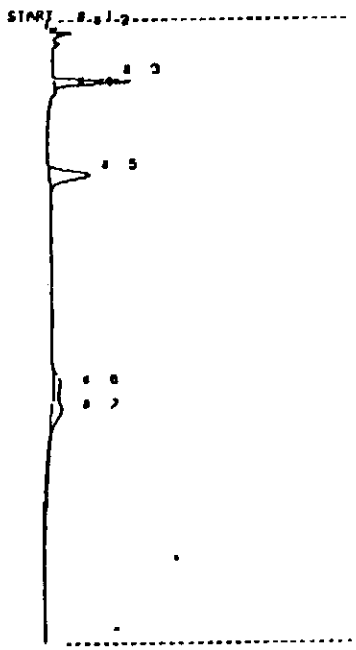
STOP @ 550.0
SAMPLE LIBRARY 1 DEC 5 1991 13:14
ANALYSIS # 23 NYSEG NORWICH
INTERNAL TEMP 26 SUS DEC 1991
GAIN 23 [redacted] SYRINGE BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
CHLO ETHYL BENZE	4	565.3	10.17 PPB

54

P-23

PHOTOVAC



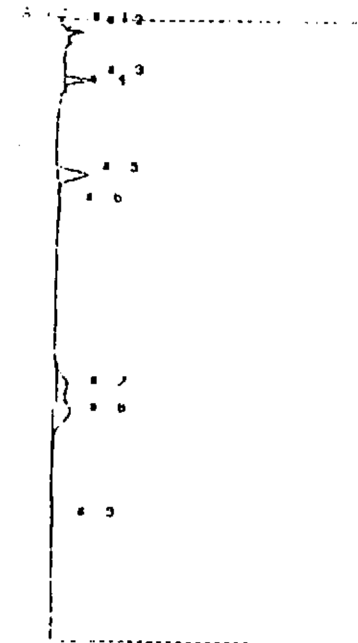
STOP # 350.0
SAMPLE LIBRARY 1 DEC 5 1991 14:30
ANALYSIS # 25 NYSEG NORWICH
INTERNAL TEMP 26 SUS DEC 1991
GAIN 20 P-23

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.0	35.2 mVS
UNKNOWN	2	22.1	46.6 mVS
BENZENE	3	97.3	674.3 PPB
TOLUENE	5	241.6	255.2 PPB
CHLO ETHYL BENZE	6	560.3	184.4 PPB
UNKNOWN	7	607.9	656.5 mVS

155

P-22

PHOTOVAC



STOP # 350.0
SAMPLE LIBRARY 1 DEC 5 1991 14:47
ANALYSIS # 26 NYSEG NORWICH
INTERNAL TEMP 26 SUS DEC 1991
GAIN 20 P-22

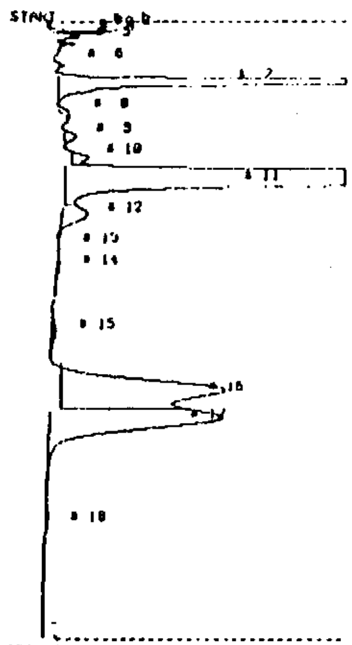
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	16.7	38.6 mVS
UNKNOWN	2	22.0	46.8 mVS
BENZENE	3	58.0	241.6 PPB
TOLUENE	5	245.1	579.3 PPB
UNKNOWN	6	232.3	51.5 mVS
UNKNOWN	7	574.3	1.4 VS
UNKNOWN	8	615.9	1.8 VS
O-XYLENE	9	770.8	126.3 PPB

— c/cl benzene 284 ppb

56

P-24

PHOTOVAC



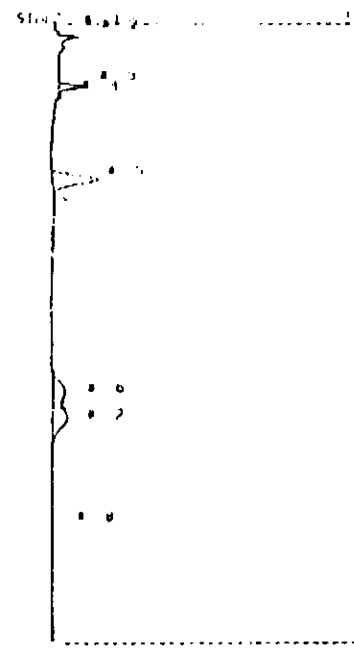
STOP @ 350.0
SAMPLE LIBRARY 1 DEC 5 1991 15:14
ANALYSIS # 27 NYSEG NORWICH
INTERNAL TEMP 20 SUS DEC 1991
GAIN 20 P-24

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	10.1	110.5 mVS
UNKNOWN	2	18.8	257.3 mVS
UNKNOWN	4	26.8	43.9 mVS
UNKNOWN	5	36.4	63.3 mVS
UNKNOWN	6	70.3	76.5 mVS
BENZENE	7	98.0	12.12 PPM
UNKNOWN	8	149.7	124.4 mVS
UNKNOWN	9	186.7	530.4 mVS
~~TOLUENE~~	10	218.4	405.0 PPB
TOLUENE	11	244.5	17.35 PPM
UNKNOWN	12	304.3	1.9 VS
UNKNOWN	14	387.4	107.0 mVS
CHLO ETHYL BENZE	15	484.9	76.76 PPB
UNKNOWN	16	578.0	70.8 VS
UNKNOWN	17	628.7	19.2 VS
O-XYLENE	18	703.6	1.0E7 PPM

57

P-25

PHOTOVAC



STOP @ 350.0
SAMPLE LIBRARY 1 DEC 5 1991 15:24
ANALYSIS # 28 NYSEG NORWICH
INTERNAL TEMP 25 SUS DEC 1991
GAIN 20 P-25

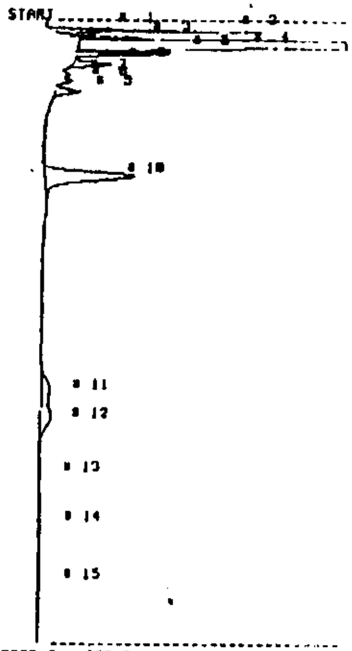
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.0	54.3 mVS
BENZENE	3	33.1	214.4 PPB
TOLUENE	5	246.5	830.0 PPB
UNKNOWN	6	528.6	1.5 VS
UNKNOWN	7	613.1	1.7 VS
O-XYLENE	9	7[illegible]	146.0 PPB

— CHLORO ETHYL BENZENE
304 ppb

58

P-26

PHOTOVAC



STOP # 950.0
SAMPLE LIBRARY 1 DEC 5 1991 15:42
ANALYSIS # 29 NYSEG NORWICH
INTERNAL TEMP 24 SVS DEC 1991
GAIN 20 P-26

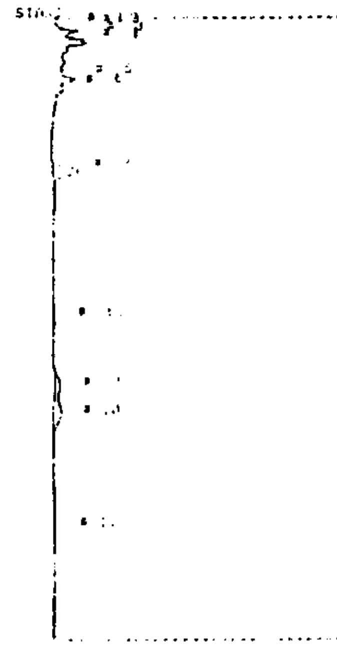
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	16.5	288.2 mVS
UNKNOWN	2	19.3	1.7 VS
UNKNOWN	3	23.6	885.8 mVS
UNKNOWN	4	39.5	38.1 VS
UNKNOWN	5	51.7	677.0 mVS
UNKNOWN	6	71.3	812.4 mVS
~~BENZENE~~	7	85.8	23.32 PPB
BENZENE	8	98.2	18.83 PPB
UNKNOWN	9	114.1	348.8 mVS
TOLUENE	10	245.8	1.701 PPM
UNKNOWN	11	577.3	1.0 VS
UNKNOWN	12	619.1	1.1 VS
UNKNOWN	15	864.3	78.1 mVS

← CHLORO/ETHY BENZENE
203 ppb

57

P-27

PHOTOVAC



STOP # [illegible]20.0
SAMPLE LIBRARY 1 DEC 5 1991 16:[illegible]0
ANALYSIS # 30 NYSEG NORWICH
INTERNAL TEMP 24 SVS DEC 1991
GAIN 20 P-27

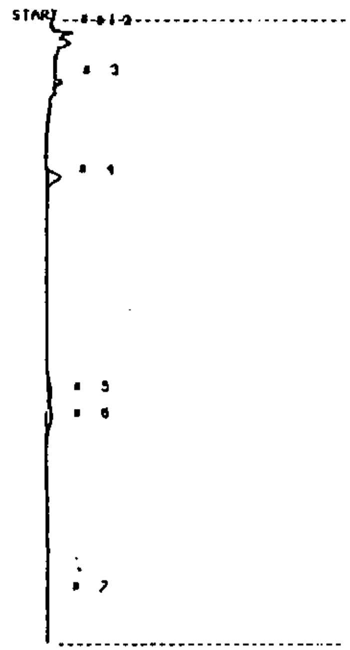
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.5	45.8 mVS
UNKNOWN	3	35.3	32.8 mVS
BENZENE	5	57.9	38.49 PPB
TOLUENE	7	245.1	460.9 PPB
UNKNOWN	9	577.3	239.5 mVS
UNKNOWN	10	619.1	314.7 mVS
O-XYLENE	11	290.6	87.82 PPB

– C/E BENZENE
150 ppb

(2)

P-28

PHOTOVAC



STOP 8 950.0
SAMPLE LIBRARY 1 DEC 5 1991 16:19
ANALYSIS # 31 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 P-28

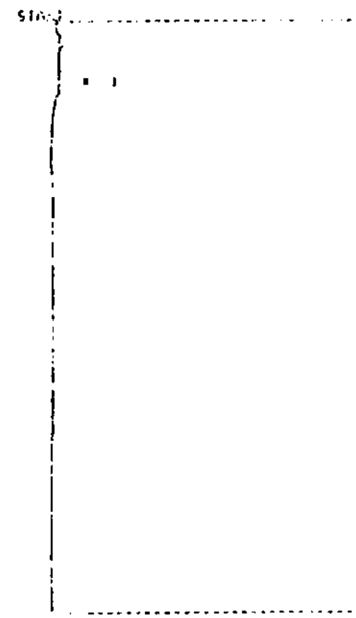
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	22.5	48.9 mVS
BENZENE	3	97.8	58.21 PPB
TOLUENE	4	245.1	209.7 PPB
UNKNOWN	5	578.8	492.3 mVS
UNKNOWN	6	619.1	561.9 mVS
UNKNOWN	7	882.7	194.3 mVS

*/2 Benzene 100 ppb

(1)

SYRINGE BLANK

PHOTOVAC

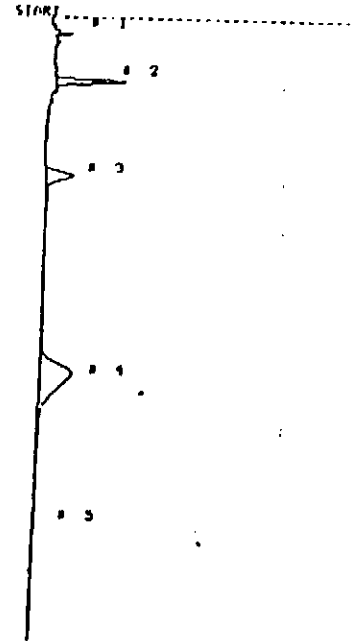


SAMPLE LIBRARY 1 DEC 5 1991 16:39
ANALYSIS # 32 NYSEG NORWICH
INTERNAL TEMP 24 SUS DEC 1991
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

(A) BTOX CAL / FINAL

PHOTOVAC



STOP # 350.0
SAMPLE LIBRARY 1 DEC 5 1991 16156
ANALYSIS # 33 NYSEG NORWICH
INTERNAL TEMP 23 SUS DEC 1991
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	20.6	62.0 mUS
BENZENE	2	99.7	629.2 PPB
TOLUENE	3	247.5	523.5 PPB
CHLO ETHYL BENZE	4	555.1	892.3 PPB
O-XYLENE	5	778.6	182.2 PPB

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 2 DEC 5 1991 16153
ANALYSIS # 33 NYSEG NORWICH
INTERNAL TEMP 21 DEC 1991 SUS
GAIN 20 BTEX CALA

OFFSET 15.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 10 16 6 mU/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mUSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 950.0 Sec
CYCLE TIME 0 Min

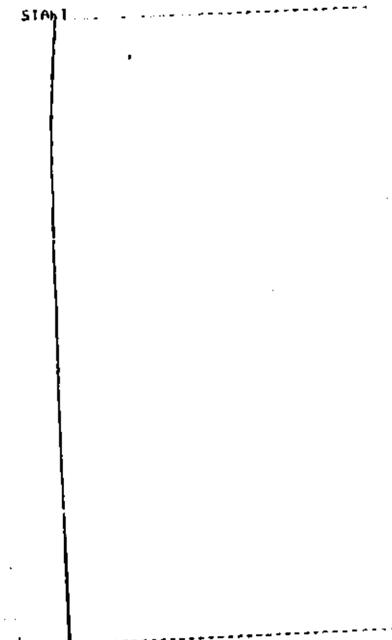
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	20.6	62.0 mUS
BENZENE	2	99.7	510.0 PPB
TOLUENE	3	247.5	410.0 PPB
CHLO ETHYL BENZE	4	555.1	710.0 PPB
O-XYLENE	5	778.6	550.0 PPB

PHOTOVAC

2 COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	99.7	1.000 PPM
TOLUENE	2	247.5	1.000 PPM
CHLO ETHYL BENZE	3	555.1	1.000 PPM
O-XYLENE	4	778.6	1.000 PPM

MACHINE BLANK (C3)

PHOTOVAC



STOP # 950.0
SAMPLE LIBRARY 2 DEC 5 1991 17:30
ANALYSIS # 1 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 2 BTEX CALA

COMPOUND NAME PEAK R.T. AREA/PPM

NYSEG
12-6-91 NORWICH

GC OPERATOR / 1-08

* SUB P-1 FOR SET-UP

WEATHER / 20's , SNOWING

WORK PLAN / CONTINUE
SUB ALONG PROPERTY
LINE

•1000 GC DOWN FOR
DAY , LAMP NOT
FIRING , UNABLE TO
REPAIR IN FIELD

LEAVE SITE
10:30
MGK

12-10-91 NYSEG NORWICH

GC OPERATOR / MJS

* SUB P-1 FOR SET-UP

WEATHER / 40's , OVERCAST

* HAVE RENTAL / PS 55 GC
UNIT FROM MARCO INC

WORK PLAN / CONTINUE SUB
ALONG OFF PROPERTY

66

SET-UP

PHOTOVAC

DEC 5 1991 10:45

FIELD: 30
POWER: 35

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	120.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

PHOTOVAC

START

STOP @ 5.7
SAMPLE LIBRARY 1 DEC 10 1991 9:52
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 10 SYRINGE BLANK

OFFSET 1.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 10 10 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 300.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

67

MACHINE BLANK

PHOTOVAC

START

STOP @ 300.0
SAMPLE LIBRARY 1 DEC 10 1991 9:32
ANALYSIS # 2 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 10 MACHINE BLANK

OFFSET 5.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 10 10 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 300.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

68

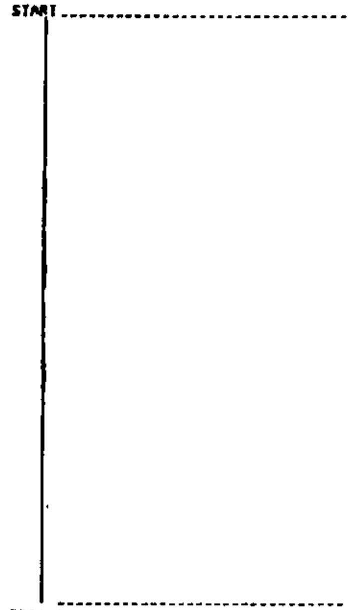
SYRINGE | BLANK

BTEX CAL

69

PHOTOVAC

START



STOP @ 300.0

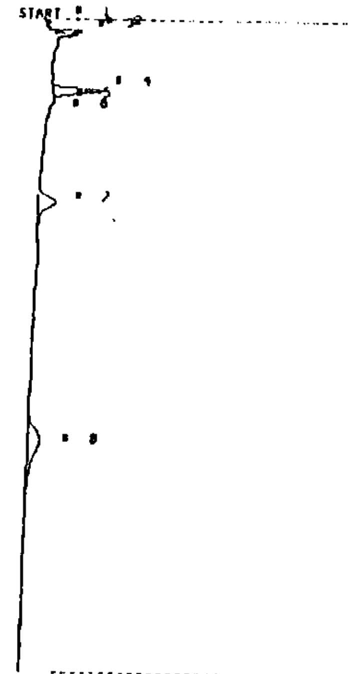
SAMPLE LIBRARY	1	DEC 10 1991 5:43
ANALYSIS #	3	NYSEG NORWICH
INTERNAL TEMP	24	DEC 1991 SUS
GAIN	10	SYRINGE BLANK

OFFSET	1.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	300.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START



STOP @ 1000.0

SAMPLE LIBRARY	1	DEC 10 1991 13:6
ANALYSIS #	7	NYSEG NORWICH
INTERNAL TEMP	23	DEC 1991 SUS
GAIN	20	SYRINGE BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.6	17.0 mVS
UNKNOWN	2	19.7	158.6 mVS
UNKNOWN	3	25.5	28.5 mVS
UNKNOWN	4	105.0	[illegible]
UNKNOWN	6	144.0	13.1 mVS
UNKNOWN	7	287.5	1.0 VS
UNKNOWN	8	660.4	1.8 VS

PHOTOVAC

CALIBRATED PEAK 4,BENZENE

SAMPLE LIBRARY	1	DEC 10 1991 13:0
ANALYSIS #	7	NYSEG NORWICH
INTERNAL TEMP	23	DEC 1991 SUS
GAIN	20	SYRINGE BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.6	17.0 mVS
UNKNOWN	2	13.7	158.6 mVS
UNKNOWN	3	25.5	28.5 mVS
BENZENE	4	105.0	510.0 PPB
UNKNOWN	6	144.0	10.1 mVS
TOLUENE	7	287.5	410.0 PPB
CHLO ETHY BENZEN	8	660.4	210.0 PPB

PHOTOVAC

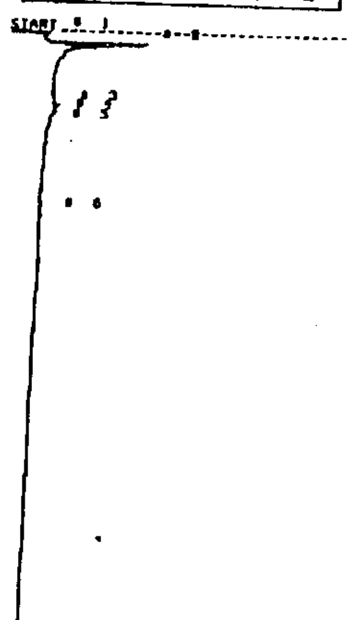
1 COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	105.0	1.000 PPM
TOLUENE	2	287.5	1.000 PPM
CHLO ETHY BENZEN	3	660.4	1.000 PPM

70

P-29

MICROTIP
OPPM

PHOTOVAC



STOP @ 301.4
SAMPLE LIBRARY 1 DEC 10 1991 13:25
ANALYSIS # 8 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-29

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.0	180.1 mVS
UNKNOWN	2	18.9	627.2 mVS
~~BENZENE~~	3	114.7	22.04 PPB
TOLUENE	6	208.3	27.27 PPB

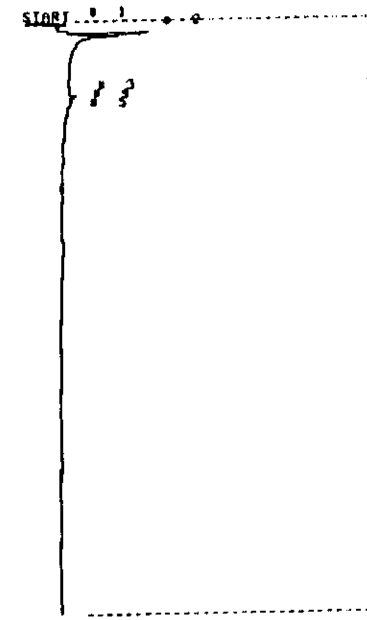
carry over

71

P-30

MICROTIP
OPPM

PHOTOVAC



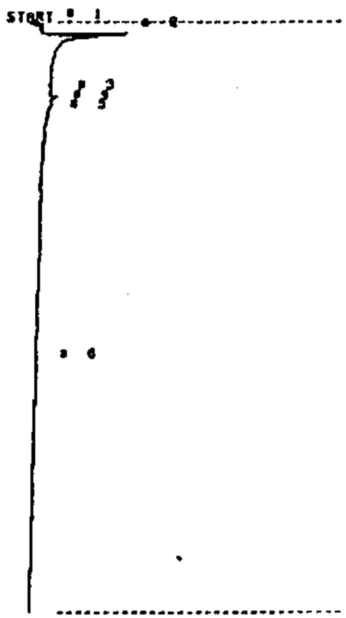
STOP @ 300.9
SAMPLE LIBRARY 1 DEC 10 1991 13:41
ANALYSIS # 9 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-30

carryover

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.0	182.1 mVS
UNKNOWN	2	18.6	490.0 mVS
[illegible]	3	[illegible]	23.33 PPB

P-31

PHOTOVAC



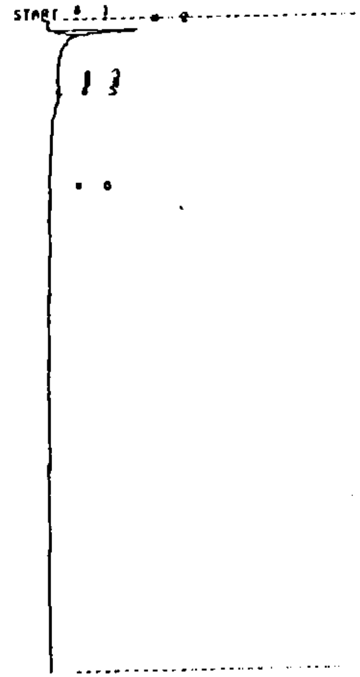
STOP @ 301.2
SAMPLE LIBRARY 1 DEC 10 1991 13:57
ANALYSIS # 10 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-31

OFFSET	75.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.3	37.5 mVS
UNKNOWN	2	15.0	483.0 mVS
[illegible]	3	114.7	22.24 PPB

P-32

PHOTOVAC



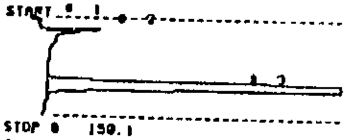
STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 14:15
ANALYSIS # 11 NYSEG NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 P-32

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	15.9	883.0 mVS
BENZENE	3	104.5	11.35 PPB
[illegible]	4	114.7	20.08 PPB
TOLUENE	6	223.0	34.27 PPB

74

P-33 ...... 3/11

PHOTOVAC



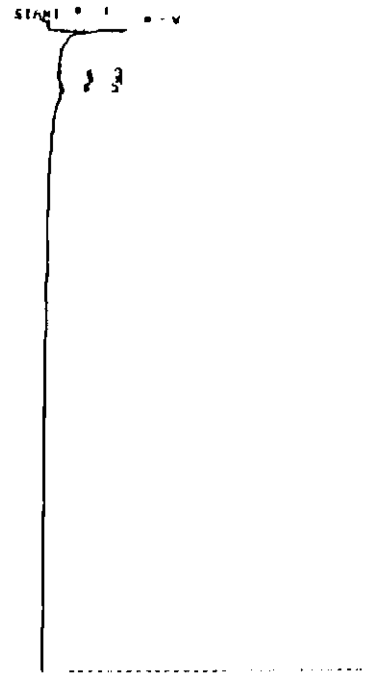
STOP @ 150.1
SAMPLE LIBRARY 1 DEC 10 1991 14:13
ANALYSIS # 12 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 ~~0.00~~ 10.4 ppm Benzene STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.3	33.2 mVS
UNKNOWN	2	15.0	324.1 mVS
BENZENE	3	105.4	10.58 PPM

173

P-33

PHOTOVAC



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 14:36
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-33

OFFSET 26.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 16 16 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	15.9	515.0 mVS
BENZENE	3	105.2	14.22 PPB
[redacted]	4	114.2	15.12 PPB

76

P-34

MICRO TIP

988

PHOTOVAC

STOP @ 808.0
SAMPLE LIBRARY 1 DEC 18 1991 14:57
ANALYSIS # 14 NYSED NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-34

OFFSET 29.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 10 10 6 mU/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mUSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

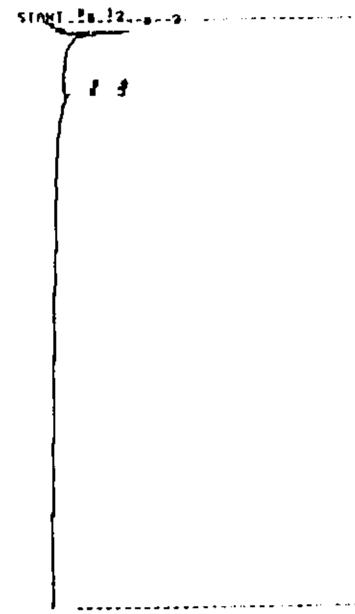
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.1	32.6 mUS
UNKNOWN	2	18.0	528.3 mUS
~~BENZENE~~	3	114.7	18.57 PPB

177

P-35

MICROTIP OPPS

PHOTOVAC



STOP @ 501.1
SAMPLE LIBRARY 1 DEC 18 1991 15:15
ANALYSIS # 15 NYSED NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-35

OFFSET 29.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 6 mU/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mUSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.9	21.9 mUS
UNKNOWN	2	12.5	34.9 mUS
UNKNOWN	3	18.7	408.2 mUS
~~BENZENE~~	4	114.7	15.29 PPB

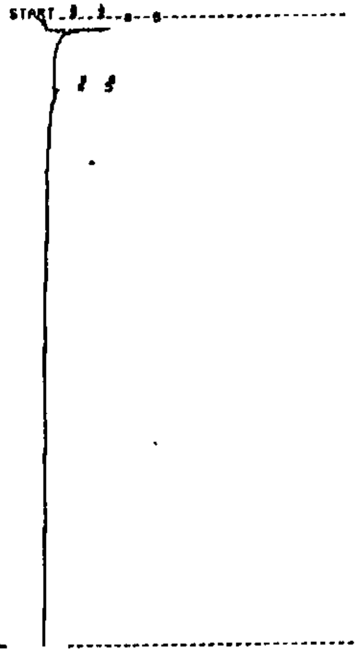
78

P-35

MICRATIR ... PPM

PHOTOVAC

START 0.1



STOP @ 555.5
SAMPLE LIBRARY 1 DEC 18 1991 15:33
ANALYSIS # 16 NYSEO NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-38

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	18.2	370.5 mVS
[illegible]	4	114.7	18.17 PPB

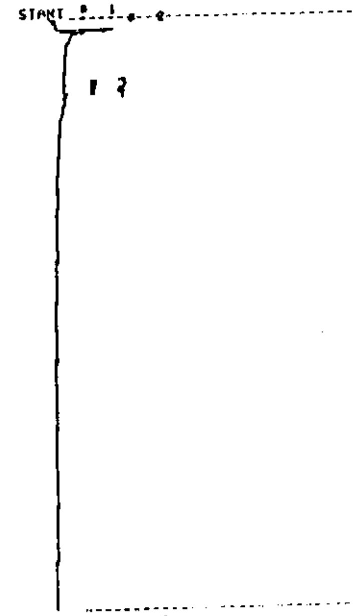
[illegible]

P-57

MICRATIR PPM

PHOTOVAC

START 0.1



STOP @ 500.0
SAMPLE LIBRARY 1 DEC 18 1991 15:49
ANALYSIS # 17 NYSEO NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 P-37

OFFSET 20.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	18.2	313.2 mVS
[illegible]	3	114.7	16.87 PPB

[illegible]

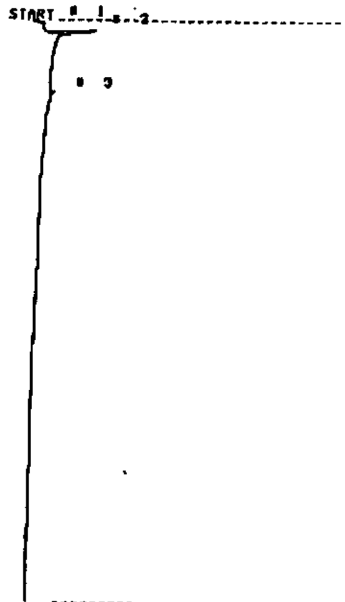
80

P-38

MICROTIP oppr

PHOTOVAC

START



STOP @ 302.0
SAMPLE LIBRARY 1 DEC 10 1991 16:15
ANALYSIS # 18 NYSEG NORWICH
INTERNAL TEMP 21 DEC 1991 SUS
GAIN 20 P-38

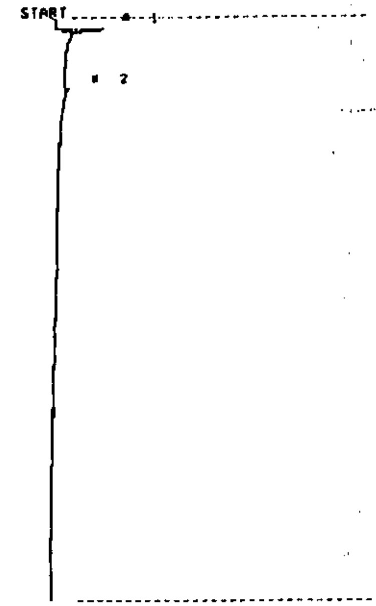
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.4	37.2 mVS
UNKNOWN	2	18.5	309.4 mVS
~~BENZENE~~	3	114.7	15.13 PPB

81

P-38 DUP

PHOTOVAC

START

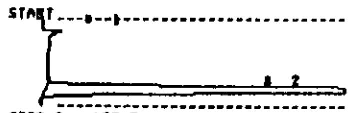


STOP @ 301.3
SAMPLE LIBRARY 1 DEC 10 1991 16:21
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 P-38 DUPLICATE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	19.0	265.9 mVS
[illegible]	2	114.7	13.44 PPB

Benzene STD

PHOTOVAC

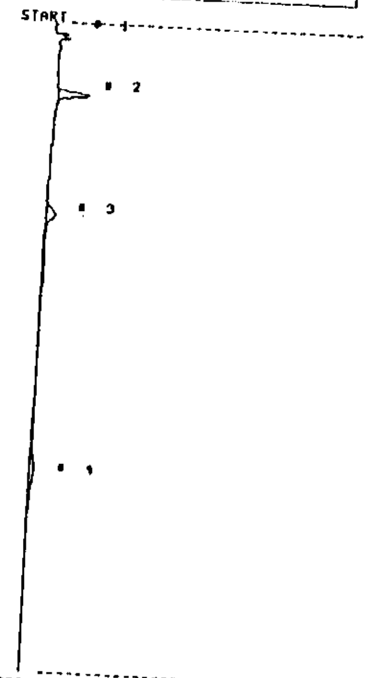


STOP # 135.7
SAMPLE LIBRARY 1 DEC 10 1991 10:24
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 21 DEC 1991 SVS
GAIN 20 BENZENE STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.6	42.0 mVS
BENZENE	2	118.2	7.200 PPM

BTEX CAL / FINAL

PHOTOVAC

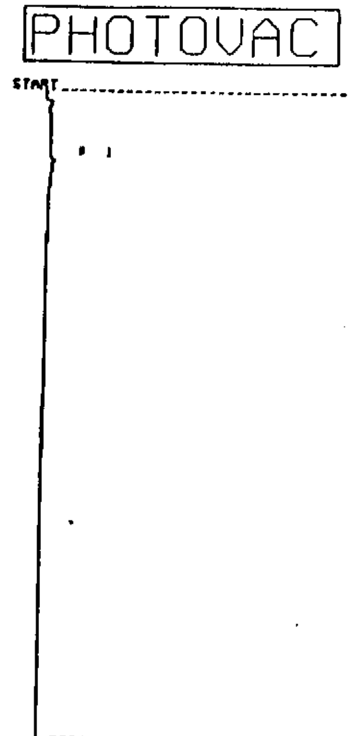


STOP # 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 10:42
ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SVS
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.9	28.5 mVS
BENZENE	2	113.5	292.0 PPB
TOLUENE	3	302.7	216.9 PPB
CHLO ETHY BENZEN	4	704.3	203.5 PPB

84

SYRINGE BLANK

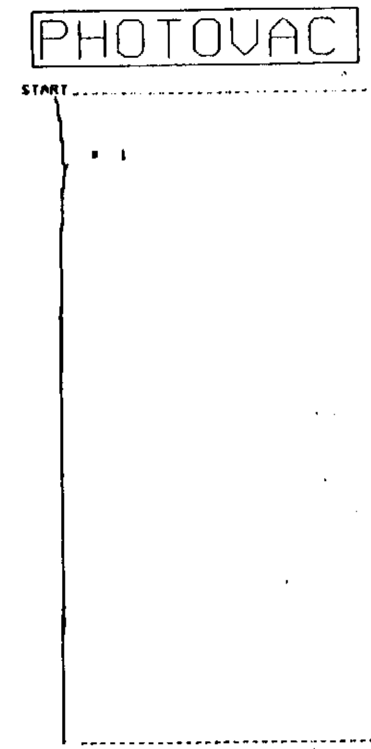


STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 17: 2
ANALYSIS # 22 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
[illegible]	1	114.7	12.06 PPB

85

MACHINE BLANK



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 17:20
ANALYSIS # 23 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 MACHINE BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	1	114.7	12.59 PPB

FINISH
1830
Om[illegible]

12-11-91 NYSEG
NORWICH

SUS P1 FOR SET-UP

WEATHER / 30's SUNNY

WORK PLAN / SUS CONTINUES
ALONG PROPERTY LINE
TO DEFINE PLUME
UPGO?

SET-UP

SAMPLE LIBRARY 1 DEC 11 1991 9:37
ANALYSIS # 32 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

OFFSET	30.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	17.9	21.5 mVS
UNKNOWN	2	31.9	3.1 VS

PHOTOVAC

DEC 11 1991 9:30

FIELD: 30
POWER: 37

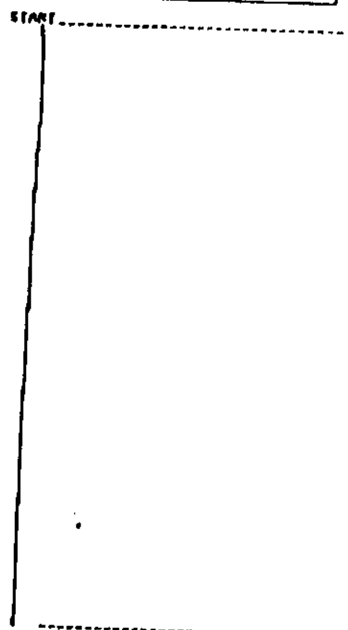
SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	150.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

88

MACHINE BLANK

PHOTOVAC

START



STOP 0 329.1

SAMPLE LIBRARY 1 DEC 11 1991 8:11
ANALYSIS # 29 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 10 MACHINE BLANK

OFFSET 36.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

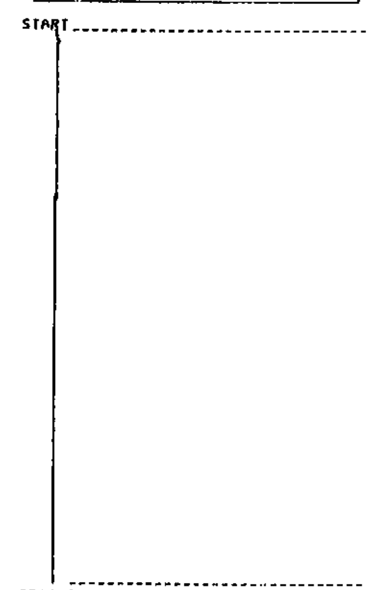
COMPOUND NAME PEAK R.T. AREA/PPM

87

SYRINGE BLANK

PHOTOVAC

START



STOP 0 851.2

SAMPLE LIBRARY 1 DEC 11 1991 8:27
ANALYSIS # 29 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 10 SYRINGE BLANK

OFFSET 33.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 16 16 0 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 1000.0 Sec
CYCLE TIME 0 Min

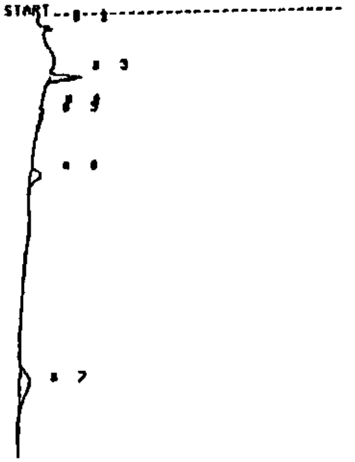
COMPOUND NAME PEAK R.T. AREA/PPM

90

B T E X | CAL

PHOTOVAC

START



STOP @ 843.9

SAMPLE LIBRARY	1	DEC 11 1991 10: 2
ANALYSIS #	3	MTSEG NORWICH
INTERNAL TEMP	25	DEC 1991 SUS
GAIN	20	SYRINGE BLANK

OFFSET	64.0 mU
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 6 mU/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mUSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.7	23.0 mUS
UNKNOWN	3	56.1	681.9 mUS
UNKNOWN	4	145.6	28.7 mUS
UNKNOWN	6	240.5	535.9 mUS
UNKNOWN	7	503.0	1.1 US

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY	1	DEC 11 1991 10: 4
ANALYSIS #	3	MTSEG NORWICH
INTERNAL TEMP	25	DEC 1991 SUS
GAIN	20	SYRINGE BLANK

OFFSET	57.0 mU
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 6 mU/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mUSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

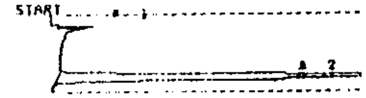
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.7	23.0 mUS
BENZENE	3	56.1	510.0 PPB
UNKNOWN	4	145.8	28.7 mUS
TOLUENE	6	240.5	910.0 PPB
E BENZENE	7	503.0	710.0 PPB

91

Benzene STD

PHOTOVAC

START



STOP @ 117.5

SAMPLE LIBRARY	1	DEC 11 1991 10: 7
ANALYSIS #	4	MTSEG NORWICH
INTERNAL TEMP	26	DEC 1991 SUS
GAIN	20	SYRINGE BLANK

OFFSET	57.0 mU
CHART SPEED	0.5 cm/min
SLOPE SENS.	10 10 6 mU/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mUSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

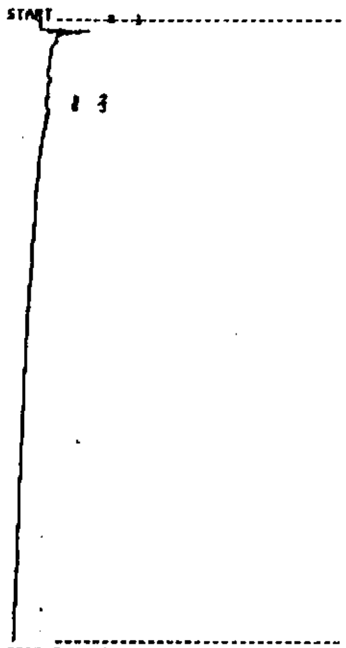
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	130.3 mUS
BENZENE	2	55.4	10.05 PPM

92

P-39

MICROTIP
2ppm

PHOTOVAC



STOP @ 359.4
SAMPLE LIBRARY 1 DEC 11 1991 10:24
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 P-39

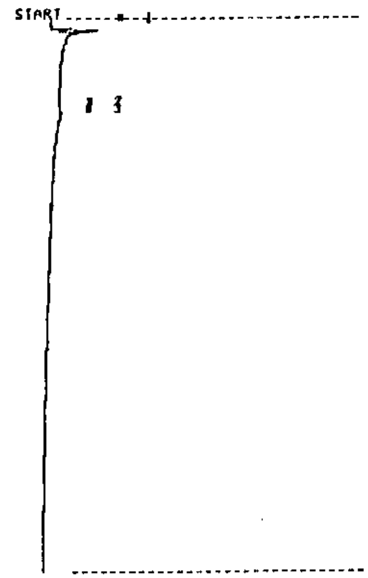
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.0	236.5 mUS
UNKNOWN	2	145.6	24.7 mUS

93

P-40

MICROTIP 0ppm

PHOTOVAC



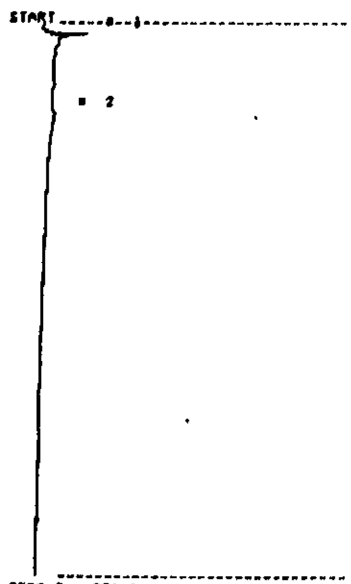
STOP @ 850.0
SAMPLE LIBRARY 1 DEC 11 1991 10:40
ANALYSIS # 6 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 P-40

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.0	239.5 mUS
UNKNOWN	2	145.6	21.2 mUS

P-41

Microtip
0ppm

PHOTOVAC



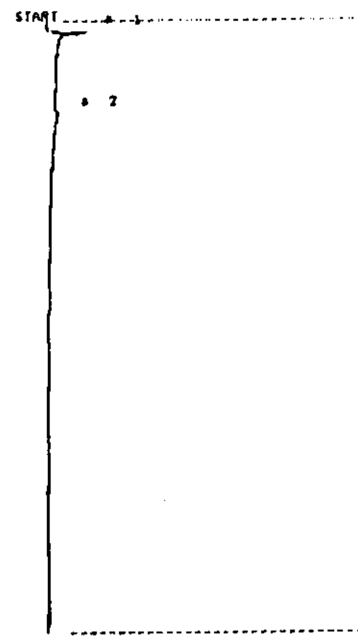
STOP @ 951.1
SAMPLE LIBRARY 1 DEC 11 1991 10:55
ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-41

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	10.1	212.2 mVS

P-42

Microtip
0ppm

PHOTOVAC



STOP @ 334.0
SAMPLE LIBRARY 1 DEC 11 1991 11:12
ANALYSIS # 8 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-42

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	10.2	213.0 mVS

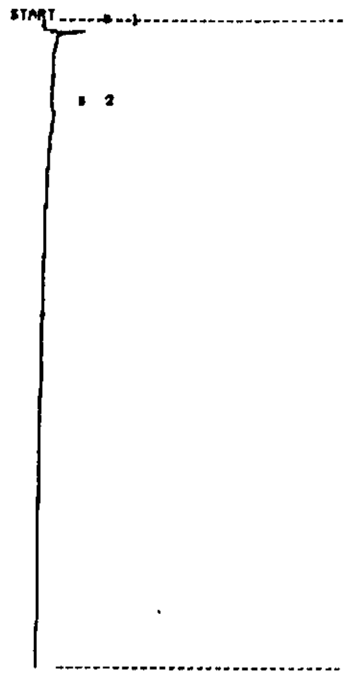
96

P-43

Microtip

0 ppm

PHOTOVAC



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 11 1991 11:23
ANALYSIS # 9 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-43

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.2	200.2 mVS

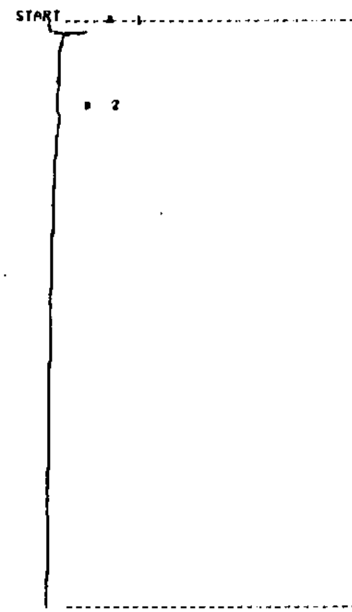
97

P-44

Microtip

0 ppm

PHOTOVAC



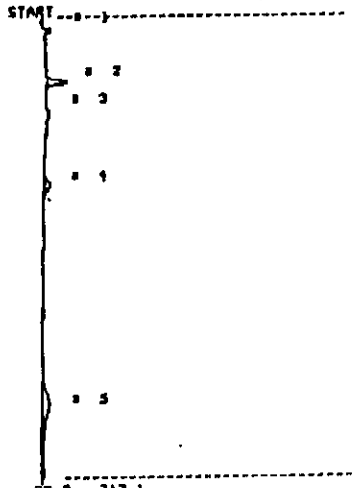
STOP @ 303.4
SAMPLE LIBRARY 1 DEC 11 1991 11:48
ANALYSIS # 10 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-44

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	156.5 mVS

98

BTEX CAL

PHOTOVAC



STOP @ 717.1
SAMPLE LIBRARY 1   DEC 11 1991   12: 5
ANALYSIS #   12   NYSEG NORWICH
INTERNAL TEMP 24   DEC 1991 SUS
GAIN   20   BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	2	190.6	308.0 PPB
TOLUENE	4	262.6	245.4 PPB
C E BENZENE	5	604.7	610.0 PPB

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 1   DEC 11 1991   12: 7
ANALYSIS #   12   NYSEG NORWICH
INTERNAL TEMP 24   DEC 1991 SUS
GAIN   20   BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	2	190.0	510.0 PPB
TOLUENE	4	262.0	410.0 PPB
C E BENZENE	5	604.7	710.0 PPB

(99

P-45

Mikrotip PPM

PHOTOVAC

STOP @ 1000.0
SAMPLE LIBRARY 1   DEC 11 1991   12:24
ANALYSIS #   13   NYSEG NORWICH
INTERNAL TEMP 22   DEC 1991 SUS
GAIN   20   P-45

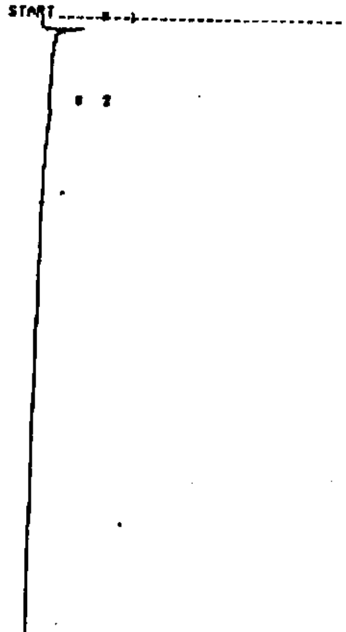
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.0	152.2 mVS
UNKNOWN	2	17.1	47.4 mVS

100

P-46

MICROTIP
ppm

PHOTOVAC



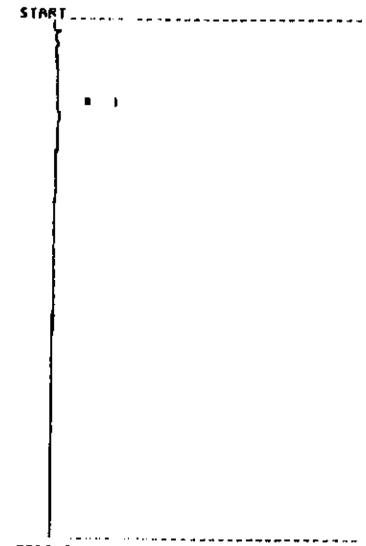
STOP @ 353.8
SAMPLE LIBRARY 1 DEC 11 1991 12:41
ANALYSIS # 14 NYSEG NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 P-46

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	208.0 mVS

101

SYRINGE BLANK

PHOTOVAC



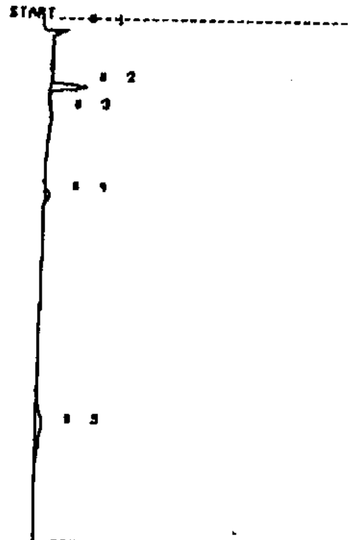
STOP @ 900.1
SAMPLE LIBRARY 1 DEC 11 1991 12:55
ANALYSIS # 15 NYSEG NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 ~~P-46~~ SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

102

BTEX CAL

PHOTOVAC



STOP @ 891.3
SAMPLE LIBRARY 1 DEC 11 1991 13:30
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 .P-46

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.8	54.2 mUS
BENZENE	2	185.1	854.9 PPB
TOLUENE	4	274.5	352.2 PPB
C E BENZENE	5	831.3	636.7 PPB

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 1 DEC 11 1991 13:33
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 P-46

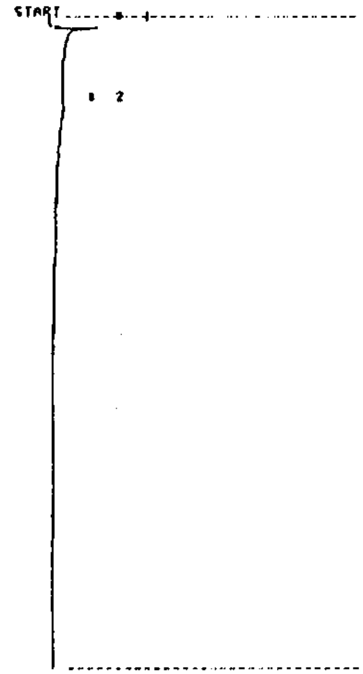
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.8	54.2 mUS
BENZENE	2	185.1	510.0 PPB
TOLUENE	4	274.5	410.0 PPB
C E BENZENE	5	831.5	710.0 PPB

103

P-47

MICROTIP
PPM

PHOTOVAC



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 11 1991 13:53
ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 20 P-47

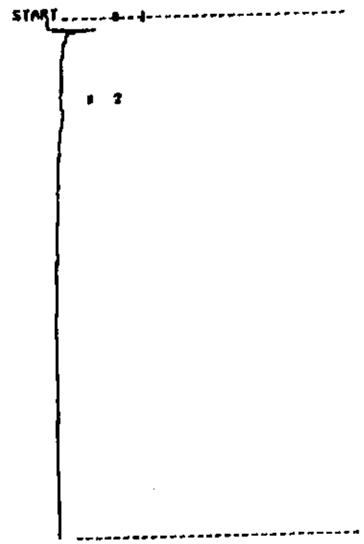
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	254.1 mUS

104

P-48

MICROTIP
open

PHOTOVAC



STOP @ 901.4
SAMPLE LIBRARY 1 DEC 11 1991 14:8
ANALYSIS TEMP 33 HYSEQ NORWICH
GAIN 20 P-48

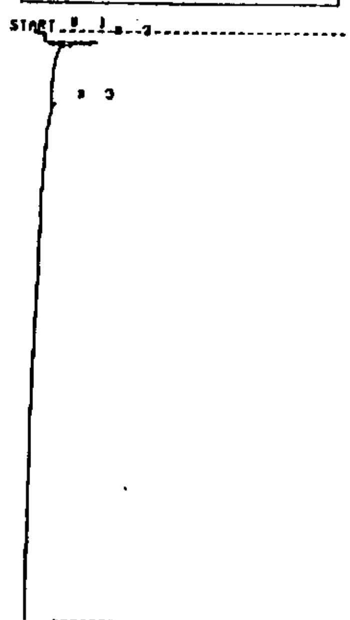
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	10.1	248.5 AUS

80

P-38

MICROTIP oppi

PHOTOVAC



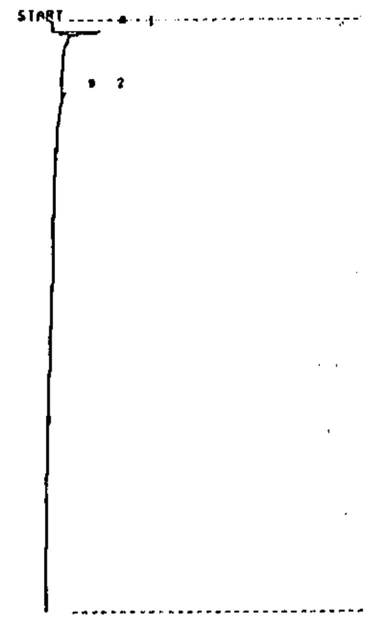
STOP @ 302.0
SAMPLE LIBRARY 1 DEC 10 1991 16:5
ANALYSIS # 18 NYSEG NORWICH
INTERNAL TEMP 21 DEC 1991 SUS
GAIN 20 P-38

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	5.4	32.2 mVS
UNKNOWN	2	18.5	303.4 mVS
BENZENE [redacted]	3	114.7	15.13 PPB

81

P-38 DUP

PHOTOVAC



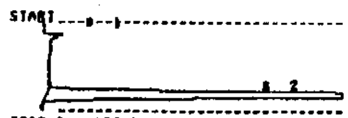
STOP @ 301.3
SAMPLE LIBRARY 1 DEC 10 1991 16:21
ANALYSIS # 19 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 P-38 DUPLICATE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	15.0	265.9 mVS
[redacted]	2	114.7	13.49 PPB

82

Benzene STD

PHOTOVAC



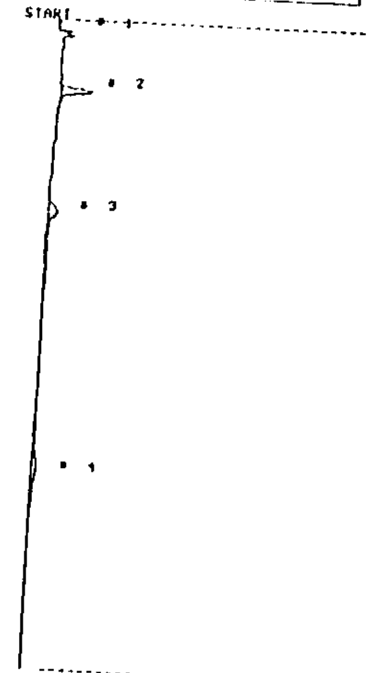
STOP 8 133.7
SAMPLE LIBRARY 1 DEC 18 1991 16:24
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 21 DEC 1991 SVS
GAIN 20 BENZENE STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	19.8	42.0 mVS
BENZENE	2	118.2	2.200 PPM

83

BTUX CAL / FINAL

PHOTOVAC

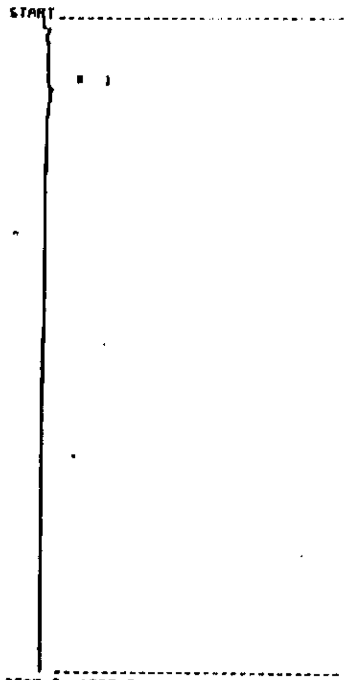


STOP 8 1000.0
SAMPLE LIBRARY 1 DEC 18 1991 16:42
ANALYSIS # 21 NYSEG NORWICH
INTERNAL TEMP 20 DEC 1991 SVS
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	19.9	20.5 mVS
BENZENE	2	113.5	232.0 PPB
TOLUENE	3	302.7	210.9 PPB
CHLO ETHY BENZEN	4	704.3	203.5 PPB

SYRINGE | BLANK

PHOTOVAC



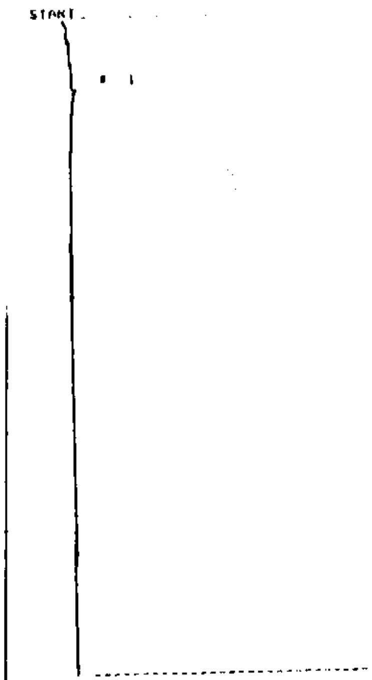
STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 171 2
ANALYSIS # 22 NYSEO NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

[illegible] 1 114.7 12.00 PPB

MACHINE BLANK

PHOTOVAC



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 10 1991 17:20
ANALYSIS # 23 NYSEO NORWICH
INTERNAL TEMP 20 DEC 1991 SUS
GAIN 20 MACHINE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE 1 114.7 12.55 PPB

Finish
1630
DnB

12-11-91 NYSEG
NORWICH

SUB P1 FOR SET-UP

WEATHER / 30°s SUNNY

WORK PLAN / SUS CONTINUES
ALONG PROPERTY LINE
TO ROTTING PLUME
WOODS

SET-UP

SAMPLE LIBRARY 1 DEC 11 1991 8:37
ANALYSIS # 37 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

OFFSET 10.0 mV
CHART SPEED 0.5 cm/Min
SLOPE SENS. 16 16 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 20 mVSec
TIMER DELAY 13.0 Sec
ANALYSIS TIME 1002.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	17.9	21.5 mVS
UNKNOWN	2	31.9	3.1 VS

PHOTOVAC

DEC 11 1991 8:20

FIELD: 30
POWER: 37

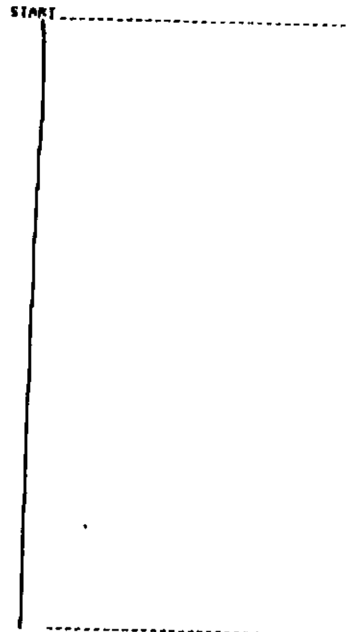
SAMPLE	8.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	150.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

88

MACHINE BLANK

PHOTOVAC

START



STOP @ 323.1
SAMPLE LIBRARY 1 DEC 11 1991 8:11
ANALYSIS # 20 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 10 MACHINE BLANK

OFFSET	30.0 mV
CHART SPEED	0.3 cm/min
SLOPE SENS.	10 10 0 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 Min

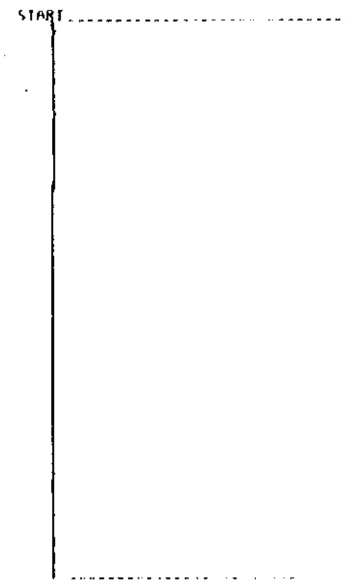
COMPOUND NAME PEAK R.T. AREA/PPM

87

STRINGE BLANK

PHOTOVAC

START



STOP @ 851.2
SAMPLE LIBRARY 1 DEC 11 1991 8:27
ANALYSIS # 23 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 10 STRINGE BLANK

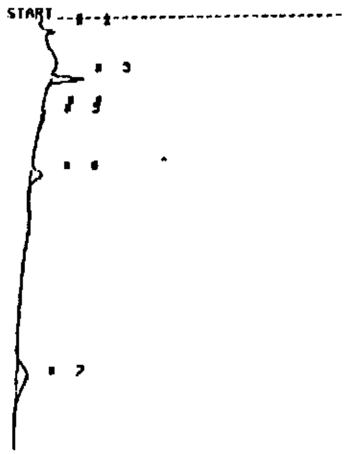
OFFSET	33.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 10 6 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

40

B | TBX | CAL

PHOTOVAC



STOP # 843.8
SAMPLE LIBRARY 1 DEC 11 1991 10: 2
ANALYSIS # 3 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

OFFSET	84.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 8 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.7	23.0 mVS
UNKNOWN	3	56.1	681.4 mVS
UNKNOWN	4	145.6	28.7 mVS
UNKNOWN	6	246.5	535.9 mVS
UNKNOWN	7	563.8	1.1 VS

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 DEC 11 1991 10: 4
ANALYSIS # 3 NYSEG NORWICH
INTERNAL TEMP 25 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

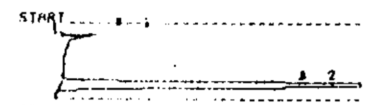
OFFSET	57.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 8 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.7	23.0 mVS
BENZENE	3	56.1	510.0 PPB
UNKNOWN	4	145.6	28.7 mVS
TOLUENE	6	246.5	910.0 PPB
E BENZENE	7	563.8	710.0 PPB

91

Benzene STD

PHOTOVAC



STOP # 112.5
SAMPLE LIBRARY 1 DEC 11 1991 10: 7
ANALYSIS # 4 NYSEG NORWICH
INTERNAL TEMP 26 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

OFFSET	57.0 mV
CHART SPEED	0.5 cm/min
SLOPE SENS.	16 16 8 mV/Sec
WINDOW +/-	10 Percent
MINIMUM AREA	20 mVSec
TIMER DELAY	10.0 Sec
ANALYSIS TIME	1000.0 Sec
CYCLE TIME	0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.3	190.3 mVS
BENZENE	2	55.4	10.05 PPM

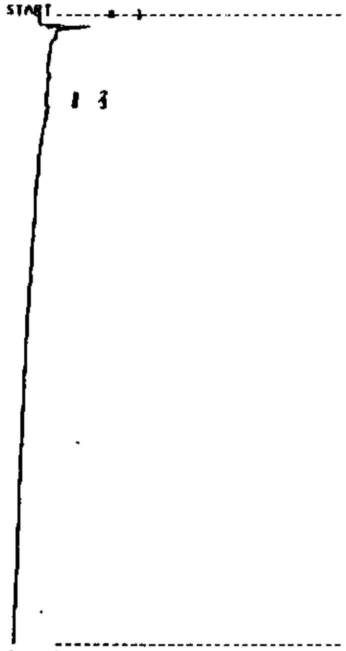
92

P-39

MICROTIP
2PPM

PHOTOVAC

START



STOP @ 353.4
SAMPLE LIBRARY 1 DEC 11 1991 10:24
ANALYSIS # 5 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 P-39

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.0	258.5 mVS
UNKNOWN	2	145.6	24.7 mVS

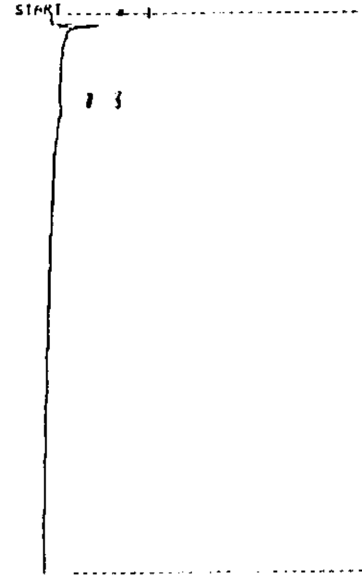
93

P-40

MICROTIP 0PPM

PHOTOVAC

START



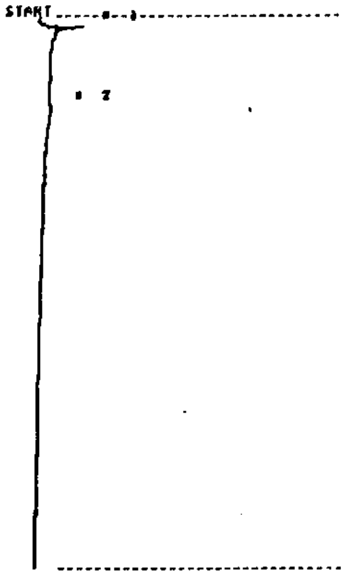
STOP @ 850.6
SAMPLE LIBRARY 1 DEC 11 1991 10:40
ANALYSIS # 6 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 P-40

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.0	235.5 mVS
UNKNOWN	2	145.8	21.2 mVS

94

P-41

PHOTOVAC



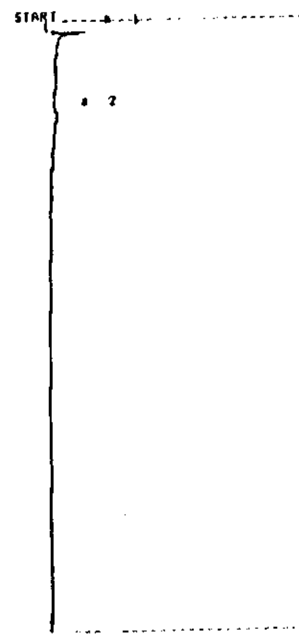
STOP @ 851.1
SAMPLE LIBRARY 1 DEC 11 1991 10:55
ANALYSIS # 7 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-41

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.1	212.2 mVS

95

P-42

PHOTOVAC



STOP @ 331.8
SAMPLE LIBRARY 1 DEC 11 1991 11:12
ANALYSIS # 8 NYSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-42

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	18.2	213.0 mVS

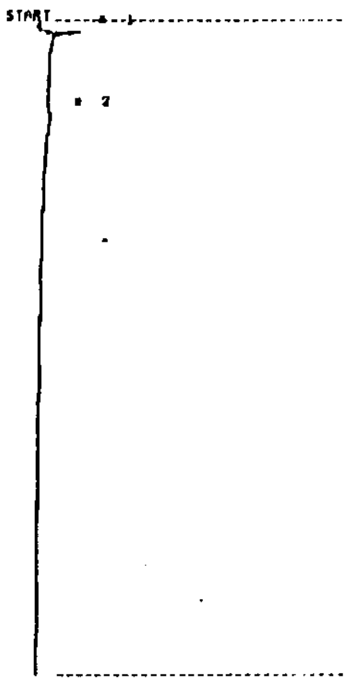
46

P-43

MICROTIP

0 ppm

PHOTOVAC



STOP @ 1000.0
SAMPLE LIBRARY 1 DEC 11 1991 11:29
ANALYSIS # 9 NTSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-43

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 10.2 200.2 mVS

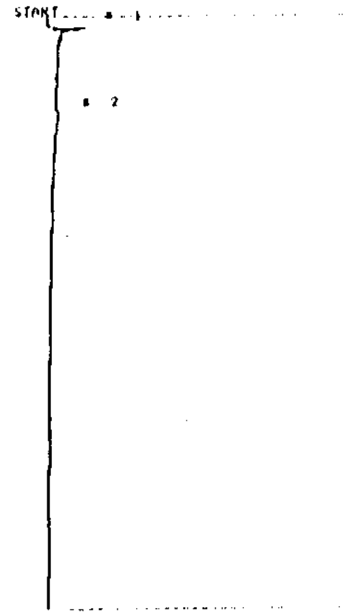
47

P-44

MICROTIP

0 ppm

PHOTOVAC



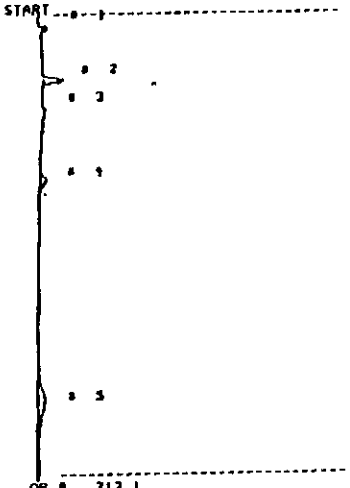
STOP @ 909.4
SAMPLE LIBRARY 1 DEC 11 1991 11:40
ANALYSIS # 10 NTSEG NORWICH
INTERNAL TEMP 23 DEC 1991 SUS
GAIN 20 P-44

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 10.3 196.5 mVS

98

PHOTOVAC



STOP # 717.1
SAMPLE LIBRARY 1 DEC 11 1991 12:5
ANALYSIS # 12 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	2	100.6	360.8 PPB
TOLUENE	4	202.6	215.4 PPB
C E BENZENE	5	604.7	610.0 PPB

PHOTOVAC

CALIBRATED PEAK 2,BENZENE

SAMPLE LIBRARY 1 DEC 11 1991 12:7
ANALYSIS # 12 NYSEG NORWICH
INTERNAL TEMP 24 DEC 1991 SUS
GAIN 20 BTEX CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	2	100.8	510.0 PPB
TOLUENE	4	202.6	410.0 PPB
C E BENZENE	5	604.7	710.0 PPB

BTEX. CAL

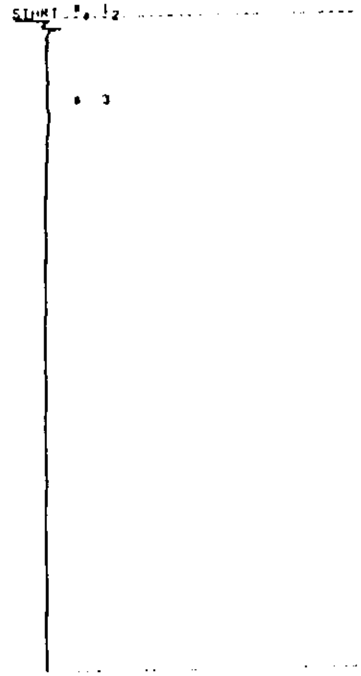
P-45

99

MICROTIP

PPM

PHOTOVAC



STOP # 1000.0
SAMPLE LIBRARY 1 DEC 11 1991 12:24
ANALYSIS # 13 NYSEG NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 P-45

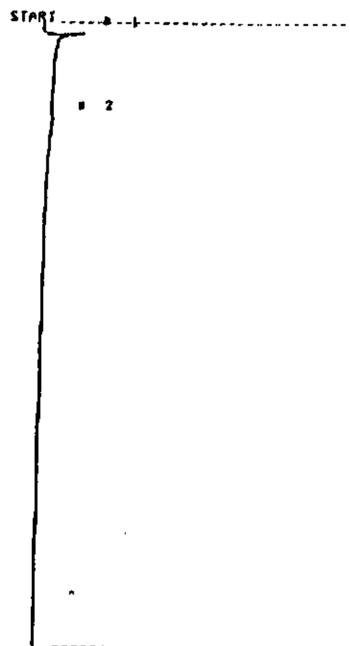
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.8	152.2 mVS
UNKNOWN	2	17.1	42.4 mVS

100

P-46

MICROTIP
2ppm

PHOTOVAC



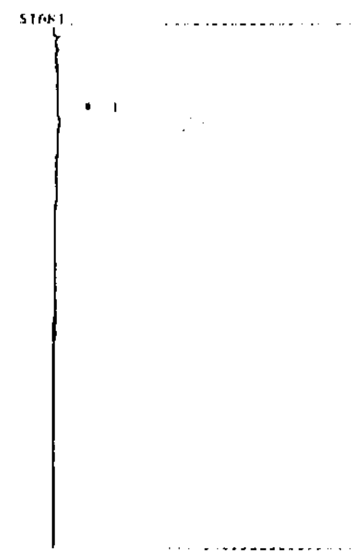
STOP # 353.0
SAMPLE LIBRARY 1 DEC 11 1991 12:41
ANALYSIS # 14 NYSED NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 P-46

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	19.3	288.0 AUS

101

SYRINGE BLANK

PHOTOVAC



STOP # 833.1
SAMPLE LIBRARY 1 DEC 11 1991 12:55
ANALYSIS # 15 NYSED NORWICH
INTERNAL TEMP 22 DEC 1991 SUS
GAIN 20 SYRINGE BLANK

COMPOUND NAME PEAK R.T. AREA/PPM

APPENDIX C

GEOLOGICAL DATA

R&R INTERNATIONAL, INC.

PROJECT: Engineering Science, Inc.

MOISTURE (ASTM D 2216-90), PARTICLE SIZE (ASTM D 422-63)

BORING NUMBER	DEPTH (FT.)	MOISTURE CONTENT (%)	PARTICLE SIZE ANALYSIS (% RETAINED ON U.S. STANDARD SIEVE) #4	#10	#40	#100	#200	SILT	CLAY
GW-1	16-18	29.2	0.0	0.0	0.6	0.5	0.3	17.9	80.7
GW-2	12-18	9.8	52.3	10.0	13.2	8.7	2.8	*	13.0
GW-3	8-16	14.6	46.7	9.7	18.0	4.2	1.4	*	20.0
GW-4	14-18	10.6	58.0	12.1	19.6	5.3	1.0	*	4.0
GW-5	8-16	13.1	34.2	9.2	20.4	10.9	3.3	*	22.0
GW-6	18-20	26.2	6.8	0.8	1.4	0.9	0.5	27.0	62.6
GW-7	12-14	28.0	0.0	0.1	0.2	0.1	1.3	37.1	61.2

BORING LOGS

Note: The Photovac readings presented on the boring logs are not indicative of actual VOC concentrations, but rather are indicative of relative differences in VOC levels between samples.

Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspector: N.A. Smith
Rig Type: Mobile B-57 4.25" HSA

ENGINEERING–SCIENCE DRILLING RECORD

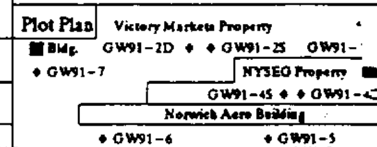
BORING GW91-1

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 1
Location: Northeast border of NYSEG property, east of Victory Markets trailer lot.

Weather Partly cloudy, 30s, 1" snow on ground
Date/Time Start December 30, 1991 / 10:00
Date/Time Finish December 30, 1991 / 15:45

Plot Plan

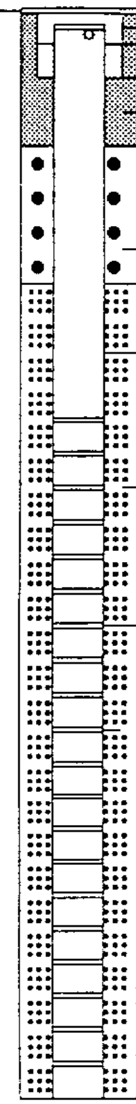


GROUNDWATER OBSERVATIONS

Water Level	7.94			
Date	1/13/92			
Time	9:08			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL		COMMENT
Headspace		0		SS			
0.0	•		37.5	1 for			Locking Steel Cark Locking Gripper Ca
	•	1		12"	FILL–brown medium sand and gravel	(wet)	Sand
	•			9			Cement Grout
	•	2		9			(0-2')
0.0	•		50	6	FILL–black fine sand, silt, glass, stone	(dry)	
	•	3		5			Bentonite Pellets
	•			8			(2-4')
	•	4		9			
0.0	•		62.5	6			2" ID Stainless
	•	5		6	SAND–brown, fine, some silt and	(dry)	Steel Riser (0.5-6'
	•			10	coarse gravel		
	•	6		15			
			0	17			3Q Sand Pack
		7		31			(4-16')
				27			
		8		22			0.010" Slot Prepacked
0.0	•		100	33	SAND & GRAVEL –brown, medium to very coarse	(moist)	Stainless Steel Screen
	•	9		15			(6-16')
	•			14			
	•	10		17			
0.0	•		62.5	3	no odor	(wet)	
	•	11		3			
	•			6			
	•	12		4			
			0	4			
		13		6			
				5			
		14		6			
0.0	•		62.5	4	SAND & GRAVEL –brown, fine to medium	(wet)	
	•	15		6			
	•			4			Stainless Steel
	•	16		4	CLAY–brown, some silt	(wet)	End Cap
0.0	•		50	14	gray	(moist–wet)	
	•	17		4			
	•			3			
	•	18		5			

WELL SCHEMATIC



Augering terminated at 16 feet. Sampling terminated at 18 feet.
* Sample I.D.: NOVUXX9101C. Analysis for VOA, BNA, Cyanide.
Environmental samples composited from 8 to 16 feet. MS/MSD samples composited from 0 to 18 fee

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0-4.25'; Sand & Gravel 4.25-15.5'; Clay 15.5-18'

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–2D

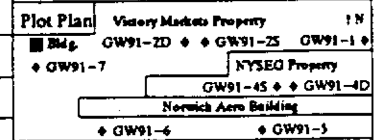
Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 2
Location: Victory Markets Trailer lot, south of well house.

Weather Cloudy, 30s
Date/Time Start January 6, 1992 / 9:30
Date/Time Finish January 6, 1992 / 16:50

Plot Plan

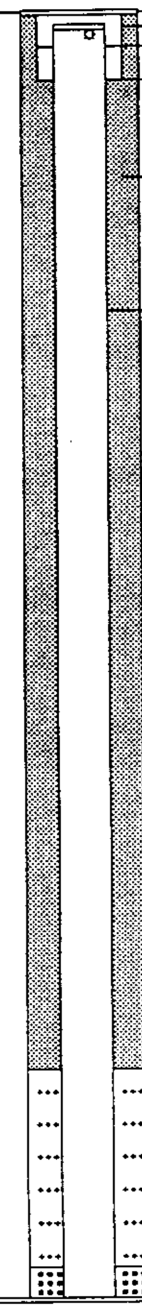


GROUNDWATER OBSERVATIONS

Water Level	4.54			
Date	1/13/92			
Time	9:15			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
Headspace		0		A		
				SS	ASPHALT	
1.7		1	66.7	36	FILL–brown fine to medium sand, some silt and slag	(dry)
				43		
		2		33		
0.0			87.5	22	FILL–black sand, stone, coal	(dry)
		3		15		
				13		
		4		6	SAND & SILT–brown, fine	(dry)
1.9			25	15		
		5		6		
				5		
		6		9		
0.0			87.5	10		
		7		4		
				7		
		8		7	SAND–brown, medium to coarse	(dry)
			0	3	no odor	
		9		3		
				4		
		10		8		
39.9			25	2	SAND & GRAVEL–brown, fine to medium	(wet)
		11		2		
				2		
		12		4		
0.0			50	5	little stone	
		13		5		
				5		
		14		8		
0.0			62.5	8		
		15		10		
				10	SAND–brown, coarse, little fine gravel	(wet)
		16		5		
0.0			75	12	some fine to coarse gravel	
		17		11		
				8		
		18		8		
			0	25		
		19		13		
				7		

WELL SCHEMATIC



COMMENTS

- Locking Steel Curb Box
- Locking Gripper Cap
- Sand
- Cement Grout (0–16')
- 2" ID Stainless Steel Riser (0.5–21')
- Bentonite Seal (16–19')
- 3Q Sand Pack (19–25')

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Asphalt 0–0.5'; Fill 0.5–3.25'; Sand & Silt 3.25–7.25'; Sand & Gravel 7.25–25'; Clay & Silt 25–28'

Contractor:	American Auger and Ditching
Driller:	Lee Pearsd
Inspector:	N.A. Smith
Rig Type:	Mobile B-57 4.25" HSA

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–2D

Sheet 2 of 2

PROJECT NAME NYSEG Norwich

PROJECT NUMBER SY236.10

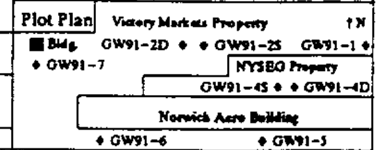
Location: Victory Markets Trailer lot, south of well house.

Weather Cloudy, 30s

Date/Time Start January 6, 1992 / 9:30

Date/Time Finish January 6, 1992 / 16:50

Plot Plan

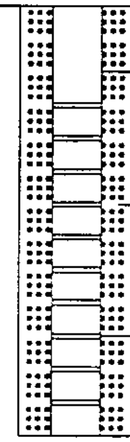


GROUNDWATER OBSERVATIONS

Water Level	8.54			
Date	1/13/92			
Time	9:15			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT SS	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		20		6	SAND–brown, medium to coarse, little fine gravel (wet)	2" ID Stainless Steel Riser (0.5–21')
0.0	*		75	5		
	*	21		3	SAND–brown, medium, some coarse gravel and stone (wet)	
	*			7		
	*	22		15		3Q Sand Pack (19–26')
0.0	*		87.5	10		
	*	23		30		
	*			15		0.010" Slot Prepacked Stainless Steel Screen (21–26')
	*	24		12		
0.0	*		75	4		
	*	25		10		
	*			4	SILT & CLAY–gray (moist – wet)	Stainless Steel End Cap
	*	26		9		
0.0			100	4		
		27		4		
				7		
		28		7		

WELL SCHEMATIC



Augering terminated at 26 feet. Sampling terminated at 28 feet.

* Sample I.D.: NOVUD–9102C
Composited from 20 to 26 feet.
Analysis for VOA, BNA, Cyanide.

STANDARD PENETRATION TEST

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

SUMMARY: Asphalt 0–0.5'; Fill 0.5–3.25'; Sand & Silt 3.25–7.25'; Sand & Gravel 7.25–25'; Clay & Silt 25–28'

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–2S

Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 1
Location: Victory Markets Trailer lot, south of well house.

Plot Plan: Victory Markets Property ↑N
■ Bldg. GW91–2D ◆ ◆ GW91–2S GW91–1 ◆
◆ GW91–7
NYSEG Property
GW91–4S ◆ ◆ GW91–4D
Norwich Aero Building
◆ GW91–6 ◆ GW91–5

Weather Cloudy, 30s
Date/Time Start January 7, 1992 / 8:45
Date/Time Finish January 7, 1992 / 11:50

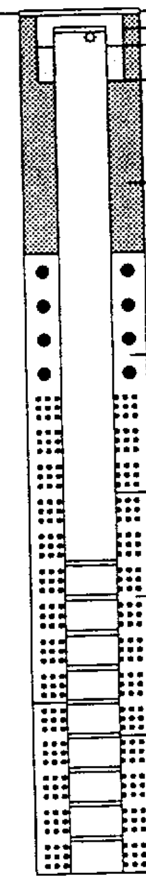
GROUNDWATER OBSERVATIONS

Water Level	8.23 ft			
Date	1/13/92			
Time	9:13			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
Headspace		0			
				A	SEE BORING LOG GW91–2D FOR SAMPLE DESCRIPTIONS
		1		A	
				A	
		2		SS	
5.2			37.5	30	FILL–brown and black sand, stone, and brick (dry)
		3		for	
				2 ft	
		4		A	SEE BORING LOG GW91–2D FOR SAMPLE DESCRIPTIONS
				A	
		5		A	
				A	
		6		A	
				SS	
5.8	•	7	50	47	SAND & GRAVEL–brown, medium sand, coarse gravel (sl. moist) trace odor
	•			12	
	•	8		11	
	•			7	
31.3	•	9	75	30	
	•			11	(wet)
	•	10		9	
	•			9	
27.2	•	11	12.5	20	trace oily sheen
	•			19	
	•	12		16	
	•			15	
		13			Boring terminated at 12.5 feet.
		14			

* Sample I.D.: NOVUSH9102C
Composited from 6.5 to 12.5 feet
Analysis for: VOA, BNA, Cyanide

WELL SCHEMATIC



COMMENTS

Locking Steel Curb Box
Locking Gripper Cap
Sand
Cement Grout (0–3.5')
Bentonite Pellets (3.5–5.5')
2" ID Stainless Steel Riser (0.5–7.5')
3Q Sand Pack (5.5–12.5')
0.010" Slot Prepacked Stainless Steel Screen (7.5–12.5')
Stainless Steel End Cap

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Asphalt 0–0.5'; Fill 0.5–3.25'; Sand & Silt 3.25–6.5'; Sand & Gravel 6.5–12.5'

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–4D

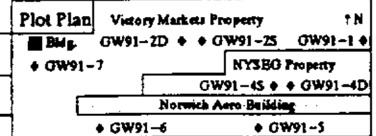
Contractor: American Auger and Ditching
Driller: Lee Penrod
Inspectors: S.B. Dillman, W.D. Lilley
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 2
Location: Southeast corner of NYSEG storage area, west of Birdsall Street Substation.

Weather Rain, 40s
Date/Time Start December 23, 1991 / 14:00
Date/Time Finish December 27, 1991 / 14:20

Plot Plan

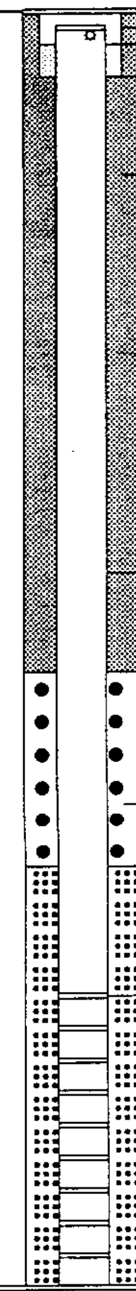


GROUNDWATER OBSERVATIONS

Water Level	9.18 ft			
Date	1/13/92			
Time	9:24			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT SS	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
Headspace		0				
0.0				5		Locking Steel Curb Box Locking Gripper Cap
		1		10	FILL–gray and black sand and gravel	Sand
				5		
		2		1		Cement Grout
0.0				4	FILL–black cinders, brick, and gravel	(0–10')
		3		6	slight coal tar odor	
				6		
		4		9		
0.0				7		
		5		5		
				2		
		6		3		
0.0				3	SAND & GRAVEL– black (wet)	
		7		6	SAND & GRAVEL–brown (dry)	
				9	slight coal tar odor	
		8		5		2" ID Stainless
0.0				7	SAND /	Steel Riser (0.5–15')
		9		4	SAND & GRAVEL –brown and gray, layered (moist – wet)	
				5		
		10		4		
34				3	SAND & GRAVEL –brown (wet)	
		11		4	coal tar sheen and odor	
				3		Bentonite Pellets
		12		5		(10–13')
70				3	sheen, tar particles	
		13		3		
				3		
		14		3		
49				8	oily sheen	3Q Sand Pack
		15		4		(13–22')
				4		
		16		4		
75				7	SAND –some gravel, brown (wet)	
		17		5	oily sheen	
				5		0.010" Slot Prepacked
		18		3		Stainless Steel Screen
69				6	SAND –brown	(15–20')
		19		2	SILT & SAND –trace gravel and clay, brown	
				2		

WELL SCHEMATIC



STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0–6'; Sand & Gravel 6–16'; Sand 16–18.5'; Silt & Sand 18.5–20'; Silt & Clay 20–22'; Silt, Sand, & Silty Clay 22–24'

ENGINEERING-SCIENCE DRILLING RECORD

BORING GW91-4D

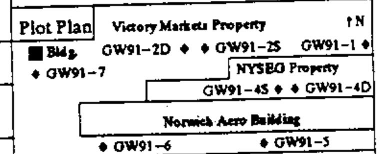
Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspectors: S.B. Dillman, W.D. Lilley
Rig Type: Mobile B-57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 2 of 2

Location: Southeast corner of NYSEG storage area, west of Birdsall Street Substation.

Plot Plan



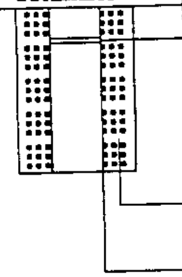
GROUNDWATER OBSERVATIONS

Water Level	9.18 ft			
Date	1/13/92			
Time	9:24			
Meas. From	Top of SS	Top of SS		

Weather Rain, 40s
Date/Time Start December 23, 1991 / 14:00
Date/Time Finish December 27, 1991 / 14:20

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT SS	FIELD IDENTIFICATION OF MATERIAL
		20		2	SILT & SAND – trace gravel and clay, brown
45				4	SILT & CLAY – gray and brown
		21		3	
				3	
		22		2	
55				4	SILT & SAND/
		23		2	SILTY CLAY –gray
				1	
		24		2	
					Boring terminated at 24 feet.
		25			

WELL SCHEMATIC



COMMENTS

0.010" Slot Prepacked Stainless Steel Screen (15–20')

3Q Sand Pack (13–22')

Stainless Steel Sump and End Cap (20–22')

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0–6'; Sand & Gravel 6–16'; Sand 16–18.5'; Silt & Sand 18.5–20'; Silt & Clay 20–22'; Silt, Sand, & Silty Clay 22–24'

ENGINEERING–SCIENCE
DRILLING RECORD

BORING GW91–4S

Contractor: American Auger and Ditching
Driller: Lee Peared
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

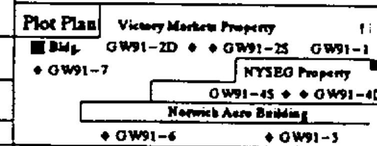
Sheet 1 of 1

Location: Southeast corner of NYSEG storage area, west of Birdsall Street Substation.

GROUNDWATER OBSERVATIONS

Water Level	8.86 ft			
Date	1/13/92			
Time	9:24			
Meas. From	Top of SS	Top of SS		

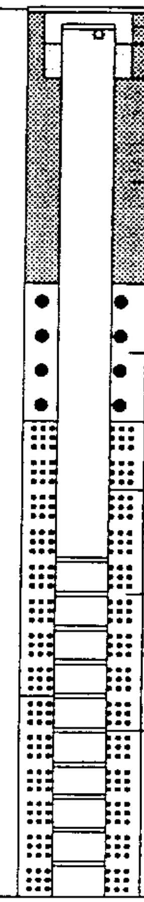
Weather Sunny, 30s
Date/Time Start December 27, 1991 / 15:00
Date/Time Finish December 27, 1991 / 17:00

Plot Plan


Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
Headspace		0			
				A	SEE BORING LOG GW91–4D FOR SAMPLE DESCRIPTIONS
		1		A	
				A	
		2		A	
				A	
		3		A	
				A	
		4		A	
				A	
		5		A	
				A	
		6		A	
				A	
		7		A	
				A	
		8		SS	
0.0	*		75	19	FILL–brown medium sand and gravel, some wood, brick, glass, trace coal fragments
	*	9		12	
	*			12	(dry–sl. moist)
	*	10		10	
13.4	*		100	7	(moist)
	*	11		5	SAND & GRAVEL –brown to gray, coarse, some stone strong hydrocarbon odor (wet)
	*			7	
	*	12		5	
			0	4	
		13		3	
				2	Boring terminated at 13 feet.
		14		3	

* Sample I.D.: NOVDSH9104C
Composited from 8 to 12 feet
Analysis for: VOA, BNA, Cyanide

WELL SCHEMATIC



COMMENTS

Locking Steel Curb & Locking Gripper Cap
Sand
Cement Grout (0–4')
Bentonite Pellets (4–6')
2" ID Stainless Steel Riser (0.5–8')
3Q Sand Pack (6–13')
0.010" Slot Prepacked Stainless Steel Screen (8–13')
Stainless Steel End Cap

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0–10'; Sand & Gravel 10–13'

ENGINEERING–SCIENCE DRILLING RECORD

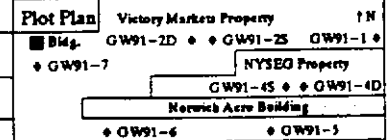
BORING GW91–5

Contractor: American Auger and Ditching
Driller: Lee Peared
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 1
Location: Norwich Aero Products parking lot near southeast corner of building

Plot Plan



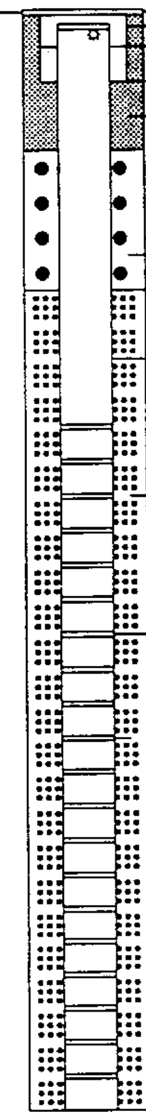
Weather Cloudy, 30s.
Date/Time Start January 2, 1992 / 9:15
Date/Time Finish January 2, 1992 / 13:45

GROUNDWATER OBSERVATIONS

Water Level	6.97 ft			
Date	1/13/92			
Time	9:35			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
Headspace		0		A	
				SS	ASPHALT
0.2		1	50	7	FILL–black cinders and ash (dry)
				5	SILT–brown, trace wood (dry)
		2		5	
0.0			62.5	4	SAND–light brown, very fine (dry)
		3		5	
				11	
		4		20	
0.0			75	10	trace fine to medium gravel
		5		19	
				18	
		6		14	
1.6			37.5	5	SAND–brown, fine to medium, (dry)
		7		10	some fine to medium gravel
				8	
		8		8	
1.1			62.5	12	stained black (moist – wet)
		9		8	slight hydrocarbon odor
				5	
		10		4	
5.6	•		12.5	2	GRAVEL–brown, medium to coarse, some (wet)
	•	11		2	medium sand, oily sheen
	•			2	hydrocarbon odor
	•	12		5	
2.3	•		62.5	7	SAND–gray, coarse, little fine gravel (wet)
	•	13		5	oily sheen, hydrocarbon odor
	•			4	
	•	14		6	
2.9	•		87.5	4	
	•	15		3	
	•			2	CLAY–gray, some silt (wet)
	•	16		2	
2.0			75	2	(moist–wet)
		17		3	
				3	
		18		3	

WELL SCHEMATIC



COMMENTS

- Locking Steel Curb Box
- Locking Gripper Cap
- Sand
- Cement Grout (0–2')
- Bentonite Pellets (2–4')
- 2" ID Stainless Steel Riser (0.5–6')
- 3Q Sand Pack (4–16')
- 0.010" Slot Prepacked Stainless Steel Screen (6–16')
- Stainless Steel End Cap

Augering terminated at 16 feet. Sampling terminated at 18 feet.
* Sample I.D.: NOVDXX9105C. Composited from 10 to 16 feet.
Analysis for VOA, BNA, Cyanide.

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Asphalt/Fill 0–1'; Silt 1–2'; Sand 2–6'; Sand & Gravel 6–15'; Clay 15–18'

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–6

Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 2
Location: Norwich Aero Products parking lot south of building

Plot Plan
Victory Markets Property ↑N
■ Bldg. GW91–2D ♦ ♦ GW91–2S GW91–1 ♦
♦ GW91–7
NYSEG Property
GW91–4S ♦ ♦ GW91–4D
Norwich Aero Building
♦ GW91–6 ♦ GW91–5

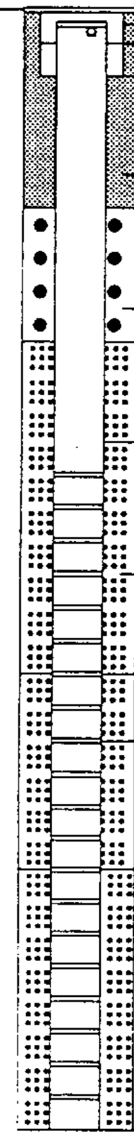
GROUNDWATER OBSERVATIONS

Water Level	7.18 ft			
Date	1/13/92			
Time	9:35			
Meas. From	Top of SS	Top of SS		

Weather Mostly sunny, 30s
Date/Time Start January 2, 1992 / 15:00
Date/Time Finish January 3, 1992 / 9:45

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
Headspace		0				
				A	ASPHALT	
		1		SS		
0.3			100	3	FILL–brown silt, brick, cinders	(dry)
		2		7		
0.0			75	5	SAND–light brown, very fine, little silt	(dry)
		3		8		
				11		
		4		9	SAND–brown, fine to medium, trace silt	(dry)
0.0			75	2	little coarse stone	
		5		5		
				5		
		6		8		
0.0			50	3		(moist)
		7		4		
				5		
		8		4		
36.4	•		25	1	coal tar odor	(moist – wet)
	•	9		2		
	•			4		
	•	10		4		
0.9	•		50	4	SAND–dark gray, fine to medium, some	(wet)
	•	11		5	fine to coarse gravel	
	•			4	coal tar odor	
	•	12		4		
8.7	•		50	4	oily sheen	
	•	13		4		
	•			3		
	•	14		4		
0.0	•		62.5	4	SAND–gray, medium to coarse, some	(wet)
	•	15		5	fine to coarse gravel	
	•			7		
	•	16		5		
0.0			100	1	SAND–dark gray, coarse, some fine gravel	(wet)
		17		1		
				4	CLAY–gray, little to some silt	(moist – wet)
		18		4		
0.0			75	3		
		19		3		
				5		

WELL SCHEMATIC



COMMENTS

- Locking Steel Curb Box
- Locking Gripper Cap
- Sand
- Cement Grout (0–3')
- Bentonite Pellets (3–5')
- 2" ID Stainless Steel Riser (0.5–7')
- 2Q Sand Pack (5–17')
- 0.010" Slot Prepacked Stainless Steel Screen (7–17')
- Stainless Steel End Cap

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Asphalt/Fill 0–2'; Sand 2–17'; Clay 17–20'

ENGINEERING-SCIENCE DRILLING RECORD

BORING GW91-6

Contractor: American Auger and Ditching
Driller: Lee Pearod
Inspector: N.A. Smith
Rig Type: Mobile B-57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 2 of 2
Location: Norwich Aero Products parking lot south of building.

GROUNDWATER OBSERVATIONS

Water Level	7.18 ft			
Date	1/13/92			
Time	9:35			
Meas. From	Top of SS	Top of SS		

Weather Mostly sunny, 30s
Date/Time Start January 2, 1992 / 15:00
Date/Time Finish January 3, 1992 / 9:45

Plot Plan: Victory Markets Property ↑N; Bldg.; GW91-2D; GW91-2S; GW91-1; GW91-7; NYSEG Property; GW91-4S; GW91-4D; Norwich Aero Building; GW91-6; GW91-5

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT SS	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
		20		5	CLAY-gray, little silt (moist - wet)		
					Augering terminated at 17 feet. Sampling terminated at 20 feet.		
		21					
					* Sample I.D.: NOVDXX9106C		
		22			Composited from 8 to 16 feet.		
					Analysis for VOA, BNA, Cyanide.		
		23					
		24					
		25					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Asphalt/Fill 0-2'; Sand 2-17'; Clay 17-20'

ENGINEERING–SCIENCE DRILLING RECORD

BORING GW91–7

Contractor: American Auger and Ditching
Driller: Lee Penrod
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 1
Location: Victory Markets property, northwest of NYSEG, near concrete building and railroad tracks.

Plot Plan
Victory Markets Property
Bldg. GW91–2D ♦ ♦ GW91–2S GW91–
♦ GW91–7
NYSEG Property
GW91–4S ♦ ♦ GW91–4D
Norwich Aero Building
♦ GW91–6 ♦ GW91–5

Weather Light snow, 30s
Date/Time Start January 7, 1992 / 12:10
Date/Time Finish January 7, 1992 / 16:20

GROUNDWATER OBSERVATIONS

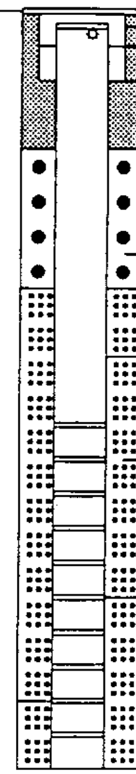
Water Level	7.29 ft			
Date	1/13/92			
Time	9:19			
Meas. From	Top of SS	Top of SS		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT SS	FIELD IDENTIFICATION OF MATERIAL
Headspace		0			
0.8			50	13	
		1		22	FILL–brown to black sand, some stone (dry)
				5	SAND & SILT–brown, fine (dry–moist)
		2		9	
0.0			50	11	SAND–brown, fine, some fine gravel and stone, little silt (sl. moist)
		3		14	
				15	
		4		22	
0.0	•		50	24	
	•	5		32	
	•			18	
	•	6		18	
2.2	•		50	27	
	•	7		21	
	•			7	
	•	8		6	
1.4	•		62.5	9	SAND–brown, very fine (moist–wet)
	•	9		5	
	•			7	
	•	10		6	SAND & SILT–brown, very fine, trace clay (wet)
1.1	•		50	3	SILT–gray, some clay, little very fine sand (moist–wet)
	•	11		4	
	•			5	
	•	12		6	
0.0			100	4	SILT & CLAY–gray (moist–wet)
		13		4	
				5	
		14		5	

Augering terminated at 11 feet. Sampling terminated at 14 feet.

* Sample I.D.: NOVUXX9107C
Composited from 4 to 12 feet.
Analysis for VOA, BNA, Cyanide.

WELL SCHEMATIC



COMMENT

- Locking Steel Cart
- Locking Gripper Ca
- Sand
- Cement Grout (0–2')
- Bentonite Pellets (2–4')
- 2" ID Stainless Steel Riser (0.5–6'
- 3Q Sand Pack (4–11')
- 0.010" Slot Prepack Stainless Steel Screen (6–11')
- Stainless Steel End Cap

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0–0.75'; Sand & Silt 0.75–2'; Sand & Gravel 2–9.5'; Sand & Silt 9.5–10'; Silt & Clay 10–14'

ENGINEERING–SCIENCE DRILLING RECORD

BORING BH91–3

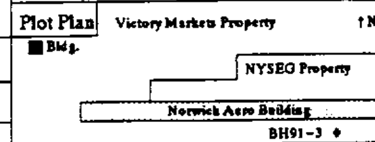
Contractor: American Auger and Ditching
Driller: Lee Penrod
Inspector: N.A. Smith
Rig Type: Mobile B–57 4.25" HSA

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10

Sheet 1 of 1
Location: South of Norwich Aero Products parking lot near southeast corner of building.

Weather Mostly sunny, 30s.
Date/Time Start December 30, 1991 / 16:00
Date/Time Finish December 31, 1991 / 10:00

Plot Plan

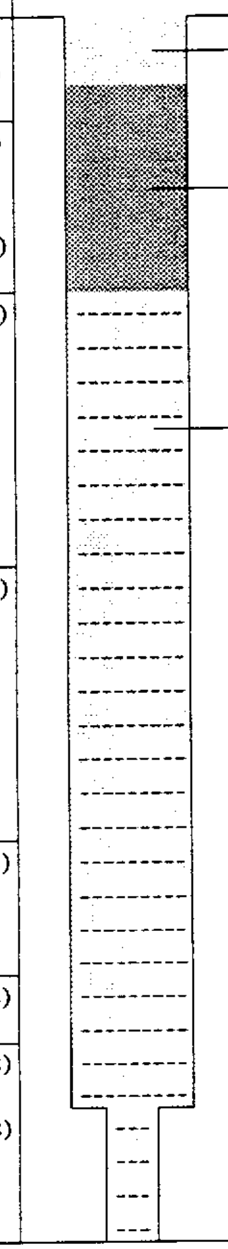


GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
Headspace		0		SS		
0.3			87.5	1	FILL–black cinders and ash (dry)	Sand
		1		5		
				8		
		2		5	SAND–brown, fine, little silt (dry)	
0.0			87.5	4		Cement Grout
		3		10		
				14	(moist)	
		4		14		
0.0			62.5	11	SAND & GRAVEL–brown, fine to medium sand, (moist)	
		5		11	medium to coarse gravel	
				7		
		6		5		Bentonite slurry
0.0			50	3		
		7		6		
				6		
		8		6		
0.0	•		37.5	6	SAND–brown, fine to medium, (wet)	
	•	9		3	little coarse gravel	
	•			4	slight hydrocarbon odor and sheen	
	•	10		4		
2.0	•		12.5	2	oily sheen	
	•	11		3		
	•			2		
	•	12		2		
13.0	•		37.5	2	SAND–brown, fine, little fine gravel and silt (wet)	
	•	13		3	oily sheen, no odor	
	•			2		
	•	14		4		
0.0	•		50	3	SAND–brown, coarse to very coarse, (wet)	
	•	15		4	little fine gravel	
	•			4	CLAY–brown, some silt (wet)	
	•	16		3		
0.0			87.5	5	CLAY–gray, some silt (wet)	
		17		3		
				4		
		18		3		

WELL SCHEMATIC



Augering terminated at 16 feet. Sampling terminated at 18 feet.
* Sample I.D.: NOVDXX9103C. Composited from 8 to 16 feet.
Analysis for VOA, BNA, Cyanide.

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

SUMMARY: Fill 0–1.5'; Sand, little Silt 1.5–4'; Sand & Gravel 4–14.75'; Clay 14.75–18'

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-01

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of purifier house, east of fence
N10,E182

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather

Date/Time Start November 19, 1991

Date/Time Finish November 19, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
	SB91-5		35	3			
	SB91-5	1		4			Cement Grout
	SB91-5			2	dark grey-black CINDERS with reddish areas (sand to pebble size), trace clay and silt		
	SB91-5	2		3			
	SB91-5			3			
	SB91-5	3		2	dark grey-black CINDERS with reddish areas (sand to pebble size), trace clay and silt		
	SB91-5			2			
	SB91-5	4		2			
				2			
		5		2	dark grey-black CINDERS with reddish areas (sand to pebble size), trace clay and silt		
				2			
		6	70	2			
				2			
		7		3	upper 4" as above bottom 9" tan SAND		
				3			
		8	40	5			
				4			
		9		6	silty tan SAND with some gravel end of boring 10'		
				9			
		10		8			

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-6': CINDERS
6-10': SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–02

Contractor: Engineering–Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of purifier house, close to building
N22,E200
Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather

Date/Time Start November 19, 1991

Date/Time Finish November 19, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
							Ground Surface
		0		ss	0		
			60	2			Cement Grout
		1		2	silty SAND, trace ash, cinders		
				2	reddish SILT with some clay		
		2		2	some cinders		
69 ppm	SB91–1			2	bottom 6" stained, oily, trace cinders		
	SB91–1	3		2	Refusal – end of boring		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–3': SAND, SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-03

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: NW of B91-2 three ft.
N23,E198

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather

Date/Time Start November 19, 1991

Date/Time Finish November 19, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
			80	2			
		1		2	tan-brown SILT, scattered black staining, moist		Cement Grout
				2			
		2	90	2			
				2			
39 ppm		3		2	dark gray-black CINDERS, ash, some silt		
				2	bottom 5" yellow-tan moist clay		
		4		2			
				2	as above		
39 ppm		5		5			
				2			
		6		2	tan SAND 8",1" black stained sand		
14 ppm				2	bottom 2" coarse sand, pebbles		
		7		6	wet SAND, GRAVEL		
				7	3" oily stained sand		
169 ppm		8		5	bottom 2" unstained coarse gravel		
				7			
		9		12	grossly stained wet GRAVEL		
				11	End of boring 9.5'		
		10					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-1.5': SILT
1.5-5.5': CINDERS
5.5-6.5': SAND
6.5-9.5': GRAVEL

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-04

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: North of fence, south of holder
N80,E260

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Partly cloudy, clearing, 57 F
Date/Time Start November 20, 1991
Date/Time Finish November 20, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
70 ppm	SS91-7				0-12" SILT and SAND, trace coal, clay, brick.		
	SS91-7	1		100	16-18" stained.		
					Refusal, end of boring 1.5'		Cement Grout
		2					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-1.5': SILT, SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–05

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Inside south end of holder
N90, E260

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Partly cloudy, clearing, 57 F

Date/Time Start November 20, 1991

Date/Time Finish November 20, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
34 ppm		0		ss	0		Ground Surface
				39	upper 7" GRAVEL		
		1		32	lower 7" SILT with little sand		
206 ppm	SB91–2		80	28	dark gray with petroleum odor		Cement Grout
	SB91–2	2		14			
	SB91–2			12	SILT with little clay, some gravel		
	SB91–2	3		12	coal, ash layer, moist, wet at base		
		3.1		100	Refusal, end of boring 3.1'		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–1.5': GRAVEL SILT
1.5–3.1': SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-06

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of B91-5, N90,E248

Weather Partly cloudy, clearing, 57 F
Date/Time Start November 20, 1991
Date/Time Finish November 20, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
			100	25	SILT, tan, some gravel		
		1		27	tar, petroleum		
		1.1		100	Refusal end of boring 1.1'		Cement Grout

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-1': SILT

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–07

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Along north side of fence
N70,E260

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Partly cloudy, clearing, 57 F
Date/Time Start November 20, 1991
Date/Time Finish November 20, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
28 ppm			55	15			
		1		25	SILT with little clay, some gravel		
				29	rounded pebbles		Cement Grout
364 ppm		2	67	31	stained, tar odor		
				14			
		3		15	SILT with some clay and gravel		
				11			
405 ppm	SB91-3	4		11			
	SB91-3			10			
	SB91-3	5		11	SILT and SAND with some gravel		
	SB91-3			12	wet, oily, odor trace stain,near base of sample		
104 ppm		6		10	as above		
				10	wet, oily, sheen		
		7		6			
				6			
		8		6			
				4	no recovery, stain at end of split–spoon		
	SB91-4	9		5			
	SB91-4			12	sandy, SILT, rounded GRAVEL		
	SB91-4	10		7	oily stain, free product		
				6	end of boring 10.5'		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–4': SILT
4–9': SILT, SAND
9–10.5': SILT, GRAVEL

ENGINEERING-SCIENCE
DRILLING RECORD

BORING B91-08

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Center of holder
N110, E260

Weather Partly cloudy, clearing, 57 F
Date/Time Start November 20, 1991
Date/Time Finish November 20, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
750 ppm			35				
		1					Cement Grout
					SILT, fine SAND, with rounded GRAVEL		
370 ppm		2		37	bottom 3" stained dark black		
				30			
		3		30	fine silty SAND and GRAVEL		
				30	upper 9" wet with oily sheen		
770 ppm	SB91-6	4	50	30	trace brick and tarpaper frag. in sample		
	SB91-6			12			
	SB91-6	5		22	coarse angular GRAVEL, medium-fine SAND		
	SB91-6			11			
	SB91-6	6		12	end of boring 6'		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': SILT, SAND, GRAVEL
2-6': SAND, GRAVEL

ENGINEERING–SCIENCE
DRILLING RECORD

BORING B91–09

Contractor: Engineering–Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: North of B91–8, N of holder edge
N130,E260

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Partly cloudy, clearing, 57 F
Date/Time Start November 20, 1991
Date/Time Finish November 20, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
250 ppm				34			
		1		45	SILT with some rounded gravel		
				67			Cement Grout
728 ppm		2		57			
				31			
		3		18	SILT with some rounded gravel		
				11	moist, trace clay, trace stain, strong odor		
		4		9			
470 ppm			80	14			
		5		16	SILT, SAND with some rounded gravel, moist		
				10	oily brown–tan residue at bottom of sample		
1110 ppm	SB91–7	6	50	14			
	SB91–7			10	SILT, fine SAND with some coarse gravel moist		
	SB91–7	7		9	oily brown–tan residue at bottom of sample		
255 ppm	SB91–7			12			
	SB91–7	8		11			
	SB91–7			9	SILT, fine SAND with some coarse gravel moist		
	SB91–7	9		7			
				6	as above		
		10		6	wet with oily sheen		
				6	end of boring 10.5 Boring completed 11–21–91		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–4': SILT
4–10.5': SILT, SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–09A

Sheet 1 of 1

Contractor: Engineering–Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Location: North of holder near property line
N148.E260

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 21, 1991
Date/Time Finish November 21, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
2000 ppm					asphalt 1", 12" fine SAND, some gravel		
		1			6" SILT, fine SAND stained black		Cement Grout
250 ppm		2		12	4" SILT, fine SAND with little gravel		
				25	5" pink, flesh color		
		3		18	4" brick, fine SILT, SAND, some gravel		
350 ppm			25	18			
		4		9	brick frag., fine SAND with some gravel		
				8			
		5		7			
				8			
40 ppm	SB91–8	6	70	6	silty SAND, brick frag.		
	SB91–8			8	some gravel, trace coal		
	SB91–8	7		8			
				9	no recovery		
		8		12			
				6			
		9		11			
				9	GRAVEL, some sand, oily sheen,		
		10		14	tan–brown, staining, wet		
				10	end of boring 11'		
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–3.5': SILT, SAND
3.5–9': SAND
9–11': GRAVEL

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-10

Contractor: Engineering-Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Center of large holder west of fence
N118,E320

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 21, 1991
Date/Time Finish November 21, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
	SS91-5	1			silty SAND, trace red brick and trace coal		Cement Grout
	SS91-5						
		2					
					Refusal end of boring 2.5'		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2.5': SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–11

Contractor: Engineering–Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: In large holder
SW of B91–10
N120,E358

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F

Date/Time Start November 21, 1991

Date/Time Finish November 21, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
		0		ss	0		Ground Surface
178 ppm				86			
		1		36	silty SAND, trace red brick and trace coal		
	SB91–9			24			Cement Grout
	SB91–9	2		15			
	SB91–9			9	Refusal end of boring 2.5'		
				50/0			

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2.5': SAND

ENGINEERING–SCIENCE DRILLING RECORD

Contractor: American Auger and Ditching
Driller: Lee Penrod
Inspector: S.B. Dillman
Rig Type: Mobile B–7

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

BORING B91–12
Sheet 1 of 1
Location: West edge of large gas holder
N120, E305
Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 21, 1991
Date/Time Finish November 21, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground Surface
			75	82	ASPHALT, silty SAND, some rounded gravel traces ash, strong odor, black stain dry to damp		Cement Grout
		1		34			
				40			
		2		26			
348 ppm			50	18	2" ASPHALT, silty SAND, some rounded gravel tan brown oil staining,sheen		
		3		17			
				16			
		4		14			
429 ppm	SB91–10		70	22	2" SILT with some coal tan brown oily material, sheen		
	SB91–10	5		14			
	SB91–10			17			
	SB91–10	6		9			
246 ppm				14	2" SILT with some coal 8" silty SAND with some gravel strong odor		
		7		18			
				12			
		8		12	boring caving in sample very moist with strong odor end of boring 9'		
				8			
		9		8			
		10					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–4': ASPHALT, SAND
4–6': SILT
6–9': SILT, SAND

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-13

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Between holders, west of B91-12
N120,E290

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F

Date/Time Start November 21, 1991

Date/Time Finish November 21, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				ss		
		0			0	Ground Surface
614 ppm			65	56		
		1		32	dark stained silty SAND with some gravel	
				21	little coal, strong odor	
		2		8		Concrete grout
				14		
		3		17	SILT, fine SAND, some gravel	
	SB91-11			16	wet	
	SB91-11	4		14		
	SB91-11			10		
	SB91-11	5		16	GRAVEL with some silt and fine sand	
	SB91-11			18	wet	
	SB91-11	6		15		
				14		
		7		12	wet medium sand with some fine gravel	
				9		
		8				
		9				
		10				

BORING SCHEMATIC

STANDARD PENETRATION TEST

SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': SAND
2-4': SILT, SAND
4-6': GRAVEL
6-7.5': SAND

ENGINEERING–SCIENCE DRILLING RECORD

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

BORING B91–14

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: NW of western holder

N120,E240

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F

Date/Time Start November 21, 1991

Date/Time Finish November 21, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				ss			
		0			0		Ground surface
85 ppm				37			
		1		48	2" ASPHALT, tan SILT, GRAVEL		
				26	dense firm SILT, damp, with gravel		
		2		31			Concrete grout
57 ppm				12			
		3		48	SILT, fine SAND, trace black tar residue		
				39	some staining, trace red brick, 2" concrete/mortar		
		4		19			
	SB91–12			14			
	SB91–12	5		9	6" GRAVEL, trace silt, 4" red brick		
	SB91–12			18	6" GRAVEL, heavily stained		
	SB91–12	6		17			
		7					
		8					
		9					
		10					

STANDARD PENETRATION TEST

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

0–2': ASPHALT, SILT, GRAVEL

2–4': SILT, SAND

4–6': GRAVEL

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-15

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Hand auger

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: NE of site, east of Victory Market trailers
N120,E290
Plot Plan
↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 21, 1991
Date/Time Finish November 21, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				SS		
		0			0	Ground surface
	SS91-3					
	SS91-3	1				
					dark brown SILT with some gravel	Concrete grout
		2				
		3				
	SS91-2				end of boring, 3.5'	
		4				
		5				
		6				
		7				
		8				
		9				
		10				

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-3.5': SILT

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–16

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of holder and B91–14
in parking lot
N120,E220

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

Plot Plan
↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				ss			
		0			0		Ground surface
240 ppm				26			
		1		28	4" ASPHALT, gravel		
				40	12" fine SAND, some gravel, odor		Concrete grout
		2		19			
655 ppm				20			
		3		21	5" some black staining		
				14	lower 12" SILT, fine SAND, GRAVEL, dry		
		4		10			
240 ppm	SB91–13			6			
	SB91–13	5		5	18" SILT with some clay, black staining		
	SB91–13			4	pockets of coarser stained silt, strong odor		
	SB91–13	6		5			
269 ppm				10			
		7		14	SILT and CLAY		
				11	SILT with some gravel		
490 ppm		8		10			
				10	SAND, SILT, some gravel, stained		
		9		9			
93 ppm				7			
		10		11	SAND, wet, tan–brown oily		
				11			
		11		8	end of boring 11'		

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2': ASPHALT, SAND
2–4': SILT, SAND
4–6': SILT
6–7.5': SILT, CLAY
7.5–11': SAND, SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-17

Contractor:	Engineering Science
Driller:	C.R. Terell
Inspector:	S.B. Dillman
Rig Type:	Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Center of large holder, inside fence
N120, E340

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 21, 1991
Date/Time Finish November 21, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
		1			brown GRAVEL, SILT, SAND, little cinders		Concrete grout
		2			Refusal end of boring 2.25'		
		3					
		4					
		5					
		6					
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': GRAVEL, SAND, SILT

ENGINEERING–SCIENCE DRILLING RECORD

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

BORING B91–18
Sheet 1 of 1
Location: East edge of holder
N120,E360
Plot Plan

Weather Overcast, 40 F, rainfall during previous night.
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				SS		
		0			0	Ground surface
				68		
		1		17	gravel FILL, angular, damp	
	SB91–14			26	SILT, trace clay, black stained at 3"	Concrete grout
		2		21		
				23		
		3		18	4" SILT with some gravel, 2" concrete	
				9	3" BRICK and CINDERS	
		4		19		
				42	tan SILT with little gravel	
		5		28	upper 2" CINDERBLOCK, trace BRICK	
				40		
		6		18		
				15	SILT, fine SAND with some gravel	
		7		17		
				17		
		8		15	SILT, fine SAND with some gravel	
				13	wet at base	
		9		13	end of boring 9'	
		10				
		11				

BORING SCHEMATIC

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2': FILL, SILT
2–5.5': SILT, BRICK, CINDERS, CINDERBLOCK
5.5–9': SILT, SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–19

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: In back yard of #26 Birdsall St.

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

Plot Plan

↑N

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
		1			SILT, fine SAND, some gravel		Concrete grout
		2					
	SS91–1	3		15			
	SS91–1			18	tan SILT with little to some clay		
	SS91–1	4		11			
	SS91–1				end of boring 4.5'		
		5					
		6					
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–1.5': SILT, SAND
1.5–4.5': SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-20

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: In large holder,
N100, E340
Plot Plan

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
	SB91-15			19			
	SB91-15	1		17	SAND and SILT, some gravel, odor		
	SB91-15			20			Concrete grout
	SB91-15	2		20	Refusal at 2.1'		
		3					
		4					
		5					
		6					
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': SAND, SILT

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–21

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: South of large holder

N80, E340

Plot Plan

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			Ground surface
		0			0		
			60	25			
		1		19	SILT, fine SAND, some gravel, trace brick		Concrete grout
				15	black stain		
		2		14	tar odor		
				12	SILT, fine SAND, some gravel,		
		3		10	black stain		
				9	tar odor		
	SB91–16	4			SILT, fine SAND, some gravel,		
	SB91–16				heavily stained		
	SB91–16	5		100	Refusal end of boring 5'		
		6					
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–5': SILT, SAND

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-22

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: N edge of small holder, w. of substation
N60,E340

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 22, 1991
Date/Time Finish November 22, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
			75	19			
		1		20	silty SAND with some gravel		
				18	trace staining, brick frags. sl. odor		Concrete grout
		2		15			
				14			
		3		8	sandy SILT with angular gravel		
				9	5" dark stained silt and gravel		
		4		7	3" tan silt, sand, some gravel		
			60	7			
		5		8	silty SAND, some gravel,		
				4	tan, damp, no odor		
		6		6			
	SB91-18			7	as above, bottom 6" stained		
	SB91-18	7		6	tar odor		
	SB91-18			4			
		8	25	7	silty SAND, some gravel,		
				5	gravel stained tan-brown, oily, wet		
		9		5	end of boring		
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': SAND
2-4': SILT
4-9': SAND

ENGINEERING–SCIENCE DRILLING RECORD

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

BORING B91–23

Sheet 1 of 1

Location: Center of small holder

N40, E340

Plot Plan

↑N

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 25, 1991
Date/Time Finish November 25, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				SS		
		0			0	Ground surface
				12		
		1		7	4" dark brown gray SILT with some gravel	
				6	3" stained SILT, coal	Concrete grout
		2		18	1" yellow fine SILT and sand	
				8		
		3		11	ASH and CINDERS, trace red brick	
				14	3" reddish brown SILT, some gravel	
		4		8	damp	
16 ppm				8		
		5		13	damp upper 1" cinders, black clinkers	
				9	tan SILT with some gravel	
		6		11		
			75	9		
		7		16	tan SILT with some gravel	
				8		
109	SB91–19	8	100			
	SB91–19				SILT with some gravel, some black staining	
	SB91–19	9			bottom 12" staining wet, odor	
		10				
		11				

BORING SCHEMATIC

STANDARD PENETRATION TEST

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

0–2': SILT

2–4': ASH, CINDERS, SILT

4–9': SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-24

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Southeast of small holder

N23,E317

Plot Plan

↑N

Weather Low 30's F light snow, calm winds
Date/Time Start November 25, 1991
Date/Time Finish November 25, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
				6			
		1		6	5" SILT with gravel		
				8	9" black dry CINDERS		Concrete grout
		2		7			
				4			
		3		5	1" CINDERS and CLINKERS		
				7	5" SILT with some gravel, brown		
		4		8			
58 ppm				6			
		5		15	SILT, some gravel, cinders, coal		
				14	dark gray staining, some coarse rounded gravel		
		6		9			
53 ppm				11			
		7		10	SILT, some gravel, tan sand,		
				10	moist at base		
		8		17			
92 ppm	SB91-20			8			
	SB91-20	9		7	SILT, some gravel, staining and odor		
	SB91-20			6			
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-4': SILT, CINDERS, CLINKERS
4-9.5': SILT

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-25

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Between w. fence and purifier house, along s. fence
N5, E178

Weather Light rain, gray, cloudy, 50 F
Date/Time Start November 25, 1991
Date/Time Finish November 25, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
				4			
		1		4	SILT with some gravel 8"		
				9	lower 3" stained, slight odor		Concrete grout
		2		9			
238 ppm				5			
		3		3	SILT with some gravel		
				4	stained black, tarry, contaminated		
		4		8			
	SB91-21			10			
	SB91-21	5		8	SILT with some gravel		
	SB91-21			10	wood chips, wet		
	SB91-21	6		18	end of boring 6'		
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-6': SILT

Contractor:	Engineering Science
Driller:	C.R. Torett
Inspector:	S.B. Dillman
Rig Type:	Minute-Man Drill Rig

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-26

PROJECT NAME NYSEG Norwich

PROJECT NUMBER SY236.10.01

Sheet 1 of 1

Location: West of purifier house

N25,E185

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Low 30's F light snow, calm winds

Date/Time Start November 25, 1991

Date/Time Finish November 25, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
				5	2" SILT, some gravel		
		1		4	11" SILT, some cinders		
				3	trace fine brick and stain		Concrete grout
		2		3			
				2	SILT, some stain, brick, cinders		
		3		1			
				1			
		4		3			
				3	SILT with some moist clay		
		5		2	fine medium sand bottom 12"		
42 ppm	SB91-22		40	5			
	SB91-22	6		6			
	SB91-22			8	fine medium SAND, some gravel		
	SB91-22	7		7	moist, staining at bottom		
				8			
		8		10			
				6	no recovery		
		9		9	end of boring 9'		
		10					
		11					

STANDARD PENETRATION TEST

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

0-6': SILT

6-8': SAND

8-10': NO RECOVERY

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–27

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Near Aero bldg., outside fence
N10, E155
Plot Plan

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather Mostly sunny, cold light flurries, below freezing
Date/Time Start November 26, 1991
Date/Time Finish November 26, 1991

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			Ground surface
		0					
				4	no recovery		Concrete grout
		1		6			
				8			
		2		7			
				3	silty SAND, some gravel, tarry odor		
		3		2			
				0.5			
		4		0.5			
55 ppm				5	SILT and SAND, tarry, stained black, some gravel, cinders		
		5		3	CLAY, some silt, sand, wet, oily, tarry		
				4			
		6		5			
	SB91–23			5	CLAY, some silt, wood chips, tarry wet		
	SB91–23	7		4			
	SB91–23			4			
		8		3			
				9			
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2': NO RECOVERY
2–6': SILT, SAND
6–7.5': CLAY

ENGINEERING-SCIENCE DRILLING RECORD

BORING B91-28

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute-Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: Near Aero bldg., west of B91-27
N12,E140

Weather Mostly sunny, cold, light flurries, below freezing
Date/Time Start November 26, 1991
Date/Time Finish November 26, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
				9			
		1		9	tan-brown SILT and SAND, some gravel		
				9	no odor, moist at top		Concrete grout
		2		9			
				24			
		3		6	GRAVEL, some silt, stained at bottom, odor		
				1			
		4		1			
30 ppm					5" SILT, some gravel, oily tar		
		5			2" wood		
					10" SILT, no gravel, trace clay		
		6			end of boring 6'		
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0-2': SILT, SAND
2-4': GRAVEL
4-6': SILT

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–29

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of B91–28 near Aero building
N08,E120

Weather Mostly sunny, cold, light flurries, below freezing
Date/Time Start November 26, 1991
Date/Time Finish November 26, 1991

Plot Plan

↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				SS			
		0			0		Ground surface
				7			
		1		5	GRAVEL,some silt and sand,		
				7	coal, silt, trace red sand, red brick		Concrete grout
		2		7			
				7			
		3		5	CINDERS and CLINKERS, faint odor,		
				4	some clay		
		4		2			
	SB91–24			7			
	SB91–24	5		8	wet SILT and SAND, trace oil,		
	SB91–24			13	end of boring 5.5'		
		6		10			
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2': GRAVEL
2–4': CINDERS, CLINKERS
4–6': SILT, SAND

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–30

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: West of fence, north of B91–27
N38,E152
Plot Plan
↑N

Weather Mostly sunny, cold, light flurries, below freezing
Date/Time Start November 26, 1991
Date/Time Finish November 26, 1991

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				SS		
		0			0	Ground surface
				15		
		1		11	4" SILT, some gravel	
				13	6" tan SILT and sand	
		2		21		Concrete grout
				4		
		3		3	sand size reddish BRICK, oily	
				1		
		4		2		
				0		
		5		0	very wet and soft, oily, WOOD CHIPS	
				1	brick frags	
		6		2		
	SB91–25			5		
	SB91–25	7		5	wet, oily with WOOD CHIPS and brick,	
	SB91–25			5		
	SB91–25	8		6		
				3		
		9		3	WOOD CHIPS, oily tar, wet	
				5		
		10		6	end of boring 10'	
		11				

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–2': SILT
2–4': BRICK
4–10': WOOD CHIPS

ENGINEERING–SCIENCE DRILLING RECORD

BORING B91–31

Contractor: Engineering Science
Driller: C.R. Torell
Inspector: S.B. Dillman
Rig Type: Minute–Man Drill Rig

PROJECT NAME NYSEG Norwich
PROJECT NUMBER SY236.10.01

Sheet 1 of 1
Location: N of NE corner of purifier house
N60, E240

Weather Mostly sunny, cold, light flurries, below freezing
Date/Time Start November 26, 1991
Date/Time Finish November 26, 1991

Plot Plan
↑N

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	BORING SCHEMATIC	COMMENTS
				ss			
	SB91–26	0			0		Ground surface
	SB91–26			9			
	SB91–26	1		8	SILT, some gravel, trace brick,		
	SB91–26			8	trace cinders, scattered dark staining		Concrete grout
		2		6			
				14			
		3		6	SILT, some gravel, trace brick,		
				8	trace cinders, scattered dark staining		
		4		3	end of boring 4'		
		5					
		6					
		7					
		8					
		9					
		10					
		11					

STANDARD PENETRATION TEST
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

0–6': SILT, GRAVEL, FILL

SLUG TEST METHOD FOR UNCONFINED AQUIFERS

REFERENCE: Bouwer, H. and R. C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

SOLUTION:

$$\ln s_o - \ln s_t = \frac{2\,K\,L\,t}{r_c^2 \ln(r_e/r_w)}$$

where:

s_o = initial drawdown in well due to instantaneous removal of water from well [L]

s_t = drawdown in well at time t [L]

L = length of well screen [L]

r_c = radius of well casing [L]

$\ln(r_e/r_w)$ = empirical "shape factor" determined from tables provided in Bouwer and Rice (1976)

r_e = equivalent radius over which head loss occurs [L]

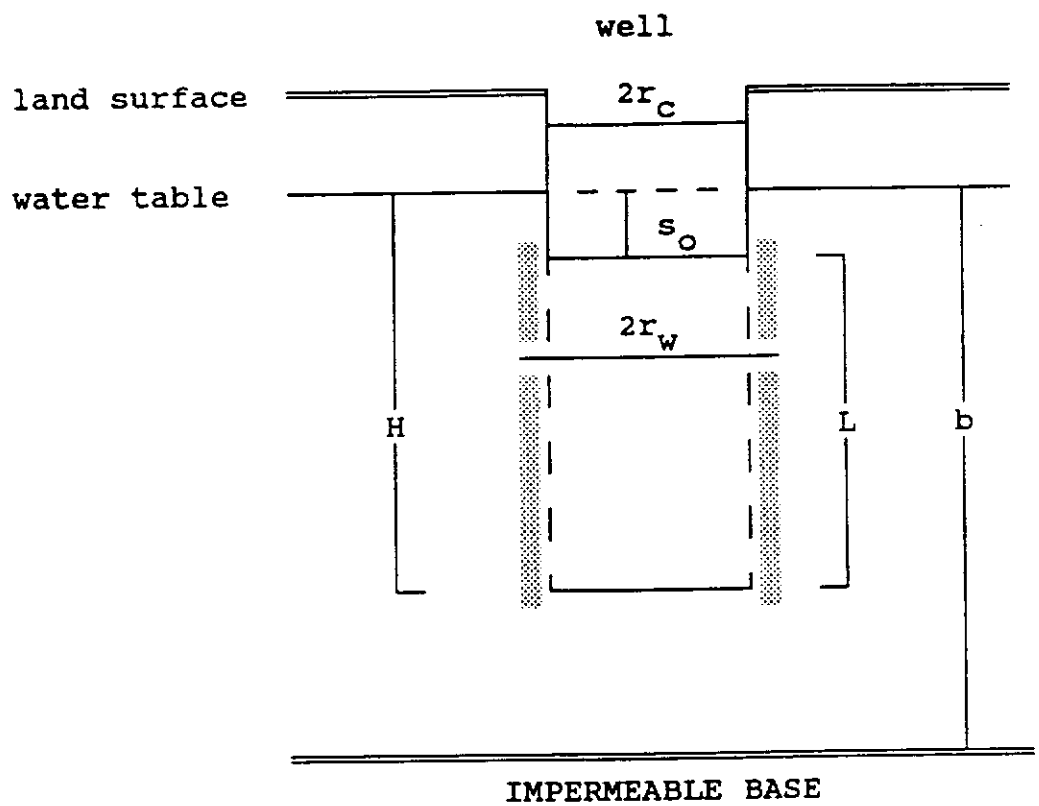
r_w = radius of well (including gravel pack) [L]

H = static height of water in well [L]

b = saturated thickness of aquifer

SLUG TEST METHOD FOR UNCONFINED AQUIFERS
(continued)

DEFINITION OF TERMS:



ES ENGINEERING-SCIENCE, INC.

Client NYSEG - Norwich | Job No. S4236.10.01 | Sheet 1 of 1

Subject SLUG TEST INPUTS FOR AQTESOLV | By SBD | Date

Checked | Rev.

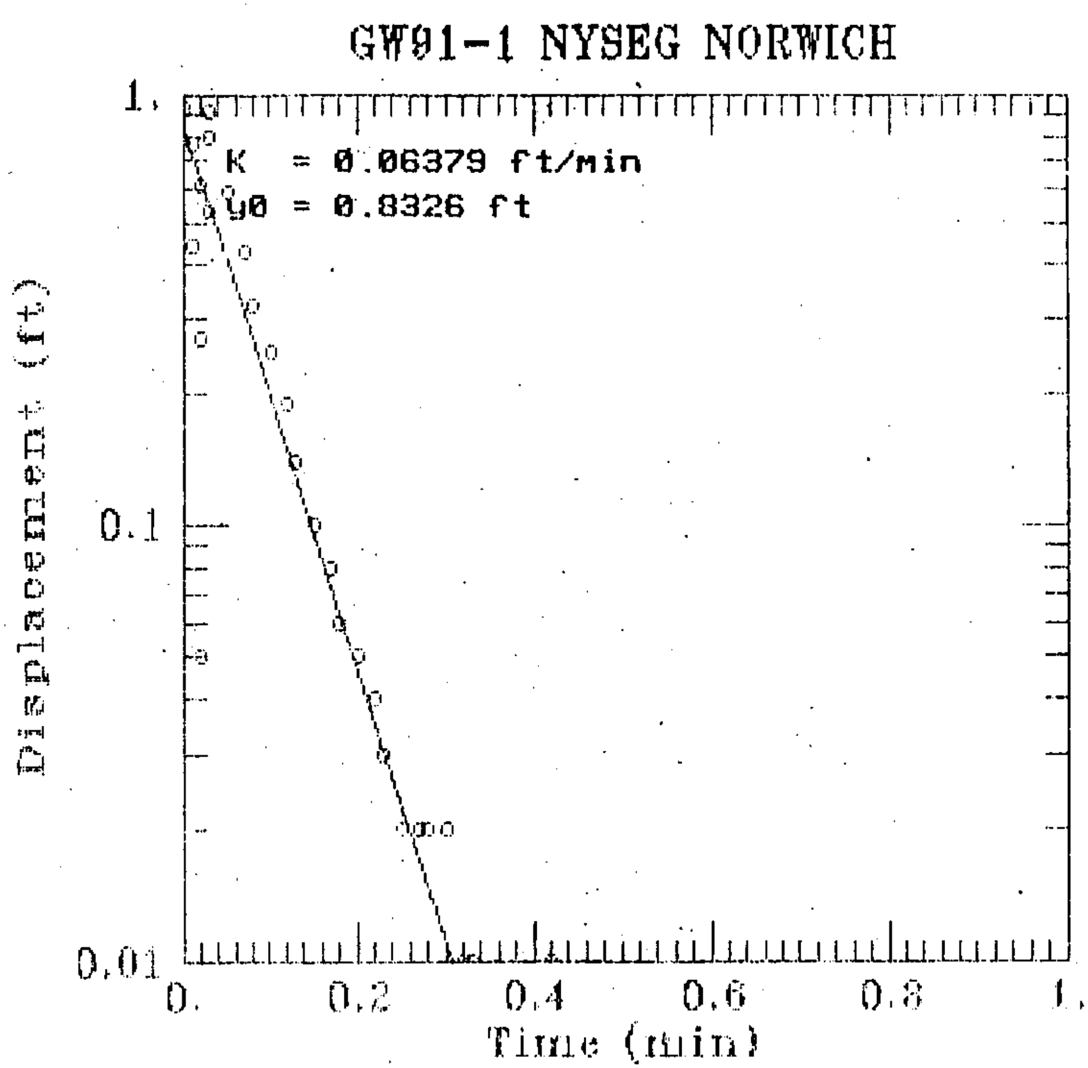
WELL	I_{DD}	r_c (ft)	r_w (ft)	b (ft)	L (ft)	Static H_2O	
*GW91-1	0.93	0.19	0.33	8.06	10	8.06	
*GW91-4D	0.95	0.0833	0.33	5.84	5	5.84	
*GW91-4SH	0.45	0.19	0.33	4.16	5	4.16	
*GW91-5	1.34	0.19	0.33	9.14	10	9.14	
*GW91-6	1.24	0.19	0.33	9.92	10	9.92	
*GW91-7	0.20	0.19	0.33	3.81	5	3.81	

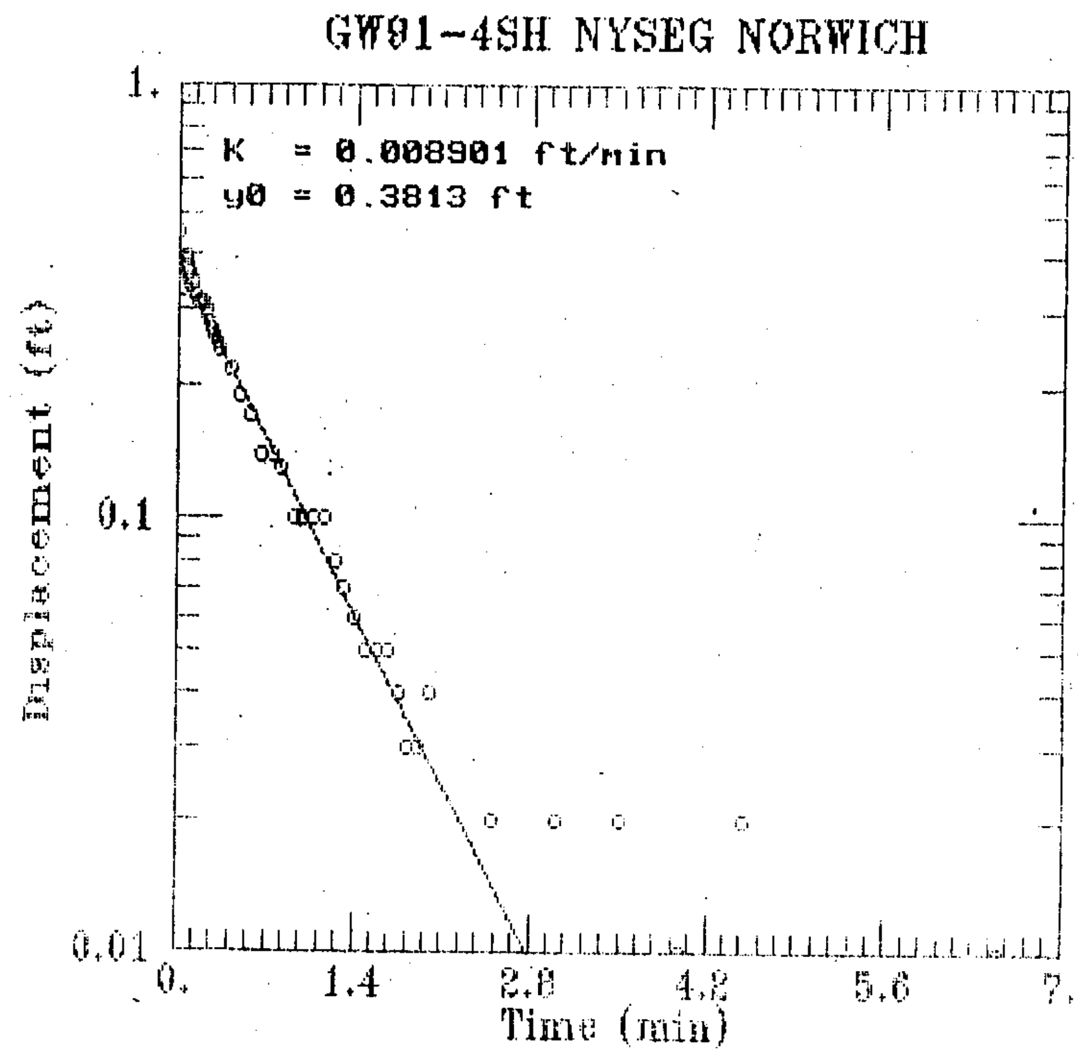
$$\left[(1-n)\,r_c^2 + n\,r_w^2\right]^{1/2} = \left[(1-0.30)\,0.0833^2 + 0.30(0.33)^2\right]^{1/2} = 0.19 \text{ ft}$$

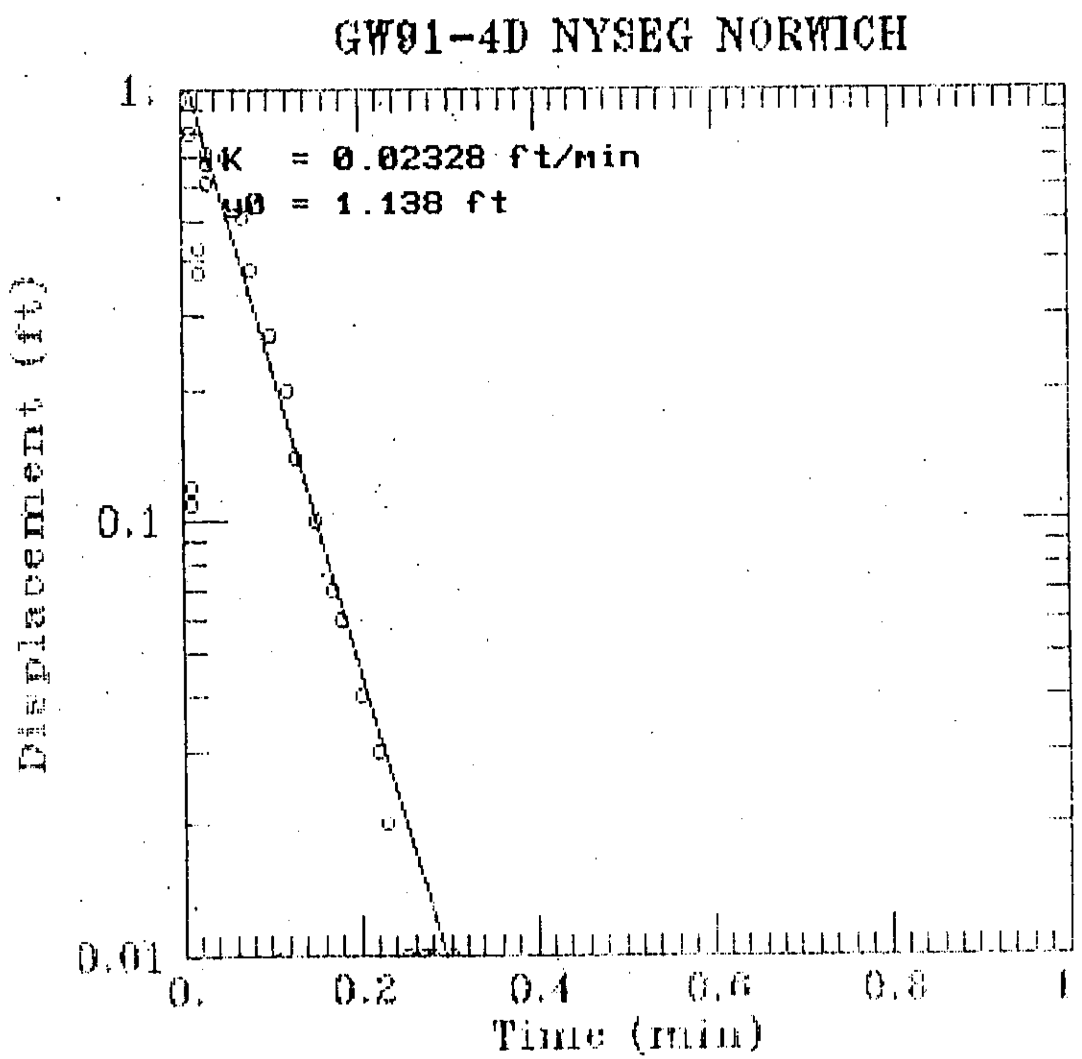
Corrected well radius for withdrawal, partially exposed screen

* - Withdrawal test

I_{DD} = Initial Draw Down, r_c - radius casing, r_w - radius well boring, b - aquifer thickness, L - length of screen, static H_2O - static height in [illegible]

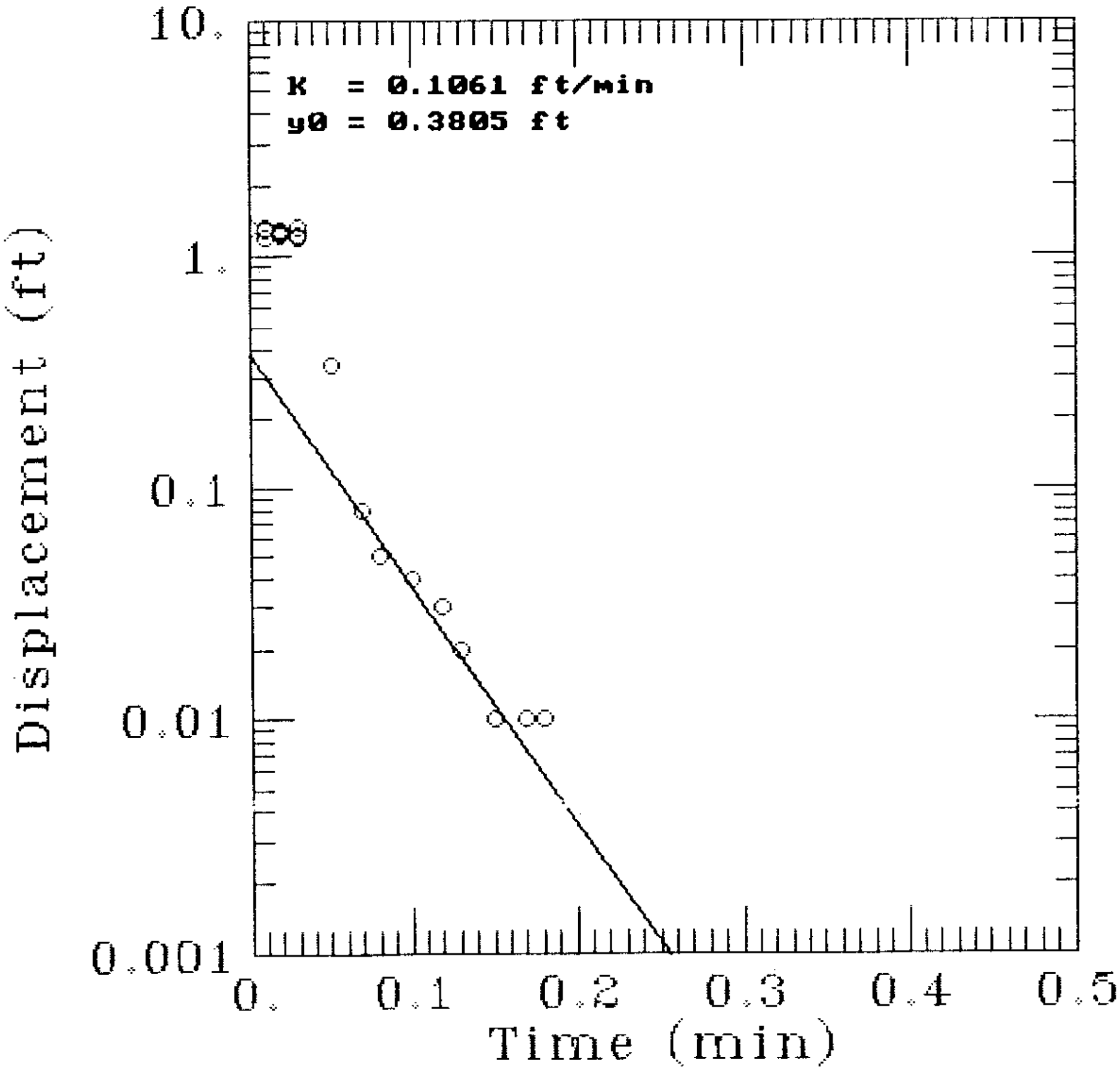

GW91-1 NYSEG NORWICH
K = 0.06379 ft/min
y0 = 0.8326 ft
Displacement (ft)
1.
0.1
0.01
0.
0.2
0.4
0.6
0.8
1.
Time (min)


GW91-4SH NYSEG NORWICH
K = 0.008901 ft/min
y0 = 0.3813 ft
Displacement (ft)
1.
0.1
0.01
0.
1.4
2.8
4.2
5.6
7.
Time (min)

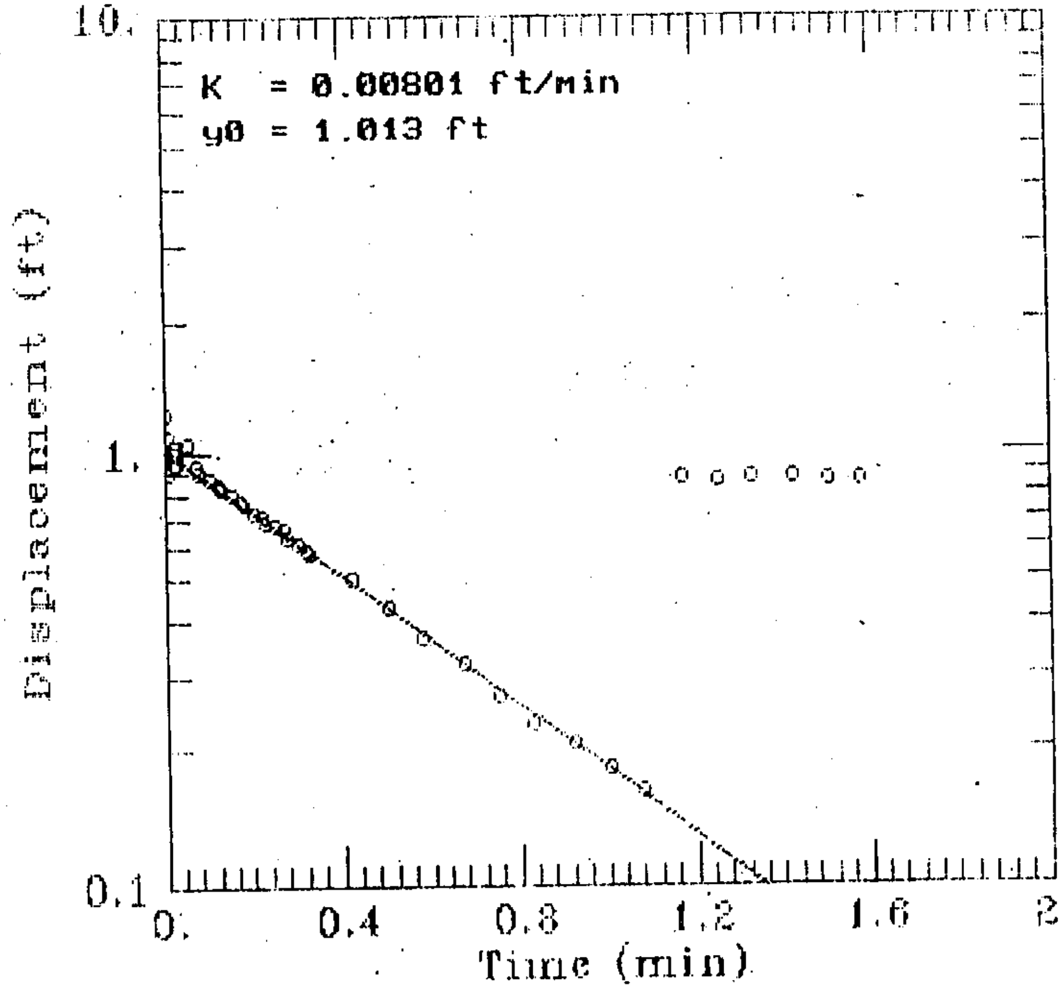


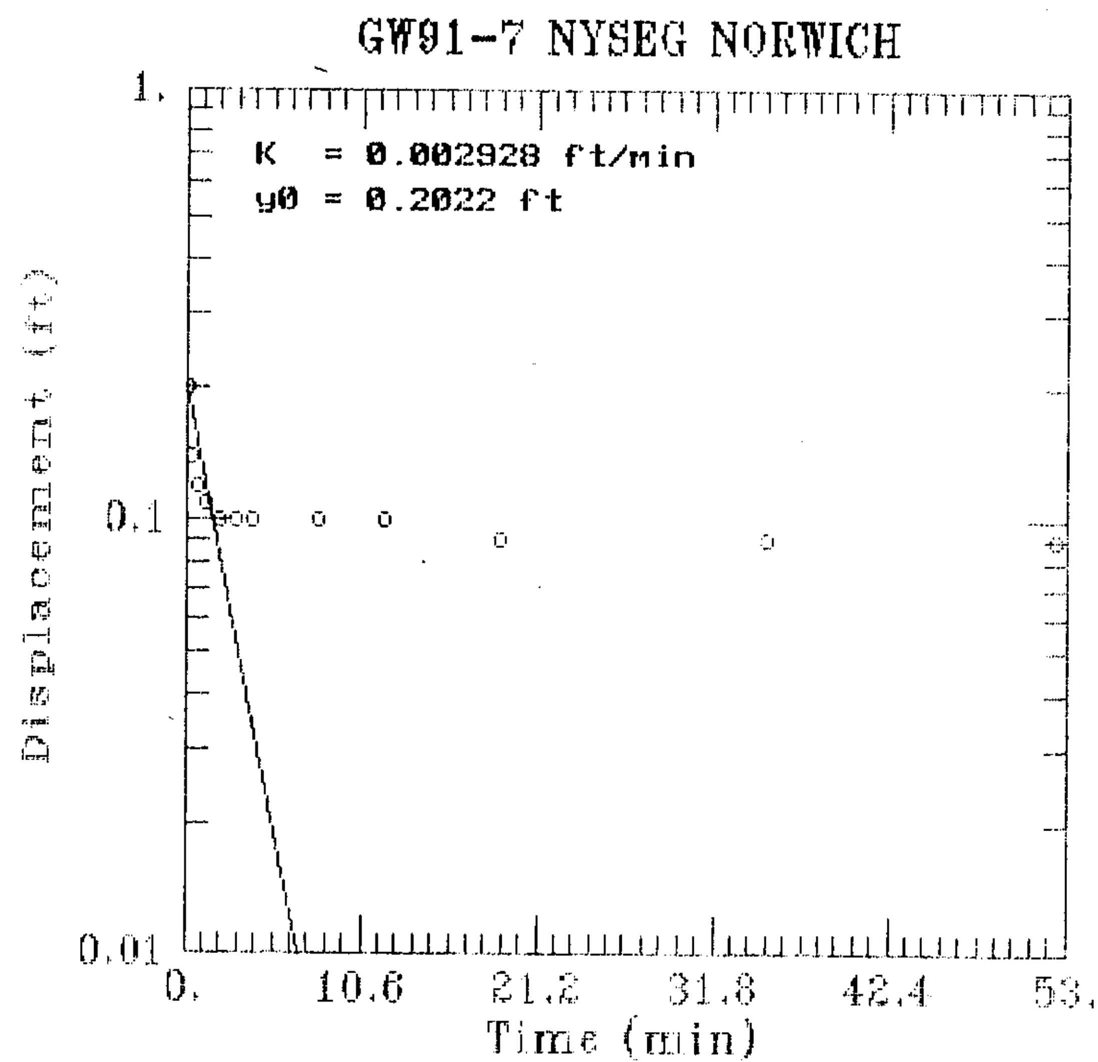
GW91-4D NYSEG NORWICH
K = 0.02328 ft/min
y0 = 1.138 ft
Displacement (ft)
1.
0.1
0.01
0.
0.2
0.4
0.6
0.8
1.
Time (min)

GW91-5 NYSEG NORWICH



GW91-6 NYSEG NORWICH




GW91-7 NYSEG NORWICH
K = 0.002928 ft/min
y0 = 0.2022 ft
Displacement (ft)
1.
0.1
0.01
0.
10.6
21.2
31.8
42.4
53.
Time (min)

ES ENGINEERING-SCIENCE, INC.

Client: NYSEG Norwich | Job No. 54236.10.01 | Sheet 1 of 2
Subject: Groundwater Velocity Calculation | By: SBD | Date: 4-8-92
Checked: | Rev.:

$$V = \frac{K}{n}\frac{dh}{dl}$$

Seepage Velocity of Groundwater
USGS Water Sup. Paper 2220, Heath

$$V = \frac{152.8\ ft}{day} \times \frac{1}{0.30} \times \frac{1\ ft}{100\ ft} = 5.093\ ft/day$$

GW91-5

$$\frac{5.093\ ft}{day} \times \frac{365\ day}{1\ year} = 1858.9\ ft/year \quad MAX$$

$$V = \frac{4.216\ ft}{day} \times \frac{1}{0.30} \times \frac{1\ ft}{100\ ft} = 0.14\ ft/day$$

GW91-7

$$\frac{0.14\ ft}{1\ day} \times \frac{365\ day}{1\ yr} = 51.3\ ft/year \quad MIN$$

$$V = \frac{11.53\ ft}{day} \times \frac{1}{0.30} \times \frac{1\ ft}{100\ ft} = 0.38\ ft/day$$

GW91-6

$$\frac{0.38\ ft}{1\ day} \times \frac{365\ day}{yr} = 140.3\ ft/year$$

n = porosity, assumed to be 30% for sand & gravel
K = hydraulic conductivity Max $2.223 \times 10^{+2}$, Min 4.216, by Slug Test
$\frac{dh}{dl}$ = hydraulic gradient, measured from monitoring well gw elevations

ES ENGINEERING-SCIENCE, INC.

Client NYSEG Job No. 54236.10.01 Sheet 2 of
Subject GROUNDWATER VELOCITY Calculation By SBD Date 4-8-92
Checked Rev.

GW91-1

$$V = \frac{91.86\ ft}{day} \times \overset{3.333}{\frac{1}{0.30}} \times \frac{1}{100} = 3.062\ ft/day$$

$$3.062\ ft/day \times \frac{365\ day}{yr} = 1090.\ ft/year$$

GW91-4SH

$$V = \frac{12.82\ ft}{day} \times \frac{1}{0.30} \times \frac{1}{100} = .427\ ft/day$$

$$.427\ ft/day \times \frac{365\ day}{yr} = 155\ ft/yr$$

GW91-4D

$$V = 33.52\ \frac{ft}{day} \times \frac{1}{0.30} \times \frac{1}{100} = 1.12\ ft/day$$

$$1.12\ ft/day \times 365\ \frac{day}{yr} = 407.8\ ft/yr$$

Average Value

$$\frac{1858 + 51.3 + 140.3 + 1090 + 155 + 407.8}{6} =$$

$$\frac{3702.4}{6} = 617.1\ ft/year$$

Geometric Mean $\sqrt[6]{(1858 \times 51.3 \times 140.3 \times 1090 \times 155 \times 407.8)}$

$$\sqrt[6]{9.2135 \times 10^{14}} = 311.9\ ft/yr$$

ES ENGINEERING-SCIENCE

SE1000B
Environmental Logger
02/28 13:47

Unit# 00549 Test# 2

INPUT 1: Level (F) TOC

Reference 7.94
Scale factor 19.94
Offset 0.25

Step# 0 02/27 15:51

GW91-1

Elapsed Time	Value
0.0000	7.95
0.0033	7.87
0.0066	7.85
0.0099	8.72
0.0133	8.39
0.0166	8.22
0.0200	8.00
0.0233	8.56
0.0266	8.49
0.0300	8.87
0.0333	8.75
0.0500	8.54
0.0666	8.38
0.0833	8.27
0.1000	8.20
0.1166	8.14
0.1333	8.09
0.1500	8.05
0.1666	8.03
0.1833	8.01
0.2000	8.00
0.2166	7.99
0.2333	7.98
0.2500	7.97
0.2666	7.97
0.2833	7.97
0.3000	7.97
0.3166	7.96
0.3333	7.96
0.4167	7.96
0.5000	7.95
0.5833	7.95
0.6667	7.95
0.7500	7.95
0.8333	7.95
0.9167	7.95
1.0000	7.95
1.0833	7.95
1.1667	7.95
1.2500	7.95
1.3333	7.95
1.4166	7.95
1.5000	7.95
1.5833	7.95
1.6667	7.95
1.7500	7.95
1.8333	7.95
1.9167	7.95
2.0000	7.95
2.5000	7.95

END

SE1000B
Environmental Logger
02/28 14:11

Unit# 00549 Test# 7

INPUT 2: Level (F) TOC

Reference 9.16
Scale factor 19.96
Offset 0.00

Step# 0 02/28 11:45

GW91-4D

Elapsed Time	Value
0.0000	9.80
0.0033	10.11
0.0066	9.95
0.0099	9.27
0.0133	9.28
0.0166	9.02
0.0200	9.53
0.0233	9.59
0.0266	9.78
0.0300	9.88
0.0333	9.84
0.0500	9.86
0.0666	9.67
0.0833	9.54
0.1000	9.43
0.1166	9.36
0.1333	9.30
0.1500	9.26
0.1666	9.23
0.1833	9.22
0.2000	9.20
0.2166	9.19
0.2333	9.18
0.2500	9.17
0.2666	9.17
0.2833	9.17
0.3000	9.17
0.3166	9.16
0.3333	9.16
0.4167	9.15
0.5000	9.16
0.5833	9.16
0.6667	9.15
0.7500	9.16
0.8333	9.16

END

SE1000B
Environmental Logger
02/28 14:05

Unit# 00549 Test# 6

INPUT 1: Level (F) TOC

Reference 8.84
Scale factor 19.94
Offset 0.25

Step# 0 02/28 11:15

GW91-4SH

Elapsed Time	Value
0.0000	9.29
0.0033	9.22
0.0066	9.21
0.0099	9.20
0.0133	9.20
0.0166	9.19
0.0200	9.19
0.0233	9.19
0.0266	9.19
0.0300	9.18
0.0333	9.18
0.0500	9.24
0.0666	9.24
0.0833	9.22
0.1000	9.21
0.1166	9.20
0.1333	9.19
0.1500	9.17
0.1666	9.16
0.1833	9.16
0.2000	9.16
0.2166	9.15
0.2333	9.14
0.2500	9.13
0.2666	9.12
0.2833	9.12
0.3000	9.11
0.3166	9.10
0.3333	9.09
0.4167	9.07
0.5000	9.04
0.5833	9.02
0.6667	8.99
0.7500	8.99
0.8333	8.98
0.9167	8.95
1.0000	8.95
1.0833	8.95
1.1667	8.95
1.2500	8.93
1.3333	8.92
1.4166	8.91
1.5000	8.90
1.5833	8.90
1.6667	8.90
1.7500	8.89
1.8333	8.88
1.9167	8.88
2.0000	8.89
2.5000	8.87
3.0000	8.87
3.5000	8.87
4.0000	8.86
4.5000	8.87
5.0000	8.85
5.5000	8.85
6.0000	8.85
6.5000	8.86

END

SE1000B
Environmental Logger
02/28 13:39

Unit# 00549 Test# 1

INPUT 1: Level (F) TOC

Reference	7.94
Scale factor	19.94
Offset	0.25

Step# 0 02/27 15:40

GW91-1

Elapsed Time	Value
0.0000	8.65
0.0033	8.48
0.0066	8.43
0.0099	8.37
0.0133	8.33
0.0166	8.29
0.0200	8.26
0.0233	8.22
0.0266	8.19
0.0300	8.17
0.0333	8.14
0.0500	8.16
0.0666	8.09
0.0833	8.05
0.1000	8.02
0.1166	8.00
0.1333	7.99
0.1500	7.98
0.1666	7.97
0.1833	7.94
0.2000	7.95
0.2166	7.95
0.2333	7.95
0.2500	7.95
0.2666	7.95
0.2833	7.95
0.3000	7.95
0.3166	7.95
0.3333	7.95
0.4167	7.96
0.5000	7.96
0.5833	7.96
0.6667	7.96
0.7500	7.95
0.8333	7.95
0.9167	7.95
1.0000	7.96
1.0833	7.95
1.1667	7.96
1.2500	7.95
1.3333	7.96
1.4166	7.96
1.5000	7.95
1.5833	7.95

END

GW91-7 Hand Readings

Time	Depth To Water
13:59:03	7.12
14:25:15	7.32
14:25:28	7.26
14:25:45	7.24
14:26:15	7.23
14:27:00	7.22
14:28:00	7.22
14:29:00	7.22
14:33:00	7.22
14:37:00	7.22
14:44:00	7.21
15:00:00	7.21
15:17:28	7.21

GW91-5

SE1000B
Environmental Logger
02/28 14:01

Unit# 00549 Test# 5

INPUT 2: Level (F) TOC

Reference	6.86
Scale factor	19.96
Offset	0.00

Step# 0 02/28 10:05

Elapsed Time	Value
0.0000	8.34
0.0033	8.45
0.0066	8.57
0.0099	8.66
0.0133	8.68
0.0166	8.66
0.0200	8.63
0.0233	8.61
0.0266	8.59
0.0300	8.56
0.0333	8.71
0.0500	7.71
0.0666	7.45
0.0833	7.42
0.1000	7.41
0.1166	7.40
0.1333	7.39
0.1500	7.38
0.1666	7.38
0.1833	7.38
0.2000	7.36
0.2166	7.37
0.2333	7.37
0.2500	7.37
0.2666	7.37
0.2833	7.37
0.3000	7.37
0.3166	7.37
0.3333	7.37
0.4167	7.35
0.5000	7.36
0.5833	7.36
0.6667	7.37
0.7500	7.35
0.8333	7.36
0.9167	7.36
1.0000	7.36
1.0833	7.36
1.1667	7.35
1.2500	7.36
1.3333	7.36
1.4166	7.35
1.5000	7.36
1.5833	7.36
1.6667	7.35
1.7500	7.36
1.8333	7.35
1.9167	7.35
2.0000	7.35
2.5000	7.35
3.0000	7.35
3.5000	7.35
4.0000	7.37
4.5000	7.37
5.0000	7.37

END

GW91-6

SE1000B
Environmental Logger
02/28 13:56

Unit# 00549 Test# 4

INPUT 1: Level (F) TOC

Reference	7.09
Scale factor	19.94
Offset	0.25

Step# 0 02/28 09:56

Elapsed Time	Value
0.0000	8.33
0.0033	8.24
0.0066	8.18
0.0099	8.00
0.0133	8.07
0.0166	8.05
0.0200	8.12
0.0233	8.09
0.0266	8.09
0.0300	8.05
0.0333	8.12
0.0500	8.15
0.0666	8.03
0.0833	7.99
0.1000	7.96
0.1166	7.93
0.1333	7.92
0.1500	7.89
0.1666	7.86
0.1833	7.85
0.2000	7.81
0.2166	7.80
0.2333	7.78
0.2500	7.76
0.2666	7.75
0.2833	7.72
0.3000	7.70
0.3166	7.68
0.3333	7.67
0.4167	7.59
0.5000	7.52
0.5833	7.46
0.6667	7.41
0.7500	7.36
0.8333	7.32
0.9167	7.30
1.0000	7.27
1.0833	7.25

END

SE1000B
Environmental Logger
02/28 13:59

Unit# 00549 Test# 5

INPUT 1: Level (F) TOC

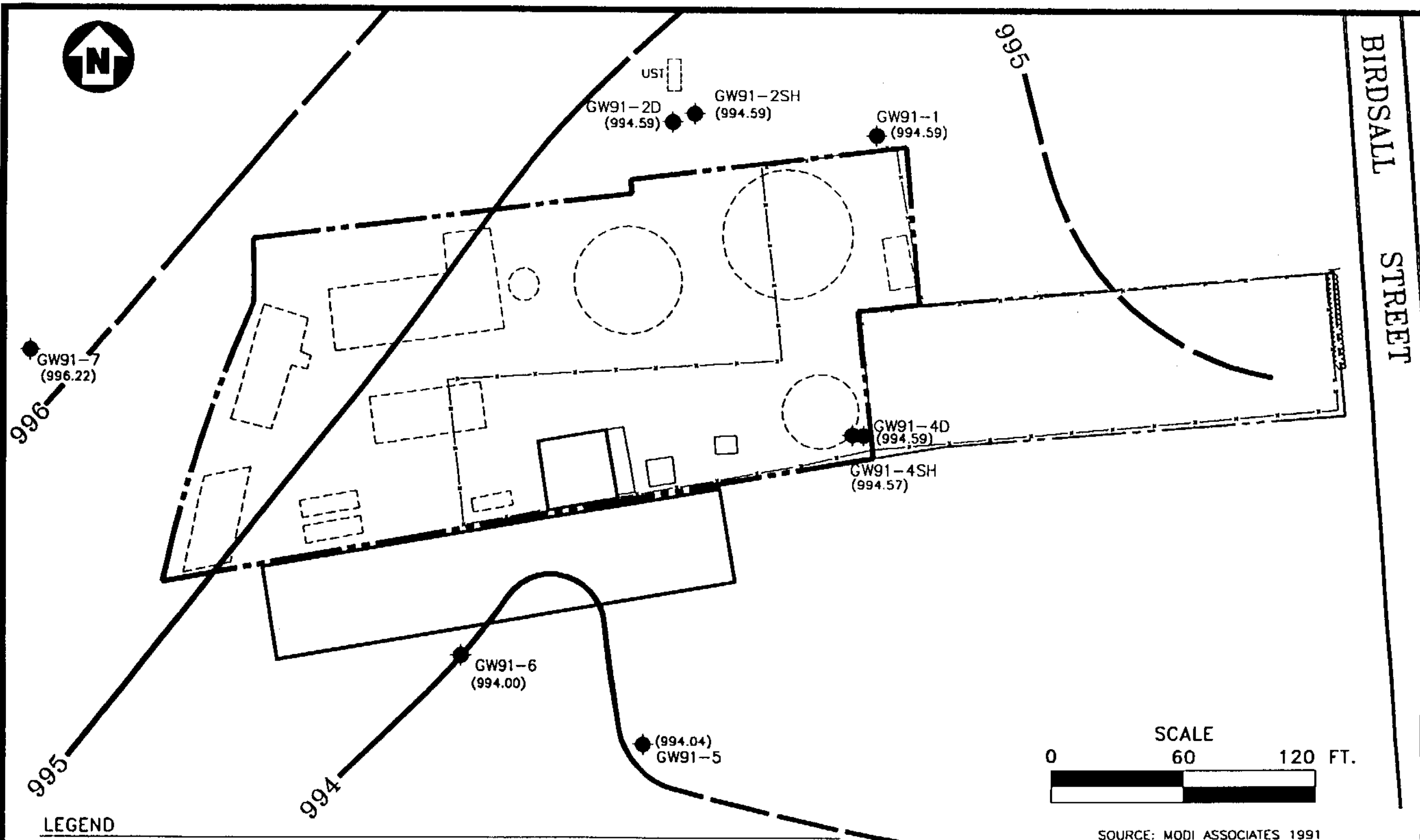
Reference	7.09
Scale factor	19.94
Offset	0.25

Step# 0 02/28 10:05

GW91-6

Elapsed Time	Value
0.0000	8.05
0.0033	7.97
0.0066	7.93
0.0099	7.93
0.0133	7.92
0.0166	7.91
0.0200	7.90
0.0233	7.90
0.0266	7.89
0.0300	7.89
0.0333	7.88
0.0500	7.94
0.0666	7.91
0.0833	7.88
0.1000	7.86
0.1166	7.83
0.1333	7.81
0.1500	7.78
0.1666	7.76
0.1833	7.74
0.2000	7.71
0.2166	7.70
0.2333	7.67
0.2500	7.65
0.2666	7.63
0.2833	7.61
0.3000	7.59
0.3166	7.58
0.3333	7.57
0.4167	7.48
0.5000	7.43
0.5833	7.37
0.6667	7.32
0.7500	7.29
0.8333	7.26
0.9167	7.23
1.0000	7.22
1.0833	7.22
1.1667	7.20
1.2500	7.20
1.3333	7.19
1.4166	7.19
1.5000	7.18
1.5833	7.19
1.6667	7.19
1.7500	7.17
1.8333	7.17
1.9167	7.17
2.0000	7.17
2.5000	7.16
3.0000	7.15
3.5000	7.15
4.0000	7.14
4.5000	7.14
5.0000	7.14

END



LEGEND

SITE BOUNDARY

FENCE

GW91-1 GROUNDWATER MONITORING WELL LOCATION

(994.04) TOP OF GROUNDWATER ELEVATION

985 LINE OF EQUAL ELEVATION FOR GROUNDWATER

ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

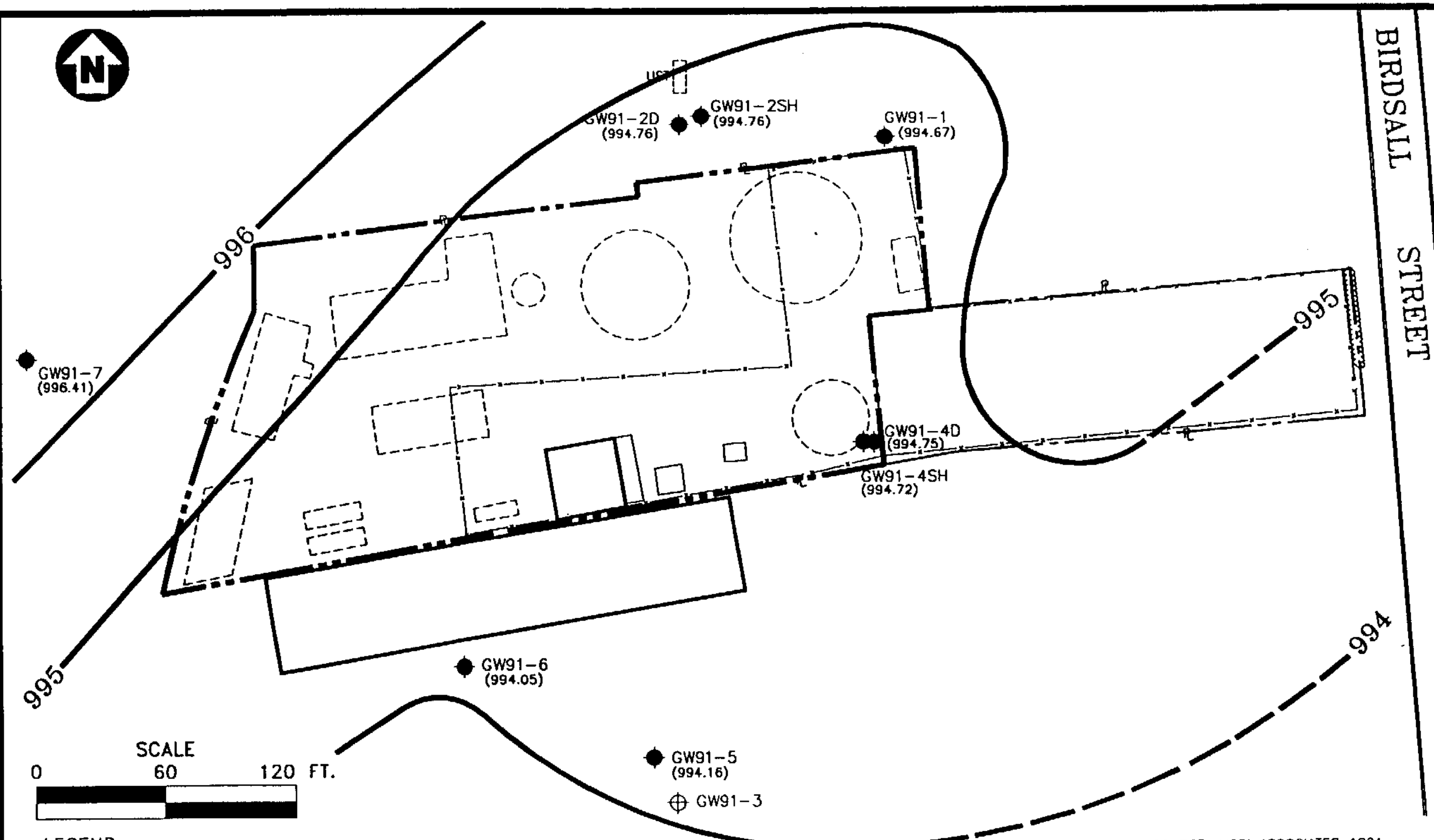
GROUNDWATER ELEVATION CONTOUR MAP

WATER LEVEL ON 2/27/92

FIGURE

001631|D:\SY236\SY236001.DWG

REVISED: 7/9/92



SCALE
0 60 120 FT.

LEGEND

SITE BOUNDARY
FENCE
GW91-3 ABANDONED MONITORING WELL LOCATION
GW91-1 GROUNDWATER MONITORING WELL LOCATION
(994.04) TOP OF THE GROUNDWATER TABLE
994 LINE OF EQUAL ELEVATION FOR GROUNDWATER

MAP SOURCE: MODI ASSOCIATES 1991

ENGINEERING-SCIENCE

NYSEG CODE CGNO
Norwich, New York

GROUNDWATER ELEVATION CONTOUR MAP

WATER LEVELS ON 3/25/92

FIGURE

001631|D:\SY236\SY236007.DWG

REVISED: 7/8/92

APPENDIX D

MISCELLANEOUS ANALYTICAL RESULTS

Galson
Laboratories

6601 Kirkville Road
E. Syracuse, NY 13057
Tel (315) 432-0506
1-800-950-0506

DOH ELAP # 10186

04-09-92

Mr. Jim Lamphere
New York State Electric & Gas
87-89 Chenango St.
Binghamton, NY 13902-3609

Client Account # 11163   Login # 7212

Dear Mr. Lamphere:

Enclosed are the results of the analyses of the samples received by ou laboratory 02-28-92. The test results are within the acceptable quality control guidelines established by the indicated methods, as well as by our internal quality control specifications.

Semivolatile analysis of sample N091-DUMP resulted in low recoveries o the acid surrogates. A re-extraction of this sample exhibited the same results.

Low surrogate recoveries are indicative of sample matrix interferences. As a result, the acid (phenol) compound results of this sample may be biased low.

Please contact Sherry Weinberg, our Environmental Client Services Manager, at (315) 434-9692 extension 242 if you would like any additional information regarding this report.

Sincerely,

Gale G. Sutton, CIH
Laboratory Director
GALSON LABORATORIES

Galson Laboratories

LABORATORY ANALYSIS REPORT

Client : New York State Electric & Gas
Acct # : 11163

Matrix : Soil

Location : NS
Date Sampled : 02/28/92
Date Received: 02/28/92

Method (S) : RCRA Section 2.3.1

Galson Id:			7212-001
Client Id:			NO91-DUMP
Corrosivity:*			Non-corrosive
Bulk pH	Standard Units		7.9
Ignitability:**			Non-ignitable
Reactivity:***			Non-reactive
Cyanide, Total Releasable		mg/kg	<0.1
Sulfide, Total Releasable		mg/kg	0.31

*The bulk ph was performed using SW846 Method 9045.
Under these conditions the sample is corrosive if pH is less than or equal to 2, or greater than or equal to 12.5.

**The samples do not ignite or support combustion.
Under these conditions the sample is non-ignitable.

***Less than 250 mg total releasable HCN/kg waste.
Less than 500 mg total releasable H2S/kg waste.

(<)	-Less Than	(>)	-Greater Than
NR	-Not Requested	NS	-Not Specified
kg	-Kilograms	mg	-milligrams
L	-Liters	ml	-milliliters

Submitted by : fs
Approved by :
Date : 04/07/92

Galson Laboratories

Metals Analytical Report

Client : New York State Electric & Gas
Account # : 11163
Site : NS

Date Received : 28-FEB-92
Date Sampled : 28-FEB-92

Matrix : Leachate
Method : EPA METHOD 6010/7000/7470
Units : mg/l

Galson ID:	7212-001	QM920309-1
Client ID:	NO91-DUMP	BLANK
Arsenic	< 0.2	< 0.2
Barium	0.37	0.035
Cadmium	< 0.005	< 0.005
Chromium	< 0.01	< 0.01
Lead	< 0.09	< 0.09
Mercury	< 0.0002	< 0.0002
Selenium	< 0.1	< 0.1
Silver	< 0.03	< 0.03

ug - microgram
mg - milligram
kg - kilogram
> - Greater than

NR - Not Requested
NS - Not Specified
L - Liter
< - Less than

Approved by : Mary Withrow
Date : 17-MAR-92

Footnotes:

WELL SAMPLING RECORD

Site Name Norwich Well GW91-07 Date 4/24/92

Samplers: DRD of ES

MNM. of ES

Intial Static Water Level (from top of well protective casing) 7.10

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: ___ ft. of water x .16 = .58 gals

Airlift ___ Positive Displacement ~~X~~ JBD 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed X ___ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing 28.0'

Volume of water removed 2.0 Gals. (> 3 Well Volumes)

Sampling: Time 910 X a.m.

___ p.m.

Bailer Type: Stainless Steel X

Teflon ___

From Pos. Dis. Discharge Tube ~~X~~ JBD

Other ___ ___

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NO6UXX92076	VOA, SVOA, CN-

Physical Appearance and Odor cloudy, brown

Refrigerate: Date: 4/24/92 Time 920

Field Tests:

Temperature (C/F)		48.1 °F
pH		7
Spec. Conduc (umhos/cm)		793

Weather Sunny, 60's

Comments

ENGINEERING-SCIENCE

Galson Laboratories

PCB/PESTICIDE Analytical Report

Client : New York State Electric & Gas
Account # : 11163
Site : NS

Date Sampled : 28-FEB-92
Date Received : 28-FEB-92
Date Extracted: 10-MAR-92

Matrix : LEACHATE
Method : SW846-1311/3510/8080
Units : mg/L

Galson ID: / Client ID:	7212-001 NO91-DUMP	Q5-0540 METHOD BLANK	Q5-0540TP TCLP BLANK
Chlordane	< 0.003	< 0.003	< 0.003
gamma-BHC	< 0.04	< 0.04	< 0.04
Endrin	< 0.002	< 0.002	< 0.002
Heptachlor	< 0.001	< 0.001	< 0.001
Heptachlor Epoxide	< 0.001	< 0.001	< 0.001
Methoxychlor	< 1.0	< 1.0	< 1.0
Toxaphene	< 0.05	< 0.05	< 0.05
Surrogate Recovery Control Limits (24%-154%)	92. %	90. %	97. %

ug - microgram
mg - milligram
kg - kilogram
> - Greater than

NA - Not Applicable
NS - Not Specified
L - Liter
< - Less than

Approved by : Jeffrey R. Ott
Date : 19-MAR-92

Footnotes:

Galson Laboratories

HERBICIDE Analytical Report

Client : New York State Electric & Gas
Account # : 11163
Site : NS

Date Sampled : 28-FEB-92
Date Received : 28-FEB-92
Date Extracted: 10-MAR-92

Matrix : LEACHATE
Method : SW846-1311/3510/8150
Units : ug/L

Galson ID: / Client ID:	7212-001 NO91-DUMP	Q5-0539 METHOD BLANK	Q5-0539TP TCLP BLANK
2,4-D	< 0.50	< 0.50	< 0.50
2,4,5-TP	< 0.25	< 0.25	< 0.25
Surrogate Recovery	101. %	49. %	101. %
Control Limits (9%-167%)			

ug - microgram
mg - milligram
kg - kilogram
> - Greater than

NA - Not Applicable
NS - Not Specified
L - Liter
< - Less than

Approved by : Jeffrey R. Ott
Date : 19-MAR-92

Footnotes:

Galson Laboratories

SAMPLE

VOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD 8240 TCLP

NO91-DUMP

Client: NYSEG
Matrix: (soil/water) WATER
Sample wt/vol: 5 mL
Level: (low/med) LOW
Date TCLP Extracted: 03/04/92
Column: (pack/cap) PACK

Task No.: 7212
Lab Sample ID: 7212-001
Lab File ID: >BJ563::D1
Date Received: 02/28/92
Date Analyzed: 03/05/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
75-01-4	Vinyl Chloride	.010	U
75-35-4	1,1-Dichloroethene	.005	U
67-66-3	Chloroform	.005	U
107-06-2	1,2-Dichloroethane	.005	U
78-93-3	2-Butanone	.010	U
56-23-6	Carbon Tetrachloride	.005	U
79-01-6	Trichloroethene	.005	U
71-43-2	Benzene	.005	U
127-18-4	Tetrachloroethene	.005	U
108-90-7	Chlorobenzene	.005	U

Qualifiers:
U - Undetected. Value is the quantitation limit for that compound.

Approved: [signature]

Galson Laboratories

VOLATILE SURROGATE RECOVERY
GC/MS METHOD 8240 TCLP

Client: NYSEG

Task No.: 7212

Level: (low/med) LOW

	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#	OTHER	TOT OUT
1	METHOD BLANK	100	109	99		0
2	Q5-0529.EP	99	107	96		0
3	N091-DUMP	98	106	100		0
4						
5						
6						
7						
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29						
30						

		QC LIMITS
(TOL)	= Toluene-d8	(88-110)
(BFB)	= Bromofluorobenzene	(86-115)
(DCE)	= 1,2-Dichloroethane-d4	(76-114)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

FORM II SV

1/87 Rev.

Galson Laboratories

SAMPLE

| METHOD BLANK |

VOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD 8240 TCLP

Client: NYSEG
Matrix: (soil/water) WATER
Sample wt/vol: 5 mL
Level: (low/med) LOW
% Moisture: not dec.:
Column: (pack/cap) PACK

Task No.: 7212
Lab Sample ID: BLANK
Lab File ID: >BJ559::D3
Date Received: 00/00/00
Date Analyzed: 03/05/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
75-01-4	Vinyl Chloride	.010	U
75-35-4	1,1-Dichloroethene	.005	U
67-66-3	Chloroform	.005	U
107-06-2	1,2-Dichloroethane	.005	U
78-93-3	2-Butanone	.010	U
56-23-6	Carbon Tetrachloride	.005	U
79-01-6	Trichloroethene	.005	U
71-43-2	Benzene	.005	U
127-18-4	Tetrachloroethene	.005	U
108-90-7	Chlorobenzene	.005	U

Qualifiers:
U - Undetected. Value is the quantitation limit for that compound.

Approved: LMarl

Galson Laboratories

SAMPLE

TCLP BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD 8240 TCLP

Client: NYSEG
Matrix: (soil/water) WATER
Sample wt/vol: 5 mL
Level: (low/med) LOW
Date TCLP Extracted: 03/04/92
Column: (pack/cap) PACK

Task No.: 7212
Lab Sample ID: Q5-0529.EP
Lab File ID: >BJ562::D1
Date Received: 02/28/92
Date Analyzed: 03/05/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
75-01-4	Vinyl Chloride	.010	U
75-35-4	1,1-Dichloroethene	.005	U
67-66-3	Chloroform	.005	U
107-06-2	1,2-Dichloroethane	.005	U
78-93-3	2-Butanone	.010	U
56-23-6	Carbon Tetrachloride	.005	U
79-01-6	Trichloroethene	.005	U
71-43-2	Benzene	.005	U
127-18-4	Tetrachloroethene	.005	U
108-90-7	Chlorobenzene	.005	U

Qualifiers:
U - Undetected. Value is the quantiation limit for that compound.

Approved: L Merll

Galson Laboratories

SAMPLE

NO91-DUMP

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 03/04/92
Date Extract Prep: 03/09/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: 7212-001
Lab File ID: >DD683::D5
Date Received: 02/28/92
Date Analyzed: 03/19/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.052	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.052	U

ualifiers:
U- Undetected. Value is the quantitation limit for that compound.

pproved:

Galson Laboratories

SAMPLE

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

NO91-DUMP RE

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 03/23/92
Date Extract Prep: 03/24/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: 7212-001RE
Lab File ID: >AG303::D7
Date Received: 02/28/92
Date Analyzed: 03/27/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.050	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.050	U

ualifiers:
U- Undetected. Value is the quantitation limit for that compound.

pproved:

Galson Laboratories

WATER SEMIVOLATILE SURROGATE RECOVERY
GC/MS METHOD TCLP

Client: NYSEG
Level: (low/med) LOW

Task No.: 7212

	SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
1	TP BLANK 537	61	78	70	61	63	51		0
2	NO91-DUMP	87	115	120	2 *	0 *	0 *		3
3	BLNK-Q5.0537	66	77	69	60	59	75		0
4	BLNK-Q5.0563	83	88	74	75	78	82		0
5	TP BLANK 563	85	97	94	85	92	96		0
6	NO91-DUMP RE	45	51	57	2 *	1 *	0 *		3
7									
8									
9									
10									
11									
12									
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29									
30									

		QC LIMITS
(NBZ)	= Nitrobenzene-d5	(35-114)
(FBP)	= 2-Fluorobiphenyl	(43-116)
(TPH)	= Terphenyl-d14	(33-141)
(PHL)	= Phenol-d6	(10-94)
(2FP)	= 2-Fluorophenol	(21-100)
(TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

Galson Laboratories

SAMPLE

BLNK-Q5.0537

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 00/00/00
Date Extract Prep: 03/09/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: Q5-0537
Lab File ID: >DD691::D5
Date Received: 00/00/00
Date Analyzed:03/20/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.050	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.050	U

ualifiers:
U- Undetected. Value is the quantitation limit for that compound.

pproved: [signature]

Galson Laboratories

SAMPLE

BLNK-Q5.0563

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 00/00/00
Date Extract Prep: 03/24/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: Q5-0563
Lab File ID: >AG301::D7
Date Received: 00/00/00
Date Analyzed:03/27/92
Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS No.	COMPOUND	mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.050	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.050	U

ualifiers:
U- Undetected. Value is the quantitation limit for that compound.

pproved: [signature]

Galson Laboratories

SAMPLE

TP BLANK 537

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 03/04/92
Date Extract Prep: 03/09/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: Q5-0537TP
Lab File ID: >DD679::D5
Date Received: 00/00/00
Date Analyzed:03/19/92
Dilution Factor: 1.00

CAS No.	COMPOUND	CONCENTRATION UNITS: mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.051	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.051	U

Qualifiers:
U- Undetected. Value is the quantitation limit for that compound.

Approved:

Galson Laboratories

SAMPLE

| TP BLANK 563 |

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
GC/MS METHOD TCLP

Client: NYSEG
Matrix: LEACHATE
Date TCLP Extracted: 03/23/92
Date Extract Prep: 03/24/92
Extraction:(SepF/Cont/Sonc) CONT
GPC Cleanup: (Y/N)

Task No.: 7212
Lab Sample ID: TP BLANK
Lab File ID: >AG302::D7
Date Received: 00/00/00
Date Analyzed:03/27/92
Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS No.	COMPOUND	mg/L	Q
110-86-1	Pyridine	.010	U
106-46-7	1,4-Dichlorobenzene	.010	U
95-48-7	o-Cresol	.010	U
106-44-5	m&p-Cresol	.010	U
67-72-1	Hexachloroethane	.010	U
98-95-3	Nitrobenzene	.010	U
87-68-3	Hexachlorobutadiene	.010	U
88-06-2	2,4,6-Trichlorophenol	.010	U
95-95-4	2,4,5-Trichlorophenol	.050	U
121-14-2	2,4-Dinitrotoluene	.010	U
118-74-1	Hexachlorobenzene	.010	U
87-86-5	Pentachlorophenol	.050	U

ıalifiers:
U- Undetected. Value is the quantitation limit for that compound.

bproved: [signature]

0068

Low DETECTION LIMITS
NYSDEC ASP Protocols

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME
SY236.10.01	NYSEG NORWICH

SAMPLERS (Signatures): Scott B. Dillman

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION 7210	NO. OF CONTAINERS	VOA-8240 Method	TCLP + W.C.	REMARKS
NOGUXX	91076RE	2-28-92	1415		✓	GW91-7 Norwich	3	✓		REANALYSIS - original sample missed Holding Time By Galson Lab
NOGUXX	91076RE	2-28-92	1415		✓	GW91-7 Norwich	3	✓		MS Provided in case needed
NOGUXY	91076RE	2-28-92	1415		✓	GW91-7 Norwich	3	✓		MSD for QA by lab.
N091-	DUMP	2-28-92	8:45	✓		Roll-off dumpster Norwich	8		✓	TCLP and Waste Characteristics (SOIL)
W.O.						TRIP BLANK	2	✓		No MS per George Moreau 3/3/92 (SW)

Uat

New York State Electric & Gas 7212-001
Feb-28-1992 Soil
N091-DUMP

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Scott B. Dillman	2-28-92 1709				

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for lab. by: (Signature)	Date/Time	Remarks
		[signature]	28Feb92 1705	

ENGINEERING-SCIENCE INC.
290 Elwood Davis Road, Suite 312
Liverpool, New York 13088
Telephone: (315) 451-9560

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
100 TOMPKINS ST. · CORTLAND, N.Y. 13045
607-753-3403

LABORATORY REPORT

Client: ENGINEERING SCIENCE, INC.
290 Elwood Davis Road
Suite 312
Liverpool, NY 13088
Site: Norwich NYSEG
Sample: Liquid

Report Date: 1/14/92
Sampling Date: 1/03/92
Sampled By: B.Lilly
Analysis Date: 1/10/92
Lab Log No: 9201018

TARGET COMPOUND LIST
(EPA 8270 GC/MS Methodology)

CAS No.	COMPOUND	DL	RESULT
83-32-9	Acenaphthene	5	6.0
208-96-8	Acenaphthylene	5	ND
120-12-7	Anthracene	5	ND
92-87-5	Benzidene	50	ND
56-55-3	Benzo(a)anthracene	10	ND
50-32-8	Benzo(a)pyrene	5	ND
205-99-2	Benzo(b)fluoranthene	5	ND
191-24-2	Benzo(ghi)perylene	5	ND
207-08-9	Benzo(k)fluoranthene	5	ND
65-85-0	Benzoic Acid	50	ND
100-51-6	Benzyl Alcohol	20	ND
85-68-7	Benzyl butyl phthalate	5	ND
111-91-1	Bis(2-chloroethoxy)methane	10	ND
111-44-4	Bis(2-chloroethyl)ether	10	ND
39638-32-9	Bis(2-chloroisopropyl) ether	10	ND
117-81-7	Bis(2-ethylhexyl)phthalate	5	ND
101-55-3	4-Bromophenylphenyl ether	5	ND
59-50-7	4-chloro-3-methylphenol	5	ND
106-47-8	4-Chloroaniline	20	ND
91-58-7	2-Chloronaphthalene	5	ND
95-57-8	2-Chlorophenol	5	ND
7005-72-3	4-Chlorophenyl phenyl ether	5	ND
218-01-9	Chrysene	5	ND
53-70-3	Dibenzo(a,h)anthracene	5	ND
132-64-9	Dibenzofuran	10	ND

Continued on Page 2

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
100 TOMPKINS ST. · CORTLAND, N.Y. 13045
607-753-3403

LABORATORY REPORT

Client: **ENGINEERING SCIENCE, INC.**
290 Elwood Davis Road
Suite 312
Liverpool, NY 13088
Site: Norwich NYSEG
Sample: Liquid

Report Date: 1/14/92
Sampling Date: 1/03/92
Sampled By: B.Lilly
Analysis Date: 1/10/92
Lab Log No: 9201018

TARGET COMPOUND LIST
(EPA 8270 GC/MS Methodology)

CAS No.	COMPOUND	DL	RESULT
95-50-1	1,2-Dichlorobenzene	5	ND
541-73-1	1,3-Dichlorobenzene	5	ND
106-46-7	1,4-Dichlorobenzene	5	ND
91-94-1	3,3-Dichlorobenzidine	20	ND
120-83-2	2,4-Dichlorophenol	5	ND
84-66-2	Diethyl phthalate	5	ND
105-67-9	2,4-Dimethylphenol	5	ND
131-11-3	Dimethyl phthalate	5	ND
84-74-2	Di-n-butyl phthalate	5	ND
117-84-0	Di-n-octyl phthalate	5	ND
51-28-5	2,4-Dinitrophenol	50	ND
121-14-2	2,4-Dinitrotoluene	10	ND
606-20-2	2,6-Dinitrotoluene	5	ND
206-44-0	Fluoranthene	5	ND
86-73-7	Fluorene	5	5.0
118-74-1	Hexachlorobenzene	5	ND
87-68-3	Hexachlorobutadiene	5	ND
77-47-4	Hexachlorocyclopentadiene	5	ND
67-72-1	Hexachloroethane	5	ND
193-39-5	Indeno(1,2,3-c,d)pyrene	5	ND
78-59-1	Isophorone	5	ND
534-52-1	2-Methyl-4,6-dinitrophenol	25	ND
91-57-6	2-Methylnaphthalene	10	ND
95-48-7	2-Methylphenol	10	ND
106-44-5	4-Methylphenol	10	ND

Continued on Page 3

BUCK ENVIRONMENTAL LABORATORIES INC.
ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150
607-753-3403

LABORATORY REPORT

Client:	ENGINEERING SCIENCE, INC. 290 Elwood Davis Road Suite 312 Liverpool, NY 13088	Report Date:	2/10/92
		Sampling Date:	1/03/92
		Sampled By:	Client
		Analysis Date:	1/08/92
		Lab Log No:	9201018
Site:	Norwich NYSEG		
Sample:	Liquid		

Volatile Aromatic and Unsaturated Organics by EPA 503.1

	Liquid			
Benzene	ND			
Bromobenzene	ND			
n-Butylbenzene	6.3			
sec-Butylbenzene	ND			
tert-Butylbenzene	ND			
Chlorobenzene	ND			
2-Chlorotoluene	ND			
4-Chlorotoluene	ND			
1,2-Dichlorobenzene	ND			
1,3-Dichlorobenzene	ND			
1,4-Dichlorobenzene	ND			
Ethylbenzene	ND			
Hexachlorobutadiene	ND			
Isopropylbenzene	ND			
p-Isopropyltoluene	1.2			
Naphthalene	4.3			
n-Propylbenzene	ND			
Styrene	ND			
Tetrachloroethene	ND			
Toluene	ND			
1,2,3-Trichlorobenzene	ND			
1,2,4-Trichlorobenzene	ND			
Trichloroethene	ND			
1,2,4-Trimethylbenzene	ND			
1,3,5-Trimethylbenzene	1.0			
o-Xylene	ND			
m & p-Xylene	ND			

All concentrations are reported as ug/L.
ND - None detected greater than detection limit of 1.0 ug/L.

This analysis is certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck

John H. Buck, P.E.
Laboratory Director
NYS ELAP CERT 10795

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
100 TOMPKINS ST. · CORTLAND, N.Y. 13045
607-753-3403

NYS ELAP ID 10795

LABORATORY REPORT

Client: **ENGINEERING SCIENCE, INC.**
290 Elwood Davis Road
Suite 312
Liverpool, NY 13088
Site: Norwich NYSEG
Sample: Liquid

Report Date: 1/14/92
Sampling Date: 1/03/92
Sampled By: B.Lilly
Analysis Date: 1/10/92
Lab Log No: 9201018

TARGET COMPOUND LIST
(EPA 8270 GC/MS Methodology)

CAS No.	COMPOUND	DL	RESULT
91-20-3	Naphthalene	5	ND
88-74-4	2-Nitroaniline	50	ND
99-09-2	3-Nitroaniline	50	ND
100-01-06	4-Nitroaniline	50	ND
98-95-3	Nitrobenzene	5	ND
88-75-5	2-Nitrophenol	5	ND
100-02-7	4-Nitrophenol	5	ND
62-75-9	n-Nitrosodimethylamine	5	ND
621-64-7	Nitrosodi-n-propylamine	5	ND
86-30-6	n-Nitrosodiphenylamine	5	ND
87-86-5	Pentachlorophenol	5	ND
85-01-8	Phenanthrene	10	ND
108-95-2	Phenol	5	ND
129-00-0	Pyrene	5	ND
120-82-1	1,2,4-Trichlorobenzene	5	ND
88-06-2	2,4,5-Trichlorophenol	10	ND
88-06-2	2,4,6-Trichlorophenol	5	ND

All concentrations are reported as ug/L. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
100 TOMPKINS ST. · CORTLAND, N.Y. 13045
607-753-3403

Report Date: 1/14/92

Lab Log Number: 9201018

LABORATORY REPORT

Client: **ENGINEERING SCIENCE, INC.**
290 Elwood Davis Road, Suite 312
Liverpool, NY 13088

Site: Norwich NYSEG

Date of Sample: 1/03/92 by B. Lilly

Sample: Liquid

Method:
- o Flame Ionization Detector, and/or GC/MS (75 degrees for 4 minutes, 8 degrees/min to 310 degrees C)
- o N2 purge at 25ml/min - calibrated against toluene standard (unless otherwise noted)
- o Adapted from NYSDOH 310-13 methodology

TOTAL PETROLEUM HYDROCARBON QUANTITATION

Liquid	33 ug/L as gasoline 1,480 ug/L as fuel oil

PRODUCT IDENTIFICATION

The chromatogram is consistent with both gasoline and fuel oil #2.

This analysis is certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck

John H. Buck, P.E.
Laboratory Director
NYS ELAP CERT 10795

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
100 TOMPKINS ST. • CORTLAND, N.Y. 13045
607-753-3403

Report Date: 1/09/92

Lab Log Number: 9201018

LABORATORY REPORT

Client: ENGINEERING SCIENCE, INC.
290 Elwood Davis Road, Suite 312
Liverpool, NY 13088

Site: Norwich NYSEG

Sample Date: 1/03/92 by B. Lilly

Sample: Liquid

LEAD RESULTS

Liquid	.57 mg/L

This analysis is certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck

John H. Buck, P.E.
Laboratory Director

NYS ELAP CERT 10795

WELL SAMPLING RECORD

Site Name Norwich Well Victory Markets Well Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) NA (spigot)

Evacuation:

Using: ~~Submersible~~ spigot X Centrifugal ____ 2" Casing: ___ ft. of water x .16 = ____ gals

Airlift ____ Positive Displacement ____ 3" Casing: ___ ft. of water x .36 = ____ gals

Bailed ____ ____ Times 4" Casing: ___ ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing unknown

Volume of water removed 50 Gals. (> 3 Well Volumes)

Sampling: Time 820 X a.m.

____ p.m.

Bailer Type: Stainless Steel ____

Teflon ____

From Pos. Dis. Discharge Tube ____

Other spigot X

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		N0GNXXVIG	VOA, SVOA, CN⁻

Physical Appearance and Odor Clear, no odor noted

Refrigerate: Date: 1/30/92 Time 830 am

Field Tests:

Temperature (C/F)	X	51.1°F
pH	X	7
Spec. Conduc (umhos/cm)	X	238

Weather P. cloudy, 40's

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-1 Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 8.16 ~~7.04~~ CRT (1/29/92)

Evacuation:

Using: Submersible ____ Centrifugal ____ 2" Casing: 7.04 ft. of water x .16 = 1.126 gals

Airlift ____ Positive Displacement X 3" Casing: __ ft. of water x .36 = ____ gals

Bailed ____ ____ Times 4" Casing: __ ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing ≈ 15.0 ft

Volume of water removed 4 Gals. (> 3 Well Volumes)

Sampling: Time 920 X a.m.

____ p.m.

Bailer Type: Stainless Steel X

Teflon ____

From Pos. Dis. Discharge Tube ~~[illegible]~~ 1.80

Other ____ ____

	No. of Bottles Filled	I.D. No.	Analyses
~~Trip Blank~~ MS/MSD		NOGUMSXX01Q NOGUMSDXX01Q	VOA, SVOA, CN-
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGUXX9101G	VOA, SVOA, CN-

Physical Appearance and Odor cloudy, brown, No odor noted

Refrigerate: Date: ~~930~~ 1/30/92 Time 930 am

Field Tests:

Temperature (C/F)	X	44.5°F
pH	X	6.5
Spec. Conduc (umhos/cm)	X	596

Weather p Cloudy, 40's

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW-91-25H Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 8.45 (1/29/92)

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: 3.25 ft. of water x .16 = .52 gals

Airlift ___ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed ___ ___ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing ≃ 9.0'

Volume of water removed 2 Gals. (> 3 Well Volumes)

Sampling: Time 1000 X a.m. ___ p.m.

Bailer Type: Stainless Steel X

Teflon ___

From Pos. Dis. Discharge Tube ~~X~~ [illegible]

Other ___

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGUSH 9102G	VOA, SVOA, CN⁻

Physical Appearance and Odor Cloudy Brown

Refrigerate: Date: 1/30/92 Time 1010

Field Tests:

Temperature (C/F)	X	47.3°F
pH	X	6-6.5
Spec. Conduc (umhos/cm)	X	730

Weather cloudy, 40's

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-2D Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 8.75 (1/29/92)

Evacuation:

Using: Submersible ____ Centrifugal ____ 2" Casing: 16.65 ft. of water x .16 = 2.6 gals

Airlift ____ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed ____ ________ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing 29.0'

Volume of water removed 8.5 Gals. (> 3 Well Volumes)

Sampling: Time 1030 X a.m. ___ p.m.

Bailer Type: Stainless Steel X

Teflon ____

From Pos. Dis. Discharge Tube ~~X~~ 100

Other ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGUD91026	VOA, SVOA, CN-

Physical Appearance and Odor slightly cloudy

Refrigerate: Date: 1/30/92 Time 1035

Field Tests:

Temperature (C/F)	X	50.8°F
pH	X	7
Spec. Conduc (umhos/cm)	X	859

Weather Cloudy 40's

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-4SH Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 9.38 (1/29/92)

Evacuation:

Using:	Submersible ____	Centrifugal ____		2" Casing: ~~?~~ 2.73 ft. of water x .16 = .43 gals
	Airlift ____	Positive Displacement X		3" Casing: ___ft. of water x .36 = ____gals
	Bailed ____	____ Times		4" Casing: ___ft. of water x .65 = ____gals

Depth to intake from top of protective well casing ≈10.0'

Volume of water removed 1.5 Gals. (> 3 Well Volumes)

Sampling: Time 1311 ____a.m. ____p.m.

Bailer Type: Stainless Steel X

Teflon ____

From Pos. Dis. Discharge Tube ~~?~~ ABD

Other ____ ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		ND6DSH91046	VOA, SVOA, CN⁻, FINGERPRINT

Physical Appearance and Odor Cloudy Brown

Refrigerate: Date: 1/30/92 Time 1320

Field Tests:

Temperature (C/F)	X	48.1°F
pH	X	6-6.5
Spec. Conduc (umhos/cm)	X	838

Weather Cloudy 40's

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-4D Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 9.42 1/29/92

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: 12.58 ft. of water x .16 = 2.01 gals

Airlift ___ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed ___ ___ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing ± 10.5'

Volume of water removed 8 Gals. (> 3 Well Volumes)

Sampling: Time 1400 ___ a.m. ___ p.m.

Bailer Type: Stainless Steel X

Teflon ___

From Pos. Dis. Discharge Tube ~~1~~ 100

Other ___ ___

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGDD91046	VOA, SVOA, CN; FINGERPRINT

Physical Appearance and Odor cloudy, hydrocarbon odor

Refrigerate: Date: 1/30/92 Time 1410

Field Tests:

Temperature (C/F) None

pH None SHEEN ON H2O

Spec. Conduc (umhos/cm) None

Weather cloudy 40's

Comments

ENGINEERING-SCIENC

WELL SAMPLING RECORD

Site Name Norwich Well GW91-5 Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.13 1/29/92

Evacuation:

Using: Submersible ____ Centrifugal ____ 2" Casing: 4.77 ft. of water x .16 = 1.4 gals
Airlift ____ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ___ gals
Bailed ____ ____ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing 28.0'

Volume of water removed 4.5 Gals. (> 3 Well Volumes)

Sampling: Time 1150/1200 X a.m.
____ p.m.

Bailer Type: Stainless Steel X
Teflon ____
From Pos. Dis. Discharge Tube ~~3~~ ABD
Other ____ ____

	No. of Bottles Filled	I.D. No.	Analyses
~~Trip Blank~~ Duplicate		NO6DDUXX05Q	VOA, SVOA, CN⁻
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NO6DXX9105G	VOA, SVOA, CN⁻

Physical Appearance and Odor Cloudy brown, coal tar odor

Refrigerate: Date: 1/30/92 Time 1210

Field Tests:

Temperature (C/F)	X	45.6°F
pH	X	6.5
Spec. Conduc (umhos/cm)	X	615

Weather cloudy, 40's

Comments ____

WELL SAMPLING RECORD

Site Name Norwich Well GW91-6 Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.55 (1/29/92)

Evacuation:

Using: Submersible ______ Centrifugal ______ 2" Casing: 8.05 ft. of water x .16 = 1.28 gals

Airlift ______ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ______ gals

Bailed ______ ______ Times 4" Casing: ___ ft. of water x .65 = ______ gals

Depth to intake from top of protective well casing ~8.0'

Volume of water removed dry Gals. (> 3 Well Volumes)

Sampling: Time 1140 X a.m.

______ p.m.

Bailer Type: Stainless Steel X

Teflon ______

From Pos. Dis. Discharge Tube X CN

Other ______ ______

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NDGDXX91066	VOA, SVOA, CN

Physical Appearance and Odor Cloudy grey, hydrocarbon odor

Refrigerate: Date: 1/30/92 Time 1150

Field Tests:

Temperature (C/F)	X	47.6 °F
pH	X	6.5
Spec. Conduc (umhos/cm)	X	817

Weather Cloudy, 40s

Comments

ENGINEERING-SCIENCE

WELL SAMPLING RECORD

Site Name Norwich Well GW91-7 Date 1/30/92

Samplers: NAS of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.43 (1/29/92)

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: 3.33 ft. of water x .16 = .53 gals

Airlift ___ Positive Displacement X 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed ___ ___ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing ~8'

Volume of water removed 2 Gals. (> 3 Well Volumes)

Sampling: Time 1050 X a.m. ___ p.m.

Bailer Type: Stainless Steel X

Teflon ___

From Pos. Dis. Discharge Tube ~~X~~ ~~[illegible]~~

Other ___ ___

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGUXX91076	VOA, SVOA, CN⁻

Physical Appearance and Odor Cloudy grey

Refrigerate: Date: 1/30/92 Time 1100

Field Tests:

Temperature (C/F)	X	41.7°F
pH	X	6.5
Spec. Conduc (umhos/cm)	X	1180

Weather cloudy, 40's

Comments

ENGINEERING-SCIENCE

WELL SAMPLING RECORD

Site Name Norwich Well GW91-1 Date 4/24/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.44

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: ~~1.24~~ CAT ft. of water x .16 = ~~.19~~ car 1.24 gals

Airlift ___ Positive Displacement X DAD 3" Casing: ___ ft. of water x .36 = ___ gals

Bailed X ___ Times 4" Casing: ___ ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing ~9.0'

Volume of water removed 4 Gals. (> 3 Well Volumes)

Sampling: Time 800 X a.m.

___ p.m.

Bailer Type: Stainless Steel X

Teflon ___

From Pos. Dis. Discharge Tube X DAD

Other ___ ___

	No. of Bottles Filled	I.D. No.	Analyses
~~Trip Blank~~ MS/MSD		NOGUMSD92016 NOGUMS92016	VOA, SVOA, CN-
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGUXX 92016	VOA, SVOA, CN-

Physical Appearance and Odor Cloudy brown

Refrigerate: Date: 4/24/92 Time 810

Field Tests:

Temperature (C/F)		48.8°F
pH		7
Spec. Conduc (umhos/cm)		585

Weather 60°F sunny

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-2D Date 4/24/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 8.00

Evacuation:

Using:				
Submersible ____	Centrifugal ____		2" Casing: CRT ~~2.78~~ ft. of water x .16 = CR - 2.78 .44 gals
Airlift ____	Positive Displacement X DRD		3" Casing: ___ ft. of water x .36 = ____ gals
Bailed X	____ Times		4" Casing: ___ ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing ≈ 9.0'

Volume of water removed 7.5 Gals. (> 3 Well Volumes)

Sampling: Time 845 X a.m. ____ p.m.

Bailer Type: Stainless Steel X

Teflon ____

From Pos. Dis. Discharge Tube ~~X~~ DRD

Other ____ ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NOGWD92026	VOA, SVOA, CN-

Physical Appearance and Odor Cloudy brown

Refrigerate: Date: 4/24/92 Time 855

Field Tests:

Temperature (C/F)		52.2°F
pH		7
Spec. Conduc (umhos/cm)		685

Weather 60's sunny

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-2S Date 4/24/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.72

Evacuation:

Using: Submersible	______	Centrifugal	______	2" Casing:__ft. of water x .16 = .64 gals
Airlift	______	Positive Displacement	X DBD	3" Casing:__ft. of water x .36 = ____ gals
Bailed	X	______	Times	4" Casing:__ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing 28.5'

Volume of water removed 2 Gals. (> 3 Well Volumes)

Sampling: Time 830 X a.m.

____ p.m.

Bailer Type: Stainless Steel	X
Teflon	
From Pos. Dis. Discharge Tube	X DBD
Other	

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NDGUSH9202G	VOA, SVOA, CN-

Physical Appearance and Odor cloudy brown

Refrigerate: Date: 4/24/92 Time 840

Field Tests:

Temperature (C/F)	X	50.2°F
pH	X	7
Spec. Conduc (umhos/cm)	X	783

Weather Sunny, 60s

Comments

WELL SAMPLING RECORD

Site Name Norwich Well ~~GW-4D~~ GW 91-4D Date 4/23/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 7.66

Evacuation:

Using: Submersible ____ Centrifugal ____ 2" Casing: ___ ft. of water x .16 = 2.3 gals

Airlift ____ Positive Displacement ~~#~~ ddd 3" Casing: ___ ft. of water x .36 = ____ gals

Bailed X ____ Times 4" Casing: ___ ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing ~ 8.5'

Volume of water removed 7.0 Gals. (> 3 Well Volumes)

Sampling: Time 1600 ____ a.m. ____ p.m.

Bailer Type: Stainless Steel X

Teflon ____

From Pos. Dis. Discharge Tube ~~#~~ ddd

Other ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		ND6DD92046	VOA, SVOA, CN-

Physical Appearance and Odor brn, black, odor, sheen

Refrigerate: Date: 4/23/92 Time 1610

Field Tests:

Temperature (C/F)		52.0°F
pH		6
Spec. Conduc (umhos/cm)		702

Weather Sunny, 60s

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-4S Date 4/23/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 9.32

Evacuation:

Using: Submersible ______ Centrifugal ______ 2" Casing: __ft. of water x .16 = .60 gals
Airlift ______ Positive Displacement ~~X~~ DBD 3" Casing: __ft. of water x .36 = ______ gals
Bailed X ______ Times 4" Casing: __ft. of water x .65 = ______ gals

Depth to intake from top of protective well casing ~90'

Volume of water removed 1.5 (dry) Gals. (> 3 Well Volumes)

Sampling: Time 1545 ______ a.m. ______ p.m.

Bailer Type: Stainless Steel X
Teflon ______
From Pos. Dis. Discharge Tube ~~X~~ DBD
Other ______ ______

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		N06DSH92046	VOA, SVOA, CN⁻

Physical Appearance and Odor Cloudy grey, odor

Refrigerate: Date: 4/23/92 Time 1555

Field Tests:

Temperature (C/F)		54°F
pH		6
Spec. Conduc (umhos/cm)		552

Weather Sunny 60s

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-5 Date 4/24/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 6.43

Evacuation:

Using: Submersible ______ Centrifugal ______ 2" Casing:__ft. of water x .16 = 1.52 gals

Airlift ______ Positive Displacement ~~X~~ DRD 3" Casing:__ft. of water x .36 = ____ gals

Bailed X ______ Times 4" Casing:__ft. of water x .65 = ____ gals

Depth to intake from top of protective well casing 27.5'

Volume of water removed 5.0 Gals. (> 3 Well Volumes)

Sampling: Time 1000 X a.m. ____ p.m.

Bailer Type: Stainless Steel X

Teflon

From Pos. Dis. Discharge Tube ~~X~~ DBD

Other

	No. of Bottles Filled	I.D. No.	Analyses
~~Trip Blank~~ Duplicate		NO6DDUXX056	VOA, SVOA, CN-
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		NO6-0XX92056	VOA, SVOA, CN-

Physical Appearance and Odor cloudy brown

Refrigerate: Date: 4/24/92 Time 1010

Field Tests:

Temperature (C/F)		—
pH		—
Spec. Conduc (umhos/cm)		—

Weather 60's, sunny

Comments

WELL SAMPLING RECORD

Site Name Norwich Well GW91-6 Date 4/24/92

Samplers: DRD of ES

MNM of ES

Intial Static Water Level (from top of well protective casing) 6.68

Evacuation:

Using: Submersible ___ Centrifugal ___ 2" Casing: ___ft. of water x .16 = 1.43 gals
Airlift ___ Positive Displacement ~~X~~ DRD 3" Casing: ___ft. of water x .36 = ___ gals
Bailed X ___ Times 4" Casing: ___ft. of water x .65 = ___ gals

Depth to intake from top of protective well casing ~7.5'

Volume of water removed 5.0 Gals. (> 3 Well Volumes)

Sampling: Time 945 X a.m. ___ p.m.

Bailer Type: Stainless Steel X
Teflon ___
From Pos. Dis. Discharge Tube ~~X~~ DRD
Other ___

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash / Atmospheric (cirle one)			
Groundwater Sample		N06DXX92066	VOA, SVOA, CN-

Physical Appearance and Odor cloudy grey

Refrigerate: Date: 4/24/92 Time 955

Field Tests:

Temperature (C/F)		54.6°F
pH		8
Spec. Conduc (umhos/cm)		218

Weather Sunny 60's

Comments

ENGINEERING-SCIENCE

APPENDIX E

HISTORICAL MAPS

Norwich
21130
147
Pag 1

[illegible] Publishing Co.
LIMITED

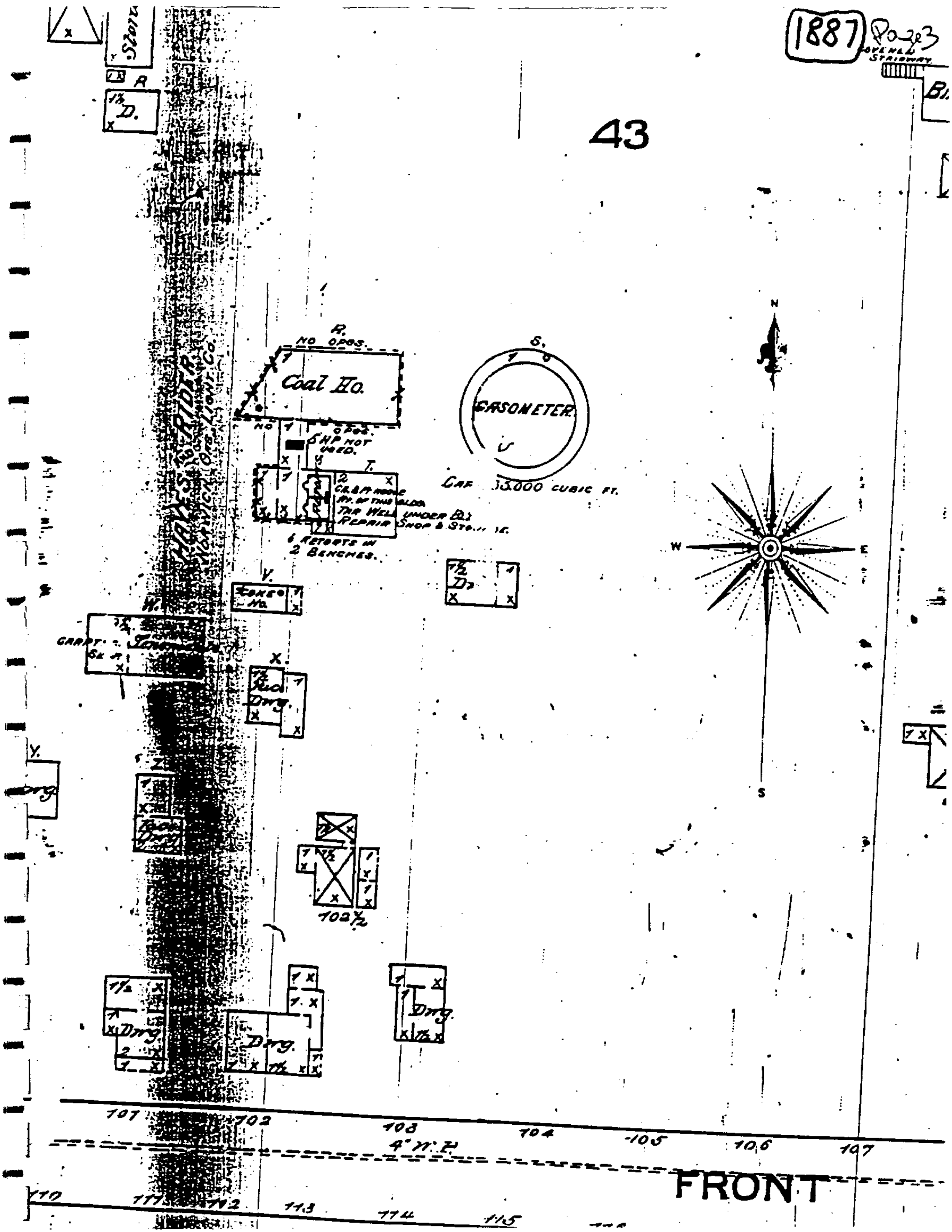
Scale 50 Feet to an Inch

117 BROADWAY
NEW YORK

JULY 1887

INDEX.

SHEET



1887
43
Coal Ho.
GASOMETER.
CAP. 33,000 CUBIC FT.
6 H.P. NOT USED.
6 RETORTS IN 2 BENCHES.
REPAIR SHOP & STO.
Drg.
102½
4" W. P.
FRONT
N
S
E
W

Pony 4

125-346

NEW YORK Sanborn-Perris MAP CO.

117 Broadway, New York.

SEPT. 1892

Scale, 50 ft. to an Inch

INDEX

...EETS.

B

...t Hale

...at ...easant

Main t... ...rtland

...E. Main t... ...itchell

S. of Front t... Main

....Plano t... Main

...6 & 10

....at Nort... ...rwich

Guernsey to ... Broad

...W. of Ca... ...wasta

...at North ...rwich

... Hickory ... Plano

Plano to ... Main

.....Broad to R. R.

.....R. R. to ...rdsall

...at ...rdsall

.... E. of R. R.

.N. Broad to R. R.

Birdsall to Adelaide

N. Broad to R. R.

R. R. to E. of Silver

R. R. to Birdsall

...road to R. R.

...orth Norwich

...o Canasawacta

...ey to N. Broad

...Elm to S. ...

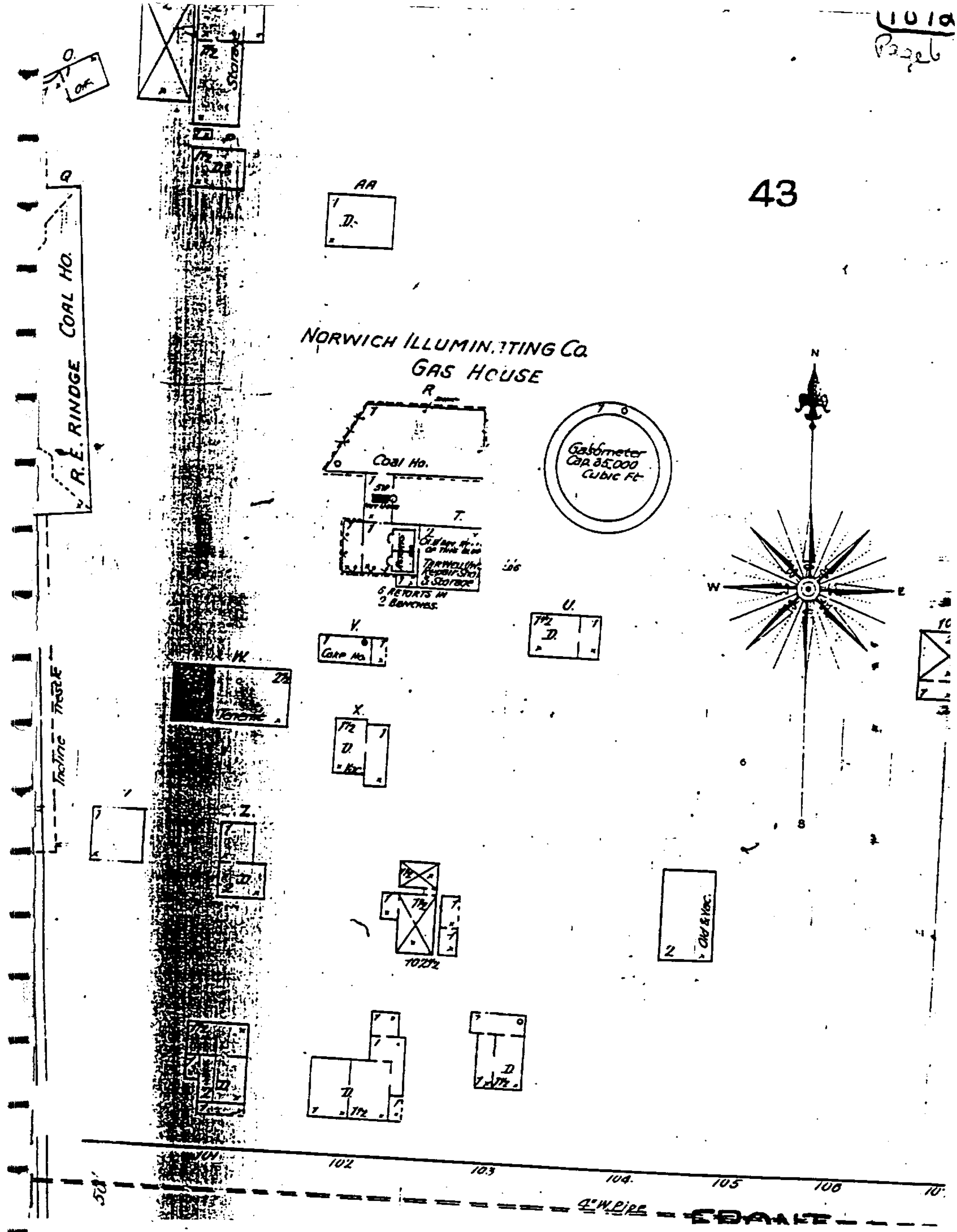
...E. ... R.

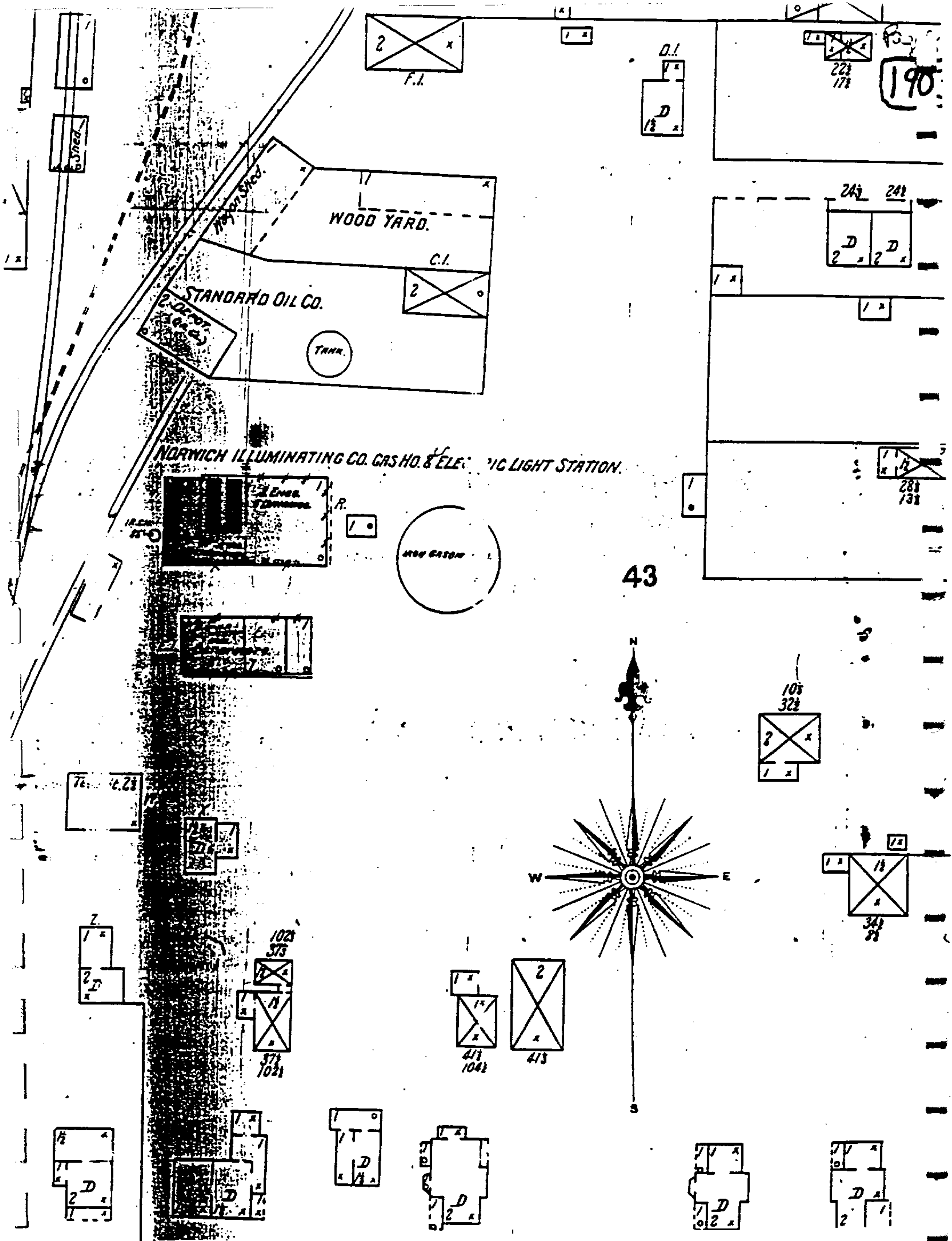
N. Broad t... R.

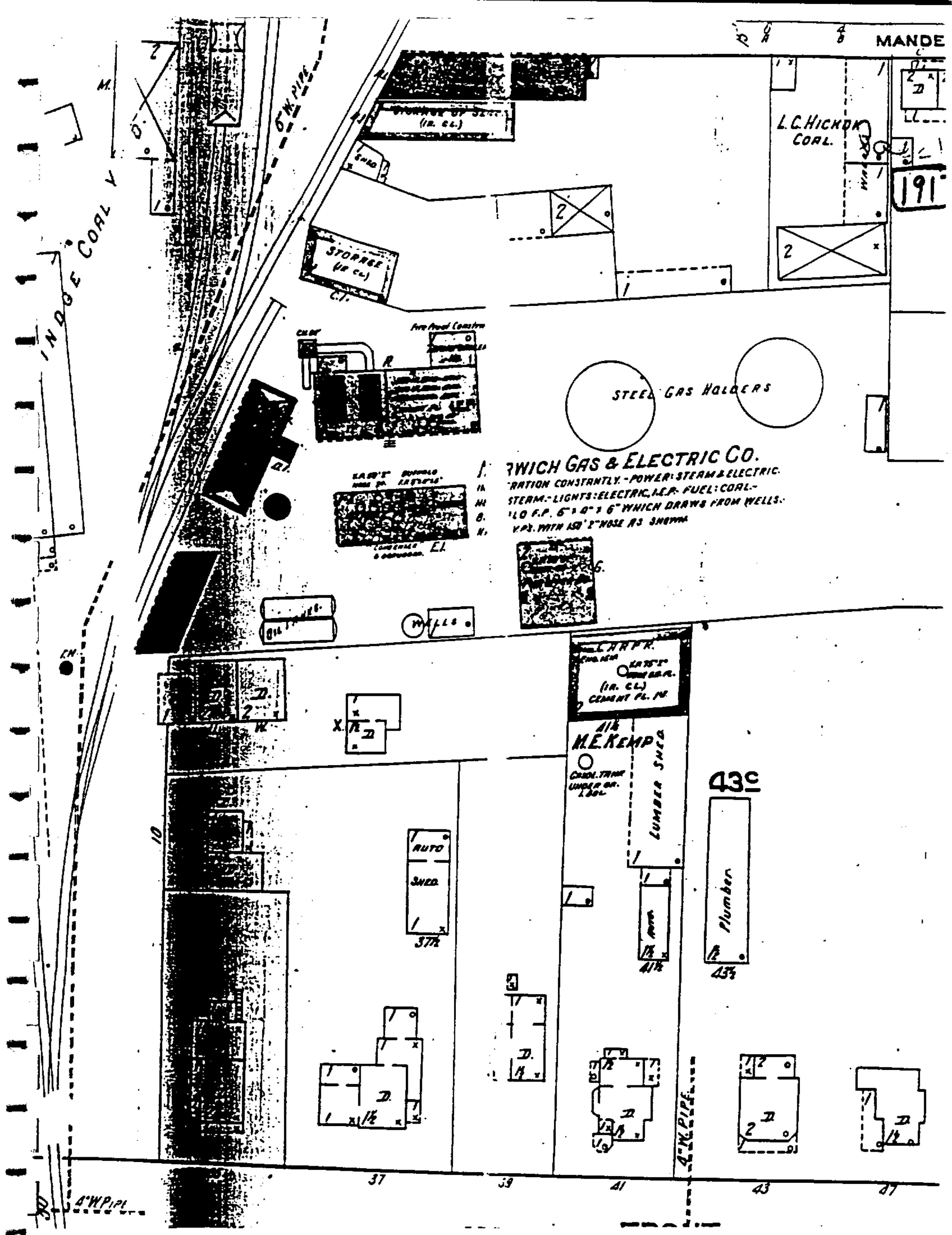
SPECIALS.

⊙ Indicates only one side of Street shown.

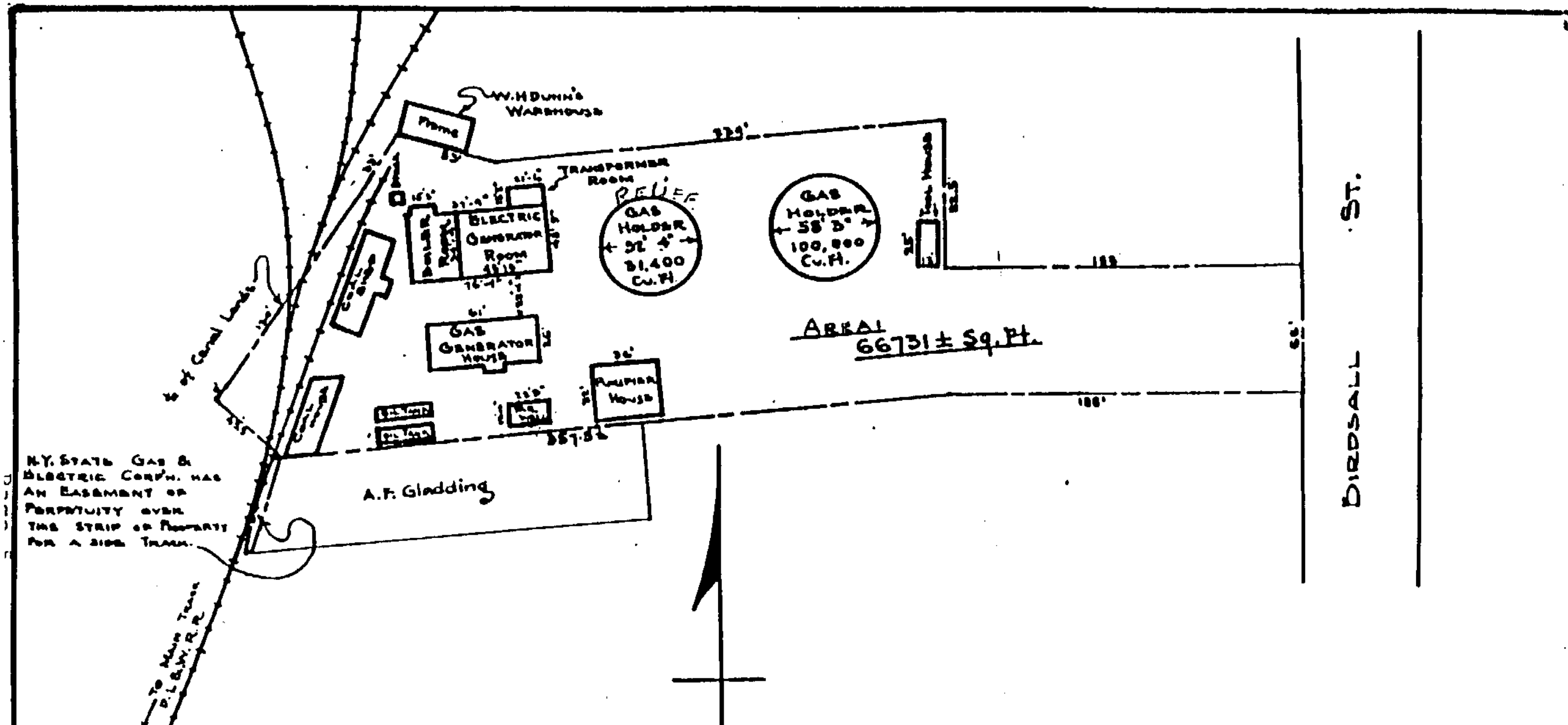
1016a
Page 6


43
NORWICH ILLUMINATING CO.
GAS HOUSE
Coal Ho.
Gasometer Cap. 35,000 Cubic Ft.
Tar Well, Wks. Repair Shop & Storage
6 RETORTS IN 2 BENCHES.
R. E. RINDGE COAL HO.
Storage
Carp. Ho.
Tenement
Old & Vac.
Incline Trestle
4" W. Pipe
102
103
104
105
106
N
S
E
W


190
F.I.
D.I.
Shed
Wagon Shed
WOOD YARD.
C.I.
STANDARD OIL CO.
TANK.
NORWICH ILLUMINATING CO. GAS HO. & ELEC IC LIGHT STATION.
43
N
W
E
S



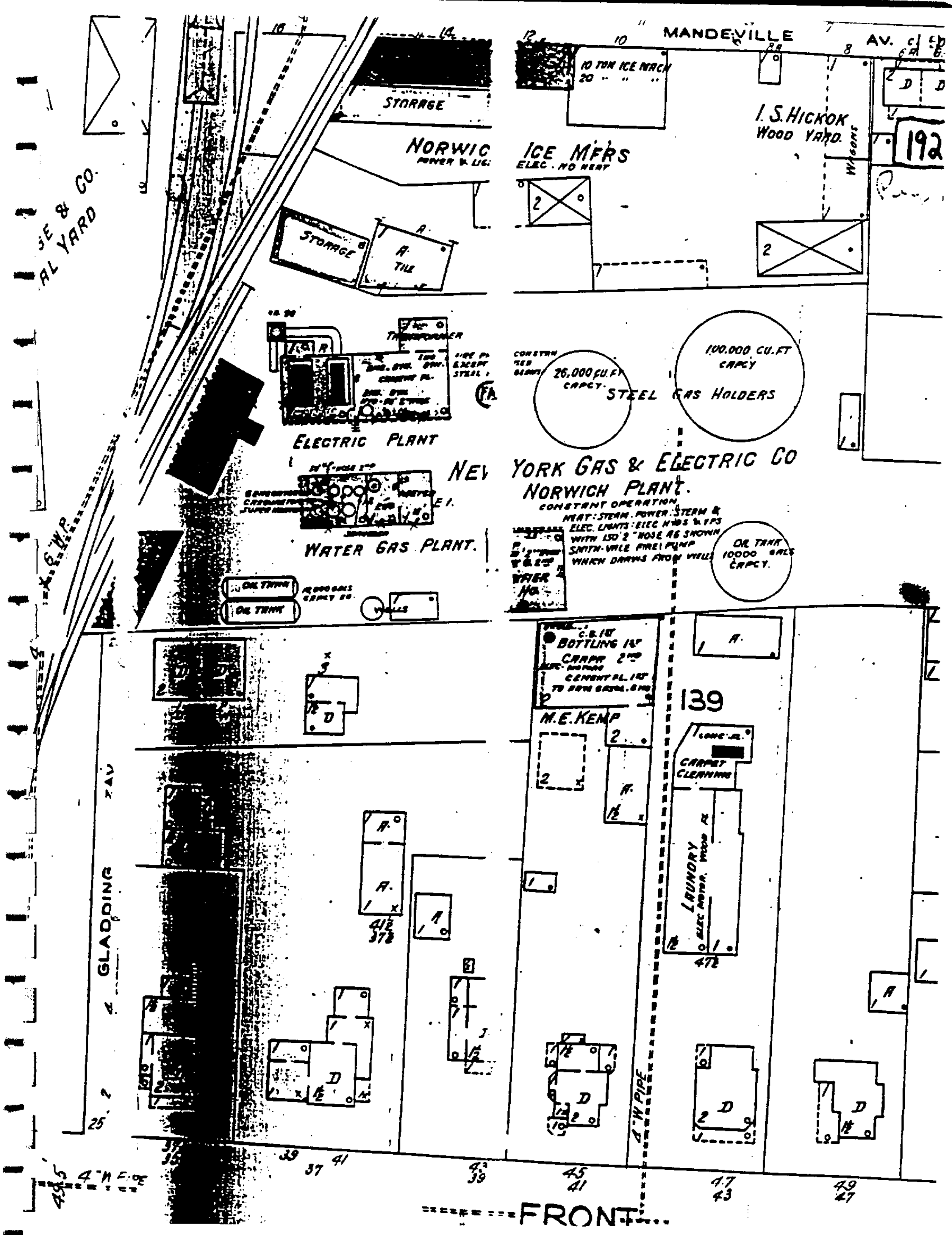
MANDE
L.C. HICKOK COAL.
191
STORAGE (IR. CL.)
STEEL GAS HOLDERS
INDGE COAL Y
6" W. PIPE
WICH GAS & ELECTRIC CO.
RATION CONSTANTLY. - POWER: STEAM & ELECTRIC.
STEAM. - LIGHTS: ELECTRIC, I.E.P. - FUEL: COAL.
LO F.P. 6" & 4" & 6" WHICH DRAWS FROM WELLS.
V.P.S. WITH 150' 2" HOSE AS SHOWN.
WELLS
M.E. KEMP
LUMBER SHED
43c
Plumber
AUTO SHED
37½
41½
43½
4" W. PIPE
37
39
41
43
47



BUILDING	CONSTRUCTION			
	Wall	Floor	Roof	Roofing
ELECTRIC GENERATOR ROOM	Brick	Conc.	Wood & Steel	Slate
BOILER ROOM	Brick	Conc.	Wood & Steel	Slate
TRANSFORMER ROOM	Brick	Conc.	Steel	Reinforced Conc.
COAL SHED	Conc.	Earth	Wood	Slate
GAS GENERATOR HOUSE	Brick	Brick, Conc. Cast iron	Iron Wood	Slate
PURIFIER HOUSE	Brick	Conc. Wood	Wood Steel	Slate
COAL HOUSE	Conc.	Earth	Wood	Slate
TOOL HOUSES	Wood	Wood	Wood	Composition

REAL ESTATE OWNED BY
NEW YORK STATE GAS & ELECTRIC CORP'N.
NORWICH, N.Y.

SCALE: 1" = 80'   JULY 31, 1920.



MANDEVILLE
AV.
10 TON ICE MACH
20
STORAGE
NORWICH
POWER & LIG
ICE MFRS
ELEC. NO HEAT
I.S. HICKOK
WOOD YARD.
WAGONS
192
GE & CO.
AL YARD
STORAGE
TILE
TRANSFORMER
ELECTRIC PLANT
26,000 CU.FT
CAPCY.
100,000 CU. FT
CAPCY
STEEL GAS HOLDERS
NEW YORK GAS & ELECTRIC CO
NORWICH PLANT.
CONSTANT OPERATION
HEAT: STEAM. POWER: STEAM &
ELEC. LIGHTS: ELEC
SMITH-VILLE FIRE PUMP
WHICH DRAWS FROM WELLS
OIL TANK
10000 GALS
CAPCY.
WATER GAS PLANT.
OIL TANK
OIL TANK
WELLS
WATER
BOTTLING 1ST
CARPR 2ND
CEMENT FL. 1ST
M.E. KEMP
139
CARPET
CLEANING
LAUNDRY
GLADDING
AV
4" W. PIPE
FRONT
39
37
41
43
39
45
41
47
43
49
47
25

NORWICH

Incl… ting-NORTH NORWICH

Chena… o County, NEW YORK

S… nborn Map Co. New York

September, 1926

PASTE OVER … REPORT — NORWICH, N. Y.

…EW REPORT, October, 1937

POPULATION: 775

Prevailing Winds:—Northwest.

…VING:—Principal streets ar… brick, concrete or macadamized.

…ADES:—Nearly level.

WATER FACI… IES

Owned an… aintained by New York Water Service Corp'n. Gravity pressure system from 2 reservoirs of 60,000,… and 30,000,000 gallons capacity respectively, located 2 miles east of and 130' above Public Square, fed by springs. Reserve supply is from Chenango Lake, located 6 miles east of reservoirs. System was …stalled in 1881. Most of present system is composed of extensions and renewals. Water flows through … ers of 600,000 gallons daily capacity each.

21 miles o… 12" mains. 111 triple hydrants. Average daily consumption 1,500,000 gallons. Average pressure in … section 65 lbs. In northern part of City 30 to 40 lbs.

FIRE DEPART… NT

Partly pai… paid drivers, 5 paid firemen, 4 partly paid men, 40 call men and 140 volunteers. 4 companies. 2 stati… 1 chief, 2 assistant chiefs, 1 captain (included in above). 6,000' 2½" total hose.

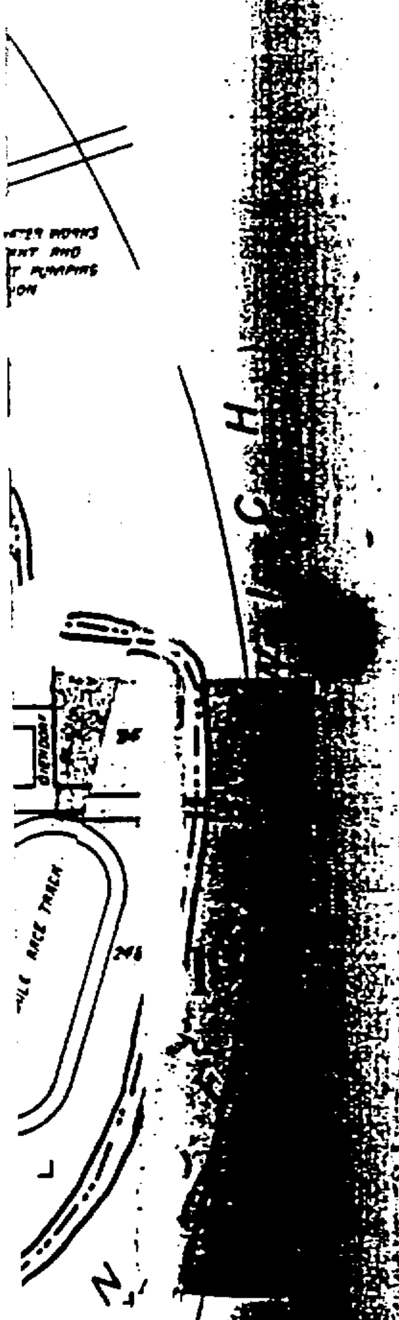
CENTRA… RE STATION (see Sheet 3).—1 Seaford auto triple combination with 600 gallon per minute pu… 100 gallon booster tank and 1,000' 2½" hose. 1 Seaford hook and ladder truck. 1 Larrabee ho… ck and 1 Reo hose truck in reserve.

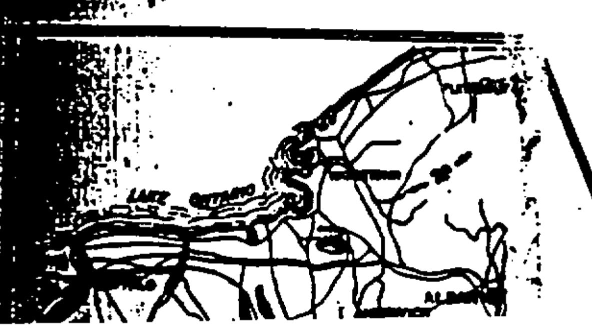
ONTARI… SE CO.—Located E. Railroad St. 1 Seaford auto triple combination with 600 gallon per minute pu… 100 gallon booster tank and 1,000' 2½" hose.

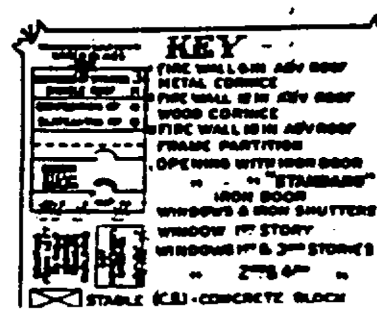
Gamewell … alarm system. 31 boxes. Fire alarm headquarters in Central Fire Station, an ordinary joined brick c… struction. Siren and bell alarms.

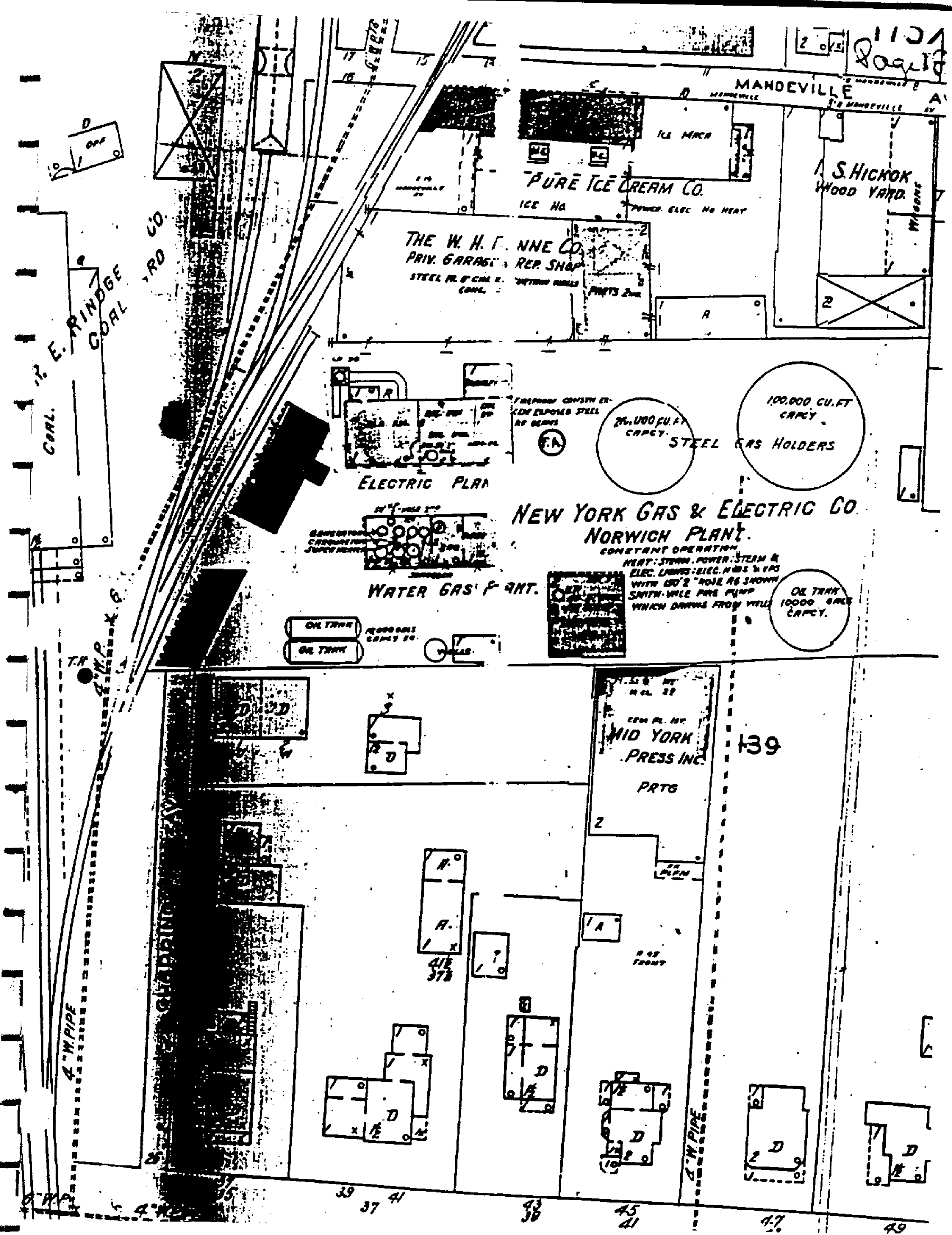
FIRE-RESISTIVE ROOFING ORDINANCE.

Ordinance … ibits wooden shingle roofs within Fire Limits, adopted July 9, 1929.

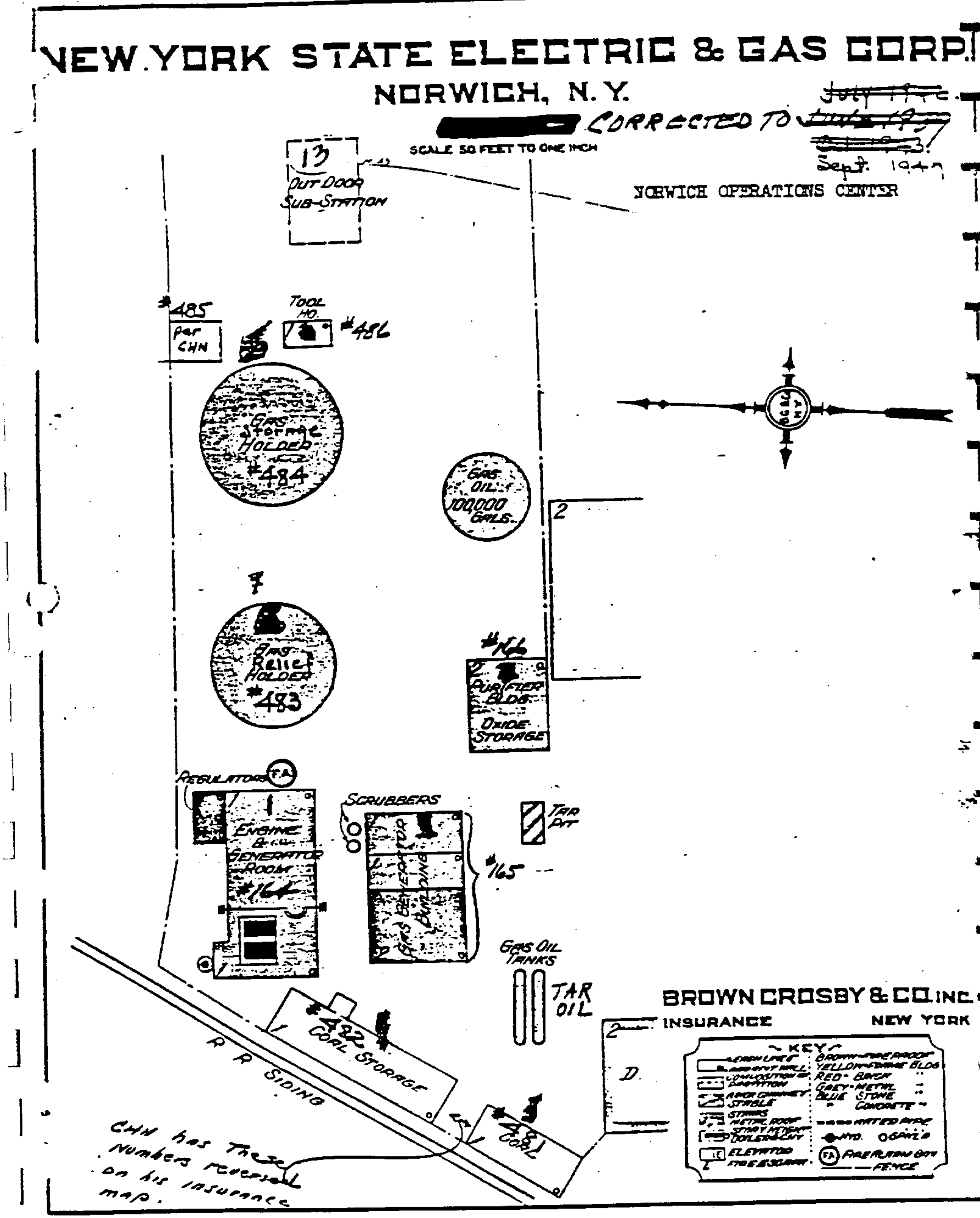








MANDEVILLE AV
PURE ICE CREAM CO.
ICE MACH
POWER: ELEC. NO HEAT
S. HICKOK WOOD YARD.
THE W. H. [illegible]NNE CO.
PRIV. GARAGE & REP. SHOP
PARTS 2nd.
R. E. RINDGE CO. COAL YARD
COAL
ELECTRIC PLANT
STEEL GAS HOLDERS
100,000 CU. FT. CAPCY.
NEW YORK GAS & ELECTRIC CO.
NORWICH PLANT.
CONSTANT OPERATION
WATER GAS PLANT.
OIL TANK
OIL TANK 10000 GALS CAPCY.
MID YORK PRESS INC.
PRTG
139
4" W. PIPE
6" W.P.


NEW YORK STATE ELECTRIC & GAS CORP.
NORWICH, N.Y.
~~July 19~~
[redacted] CORRECTED TO ~~~~ ~~~~
Sept. 1947
SCALE 50 FEET TO ONE INCH
NORWICH OPERATIONS CENTER
13
OUT DOOR SUB-STATION
#485
Per CHN
TOOL HO.
#486
GAS STORAGE HOLDER
#484
GAS OIL 100,000 GALS.
2
GAS RELIEF HOLDER
#483
#166
PURIFIER BLDG.
OXIDE STORAGE
REGULATORS
F.A.
ENGINE & GENERATOR ROOM
#164
SCRUBBERS
GAS GENERATOR BUILDING
#165
TAR PIT
GAS OIL TANKS
TAR OIL
#482
COAL STORAGE
R R SIDING
#481
COAL
D
CHN has These Numbers reversed on his insurance map.
BROWN CROSBY & CO. INC.
INSURANCE
NEW YORK
~ KEY ~
BROWN - FIRE PROOF
YELLOW - FRAME BLDG.
RED - BRICK
GREY - METAL
BLUE STONE
" CONCRETE
ELEVATOR
HYD.
FIRE ALARM BOX
FENCE