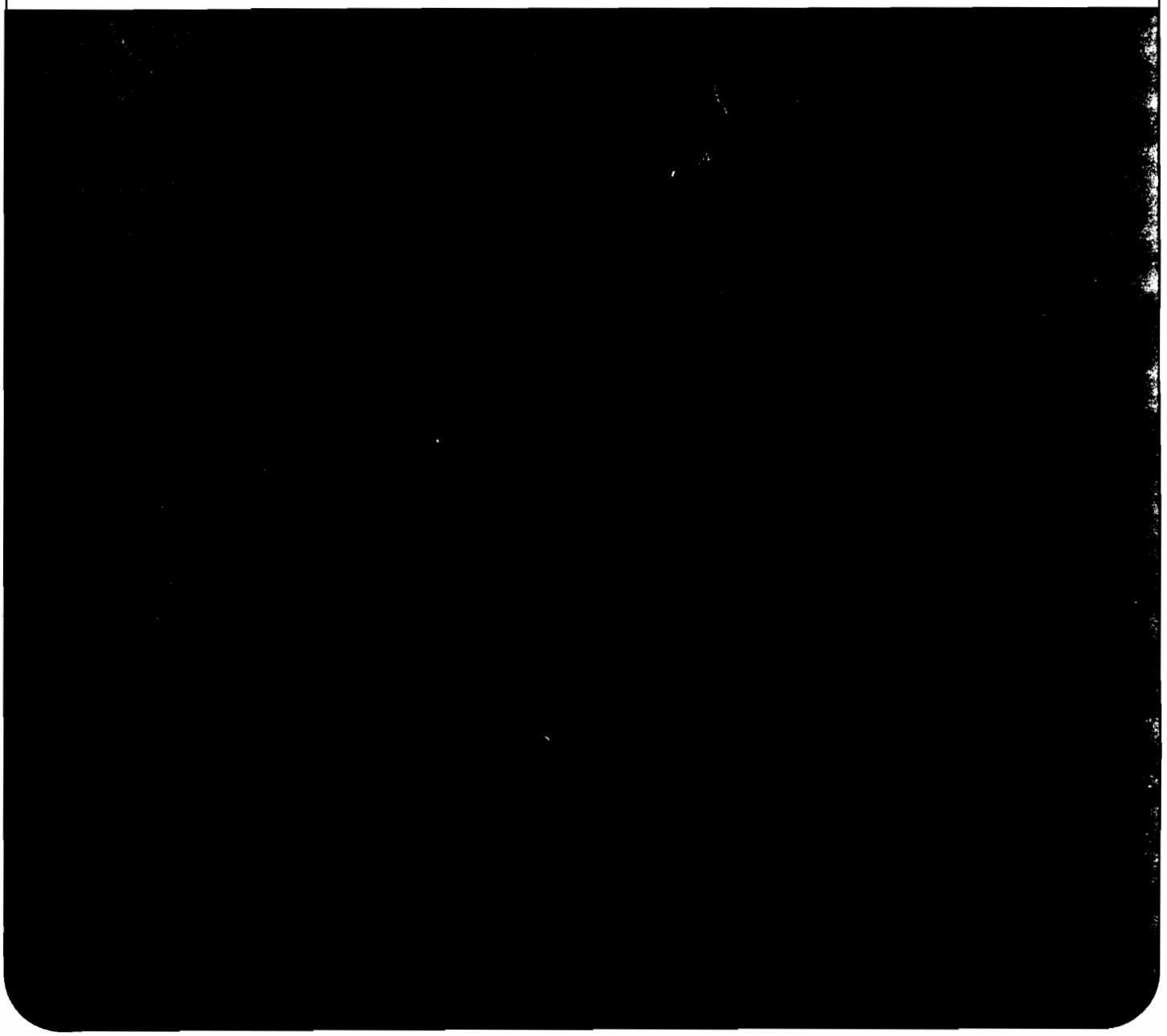
Initial Report



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VIA OVERNIGHT DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

November 21, 1989

New York State Division of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233

ATTENTION: Michael J. O'Toole, P.E., Director

RE: 904 State Fair Boulevard (Maestri Site)
Signed Consent Order (A7-0139-88-01)

Dear Mr. O'Toole:

Enclosed for your review are two (2) copies of the Initial Report for the Site Investigation and Development of Interim Remedial Measures for the above referenced site. We have also enclosed one (1) copy of the Contract Laboratory Protocol data package.

The report has been prepared by our consultants, O'Brien & Gere Engineers, Inc., and is submitted in fulfillment of Section 3.11.1 (Initial Reporting) of the Work Plan.

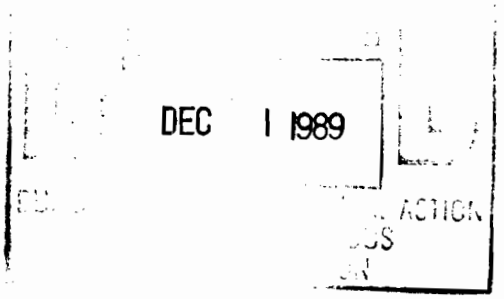
If there are any questions concerning the Initial Report, please do not hesitate to call us.

Very truly yours,

ENVIRONMENTAL SERVICES & OPERATIONS

William P. Stilson/gmm

William P. Stilson
Hydrogeologic Associate



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Enclosures

cc: NYS Division of Environmental Enforcement, David Markell, Director (2)
NYS Department of Environmental Conservation, Region 7, Regional Dir. (2)
NYS Department of Health, Syracuse, Attn: Ronald Heerkins (2)

3213.004

INITIAL REPORT

MAESTRI SITE

904 STATE FAIR BOULEVARD

SITE INVESTIGATION

AND

DEVELOPMENT OF INTERIM REMEDIAL MEASURES

SUBMITTED IN COMPLIANCE WITH

CONSENT ORDER #A7-0129-88-01

FOR NYSDEC SITE #7-34-025

PREPARED FOR:

STAUFFER MANAGEMENT COMPANY

WILMINGTON, DELAWARE

NOVEMBER, 1989

O'BRIEN & GERE ENGINEERS, INC.
1304 BUCKLEY ROAD
SYRACUSE, NEW YORK 13221

INITIAL REPORT

MAESTRI SITE
904 STATE FAIR BLVD.

SITE INVESTIGATION
AND
DEVELOPMENT OF INTERIM
REMEDIAL MEASURES

INITIAL REPORT

MAESTRI SITE
904 STATE FAIR BLVD.

SITE INVESTIGATION
AND
DEVELOPMENT OF INTERIM
REMEDIAL MEASURES
(Continued)

INITIAL REPORT

MAESTRI SITE
904 STATE FAIR BLVD.

SITE INVESTIGATION
AND
DEVELOPMENT OF INTERIM
REMEDIAL MEASURES
(Continued)

TABLES (Continued)

FIGURES

APPENDICES

EXHIBIT

SECTION 1 - INTRODUCTION

1.01 Project Background

The Maestri Site is located at 904 State Fair Boulevard in the Town of Geddes, New York (Figure 1). The property covers 6.7 acres and is owned by Bert Maestri. The primary area of interest is a reported waste disposal area in the northeast portion of the site where barrels containing xylenes and unspecified industrial waste materials were reportedly buried in the early 1970s.

The site has been placed on the New York State List of Inactive Hazardous Waste Sites. Pursuant to the enforcement of Article 27, Title 13, of the Environmental Conservation Law of New York State (ECL), regarding inactive hazardous waste disposal sites, the Stauffer Management Company (formed as a result of the divesture of Stauffer Chemical Company) in cooperation with the NYSDEC voluntarily agreed to conduct a site investigation to evaluate the necessity for interim remedial measures. On October 4, 1988, the NYSDEC executed an Interim Order on Consent, #A7-0139-88-01, entitled "Development and Implementation of an Interim Remedial Measure Program at 904 State Fair Boulevard."

Prior to drafting the Consent Order, a Site Investigation Work Plan was developed by Environmental Resources Management (ERM) and submitted to the NYSDEC. In February 1989, Stauffer Management Company retained O'Brien & Gere Engineers to develop a Quality Assurance Project Plan (QAPP) and to implement the scope of the approved Work Plan.

Subsequent to the acceptance of the QAPP, site investigative efforts commenced in June, 1989.

1.02 Project Objectives and Scope

The objective of the Interim Remedial Measures project was to investigate the site according to the approved Work Plan and to develop sufficient data to evaluate risks and effects. The data were interpreted to provided an assessment of the necessity for possible immediate interim remedial measures. To meet the project objectives, the following investigations were completed:

1. Collection of electromagnetic geophysical data on a site wide basis and in the vicinity of the former on-site waste disposal area
2. On-site and off-site installation of soil vapor probes and soil vapor analyses using gas chromatograph methods
3. Collection and chemical analyses of 17 surface soil samples located in and around the former waste disposal area
4. Collection and chemical analyses of 12 subsurface soil samples collected from soil borings located in and around the former waste disposal area
5. Installation and hydraulic conductivity testing of two over-burden and two bedrock ground water monitoring wells to evaluate on-site ground water hydrology
6. Collection and chemical analyses of ground water samples from newly installed and existing monitoring wells.

1.03 Report Organization

This initial report presents data collected during the field investigation program and is submitted in accordance with Task 11, item 3.11.1 of the approved Work Plan. The report has been developed in

sections that correspond to tasks outlined in the Work Plan. It also presents preliminary discussions of the summarized data and data interpretation. These sections include:

1. Project Introduction
2. Data Collection Methods and Procedures
3. Preliminary Data Evaluation
4. Qualitative Exposure Pathway Assessment of Interim Remedial Measures
5. Interim Remedial Measures and Additional Evaluations

SECTION 2 - DATA COLLECTION METHODS AND PROCEDURES

2.01 Task 1 - Quality Assurance Project Plan

As a condition of the approved Work Plan, a Quality Assurance Project Plan (QAPP) was developed. This document presents specific procedures related to sample collection, handling, and laboratory quality assurance and quality control (QA/QC). The document was submitted to the NYSDEC in November 1988 and subsequently revised and approved in May 1989.

2.02 Task 2 - Health and Safety Plan

In accordance with the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910 and the approved Work Plan, a Health and Safety Plan (HASP) was developed. The purpose of the HASP was to define levels of personal protection and appropriate levels of action to be taken while conducting on-site activities. The HASP was submitted to the NYSDEC in November 1988. It was subsequently revised and approved in May 1989.

2.03 Task 3 - Preliminary Site Characterization

2.03.1 Property Survey

Before beginning on-site work efforts, a topographic map of the site was developed. The map was produced using aerial photogrammetry. Standard ground based instrument survey methods provided necessary horizontal and elevation control (Figure 2a).

The map encompasses approximately 26 acres including the 6.7 acre Maestri property, and has been produced at a horizontal scale of 1 inch = 100 ft. The topographic contours representing vertical relief were produced at an interval of two feet, and are based on United States Geological Survey (USGS) datum. Property boundaries defining the Maestri property were drawn on the map using available 1988 Onondaga County tax maps.

After defining the property boundaries, a 50 ft x 50 ft grid system was developed across the site using conventional taping and instrument survey methods. The base map, grid, and corresponding coordinate system are illustrated on Figure 2b. The grid is based on a surveyed centerline segmented at 50 ft intervals with 100 ft intervals (1+00, 2+00, etc.) illustrated on Figure 2b. Perpendicular grid nodes are designated as left (L) or right (R). For example: 2+00, L50 would designate a grid node location 200 feet northeast along the centerline and 50 feet to the left of the centerline. In addition a 10 ft x 10 ft grid system was imposed on the former waste disposal area and is illustrated on Figure 2c. Subsequent on-site investigation efforts were located relative to the established grid system.

2.03.2 Site Walkover

Prior to initiating field activities, a site walkover was performed. The purpose of the walkover was to evaluate site conditions and to select locations for geophysical investigations, soil borings and monitoring well installations. In addition, upwind and downwind ambient air monitoring was performed with a

photoionization detector (HNu) in accordance with the approved HASP. The air monitoring showed no detectable quantities of air borne volatile organic contaminants above the 1 part per million (ppm) instrument detection limit.

2.04 Task 4 - Waste/Soil Investigation

2.04.1 Metal Detector Survey

A geophysical survey was completed to determine if subsurface metal relating to buried, drummed waste material is present on-site. The survey was performed using Geonics Ltd. EM31 electromagnetic (EM) terrain conductivity meter.

This instrument operates at a frequency 9.8 kHz, with an intercoil spacing of 3.7 meters (12 feet), and measures subsurface soil conductivity in millimhos per meter (mmhos/m). This is accomplished by inducing an electromagnetic wave into the subsurface, which in turn produces secondary electromagnetic fields from any conductive materials. These secondary fields are measured by a receiving coil and measured as an output voltage on an analog meter on the instrument. The output voltage produced is linearly proportional to the subsurface conductivity, and is displayed on an analog meter located on the instrument.

The EM31 instrument measures both the quadrature-phase component of the secondary magnetic field, which produces the conductivity measurements, and the in-phase component, that is primarily used for calibration. Additionally, the in-phase component is particularly sensitive to metallic objects. Therefore, by adjusting the deflection needle on the meter to an arbitrary center

point with the instrument tuned to the in-phase mode, sensitive metal detection surveying can be performed.

Figure 3 illustrates quadrature-phase mode data collected across the site at a 50-foot grid spacing. Figure 4 illustrates quadrature-phase mode data collected in the vicinity of the disposal area data at a 10-foot grid spacing interval. Data also was collected in the in-phase mode of instrument operation to provide correlative information pertaining specifically to the detection of buried metallic materials. Before collecting data near the disposal area, the woven wire fence was dismantled to eliminate a source of bias from the conductivity readings. The fence was reinstalled after the geophysical surveys were completed.

2.04.2 Soil Vapor Survey

Chemical analyses of soil vapor can provide insight into the nature and location of subsurface soil and ground contamination. Per the scope of work as defined in the approved QAPP, two distinct surveys of xylene concentrations in subsurface soil vapor were performed in this investigation.

The first soil vapor survey was focused at on-site locations (Figures 5 and 6). Soil vapor was analyzed with the objective of assessing the areal extent of subsurface waste disposal. This survey entailed: 1) photoionization screening of soil vapor samples collected from across the site for volatile organic compounds (Figure 6), and 2) in-field gas chromatographic (GC) analysis of xylenes in soil vapor samples collected in the immediate vicinity of the former on-site disposal area (Figure 5).

The second soil vapor survey was performed at off-site locations (Figure 6). In this phase of the investigation, concentrations of xylene in soil vapor were measured via GC analysis with the objective of assessing the distribution of contaminants, if any, in ground water emanating from the site.

Sample Locations

Sample locations were selected based on 1) criteria presented in the approved Work Plan and 2) consultation and concurrence with the on-site NYSDEC representatives. The location of the soil vapor sample points are shown on Figures 5 and 6. Sample locations can be grouped into three categories:

1) On-site sample locations in the immediate vicinity of the main disposal area (Figure 5). Analyses of these samples were conducted using a photoionization screening detector, followed by on-site GC analysis for xylenes.
2) Site-wide sample locations southwest of the main disposal area (Figure 6). Samples from these locations were analyzed using the photoionization screening detector only.
3) Off-site sample locations situated on the residential parcels to the east of the site (Figure 6). Samples collected from these locations were analyzed using a photoionization screening detector, followed by in-field GC analysis for xylenes.

Approach

Soil vapor samples were collected in accordance with the approved Quality Assurance Project Plan (May 1989). The

approach involved a three-step process, consisting of sample probe installation, sample collection, and sample analysis.

- Probe Installation

  Steel drive shafts were employed to drive an aluminum soil vapor point to a depth of three feet below grade. A four foot length of teflon (PFE) tubing extended from the soil vapor point to the surface, establishing an essentially inert conduit for the collection of vapor samples from depth. Subsequent to driving the point, the steel shaft was removed, and soil was firmly packed around the teflon tubing to inhibit influx of ambient air to the subsurface environment to be sampled.

- Sample Collection

  Sample collection and analysis of on-site vapor samples was conducted on July 13, 14, and 31, 1989. Off-site analyses were conducted on July 21, 1989. On-site and off-site soil vapor data are summarized on Tables 1 and 2, and respectively, illustrated on Figures 5 and 6.

  Soil vapor samples were collected in the following manner: A photoionization screening instrument (HNu model P-101 or Thermo-Environmental model 580A-OVM) was connected to the teflon vapor probe via a six inch length of Tygon tubing. This instrument served to 1) pump soil vapor from depth up through the teflon probe, and 2) monitor the sample stream for evidence of volatile photoionizable organic constituents.

As described above, soil vapor samples were collected for in-field GC analysis for xylenes from locations in the former waste disposal area, and from locations situated in the residential parcels northeast at the site (Figures 5 and 6). In order to collect these samples, a 100 ul syringe was inserted through the tygon connecting line into the teflon tubing while sample was being drawn by the screening detector. When the screening detector had stabilized, a sample of the vapor stream was withdrawn into the syringe for subsequent GC analysis.

- Sample Analysis

Screening analysis of soil vapor at sample locations was conducted in-field using a photoionization screening detector (HNu model P-101 or Thermo-Environmental model 580A OVM). Gas chromatographic (GC) analysis of soil vapor for xylenes at locations in the immediate vicinity of the main disposal area and on the residential properties was conducted using a Photovac 10S-Series GC, equipped with a photoionization detector and CPSIL5 capillary column. The GC was equipped with an isothermal column oven.

The GC was calibrated each day using a certified standard of xylene (1 and 20 ppm-v/v) obtained from Scott Specialty Gasses. Results of calibration analyses are presented in Appendix A. Analysis of four calibration concentrations was completed via injection of precisely measured aliquots of

the standard into the GC (e.g. 25, 50, 75, or 100 microliter injection volumes).

Qualitative identification of xylene in samples was achieved by comparison of chromatographic behavior (retention time) of the xylene standards to that of the sample. Quantification of xylene in soil vapor was achieved by comparison of sample chromatographic response (peak area) to that of known calibrant standards. For quantification purposes, a linear regression was performed on calibration data to correlate chromatographic response (peak area) with xylene concentration. Results of regression analyses indicate that consistent and linear response was obtained from the instrument throughout the sample period each day (Appendix A).

2.04.3 Surface Soil Sampling

Seventeen on-site surface soil samples were collected in accordance with the approved work plan and QAPP. The purpose of collecting and analyzing these samples was to evaluate if site-related chemical constituents were present in near surface soils. Prior to collection, the sample locations were discussed with, and approved by, representatives of the NYSDEC.

The samples were collected to a depth of 3 inches using a stainless steel spoon. Following collection, the samples were transferred directly to an appropriate precleaned sample container. Non-disposable sampling equipment was decontaminated after each use according to the procedures described in approved QAPP.

Sixteen surface soil samples were collected on a 20 foot grid spacing within the former disposal area as described in the approved work plan. The locations of these samples are shown on Figure 7. Samples SS-7 and SS-13 were submitted to the laboratory for full TCL analyses. The remaining samples collected within the former disposal area were submitted to the laboratory for analysis of TCL metals and semivolatiles.

One background sample (SS-17) was submitted to the laboratory for full TCL analyses as described in the approved work plan. This sample consisted of a composite of samples collected at three background grid locations (3+00, L25; 3+25; and 3+25, L50).

2.04.4 Soil Borings

Eleven shallow soil borings (B-1 through B-11) were completed at locations shown on Figure 8. Ten soil borings were completed in and around the main disposal area to assess the vertical and lateral extent of soil contamination. One soil boring (B-1) was completed approximately 360 feet southwest of the former disposal area at grid location 4+50 along the centerline (Figure 2b) to determine background conditions. The locations of the borings were selected based on the results of the soil vapor analyses, and approved by the on-site NYSDEC representative.

Soil borings were advanced using 3¼ inch I.D. augers and conventional hollow stem augering techniques. Split spoon samples were collected continuously, at two foot intervals, consistent with ASTM Method D-1586-84. Each boring was completed to first encountered ground water with the exception of the background

boring B-1 which was completed to bedrock as described in the approved Work Plan.

Soil samples collected from each split spoon were initially screened in ambient air conditions with a photoionization detector (HNu Model P101-1). In addition, soil samples were described, logged in detail by the on-site hydrogeologist, and placed in appropriate containers for subsequent volatile organic headspace and laboratory analyses in accordance with the approved QAPP. Samples collected for laboratory analyses were properly labeled and immediately placed in a cooler with ice prior to delivery to OBG Laboratories in Syracuse, New York. A summary of boring depths, fill thickness, depths to water and associated sample screening data are presented on Table 3. Subsequent to the completion of each soil boring, drilling and sampling equipment were decontaminated in the waste disposal area according to the methods described in the approved QAPP.

2.04.5 Soil Analyses

Surface soil and soil boring samples were submitted for laboratory analysis by NYSDEC Contract Laboratory Protocol methods. In developing these protocols the NYSDEC has adopted the following methodologies:

Parameters	Analytical Method
Volatiles	EPA CLP SOW No. 288 (2/88)
Semi-volatiles	EPA CLP SOW No. 288 (2/88)
PCB's	EPA CLP SOW No. 288 (2/88)
Inorganics - Metals	EPA CLP SOW No. 787-200 series (7/87)
Inorganics - Cyanide	EPA CLP SOW No. 787-335.2 (7/87)

Specific protocols for each method are presented in the EPA documents "USEPA Contract Laboratory Protocol (CLP) Statement of Work for Organics Analysis - SOW288, February 1988"; and "USEPA CLP Statement of Work for Inorganics Analysis - SOW787, July 1987." A preliminary evaluation of the data quality with respect to CLP required QA/QC criteria and reporting format is presented in Section 3.01.3 of this report.

- Surface Soils Analyses

  Surface soil samples SS-1 through SS-17 were submitted for analysis of semivolatiles, metals, and cyanide. Surface soil samples SS-7, SS-13, and SS-17 were also submitted for analysis of volatiles.

- Soil Borings

  Soil borings were advanced at eleven locations (B-1 through B-11) identified in Figure 8. At least one and a maximum of two subsurface soil samples from each soil boring were submitted for laboratory analyses. These samples were selected from depth intervals exhibiting the highest screening response by photoionization detection (Table 3). The background soil boring B-1 was submitted for analyses as a composite of samples collected from the ground surface to a depth of six (6) feet. All subsurface soil samples submitted for laboratory analysis were analyzed for volatile and semi-volatile organic compounds. Samples B-1 (0-6'), B-6 (2-4'), B-7 (4-6'), B-9 (4-6'), B-10 (4-6'), and B-11 (0-2')

were also analyzed for inorganic constituents and PCB's/Pesticides.

2.05 Task 5 - Hydrogeologic Investigations

2.05.1 Ground Water Monitoring Well Installation and Testing

Four on-site ground water monitoring wells were installed according to the methods and specifications described in the approved Work Plan. The locations of the newly installed wells MW-7 through MW-10 and existing wells MW-5 and MW-6 are shown on Figures 2a and 2b. The locations of these wells established with concurrence from the on-site NYSDEC representative. Two shallow monitoring wells (MW-9 and MW-10) were installed in the unconsolidated sediments and two deep monitoring wells (MW-7 and MW-8) were installed in the bedrock unit. The wells were installed to further characterize the geology and hydrogeology and evaluate ground water quality conditions in both unconsolidated sediments and bedrock unit. The newly installed wells augment the existing on-site monitoring wells which includes both shallow well MW-6 and bedrock well MW-5 installed by Malcolm Pirnie in December 1987. These wells were installed in conjunction with a previous investigation conducted by the Onondaga County Health Department (OCHD).

Test borings completed for shallow overburden monitoring wells MW-9 and MW-10 were advanced using conventional hollow stem augering techniques using 4¼ inch I.D. augers. Standard split spoon sampling was utilized by the supervising hydrogeologist per ASTM D-1586-84. All soil samples were described, logged in

detail, and placed in 8 ounce soil jars for subsequent volatile organic headspace screening with a photoionization detector (HNu Model P101-1).

The test borings completed for monitoring wells MW-7 and MW-8 were advanced approximately two feet into the underlying bedrock using 4¼ inch hollow stem augers. Standard sampling of the unconsolidated sediments was employed for the installation of MW-7. Once the augers had been advanced into the underlying bedrock, a cement/bentonite grout mixture was added inside the augers. The augers were subsequently removed and 5 inch I.D. steel pipe was installed into bedrock. The grout mixture was then allowed to cure at least 24 hours. Four inch diameter tricone drilling was then utilized to advance the borehole into bedrock. Each borehole was completed to a depth of least ten feet below the first encountered water bearing zone.

The newly installed overburden and bedrock monitoring wells are constructed of a 10 foot section of 2 inch I.D. machine slotted PVC (.010" slot size) well screen and 2 inch I.D. flush joint threaded PVC riser. A graded silica sand pack was placed around the screen and extended a minimum of one foot above the top of the screen. A minimum two foot bentonite slurry seal was placed immediately above the sand pack and the remainder of the annular space was filled with a 95% cement/5% bentonite grout mixture.

Following installation, each well was developed by bailing. The purpose of well development was to remove silt and fine sand which may have settled in or around the well screen during installation. In addition, a field instrument survey was completed to

establish the horizontal location and elevations of the newly installed and existing monitoring wells.

A summary of well specifications are presented on Table 4. Boring logs describing subsurface geologic materials encountered and figures describing well construction details are included in Appendix B.

Subsequent to the completion of each monitoring well, drilling and sampling equipment were decontaminated in the waste disposal area, in accordance to the methods described in the approved QAPP.

2.05.2 Ground Water Sampling and Analysis

2.05.2.1 Ground Water Sampling

Ground water monitoring wells MW-5, MW-6, MW-7, MW-8, MW-9 and MW-10 were sampled on August 23, 1989. Ground water samples collected from these wells were submitted for full TCL analyses, as described in the approved QAPP.

Before sampling, a period of two weeks was allowed to elapse after developing to allow the wells to equilibrate.

A complete set of ground water elevations were collected from the wells, prior to initiating the sampling event to evaluate ground water flow direction and to calculate the volume of water present in each of the wells. Utilizing the calculated volume of standing water in each well a minimum of three well volumes of water were then purged from each well. Wells were purged and sampled in order of least contaminated to the most contaminated based on location, historical data, and photoionization detector readings

recorded during drilling and measured at the well head immediately before sampling.

Dedicated bottom loading stainless steel bailers attached to poly-propylene rope were used to evacuate and sample all the on-site wells. Immediately after collection, ground water samples were transferred to proper, labeled, and precleaned sample containers as specified in the approved QAPP. Samples collected for volatile organic constituent analyses were collected first. Ground water samples collected for metals analysis were field-filtered through a 0.45 micrometer pore size filter prior to preserving. Samples requiring pH adjustment for preservation were checked in the field using pH paper, and appropriate quantities of preservative added to the sample as needed. Samples requiring refrigeration for preservation were immediately transferred to coolers packed with ice or ice packs. Proper chain-of-custody documentation was maintained as put forth in the approved QAPP.

Field measurements for pH, specific conductance, and temperature were obtained from ground water grab samples, immediately following laboratory sample collection. These data are contained on the ground water sampling logs presented in Appendix C.

2.05.2.2 Ground Water Analytical Methods

As described above, ground water samples were collected from monitor wells MW-5 through MW-10 for analysis of Target Compound List (TCL) parameters by NYSDEC Contract Laboratory Protocol methods. In developing these protocols the NYSDEC has adopted the following USEPA methodologies:

Parameters	Analytical Method
Volatiles	EPA CLP SOW No. 288 (2/88)
Semi-volatiles	EPA CLP SOW No. 288 (2/88)
PCB's	EPA CLP SOW No. 288 (2/88)
Inorganics - Metals	EPA CLP SOW No. 787-200 series (7/87)
Inorganics - Cyanide	EPA CLP SOW No. 787-335.2 (7/87)

Specific protocols for each method are presented in the EPA documents "USEPA Contract Laboratory Protocol (CLP) Statement of Work for Organics Analysis - SOW288, February 1988"; and "USEPA CLP Statement of Work for Inorganics Analysis - SOW787, July 1987." A preliminary evaluation of the data quality with respect to CLP required QA/QC criteria and reporting format is presented in Section 3.01.3 of this report.

2.05.3 Hydraulic Conductivity Testing

In-situ hydraulic conductivity tests were performed on the four newly installed and two existing on-site monitoring wells to determine overburden and bedrock permeabilities. The rising head and falling head test methods were accomplished by either evacuating the well by bailer methods or adding a solid rod or "slug" to raise the water level in the well. Measurements of ground water level were then collected at regular time intervals until equilibrium was obtained. The data were analyzed using Hvorslev's formula. A summary of the results of these analyses are presented on Table 4. Data and calculations are presented in Appendix D.

2.06 Task 6 - Surface Water Investigation

Surface water run-off patterns associated with the site were not apparent on the developed site topographic map (Figure 2a) nor identified during field inspections. Field inspections performed on September 7, 1989 during a steady rainfall event did not disclose the presence of runoff channels, rivulets, or seeps.

Information concerning the absence of site-related runoff and/or associated sediments were discussed with representatives of the NYSDEC and subsequent sampling efforts were not performed.

With the cooperation of the OCHD, arrangements were made to sample the residential sump located at 151 Alhan Parkway on November 16, 1989. Prior analytical data provided by the OCHD, identified this sump to contain contamination. The off-site soil gas survey did not indicate the presence of xylene at any of the locations sampled (Figure 6).

At the time of this writing, laboratory analytic results pertaining to the residential sump water sample collected at 151 Alhan Parkway were not yet available. These data will be in the final report to be submitted in March 1990.

SECTION 3 - PRELIMINARY DATA EVALUATION

3.01 Geology

3.01.1 Regional Geology

The Maestri site is located in the glaciated Erie-Ontario Lowland physiographic providence of New York State. The Erie-Ontario Lowland is a region of low topographic relief lying south of Lake Ontario comprised of rolling hills, broad featureless plains, and poorly drained swamps and mucklands.

The surficial geology of the region is characterized by unconsolidated glacial deposits directly overlying lower Paleozoic aged sedimentary bedrock. Surficial glacial deposits in the region consist of predominantly glacial till and glaciolacustrine deposits. Prominent glacial features characteristic to the region are rolling hills representing ground moraine deposits and elongated hills representing drumlins. Bedrock in the region consists of broad east-west trending bands of lower Paleozoic dolostones, limestones, sandstones, and shales which dip gently to the south.

3.01.2 Site Geology

Site topography is characterized by gently sloping grades which fall to the northeast at slopes between 0 and 5 percent. Elevation on site range from approximately 406 to 433 feet above mean sea level (msl) (Figure 2a).

The subsurface geology at the site as defined by soil borings consists of unconsolidated fill, glaciolacustrine deposits, and glacial till overlying Vernon Formation bedrock. The Vernon Formation is

Upper Silurian in age and consists of shale or dolostone. Shale bedrock occurs at depths from 6 feet in the southwestern end of the site, to 21 feet in the northeastern portion of the site.

Reddish brown, dense glacial till overlies the shale bedrock. The glacial till consists of a heterogenous unsorted mixture of clay, silt, sand, and gravel.

Unconsolidated sediments occurring above the glacial till consist predominantly of light brown to tan silty fine to medium glaciolacustrine sands. This unit is well sorted and contains thin interbedded lenses of silty clay.

Fill materials were encountered in nine of the ten soil borings completed in and around the former waste disposal area. These materials are comprised primarily of mixed unstratified, sand, silt, clay, and gravel. The locations of the borings are illustrated on Figure 8. The thickness of the fill defined by split spoon samples collected from the borings ranged from less than 4 feet in boring B-9 to greater than 8 feet in boring B-4. Fill was not encountered at B-1 the upgradient background boring or identified at B-7 located along the south boundary the disposal area. Boring depths and encountered fill thicknesses are summarized on Table 3. Depths to first encountered ground water and volatile organic headspace analyses values are also included on Table 3.

It should be noted that apparent fill materials were also encountered in sampled borings completed as monitoring wells MW-7, MW-8 and MW-9, to depths of 7 feet, 11 feet, and 12 feet respectively. Figure 9 illustrates a vertical geologic cross-section through the former waste disposal area extending from MW-10 to

MW-8. The location of the cross-section designated as A-A' is illustrated on Figure 8.

3.02 Hydrogeology

3.02.1 Regional Hydrogeology

The Maestri site is located in the Oswego Canal Hydrologic Sub Basin of the Oswego River Drainage Basin (The Bureau of Water Resources Planning - NYSDEC, 1971). The basin contains eight major lakes and two major river systems and ultimate discharge from the basin is into Lake Ontario. The land surface in the basin slopes upward to the south and away from Lake Ontario.

Significant ground water resources in the Oswego Canal Sub Basin are limited to the more permeable unconsolidated and bedrock units. Aquifers in this region are recharged primarily by surface water bodies or infiltration of precipitation. Ground water from the site, discharges to Onondaga Lake, which is located approximately 0.4 miles to the northeast (Figure 1). Verbal communication with the OCDH indicates, however, that there are no current ground water users downgradient between the site, and Onondaga Lake.

3.02.2 Site Hydrogeology

On-site ground water occurs in both the unconsolidated sediments and the bedrock unit. Ground water elevation data collected from August through October 1989 are presented in Table 4.

Shallow ground water at the site is unconfined and occurs at a depth of 7.7 to 12.6 feet below grade among monitoring wells which screen the unconsolidated sediments (MW-6, MW-9, and MW-10). The shallow ground water table pinches out in the central portion of the site between monitoring wells MW-5 and MW-10. Figure 10 illustrates shallow water table conditions measured on September 7, 1989. Shallow ground water movement across the site is southeasterly toward Onondaga Lake.

Bedrock ground water measured in monitoring wells occurs between the depths of 14.2 and 18.8 feet below grade among bedrock monitoring wells MW-5, MW-7, and MW-8. Figure 11 depicts ground water flow conditions measured on September 7, 1989. A review of Figure 11 indicates that ground water in the bedrock flows across the site in a northeast direction.

Along the northeastern downgradient portion of the site hydraulic conductivity values measured in the overburden materials ranged from 3.2×10^{-5} cm/sec (9.1×10^{-2} ft/day) at MW-6 to 2.0×10^{-4} cm/sec (0.57 ft/day) at MW-9. Hydraulic conductivity values in the bedrock ranged from 6.7×10^{-6} cm/sec (1.9×10^{-2} ft/day) at MW-7 to 1.8×10^{-5} cm/sec (5.1×10^{-2} ft/day) at MW-8. Assuming average hydraulic conductivity values of 7.4×10^{-2} ft/day in the overburden and 3.5×10^{-2} ft/day in the bedrock along the northeastern portion of the site, hydraulic gradients of 0.03 ft/ft in the overburden, and 0.03 ft/ft in the bedrock as estimated from Figures 10 and 11 respectively, and assumed porosity values of 0.39 for unconsolidated lacustrine sediments, and

0.06 for shale (Todd, 1980), estimates of ground water velocity (v) were calculated using the following formula:

$$V = \frac{ki}{n}$$

Where: K = hydraulic conductivity (ft/day)

i = hydraulic gradient (ft/ft)

n = porosity

The average ground water velocity in the unconsolidated sediments is 0.006 feet/day. The average ground water velocity in bedrock is 0.018 feet/day.

3.03 Metal Detector Survey Results

Figure 3 illustrates site-wide quadrature-phase mode terrain conductivity data collected over a 50 foot spaced grid pattern. Figure 4 illustrates these survey methods performed on a 10 foot spaced grid encompassing the previously defined disposal area. Recorded data values presented on both figures are measured in millimhos per meter (mmhos/m).

A review of Figure 3 indicates that terrain conductivity values across the site range from 18.5 mmhos/m in the southwest (upgradient) portion of the site to 3.3 mmhos/m in the northeast corner (downgradient). The higher values measured in the southwest portion of the site area most likely relate to overhead power lines and building debris present in this area. Disregarding these elevated values as a result of cultural influences, no anomalous values were noted on the 50 foot grid survey.

Figure 4 illustrates data values collected on the 10 foot grid system encompassing the former waste disposal area. These data values

exhibit the same approximate range as measured across the site. However, an anomalous area located in the northern most corner of the grid, was detected. Based on irregularities in the electromagnetic response of the anomaly and the absence of detectable soil vapor data an exploratory soil boring was installed at the expected periphery of the anomaly. Soil boring (B-3) installed in this area revealed the presence of a non-aqueous phase liquid which was likely occurring from a damaged subgrade container. A grab sample of the liquid was collected and submitted for laboratory analyses. The results of these laboratory analyses are presented in the Contract Laboratory Protocol Package (Exhibit I), which has been submitted as a separate report document. These data indicate the liquid is comprised primarily of xylene and related compounds. To confirm if the container was a metallic drum and to further define the extent of the anomaly, a continuous in-phase mode terrain conductivity survey was performed. The horizontal extent of the anomaly defined by this survey is shown on Figures 3 and 4.

Figure 4 illustrates the proximity of the anomalous area to the identified former waste disposal area. The nature of the terrain conductivity instrument response in this area suggested the anomaly is comprised of subgrade metallic objects. Further limited exploratory investigations performed on October 5, 1989 in the vicinity of boring B-3, revealed that in fact, at this specific location, the anomalous instrument response was the result of buried metallic containers.

3.04 Soil Vapor Chemistry

As described in Section 2.04.2 of this report, a soil vapor survey was completed in both on-site and off-site locations, which have been grouped into three main regions.

1) On-site sample locations in the immediate vicinity of the former disposal area (Figure 5).
2) Site-wide sample locations southwest of the former disposal area (Figure 6).
3) Off-site sample locations situated on the residential parcels to the east of the site (Figure 6).

- On-site samples collected in the vicinity of the former disposal area.

Results of the on-site investigation are presented in Table 1. The soil vapor concentration of xylene as determined by GC analysis at each location (in ppm-volume/volume) is plotted in Figure 5. As shown in this figure, xylene detected in shallow soil vapor appears to be focused in the immediate vicinity of the former disposal area enclosed by the fence. No distinct pattern is apparent across the site.

The highest concentrations of xylene in soil vapor were detected at two of the sample locations adjacent to the former disposal area (8+60/R60 and 8+80/L20, Figure 5). Analysis of soil vapor collected at location 8+60/R60 revealed soil vapor xylene concentrations of 1564 ppm. This finding is consistent with xylene detected in boring B-7 (Table 7). Analysis of soil vapor collected from location 8+80/L20 revealed xylene at a concentration of 1070

ppm. This sample is located within the "anomaly" area discussed in Section 3.03.

- Site-wide sample locations southwest of the former disposal area.

  Site-wide soil vapor sample locations southwest of the former disposal area are shown in Figure 6. Results of soil vapor analysis at each point, as determined by photoionization screening analyses, are also plotted in Figure 6. As shown in this figure, no detectable levels of volatile photoionizable organic constituents were found in the samples collected from this region.

- Off-site sample locations (residential parcels northeast of the site).

  Results of the off-site soil vapor survey, as determined by infield GC analysis, are presented in Table 2. Sample locations are shown in Figure 6. As detailed in Table 2, no detectable levels of xylene were found in the shallow soil vapor samples collected from this area (the analytical detection limit is estimated at 0.1 ppm, based on in-field instrument response to calibrant standards).

3.05 Chemical Data

3.05.1 Introduction

This quality assurance review is a preliminary evaluation of the laboratory data presented for the Maestri site in Geddes, New

York. Seventy-seven samples, including soil and water samples, duplicates, and blanks, were submitted to OBG Laboratories, Inc. for analysis. The samples were analyzed for Target Compound List (TCL) volatiles and semi-volatiles (SOW 288), pesticides and PCBs, and trace metals and cyanide (SOW 787). OBG Laboratories, Inc. was contracted to complete the analysis using the NY State DEC Contract Laboratory Program (CLP) protocols. In developing these protocols, the DEC has adopted the EPA analytical methods referenced above. The Contract Laboratory Program requires that a comprehensive independent review of the analytical and quality assurance data be completed to assess the degree of compliance with CLP methods.

The review presented in this section was based primarily on the case narrative information package prepared by the laboratory manager for the Maestri project. However, an independent review was complete for data suspected to be out of compliance with required quality control (QC) limits. This review does not include a complete evaluation of all the raw analytical data prepared for the Maestri program. However, a sufficient review has been completed to date such that judgments can be made regarding the data quality to preliminarily assess risks associated with the site and evaluate interim remedial measures. A complete discussion of data validation will be presented in the final report due as a condition of Work Plan Task 11 - Item 3.11.2.

The preliminary quality assurance review presented below suggests that the analytical data will be of acceptable quality for the assessment of site risks and/or the identification of interior

remedial measures. Although some organic and inorganic results will require qualification, it is not anticipated that any of the data will be rejected and, therefore, unusable.

3.05.2 Methodology

The quality assurance review was conducted based on the protocols outlined in the Laboratory Data Validation Functional Guidelines For Evaluating Organic Analysis, the CLP Organics Data Review and Preliminary Review (SOP No. HW-4), DEC Exhibit (E) "Quality Assurance/Quality Control Requirements" (11/87), and the Evaluation of Metals Data for the Contract Laboratory Program (CLP) (SOW 787). These documents provide standardized approaches to evaluating organic and inorganic analytical data under the CLP program.

3.05.3 Data Evaluation

The laboratory data package for the Maestri Site (Exhibit 1) is presented in three sections. Section 1 consisted of the analytical results for each sample. Section 2 of the laboratory package contains the chain-of-custody records for each sample collected over the seventeen day sampling period. This section includes the laboratory sample log and the sample control record for each sample, as well as the case file for each shipment of samples. Section 3 of the laboratory package contains the raw analytical data and quality assurance data applicable to the Maestri program.

In order to simplify the validation procedure each analytical group: organics (volatiles, semi-volatiles, & pesticides/PCBs) and inorganics is addressed separately in this document.

3.05.3.1 Organics Analysis - SOW No. 288

In general, a review of holding times, blank analysis results, surrogate and matrix spike recoveries, Gas Chromatograph/Mass Spectometry (GC/MS) tuning, target compound matching quality, calibration, and internal standard areas, indicates that the laboratory data quality is good. However, some of excursions from CLP criteria were identified during the data evaluation. Specific excursions from quality control (QC) limits are addressed in the following sections.

VOLATILE ORGANIC DATA

All the deliverables for the volatile organics package appeared to be present, including the raw data and chromatograms. A few excursions from acceptable QC limits were noted in the surrogate recoveries, internal standard areas, and continuing calibration. These excursions and the resulting actions are discussed below.

Surrogate Recoveries - Five samples did not achieve the Quality Control percent recovery limits of 81-117%, 74-121%, or 70-121% for toluene, bromofluorobenzene, or 1,2-dichloroethane, respectively. These were surface soil samples 7, 13 and 17; and soil borings B-9 (4-6') and B-10 (4-6'). All of these samples were re-analyzed;

and, the second run also produced excursions. In all cases, the excursions were above the acceptable ranges. As a result, the non-detects for the samples are not rejected, but, detected analytes are flagged with a J indicating that the result is estimated.

Internal Standard Areas - Two samples, surface soil samples 7 and 13, were outside of the QC limits for internal standard areas. These samples were also outside QC limits for surrogate recoveries. Therefore, all detected analytes in the samples are flagged as estimated and no further action is taken.

Calibration - The criteria for the calibration check compounds, vinyl chloride, chloroethane, and acetone, was exceeded in two continuing calibrations (8/21/89 and 8/22/89). However, because the number of Calibration Check Compounds and System Performance Check Compounds outside QC limits was less than five, the samples run in association with the calibration should not be rejected. Instead, only those analytes outside QC limits will be flagged as estimated if they are detected in samples associated with the calibration. The qualifiers apply only to surface soil samples 7 and 13, in which acetone was detected.

SEMI-VOLATILE ORGANIC DATA

The samples in the semi-volatiles package were divided into three groups which are addressed below: boring samples, ground

water samples, and surface soil samples. All the deliverables for the semi-volatile organic package appeared to be present. The excursions noted for these sections consisted of surrogate recoveries, matrix spike recoveries, and internal standard areas.

Surrogate Recoveries

Soil Borings: Seven samples exhibited excursions from the surrogate recovery limits. Samples which exceed QC limits in two or more surrogates were re-analyzed. Sample B-3 (2-4') exceeded two surrogate limits in both the initial and the secondary analysis. Consequently, all non-detects are not rejected, however, any semi-volatile compounds detected in this sample should be flagged as estimated.

Ground Water: Two samples, MW-6 and MW-9, did not meet surrogate requirements for 4 compounds. Both of these samples were re-analyzed and were within the QC requirements.

Surface Soils: Surface soil sample SS-6 and the Matrix Spike Duplicate (MSD) of SS-13 both exceeded surrogate limits for two compounds. These samples have not been reanalyzed. Consequently, compounds detected in these samples should be flagged as estimated, while non-detects will remain unchanged.

Matrix Spike Recoveries

Soil Borings: Sample B-6 (2-4') was submitted for MS/MSD analysis. The matrix spike percent recovery was exceeded for 1,2,4- Trichlorobenzene and 4-Chloro-3-methylphenol. The percent relative difference for the matrix spike duplicate was exceeded for 1,2,4- Trichlorobenzene. No action is recommended based on these excursions.

Surface Soils: Matrix spikes/matrix spike duplicate forms were not present for surface soil samples.

Internal Standard Areas

Soil Borings: Sample B-3 (2-4') was below the internal standard criteria for acenaphthene-d10 and perylene-d12. Sample B-11 and B-6 (DUP) were below acceptable criteria for both chrysene-d12 and perylene-d12. Samples are not, however, qualified based solely on this analysis. This is further discussed below.

Ground Water: Samples MW-6 and MW-9 were both below QC limits for acenaphthene-d10. These were the only excursions noted for this item.

Surface Soils: All the surface soil samples except SS-1, SS-2, SS-4, SS-16, and the equipment blank were outside the

QC limits for perylene-d12. Sample SS-5 and the matrix spike/matrix spike duplicate (MS/MSD), sample, and duplicate of SS-13 were outside limits for chrysene-d12.

Based on the set of excursions noted above, the concentration of any semivolatile compounds detected in Boring B-3 (2-4') is in question. Excursions were noted in this sample for surrogate recovery, MS/MSD analysis, and internal standard areas. Consequently, experience suggests that the concentrations of analytes detected in this sample should be flagged by a J indicating the result is estimated.

PESTICIDE AND PCB ANALYSIS

A review of the Pesticide and PCB package indicates that some excursions existed in the areas of surrogate recovery, matrix spike/matrix spike duplicates, standard summary evaluation, and pesticide/PCB standard summary. A brief overview of the specific samples and excursions is presented in the following sub-section.

Surrogate Recoveries - Samples MW-10, MW-10 (MS), MW-8, and MW-6, and standards SB082889 and SB082489 all exceeded the QC percent recovery limits of 24-154% for Dibutylchlorendate. For this reason, the concentration of pesticides and PCBs in these samples should be flagged with a J indicating that the result is estimated. In a number of cases, the surrogate was diluted out of the sample or a value could not be given due to matrix interference. In

these cases, compounds detected in the samples should be flagged as estimated.

Matrix Spike Recoveries - Matrix spike/ matrix spike duplicate analysis was performed on 4 samples (B-1, 0-6'; B-6, 2-4'; SS-13; and MW-10) and 5 laboratory blanks. In general, the recoveries and relative percent differences for the samples were acceptable, with the exception of SS-13. Nine out of 12 percent recoveries and 4 out of 6 relative percent differences were out of acceptable limits for this sample. The reason for this excursion is attributed to matrix interference which led to dilution of the spike. Laboratory blank SB/SBD 082889 was outside QC limits for 4 out of 6 relative percent differences. However, laboratory data is not qualified based solely on the results of matrix spike/matrix spike duplicate analyses. The results of these samples are evaluated in conjunction with other QC data.

Pesticides Evaluation Standards Summary - The retention time check (% difference) is diluted in a number of samples. The percent relative difference for 4,4'-DDT is exceeded in each check for linearity (Dates: 8-23-89 to 8-25-89, 9-8-89 to 9-11-89, and 9-12-89 to 9-14-89). Endrin exceeds the relative percent difference limit of /= 10% for analyses from 9-12-89 to 9-14-89. As a result of these excursions, all associated positive results for the sampling periods should be flagged by a J indicating that the result is estimated.

Pesticide/ PCB Standard Summary - Endrin exceeded the QC limit of /= 15% difference on two occasions (8-23-89 to 8-25-89 and 8-9-89 to 8-11-89). In two other analyses, a percent difference for endrin was not given due to co-elution with endosulfan II. As a result of these excursions, all positive responses in associated samples should be qualified with a J.

Endosulfate, endrin ketone, and aldrin exceeded the QC limit of /= 20% for non-quantitation matrix. Since these compounds were noted as non-quantitative, there is no qualifiers associated with the data. However, positive results for the specific compounds could be subject to error.

In general, the quality of the laboratory data for the pesticides/PCBs section was good. Samples which required qualification did not exhibit pesticide or PCB analytes. Therefore, qualifiers were not applied to any data.

3.05.3.2 Inorganic Analysis - SOW No. 787

The samples in the data package presented by the analytical laboratory for inorganic analysis are divided into two groups; surface soils, and borings and ground water. A preliminary review of holding times, calibration, contract required detection limit (CRDL) standards, calibration blanks, Inductively Coupled Plasma (ICP) check samples, and other criteria for each of these sections indicates that the data is generally acceptable. However, a few excursions were encountered during a review of the inorganic data. These excursions are presented below along with the QC

limits requirements for each item. The excursions identified in the review were in the areas of spike sample recovery and duplicates.

Sample Recovery

Surface Soils: Antimony, chromium, cobalt, manganese, selenium, and lead are outside the recovery limits of 75% to 125% for spike sample recovery. No corrective measures for these excursions were noted in the data package.

Borings and Ground Water: Antimony, iron and selenium are outside the required recovery limits for spike sample recovery. The limits for this criteria are the same as for soil. As a result of these excursions, all associated data is flagged with a J to indicate an estimated result.

Duplicates

Surface Soils: Antimony, lead, mercury, and silver exceed the criteria of /= 35% relative difference for soil sample.

Borings and Ground Water: Silver appears to be the only analyte which exceeds the /=35% relative difference criteria for soil. Calcium, magnesium, and manganese all exceed the aqueous criteria of /=20% relative difference.

3.05.4 Discussion

Rigorous quality assurance reviews of CLP data consistently identify problems associated with analytical measurements. Matrix

interference, analyte interferences and other influences external to the laboratory often cause problems which lead to excursions from acceptable QC limits. Therefore, the qualification of a portion of the data is an expected component of a CLP review.

The preliminary review of the data indicates that some organic and inorganic results will require qualification. However, based on the preliminary review, it is not anticipated that any of the data will be rejected.

This review should not be used in place of a comprehensive evaluation of the data. A detailed validation of the complete data package, including a review of transcription and calculation accuracy, would provide a solid basis on which to assess the usability of the data in various applications. The preliminary evaluation of the data completed to date, however, has not revealed any data which are of unacceptable quality for the assessment of site risks or the identification of interim remedial measures.

3.06 Soil Chemistry

3.06.1 Surface Soil Chemical Characterization

As described in section 2.04.4 of this report, seventeen (17) surface soil samples were collected from across the site and submitted for laboratory analysis. A summary of the analytical methods used for each sample is presented in Section 2.04.6. Compounds identified in surface soil samples at or above the analytical detection limit are presented in Tables 5 and 6. Of the three surface soil samples submitted for analysis of Target Compound List

(TCL) volatile organic compounds (SS-7, SS-13, SS-17), none revealed detectable quantities of VOC's.

Semivolatile organic compounds were detected in surface soil samples collected at locations SS-3, and SS-12 through SS-17. These data are summarized on Table 5. These compounds include 2-4-Dimethylphenol (SS-3, SS-12), Napthalene (SS-15), Phenanthrene (SS-17), Fluoranthrene (SS-15, SS-16, SS-17), and Pyrene (SS-13 through SS-17). It should be noted that in all cases, detected concentrations of semivolatiles in surface soils are presented as "estimated" by the laboratory. Based on the concentrations of semivolatiles detected in these samples, and the finding of such materials in "background" sample SS-17, the semivolatile compounds detected in surface soils do not appear to be a direct result of on-site waste disposal.

Results of surface soil analyses for inorganic constituents are presented in Table 6. Also presented in Table 6 is the median and range of concentration reported for North American soils (Dragun, 1988). The concentrations of metals observed in surface soils at the site are within typical ranges reported for North American soils. However, surface soil concentrations of cobalt at several locations are at the high end of the expected range.

3.06.2 Subsurface Soil Chemical Characterization

As described in Section 2.04.3, a total of eleven (11) soil borings were advanced on-site. As discussed in section 2.04.4, fourteen (14) soil boring samples were submitted for analysis of

VOC's, and semivolatiles. Of these samples, six (6) were submitted for analysis of PCB's and metals.

Table 7 presents a summary of volatile organic constituents detected in subsurface soil samples. A review of Table 7 indicates that the major volatile constituent detected in soil boring samples submitted for analysis was xylene. Xylene was detected in samples B-3 (2-4'), B-7 (4-6'), B-9 (4-6'), B-9 (6-7') and B-10 (4-6') at levels of 9700, 5900, 3700, 5400, and 340 ppm- xylene, respectively. Lower levels of xylene (ranging from approximately 0.002 ppm to 72 ppm) were detected in samples B-1 (0-6'), B-4 (2-4'), B-6 (2-4'), B-8B (6-7.3'), B-10 (6-7.9'), B-11 (0-2') and B-11 (6-9').

Other volatile organic compounds detected in subsurface soil samples include: ethylbenzene, toluene, tetrachloroethylene (PCE), 2-butanone (MEK), acetone, and methylene chloride. Of these compounds, methylene chloride, acetone, and 2-MEK were also detected in the laboratory blank sample. This would indicate that detection of these three compounds may represent a background artifact of the laboratory analysis, rather than a significant presence in the soil sample. PCE was detected in boring B-2 (6-8') at 0.097 ppm and in boring B-8B (6-7.3') at an estimated concentration of 6.9 ppm. Toluene was detected in borings B-9 (6-7') and B-10 (6-7.9') at estimated concentrations of 47 and 1.4 ppm, respectively. Ethylbenzene was detected in borings B-10 (4-6') and B-11 (0-2' and 6-9') at estimated concentrations of 5.9, 0.028, and 0.003 ppm, respectively.

Table 8 presents a summary of semi-volatile compounds detected. Semivolatile organic compounds, including 2-methylphenol,

4-methylphenol, and 2,4-dimethylphenol were detected in samples collected from soil borings B-3, B-7, B-9, and B-11. Bis (2-ethylhexyl)-phthalate was found in the blank as well as in each of the boring samples submitted for analysis. The presence of this compound cannot be specifically accounted for. However, it is most likely the result of contaminants present in the sampling equipment (poly-rope, plastic bag and coders, gloves). The concentrations of 2-methylphenol detected on-site ranged from an estimated 0.11 ppm (B-11, 6-9') to 2.8 ppm (B-11, 0-2'). Residues of 4- methylphenol, ranging from an estimated 0.061 to 0.28 ppm were also detected in these same two borings (B-11, 6-9' and 0-2', respectively). 2-4-dimethylphenol was detected in boring B-3, 2- 4' (26 ppm); B-7,4-6' (estimated 3.5 ppm); B-9,4-6' (estimated 28 ppm); and B-11,0-2' (estimated 0.12 ppm).

Table 9 presents the concentrations of inorganic constituents detected in soil boring samples submitted for analysis. It may be noted that the detected levels are within the respective concentration ranges expected for metals in North American soils (Table 9).

3.07 Ground Water Chemistry

As detailed in section 2.05.2, ground water samples were collected from six (6) on-site wells and submitted for analysis of volatiles, semi-volatiles, and metals. The locations of these wells are presented in Figure 2, and the results of the laboratory analysis are included in Tables 10, 11, and 12.

Table 10 presents a summary of detected volatile organic constituents measured in collected ground water samples.

The most prevalent volatile organic compound observed in the analysis of ground water samples was xylene. Xylene was detected in shallow wells MW-6 and MW-9 at 6.3 and 34 ppm, respectively. Acetone, MEK, toluene, ethylbenzene, and 1,2-dichloroethene were also detected in MW-6 at concentrations ranging from 0.005 (estimated) to 0.7 ppm. The sample from MW-9 also showed evidence of the presence of acetone (0.083 ppm), MEK (estimated 0.008 ppm), toluene (4.2 ppm) and ethylbenzene (estimated 1.7 ppm). In addition to these VOC's, analysis of the sample MW-9 indicated the presence of benzene (estimated at 0.004 ppm) and 4-methyl 2-pentanone at 0.026 ppm. Analyses of the sample from MW-7 indicated the presence of methylene chloride at an estimated concentration of 0.003 ppm. No VOCs were detected in samples collected from MW-5 and MW-10.

Table 11 presents concentrations of semivolatile compounds detected in ground water monitoring wells MW-5, MW-6, MW-7, MW-8, MW-9 and MW-10. Practical quantitation limits in samples MW-6 and MW-9 were affected by the presence of unknown compounds (Exhibit I) at ppm concentrations. Estimated practical quantitation limits for TCL semi-volatiles in these samples were in the range from 1 to 5 ppm. Practical quantitation limits for TCL volatiles in all other samples (MW-5, MW-7, MW-8 and MW-10) were in the range from 0.010 to 0.054 ppm.

Semivolatile organic compounds 2-methylphenol and bis(2-ethylhexyl) phthalate were detected in MW-6 at estimated concentrations of 0.14 ppm and 0.067 ppm, respectively. It should be noted, however

that these compounds were also detected in the method blank sample. Detectable concentrations of TCL semivolatile compounds were not found in MW-9. Semivolatile compounds were not quantitatively detected in samples MW-5, MW-7, MW-8 and MW-10 at concentrations above the required analytical detection limit. However, diethylphthalate and bis(2-ethylhexyl) phthalate were detected in MW-5 at estimated concentrations of 0.001 and 0.010 ppm, respectively. Bis(2-ethylhexyl) phthalate, 2-methylphenol and di-n-octylphthalate were detected in MW-7 at estimated concentrations of 0.006 and 0.007 and 0.001 ppm, respectively. Bis-(2-ethylhexyl)phthalate was detected in MW-10 at an estimated concentration of 0.009 ppm. Practical quantitation limits for TCL semivolatiles in samples from MW-5, MW-7, MW-8 and MW-10 ranged between 0.01 and 0.054 ppm.

SECTION 4 - PRELIMINARY EVALUATION OF EXPOSURE SCENARIOS AND PROPOSED IMMEDIATE ACTIONS AND IMMEDIATE REMEDIAL MEASURES

4.01 Potential Exposure Scenarios

At the Maestri Site, a variety of environmental pathways are operable and could potentially allow for human exposure of site related compounds. The potential exposure pathways include the air, surface water, ground water and direct contact routes. This section identifies the primary contaminants of concern and potential human exposure scenarios. It also evaluates the need for immediate actions or immediate remedial measures to confirm and quantify exposure.

The need to initiate an immediate action, such as additional sampling and analysis, or immediate interim remedial measures, is assessed based on a preliminary evaluation of empirical data using sound professional judgement and experience. In the early stages of an investigation, similar to the present status of the Maestri Site study, sufficient data are unavailable to complete a quantitative evaluation of risks to human health and the environment. Under these circumstances, a conservative approach, protective of human health, has been used to identify potential exposure scenarios and evaluate the need for additional sampling and analysis or immediate remedial measures for the Maestri Site.

4.02 Air Transport Route

4.02.1 Exposure Scenarios

There are presently three air exposure scenarios that are potentially operable at the Maestri Site. These include:

a. volatilization of organic compounds (VOCs) from waste materials into general atmospheric circulation.

b. transport of contaminated fugitive dust from the waste site area into general atmospheric circulation.

c. volatilization of organic compounds from contaminated ground water into area residental dwellings.

A review of the chemical analysis of surface soil samples collected in the waste site area reveal that VOCs were not detected in the surface soils. Additionally, ambient air VOC screening during the initial site walk through and during the completion of the field program as part of the health and safety monitoring did not identify photoionization detector readings above background. Based on this data, it appears that exposure to VOCs released from the site into general atmospheric circulation has a low potential.

The results of surface soil analysis reveal concentrations of cobalt above background and greater than the range typical for North American soils. Using the highest concentration detected (144 mg/kg at location SS-5) and the OSHA inhalation guideline, time weighted acceptable exposure limit for occupational safety (the only inhalation exposure guideline available), a worst case daily exposure to cobalt has been evaluated. The results of this evaluation indicate that the potential exposure to cobalt from fugitive dust is well below the OSHA exposure limit. Therefore, in our opinion, cobalt exposure from fugitive dust does not pose an immediate threat to human health. However, both the acute and

chronic aspects of this need to be further evaluated and will be addressed in the final report.

Available data for on-site ground water chemistry indicates concentrations of xylene up to 34 ppm. Additionally, xylene has been detected in a residental basement sump (151 Alhan Parkway) hydraulically downgradient from the site. The soil gas survey, however, did not detect concentrations of xylene in any residential backyard soil vapor.

4.02.2 Proposed Immediate Action

Exposure to VOCs by volatilization from subsurface waste material is a potentially operable exposure scenario. However, under current site conditions, exposures to VOCs released from the site to general atmospheric circulation appear to have a low potential. No immediate action or immediate remedial measure is therefore proposed for this exposure scenario.

Exposure to fugitive dust containing cobalt, based on a worst case exposure scenario under current site conditions, is well below OSHA limits. Therefore an immediate action or immediate remedial measure is not proposed.

Human exposure to VOCs in area residental dwellings by volatilization of organic compounds is identified as a potentially operable pathway. Available data are currently not sufficient to quantifiably assess this exposure scenario. Therefore, prudence dictates that indoor air sampling and analysis be performed at the residence where xylene has previously been detected in the sump.

This is proposed as an immediate action and will be completed as per the provisions in the work plan.

4.03 Surface Water Transport Route

4.03.1 Exposure Scenarios

As part of the site investigation in the approved work plan, drainage channels from the site where surface water could be present due to direct site run-off or ground water seepage were to be identified. Inspections of the site on several occasions following precipitation events did not identify the presence of surface water coming from the site. Therefore, this exposure scenario is apparently not presently operable.

Surface water could also act as an exposure mechanism if contaminated ground water discharges to a surface water hydraulically down gradient from the site. Available data suggest ground water from the site may discharge into Onondaga Lake. This possible exposure scenario is, however, in our opinion, not of concern given the distance of the lake from the site (greater than 1000 feet), and anticipated dilution with other ground water and lake water.

4.03.2 Proposed Immediate Action

No immediate actions or immediate remedial measures to address potential surface water exposure scenarios are proposed.

4.04 Ground Water Transport Route

4.04.1 Exposure Scenarios

Available ground water chemistry data indicate VOCs, mainly xylene, are present in the on-site ground water. Additionally, xylene has been detected in the foundation sump of an area residence in samples collected and analyzed by Onondaga County Health Dept. (OCHD).

Area residences are served by a municipal water system and, to that end, do not use local ground water for potable supply. For the purposes of this evaluation, it is assumed that the resident whose sump contains concentrations of xylene does not dermally contact the sump water or use if for consumption. Therefore, the ground water exposure under this scenario is apparently not operable.

4.04.2 Immediate Action

To confirm the presence of xylene in the residential sump, a single confirmatory sample was collected from 151 Alhan Parkway on November 17, 1989. This sample will be analyzed for TCL volatiles and semi-volatiles as per the approved work plan.

4.05 Direct Contact Transport Route

4.05.1 Exposure Scenario

Available surface soil chemistry data from the waste site area indicate that cobalt is present at concentrations above background and that typically observed in North American soils. The direct contact exposure scenario is considered possible.

A preliminary evaluation indicates that the exposure to cobalt by incidental ingestion, using the USEPA suggested assumed intake rate of soil for children, is below the average daily cobalt dietary intake by U.S. citizens.

4.05.2 Proposed Immediate Interim Remedial Measure

The area where removal of drums was previously performed by Maestri and the anomaly area are presently isolated with fencing. Additionally, vehicular access to the site as a whole is restricted by a locking chain at State Fair Boulevard. These measures are presently adequate to protect against direct contact by inadvertent entry to the waste source areas. However, as a prudency measure and to further improve waste area security, a six foot high chain link fence will be installed to inscribe the area of the anomaly and where previous excavations by Maestri took place.

4.06 Anomaly Excavation and Removal

As discussed previously in Section 3.03, during the course of completing these investigations a geophysical anomaly was detected. Follow-up physical inspection completed in early October 1989 revealed the anomaly includes buried drums which are crushed but still contain small volumes of waste material.

The anomaly may indicate the presence of a source of contaminants to surrounding soil and ground water. However, even if this is the case, it does not likely represent an acute threat to human health. Whatever material is responsible for the anomaly is buried, and

therefore poses no threat of incidental direct contact. Nevertheless, it would be desirable to excavate and remove the source of the anomaly from the area, during the 1989-1990 winter season. A work plan is being developed accordingly.

Tables

TABLE 1
MAESTRI SITE
904 STATE FAIR BLVD.

ON-SITE SOIL VAPOR SURVEY RESULTS

DESIGNATED GRID LOCATION*		DATE	XYLENE (ppm-v/v)	PHOTOIONIZATION SCREENING RESULTS (ppm)
L80	7+60	7/13/89	ND **	ND ***
L80	8+0	7/13/89	ND	ND
L80	8+60	7/14/89	ND	ND
L80	8+80	7/14/89	ND	ND
L80	9+20	7/13/89	ND	ND
L40	8+0	7/13/89	ND	ND
L40	8+20	7/31/89	ND	2.7
L40	8+40	7/14/89	ND	ND
L40	8+60	7/31/89	ND	ND
L40	8+80	7/14/89	0.1	ND
L30	9+20	7/13/89	ND	ND
L20	8+0	7/13/89	ND	ND
L20	8+20	7/31/89	ND	ND
L20	8+40	7/31/89	0.17	ND
L20	8+60	7/31/89	ND	ND
L20	8+80	7/14/89	1079	427
CL	7+60	7/13/89	ND	ND
CL	8+0	7/13/89	ND	ND
CL	8+20	7/31/89	0.2	ND
CL	8+40	7/31/89	275	306
CL	8+60	7/31/89	ND	ND
CL	8+80	7/14/89	ND	ND
R10	9+20	7/13/89	ND	ND
R20	8+0	7/13/89	ND	ND
R20	8+20	7/31/89	ND	39.5
R20	8+40	7/31/89	149	166
R20	8+60	7/14/89	672	255
R20	8+80	7/14/89	ND	ND
R40	8+0	7/13/89	ND	ND
R40	8+40	7/14/89	21	25.7
R40	8+60	7/31/89	ND	ND
R40	8+80	7/14/89	ND	ND
R50	9+20	7/13/89	ND	24.3
R60	8+0	7/13/89	ND	ND
R60	8+20	7/13/89	ND	ND
R60	8+40	7/14/89	ND	ND
R60	8+60	7/14/89	1564	1036
R60	8+80	7/14/89	ND	ND
R90	9+20	7/13/89	ND	ND
R100	8+0	7/13/89	ND	ND
R100	8+40	7/13/89	ND	ND
R100	8+80	7/13/89	ND	ND
R120	7+60	7/13/89	ND	ND
R130	9+20	7/13/89	0.05	ND

NOTE: * - Grid locations illustrated on Figure 2C.
ND** - Not detected. Detection limit for GC analyses estimated at 0.05 based on in-field instrument reponse to claibrant standards.
CL - Center Line
ND*** - Not detected. Photoionization screening detection limit estimated at 1 ppm.

TABLE 2
MAESTRI SITE
904 STATE FAIR BLVD.

OFF-SITE RESIDENTIAL SOIL VAPOR SURVEY RESULTS

LOCATION	GAIN	INJ VOL	CONC (ppm)	UNKNOWN RT=20	UNKNOWN RT=28	UNKNOWN RT=40	UNKNOWN RT=44	UNKNOWN RT=50	UNKNOWN RT=275	UNKNOWN RT=285	XYLENE
157 Alhan Pkwy.	50	100	—	)2.02	)2.569	(0.1	(0.1	(0.1	(0.1	0.215	(0.1
156 Alhan Pkwy.	50	100	—	)1.687	)1.771	(0.1	(0.1	(0.1	(0.1	0.047	(0.1
155 Alhan Pkwy.	50	100	—	)1.602	)2.275	(0.1	(0.1	(0.1	(0.1	0.173	(0.1
154 Alhan Pkwy.	50	100	—	)1.266	)1.771	(0.1	(0.1	(0.1	(0.1	0.089	(0.1
153 Alhan Pkwy.	50	100	—	)1.400	)1.140	(0.1	(0.1	(0.1	0.215	(0.1	(0.1
152 Alhan Pkwy.	50	100	—	)1.434	)1.644	(0.1	(0.1	(0.1	(0.1	0.215	(0.1
151 Alhan Pkwy.	50	100	—	)1.644	)2.401	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1
150 Alhan Pkwy.	50	100	—	)1.644	)1.560	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1
149 Alhan Pkwy.	50	100	—	)1.897	)2.527	(0.1	(0.1	(0.1	0.215	(0.1	(0.1
148 Alhan Pkwy.	50	100	—	)1.854	)1.392	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1
147 Alhan Pkwy.	50	100	—	)1.350	)0.972	(0.1	(0.1	(0.1	0.131	(0.1	(0.1
146 Alhan Pkwy.	50	100	—	)2.149	)2.023	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1
145 Alhan Pkwy.	50	100	—	)1.350	)0.804	(0.1	(0.1	(0.1	0.173	(0.1	(0.1
143 Alhan Pkwy.*	50	100	—	)2.696	)3.536	0.677	0.551	0.930	(0.1	(0.1	(0.1
XYLENE	50	75	1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	0.677
XYLENE	50	50	1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	0.551
XYLENE	50	25	1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	0.215
XYLENE	50	50	1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	0.551
XYLENE	50	100	0	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1	(0.1

NOTES: RT - Chromatographic retention time in seconds.

* - Sample 143 ALHPKY-3 exhibits a chromatographic fingerprint commonly associated with a petroleum product. This fingerprint was found only in the above mentioned sample, and is not representative of contaminants encountered in on-site sampling.

- Unknown concentrations expressed in xylene equivalents.
- All samples collected from a depth of 3 feet.
- Values expressed as "greater than", should be viewed as conservative estimates of the actual concentration present.

TABLE 3
MAESTRI SITE
904 STATE FAIR BLVD.

SUMMARY OF MAIN BORINGS

BORINGS	GROUND ELEV. (FT)	TOTAL DEPTH (FT)	DEPTH OF FILL (FT)	DEPTH TO GROUND WATER (FT)	SAMPLED INTERVAL (FT)	HNU FIELD SCREENING (ppm)
B-1	419.4	6.4	0	NOT ENCOUNTERED	0-2'	BG
					2-4'	BG
					4-6'	BG
					6-6.4'	BG
B-2	408.7	6	4	5.8	0-2'	1
					2-4'	3.8
					4-6'	5
B-3	409.7	4	)4	NOT ENCOUNTERED	0-2'	BG
					2-4'	350
B-4	407.8	8	)8	6.25	0-2'	0.4
					2-4'	0.2
					4-6'	0.4
					6-8'	35
B-5	405.8	8	6	6.5	0-2'	BG
					2-4'	BG
					4-6'	BG
					6-8'	4
B-6	409.4	8	4	6.5	0-2'	BG
					2-4'	BG
					4-6'	BG
					6-8'	BG
B-7	408.3	6	0	6	0-2'	300
					2-4'	350
					4-6'	350
B-8	407.5	8	4	7.3	0-2'	0
					2-4'	1.2
					4-6'	5
					6-7.3'	160
B-9	407.7	8	3.3	7	0-2'	1
					2-4'	50
					4-6'	300
					6-7'	280
B-10	409.2	8	4.7	7.9	0-2'	170
					2-4'	280
					4-6'	280
					6-7.9'	280
B-11	409.2	8	4	7	0-2'	260
					2-4'	38
					4-6'	30
					6-7'	140

NOTE: BG - Backround.

TABLE 4
MAESTRI SITE
904 STATE FAIR BLVD.

WELL SPECIFICATION AND GROUND WATER ELEVATION

WELL NO.	WELL DEPTH BELOW GRADE (FEET)	GRADE ELEV. (FT)	STEEL CASING ELEV. (FT)	DEPTH TO BEDROCK (FEET)	PVC CASING ELEVATION (FEET)	SCREENED-INTERVAL (FT)	HYDRAULIC COND. (cm/s)	GROUND WATER ELEVATION 8/10/89	8/11/89	8/23/89	9/7/89	10/13/89
MW-5*	34.51	432.80	434.73	8	434.50	398.29 - 413.29	7.8 X 10 -3	415.35	415.26	414.43	413.54	414.00
MW-6*	20.40	407.20	409.44	21	409.26	386.80 - 401.80	3.2 X 10 -5	399.44	399.39	398.53	397.69	397.31
MW-7	38.27	406.90	409.15	21	408.99	368.63 - 378.63	6.7 X 10 -6	391.04	390.94	390.86	390.46	390.46
MW-8	37.04	406.14	408.14	20	408.02	369.10 - 379.10	1.8 X 10 -5	391.96	391.88	391.20	390.60	390.58
MW-9	19.20	406.20	407.79	20	407.61	387.00 - 397.00	2.0 X 10 -4	396.89	396.85	396.24	395.42	394.65
MW-10	19.48	412.50	414.13	20	413.92	393.02 - 403.02	1.0 X 10 -4	404.01	403.86	401.27	399.84	399.39

NOTES: * - Installed by Malcom-Pirnie, Inc., in December 1987.

TABLE 5
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED SEMI-VOLATILE COMPOUNDS*
IN SURFACE SOILS
Analyzed September 1989

	2-4-Dimethyl-phenol	Napthalene	Phenanthrene	Fluoranthene	Pyrene	bis(2-ethylhexyl)-phthlate
SS-1	ND	ND	ND	ND	ND	0.5 JB
SS-2	ND	ND	ND	ND	ND	0.4 JB
SS-3	0.3 J	ND	ND	ND	ND	1.4 JB
SS-4	ND	ND	ND	ND	ND	1.6 JB
SS-5	ND	ND	ND	ND	ND	1.5 JB
SS-6	ND	ND	ND	ND	ND	0.79 JB
SS-7	ND	ND	ND	ND	ND	0.78 JB
SS-8	ND	ND	ND	ND	ND	2 JB
SS-9	ND	ND	ND	ND	ND	0.91 JB
SS-10	ND	ND	ND	ND	ND	0.67 JB
SS-11	ND	ND	ND	ND	ND	ND
SS-12	3.9 J	ND	ND	ND	ND	1.7 JB
SS-13	ND	ND	ND	ND	0.42 J	3 JB
SS-13 DUPLICATE	ND	ND	ND	ND	ND	2.5 JB
SS-14	ND	ND	ND	ND	0.048 J	0.44 B
SS-15	ND	0.042 J	ND	0.042 J	0.048 J	0.42 B
SS-16	ND	ND	ND	0.031 J	0.033 J	0.57 B
SS-17	ND	ND	0.039 J	0.065 J	0.085 J	0.38 JB
EQUIPMENT BLANK	ND	ND	ND	ND	ND	0.018 JB

NOTES: * - All other semi-volatile compounds analyzed were not detected.
All analytical values measured in mg/kg.
B - Found in method blank.
J - Indicates an estimated value.
ND - Not detectable.
Analytical quantitation limits are sample specific and may vary.
Quatitation limits for each sample and analyte are present
in laboratory reports. (Exhibit I)

TABLE 6
MAESTRI SITE
904 STATE FAIR BLVD.

INORGANIC CONSTITUENTS
IN SURFACE SOILS
Analyzed August 1989

Sample ID Number Sample Depth (Ft)	Typical Range*	Extreme Range*	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11
Aluminum	1000-300,000	——	8680	9020	9220	8930	9730	9790	9640	7940	9320	10200	8960
Antimony	0.6-10	——	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.61
Arsenic	1.0-40	0.1-500	2.87	3.6	3.56	4.13	4.91	3.91	3.71 B	3.65	2.94	3.96	2.61
Barium	100-3500	10-10000	34.7	36	43.3	57.3	54.4	45.4	41.1	36.9	40.9	46.9	42.9
Beryllium	0.1-40	0.1-100	0.393 B	0.373 B	0.392 B	0.398 B	0.373 B	0.376 B	0.354 B	0.389 B	0.409 B	0.382 B	0.374 B
Calcium	100-400,000	——	1560	4130	4910	7280	4590	2340	2440	6230	8790	2190	1520
Chromium	5.0-3000	0.5-10000	12.1	12.7	13	12.8	14.6	14.3	13.3	11.8	13.5	13.9	11.9
Cobalt	1.0-40	0.01-500	11.7	23	72.5	69.9	144	131	42.9	106	85.3	29.6	43.3
Copper	2.0-100	0.1-14000	21.9	22.3	17.6	17.8	17.3	22.4	16.4	16.7	17.5	19	11.7
Iron	7000-550,000	——	15800	16600	17100	16700	17900	17500	16500	16100	17000	17600	14100
Lead	2.0-200	0.1-3000	4.53	7.94	7.29	11.3	16.1	17.8	7.27	7.76	11.8	7.11	11.1
Magnesium	600-6000	——	2630	3630	4370	3350	3270	2980	3180	4460	5620	2830	2350
Manganese	100-4000	1.0-70000	378	537	417	575	508	388	400	329	358	572	422
Mercury	0.01-0.08	——	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	5.0-1000	0.8-6200	12.8 B	12.7	13.2	12.7	14.6	13.4	12.8	13.1	13.1	13.3	11
Potassium	400-30,000	——	2150 B	2010	2160	1570	1850	1970	2250	1590	2350	2810	ND
Selenium	0.1-2.0	0.01-400	ND	ND	ND	ND	ND	ND	ND	ND	5.32	ND	ND
Silver	0.1-5.0	0.1-50	0.316	0.257 B	ND	ND	ND	ND	0.272 B	ND	0.315 B	0.236 B	0.216 B
Sodium	750-7500	400-30000	188	160 B	174 B	145 B	181 B	114 B	139 B	140 B	173 B	148 B	ND
Thallium	0.1-12	——	0.564	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.539
Vanadium	20-500	1.0-1000	19.7	19.1	19.5	18.3	20.5	20.1	20.2	17.4	20.2	20.2	19
Zinc	10-300	3.0-10000	27.4	28.3	63.1	36.6	47.9	36.3	29.8	33.7	35	32.8	28.9
Cyanide	——	——	—	—	—	—	—	—	ND	—	—	—	—

NOTES: Analytical inorganic values measured in mg/kg.
ND - Not detectable.
B - Above instrument detection limit but below contract required detection limit.
* - THE SOIL CHEMISTRY OF HAZARDOUS MATERIALS, James Dragun, Ph.D.

TABLE 6
MAESTRI SITE
904 STATE FAIR BLVD.

INORGANIC CONSTITUENTS
IN SURFACE SOILS
Analyzed August 1989
(Cont.)

Sample ID Number Sample Depth (Ft)	Typical Range*	Extreme Range*	SS-12	SS-13	SS-13 DUPLICATE	SS-14	SS-15	SS-16	SS-17
Aluminum	1000-300,000	——	9000	9800	9140	10200	10800	10900	14000
Antimony	0.6-10	——	ND	16.4	ND	ND	ND	ND	ND
Arsenic	1.0-40	0.1-500	3.62	4.18	3.39	3.41	3.36	4.8	2.92
Barium	100-3500	10-10000	51.3	42.1	41.2	56.6	53.8	53	43
Beryllium	0.1-40	0.1-100	0.368 B	0.379 B	0.408 B	0.406 B	0.373 B	0.412 B	0.429 B
Calcium	100-400,000	——	3040	4520	3730	1300	1380	1340	1910
Chromium	5.0-3000	0.5-10000	12	14.4	12.8	13.2	13.2	13.9	18.3
Cobalt	1.0-40	0.01-500	40	103	124	51.5	6.7	9.49	4.16 B
Copper	2.0-100	0.1-14000	16.4	17	16.4	15.4	12.9	13.7	10.9
Iron	7000-550,000	——	17900	17000	17000	17900	16200	17600	20800
Lead	2.0-200	0.1-3000	8.34	22.8	8.51	15	15.2	16.3	15.7
Magnesium	600-6000	——	3370	4270	3710	2250	2230	2280	5300
Manganese	100-4000	1.0-70000	647	258	279	689	589	643	325
Mercury	0.01-0.08	——	0.139	0.364	0.167	ND	ND	ND	ND
Nickel	5.0-1000	0.8-6200	12.7	13.1	13.3	13.3	11.9	12.9	19.2
Potassium	400-30,000	——	1560	2150	1960	1580	1860	2160	3020
Selenium	0.1-2.0	0.01-400	ND	ND	ND	ND	ND	ND	ND
Silver	0.1-5.0	0.1-50	ND	ND	ND	ND	ND	ND	0.233 B
Sodium	750-7500	400-30000	162 B	178 B	152 B	168 B	145 B	178 B	152 B
Thallium	0.1-12	——	ND	ND	ND	ND	ND	ND	ND
Vanadium	20-500	1.0-1000	19.5	20.2	18.9	20.5	21.8	21.6	23.1
Zinc	10-300	3.0-10000	47.5	31.4	30.5	37.5	35.3	35.7	50.6
Cyanide	——	——	—	ND	ND	---	---	—	ND

NOTES: Analytical inorganic values measured in mg/kg.
ND - Not detectable.
B - Above instrument detection limit but below contract required detection limit.
* - THE SOIL CHEMISTRY OF HAZARDOUS MATERIALS, James Dragun, Ph.D.

TABLE 7
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED VOLATILE COMPOUNDS*
IN SOIL BORINGS
Analyzed August 1989

Sample ID Number	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-7	B-8B	B-9	B-9	B-10	B-10	B-11	B-11	TRIP
Sample Depth (Ft)	0-6'	4-6'	2-4'	4-6'	4-6'	2-4'	DUPLICATE	4-6'	6-7.3'	4-6'	6-7'	4-6'	6-7.9'	0-2'	6-9'	BLANK
Methylene Chloride	0.002 J	ND	ND	0.002 J	0.002 J	0.002 J	ND	ND	ND	ND	ND	ND	ND	0.019 J	ND	)1 J
Acetone	ND	0.012 JB	200 JB	0.015 B	0.005 JB	0.008 JB	ND	ND	ND	ND	ND	ND	0.9 J	0.15 B	0.067 B	0.006 JB
2-Butanone	ND	ND	150 JB	ND	ND	ND	210 JB	ND	ND	ND	ND	6.3 JB	0.99 J	0.013 J	ND	ND
Tetrachloethene	ND	0.097	ND	ND	ND	ND	ND	ND	6.9 J	130 J	250	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	47 J	ND	1.4 J	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.9 J	3.7	0.028 J	0.003 J	ND
Xylene	0.002 J	ND	9700	0.014	ND	0.004 J	8500	5900	72	3700	5400	340	34	0.65	0.11	ND

NOTES: * - All other volatile compounds analyzed were not detected.
All analytical values measured in mg/kg.
J - Indicates and estimated value.
B - Found in method blank.
ND - Not detectable.
Analytical quantitation limits are sample specific and may vary.
Quantitation limits for each sample and analyte are presented
in laboratory reports. (Exhibit I)

TABLE 8
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED SEMI-VOLATILE COMPOUNDS*
IN SOIL BORINGS
Analyzed August 1989

Sample ID Number	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-7	B-8B	B-9	B-9	B-10	B-10	B-11	B-11
Sample Depth (Ft)	0-6'	4-6'	2-4'	4-6'	4-6'	2-4'	DUPLICATE	4-6'	6-7.3'	4-6	6-7'	4-6'	6-7.9'	0-2'	6-9'
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	1.9 J	ND	ND	4.8 J	ND	ND	2.8	0.(
4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J	0.061 J
2,4-Dimethylphenol	ND	ND	26	ND	ND	ND	3.9 J	3.5 J	ND	28 J	ND	ND	ND	0.12 J	ND
Benzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)-phthalate	0.44 B	0.5 B	1.9 JB	0.38 B	0.8 B	0.34 JB	ND	1.1 JB	0.32 JB	ND	ND	ND	ND	0.23 JB	0.25 JB

NOTES: * - All other semi-volatile compounds analyzed were not detected.
All analytical values measured in mg/kg.
J - Indicates an estimated value.
B - Found in blank.
ND - Not detectable.
Analytical quanitiation limits are sample specific and may vary.
Quantitation limits for each sample and analyte are presented
in laboratory reports. (Exhibit I)

TABLE 9
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED INORGANIC CONSTITUENTS**
IN SOIL BORINGS
Analyzed August 1989

Sample ID Number Sample Depth (Ft)	Typical Range*	Extreme Range*	B-1 0-6'	B-2 4-6'	B-3 2-4'	B-4 4-6'	B-5 4-6'	B-6 2-4'	B-7 DUPLICATE	B-7 4-6'	B-8B 6-7.3'	B-9 4-6'	B-10 4-6'	B-10 6-7.9'	B-11 0-2'	B-11 6-9'	EQUIPMENT BLANK
Aluminum	1000-300,000	———	22200	NA	NA	NA	NA	8330	9720	10100	NA	6360	7550	NA	13500	NA	28 B
Arsenic	1.0-40	0.1-500	2.82	NA	NA	NA	NA	2.73	2.08	2.39	NA	2.37	2.72	NA	3.26	NA	ND
Barium	100-3500	10-10000	49.3	NA	NA	NA	NA	39.1	35.3	38.7	NA	20 B	33.9	NA	62.1	NA	ND
Beryllium	0.1-40	0.1-100	0.838	NA	NA	NA	NA	0.41 B	0.425 B	0.415 B	NA	0.432 B	0.291 B	NA	0.504 B	NA	ND
Calcium	100-400,000	———	4740	NA	NA	NA	NA	1520	1400	1820	NA	47100	1460	NA	1490	NA	1010 B
Chromium	5.0-3000	0.5-10000	31.4	NA	NA	NA	NA	11.5	12.9	14.1	NA	10.6	11	NA	17	NA	ND
Cobalt	1.0-40	0.01-500	4.98 B	NA	NA	NA	NA	5.91	19	24.6	NA	9.35	5.68 B	NA	26.1	NA	ND
Copper	2.0-100	0.1-14000	9.4	NA	NA	NA	NA	13.7	17.2	17.4	NA	16	19.2	NA	16.2	NA	21 B
Iron	7000-550,000	———	28800	NA	NA	NA	NA	13800	14700	15300	NA	11100	12900	NA	22500	NA	38 B
Lead	2.0-200	0.1-3000	3.88	NA	NA	NA	NA	4.06	3.99	5.26	NA	3.55	4.2	NA	5.46	NA	ND
Magnesium	600-6000	———	11500	NA	NA	NA	NA	2080	2940	3040	NA	19900	2530	NA	3180	NA	ND
Manganese	100-4000	1.0-70000	413	NA	NA	NA	NA	462	193	279	NA	416	254	NA	581	NA	ND
Nickel	5.0-1000	0.8-6200	30.8	NA	NA	NA	NA	10.1	11.3	13	NA	10.6	11.7	NA	17	NA	ND
Potassium	400-30,000	———	6800	NA	NA	NA	NA	1870	2900	2820	NA	1810	2030	NA	4190	NA	ND
Silver	0.1-5.0	0.1-50	0.233 B	NA	NA	NA	NA	0.258 B	0.241	ND	NA	ND	ND	NA	0.252 B	NA	ND
Sodium	750-7500	400-30000	152 B	NA	NA	NA	NA	199 B	359 B	201 B	NA	285 B	181 B	NA	297 B	NA	B
Vanadium	20-500	1.0-1000	30.3	NA	NA	NA	NA	18.4	19.9	20.8	NA	15.4	16.7	NA	25.9	NA	ND
Zinc	10-300	3.0-10000	30.2	NA	NA	NA	NA	21.7	26.2	28.9	NA	19.9	25.1	NA	29.6	NA	16 B

NOTES: ** - All other inorganic constituents analyzed were not detected.
Analytical inorganic values measured in mg/kg.
NA - Not analyzed.
ND - Not detectable.
B - Above instrument detection limit but below contract required detection limit.
* - THE SOIL CHEMISTRY OF HAZARDOUS MATERIALS, James Dragun, Ph.D.

TABLE 10
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED VOLATILE ORGANIC COMPOUNDS**
IN GROUND WATER
Analyzed August 1989

	NYS CLASS GA STANDARDS	MONITORING WELLS MW-5	MW-6	MW-7	MW-8	MW-8 DUPLICATE	MW-9	MW-10	EQUIPMENT BLANK
Methylene chloride	0.05*	ND	ND	0.003 JB	ND	0.003 JB	0.001 J	ND	0.001 JB
Acetone	NE	ND	0.170	ND	ND	0.014 J	0.083	ND	0.005 J
2-Butanone	NE	ND	0.005 J	ND	ND	ND	0.008 J	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	0.004 J	ND	ND
4-Methyl 2-Pentanone	NE	ND	ND	ND	ND	ND	0.026	ND	ND
Toluene	0.05*	ND	0.100	ND	ND	ND	4.2	ND	ND
Ethylbenzene	0.05*	ND	0.700	ND	ND	0.004 J	1.7 J	ND	ND
Xylene	0.05*	ND	6.3	ND	0.002 J	0.004 J	34	ND	ND
1,2-Dichloroethene	NE	ND	0.005 J	ND	ND	ND	ND	ND	ND

NOTES: ** - All other volatile compounds analyzed were not detected.
All analytical values measured in mg/l (ppm).
NE - Not established.
B - Found in method blank.
J - Indicates an estimated value.
* - Guidance standard.
ND - Not detectable.
Analytical quantitation limits are sample specific and may vary.
Quatitation limits for each sample and analyte are presented
in laboratory reports. (Exhibit I)

TABLE 11
MAESTRI SITE
904 STATE FAIR BLVD.

DETECTED SEMI-VOLATILE COMPOUNDS**
IN GROUND WATER
Analyzed September 1989

	NYS CLASS GA STANDARDS	MONITORING WELLS MW-5	MW-6	MW-7	MW-8	MW-8 DUPLICATE	MW-9	MW-10	EQUIPMENT BLANK
2-Methylphenol	NE	ND	0.140 JB	ND	ND	ND	ND	ND	ND
Benzoic Acid	NE	ND	ND	0.004 J	ND	ND	ND	ND	ND
Diethylphthalate	0.05	0.001 J	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	0.77	ND	ND	ND	ND	0.001 J	ND	ND	ND
bis(2-Ethylhexyl)phthalate	4.2	0.010 JB	0.067 JB	0.016 B	0.016 B	0.016 B	ND	0.009 JB	0.065 B
Di-n-Octylphthalate	0.05*	ND	ND	0.001 J	0.001 J	0.001 J	ND	ND	ND

NOTES: ** - All other semi-volatile compunds analyzed were not detected.
All analytical values measured in mg/l (ppm).
NE - Not established.
B - Found in method blank.
J - Indicates an estimated value.
* - Guidance standard.
ND - Not detectable.
Analytical quantitation limits are sample specific and may vary.
Quantitation limits for each sample and analyte are presented
in laboratory reports. (Exhibit I)

TABLE 12
MAESTRI SITE
904 STATE FAIR BLVD.

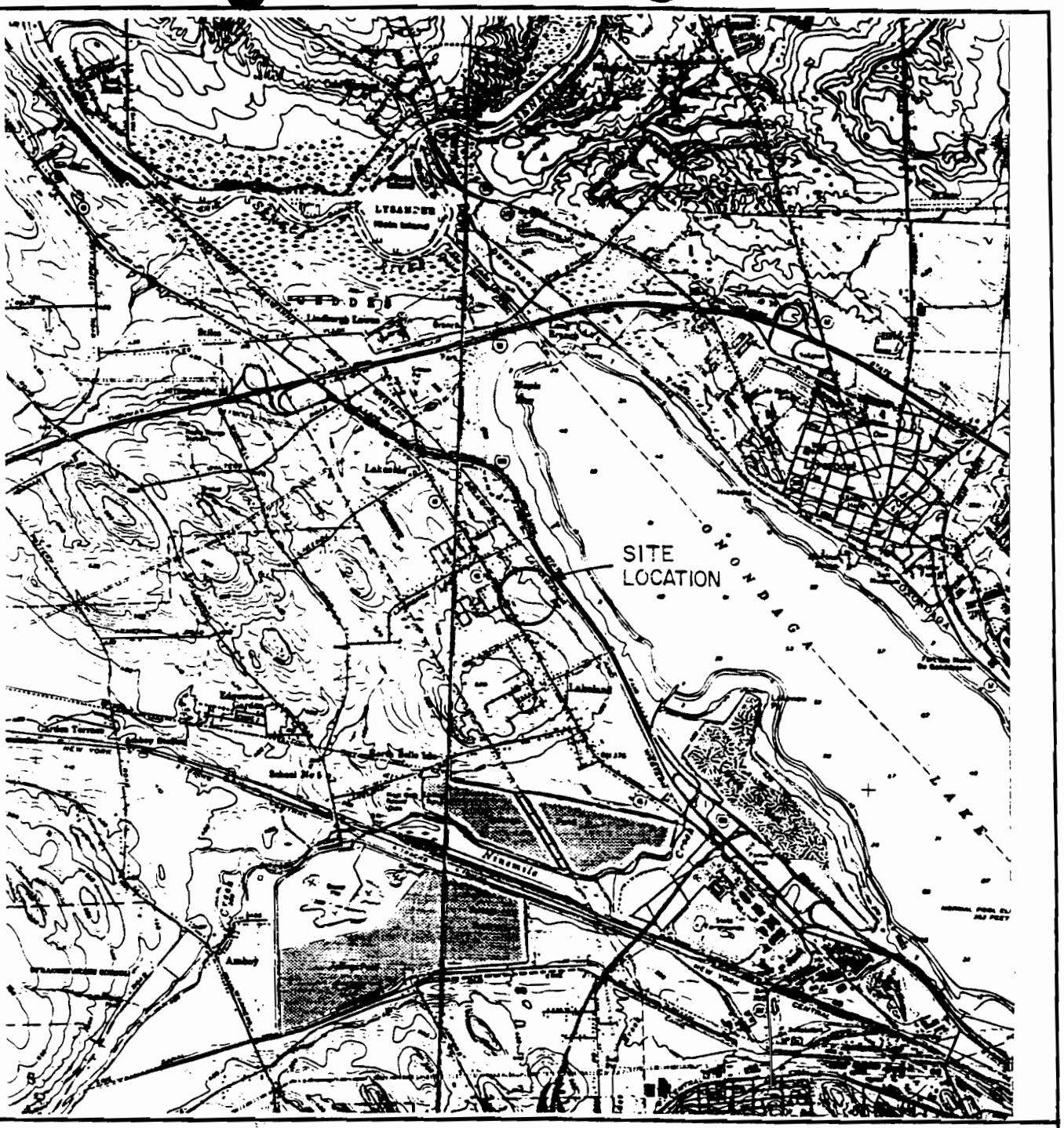
DETECTED INORGANIC CONSTITUENTS*
IN GROUND WATER
Analyzed August 1989

	NYS CLASS GA STANDARDS	MONITORING WELLS MW-5	MW-6	MW-7	MW-8	MW-8 DUPLICATE	MW-9	MW-10
Aluminum	NE	0.035 B	0.066 B	0.089 B	0.068 B	ND	0.184 B	0.181 B
Arsenic	0.025	ND	0.0239	ND	ND	ND	ND	ND
Barium	1	0.19 B	1.23	0.049 B	0.045 B	0.02 B	0.779	0.118 B
Cadmium	0.01	0.006	ND	ND	0.003 B	0.002 B	ND	ND
Calcium	NE	118	127	310	473	484	54.9	27.9
Chromium	NE	0.01	0.013	0.016	ND	0.014	0.007 B	0.005 B
Cobalt	NE	ND	0.007 B	ND	ND	ND	ND	ND
Copper	1	0.014 B	0.014 B	0.029	0.014 B	0.021 B	0.014 B	0.016 B
Iron	0.3	ND	25.7	ND	0.048 B	ND	6.72	0.202
Lead	0.025	ND	0.004	ND	ND	ND	ND	ND
Magnesium	NE	47.6	21	14.8	26.8	274	12.3	7.88
Manganese	0.3	0.007 B	0.112	0.013 B	0.071	0.071	0.085	0.049
Nickel	NE	ND	0.138	0.05	0.048	0.054	0.043	ND
Potassium	NE	1.35 B	1.52 B	163	10.6	11.4	ND	1.07 B
Sodium	NE	177	17	63.1	41.1	42.1	8.08	4.38 B
Vanadium	NE	ND	0.009 B	0.006 B	ND	ND	ND	ND
Zinc	5	0.092	0.043	0.031	0.062	0.056	0.075	0.039

NOTES: * - All other inorganic constituents analyzed were not detected.
Analytical inorganic values measured in mg/l (ppm).
NE - Not established.
ND - Not detectable.
B - Above instrument detection limit but below contract required detection limit.

Figures

FIGURE 1



MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SITE LOCATION MAP

0 4000 8000

SCALE IN FEET

ADAPTED FROM U.S.G.S. SYRACUSE WEST, NEW YORK QUADRANGLE

3213.004 1/90

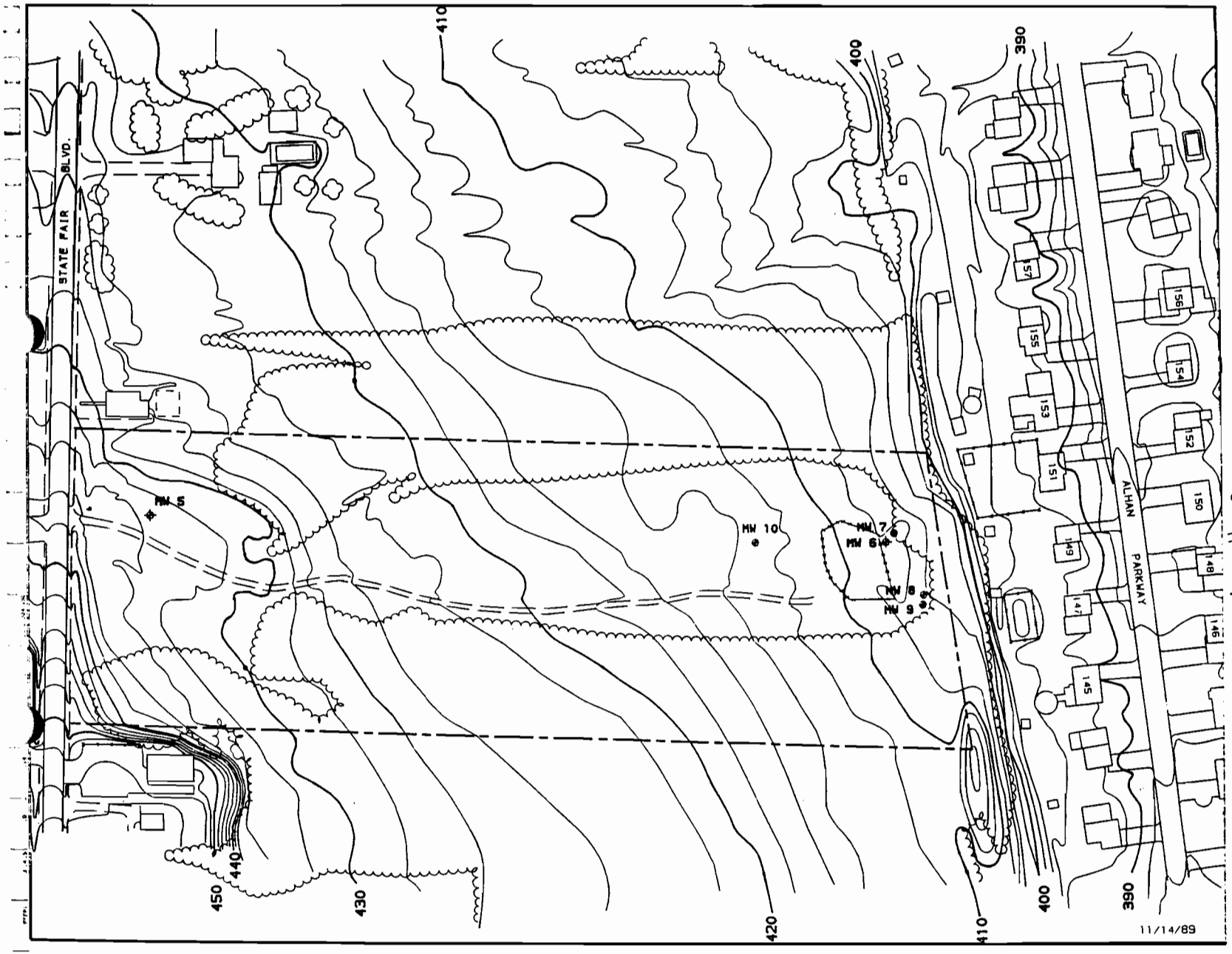
8.5X11

O'BRIEN & GERE

FIGURE 2a

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SITE TOPOGRAPHIC MAP



LEGEND

- TREE LINE
- ACCESS ROAD
- FORMER WASTE DISPOSAL AREA
- PROPERTY BOUNDARY
- 150 RESIDENCE
- MW 5 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 10 MONITORING WELL

0 100 200

SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.

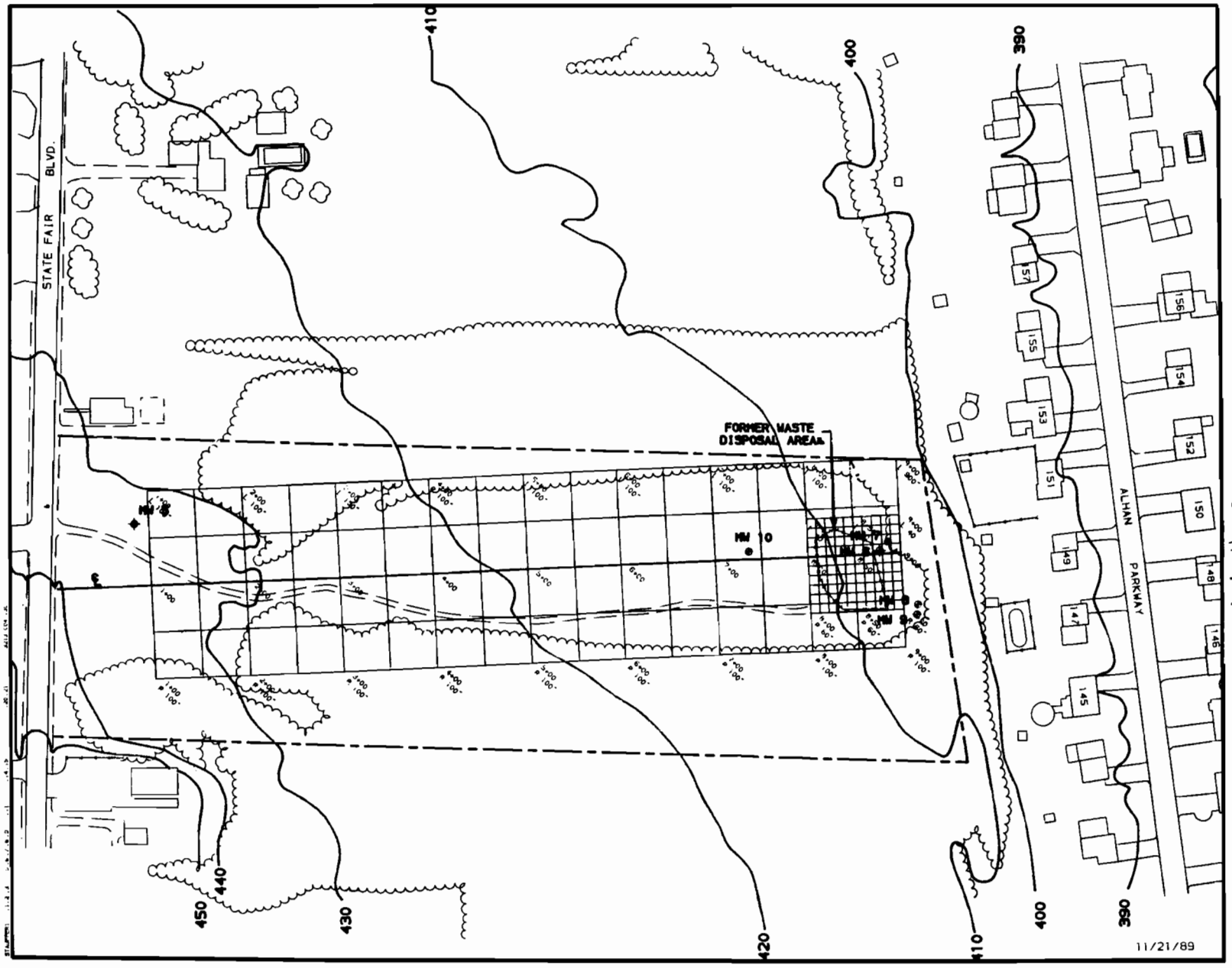


FIGURE 2b

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SITE MAP

LEGEND

- TREE LINE
- ACCESS ROAD
- PROPERTY BOUNDARY
- SURVEY GRID LINES AND COORDINATES
- MW 5 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 10 MONITORING WELL

0 100 200

SCALE IN FEET

O'BRIEN & GERE ENGINEERS, INC.

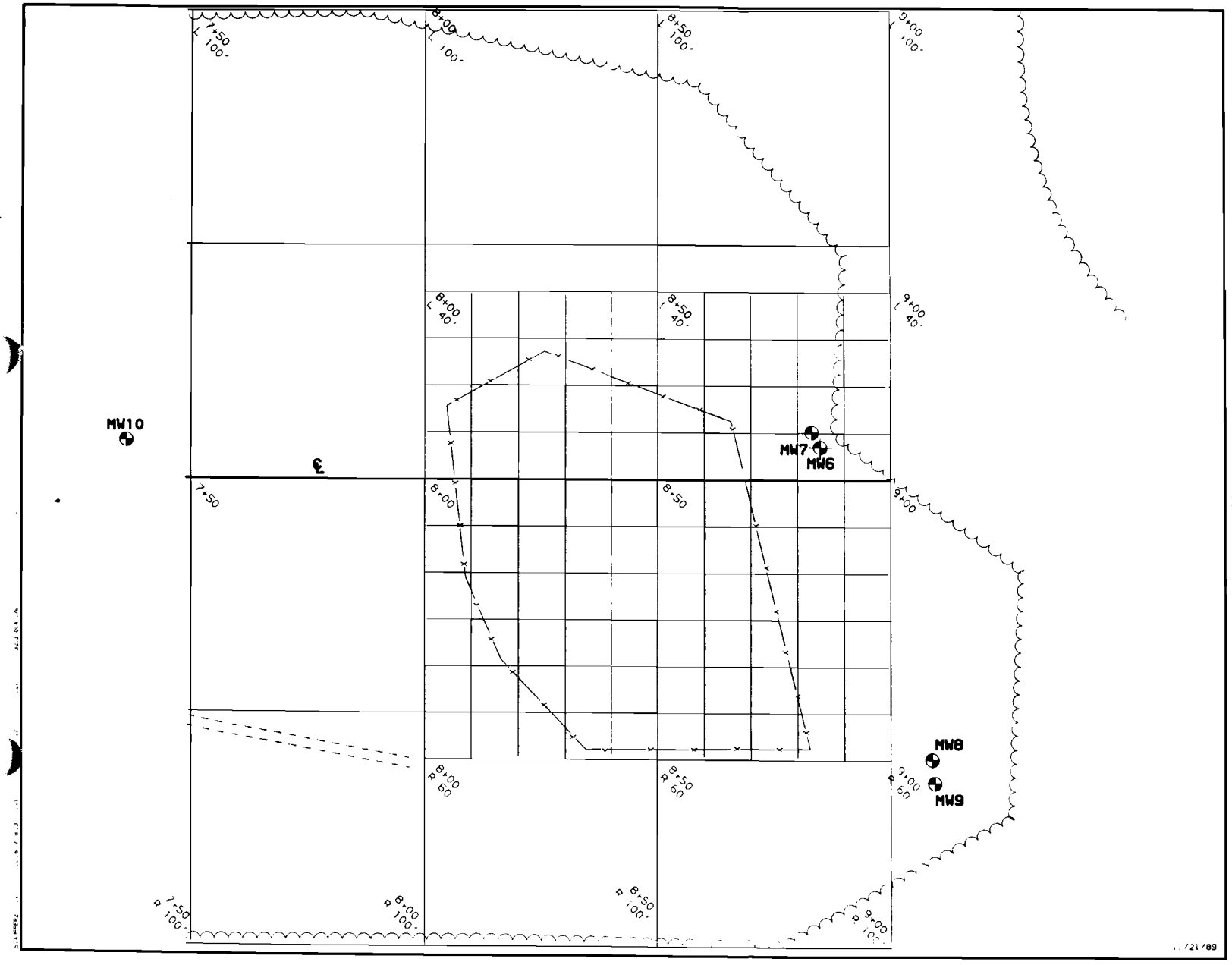


FIGURE 2c

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SITE MAP
WASTE DISPOSAL AREA

LEGEND

- TREE LINE
- ROADWAY
- FORMER WASTE DISPOSAL AREA
- SURVEY GRID LINES AND COORDINATES
- MW 6 — PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 8 — MONITORING WELL

0 20 40

SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.
Syracuse, New York

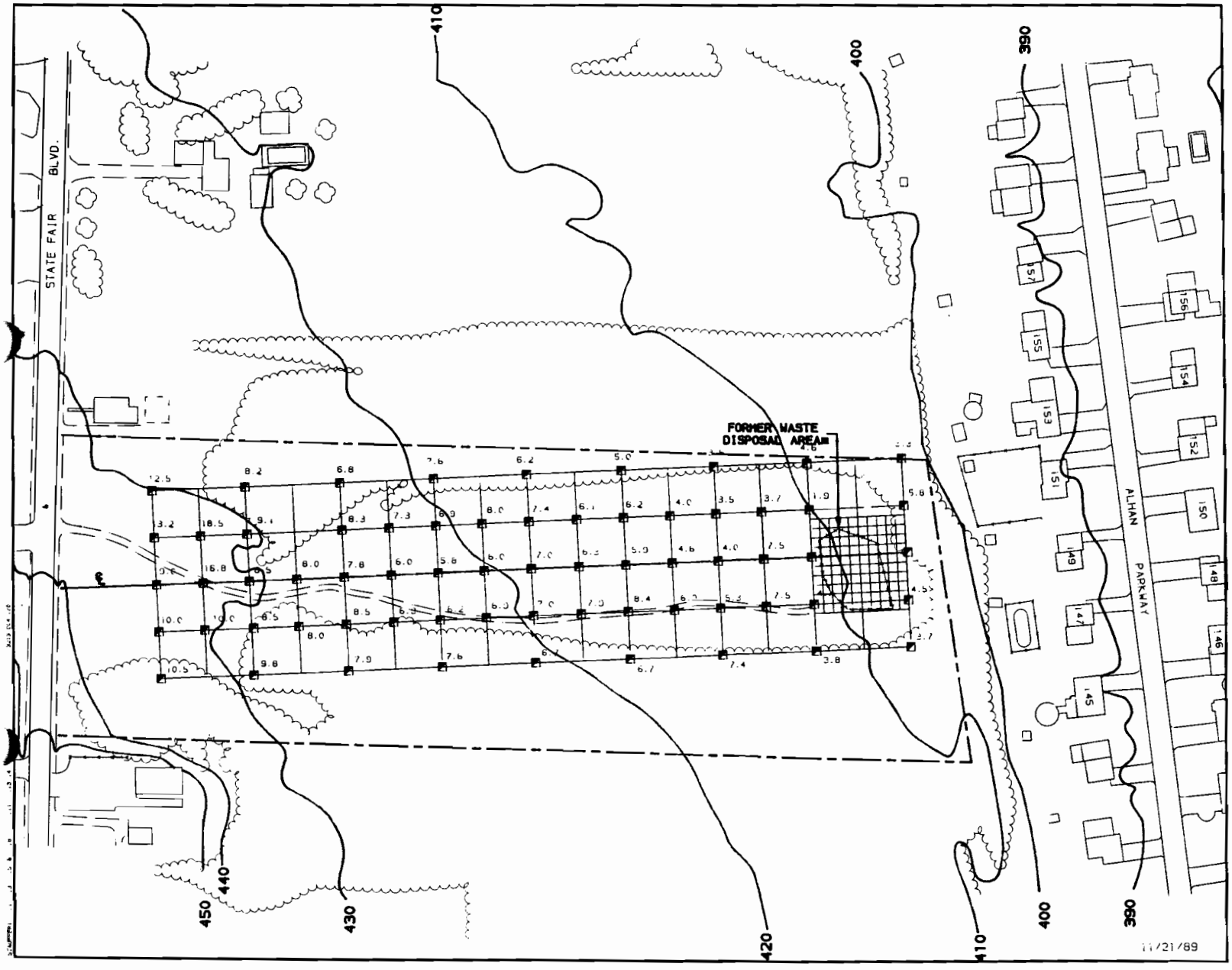


FIGURE 3

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SITE-WIDE
TERRAIN CONDUCTIVITY
SURVEY MAP
(QUADRATURE - PHASE MODE)

LEGEND

- TREE LINE
- ACCESS ROAD
- PROPERTY BOUNDARY
- SURVEY GRID LINES AND COORDINATES
- GEOPHYSIC DATA STATION AND DATA VALUE (mmhos/m)

*NOTE: VALUES COLLECTED IN FORMER WASTE DISPOSAL AREA INSET ILLUSTRATED IN DETAIL ON FIGURE 4.

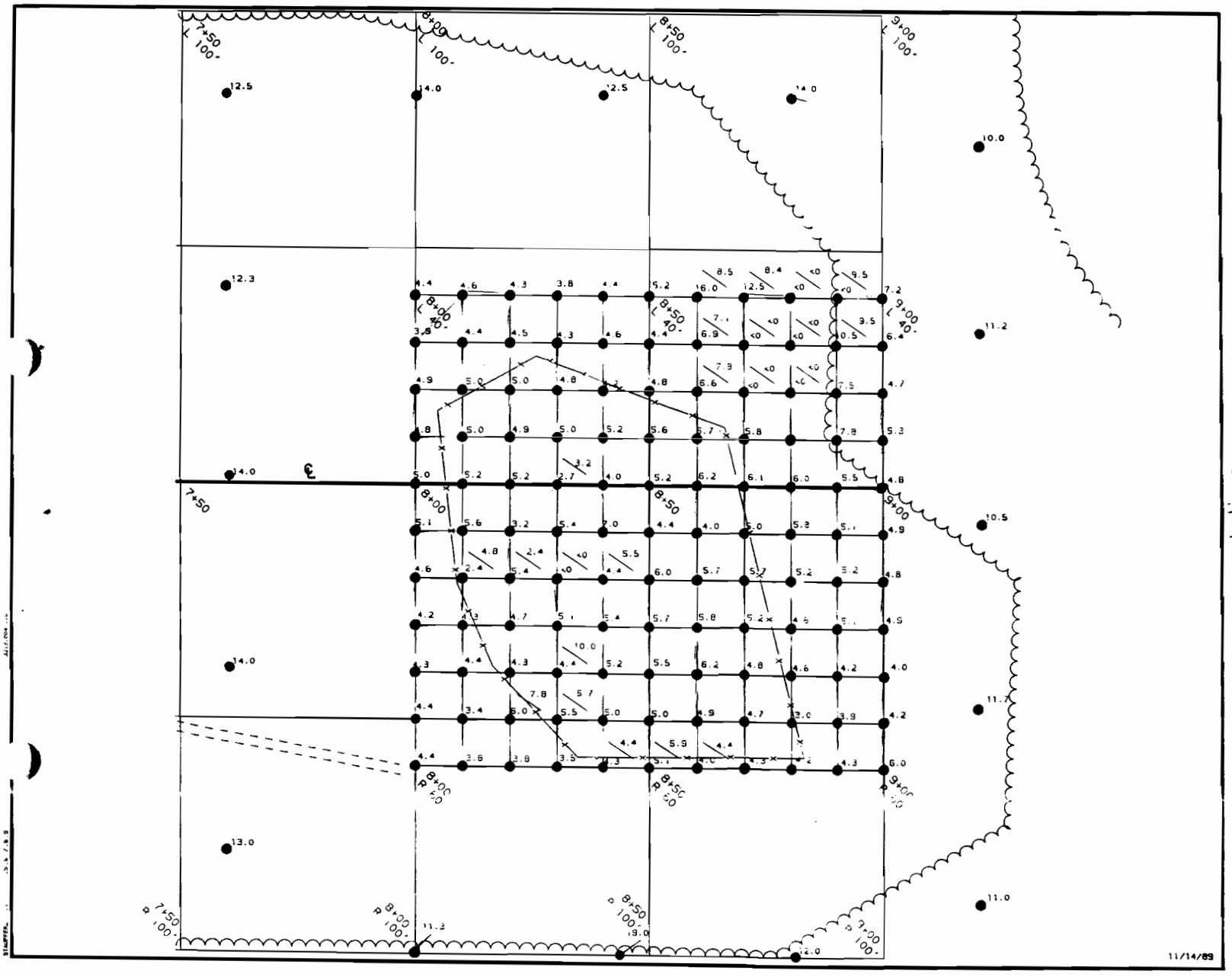
0 100 200
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.
Syracuse, New York

FIGURE 4

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

WASTE DISPOSAL AREA TERRAIN CONDUCTIVITY SURVEY MAP (QUADRATURE - PHASE MODE)



LEGEND

- TREE LINE
- ROADWAY
- FORMER WASTE DISPOSAL AREA
- SURVEY GRID LINES AND COORDINATES
- GEOPHYSIC DATA STATION AND DATA VALUE (mmhos/m)
- (2) DATA VALUES COLLECTE AT 90 DEGREE ANGLES

0 20 40

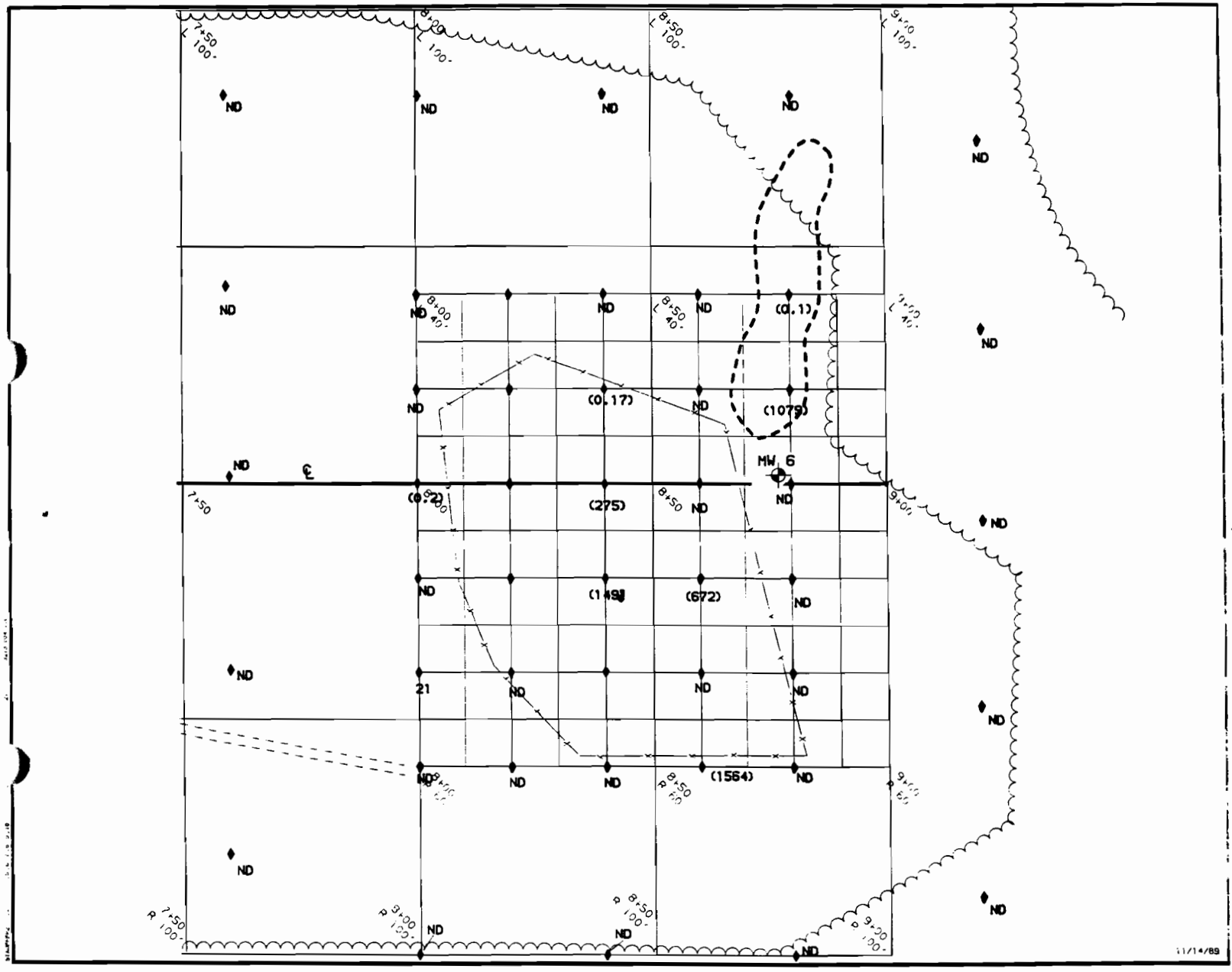
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.
Syracuse, New York

FIGURE 5

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SOIL VAPOR LOCATION MAP
(WASTE DISPOSAL AREA)



LEGEND

- TREE LINE
- ANOMALY AREA
- FORMER WASTE DISPOSAL AREA
- SURVEY GRID LINES AND COORDINATES
- SOIL GAS PROBE LOCATION
- (672) SOIL VAPOR CONCENTRATION OF XYLENE IN (ppm-v/v)
- ND NOT DETECTED
- MW 6 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)

0 20 40

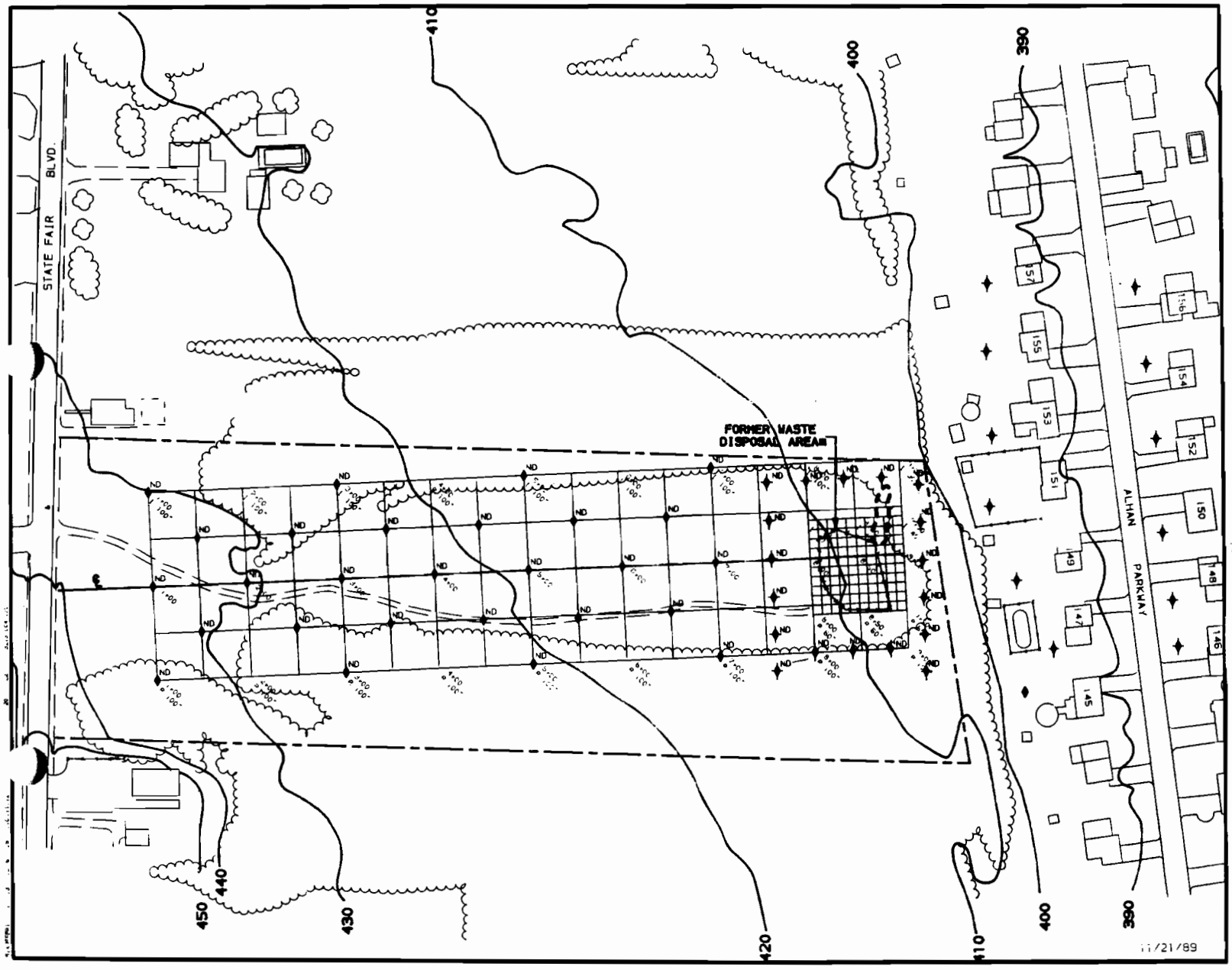
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.
Syracuse, New York

FIGURE 6

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SOIL GAS PROBE LOCATIONS
(SITE-WIDE AND OFF-SITE)



LEGEND

- TREE LINE
- ACCESS ROAD
- ANOMALY AREA
- PROPERTY BOUNDARY
- SURVEY GRID LINES AND COORDINATES
- SOIL GAS PROBE LOCATION HNU ANALYSIS
- SOIL GAS PROBE LOCATION G.C. ANALYSIS

*NOTE: G.C. DATA VALUES COLLECTED IN FORMER WASTE DISPOSAL INSET ILLUSTRATED IN DETAIL ON FIGURE 5.

0 100 200
SCALE IN FEET

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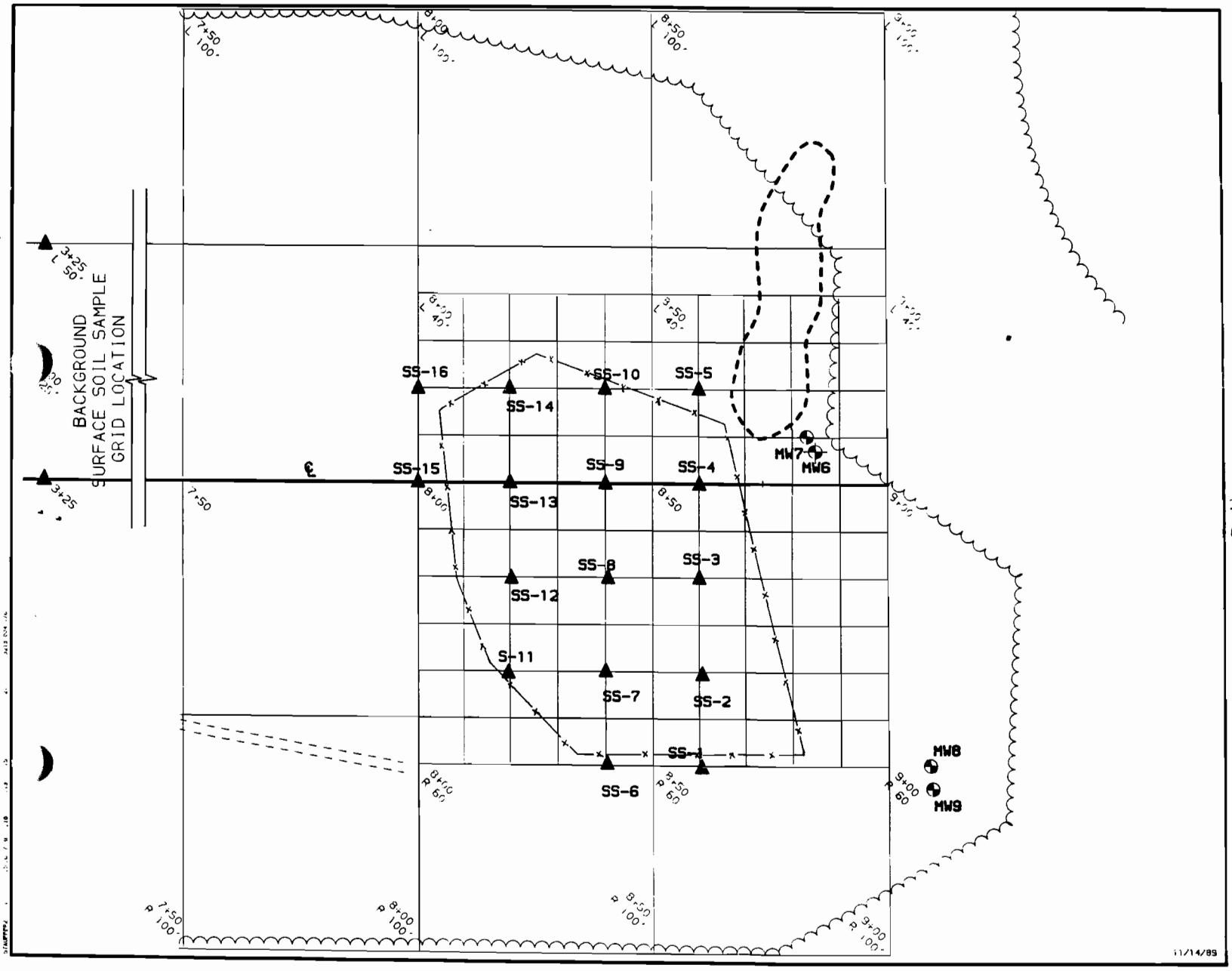


FIGURE 7

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SURFACE SOIL LOCATIONS

LEGEND

- TREE LINE
- ROADWAY
- ANOMALY AREA
- SURVEY GRID LINES AND COORDINATES
- SURFACE SOIL SAMPLE LOCATION
- MW 6 — PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 10 — MONITORING WELL

0 20 40

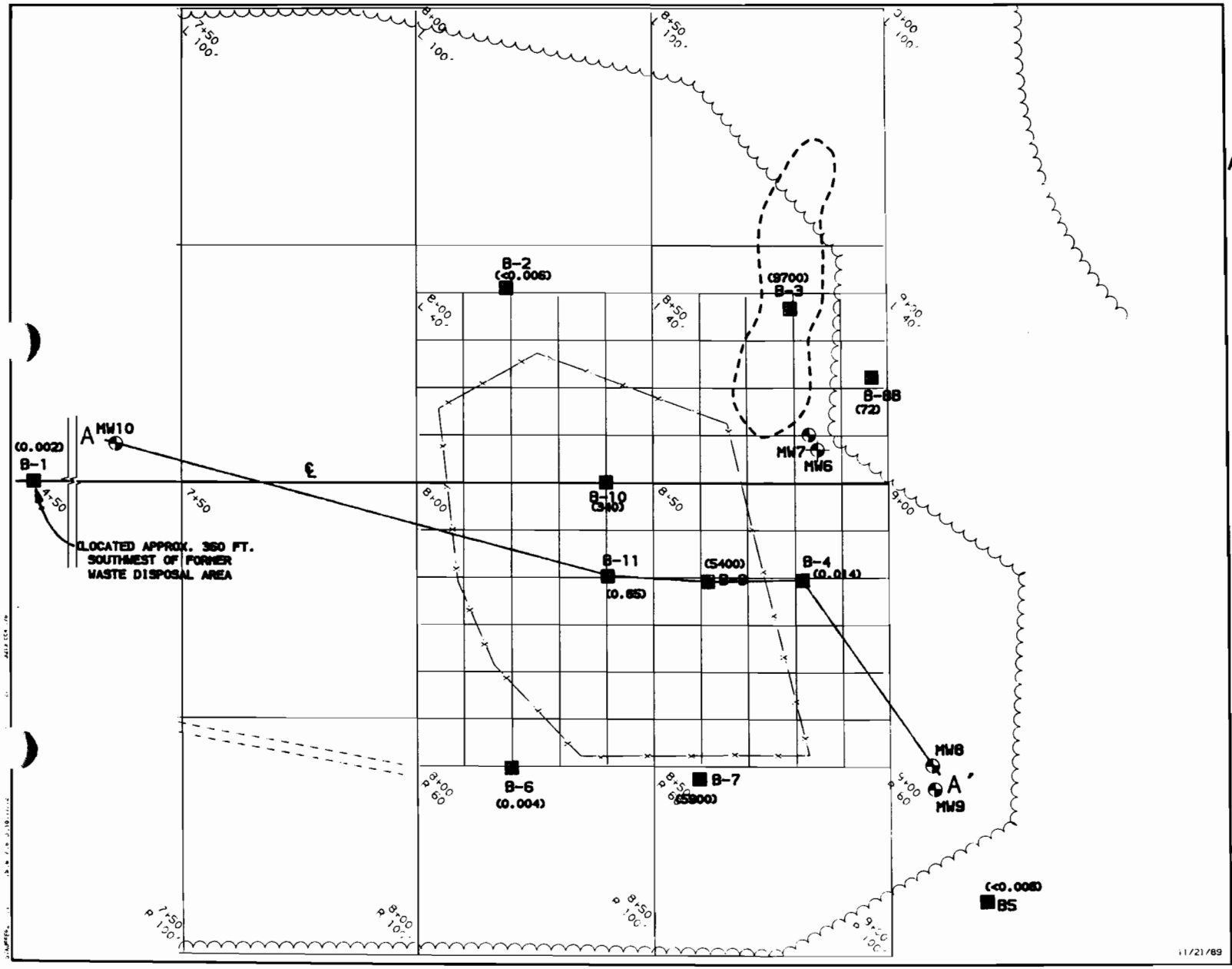
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.

FIGURE 8

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

SOIL BORING LOCATIONS
AND VOLATILE CONCENTRATION
(XYLENE)



LEGEND

- TREE LINE
- ROADWAY
- FORMER WASTE DISPOSAL AREA
- SURVEY GRID LINES AND COORDINATES
- (0.85) CONCENTRATION OF XYLENE DETECTED IN LABORATORY SOILS ANALYSIS
- SOIL BORING
- MW 6 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 8 MONITORING WELL
- A — A' GEOLOGIC CROSS SECTION
- ANOMALY AREA

0 20 40

SCALE IN FEET

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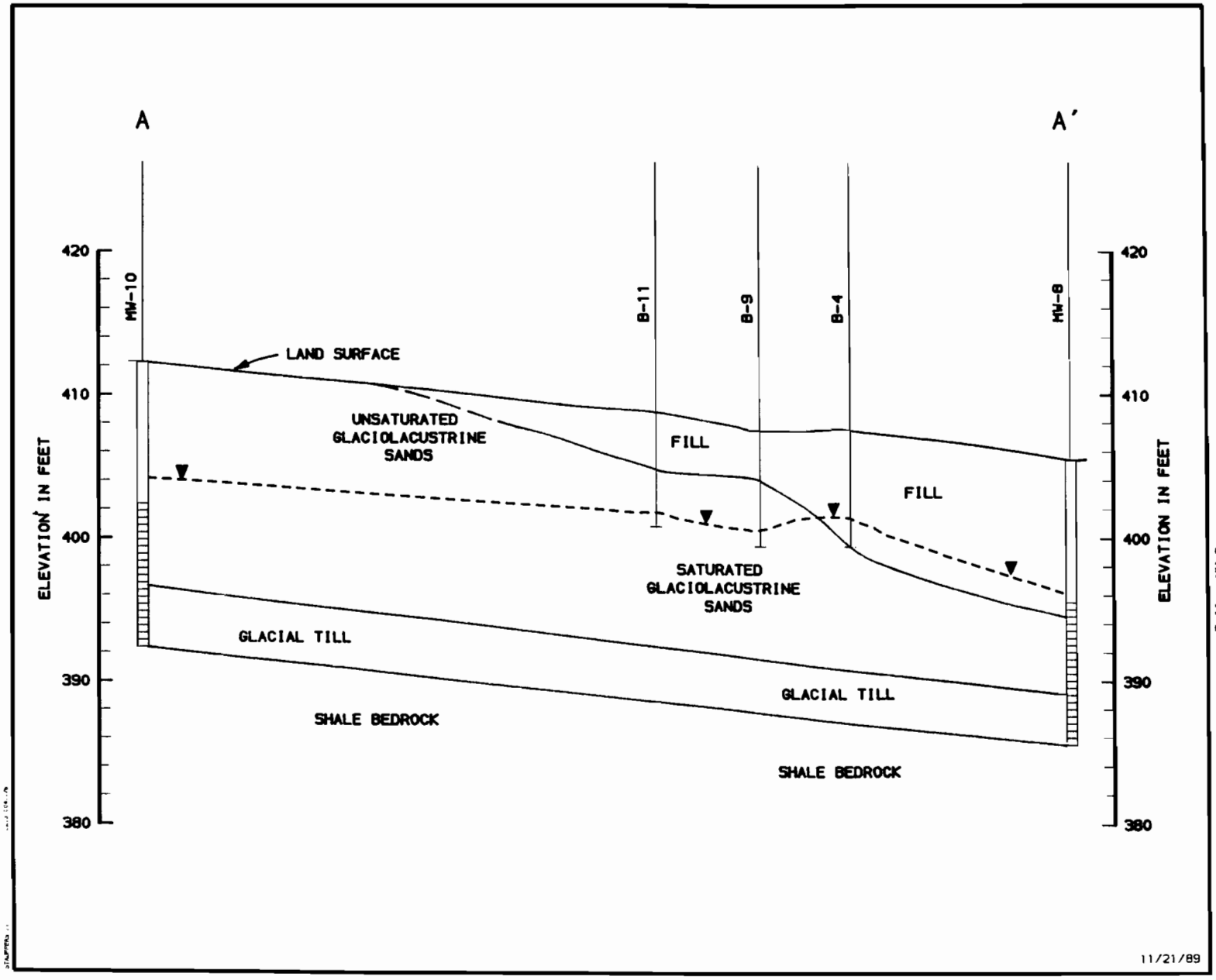
Syracuse, New York

FIGURE 9

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK



LEGEND

▼ WATER TABLE ELEVATION IN OVERBURDEN (AS DETERMINED DURING SAMPLING)

MW-8 MONITOR WELL LOCATION

B-11 SOIL BORING LOCATION

NOTE: VERTICAL EXAGGERATION IS 2.7/1.0

0 20 40
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.
Syracuse, New York

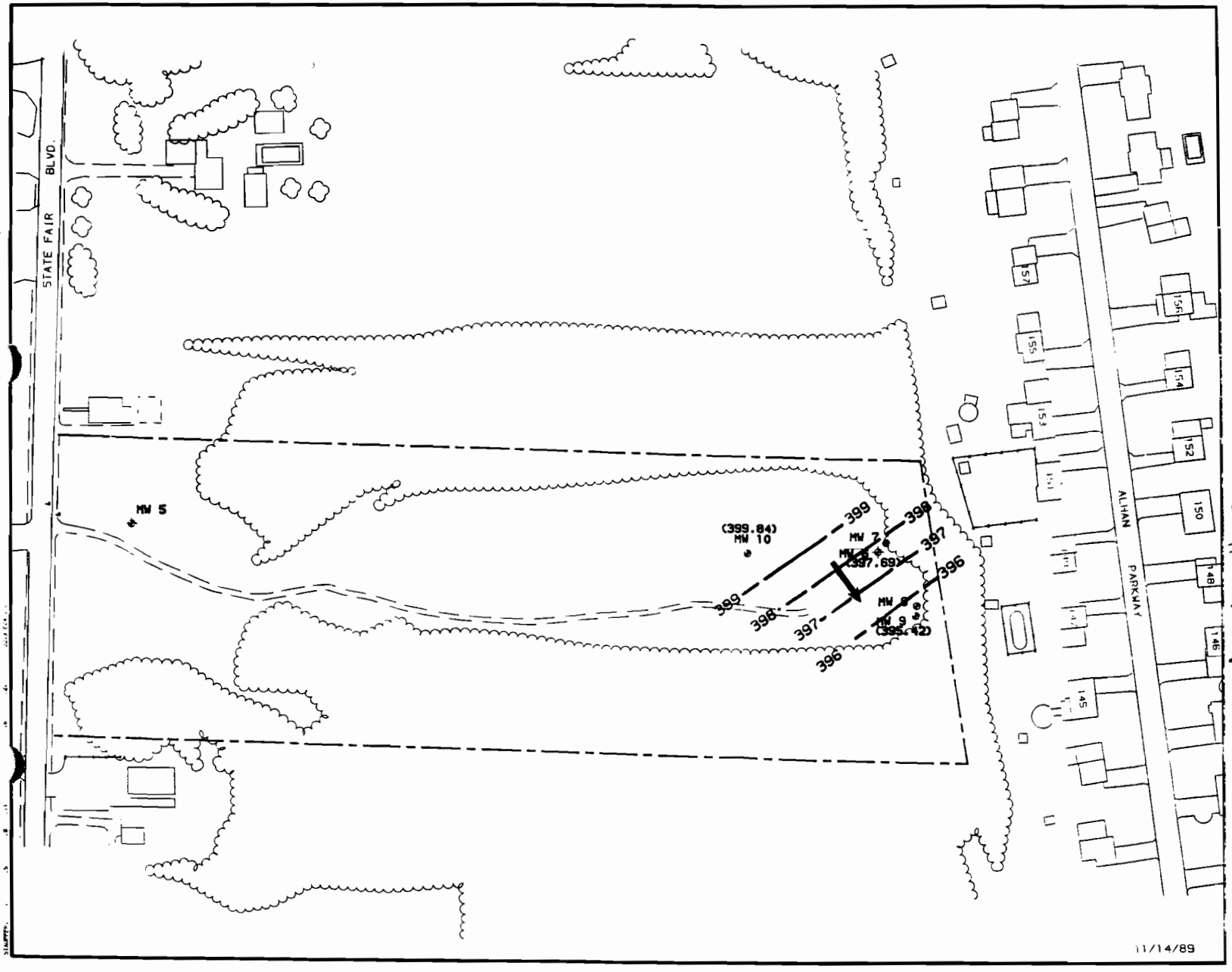


FIGURE 10

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

GROUND WATER ELEVATION MAP
(SHALLOW GROUND WATER
9/7/89)

LEGEND

- TREE LINE
- ACCESS ROAD
- FLOW DIRECTION
- PROPERTY BOUNDARY
- 396 SHALLOW GROUND WATER CONTOUR
- MW 5 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 10 MONITORING WELL

0 100 200

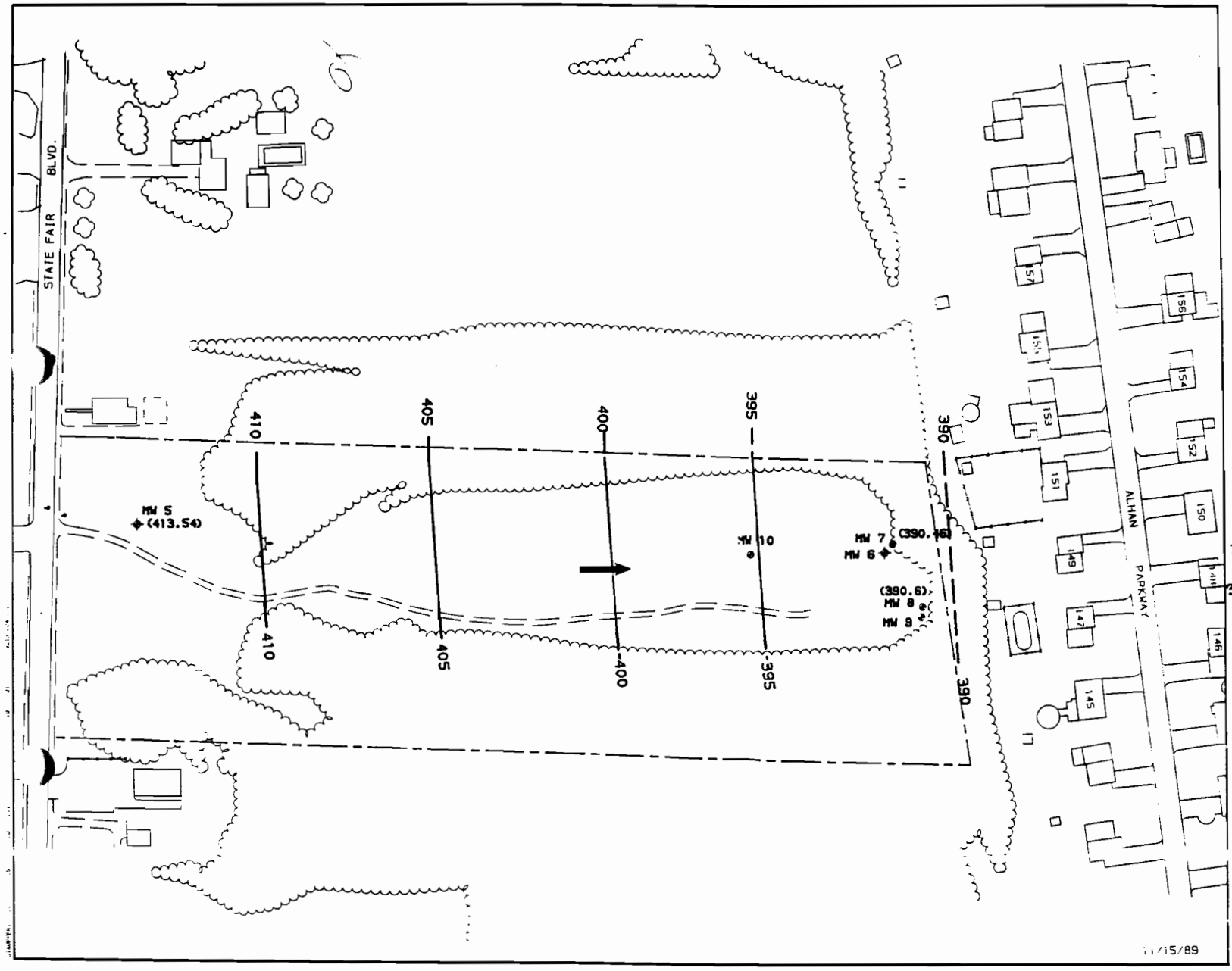
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.

FIGURE 11

MAESTRI SITE
904 STATE FAIR BLVD.
TOWN OF GEDDES, NEW YORK

GROUND WATER ELEVATION MAP
(BEDROCK 9/7/89)



LEGEND

- TREE LINE
- ACCESS ROAD
- 395 GROUND WATER CONTOUR
- PROPERTY BOUNDARY
- FLOW DIRECTION
- MW 5 PREVIOUSLY INSTALLED MONITORING WELL (MALCOM-PIRNIE 12/87)
- MW 10 MONITORING WELL

0 100 200
SCALE IN FEET

O'BRIEN & GERE
ENGINEERS, INC.

Appendices

APPENDIX A

SOIL GAS CALIBRATION ANALYSES

APPENDIX "A"

MAESTRI SITE - 904 STATE FAIR BLVD.
FIELD GAS CHROMATOGRAPH CALIBRATION DATA

STANDARDS - 7/13/89

NAME	ANAL #	CONC XYLENE (ppm)	GAIN	INJ. VOL.	NORM CONC (ppm)	AREA XYLENE (mV-s)
BLANK	5	0	50	100	0	0
BTX	7	1	50	50	0.5	1.7
BTX	8	1	50	25	0.25	0.789
BTX	24	20	50	10	2	6.4
BTX	25	1	50	25	0.25	0.71

Regression Output:

Constant	0.002307	Concentration = 0.31 * Area + 0.002
Std Err of Y Est	0.024104	
R Squared	0.999323	
No. of Observations	5	
Degrees of Freedom	3	
X Coefficient(s)	0.3113306	
Std Err of Coef.	0.0046781	

APPENDIX "A"

MAESTRI SITE - 904 STATE FAIR BLVD.
FIELD GAS CHROMATOGRAPH CALIBRATION DATA

STANDARDS - 7/14/89

NAME	ANAL #	CONC XYLENE (ppm)	GAIN	INJ. VOL.	NORM CONC (ppm)	AREA XYLENE (mV-s)
BLANK	3	0	50	100	0	0.068
BTX	9	1	50	25	0.25	0.686
BTX	10	1	50	50	0.5	1.4
BTX	11	20	10	25	1	2.6
BLANK	25	0	50	100	0	0
BTX	29	1	50	50	0.5	1.6
BTX	30	1	50	25	0.25	0.552
BTX	31	20	10	25	1	2.9
BTX	32	20	10	100	4	12.2
BTX	52	20	2	100	0.8	2.7
BTX	54	1	50	100	1	2.6
BTX	55	1	50	50	0.5	1.4

Regression Output:

Constant	0.034805	
Std Err of Y Est	0.070989	
R Squared	0.995972	Concentration = 0.326 * Area + 0.034
No. of Observations	12	
Degrees of Freedom	10	
X Coefficient(s)	0.3268421	
Std Err of Coef.	0.0065727	

APPENDIX "A"

MAESTRI SITE - 904 STATE FAIR BLVD.
FIELD GAS CHROMATOGRAPH CALIBRATION DATA

STANDARDS - 7/31/89

NAME	ANAL #	CONC XYLENE (ppm)	GAIN	INJ. VOL.	NORM CONC (ppm)	AREA XYLENE (mV-s)
BLANK	14	0	50	100	0	0
BTX	15	20	5	25	0.5	1.7
BTX	16	20	5	50	1	3.6
BTX	20	1	50	25	0.25	0.592
BTX	1	1	50	25	0.25	0.58
BTX	2	1	50	50	0.5	1
BTX	3	1	50	75	0.75	2
BTX	4	20	5	25	0.5	1.1
BTX	5	20	5	50	1	2.8

Regression Output:

Constant	0.107016	
Std Err of Y Est	0.100646	Concentration = 0.283 * Area + 0.1
R Squared	0.923800	
No. of Observations	9	
Degrees of Freedom	7	
X Coefficient(s)	0.3113306	
Std Err of Coef.	0.0046781	

APPENDIX B

BORING LOGS & WELL CONSTRUCTION DETAILS

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

Report of Boring No. MW-7
Sheet 1 of 2

Project Location: Maestri Site Investigation
Geddes, N.Y.
Client: Stauffer Management Company

SAMPLER
Type: 3" Split Spoon
Hammer: 140 lbs. Fall: 30 inches

Ground Water Depth ~7' Date 7/25/89
Depth Date
File No.: 3213.004.576

Boring Co.: Parratt-Wolff, Inc.
Foreman: Kevin White
OBG Geologist: Dennis Theoret

Boring Location: NE of main disposal area
Ground Elevation: 406.9 ft.
Dates: Started: 7/25/89 Ended: 8/3/89

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Remarks
0						Reddish brown, damp, stiff, SILT, some fine /medium sand, trace coarse sand, trace roots.						
	1	0-1.5'	3/6/7	1.5/0.9'	13						0.6	
						Auger cutting indicated fine/medium gravel layer 3 to 5 ft.						
5	2	5-6.5'	8/8/7	1.5/0.7'	15	- As above, trace clay, no roots.					0	
							~7'					
						Light brown, saturated, dense, fine/medium SAND, little silt, occasional interbeds of light brown, silty clay.						
10	3	10-11.5	9/17/20	1.5/1.5'	37						40	
15	4	15-15.2	50/.2	0.2'/0'	50+	Same as above, possible cobble layer.					7	
	5	15.5-16	50/.4	0.4/0.4'	50+	Same as above.						
20							21.0'					
	6	23-24.9	18/30/54-	2'/1.9'	84	Gray green, dry, non-calcareous, very weathered to relatively competent fissile SHALE with interbedded dark brown clayey silt.						
			50/.4'									
-	7	24.5-26	80/1.5'	1.5/1.5'	53							
25												
	8	26-27.1	24/53-	1.1/1.1'	78+	NOTE: 4" tricone drilling utilized 23 to 40 feet.						
			25/.1'									
	9	27.1-27.5	50/.4'	.4'/.4'	50+							
	10	25.7-	50/.2'	.2'/.2'	50+							
		27.7'										

1987.KJK
8/15/89

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. MW-7 Sheet 2 of 2
Project Location: Maestri Site Investigation Geddes, N.Y. Client: Stauffer Management Company	SAMPLER Type: 3" Split Spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth Date Depth Date File No.: 3213.004.576

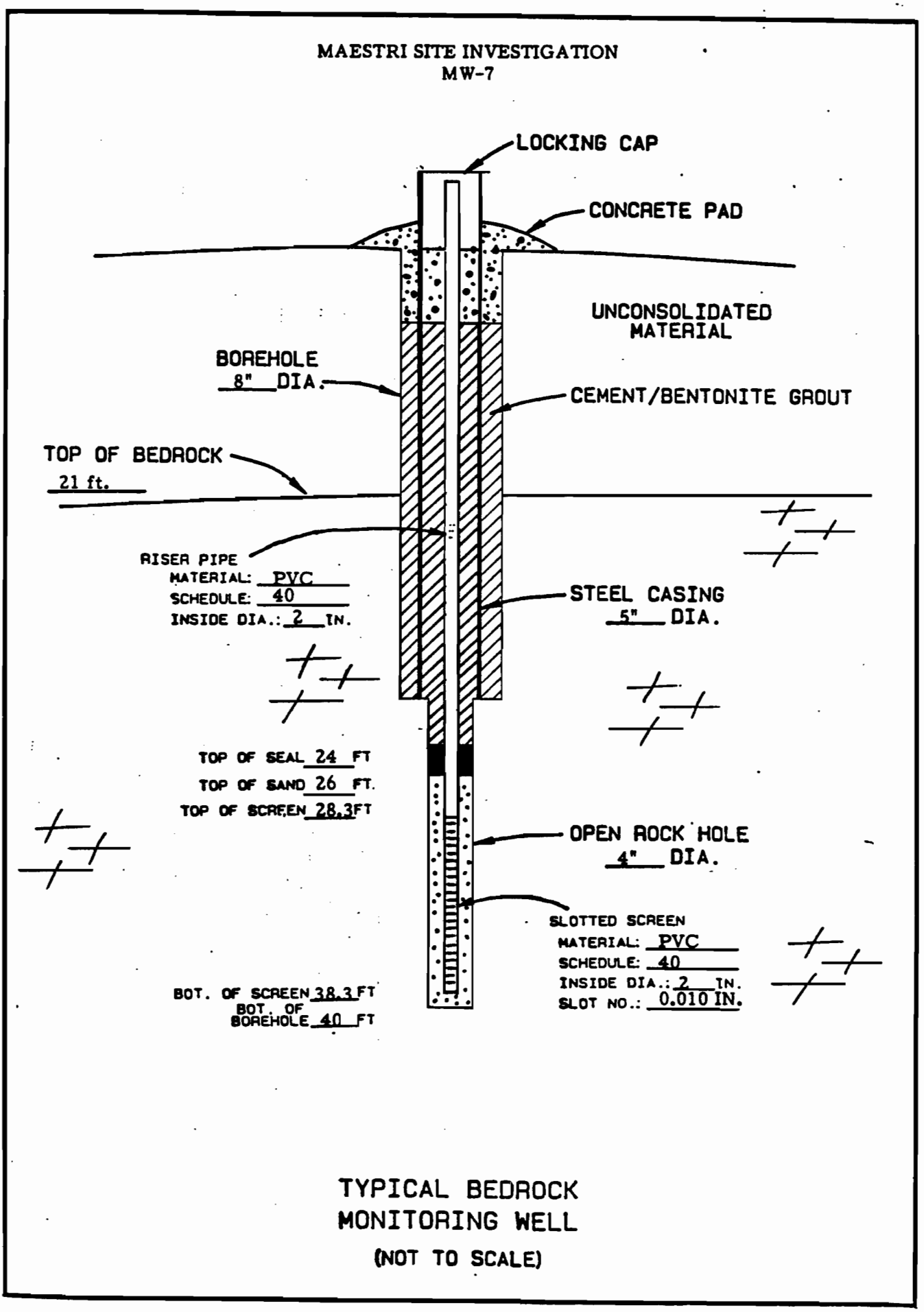
Boring Co.: Parratt-Wolff, Inc.
Foreman: Kevin White
OBG Geologist: Dennis Theoret

Boring Location: NE of main disposal area
Ground Elevation:
Dates: Started: 7/25/89 Ended: 8/3/89

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Remarks
35												
40						Bottom of boring at 40 ft.	40.0'					

2987.KJK
8/15/89

MAESTRI SITE INVESTIGATION
MW-7



TYPICAL BEDROCK
MONITORING WELL
(NOT TO SCALE)

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. MW-8 Sheet 1 of 2
Project Location: Maestri Site Investigation Geddes, N.Y. Client: Stauffer Management Company	SAMPLER Type: 3" Split Spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth 14.6' Date 8/1/89 Depth 15.8' Date 8/2/89 File No.: 3213.004.576
Boring Co.: Parratt-Wolff, Inc. Foreman: Kevin White OBG Geologist: Dennis Theoret	Boring Location: East of main disposal area Ground Elevation: 406.14 ft. Dates: Started: 7/26/89 Ended: 8/1/89	

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Remks
0	1	0-1.5'	3/4/9	1.5/0.9'	13	Reddish brown, damp, stiff, SILT, some clay trace fine/medium sand and fine/medium gravel, trace roots.					3.0	
							5.0'					
5	2	5-6.5'	1/2/1	1.5/0.9'	3	Light brown and yellowish brown, very moist soft, SILT, some fine/medium sand, little fine/medium gravel, trace clay.					3.0	
	3	7-7.2'	50/.2'	.2'/.2'	50+	-At 6 ft. grades to very dense, some fine/coarse gravel, little fine/medium sand.					300	
						NOTE: Very hard augering 6 to 11' interval.						
10	4	10-10.2	50/.2'	.2'/.2'	50+	Grades to reddish brown in color at 10 ft.					200	
							11.0'					
						Reddish brown, saturated, very dense, fine/medium SAND, trace silt.						
15	5	15-16.4	14/22-	1.4/1.4'	72+						110	
			50/.4'				16.5'					
						Brown, saturated, dense, coarse SAND and fine GRAVEL, some silty clay matrix.						
	6	18-20'	10/14/-	2'/2'	34						90	
			20/37				19.0'					
20	7	20-21.9	16/28-	2/1.9'	58	Reddish brown, saturated, dense, medium SAND with occasional rust and yellowish colored silt lenses.					1.0	
			30-50/.4				20.0'					
		21.9-	NX CORE	5'/3'	—	Gray green, dry, non-calcareous, very weathered to relatively competent fissile SHALE with interbedded dark brown clayey silt.						
		26.9'										
25						NOTE: 4" tricone drilling utilized 21.9 to 38.3 ft.						
30												

MMB. KJK
8/15/89

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. MW-8 Sheet 2 of 2
Project Location: Maestri Site Investigation Geddes, N.Y. Client: Stauffer Management Company	SAMPLER Type: 3" Split Spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth 14.6' Date 8/1/89 Depth 15.8' Date 8/2/89 File No.: 3213.004.576

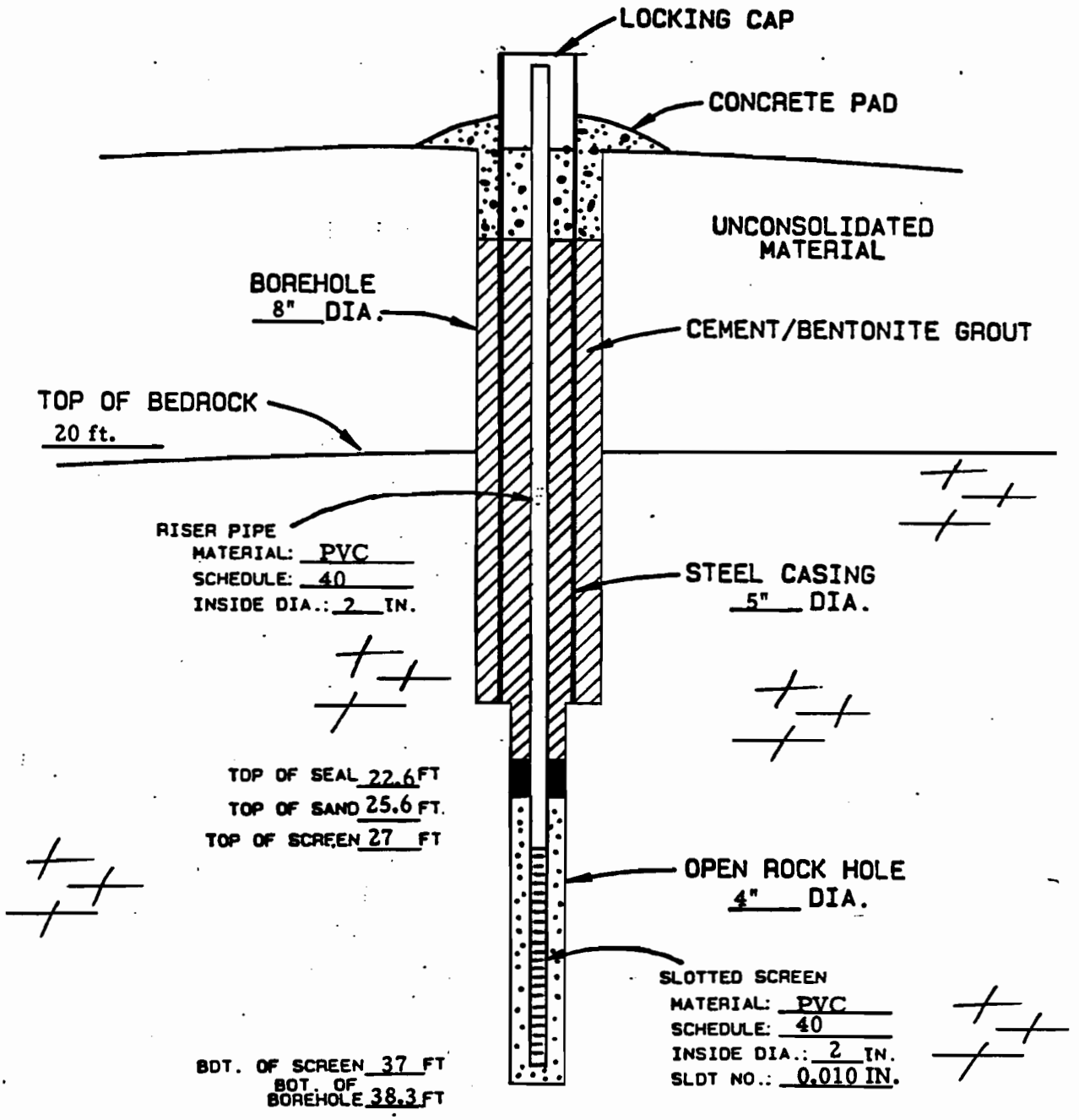
Boring Co.: Parratt-Wolff, Inc.
Foreman: Kevin White
OBG Geologist: Dennis Theoret

Boring Location: East of main disposal area
Ground Elevation:
Dates: Started: 7/26/89 Ended: 8/1/89

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Rmks*
35												
							38.3'					
						Bottom of boring at 38.3 ft.						
40												

2948.KJK
8/15/89

MAESTRI SITE INVESTIGATION
MW-8



TYPICAL BEDROCK
MONITORING WELL

(NOT TO SCALE)

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. MW-9 Sheet 1 of 1
Project Location: Maestri Site Investigation Geddes, N.Y. Client: Stauffer Management Company	SAMPLER Type: 3" Split Spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth 9.45' Date 7/31/89 Depth Date File No.: 3213.004.576

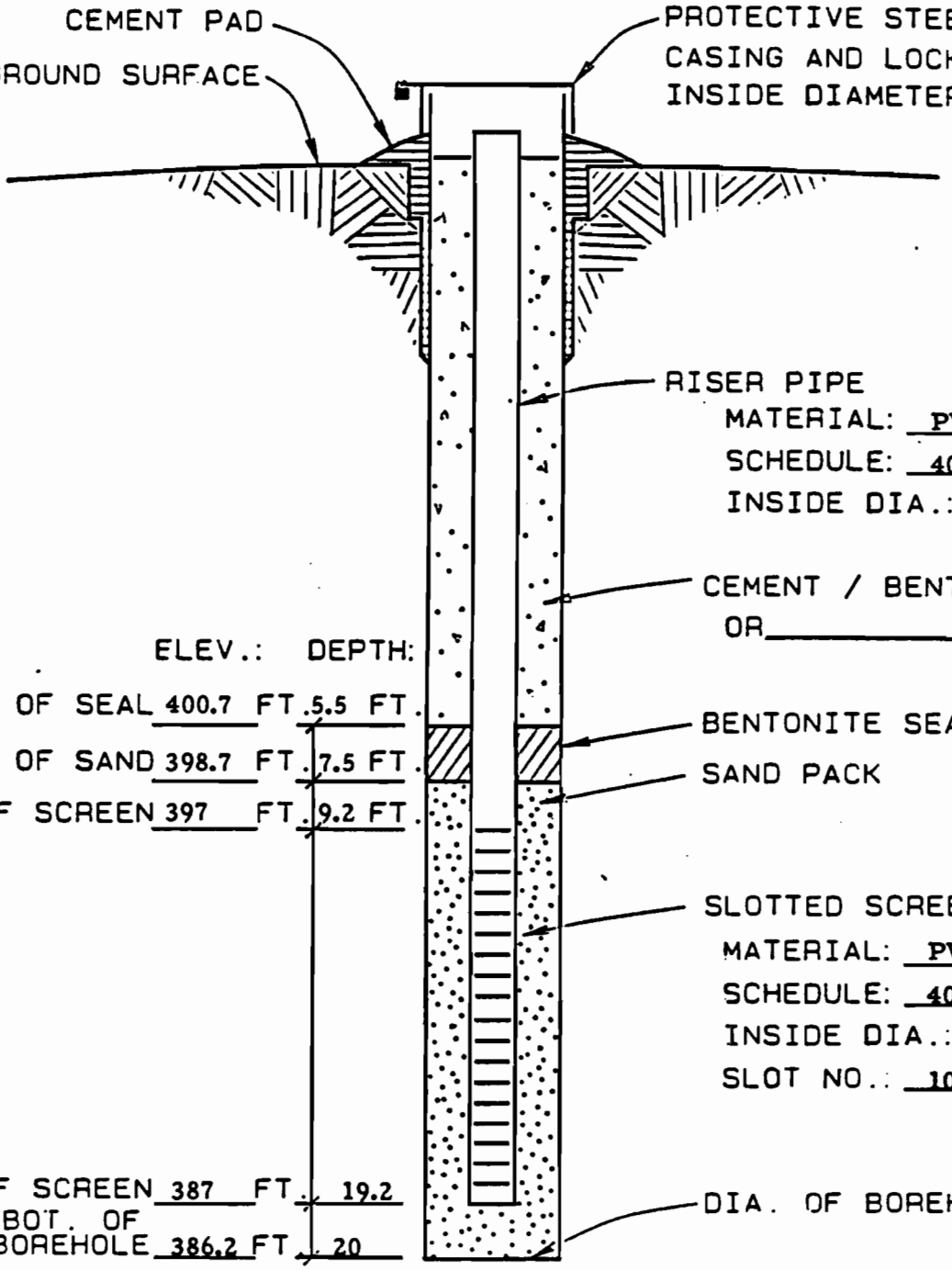
Boring Co.: Parratt-Wolff, Inc.
Foreman: Kevin White
OBG Geologist: Dennis Theoret

Boring Location: East of main disposal area
Ground Elevation: 406.2 ft.
Dates: Started: 7/27/89 Ended: 7/27/89

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Remarks
0						Augered to 20 ft. without sampling. See boring log MW-8 for descriptions.						
5						Fine to coarse gravel layer 7 to 12.5 ft.						
10												
15						Cobble layer 18 to 20 ft.						
20						Bottom of boring at 20 ft.	20.0'					

MW9.KJK
8/15/89

MAESTRI SITE INVESTIGATION
MW-9



TYPICAL OVERBURDEN MONITORING WELL

N.T.S.

O'BRIEN & GERE

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. MW-10 Sheet 1 of 1
Project Location: Maestri Site Investigation Geddes, N.Y. Client: Stauffer Management Company	SAMPLER Type: 3" Split Spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth 6.5' Date 7/24/89 Depth 7.9' Date 7/31/89 File No.: 3213.004.576

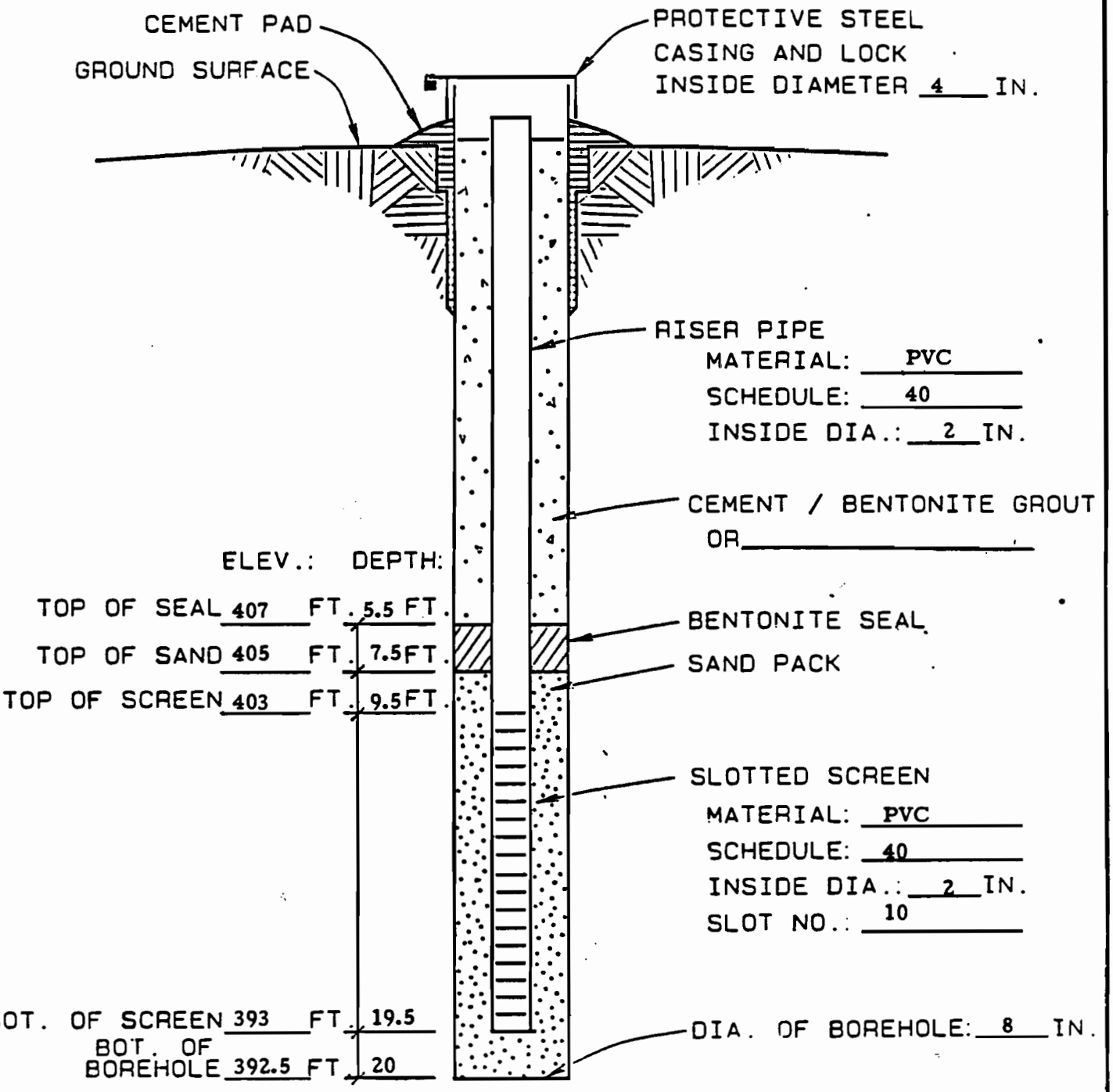
Boring Co.: Parratt-Wolff, Inc.
Foreman: Kevin White
OBG Geologist: Dennis Theoret

Boring Location: South West of main disposal area
Ground Elevation: 412.5 ft.
Dates: Started: 7/24/89 Ended: 7/25/89

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Field Testing pH	Field Testing Sp Cond	Field Testing HNU	Rmks
0	1	0-1.5'	2/3/7	1.5/1.0'	10	Light brown, damp, medium dense, fine/medium SAND, some silt, trace roots.					0	
5	2	5-6.5'	6/4/6	1.5/1.1'	10	- As above, no roots, very moist. Auger cuttings saturated at approx. 6.5 ft.					1.2	
10	3	10-11.5	3/8/13	1.5/1.3'	21	- As above, saturated.					0.2	
15	4	15-16.5	21/29/33	1.5/1.4'	62		15.8'				0	
						Light brown, very moist, very dense, fine/medium gravel, little fine/coarse sand, little silt, trace clay. Matrix is clay, silt and fine sand.						
20	5	20-20.2	50/.2'	.2'/.2'	50+	Gray green and dark gray, non-calcareous, weathered fissile SHALE.	20.0'				0	
						Bottom of boring at 20 ft.	20.4'					

MW10.KJK
8/15/89

MAESTRI SITE INVESTIGATION
MW-10



TYPICAL OVERBURDEN MONITORING WELL

N.T.S.

O'BRIEN & GERE

APPENDIX C

GROUND WATER SAMPLING FIELD LOGS

GROUND WATER SAMPLING FIELD LOG

Sample Location MASTRI Well No. MW-5

Sampled By JAMES A. MOORE Date 8/23/89 Time 10:15 AM

Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 40 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 20.07 ft. Water table elevation: ____ ft.

Length of water column (LWC) 19.93 ft.

Volume of water in well:

(2") diameter wells = 0.163 x (LWC) = 3.24 gallons 9.7

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 10.0 gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color MILKY Odor NONE Turbidity MED

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 1500

F. pH 7.3

G. TEMPERATURE 10°C

H. WELL SAMPLING NOTES:

GROUND WATER SAMPLING FIELD LOG

Sample Location MAESTRI Well No. MW-6

Sampled By JAMES A. MOORE Date 8/23/89 Time 2:45 PM

Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 20.5 15 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 10.73 ft. Water table elevation: ____ ft.

Length of water column (LWC) 4.27 ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = .70 gallons 2.1

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor SWEET Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 12.5 gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color TAN Odor SWEET Turbidity MED

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 760

F. pH 6.9

G. TEMPERATURE 10.00

H. WELL SAMPLING NOTES:

GROUND WATER SAMPLING FIELD LOG

Sample Location MAESTRI Well No. MW-7

Sampled By JAMES A. MOORE Date 8/23/89 Time 2:00 PM

Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 30 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 18.13 ft. Water table elevation: ____ ft.

Length of water column (LWC) 21.87 ft.

Volume of water in well:

(2") diameter wells = 0.163 x (LWC) = 3.6 gallons 10.7

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 11.0 gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color MILKY Odor NONE Turbidity MED.

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 1980

F. pH 10.4

G. TEMPERATURE 16°C

H. WELL SAMPLING NOTES:

GR' 'D WATER SAMPLING FIELD LOG

Sample Location MAESTRI Well No. MW-8
Sampled By JAMES A. MOORE Date 8/23/89 Time 12:45 PM
Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 40 ft. Well elevation: (top of casing) ____ ft.
Depth to water table: (below top of casing) 16.82 ft. Water table elevation: ____ ft.
Length of water column (LWC) 23.18 ft.
Volume of water in well:
(2") diameter wells = 0.163 x (LWC) = 3.78 gallons 11.3
4" diameter wells = 0.653 X (LWC) = ____ gallons
6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor NONE Turbidity LOW
Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 12.0 gallons.
Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color MILKY Odor NONE Turbidity MED
Was an oil film or layer apparent? NO

E. CONDUCTIVITY 1680

F. pH 7.9

G. TEMPERATURE 10°C

H. WELL SAMPLING NOTES:

GROUND WATER SAMPLING FIELD LOG

Sample Location MAESTRI Well No. MW-9

Sampled By JAMES A MOORE Date 8/23/89 Time 3:15 PM

Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 15 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 11.37 ft. Water table elevation: ____ ft.

Length of water column (LWC) 3.63 ft.

Volume of water in well:

(2") diameter wells = 0.163 x (LWC) = .59 gallons 4.8

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor SWEET Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 120 gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color BROWN Odor SWEET Turbidity HIGH+

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 660

F. pH 7.1

G. TEMPERATURE 16°C

H. WELL SAMPLING NOTES:

GROUND WATER SAMPLING FIELD LOG

Sample Location MAESTRI Well No. MW-10

Sampled By JAMES A. MOORE Date 8/23/99 Time 11:00AM

Weather OVERCAST Sampled with Bailer ✓ Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 20 15 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 12.65 ft. Water table elevation: ____ ft.

Length of water column (LWC) 2.35 ft.

Volume of water in well:

(2") diameter wells = 0.163 x (LWC) = .38 gallons 1.15

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color CLEAR Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 12.0 gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color TAN/BROWN Odor NONE Turbidity HIGH

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 400

F. pH 7.5

G. TEMPERATURE 10°C

H. WELL SAMPLING NOTES:

APPENDIX D

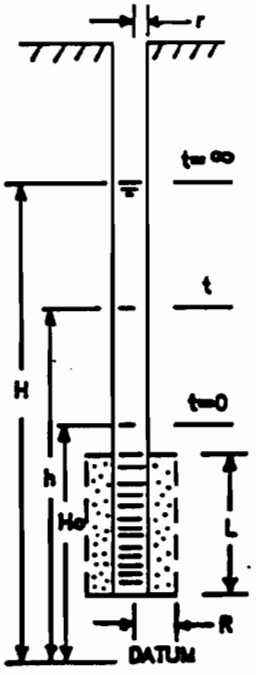
HYDRAULIC CONDUCTIVITY TEST DATA

O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-5
DATE 10/21/89

LOCATION Town of Geddes, NY
ELEVATION _____



STATIC HEAD (H) 18.67'

PIPE RADIUS (r) 0.083'

SCREEN RADIUS (R) 0.17'

SCREEN LENGTH (L) 15'

INITIAL HEAD (Ho) 24.31'

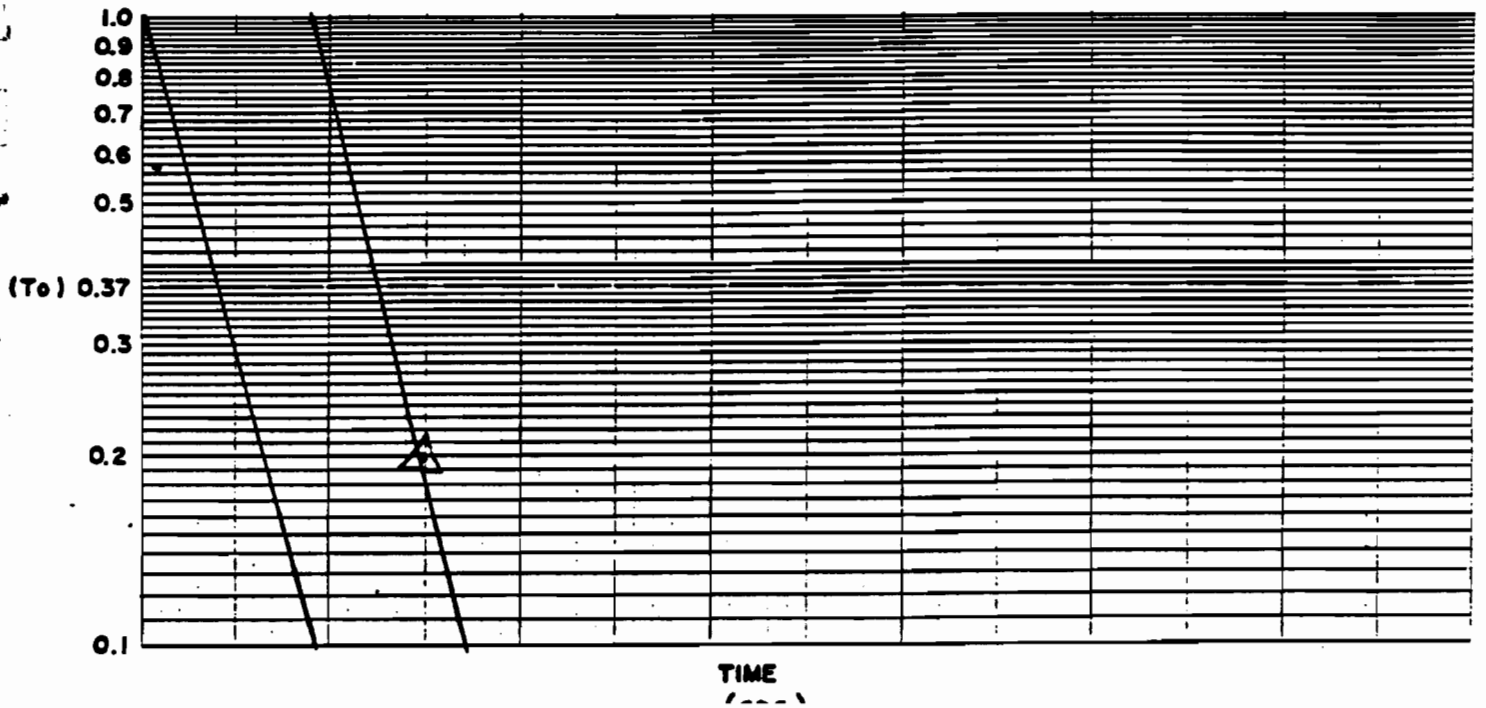
HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln (15/.17)}{2(15)(4)}$$

$= 2.57 \times 10^{-4}$ ft/s $= 7.84 \times 10^{-3}$ cm/s

	RECOVERY		SLUG	
TIME	h	$\frac{H-h}{H-Ho}$	h	$\frac{H-h}{H-Ho}$
0			24.31	1
15 sec			18.79	.02
25 sec			18.69	.004
45 sec			18.67	0

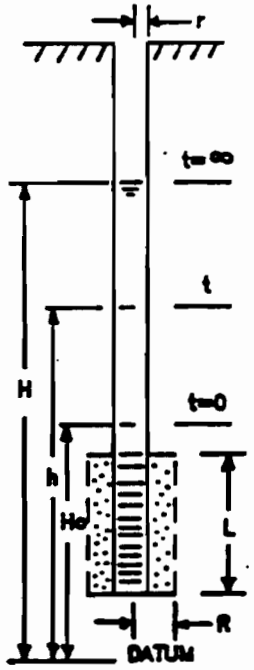


O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-6
DATE 8/11/89

LOCATION Town of Geddes, NY
ELEVATION



STATIC HEAD (H) 12.59'

PIPE RADIUS (r) .083'

SCREEN RADIUS (R) 0.33'

SCREEN LENGTH (L) 15'

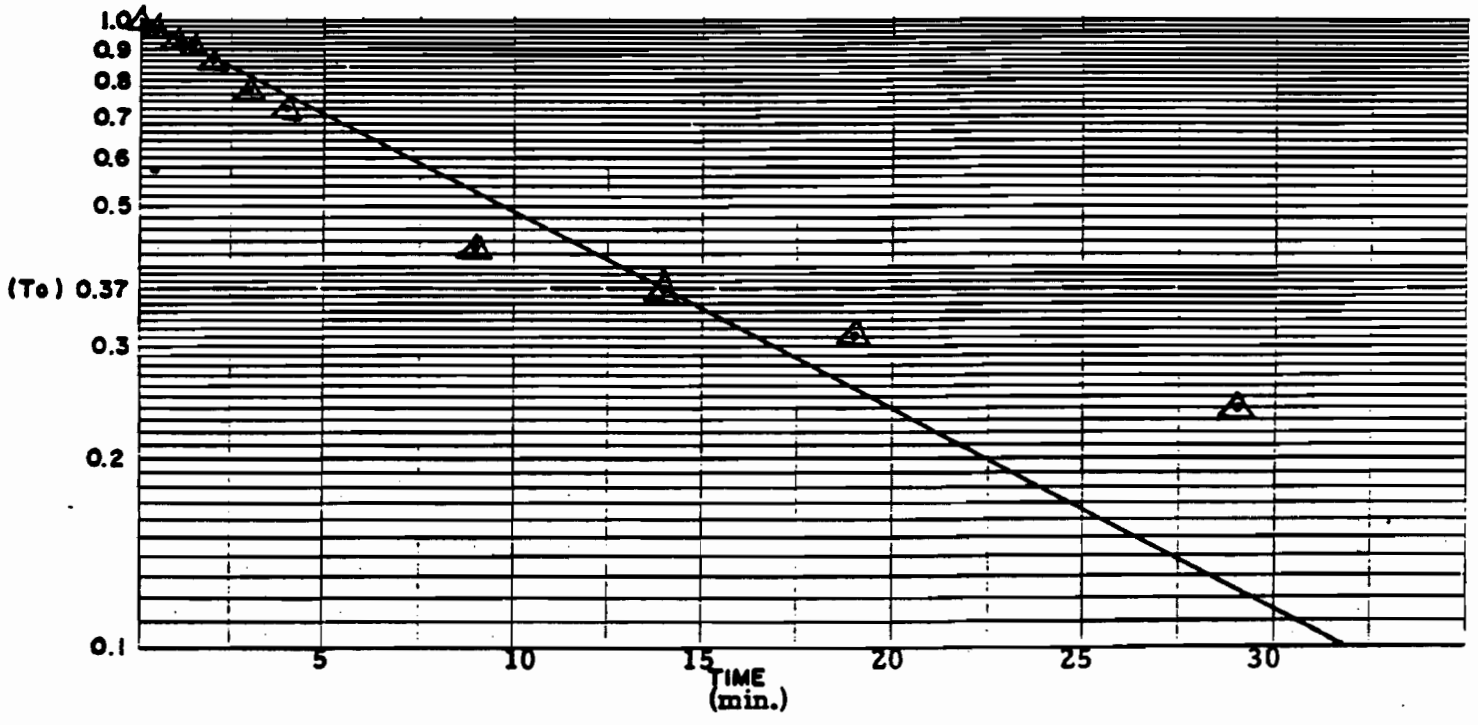
INITIAL HEAD (Ho) 9.41'

HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln(15/.33')}{2(15)(840)} = 1.04 \times 10^{-6} \text{ ft/s} = 3.18 \times 10^{-5} \text{ cm/s}$$

	RECOVERY		SLUG	
TIME	h	$\frac{H-h}{H-Ho}$	h	$\frac{H-h}{H-Ho}$
0	9.41	1		
0.5m	9.46	.98		
1m	9.61	.94		
1.5m	9.66	.92		
2.0m	9.86	.86		
3.0m	10.14	.77		
4.0m	10.31	.72		
9.0m	11.21	.43		
14.0m	11.42	.37		
19.0m	11.61	.31		
29.0m	11.83	.24		
39.0m	11.95	.20		

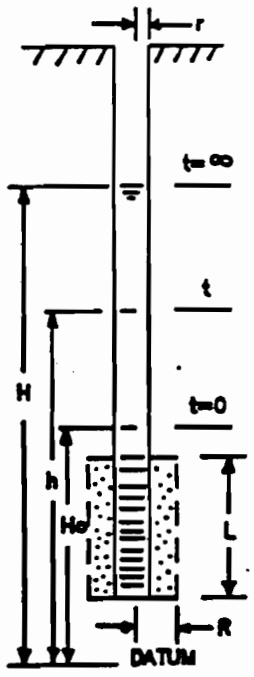


O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-7
DATE 8/11/89

LOCATION Town of Geddes, NY
ELEVATION



STATIC HEAD (H) 22.31'

PIPE RADIUS (r) .083'

SCREEN RADIUS (R) .17'

SCREEN LENGTH (L) 10'

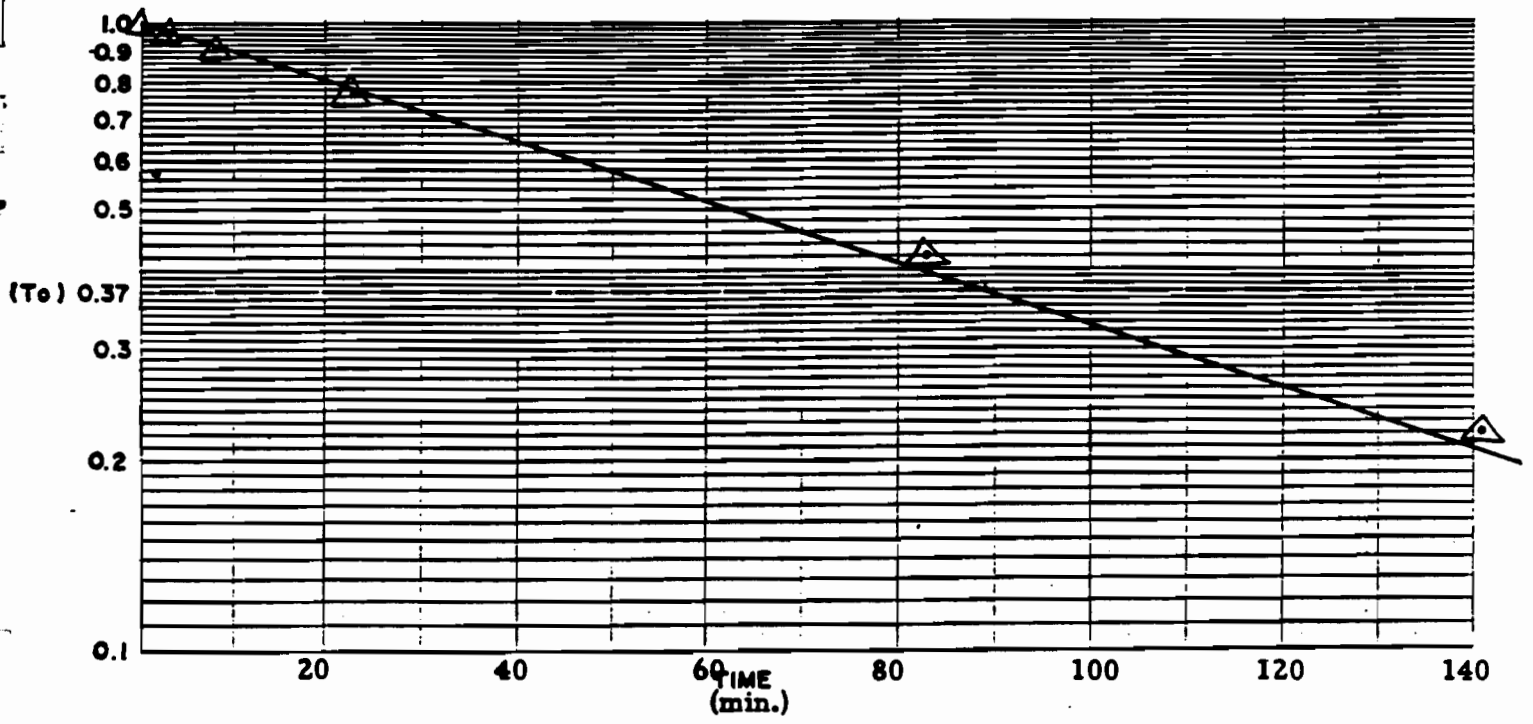
INITIAL HEAD (Ho) 15.61'

HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln(10/.17)}{2(10)(5340)} = 2.62 \times 10^{-7} \text{ ft/s} = 8.01 \times 10^{-6} \text{ cm/s}$$

	RECOVERY		SLUG	
TIME	h	$\frac{H-h}{H-Ho}$	h	$\frac{H-h}{H-Ho}$
0	15.61	1		
.5m	15.7	.99		
3.0m	15.9	.96		
8.0m	16.23	.91		
23.0m	17.17	.77		
1hr23m	19.49	.42		
2hr23m	20.82	.22		

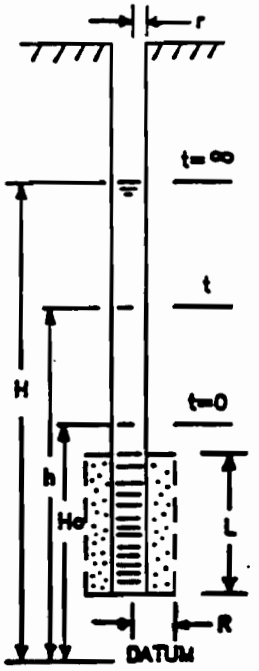


O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-8
DATE 8/11/89

LOCATION Town of Geddes, NY
ELEVATION



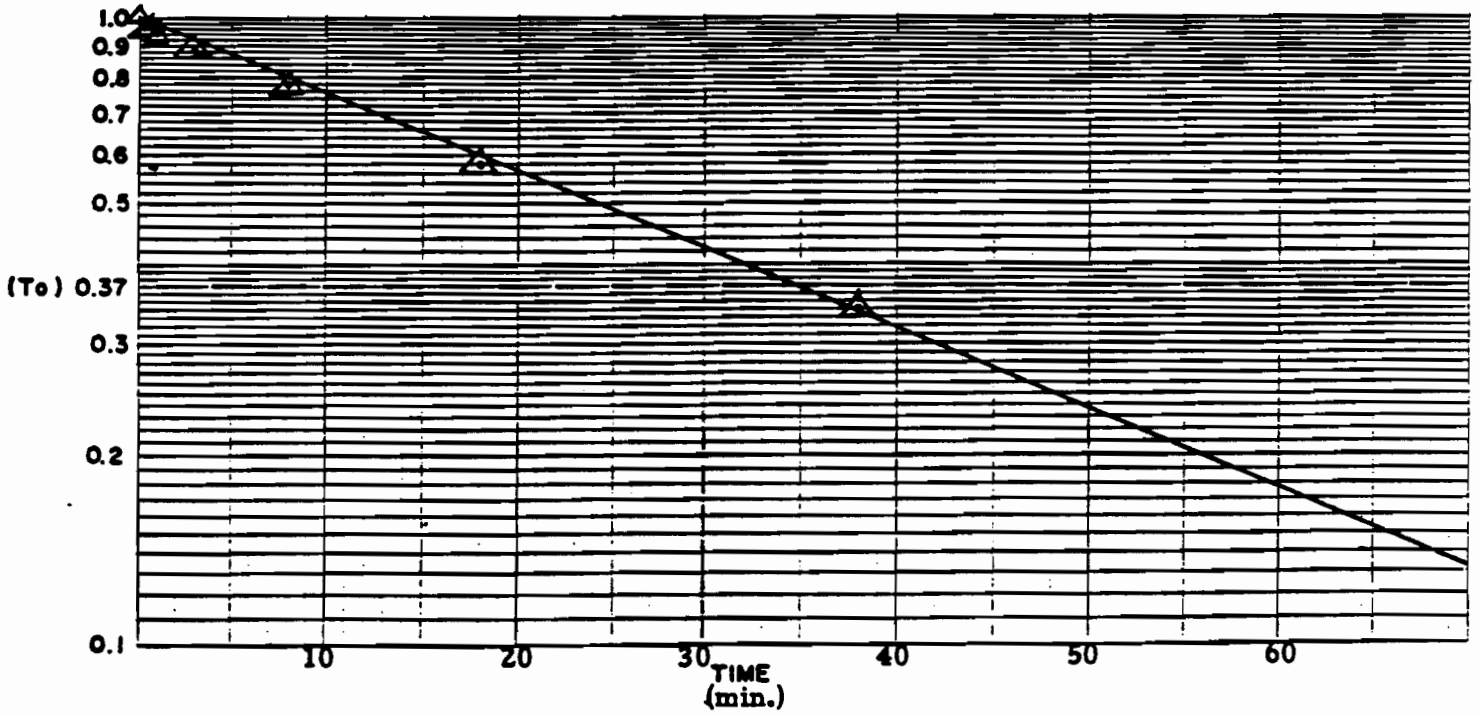
STATIC HEAD (H) 22.78'
PIPE RADIUS (r) .083'
SCREEN RADIUS (R) .17'
SCREEN LENGTH (L) 10'
INITIAL HEAD (Ho) 16.07'

HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln(10/.17)}{2(10)(2040)} = 6.87 \times 10^{-7} \text{ ft/s} = 2.1 \times 10^{-5} \text{ cm/s}$$

TIME	RECOVERY h	RECOVERY $\frac{H-h}{H-Ho}$	SLUG h	SLUG $\frac{H-h}{H-Ho}$
0	16.07	1		
.5m	16.28	.97		
1.0m	16.42	.95		
3.0m	16.81	.89		
8.0m	17.51	.78		
18.0m	18.9	.58		
38.0m	20.48	.34		
1h38m	22.21	.08		

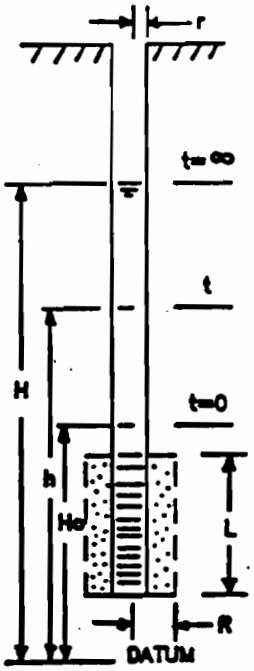


O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-9
DATE 8/11/89

LOCATION Town of Geddes, NY
ELEVATION



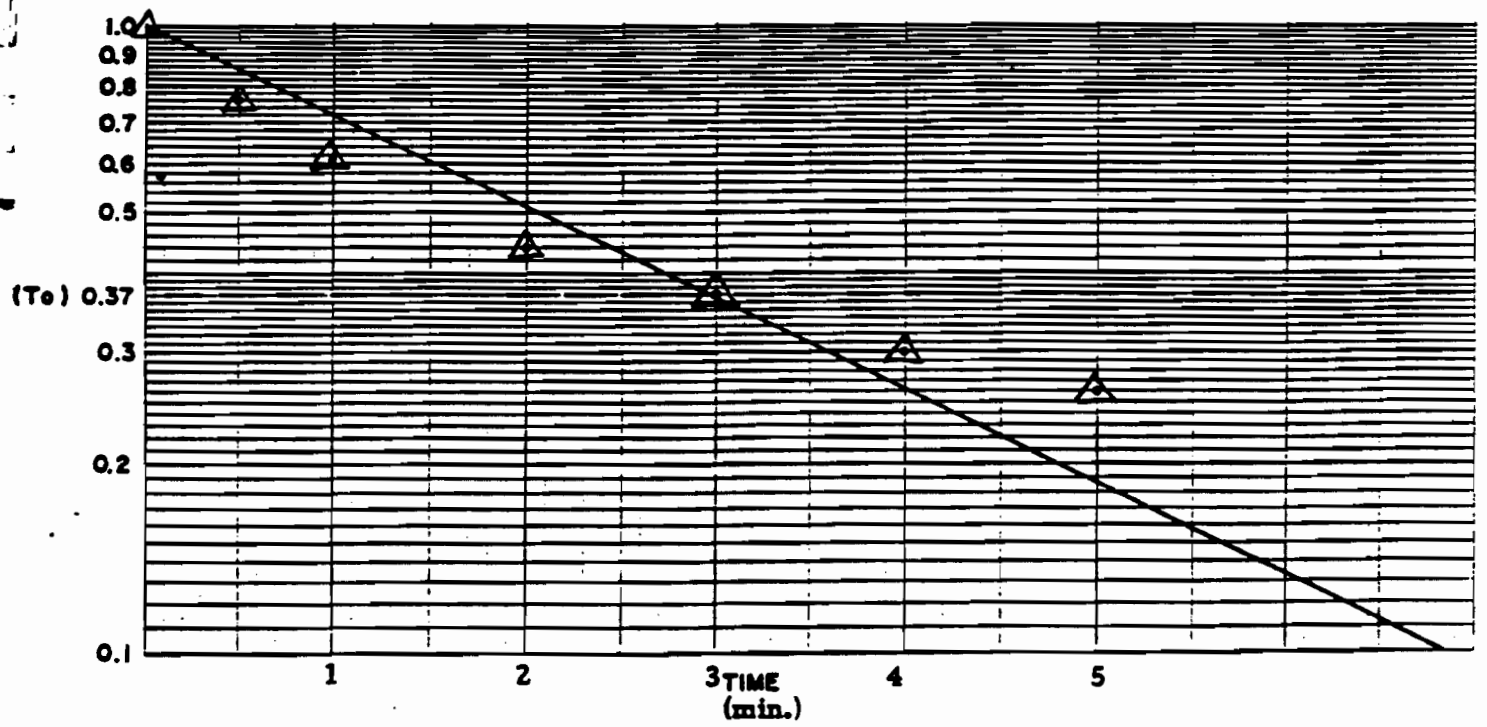
STATIC HEAD (H) 9.85'
PIPE RADIUS (r) .083'
SCREEN RADIUS (R) .33'
SCREEN LENGTH (L) 10'
INITIAL HEAD (Ho) 6.49'

HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln(10/.33)}{2(10)(180)} = 6.53 \times 10^{-6} \text{ ft/s} = 1.99 \times 10^{-4} \text{ cm/s}$$

	RECOVERY		SLUG	
TIME	h	$\frac{H-h}{H-Ho}$	h	$\frac{H-h}{H-Ho}$
0	6.49	1		
.5m	7.28	.76		
1.0m	7.79	.61		
2.0m	8.36	.44		
3.0m	8.6	.37		
4.0m	8.83	.30		
5.0m	8.96	.26		
10.0m	9.29	.17		

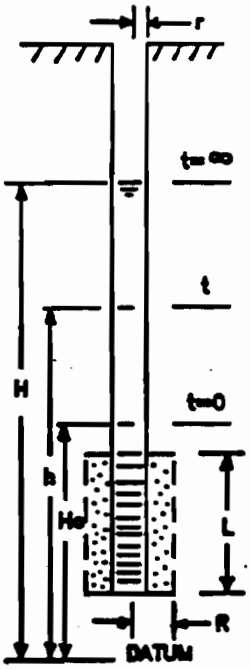


O'BRIEN & GERE

IN-SITU PERMEABILITY TEST
FIELD LOG

PROJECT Maestri Site Investigation
WELL NUMBER MW-10
DATE 8/11/89

LOCATION Town of Geddes, NY
ELEVATION



STATIC HEAD (H) 10.84'

PIPE RADIUS (r) .083'

SCREEN RADIUS (R) .33'

SCREEN LENGTH (L) 10'

INITIAL HEAD (Ho) 6.38'

HYDRAULIC CONDUCTIVITY :

$$K = \frac{r^2 \ln(L/R)}{2LTo}$$

$$K = \frac{(.083)^2 \ln(10/.33)}{2(10)(360)}$$

$= 3.26 \times 10^{-6}$ ft/s $= 9.95 \times 10^{-5}$ cm/s

	RECOVERY		SLUG	
TIME	h	$\frac{H-h}{H-Ho}$	h	$\frac{H-h}{H-Ho}$
0	6.38	1		
0.5m	7.14	.83		
1.5m	7.87	.66		
2.5m	8.38	.55		
3.5m	8.72	.47		
4.5m	8.98	.42		
7.5m	9.42	.32		
12.5m	9.69	.26		
27.5m	10.17	.15