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INVESTIGATION
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MILLENS
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JULY 1, 1999

# REMEDIAL INVESTIGATION PLAN

Volume I of II

for the property known as

**B. MILLENS SONS, INC.**
**230 EAST STRAND**
**KINGSTON, NEW YORK**

Order on Consent Number W3-0817-98-08
NYSDEC Spill Number 9604764

July 1, 1999

Revised October 26, 1999

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ESI File Number: MK9690.20

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**B. MILLENS SONS, INC.**
**230 EAST STRAND**
**KINGSTON, NEW YORK**



**July 1, 1999**

**Revised October 26, 1999**

**Prepared By:**

**Ecosystems Strategies, Inc.**
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**Poughkeepsie, NY 12603**

The undersigned has reviewed this Remedial Investigation Plan, dated July 1, 1999 and revised October 26, 1999, and certifies to the NYSDEC that the information provided in this document is accurate as of the date of issuance by this office.

Any and all questions or comments, including requests for additional information, should be submitted to the undersigned.

Paul H. Ciminello
President

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# 1.0 INTRODUCTION

## 1.1 Purpose

This Remedial Investigation Plan (hereafter referred to as the "Plan") describes all investigative work performed on April 7, April 29, June 15, and September 3, 1999 at the B. Millens Sons, Inc. site ("Site") as identified in Section 2.1 below. The expressed purpose of this work was to provide further documentation of the characteristics of surface and subsurface soils and groundwater, to document on-site conditions, and to provide a plan for future remedial activities, if warranted. The findings summarized herein are a supplement to the findings included in the Site Investigation Report issued by this office on November 16, 1998.. Full characterization of this site is provided from a review of both documents.

The work described in this Plan was prepared in accordance with the Revised Workplan for Subsurface and Groundwater Investigation prepared by Ecosystems Strategies, Inc. ("ESI") and approved by the New York State Department of Environmental Conservation ("NYSDEC") in February 1998 and August 1998. The scope of work in the Workplan called for two phases of field work. Phase A was completed in November 1998; "Phase B" field work was conducted in the current portion of the Site Investigation (April - June, 1999). The current (Phase B) portion of the field work was conducted in accordance with the approved Workplan, as modified by subsequent written and verbal communication with the NYSDEC, with the exception of the following: test pits were not excavated.

This Remedial Investigation Plan is considered by this office to adequately satisfy the requirements set forth in the NYSDEC Order on Consent Number W3-0817-98-08 to prepare an Investigation Report and Remedial Plan. References are made in this Plan to relevant NYSDEC regulations and guidance documents, including NYSDEC Spill Technology and Remediation Series Memo #1 (STARS) (July, 1993), the NYSDEC Technical Administrative Guidance Memorandum (TAGM) (January 24, 1994), and publicly available NYSDEC records of decision (RODs).

## 1.2 Objectives

The stated objectives of the services documented in this Plan are as follows:

1. Fulfill the site investigation requirements of the NYSDEC Order on Consent;

2. Provide a more extensive site characterization to supplement findings of the November 1998 Site Investigation report:

   a. Document the presence or absence of contaminants (PCBs, RCRA metals, and VOCs) in the surface and subsurface soils at selected portions of the Site not accessible during the initial investigative phase;

   b. Delineate, to the extent possible, the lateral and vertical extent of any identified contamination;

   c. Document current (Spring 1999) groundwater quality and compare current conditions with prior data; and

   d. Determine the need for remedial actions to appropriately respond to identified contamination on the Site.

# 2.0 SITE DESCRIPTION AND IDENTIFICATION

## 2.1 General Site Location and History

The B. Millens Sons, Inc. property as defined in this Plan is a 74,528-square-foot facility (1.711 acres) located at 230 East Strand in the City of Kingston, Ulster County, New York. A Site Location Map showing the location of the subject property is provided in Appendix A of this Plan. The property is bounded on the east by North Street, on the south by a railroad right of way (ROW), on the west by a commercial property, and on the north by East Strand. The boundaries of the Site are shown on the Site Survey, included in Appendix A of this Plan.

The site is located in an industrialized area of the City of Kingston, New York. Property uses in the immediate vicinity of the Site include: an active railroad ROW, a natural gas distribution facility, and boat launch to the south; a major oil storage facility (including storage tanks and distribution depot), a metal salvage yard, and a steel fabrication facility to the west; a commercial property with partially occupied buildings to the east; and a recently constructed, multi-family residential property to the north.

The topography of the Site is generally level, with a predominant downward slope of the Site to the southeast, toward Rondout Creek. The elevation of the Site is approximately 8 feet above mean sea level.

The Site and surrounding properties are connected to central water and sewer systems, according to City of Kingston records. No groundwater supply wells were observed by representatives of this office during various site inspections, and no groundwater supply wells are known to be present on adjoining or nearby properties, according to the Ulster County Health Department.

According to the current property owner, the Site has been utilized as a metal recycling and salvage yard for more than fifty years. The on-site structure is believed to have been constructed in the early 1900s. The original use of the structure is not known.

On-site activities over the past fifty years have consisted primarily of scrap metal separation. Various metals have been stockpiled on the property in a variety of locations and configurations. Commodity piles have varied in size, height and composition, depending on marketability. Virtually all portions of the property have been used for scrap metal sorting or storage in the past. According to the current owner, electrical transformers, as provided by local utility companies, were dismantled on the Site in the 1950s and early 1960s.

Historically, car-crushing activities have been conducted in the northeastern corner of the site. Vehicles were brought in through the gate on North Street (along the eastern boundary of the Site) and drained of fluids in the immediate vicinity of the gate. Vehicles were then stockpiled near the current location of the car-crusher. Gasoline tanks were stored to the immediate southwest of the North Street gate (see Selected Site Features Map, Appendix A). According to the site owner, vehicle crushing operations were modified in late 1996, as described in Section 2.2, below.

## 2.2 Current Site Activities

Recent (1996 to present) activities on the site which are relevant to this investigation and have the potential to affect the environmental integrity of the Site are the following:

- The vehicle-crushing operation was reconfigured in accordance with the Liquid Management Plan and Spill Response Procedures-Vehicle Crushing Operations prepared by Ecosystems Strategies, Inc., issued on August 16, 1996 and approved by the NYSDEC on September 20, 1996. Specific activities included the installation and operation of a vehicle liquid draining area (including temporary liquid holding tanks and sealed storage containers for automobile engines and gasoline tanks), maintenance of vehicle handling and disposal records, and the construction of a sign documenting acceptable vehicle specifications (e.g., vehicles without air conditioning or with air conditioning properly disconnected, vehicles with empty gasoline tanks).

- Periodic scraping of surface soils for the purpose of removing salable commodity interspersed within the soil column, and stockpiling of soil on-site was initiated by the property owner in the Spring 1997. Commodity that could be salvaged was removed from the soil, and the resulting soil pile was placed on plastic. Soil scraping activities have ceased, according to the property owner. It is currently estimated that approximately 400 cubic yards of soil have been stockpiled. Soil sampling data confirm this stockpiled soil to be non-hazardous, petroleum-contaminated waste. Currently, the soil is stored in steel tanks and is covered with plastic on the southeastern portion of the Site. The approximate lateral extent of soil scraping activities is shown on the Selected Site Features Map, Appendix A.

The current locations of the car-crushing operation and the stockpiled soil are shown on the Selected Site Features Map, Appendix A of this Plan.

## 2.3 Previous Environmental Investigations

A detailed discussion of previous (prior to 1998) environmental investigations is provided in the November 1998 Site Investigation Report and is, therefore, not restated here. A summary of the November 1998 Report follows.

Field work conducted on November 4- 5, 1998 consisted of the extension of eleven (11) soil borings on and off the Site. Six (6) of these soil borings were completed as groundwater monitoring wells, which were then developed and sampled. The sampling program involved two potential areas of concern: the car-crusher area and the commodity storage areas. Additionally, several boreholes and three groundwater monitoring wells were installed off-site.

A summary of the findings follows:

- Laboratory analysis of soil samples indicated that petroleum contamination (gasoline compounds) was present in soils in the car-crusher area. Soil removal combined with appropriate site improvements and installation of an additional groundwater monitoring well were recommended.

- PCBs were detected in on-site soils at levels exceeding NYSDEC action levels. PCBs were detected primarily at the 0-2 foot depth, and no PCBs were detected at depths greater than four feet.

- RCRA metals were detected at elevated concentrations (exceeding NYSDEC action levels) in the commodity storage area. Metal concentrations decreased with depth of sample and no exceedances were observed beyond the four foot depth.

- Samples from groundwater monitoring wells downgradient from the Site contained low levels of petroleum constituents. No PCBs were detected in the groundwater and metals were only detected at very low levels.

# 3.0 SITE INVESTIGATIVE SERVICES

## 3.1 Summary of Services

The current portion of the Site Investigation (Phase B) was conducted at locations within the commodity storage areas to document the presence or absence of soil and/or groundwater contamination and to delineate the extent of contamination previously (in the course of implementing Phase A [November 1998] of the Site Investigation) identified within those areas.

Field work conducted on April 7, 1999 consisted of the extension of eight (8) soil borings, and the completion of one (1) soil boring as a groundwater monitoring well (MW-7). The additional groundwater monitoring well was installed to monitor the levels of VOCs in the car-crusher area. Additionally, four hand-drilled borings (HB1 to HB-4) were extended on-site in areas inaccessible to a drilling rig. On April 29, 1999, all seven groundwater monitoring wells were properly purged and sampled.

In response to previous findings (April 1999) and in an attempt to further delineate PCBs in soils, on June 15, 1999, eight (8) hand borings (HB-1A to HB-8A) were extended in the commodity storage areas on either side of the on-site access road. These hand-drilled boreholes were installed in areas inaccessible to a drilling rig. As part of this June sampling, a groundwater sample (HB-2A) was collected from a hand boring extended in the central portion of the site within the commodity storage area. This groundwater sampling point was installed in lieu of installation of a permanent monitoring well. Due to the constant usage of heavy equipment and transfer of commodities on the Site, this office determined that a permanent well would not remain undamaged for any significant period of time and would become a direct conduit for contaminants to enter groundwater.

Finally, in response to NYSDEC's concern that test pits be extended for the purpose of characterizing subgrade material, eight test pits were dug on September 3, 1999. In consultation with the NYSDEC personnel present during the test pit extension, test pits were dug as close as permissible to the locations identified in the Workplan .

All field work is described in detail in Section 3.2, below. The locations of soil borings and groundwater monitoring wells are shown on the Selected Site Features Map, while the monitoring wells are shown on the Site Survey and the Direction of Groundwater Flow Map. All maps are included in Appendix A of this Plan.

## 3.2 Field Investigative Procedures

This Section of the Plan provides a detailed description of the tasks that were completed to document on-site soil and groundwater conditions.

### 3.2.1 Field Work Preparation

The following work was conducted prior to the commencement of subsurface investigative activities:

1. Review of the site-specific Health and Safety Plan with all subcontractors.

2. A request for a complete utility markout for the Site was submitted, as required by New York State Department of Labor regulations, and confirmation of underground utility locations was secured before any field work was initiated.

3. The schedule for all subsurface work was coordinated with subcontractors and the NYSDEC was notified of this schedule.

4. A field equipment checklist was used for mobilization and documentation of the type and quantity of field equipment and materials used each day. All field equipment used during field work was properly decontaminated in accordance with NYSDEC guidelines and all field instruments were properly calibrated in accordance with procedures set forth by the equipment manufacturer(s).

A Thermal Instruments 580B photo-ionization detector (PID) was used for site-screening of organic vapors. The 580B PID is calibrated to read parts per million calibration gas (isobutylene) equivalents (ppm-cge). Instrument calibration was performed prior to the commencement of field work on each day to determine that the equipment was functioning within tolerance ranges established by the manufacturer and required for this project.

### 3.2.2 Extension of Soil Borings

Eight (8) soil borings were extended throughout the Site on April 7 and 8, 1999, to more fully characterize site conditions. Placement and extension of the borings were supervised by ESI personnel. Drilling services were provided by Site Environmental Services, LLC ("Site Environmental") personnel. The locations of these borings (and the locations of the soil boring converted to a groundwater monitoring well) are shown on the Selected Site Features Map, Appendix A. All soil borings extended on the subject property were extended using a truck-mounted, hollow-stem auger drilling rig equipped with a standard 2-inch outer diameter split-spoon core sampler. The spoon was driven into the ground using a standard 140-pound hammer.

Prior to the initial borehole and between boreholes, the augers were steam-cleaned. All sampling equipment and the split-spoon sampler were decontaminated prior to the collection of each sample, as follows:

- soapy water rinse
- de-ionized water rinse
- nitric acid rinse (10% solution)
- de-ionized water rinse
- methanol rinse
- de-ionized water rinse
- air drying

Following proper decontamination, the surface soil samples were collected and properly sealed in pre-cleaned laboratory containers. Continuous split spoon sampling was conducted at each boring location from the surface to the groundwater interface. Extracted material at each 2-foot core was examined in the field for volatile organic compounds using the PID.

Boring logs documenting physical characteristics of soils encountered were maintained by the driller, Site Environmental. The driller logs recorded blow counts for each six-inch column of material encountered. Independent logs were maintained by ESI, documenting the extent and characteristics of the encountered soils; thickness and characteristics of any clearly identifiable contaminant lens; and the presence of odors, staining, and/or other overt indications of contamination.

The specific location of each boring was documented using measurements derived from a permanent object (e.g., the on-site building). Soil boring locations are provided on the Selected Site Features Map, included in Appendix A. A Site Survey with exact locations of groundwater monitoring wells is included in Appendix A.

Two to three samples were collected from each soil boring location for potential laboratory analysis. A sample was collected from the surface soils (defined as the 0-2 foot depth), from the 2-4 foot stratum, and from the groundwater interface (approximately four feet) at each boring location (this last sample depth was determined in the field based on encountered soil moisture levels).

All material samples were collected in sample jars pre-cleaned at the laboratory. Stainless steel trowels were used to place the material into jars, and the jars were placed in a cooler with ice prior to transport to the laboratory. Disposable latex gloves were worn by field personnel during all field sampling activities. Samples were stored at 4°C prior to delivery to the laboratory.

All material samples were transported via overnight delivery to Matrix Analytical ("Matrix", a New York State Department of Health [NYSDOH]-approved laboratory - ELAP certification #11116) for analysis. Appropriate chain of custody procedures were followed beginning with the first storage of the samples.

### 3.2.3 Completion and Sampling of Groundwater Monitoring Well

One (1) soil boring was completed, developed, and sampled as a groundwater monitoring well in accordance with the following procedures:

*Groundwater Monitoring Well Installation*

The monitoring well was constructed of two-inch PVC casing, 0.01-inch slotted PVC well screening across the water table, completed as a raised casing well, and secured with a padlock.

The well was constructed such that a minimum of two feet of well screen extended above the high water level, and eight feet of well screen extended below the water table.

The groundwater monitoring well elevation was surveyed by Robert D. Kalaka, a New York State licensed surveyor (License #049914) to the nearest 0.01 foot in relation to a permanent datum. The well location was plotted on the survey, which is included in Appendix A of this Plan.

*Monitoring Well Development*

The monitoring well was developed after installation was completed. Development was performed in order to clear fine-grained material that may have settled around the well screen and to enhance the natural hydraulic connection between the well screen and the surrounding soils. Prior to development, the monitoring well casing was opened and the well column immediately screened with a PID to document the presence of any volatile organic vapors.

The monitoring well was developed with a mechanical pump, properly decontaminated in accordance with standard decontamination protocol. Water removed from the monitoring well was visually inspected for indications of petroleum contamination. Water quality parameters (e.g., temperature, pH, and conductivity) were measured during well development, as criteria for terminating well development.

*Groundwater Sampling Procedures*

Groundwater samples from all of the on-site wells were collected on April 27, 1999 in accordance with the following sample collection protocol. Samples were collected with dedicated, disposable polyethylene bailers. Each groundwater sample was collected in a sample vial or bottle pre-cleaned at the laboratory, and properly preserved, as necessary. After sample collection, the containers were placed in a dedicated cooler maintained at 4°C prior to transport to the laboratory. Samples were accompanied by proper chain of custody documentation.

### 3.2.4 Hand Borings

Twelve (12) boreholes were installed by ESI personnel using a hand-held direct push sampling spoon equipped with a slide hammer. Sampling was conducted at each boring location at 2 foot intervals to a maximum depth of 6 feet below grade or until refusal was reached. The sampling spoon was equipped with 1½ -inch outer diameter disposable acetate sleeves to prevent the cross contamination of soil samples. The sample spoon was properly decontaminated between samples.

Hand boring soil samples collected on April 7, 1999 were collected at one foot intervals using a hammer-driven stainless steel spoon. The stainless steel spoon was decontaminated between each sampling event according to NYSDEC protocols.

ESI personnel maintained field logs documenting the physical characteristics, PID readings and any field indications of contamination for all encountered material at each boring location. Relevant information from ESI logs for each boring location is summarized in Section 4.1.1, below. A Selected Site Features Map indicating the boring locations and associated site features is provided in Appendix A of this Plan.

Soil samples were collected in a manner consistent with the methodology described in Section 3.2.1, above.

### 3.2.5 Extension of Test Pits

Provided below is a description of each of the eight test pit excavations. The locations of these test pits were based on information obtained during the initial phase one review and on observations made at the time of field work. The locations were discussed with Robert Smith of the NYSDEC, present at the time of field work. Every attempt was made to locate the test pit in the area identified in the Workplan.

**General Subsurface Characteristics**

Although some variation was noted amongst the eight test pits, the subsurface material encountered generally consisted of fill material. The upper two feet was discolored and odorous (petroleum), with scrap metal present in the first foot. Rock, cobbles and other indications of ongoing filling/regrading were present to the 3-foot depth Less permeable soils were encountered at the 3- to 5-foot depth; no field indications of contamination were noted in this stratum. Groundwater was encountered at the northern edge of the property at nine feet, with shallower water encountered in test pits in the center of the property (e..g, 5 feet at TP-8). Groundwater did not exhibit evidence of contamination.

Two soil samples were collected to document the presence or absence of elevated PCBs in soils deeper than 3 feet. Soil collected at the 8-foot depth at TP-2 contained 0.16 ppm of total PCBs; soil collected at the 40foot depth at TP-4 had no detectable concentration of PCBs.

**Description of Findings Noted During Extension of Test Pits**

Test Pits in **bold** indicate the given samples were submitted to the laboratory for analysis.

| ID | Location | Test Pit Depth | Depth to GW | General Observations |
|---|---|---|---|---|
| TP-1 | Northern edge | 9' | 9' | fill to 3'; no odor |
| **TP-2** | Center of site, near road intersection | 8' | 7' | fill to 2'; stained soil<br>silty soils at 4-5; no odor |
| TP-3 | East of TP-2 | 8' | 7' | same as TP-2 |
| **TP-4** | Near scale, south of building | 8' | 6' | fill to 3'; metal, brick<br>sandy, silt soils at 5'; no odor |
| TP-5 | near car crusher (south of road) | 6' | 6' | stained soil; rock/boulder |
| TP-6 | near car crusher | 2' | NA | stained soil; roc//boulder |
| TP-7 | near car crusher | 2' | NA | stained soil; rock/boulder |
| TP-8 | near commodity pile, south of access road | 6' | 5' | stained soil to 3' mixed with metal and cobbles |

## 3.3 Laboratory Analysis of Material Samples

Selected soil and groundwater samples collected on the Site were submitted for laboratory analysis of compounds, based upon results documented in previous studies, and/or based upon field observations. Soil samples were collected on April 7, 1999, June 15, 1999, and September 3, 1999. Groundwater monitoring well samples were collected on April 29, 1999. A single groundwater sample was collected directly from one borehole in the center of the property, HB-2A, on June 15, 1999. A description of analyses requested in soil and groundwater samples follows, in the sections below.

### 3.3.1 Soil Analyses

All soil samples collected in April 1999 and in June 1999 were submitted for analysis of PCBs (USEPA Method 8080.)

Surface soil samples collected in April were submitted for analysis of the following RCRA metals: arsenic, cadmium, chromium, lead, and mercury (i.e., the metals shown to be most consistently elevated during the sampling conducted in November 1998). All soil samples (i.e., several depths) collected in June were analyzed for cadmium, chromium, lead, and mercury (arsenic was not included in the list of compounds because arsenic levels, as shown in the April sampling event, were not as elevated as the other four metals).

Based upon field observations (odor and PID readings), VOC analysis (USEPA Method 8260B) was requested for only two samples, each collected on April 7, 1999 at three separate depths: B102 and MW-7.

Spatial Distribution maps for each analyte group are included in Appendix A. Contaminant-specific summary tables are located in Appendix B of this Plan. Copies of the full Laboratory Reports are included in Appendix C of this Plan. Summary tables used in the November 1998 Site Investigation Report are included in Appendix E of this Plan.

### 3.3.2 Groundwater Analyses

The seven on-site groundwater monitoring wells were sampled on April 29, 1999, and groundwater samples were submitted for analysis of PCBs (USEPA Method 608), selected dissolved metals (cadmium, lead, and mercury), and VOCs (USEPA Method 8021 and MTBE).

A single groundwater sample was collected from borehole HB-2A on June 15, 1999 and submitted for analysis of VOCs (USEPA Method 8021); PCBs (USEPA Method 608); total cadmium, chromium, lead, and mercury; and dissolved cadmium, chromium, lead, and mercury.

A summary table of groundwater analytical data is included in Appendix B. A copy of the full Laboratory Report is included in Appendix C.

# 4.0 FINDINGS

## 4.1 Soils

Soil descriptions for boreholes drilled by Site Environmental are provided in the Soil Boring Logs included in Appendix D of this Plan. Additional field observations and results of laboratory analysis of submitted samples are provided in the sections below.

### 4.1.1 Field Observations

Hand Borings

Subsurface soils encountered on the Site during the extension of the hand borings generally consisted of fill material comprised of medium to dark brown fine sands and silt with traces of organic material, scrap metal fragments, and stone and brick fragments ranging in depth from the surface to three feet below grade. Soils encountered below this fill layer consisted of black organic silt and medium brown, fine-grained sand with varying degrees of intermixed stone fragments and cobbles. Groundwater was encountered at approximately 4 to 5 feet below grade.

Soil samples collected from the central portion of the Site (HB-2A, HB-3A, HB-4A, and HB-5A) exhibited visual (i.e., gray and black petroleum staining), slight petroleum odor, and instrument (i.e., elevated PID readings ranging from 20 to 150 ppm) readings of contamination. Petroleum contamination appeared to be present in soil samples collected from this area to a maximum depth of 4 feet below grade (observed in soil sample HB-2A).

Observations made during the extension of hand borings in other portions of the Site did not indicate the presence of petroleum contamination.

Truck-installed boreholes

Subsurface material throughout the site was very heterogeneous. Some fill material was observed in the soil borings predominantly in the upper two (2) feet. Fill material consisted of a variety of materials, including ash, brick pieces and brick ash, slag, wood, scrap metal fragments and plastic. The fill material described above was interspersed with varying amounts of sandy and silty soils with angular gravel up to 2 inches in diameter.

Petroleum odors and elevated PID readings were measured in borehole B102 and in borehole MW-7. Slight PID readings and odors were observed in boreholes B101 and B103.

Observations noted during truck-installed soil boring completion and sampling are located in the Field Observations Table, below.

Field Observations Table

| BORING | LOCATION | DEPTH | SOIL CHARACTERISTICS | PID (ppm/cge) | OBSERVATIONS |
|---|---|---|---|---|---|
| B101 | Southern Commodity Storage Area, northwest of the previous soil removal area, but south of the access road | Sample 0-1' | Dark brown silty soil with metal fragments | 0 | No evidence of cont. |
| | | Sample 2-4' | Blackish Soil | 49 | Slight odor/oily |
| | | Sample 4-6' | Wet dark brown, fine-medium grained sand | 0 | No evidence of cont. |
| B102 | West of boring B101 | Sample 0-2' | Blackish -light grey soil with crushed stone with metal debris, brick and glass | 512 | Gasoline odor |
| | | Sample 2-3' | same | 79 | Slight odor |
| | | Sample 4' | Blackish-dark brown soil with no debris | 434 | Odor |
| B103 | West of boring B102 | Sample 0-2' | Silty dark brown sand with glass and brick fragments and metal debris | 42 | Slight gasoline odor |
| | | Sample 2-4' | Same | 0 | No evidence of cont. |
| | | Sample 4-6' | Coarse dark brown sand | 0 | No evidence of cont. |
| B104 | South west of boring B103 in the commodity storage area | Sample 0-2' | Upper half dark brown wet Lower crushed brick, glass, plastic, some metal | 0 | No evidence of cont. |
| | | Sample 3-5' | Blackish moist fine sand | 0 | No evidence of cont. |
| B105 | Northern commodity area near the access road in the central portion of the Site | Sample 1-2.5' | Dry gravel and dark brown sand-silt, cobbles and brick fragments | 0 | No evidence of cont. |
| | | Sample 5-7' | Wet dark brown silty sand with coarse sand and wet gravel and cobbles below | 0 | No evidence of cont. |
| B106 | Southern commodity storage area to the west of B103 in the vicinity of the access road | Sample 0-2' | Dry gravel and brown silty sand with a large number of cobbles | 0 | No evidence of cont. |
| | | Sample 3-5' | Fine, wet, dark brown sand/silt intermixed with crushed brick and gravel | 0 | No evidence of cont. |

| BORING | LOCATION | DEPTH | SOIL CHARACTERISTICS | PID (ppm/cge) | OBSERVATIONS |
|---|---|---|---|---|---|
| B107 | Northern commodity storage area to the west. Across the access road from the on-site brick building | Sample 0-2' | Dry brown, med. to fine grained sand with silt, cobbles up to 1.5" | 0 | No evidence of cont. |
| | | Sample 4-6' | Very wet fine grained brown sand with silt, cobbles to 0.5" | 0 | No evidence of cont. |
| B108 | Western portion of the Site southwest of the weigh scales | Sample 0-2' | Dry brown well-graded silt and sand with glass, wood and metal debris | 0 | No evidence of cont. |
| | | Sample 3-5' | Sandy silt with cobbles | 0 | No evidence of cont. |
| MW-7 | Eastern portion of the Site in the southern side of the intersection of North Street and the access road | Sample 0-2' | Brown to black fine grained sand and silt, stone frag. | 1,000 | Strong petroleum odor |
| | | Sample 2-4' | Fine-med grained sandy silt | 1,200 | Strong petroleum odor |
| | | Sample 5-7' | Wet dark brown to black fine grained sand and silt | 0 | No evidence of cont. |

### 4.1.2 Laboratory Analyses

Soil samples were analyzed for PCBs, selected RCRA metals, and VOCs. This section of the Plan analyzes the laboratory data and identifies obvious or potential patterns in the spatial distribution of the data. The relationship of soil and groundwater data to established NYSDEC action levels (as specified in TAGM 4046 or subsequent publicly available records of decision) is identified for all compounds.

The laboratory results are discussed below, separated by analyte group. Maps identifying sample locations are provided in Appendix A. Tables referenced in this section are provided in Appendix B. Complete laboratory data packages, as provided by the laboratory, are included in Appendix C.

Polychlorinated biphenyls (PCBs)

Elevated levels of PCBs were encountered throughout the Site at various depths from surface to four feet bls (see Spatial Distribution of PCBs Map, located in Appendix A). PCBs were detected in 29 of the 41 samples (71%) submitted for laboratory analysis. Of the 12 samples where PCBs were not detected, 12 (100%) were in soils deeper than two foot bls.

Twenty-five (25) of forty-one (41) samples (61%) submitted for PCB analysis (USEPA Method 8080) exhibited levels exceeding NYSDEC action levels (1,000 $\mu$g/kg for surface soils and 10,000 $\mu$g/kg for subsurface soils). Exceedances in total PCB concentrations ranged from a low of 1,060 $\mu$g/kg for soil sample HB-2 (0-2') to a high of 76,000 $\mu$g/kg at B101 (2-4'). Only three of these 25 exceedances (12%) are for subsurface soils (greater than two feet bls). The remaining twenty-two (22) soil samples (88% ) that exceed action levels were collected from surface soils (less than two feet bls).

Although PCBs were detected outside the central area of the site, the highest levels of PCBs detected were clustered in the center of the Site (samples B-101 to B-104). No PCBs were encountered at depths greater than 4 feet below land surface at any of the locations sampled. Table 1 and Table 2 (see Appendix B) summarize PCB data generated from these sampling events.

These findings (i.e., that the majority of PCB exceedances occur in surface soils) are consistent with findings presented in the November 1998 Site Investigation Report.

RCRA Metals

In prior sampling events, barium, selenium and silver were detected in soils; however, none of these concentrations exceeded NYSDEC action levels. Laboratory analysis of these metals was not requested in the current study. Additionally, since most exceedances (in the November 1998 study) were observed in surface soils, a metals analysis was requested only for surface soils. Metals detected at concentrations in excess of established soil action levels are shown on the Spatial Distribution of RCRA Metals Map, and the Spatial Distribution of Lead and Mercury (see Appendix A).

Five metals (arsenic, cadmium, chromium, lead and mercury) were included in the analyses for sampling conducted in April 7,1999. Based on laboratory data assembled during the April sampling event, additional sampling was conducted on June 15, 1999 in the central portion of the Site. Cadmium, chromium, lead and mercury were included in the analyses for this sampling event. Samples were not analyzed for arsenic due to the absence of consistent exceedances of this metal in soils.

Twenty-five (25) of the twenty-six (26) samples submitted for metals' analysis (96%) contained one or more of the metals in excess of established action levels. The single sample that did not reveal exceedances was collected at a depth of 4-6 feet bls. Fourteen (14)of the twenty-six (26) samples (54%) show exceedances for all four metals (see Tables 3 and 4, in Appendix B of this Report). Metals' exceedances are present mostly at depths from 0-2 feet bls. This pattern is consistent with findings from the November 1998 study.

The most consistent and the highest exceedances were observed in lead and mercury. The spatial distribution of these metals throughout the Site is illustrated in the Spatial Distribution of Lead and Mercury Map in Appendix A.

Volatile Organic Compounds (VOCs)

Soil samples that exhibited field indications of the presence of VOCs (e.g., odors, PID readings) were submitted for analysis of volatile organic compounds (VOCs). Six samples were submitted for VOC analysis in the April 7 sampling event, and none were submitted in June 15, 1999.

VOCs were detected in all six soil samples submitted for VOC analysis on April 7, 1999. Five of the six samples, at two sampling locations - B102 at three separate depths, and MW-7 at two separate depths revealed VOCs at concentrations in excess of action levels (individual compounds as well as total VOCs per sample location). VOCs are present in soils from the surface down to the water table (which is present, on the average, at four feet bls). The single soil sample where no VOCs were detected (MW-7 [5-7']) was collected below the water table.

Analysis of soil sample B102 indicated the presence of ten individual VOCs (all BTEX compounds) at concentrations exceeding action levels for all three depths (0-2', 2-3' and 4'). The total VOC concentration at each sampling location also exceeds the NYSDEC action level of 10,000 $\mu$g/kg.

Laboratory analysis of soil sample MW-7 indicated exceedances of action levels for similar compounds to those detected in B102, at two depths sampled: 0-2 and 2-4. Although several volatile organic compounds were detected in soil sample MW-7 (5-7'), no exceedances were detected in this sample.

A summary of VOC results is located in Table 5 in Appendix B of this Plan. Spatial Distribution of Total VOCs is located in Appendix A. A review of findings from both November 1998 and Spring 1999 indicates that elevated VOC levels in soils are present predominantly on the eastern portion of the Site (car-crusher area and downgradient from this area), as is illustrated in the Spatial Distribution of Total VOCs Map (see Appendix A). One or two other locations, most notably sample B-102, appear to be localized incidents and do not represent a site-wide trend.

## 4.2 Groundwater

Depth to water measurements were taken on April 29, 1999, prior to groundwater sample collection. Groundwater was encountered at depths varying from approximately 3-5 feet below land surface ("bls"). Groundwater elevations are listed in the Groundwater Elevation Table, below. No groundwater elevation data were collected from the temporary groundwater sampling point HB-2A.

**Groundwater Elevation Table - April 29, 1999 (All data are in feet)**

| Location | Depth to Water from top of PVC riser | Elevation of Top of PVC riser | Groundwater Elevation |
|---|---|---|---|
| MW-1 | 6.58 | 96.26 | 89.68 |
| MW-2 | 7.45 | 94.15 | 86.7 |
| MW-3 | 5.14 | 96.99 | 89.85 |
| MW-4 | 7.16 | 93.55 | 86.39 |
| MW-5 | 5.58 | 92.22 | 86.64 |
| MW-6 | 5.94 | 92.46 | 86.52 |
| MW-7 | 7.02 | 94.40 | 87.38 |

Depth to groundwater measurements were utilized in determining direction of groundwater flow on the Site. These measurements indicate that the direction of groundwater flow is to the southeast, as shown on the Direction of Groundwater Flow Map, included in Appendix A of this Plan. The direction of groundwater flow is consistent with the direction calculated in November 1998.

Descriptions of the purge water and sampled groundwater are provided in the field observations section, below. Results of samples submitted for laboratory analysis are provided in the Section 4.2.2, below. Copies of full laboratory reports are provided in Appendix C.

### 4.2.1 Field Observations

No odor was detected in any of the wells except for well MW-4, MW-6 and MW-7. An odor and a sheen were observed in the purgewater of well MW-7, and a headspace reading of 104 ppm-cge was measured with the PID . The groundwater collected for sampling had only a slight odor and no sheen.

### 4.2.2 Laboratory Analysis

Groundwater samples were analyzed for PCBs, selected RCRA metals, and VOCs. This section of the Plan analyzes the laboratory data and identifies obvious or potential patterns in the spatial distribution of the data or changes over time when compared to groundwater data collected in November 1998.

The laboratory results are discussed below, separated by analyte group. Table 6, included in Appendix B, summarizes all groundwater data. Maps identifying sampling locations are included in Appendix A.

Polychlorinated biphenyls (PCBs)

On April 29, 1999, groundwater samples were collected from each of the on-site and off-site groundwater monitoring wells, seven wells total. Additionally, one groundwater sample (HB-2A) was collected on June 15, 1999, directly from the borehole. Sample HB-2A was collected in the central portion of the Site where high PCB action level , exceedances were noted in soil samples collected. No PCBs were detected in any of the eight groundwater samples collected.

This finding is consistent with data collected in November 1998: no PCBs were detected in groundwater.

RCRA Metals

The seven on-site groundwater monitoring wells were sampled on April 29, 1999 (cadmium, lead, mercury), and sampling point HB-2A was sampled on June 15, 1999 (cadmium, chromium, lead and mercury - total and dissolved). Analysis for total and dissolved chromium was conducted only in location HB-2A: no chromium was detected by either analysis.

Total cadmium and total mercury were not detected in any of the groundwater monitoring wells. Dissolved metals were not detected in the groundwater of sampling point HB-2A.

Total lead was detected in samples collected from MW-1, MW-2, MW-3, and MW-4 at levels ranging from 3-26 $\mu$g/l; however, these levels did not exceed the established NYSDEC action level (50 $\mu$g/l).

Total cadmium and total lead were detected at a concentration of 23 $\mu$g/l and 1,100 $\mu$g/l, respectively, (representing exceedances of action levels - 10 [cadmium] and 50 [lead]) in HB-2A; however, neither dissolved cadmium nor dissolved lead was detected at this sampling location. This indicates that the metals which were detected are likely adsorbed to the soil particles suspended in the groundwater collected at this location, since the filtered sample contained no metals.

These findings are consistent with previously collected data. Low levels of dissolved lead (ranging from 1-3 $\mu$g/l) were detected in the groundwater during monitoring well sampling in November 1998, and none exceeded the NYSDEC action level of 50 $\mu$g/l.

Volatile Organic Compounds

Groundwater samples submitted from April and June 1999 sampling events indicate the presence of Methyl t-butyl ether (MTBE) in samples MW-2 (44 $\mu$g/l), MW-4 (610 $\mu$g/l), MW-5 (320 $\mu$g/l), MW-6 (1,400 $\mu$g/l), MW-7 (480 $\mu$g/l), and HB-2A (65 $\mu$g/l). The action level for MTBE is 50 $\mu$g/l indicating that all the samples noted (except for sample MW-2) exceed this action level.

No other VOCs were detected in other groundwater samples with the exception of MW-7. Nine BTEX compounds were present in this sample. Action levels were exceeded for Benzene, MTBE, Toluene, o-Xylene, and p/m Xylene (see Table 6 in Appendix B of this Plan).

Laboratory data for wells MW-1 through MW-6 are generally consistent with data collected in November 1998 (see Table 7 in Appendix B.) MTBE is present in almost all of the same wells as in November 1998 and at similar concentrations. In 1998, low levels of BTEX compounds were present in well MW-1 (all below NYSDEC action levels), while benzene was detected at 73 $\mu$g/l (exceeded action level of 0.7 $\mu$g/l) in MW-6. During the current round of sampling (April 1999) no VOCs were detected in MW-1, and benzene was not detected in MW-6.

# 5.0 CONCLUSIONS\ AND RECOMMENDATIONS

This section presents conclusions drawn from the findings of the site investigation conducted at the B. Millens site at 230 East Strand in the City of Kingston, Ulster County, New York in April and June, 1999 and also includes findings from the November 1998 site investigation. The four Spatial Distribution Maps located in Appendix A of this Plan incorporate relevant data from the November 1998 field investigation.

## 5.1 Conclusions

1. This report, in combination with the November 1998 Report, satisfies the site investigation requirements of the NYSDEC Order on Consent, as modified by subsequent correspondence with the NYSDEC, and should be considered the Investigation Report and Remedial Plan identified in the Order. Modifications to the Order on Consent and to the NYSDEC-approved Workplan were made based on field observations and previous (November 1998) findings. All tasks have been completed.

2. The following statements are made with respect to site integrity:

    1. PCBs are present throughout the Site in surface soils at concentrations exceeding current NYSDEC action levels. At 22 of 25 (88%) locations, PCBs exceeding NYSDEC action levels were identified in surface soils, supporting the conclusion that, except for three locations, subgrade soils (greater than 2 feet bls) do not contain PCBs at levels warranting remediation. No PCBs were detected at depths greater than four feet below land surface (bls), and no PCBs were detected in the groundwater.

        Surface concentrations of PCBs range from 280 to 65,000 $\mu$g/kg, with 79% of the surface samples collected exceeding the established 1,000 $\mu$g/kg action level.

        Data support the conclusion that PCB exceedances in soil are biased toward the central portion of the property. This pattern is consistent with previous activities on the Site, i.e., transformer dismantling and locations where transformer oils could have been spilled on the soil surface.

2. Field evidence in boring logs and test pits support the conclusion that petroleum and PCB-contaminated soils are present in the upper stratum (2-3 feet) of the Site, with visible evidence of petroleum/PCB contamination generally not occurring at depths greater that 3 feet. Laboratory data (see Paragraph 2a, above) support this observation.

   Remedial efforts should focus on surface soils to a maximum of 3 feet.

3. Elevated concentrations of RCRA metals were detected throughout the Site. Lead and mercury most frequently exceed NYSDEC action levels. Although no spatial pattern was observed, metals concentrations were consistently higher in surface soils than in subsurface soils. Previous soil analyses have documented leachable lead levels below characteristic hazardous waste concentrations (i.e., less than 5 mg/l); however, additional analyses are warranted prior to any off-site transport and disposition of on-site soils.

   Any remedial effort relating to RCRA metals in on-site soils should address both PCBs and metals.

4. The source of VOCs, including exceedances of NYSDEC action levels for MTBE in the groundwater on the Site, is presumed to be the soil present in the car-crushing area. Only low levels of VOCs were detected in a single well (MW-7), which is downgradient of the car-crushing area.

   MTBE was present in five groundwater samples at levels exceeding the NYSDEC action level of 50 $\mu$g/l. The concentrations ranged from 65 $\mu$g/l to 1,400 $\mu$g/l. Four of the five locations are downgradient from the car-crushing area.

   Removal of this soil and proper management of the car-crushing area will serve to reduce any continuing groundwater contamination with VOCs.

5. No dissolved metals or PCBs were detected in on-site or off-site groundwater. Evidence suggests that on-site activities which have resulted in elevated PCBs and metals in soil have not impacted groundwater.

6. The following statements are made with respect to the need for additional investigations:

a. No further soil investigation is warranted. Additional soil testing should be conducted in conjunction with site remediation.

b. Continued groundwater monitoring is appropriate.

### 5.2 Recommended Remedial Actions

The following preliminary Remedial Plan is provided to the NYSDEC, as a basis for preparing a more detailed Remedial Plan which will incorporate NYSDEC comments. Remediation as designed will be consistent with maintaining future use of the Site as a scrap metal recycling facility. Remedial actions as discussed below are subject to review by the NYSDEC and are not considered final.

1. Remediation is proposed for surface soils, with primary concern for soils in the car-crushing area. These soils are considered by this office to be the source of low-grade groundwater contamination present in the eastern portion of the Site and wells down-gradient of the Site. The intent of soil remediation in this area is to remove soils which are causing groundwater contamination; it is accepted that metal-contaminated soils may remain under the proposed concrete pad. Remediation of soils in the car-crushing area would consist of:

   - excavation of soils down to a depth sufficient to remove all visibly stained soils. Field screening using a PID is appropriate, since the contaminants present in these soils are volatile organic compounds;
   - stockpiling of excavated soils on 6-mil plastic, consistent with applicable NYSDEC guidance documents;
   - sampling of soils proposed to remain to confirm the absence of elevated VOCs and PCBs;
   - construction of a concrete pad in the car-crushing area to contain liquids generated in the future and to prevent further degradation of groundwater quality; and
   - proper removal of stockpiled soil to a permitted off-site repository.

2. Groundwater remediation is not warranted for the following reasons:

   - only low levels of VOCs are present;
   - the probable source of VOCs will be removed (see paragraph A above);
   - the Site and all nearby properties are served by central water and sewer;

- no PCBs were detected in groundwater; and
- metals were detected at very low levels.

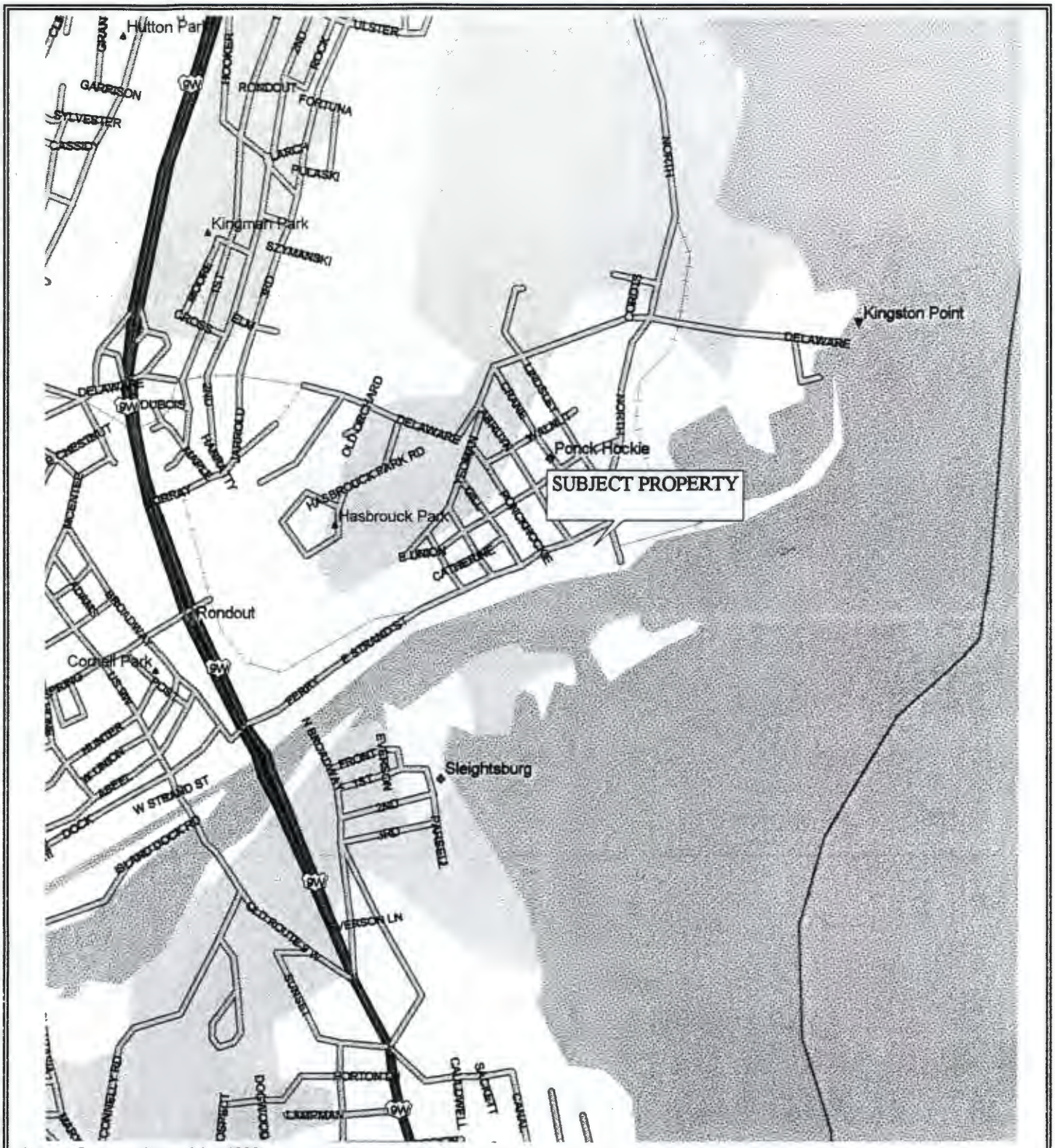
Groundwater monitoring of all on-site and off-site wells is recommended to document temporal changes in contamination concentrations subsequent to the implementation of the proposed soil remediation efforts (see Paragraph 1, above). It is recommended that monitoring be conducted on a quarterly basis for a minimum of one-year after the completion of soil remediation, with groundwater samples analyzed for VOCs, PCBs and RCRA metals. A reduction in the frequency of sampling events may be appropriate, based on data from the first four quarters.

3. Soil remediation is warranted for the upper 2-3 feet in the central portion of the Site, with control measures to minimize dust and soil dispersion appropriate for the remainder of the Site. Surface soils in the central portion of the Site should be scraped and either treated on-site to reduce PCB concentrations or disposed of off-site. All soils containing PCB contamination greater that 50 ppm will be removed from the Site. Soils containing less than 50 ppm are proposed to remain under a properly designed and installed cap. Excavated soils should be managed as a hazardous waste unless laboratory analyses document otherwise; however, remedial efforts should not preclude the property owner from removing marketable commodity (i.e., scrap metal) from the soil prior to off-site disposal.

The current estimate is that between150 and 300 cubic yards of soil containing greater than 50 ppm of PCBs (and therefore subject to off-site disposal) is present in the central portion of the Site. Soil removal actions are intended to permit PCB-containing soils, as well as soils with elevated metals, to remain on the Site. Remedial efforts for these soils should consist of limited capping through on-site relocation efforts (e.g., berms).

# APPENDIX A

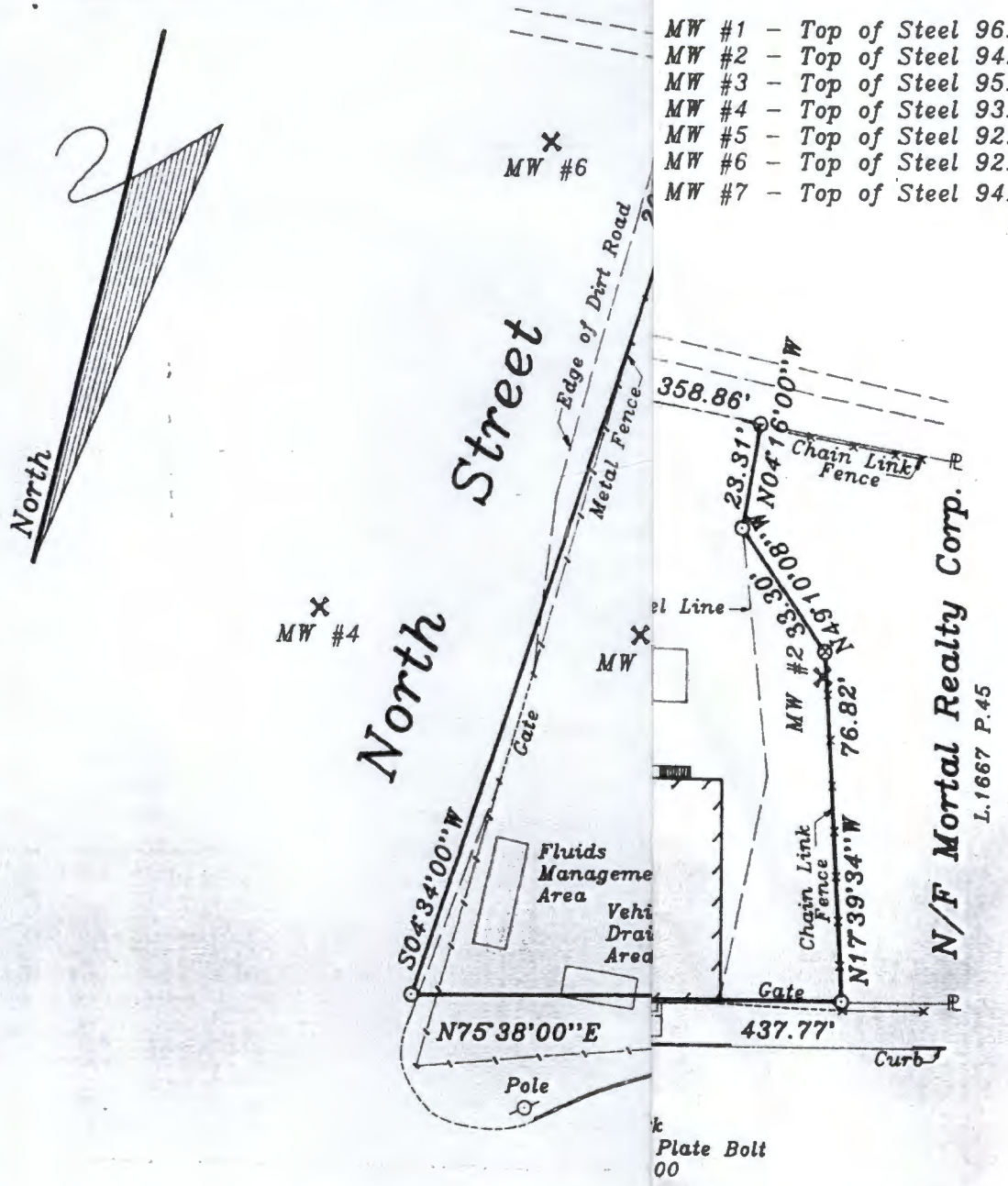
## Maps




Source: Delorme Street Atlas 1998

| | | |
|---|---|---|
| **Site Location Map**<br>B. Millens Sons, Inc.<br>230 East Strand<br>City of Kingston, Ulster County, New York | N | ESI File: MK9690.20<br>Date: July 1999<br>Appendix A |

MW #1 – Top of Steel 96.32 Top of PVC 96.26
MW #2 – Top of Steel 94.24 Top of PVC 94.15
MW #3 – Top of Steel 95.07 Top of PVC 94.99
MW #4 – Top of Steel 93.63 Top of PVC 93.55
MW #5 – Top of Steel 92.25 Top of PVC 92.22
MW #6 – Top of Steel 92.52 Top of PVC 92.46
MW #7 – Top of Steel 94.76 Top of PVC 94.40




## Certification List:

B. Millens & Sons, Inc.
Ecosystems Strategies, Inc.

Ulster County, N.Y.
November 11, 1998
April 28, 1999


**Robert D. Kalaka, L.S.**
P.O. Box 250
Wappingers Falls, N.Y. 12590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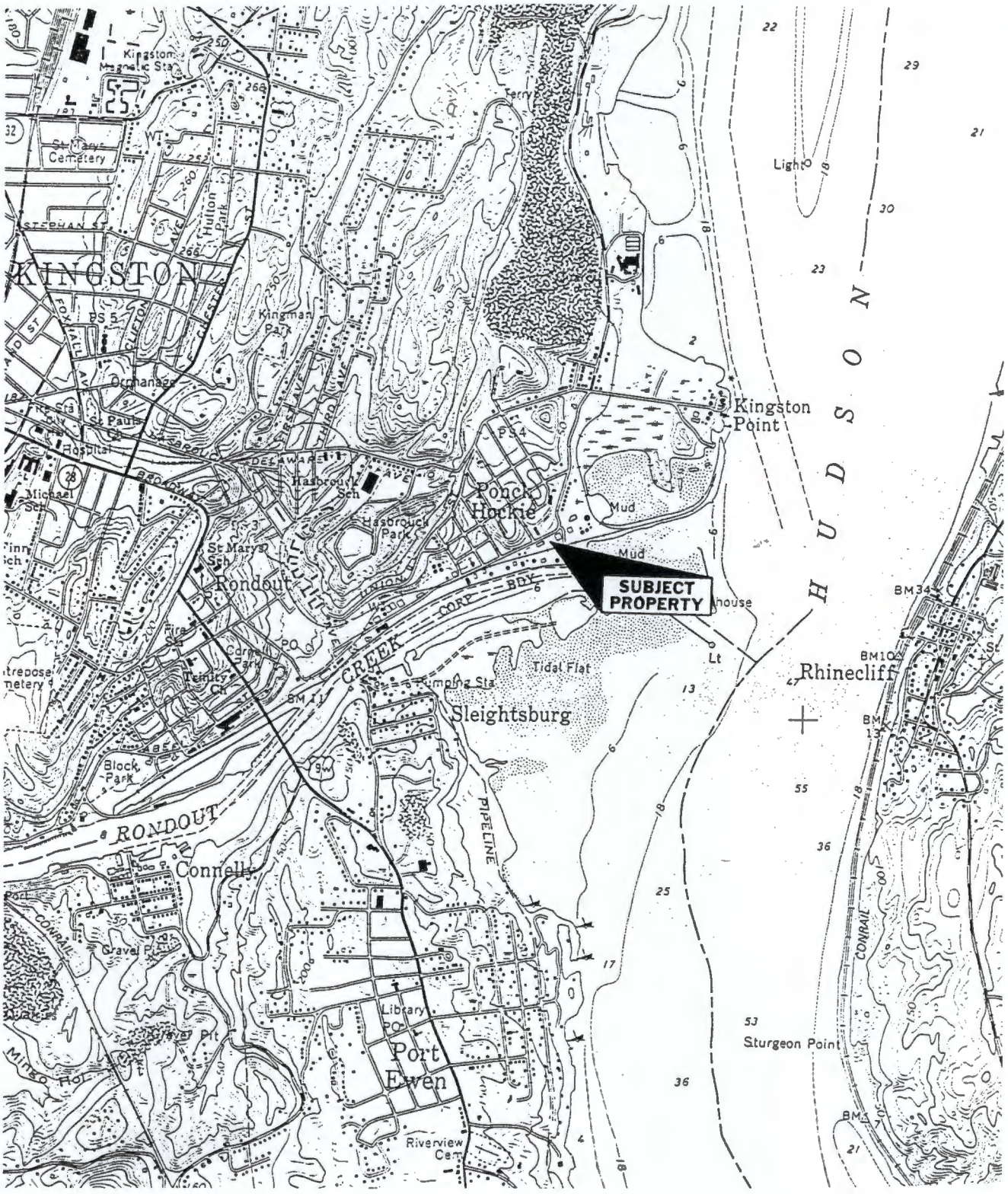


Source: U.S. G.S. Topographic Map of the Kingston East, New York Quadrangle dated 1963 ( Photoinspected 1980).

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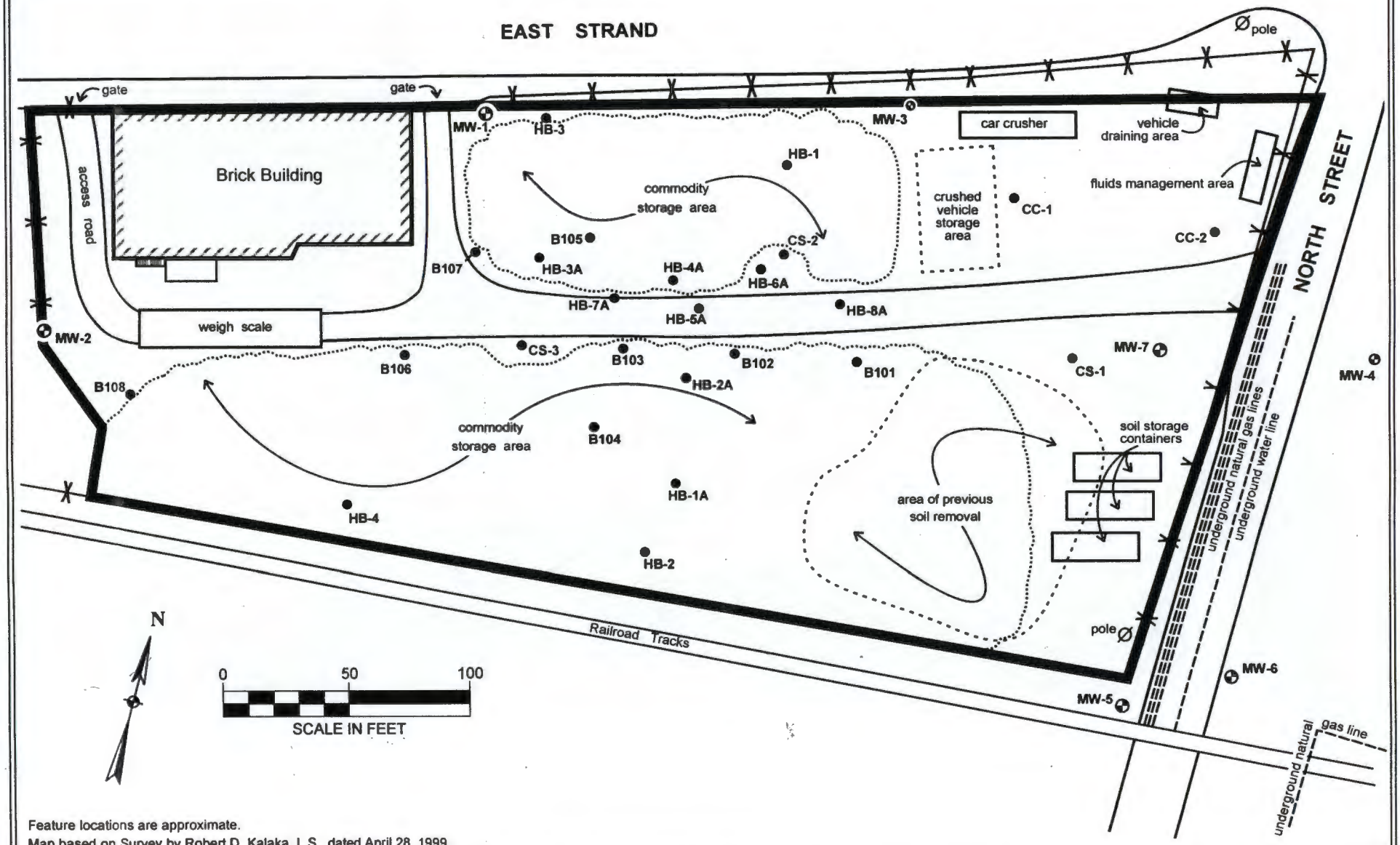
|---|---|---|
| **U.S.G.S. Topographic Map**<br>B. MILLENS SONS, INC.<br>230 East Strand<br>City of Kingston, Ulster County, New York | N | ESI File:MK9690.20<br>June 1999<br>Appendix A |




Feature locations are approximate.
Map based on Survey by Robert D. Kalaka, L.S., dated April 28, 1999.

# Selected Site Features Map

B. Millens Sons, Inc.
230 East Strand
City of Kingston, Ulster County, New York

**LEGEND:**

subject property border ▬▬

soil sample ● (B101 or HB-3)

monitoring well ⊕ (MW-3)

chain-link fence —×—×—

| |
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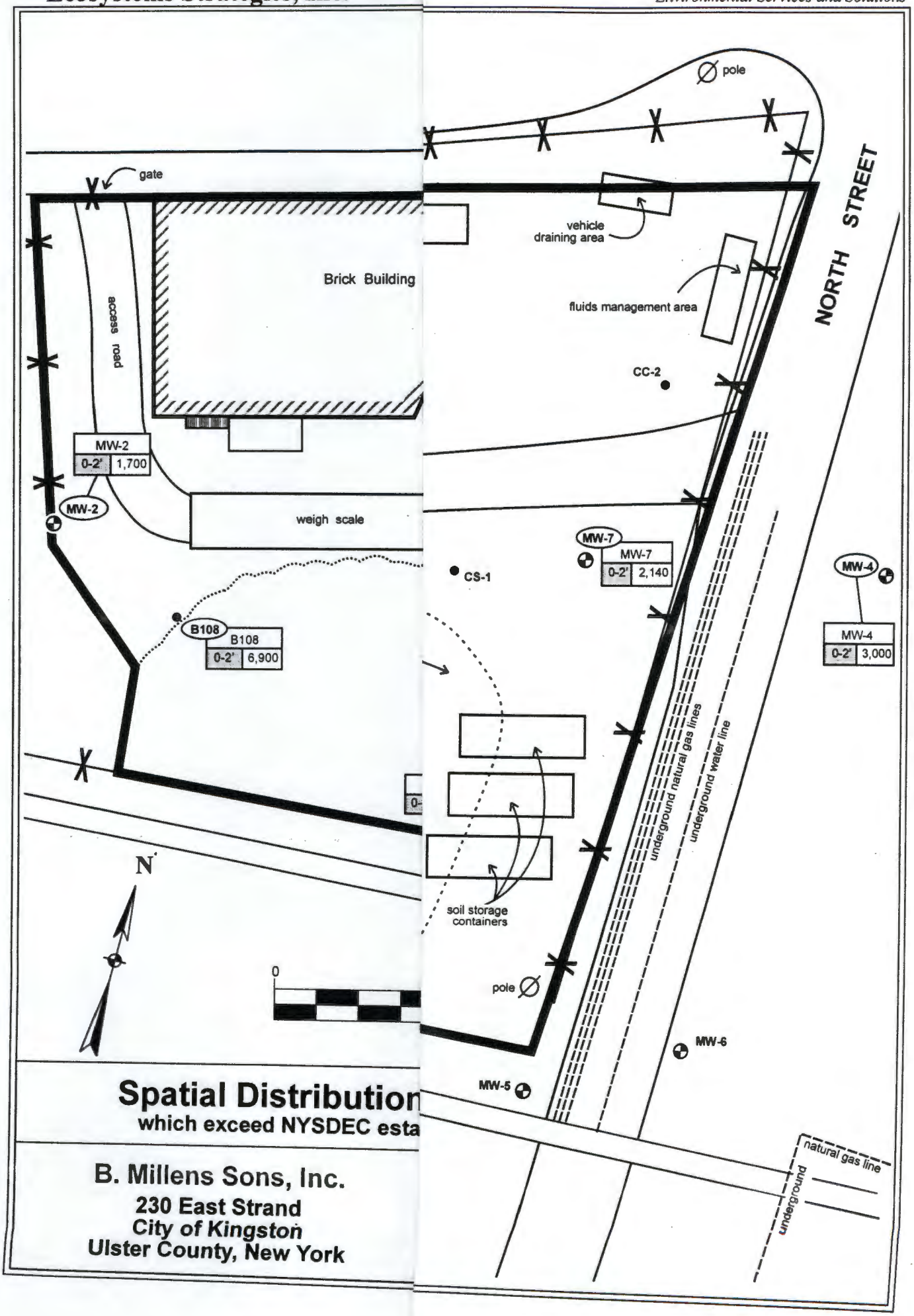
| ESI File Number: MK9690.20 |
| June 1999 |
| Scale as shown |
| Appendix A |


pole
gate
vehicle draining area
NORTH STREET
Brick Building
fluids management area
access road
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MW-2
0-2' 1,700
MW-2
weigh scale
MW-7
MW-7
0-2' 2,140
CS-1
MW-4
MW-4
0-2' 3,000
B108
B108
0-2' 6,900
underground natural gas lines
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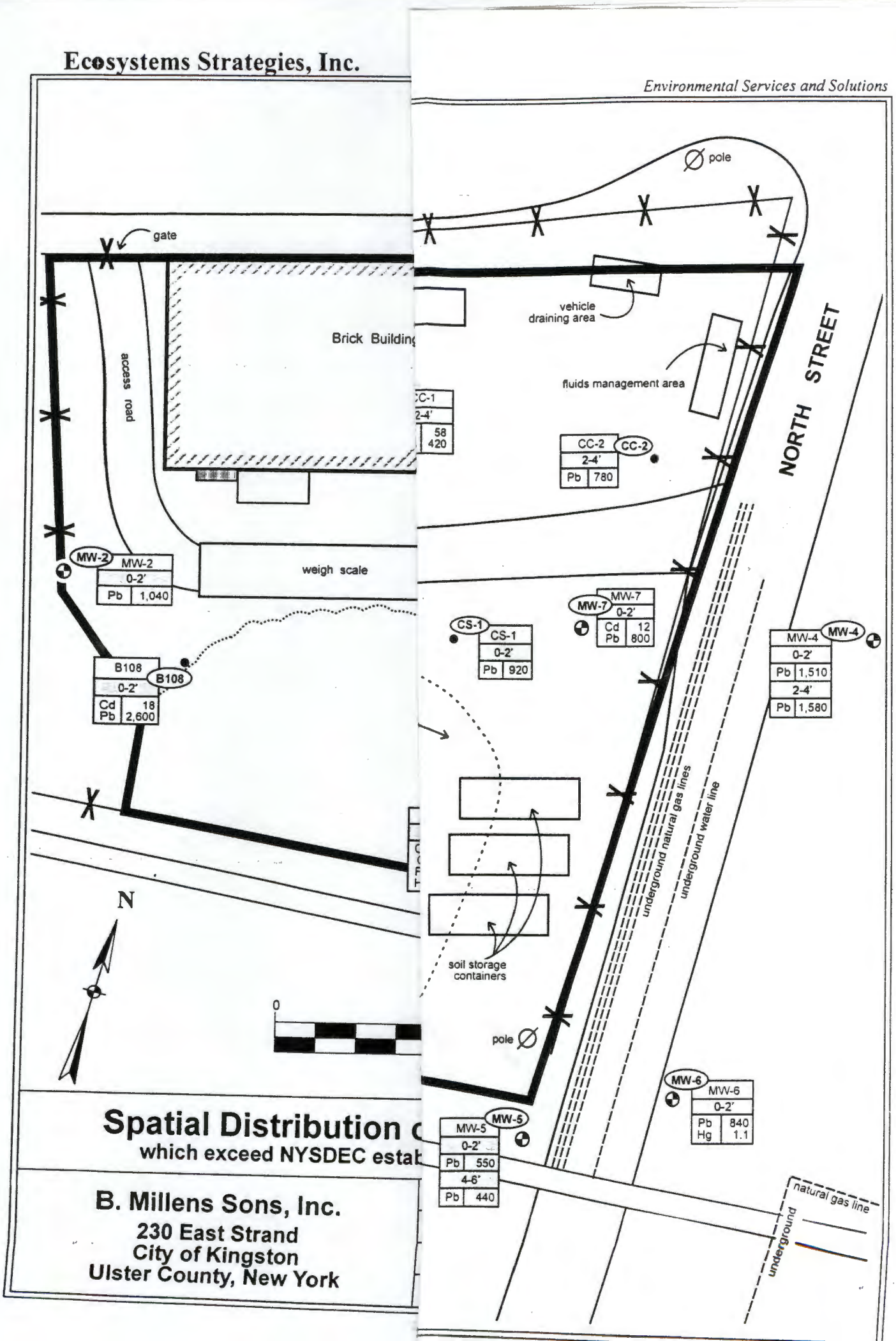
B. Millens Sons, Inc.
230 East Strand
City of Kingston
Ulster County, New York

Ecosystems Strategies, Inc.

*Environmental Services and Solutions*

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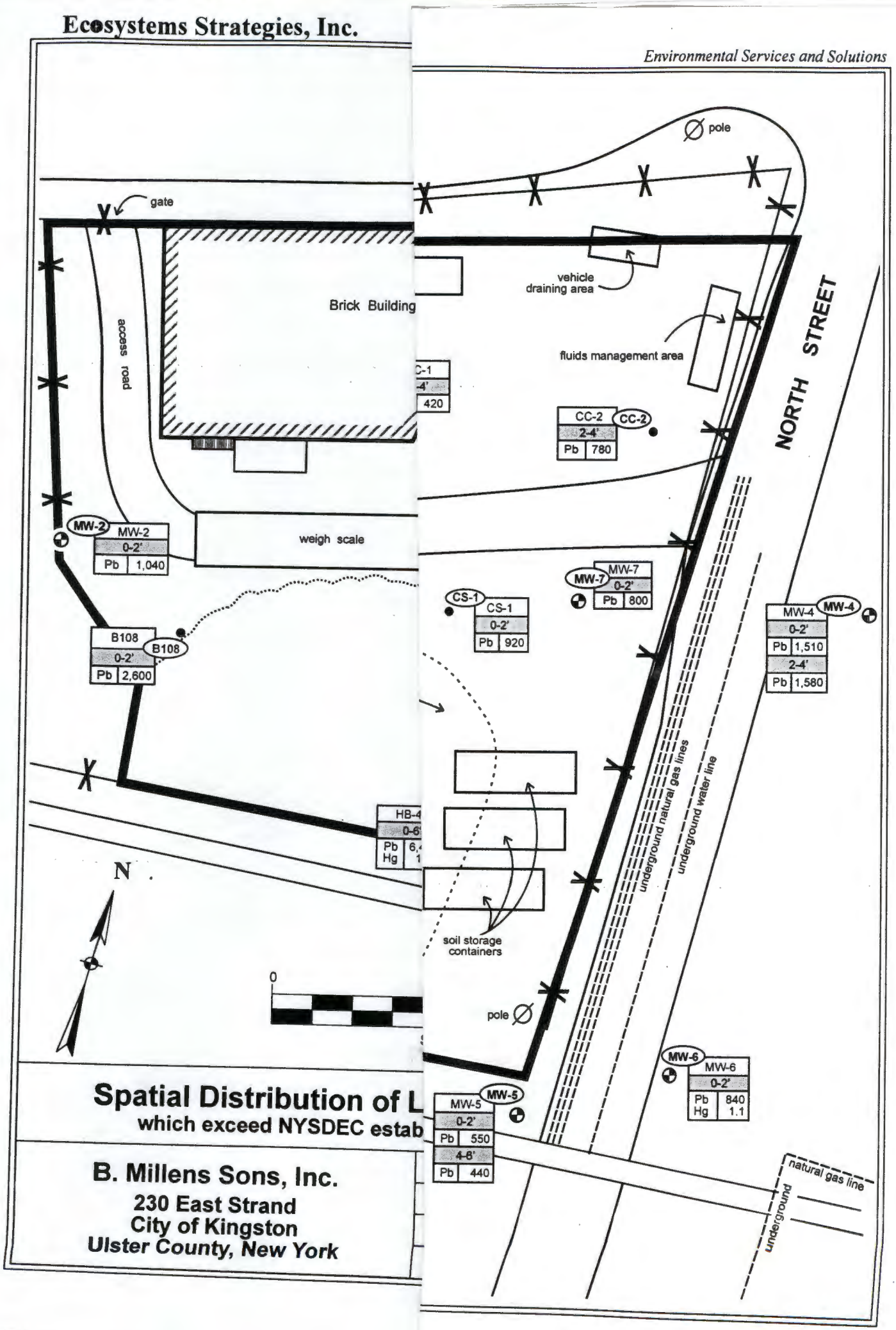
**230 East Strand**
**City of Kingston**
**Ulster County, New York**

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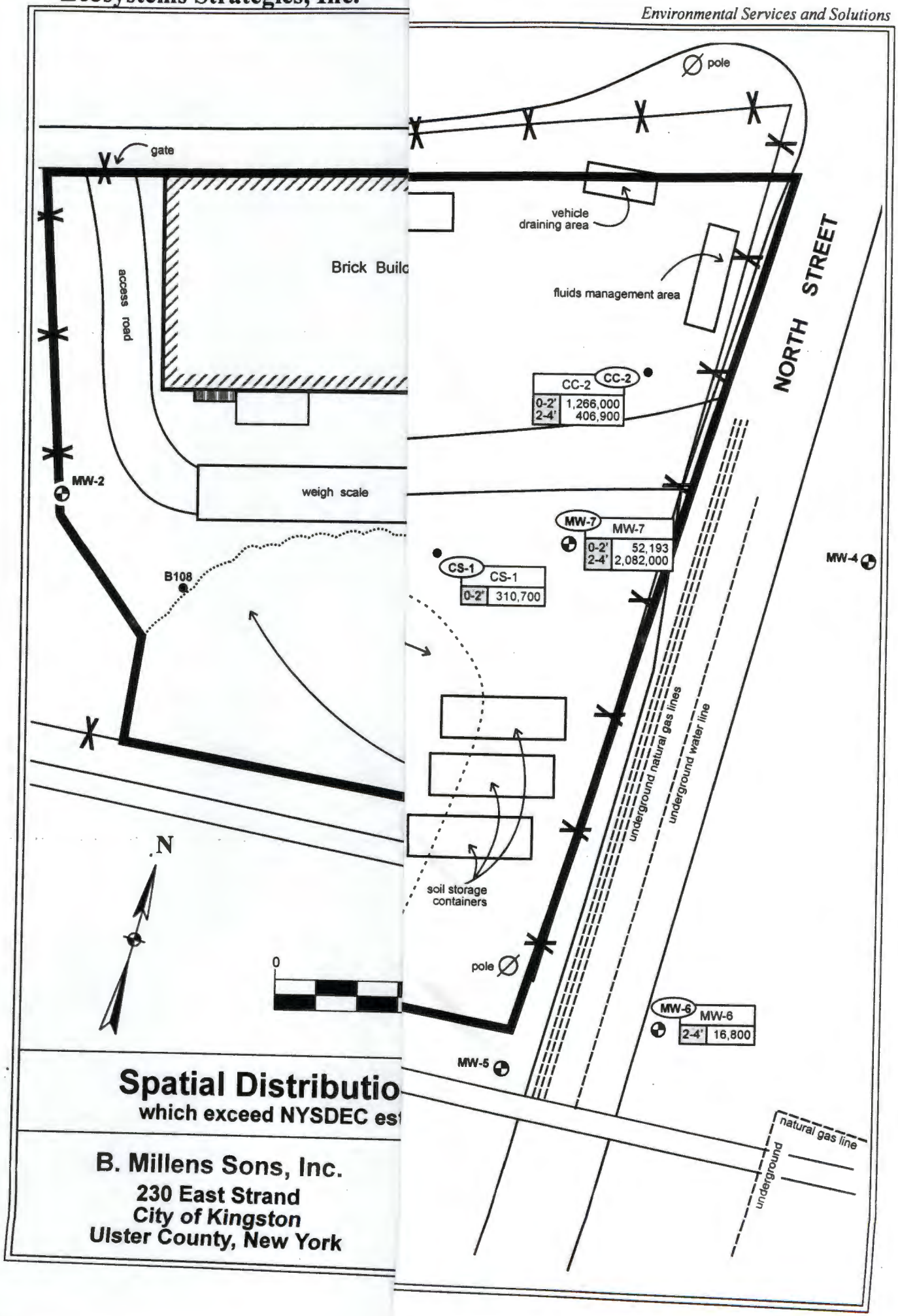
**City of Kingston**
**Ulster County, New York**

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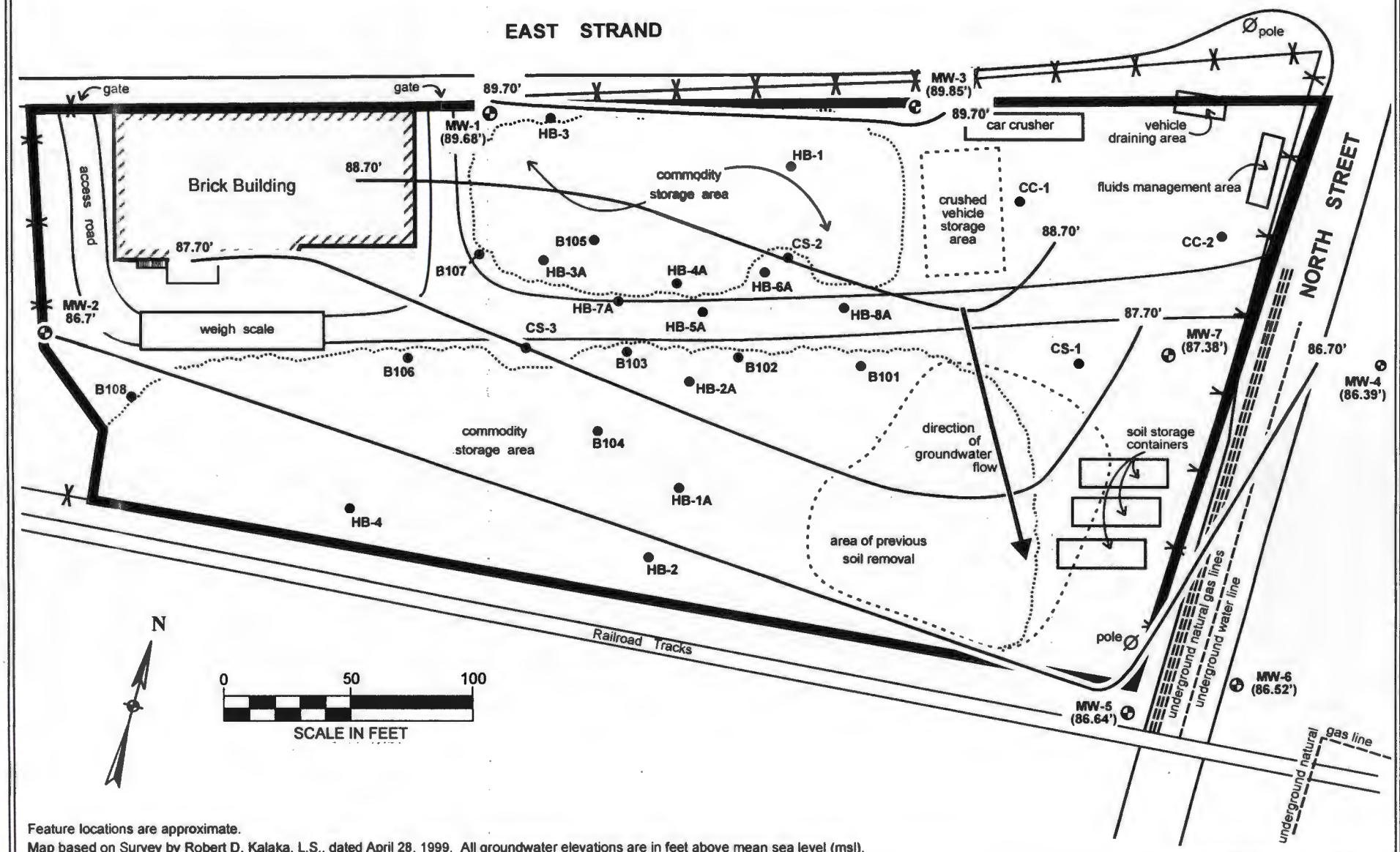
## B. Millens Sons, Inc.

230 East Strand
*City of Kingston*
Ulster County, New York




Feature locations are approximate.
Map based on Survey by Robert D. Kalaka, L.S., dated April 28, 1999. All groundwater elevations are in feet above mean sea level (msl).

# Groundwater Flow Map

**April 29, 1999**

B. Millens Sons, Inc.
230 East Strand
City of Kingston, Ulster County, New York

**LEGEND:**

- subject property border
- soil sample ● (B101 or HB-3)
- monitoring well ⊕ (MW-3)
- chain-link fence

| |
|---|
| ESI File Number: MK9690.20 |
| June 1999 |
| Scale as shown |
| Appendix A |

# APPENDIX B

## Tables

**Table 1: Summary of PCB Analysis of Soils - April 7, 1999**
(Concentrations shown in **bold** exceed NYSDEC established action levels. All results measured in $\mu$g/kg)

| PCBs[4] | Sample Identification | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B101 0-1' | B101 2-4' | B101 4-6' | B102 0-2' | B102 2-3' | B102 4' | B103 0-2' | B103 2-4' | B103 4-6' | B104 0-2' | B104 3-5' | B105 1-2.5' | B105 5-7' |
| PCB-1016 | ND[3] | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1221 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1232 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1242 | **2,800** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1248 | **1,700** | **76,000** | ND | **2,000** | **30,000** | 6,900 | **22,000** | 4,400 | ND | **65,000** | ND | **4,600** | ND |
| PCB-1254 | ND | ND | ND | ND | ND | ND | **43,000** | 3,300 | ND | ND | ND | **2,900** | ND |
| PCB-1260 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TOTAL PCBs | **4,500** | **76,000** | ND | **2,000** | **30,000** | 6,900 | **65,000** | 7,700 | ND | **65,000** | ND | **7,500** | ND |

Notes:
1. Action level for PCBs is 1,000 $\mu$g/kg for surface soils; 10,000 $\mu$g/kg for subsurface soils pursuant to the NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not detected above laboratory detection limit
3. Not able to determine presence or absence due to high concentration of PCB-1242.
4. Detection limit is based on a dilution of the sample (see laboratory report for specific sample dilutions).

**Table 1: Summary of PCB Analysis of Soils - April 7, 1999 Cont'd**
(Concentrations shown in **bold** exceed NYSDEC established action levels. All results measured in μg/kg)

| PCBs | Sample Identification | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B106 0-2' | B106 3-5' | B-107 0-2' | B107 4-6' | B108 0-2' | B108 3-5' | HB-1 0-2' | HB-2 0-2' | HB-2 2-3' | HB-3 0-2' | HB-3 2-4' | HB-4 0-6" | MW-7 0-2' | MW-7 2-4' | MW-7 5-7' |
| PCB-1016 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND[3] | ND |
| PCB-1221 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1232 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1242 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 620 | ND |
| PCB-1248 | **2,100** | ND | **2,900** | ND | **6,900** | 390 | **1,600** | ND | ND | ND | ND | 710 | **1,300** | 930 | ND |
| PCB-1254 | ND | ND | **2,900** | ND | ND | 410 | **2,100** | 640 | ND | **1,800** | ND | 880 | 840 | ND | ND |
| PCB-1260 | ND | ND | ND | ND | ND | ND | **1,800** | 420 | ND | ND | ND | ND | ND | ND | ND |
| TOTAL PCBs | **2,100** | ND | **5,800** | ND | **6,900** | 800 | **5,500** | **1,060** | ND | **1,800** | ND | **1,590** | **2,140** | 1,550 | ND |

Notes:
1. Action level for PCBs is 1,000 μg/kg for surface soils; 10,000 μg/kg for subsurface soils pursuant to the NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not detected above laboratory detection limit
3. Not able to determine presence or absence due to high concentration of PCB-1242.
4. Detection limit is based on a dilution of the sample (see laboratory report for specific sample dilutions).

**Table 2: Summary of PCB Analysis of Soils - June 15, 1999**
(Results in **bold** exceed designated action levels. All results measured in μg/kg).

| Compound[4] (EPA Method 8082) | Sample Identification | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB-1A 0-2' | HB-1A 2-3' | HB-2A 0-2' | HB-2A 2-4' | HB-2A 4-6' | HB-3A 0-6" | HB-4A 0-6" | HB-5A 0-12" | HB-6A 0-12" | HB-6A 1-2' | HB-7A 0-1' | HB-7A 1-2' | HB-8A 0-1' |
| PCB-1016 | ND | ND | ND | ND | ND | ND[3] | ND | ND | ND | ND | ND[3] | ND | ND[3] |
| PCB-1221 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1232 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCB-1242 | ND | ND | ND | ND | ND | **4,600** | ND | 300 | ND | ND | **8,300** | 5,700 | **8,600** |
| PCB-1248 | **4,000** | ND | **12,000** | ND | ND | **6,600** | **2,000** | 660 | 980 | **53,000** | **14,000** | 8,900 | **9,300** |
| PCB-1254 | **3,000** | ND | **9,300** | ND | ND | **2,900** | ND | 280 | 550 | ND | ND | ND | ND |
| PCB-1260 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **TOTAL PCBs** | **7,000** | ND | **21,300** | ND | ND | **14,100** | **2,000** | **1,240** | **1,530** | **53,000** | **22,300** | **14,600** | **17,900** |

Notes:
1. NYSDEC action level is 1,000 μg/kg for surface soils; 10,000 μg/kg for subsurface soils pursuant to the NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not Detected
3. Not able to determine presence or absence due to high concentration of PCB-1242
4. Detection limit is based on a dilution of the sample (see laboratory report for specific sample dilutions.)

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**Table 3: Summary of RCRA Metals Analysis of Soils - April 7, 1999**
(Concentrations shown in **bold** exceed NYSDEC established action levels. All results measured in mg/kg.)

| RCRA Metals | Background Levels[1] | Action Levels[1,2] | Sample Identification | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B101 0-1' | B102 0-2' | B103 0-2' | B104 0-2' | B105 1-2.5' | B106 0-2' | B107 0-2' | B108 0-2' | HB-1 0-2' | HB-2 0-2' | HB-3 0-2' | HB-4 0-6" | MW-7 0-2' |
| Arsenic | 3.0 - 12.0 | 7.5[1] | 4.7 | 7.3 | **19** | **22** | **33** | **9.2** | **30** | **15** | **12** | **69** | **14** | **40** | **8.7** |
| Cadmium | 0.1 - 1.0 | 10[2] | 8 | 7 | **24** | **23** | **15** | ND | **19** | **18** | **15** | **40** | 3 | **64** | **12** |
| Chromium | 1.5 - 40 | 50[2] | **55** | 45 | **130** | **51** | **210** | 27 | **180** | 37 | **60** | 13 | 11 | **96** | 48 |
| Lead | 4.0 - 61 | 400[2] | **800** | **650** | **2,500** | **6,100** | **5,400** | **1,800** | **7,000** | **2,600** | **1,500** | **8,200** | **680** | **6,460** | **800** |
| Mercury | 0.0001 - 0.2 | 1[2] | ND | **2.0** | **2.5** | **4.3** | **3.6** | **2.3** | **4.6** | 1.0 | **1.3** | **20.8** | **3.0** | **17.7** | 0.6 |

Notes: 1. Source: NYSDEC Technical and Administrative Guidance Memorandum (January 24, 1994).
2. NYSDEC guidance memoranda and/or publicly available records of decision (RODs).
ND = Not detected above laboratory detection limit

Barium, Selenium and Silver were not analyzed during this sampling event.

**Table 4: Summary of RCRA Metals Analysis of Soils - June 15, 1999**
(All data provided in mg/kg. Concentrations shown in **bold** exceed NYSDEC established action levels.)

| RCRA Metals | Background Levels[1] | Action Levels[1,2] | Sample Identification | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | HB-1A 0-2' | HB-1A 2-3' | HB-2A 0-2' | HB-2A 2-4' | HB-2A 4-6' | HB-3A 0-6" | HB-4A 0-6" | HB-5A 0-12" | HB-6A 0-12" | HB-6A 1-2' | HB-7A 0-1' | HB-7A 1-2' | HB-8A 0-1' |
| Cadmium | 0.1 - 1.0 | 10[2] | **30** | ND | **20** | ND | 1 | **25** | **15** | ND | 3 | **45** | **25** | **20** | **20** |
| Chromium | 1.5 - 40 | 50[2] | **105** | 35 | **60** | 5 | 9 | **110** | **80** | 30 | 17 | **100** | **100** | **60** | **120** |
| Lead | 4.0 - 61 | 400[2] | **3,050** | 350 | **2,450** | 70 | 10 | **3,300** | **6,250** | 150 | 170 | **7,500** | **3,200** | **1,250** | **2,150** |
| Mercury | 0.0001 - 0.2 | 1[2] | **12.9** | 0.3 | **2.4** | 0.2 | ND | **19.9** | **2.0** | 0.3 | 0.5 | **1.4** | **56.8** | **3.4** | **2.8** |

Notes: 1. Source: NYSDEC Technical and Administrative Guidance Memorandum (January 24, 1994).
2. NYSDEC guidance memoranda and/or publicly available records of decision (RODs)
ND = Not detected above laboratory detection limit

Arsenic, Barium, Selenium and Silver were not analyzed during this sampling event.

F:\DATA\WPDATA\PROJECTS\MK0690\MK0690.20\TABLES\RCRA METALS JUNE 1999 TABLE.WPD

**Table 5: Summary of Volatile Organic Compound Analysis of Soil Samples - April 7, 1999 Sampling** (Results in **bold** exceed designated action levels. All results measured in $\mu$g/kg).

| | Compound | Action Level[1,2] | Sample Identification: B102 0-2' | B102 2-3 | B102 4' | MW-7 0-2' | MW-7 2-4' | MW-7 5-7' |
|---|---|---|---|---|---|---|---|---|
| VOCs | Benzene | 60[1] | **19,000** | **1,300** | **280** | **250** | **18,000** | 4 |
| | sec-Butylbenzene | 100[2] | ND | ND | ND | 38 | ND | ND |
| | Ethylbenzene | 100[2] | **110,000** | **5,400** | ND | **250** | **140,000** | ND |
| | Isopropylbenzene | 100[2] | ND | ND | ND | 44 | ND | ND |
| | p-Isopropyltoluene | 100[2] | ND | ND | **600** | 51 | ND | ND |
| | MTBE | 1,000[2] | ND | ND | ND | 910 | ND | 32 |
| | Naphthalene | 200[2] | **43,000** | **2,100** | **1,600** | **3,100** | **100,000** | ND |
| | n-Propylbenzene | 100[2] | **39,000** | **2,000** | ND | **150** | **64,000** | ND |
| | Toluene | 100[2] | **250,000** | **20,000** | **3,400** | **1,800** | **320,000** | 7 |
| | 1,2,4-Trichlorobenzene | 3,400[1] | ND | ND | ND | ND | ND | 7 |
| | 1,2,4-Trimethylbenzene | 100[2] | **270,000** | **14,000** | **47,000** | **11,000** | **480,000** | ND |
| | 1,3,5-Trimethylbenzene | 100[2] | **81,000** | **4,600** | **23,000** | **5,800** | **150,000** | ND |
| | o-Xylene | 100[2] | **190,000** | **7,840** | **22,000** | **9,800** | **240,000** | 7 |
| | p/m-Xylene | 100[2] | **470,000** | **23,446** | **28,000** | **19,000** | **570,000** | 7 |
| | Total Xylenes | 100[2] | **660,000** | **31,286** | **50,000** | **28,800** | **810,000** | 14 |
| | TOTAL VOCS | 10,000[1] | **1,472,000** | **80,686** | **125,880** | **52,193** | **2,082,000** | 64 |

Notes:
1. Source: NYSDEC TAGM (January 24, 1994)
2. Source: STARS Memo (July 1993)
3. ND = Not Detected

**Table 6 : Summary of Groundwater Data - April 29, 1999 and June 15, 1999**
(Results in **bold** exceed designated action levels.)

| | Action Level[1] | Sample Identification | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | TB | HB-2A[5] |
| **Volatile Organic Compounds (VOCs) with MTBE - Method 8021B (Results measured in µg/l.)** | | | | | | | | | | |
| Benzene | 0.7 | ND | ND | ND | ND | ND | ND | **13** | ND | ND |
| n-Butylbenzene | 5 | ND | ND | ND | ND | ND | ND | 2 | ND | ND |
| Ethylbenzene | 5 | ND | ND | ND | ND | ND | ND | 2 | ND | ND |
| MTBE | 50 | ND | 44 | ND | **610** | **320** | **1,400** | **480** | ND | **65** |
| Toluene | 5 | ND | ND | ND | ND | ND | ND | **39** | ND | ND |
| 1,2,4-Trimethylbenzene | 5 | ND | ND | ND | ND | ND | ND | 4 | ND | ND |
| 1,3,5-Trimethylbenzene | 5 | ND | ND | ND | ND | ND | ND | 2 | ND | ND |
| o-Xylene | 5 | ND | ND | ND | ND | ND | ND | **8** | ND | ND |
| p/m-Xylene | 5 | ND | ND | ND | ND | ND | ND | **11** | ND | ND |
| **TOTAL RCRA METALS (Results measured in µg/l.)** | | | | | | | | | | |
| Cadmium | 10 | ND | ND | ND | ND | ND | ND | ND | NA | **23** |
| Chromium | 50 | NA | NA | NA | NA | NA | NA | NA | NA | ND |
| Lead | 50 | 3 | 26 | 6 | 15 | ND | ND | ND | NA | **1,100** |
| Mercury | 2 | ND | ND | ND | ND | ND | ND | ND | NA | ND |
| **PCBs - Method 608 (Results measured in µg/l.)** | | | | | | | | | | |
| TOTAL PCBs | 0.1 | ND | ND | ND | ND | ND | ND | ND | NA | ND |
| **DISSOLVED RCRA METALS (Results measured in µg/l.)** | | | | | | | | | | |
| Cadmium | 10 | NA | NA | NA | NA | NA | NA | NA | NA | ND |
| Chromium | 50 | NA | NA | NA | NA | NA | NA | NA | NA | ND |
| Lead | 50 | NA | NA | NA | NA | NA | NA | NA | NA | ND |
| Mercury | 2 | NA | NA | NA | NA | NA | NA | NA | NA | ND |

Notes:
1. Source: NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not Detected
3. NA = Not Analyzed
4. TB = Trip Blank
5. Sample collected June 15, 1999.

**Table 7: Comparison of Groundwater Data - November 7, 1998, April 29, 1999, and June 15, 1999**
(Results in **bold** exceed designated action levels.)

| | Action Level[1] | Sample Identification | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MW-1 (11/98) | MW-1 (4/99) | MW-2 (11/98) | MW-2 (4/99) | MW-3 (11/98) | MW-3 (4/99) | MW-4 (11/98) | MW-4 (4/99) |
| **Volatile Organic Compounds (VOCs) with MTBE - Method 8021B (Results measured in µg/l.)** | | | | | | | | | |
| Benzene | 0.7 | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Butylbenzene | 5 | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 5 | ND | ND | ND | ND | ND | ND | ND | ND |
| MTBE | 50 | 5 | ND | ND | 44 | ND | ND | **380** | **610** |
| Toluene | 5 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | 5 | 1 | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | 5 | ND | ND | ND | ND | ND | ND | ND | ND |
| o-Xylene | 5 | ND | ND | ND | ND | ND | ND | ND | ND |
| p/m-Xylene | 5 | 1 | ND | ND | ND | ND | ND | ND | ND |
| **TOTAL RCRA METALS (Results measured in µg/l.)** | | | | | | | | | |
| Cadmium | 10 | NA | ND | NA | ND | NA | ND | NA | ND |
| Chromium | 50 | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead[6] | 50 | 3 | 3 | 1 | 26 | ND | 6 | 2 | 15 |
| Mercury | 2 | NA | ND | NA | ND | NA | ND | NA | ND |
| **PCBs - Method 608 (Results measured in µg/l.)** | | | | | | | | | |
| TOTAL PCBs | 0.1 | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:
1. Source: NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not Detected
3. NA = Not Analyzed
4. TB = Trip Blank
5. Sample collected June 15, 1999.
6. Analysis conducted on November 6, 1998 samples was for dissolved lead.
7. Dissolved analyses for Lead and Cadmium were ND (not detected).

**Table 7: Comparison of Groundwater Data - November 7, 1998, April 29, 1999, and June 15, 1999 (Cont'd)** (Results in **bold** exceed designated action levels.)

| | Action Level[1] | Sample Identification: MW-5 (11/98) | MW-5 (4/99) | MW-6 (11/98) | MW-6 (4/99) | MW-7 (4/99) | FB-3 (11/98) | TB (4/99) | HB-2A[5] (6/99) |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (VOCs) with MTBE - Method 8021B (Results measured in µg/l.)** | | | | | | | | | |
| Benzene | 0.7 | ND | ND | **73** | ND | **13** | ND | ND | ND |
| n-Butylbenzene | 5 | ND | ND | ND | ND | 2 | ND | ND | ND |
| Ethylbenzene | 5 | ND | ND | ND | ND | 2 | ND | ND | ND |
| MTBE | 50 | **1,200** | **320** | **1,200** | **1,400** | **480** | ND | ND | **65** |
| Toluene | 5 | ND | ND | ND | ND | **39** | ND | ND | ND |
| 1,2,4-Trimethylbenzene | 5 | ND | ND | ND | ND | 4 | ND | ND | ND |
| 1,3,5-Trimethylbenzene | 5 | ND | ND | ND | ND | 2 | ND | ND | ND |
| o-Xylene | 5 | ND | ND | ND | ND | **8** | ND | ND | ND |
| p/m-Xylene | 5 | ND | ND | ND | ND | **11** | ND | ND | ND |
| **TOTAL RCRA METALS (Results measured in µg/l.)** | | | | | | | | | |
| Cadmium | 10 | NA | ND | NA | ND | ND | ND | NA | **23[7]** |
| Chromium | 50 | NA | NA | NA | NA | NA | ND | NA | ND |
| Lead[6] | 50 | 3 | ND | 3 | ND | ND | ND | NA | **1,100[7]** |
| Mercury | 2 | NA | ND | NA | ND | ND | ND | NA | ND |
| **PCBs - Method 608 (Results measured in µg/l.)** | | | | | | | | | |
| TOTAL PCBs | 0.1 | ND | ND | ND | ND | ND | ND | NA | ND |

Notes:
1. Source: NYSDEC Technical Administrative Guidance Memorandum (TAGM) Revised January 24, 1994.
2. ND = Not Detected
3. NA = Not Analyzed
4. TB = Trip Blank
5. Sample collected June 15, 1999.
6. Analysis conducted on November 6, 1998 samples was for dissolved lead.
7. Dissolved analyses for Lead and Cadmium were ND (not detected).

# APPENDIX D

## Soil Boring Logs
## Monitoring Well Installation Logs

# BORING LOG

**B-101**

| | | | |
|---|---|---|---|
| Date: | April 7, 1999 | Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Driller: | J. DeAngelis, Jr. | | |
| Drill Rig: | CME-75 Truck Unit | | |
| Sampler (I.d.) | Split-Spoon 2-3/8" | | |
| Hammer Wt: | 140lbs. Auto-Hammer | Project Location: | East Strand Ave., Kingston, NY |
| Casing (I.d.): | HSA 2-1/4" | | |
| Water: | 3'-6" | Log ID No.: | 99030-01 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | ROCK | |
| ORGANIC | | TILL | |
| SUBSOIL | | RISER w/CEMENT | |
| SILT | | RISER w/SAND | |
| CLAY | | RISER w/BENTONITE | |
| GRAVEL | | SCREEN w/SAND | |
| WATER: | ▽ | SPT | |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 11 | 96 | 46 | 75 | Damp | | | d.(br) | SAND, some Stone, Metal fragments | | FILL | 1 | 24" | 13" |
| 2' to 4' | 13 | 17 | 16 | 16 | Wet | | 3'-0" | | | | | 2 | 24" | 13" |
| | | | | | | ▽ | 4'-0" | (bl) | SAND, some Stone, little Silt, Fibers | | | | | |
| 4' to 6' | 5 | 4 | 4 | 5 | Wet | | 5'-0" | d.(br) | ORGANIC SILT, little Sand | | ORGANICS | 3 | 24" | 20" |
| | | | | | | | 6'-0" | d.(gy) | SAND, little Silt | | OUTWASH | | | |
| | | | | | | | | | End of Exploration @ 6'-0" | | | | | |

# BORING LOG

**B-102**

| | | | |
|---|---|---|---|
| Date: | April 7, 1999 | Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Driller: | J. DeAngelis, Jr. | | |
| Drill Rig: | CME-75 Truck Unit | | |
| Sampler (I.d.) | Split-Spoon 2-3/8" | | |
| Hammer Wt: | 140lbs. Auto-Hammer | Project Location: | East Strand Ave., Kingston, NY |
| Casing (I.d.): | HSA 2-1/4" | | |
| Water: | 4'-6" | Log ID No.: | 99030-02 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | | ROCK |
| ORGANIC | | | TILL |
| SUBSOIL | | | RISER w/CEMENT |
| SILT | | | RISER w/SAND |
| CLAY | | | RISER w/BENTONITE |
| GRAVEL | | | SCREEN w/SAND |
| WATER: | ▼ | | SPT |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water: | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 17 | 55 | 240 | 20 | Damp | | | d.(br) | SAND & STONE, Brick fragments | | FILL | 1 | 24" | 21" |
| 2' to 4' | 30 | 99 | 68 | 14 | Damp | | 4'-0" | | | | | 2 | 24" | 0" |
| 4' to 6' | 8 | 8 | 8 | 7 | Wet | ▼ | 6'-0" | d.(br) | ORGANIC SILT, little Sand, Stone | | | 3 | 24" | 4" |
| | | | | | | | | | End of Exploration @ 6'-0" | | | | | |
| | | | | | | | | | Earlier refusals @ 1'-6" and 2'-6" | | | | | |

# BORING LOG

**B-103**

| | |
|---|---|
| Date: | April 7, 1999 |
| Driller: | J. DeAngelis, Jr. |
| Drill Rig: | CME-75 Truck Unit |
| Sampler (I.d.) | Split-Spoon 2-3/8" |
| Hammer Wt: | 140lbs. Auto-Hammer |
| Casing (I.d.): | HSA 2-1/4" |
| Water: | 3'-10" |
| Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Project Location: | East Strand Ave., Kingston, NY |
| Log ID No.: | 99030-03 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | ROCK | |
| ORGANIC | | TILL | |
| SUBSOIL | | RISER w/CEMENT | |
| SILT | | RISER w/SAND | |
| CLAY | | RISER w/BENTONITE | |
| GRAVEL | | SCREEN w/SAND | |
| WATER: | ▼ | SPT | |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 27 | 43 | 29 | 56 | Damp | | | d.(br) | SAND, some Silt, Brick, Stone fragments | | FILL | 1 | 24" | 24" |
| 2' to 3' | 42 | 160 | | | Damp | ▼ | 4'-0" | | | | | 2 | 12" | 6" |
| 4' to 6' | 3 | 5 | 6 | 5 | Wet | | 4'-6" | d.(br) | ORGANIC SILT, little Clay, Sand | | ORGANICS | 3 | 24" | 22" |
| | | | | | | | 5'-0" | (ob) | SILT, little Sand(f) | | SUBSOIL | | | |
| | | | | | | | 6'-0" | (gy) | SAND(c-f), trace Silt | | OUTWASH | | | |

End of Exploration @ 6'-0"

SITE Environmental Services, LLC 121 Old Ansonia Road, Seymour, Connecticut 06483 Tel. (203) 734-5880 Fax 732-3202

# BORING LOG

**B-104**

| | | | |
|---|---|---|---|
| Date: | April 7, 1999 | Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Driller: | J. DeAngelis, Jr. | | |
| Drill Rig: | CME-75 Truck Unit | | |
| Sampler (I.d.) | Split-Spoon 2-3/8" | | |
| Hammer Wt: | 140lbs. Auto-Hammer | Project Location: | East Strand Ave., Kingston, NY |
| Casing (I.d.): | HSA 2-1/4" | | |
| Water: | 4'-0" | Log ID No.: | 99030-04 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | | ROCK |
| ORGANIC | | | TILL |
| SUBSOIL | | | RISER w/CEMENT |
| SILT | | | RISER w/SAND |
| CLAY | | | RISER w/BENTONITE |
| GRAVEL | | | SCREEN w/SAND |
| WATER: ▽ | | | SPT |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water: | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 1'-6" | 3 | 25 | 95 | | Moist | | | d.(br) | SAND, some Silt, Brick, Metal fragments | | FILL | 1 | 18" | 8" |
| 3' to 5' | 5 | 7 | 4 | 8 | Moist | ▽ | 3'-0" | | | | | 2 | 24" | 24" |
| | | | | | | | 4'-0" | (bl) | SAND, some Silt, Wood fragments | | | | | |
| | | | | | | | 5'-0" | d.(gy) | SILT, some Sand, little Stone | | SUBSOIL | | | |
| | | | | | | | | | End of Exploration @ 5'-0" | | | | | |

# BORING LOG

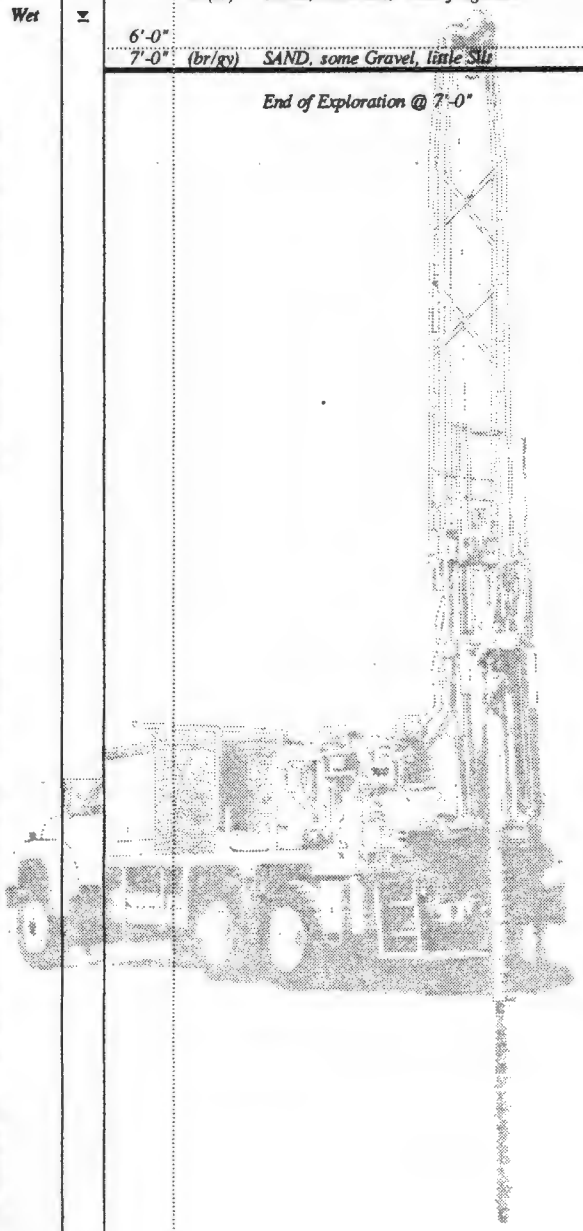
**B-105**

| | | | |
|---|---|---|---|
| Date: | April 7, 1999 | Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Driller: | J. DeAngelis, Jr. | | |
| Drill Rig: | CME-75 Truck Unit | | |
| Sampler (I.d.) | Split-Spoon 2-3/8" | | |
| Hammer Wt: | 140lbs. Auto-Hammer | Project Location: | East Strand Ave., Kingston, NY |
| Casing (I.d.): | HSA 2-1/4" | | |
| Water: | 4'-6" | Log ID No.: | 99030-05 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | | ROCK |
| ORGANIC | | | TILL |
| SUBSOIL | | | RISER w/CEMENT |
| SILT | | | RISER w/SAND |
| CLAY | | | RISER w/BENTONITE |
| GRAVEL | | | SCREEN w/SAND |
| WATER: | ▼ | | SPT |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1' to 2'-6" | 8 | 19 | 80 | | Dry | | | d.(br) | COBBLES, little Sand, Brick fragments | | FILL | 1 | 18" | 9" |
| 3' to 5' | 11 | 14 | 11 | 5 | Damp | | 3'-0" | | | | | 2 | 24" | 0" |
| 5' to 7' | 3 | 3 | 4 | 4 | Wet | ▼ | | d.(br) | SAND, some Silt, Wood fragments | | | 3 | 24" | 14" |
| | | | | | | | 6'-0" | | | | | | | |
| | | | | | | | 7'-0" | (br/gy) | SAND, some Gravel, little Silt | | | | | |
| | | | | | | | | | End of Exploration @ 7'-0" | | | | | |



# BORING LOG

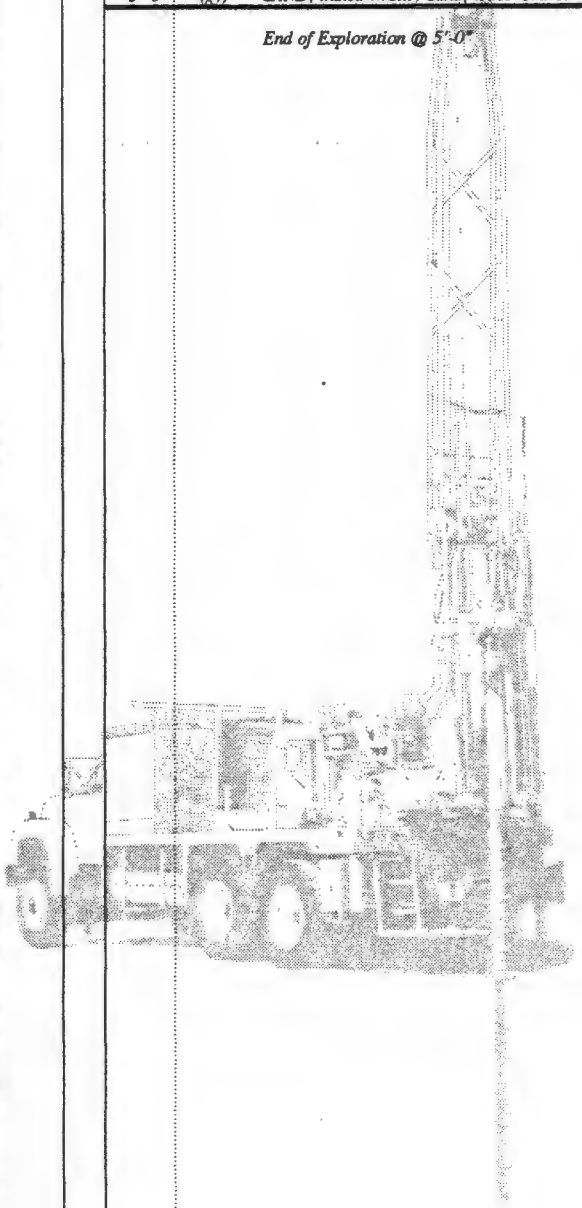
**B-106**

| | | | |
|---|---|---|---|
| Date: | April 7, 1999 | Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Driller: | J. DeAngelis, Jr. | | |
| Drill Rig: | CME-75 Truck Unit | | |
| Sampler (I.d.) | Split-Spoon 2-3/8" | | |
| Hammer Wt: | 140lbs. Auto-Hammer | Project Location: | East Strand Ave., Kingston, NY |
| Casing (I.d.): | HSA 2-1/4" | | |
| Water: | 4'-0" | Log ID No.: | 99030-06 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | ROCK | |
| ORGANIC | | TILL | |
| SUBSOIL | | RISER w/CEMENT | |
| SILT | | RISER w/SAND | |
| CLAY | | RISER w/BENTONITE | |
| GRAVEL | | SCREEN w/SAND | |
| WATER: | ▼ | SPT | |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 1'-2" | 8 | 29 | 50/2" | | Damp | | | d.(br) | SAND, some Silt, Cobbles, Metal fragments | | FILL | 1 | 14" | 8" |
| 3' to 5' | 33 | 8 | 9 | 4 | Wet | ▼ | 3'-6" | | | | | 2 | 24" | 17" |
| | | | | | | | 5'-0" | (gy) | SAND, mixed w/Silty Sand, trace Gravel | | | | | |
| | | | | | | | | | End of Exploration @ 5'-0" | | | | | |



# BORING LOG

**B-107**

| | |
|---|---|
| Date: | April 7, 1999 |
| Driller: | J. DeAngelis, Jr. |
| Drill Rig: | CME-75 Truck Unit |
| Sampler (I.d.) | Split-Spoon 2-3/8" |
| Hammer Wt: | 140lbs. Auto-Hammer |
| Casing (I.d.): | HSA 2-1/4" |
| Water: | 4'-0" |
| Client: | Ecosystems Strategies, Inc.<br>60 Worrall Avenue<br>Poughkeepsie, NY 12603-2332 |
| Project Location: | East Strand Ave., Kingston, NY |
| Log ID No.: | 99030-07 |

LEGEND

| | | | |
|---|---|---|---|
| FILL | | ROCK | |
| ORGANIC | | TILL | |
| SUBSOIL | | RISER w/CEMENT | |
| SILT | | RISER w/SAND | |
| CLAY | | RISER w/BENTONITE | |
| GRAVEL | | SCREEN w/SAND | |
| WATER: | ▼ | SPT | |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water | Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 15 | 23 | 25 | 23 | Damp | | | d.(br) | SAND, some Organic Silt, Stone, Brick fragments | | FILL | 1 | 24" | 20" |
| 4' to 6' | 3 | 3 | 1 | 3 | Wet | ▼ | 4'-0" | | | | | 2 | 24" | 19" |
| | | | | | | | 5'-0" | d.(gy) | ORGANIC SILT, trace Clay | | ORGANICS | | | |
| | | | | | | | 6'-0" | (ob/br) | SILT, some Sand(f), trace Gravel | | SUBSOIL | | | |
| | | | | | | | | | End of Exploration @ 6'-0" | | | | | |

# BORING LOG

**B-108**

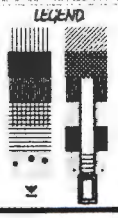
| | |
|---|---|
| Date: | April 7, 1999 |
| Driller: | J. DeAngelis, Jr. |
| Drill Rig: | CME-75 Truck Unit |
| Sampler (I.d.) | Split-Spoon 2-3/8" |
| Hammer Wt: | 140lbs. Auto-Hammer |
| Casing (I.d.): | HSA 2-1/4" |
| Water: | 4'-0" |

Client: **Ecosystems Strategies, Inc.**
**60 Worrall Avenue**
**Poughkeepsie, NY 12603-2332**

Project Location: East Strand Ave., Kingston, NY

Log TD No.: 99030-08

LEGEND



FILL, ORGANIC, SUBSOIL, SILT, CLAY, GRAVEL, WATER: ROCK, TILL, RISER w/CEMENT, RISER w/SAND, RISER w/BENTONITE, SCREEN w/SAND, SPT

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water: Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General | No. | Pen. | Rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 9 | 15 | 15 | 18 | Damp | | d.(br) | SAND, some Silt, little Stone fragments | | FILL | 1 | 24" | 20" |
| 3' to 5' | 3 | 2 | 4 | 7 | Moist | ▼ | | | | | 2 | 24" | 9" |
| | | | | | | | | 5'-0" | | | | | |
| | | | | | | | | End of Exploration @ 5'-0" | | | | | |

# BORING LOG

**MW-7**

| | |
|---|---|
| Date: | April 7, 1999 |
| Driller: | J. DeAngelis, Jr. |
| Drill Rig: | CME-75 Truck Unit |
| Sampler (I.d.): | Split-Spoon 2-3/8" |
| Hammer Wt: | 140lbs. Auto-Hammer |
| Casing (I.d.): | HSA 4-1/4" |
| Water: | 4'-0" |

Client: **Ecosystems Strategies, Inc.**
**60 Worrall Avenue**
**Poughkeepsie, NY 12603-2332**

Project Location: East Strand Ave., Kingston, NY

Log ID No.: 99030-09

LEGEND

| | | | |
|---|---|---|---|
| FILL | | ROCK | |
| ORGANIC | | TILL | |
| SUBSOIL | | RISER w/CEMENT | |
| SILT | | RISER w/SAND | |
| CLAY | | RISER w/BENTONITE | |
| GRAVEL | | SCREEN w/SAND | |
| WATER: | ▼ | SPT | |

| Sample Depth | Blows Counts per 6" | | | | Moisture | Water Changes | Color | DESCRIPTION OF FINDINGS | Elev. | General |
|---|---|---|---|---|---|---|---|---|---|---|
| 0' to 2' | 10 | 22 | 28 | 27 | Damp | 9" | d.(br) | SAND, some Silt, Wood, Stone fragments | | FILL |
| | | | | | | | d.(br) | COBBLES, some Sand, Metal fragments - odor | | |
| 2' to 4' | 29 | 49 | 89 | 102 | Damp | 4'-0" ▼ | | | | |
| 5' to 7' | 6 | 7 | 6 | 7 | Wet | 5'-0" | (bl) | SAND, little Gravel, Silt | | |
| | | | | | | | (gy) | SAND(m-f), some Silt | | OUTWASH |
| | | | | | | 6'-9" | | | | |
| | | | | | | | (gy) | SAND(c-f) | | |
| | | | | | | 10'-0" | | | | |
| | | | | | | | d.(br) | ORGANIC SILT | | ORGANICS |
| | | | | | | 12'-0" | | | | |

End of Exploration @ 12'-0" Set 2" Well at 12'-0"

Earlier attempt refused @ 4'-0" Metal?

| No. | Pen. | Rec. |
|---|---|---|
| 1 | 24" | 24" |
| 2 | 24" | 20" |
| 3 | 24" | 20" |

Screen 12'-0" to 2'-0"
Riser 2'-0" to +2'-0"
Sand 12'-0" to 1'-6"
Bentonite 1'-6" to 1'-0"
Concrete 1'-0" to 0'-0"
Protector Pipe

SITE Environmental Services, LLC 121 Old Ansonia Road, Seymour, Connecticut 06483 Tel. (203) 734-5880 Fax 732-3202

# APPENDIX E

## Tables Included in Site Investigation Report 11/98

**Table 1: Laboratory Results of July 1996 Sampling Event (TCLP analyses)**

| Analyte | MCL | Area A | Area B | Area C | Area D |
|---|---|---|---|---|---|
| Matrix ---- | ---- | Gas/Water | Soil | Surface Water | Surface Water |
| **Metals** | | | | | |
| arsenic | 5.0 | <0.5 | <0.2 | <0.2 | <0.2 |
| barium | 100.0 | <0.25 | 0.5 | 0.16 | 0.17 |
| cadmium | 1.0 | <0.05 | 0.04 | 0.02 | <0.02 |
| chromium | 5.0 | 0.06 | <0.02 | <0.02 | <0.02 |
| lead | 5.0 | 4.9 | 0.78 | <0.2 | <0.2 |
| mercury | 0.2 | <0.035 | <0.0002 | <0.0002 | <0.0002 |
| selenium | 1.0 | <0.25 | <0.2 | <0.2 | <0.2 |
| silver | 5.0 | <0.05 | <0.02 | <0.02 | <0.02 |
| **Organic Compounds** | | | | | |
| PCBs | | ND | ND | ND | ND |
| benzene | 0.5 | 2000 | <200 | <200 | <200 |
| toluene | NA | <200 | <200 | <200 | <200 |
| ethylbenzene | NA | <200 | <200 | <200 | <200 |
| xylenes | NA | <200 | <200 | <200 | <200 |
| o-methylphenol | NA | <5000 | 4 | <100 | 140 |
| m,p-methylphenol | NA | <5000 | 13 | <100 | 120 |

## Table 2: Summary of Soil Samples Collected November 4, 1998 and November 5, 1998

| | Number of Samples Collected | | | |
|---|---|---|---|---|
| **Sample Location** | **VOCs (8021 + MTBE)** | **PAHs (8270)** | **RCRA Metals** | **PCBs (8080)** |
| Car Crusher (Borings) | 6 | 4 | 6 | 4 |
| Commodity Storage Area (Borings) | 14 | 14 | 14 | 12 |
| Off-site Borings | 5 | 5 | 4 | 4 |
| | | | | |
| **Total # of Samples** | **25** | **23** | **24** | **20** |

Notes: 1. All soil samples were collected and analyzed in accordance with NYSDEC protocols.

Table 3: Summary of Laboratory Analyses for Detected PCBs in Soils
Analyzed by SW846 Method 8080

| | SAMPLE ID | DEPTH | COMPOUND (METHOD) | LEVEL DETECTED | ACTION LEVEL |
|---|---|---|---|---|---|
| PCBs | MW-1 | 0-2' | Aroclor 1254 | 470 | 1,000 |
| | MW-2 | 0-2' | Aroclor 1254 | **1,700** | 1,000 |
| | MW-4 | 0-2' | Aroclor 1254 | **3,000** | 1,000 |
| | MW-4 | 2-4' | Aroclor 1254 | 1,800 | 10,000 |
| | MW-6 | 0-2' | Aroclor 1254 | 540 | 1,000 |
| | CS-1 | 0-2' | Aroclor 1254 | 1,000 | 1,000 |
| | CS-2 | 0-2' | Aroclor 1260 | **6,100** | 1,000 |
| | CS-2 | 2-4' | Aroclor 1242 | **49,000** | 10,000 |
| | CS-3 | 0-2' | Aroclor 1248 | **6,600** | 1,000 |
| | CS-3 | 0-2' | Aroclor 1254 | **18,000** | 1,000 |
| | CS-3 | 2-4' | Aroclor 1248 | 3,900 | 10,000 |

Notes: Source: NYSDEC TAGM (January 24, 1994)
All units shown are $\mu$g/kg

# Table 4: Summary of Detected Metals and Volatile Organic Compounds in Soil

| | Compound (Method) | Action Level | MW-1 (Nov. 4, 1998) 0-2' [1] | MW-1 2-4' | MW-1 4-6' | MW-1 6-8' | MW-2 (Nov. 4, 1998) 0-2' [1] | MW-2 2-4' | MW-2 4-6' |
|---|---|---|---|---|---|---|---|---|---|
| METALS (mg/kg) | Arsenic (7060) | 7.5 | **48** | 2.6 | **19** | 2.0 | **11** | 5.0 | NA[3] |
| | Barium (6010A) | 300 | 84 | 11 | 120 | 36 | 150 | 56 | NA |
| | Cadmium (6010A) | 1 | **2** | **2** | ND | **2** | **2** | **2** | NA |
| | Chromium (6010A) | 10 | **14** | 2 | **18** | 6 | **12** | 6 | NA |
| | Lead (6010A) | 400 | **460** | 20 | **780** | 10 | **1,040** | 10 | NA |
| | Mercury (7471) | 0.1 | **0.1** | **0.6** | **7.1** | ND | **0.6** | ND | NA |
| | Selenium (7740) | 2 | 0.9 | ND | 1.4 | ND | 0.5 | ND | NA |
| | Silver (6010A) | 4 | ND | ND | ND | ND | ND | ND | NA |
| VOLATILES ($\mu$g/kg) 8021B | | | | | | | | | |
| | Benzene | 60 | ND | ND | ND | ND | ND | ND | ND |
| | n-Butylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | sec-Butylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | Ethylbenzene | 5,500 | ND | ND | ND | ND | ND | ND | ND |
| | Isopropylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | p-Isopropyltoluene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | MTBE | 1,000 | ND | ND | ND | ND | ND | ND | ND |
| | Napthalene | 13,000 | ND | ND | ND | ND | ND | ND | ND |
| | n-Propylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | Styrene | NE | ND | ND | ND | ND | ND | ND | ND |
| | Toluene | 1,500 | 7 | ND | ND | ND | ND | ND | ND |
| | 1,2,4-Trimethylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | 1,3,5 -Trimethylbenzene | 100 | ND | ND | ND | ND | ND | ND | ND |
| | o-Xylene | 1,200 | ND | ND | ND | ND | ND | ND | ND |
| | p/m-Xylene | 1,200 | ND | ND | ND | ND | ND | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) or NYSDEC STARS MEMO #1 if no TAGM level was established (August 1992)
2. ND = Not Detected 3. NA = Not Analyzed 4. NE= Not Established 5. J = Estimated value based on achievable detection limits

## Table 4: Summary of Detected Metals and Volatile Organic Compounds in Soil

| | Compound Action[1] (Method) | Level | FB-1 (Nov. 4, 1998) | MW-3 (Nov. 4, 1998) | | MW-4 (Nov. 4, 1998) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 0-2'[1] | 2-4' | 0-2'[1] | 2-4' | 4-6' |
| METALS (mg/kg) | Arsenic (7060) | 7.5 | ND | **22** | **7.9** | **11** | **16** | **12** |
| | Barium (6010A) | 300 | ND | 254 | 79 | 128 | **390** | 84 |
| | Cadmium (6010A) | 1 | ND | **6** | **2** | ND | **6** | **2** |
| | Chromium (6010A) | 10 | ND | **30** | **12** | **24** | **30** | 5 |
| | Lead (6010A) | 400 | ND | **1,720** | 90 | **1,510** | **1,580** | 160 |
| | Mercury (7471) | 0.1 | ND | **1.2** | ND | **0.8** | **0.6** | **0.2** |
| | Selenium (7740) | 2 | ND | 0.7 | ND | 1.2 | 0.5 | 0.5 |
| | Silver (6010A) | 4 | ND | ND | ND | ND | ND | ND |
| VOLATILES (µg/kg) 8021B | | | | | | | | |
| | Benzene | 60 | ND | ND | ND | ND | ND | ND |
| | n-Butylbenzene | 100 | ND | ND | ND | **640** | ND | ND |
| | sec-Butylbenzene | 100 | ND | ND | ND | ND | ND | ND |
| | Ethylbenzene | 5,500 | ND | ND | ND | ND | ND | ND |
| | Isopropylbenzene | 100 | ND | ND | ND | ND | ND | ND |
| | p-Isopropyltoluene | 100 | ND | ND | ND | ND | ND | ND |
| | MTBE | 1,000 | ND | ND | ND | ND | ND | ND |
| | Napthalene | 13,000 | ND | 3 | ND | 720 | ND | ND |
| | n-Propylbenzene | 100 | ND | ND | ND | ND | ND | ND |
| | Styrene | NE | ND | ND | ND | ND | ND | ND |
| | Toluene | 1,500 | ND | ND | ND | ND | ND | ND |
| | 1,2,4-Trimethylbenzene | 100 | ND | ND | ND | **810** | ND | ND |
| | 1,3,5 -Trimethylbenzene | 100 | ND | ND | ND | ND | ND | ND |
| | o-Xylene | 1,200 | ND | ND | ND | ND | ND | ND |
| | p/m-Xylene | 1,200 | ND | ND | ND | 770 | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) or NYSDEC STARS MEMO #1 if no TAGM level was established (August 1992)
2. ND = Not Detected 3. NA = Not Analyzed 4. NE= Not Established 5. J = Estimated value based on achievable detection limits

# Table 4: Summary of Detected Metals and Volatile Organic Compounds in Soil

| | Compound (Method) | Action[1] Level | MW-5 (Nov. 5, 1998) 0-2'[1] | MW-5 (Nov. 5, 1998) 4-6' | MW-6 (Nov. 5, 1998) 0-2'[1] | MW-6 (Nov. 5, 1998) 2-4' | FB-2 (Nov. 5, 1998) |
|---|---|---|---|---|---|---|---|
| METALS (mg/kg) | Arsenic (7060) | 7.5 | **19** | **14** | **14** | 5.9 | ND |
| | Barium (6010A) | 300 | 168 | 47 | 152 | 56 | ND |
| | Cadmium (6010A) | 1 | ND | ND | **4** | **1** | ND |
| | Chromium (6010A) | 10 | 9 | **17** | **30** | 5 | ND |
| | Lead (6010A) | 400 | **550** | **440** | **840** | 60 | ND |
| | Mercury (7471) | 0.1 | ND | **0.3** | **1.1** | ND | ND |
| | Selenium (7740) | 2 | ND | 0.7 | 0.9 | ND | ND |
| | Silver (6010A) | 4 | ND | ND | ND | ND | ND |
| VOLATILES ($\mu$g/kg) 8021B | | | | | | | |
| | Benzene | 60 | ND | ND | ND | ND | ND |
| | n-Butylbenzene | 100 | ND | ND | ND | **8,400** | ND |
| | sec-Butylbenzene | 100 | ND | ND | ND | **8,400** | ND |
| | Ethylbenzene | 5,500 | ND | ND | ND | ND | ND |
| | Isopropylbenzene | 100 | ND | ND | ND | ND | ND |
| | p-Isopropyltoluene | 100 | ND | ND | ND | ND | ND |
| | MTBE | 1,000 | ND | ND | ND | ND | ND |
| | Napthalene | 13,000 | ND | ND | ND | ND | ND |
| | n-Propylbenzene | 100 | ND | ND | ND | ND | ND |
| | Styrene | NE | ND | ND | ND | ND | ND |
| | Toluene | 1,500 | ND | ND | ND | ND | ND |
| | 1,2,4-Trimethylbenzene | 100 | ND | ND | ND | ND | ND |
| | 1,3,5 -Trimethylbenzene | 100 | ND | ND | ND | ND | ND |
| | o-Xylene | 1,200 | ND | ND | ND | ND | ND |
| | p/m-Xylene | 1,200 | ND | ND | ND | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) or NYSDEC STARS MEMO #1 if no TAGM level was established (August 1992)
2. ND = Not Detected 3. NA = Not Analyzed 4. NE= Not Established 5. J = Estimated value based on achievable detection limits

## Table 4: Summary of Detected Metals and Volatile Organic Compounds in Soil

| | Compound (Method) | Action[1] Level | CC-1 (Nov. 5, 1998) 0-2'[1] | CC-1 (Nov. 5, 1998) 2-4' | CC-2 (Nov. 5, 1998) 0-2'[1] | CC-2 (Nov. 5, 1998) 2-4' | CS-1 (Nov. 5, 1998) 0-2'[1] |
|---|---|---|---|---|---|---|---|
| METALS (mg/kg) | Arsenic (7060) | 7.5 | **29** | 7.1 | **14** | **22** | **7.9** |
| | Barium (6010A) | 300 | 48 | 80 | 64 | 108 | 144 |
| | Cadmium (6010A) | 1 | **4** | ND | **4** | **8** | **8** |
| | Chromium (6010A) | 10 | 6 | **58** | **16** | **12** | **36** |
| | Lead (6010A) | 400 | 60 | **420** | 240 | **780** | **920** |
| | Mercury (7471) | 0.1 | **0.3** | **0.1** | **0.1** | **0.4** | **0.7** |
| | Selenium (7740) | 2 | 1.8 | 0.6 | 1.4 | ND | 0.7 |
| | Silver (6010A) | 4 | ND | ND | ND | ND | ND |
| VOLATILES ($\mu$g/kg) 8021B | | | | | | | |
| | Benzene | 60 | ND | ND | **15,000** | **2,100** | **2,900** |
| | n-Butylbenzene | 100 | ND | ND | ND | **63,000** | **27,000** |
| | sec-Butylbenzene | 100 | ND | ND | ND | **6,000** | **2,600** |
| | Ethylbenzene | 5,500 | ND | ND | **100,000** | **30,000** | **19,000** |
| | Isopropylbenzene | 100 | ND | ND | **12,000** | **9,000** | **3,500** |
| | p-Isopropyltoluene | 100 | ND | ND | ND | ND | **2,700** |
| | MTBE | 1,000 | ND | ND | ND | ND | **10,000** |
| | Napthalene | 13,000 | ND | ND | **57,000** | **34,000** | 11,000 |
| | n-Propylbenzene | 100 | ND | ND | **42,000** | **33,000** | **16,000** |
| | Styrene | NE | ND | ND | ND | ND | ND |
| | Toluene | 1,500 | ND | ND | **210,000J[5]** | **6,500** | **42,000** |
| | 1,2,4-Trimethylbenzene | 100 | **5,600** | ND | **250,000J[5]** | **120,000** | **51,000** |
| | 1,3,5 -Trimethylbenzene | 100 | ND | ND | **100,000** | **25,000** | **11,000** |
| | o-Xylene | 1,200 | ND | ND | **150,000** | **4,300** | **34,000** |
| | p/m-Xylene | 1,200 | ND | ND | **330,000** | **74,000** | **78,000** |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) or NYSDEC STARS MEMO #1 if no TAGM level was established (August 1992)
2. ND = Not Detected 3. NA = Not Analyzed 4. NE= Not Established 5. J = Estimated value based on achievable detection limits

# Table 4: Summary of Detected Metals and Volatile Organic Compounds in Soil

| | Compound (Method) | Action Level | CS-2 (Nov. 5, 1998) 0-2' [1] | CS-2 (Nov. 5, 1998) 2-4' | CS-2 (Nov. 5, 1998) 4-6' | TB (Nov. 5, 1998) | CS-3 (Nov. 5, 1998) 0-2' [1] | CS-3 (Nov. 5, 1998) 2-4' |
|---|---|---|---|---|---|---|---|---|
| METALS (mg/kg) | Arsenic (7060) | 7.5 | **12** | **8** | **7.5** | NA | **14** | **26** |
| | Barium (6010A) | 300 | 176 | 168 | 252 | NA | **304** | **436** |
| | Cadmium (6010A) | 1 | **8** | **16** | **4** | NA | **34** | **12** |
| | Chromium (6010A) | 10 | **72** | **60** | **20** | NA | **66** | **36** |
| | Lead (6010A) | 400 | **2,040** | **4,480** | **8,040** | NA | **3,120** | **4,880** |
| | Mercury (7471) | 0.1 | **4.2** | **3.2** | **3.9** | NA | **2.7** | **2.7** |
| | Selenium (7740) | 2 | 0.6 | 0.6 | ND | NA | 1.3 | 1.2 |
| | Silver (6010A) | 4 | ND | ND | ND | NA | ND | ND |
| VOLATILES ($\mu$g/kg) 8021B | | | | | | | | |
| | Benzene | 60 | ND | **120** | ND | ND | **140** | ND |
| | n-Butylbenzene | 100 | **1,500** | **590** | ND | ND | **1,200** | ND |
| | sec-Butylbenzene | 100 | ND | **320** | ND | ND | **160** | ND |
| | Ethylbenzene | 5,500 | ND | 690 | ND | ND | 350 | ND |
| | Isopropylbenzene | 100 | ND | ND | ND | ND | **120** | ND |
| | p-Isopropyltoluene | 100 | ND | **200** | ND | ND | **190** | ND |
| | MTBE | 1,000 | ND | ND | ND | ND | ND | ND |
| | Napthalene | 13,000 | 3,900 | 570 | 6 | ND | 340 | **17,000** |
| | n-Propylbenzene | 100 | ND | **320** | ND | ND | **460** | ND |
| | Styrene | NE | ND | 120 | ND | ND | ND | ND |
| | Toluene | 1,500 | ND | 440 | ND | ND | 390 | ND |
| | 1,2,4-Trimethylbenzene | 100 | ND | **400** | ND | ND | **650** | ND |
| | 1,3,5 -Trimethylbenzene | 100 | ND | **160** | ND | ND | **420** | ND |
| | o-Xylene | 1,200 | ND | 280 | ND | ND | 570 | ND |
| | p/m-Xylene | 1,200 | ND | 540 | ND | ND | 560 | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) or NYSDEC STARS MEMO #1 if no TAGM level was established (August 1992)
2. ND = Not Detected 3. NA = Not Analyzed 4. NE= Not Established 5. J = Estimated value based on achievable detection limits

## Table 5: Summary of Detected Semi-Volatile Organic Compounds in Soil

Units shown are micrograms per kilogram ($\mu$g/kg) dry weight

| | Compound (Method) | Action Level[1] | FB 1 (Nov. 4, 1998) | MW-3 (Nov. 4, 1998) | | MW-4 (Nov. 4, 1998) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 0-2' | 2-4' | 0-2' | 2-4' | 4-6' |
| Semi VOCs | Acenaphthene (EPA-8270) | 50,000 | NA | ND | 220 | ND | ND | ND |
| | Acenaphthylene (EPA-8270) | 41,000 | NA | ND | 290 | ND | ND | ND |
| | Anthracene (EPA-8270) | 50,000 | NA | ND | 2,300 | ND | ND | 590 |
| | Benzo (a) Anthracene (EPA-8270) | 224 | NA | **1,500** | **1,600** | ND | ND | **1,700** |
| | Benzo (a) Pyrene (EPA-8270) | 61 | NA | **1,700** | **1,800** | ND | ND | **2,000** |
| | Benzo (b) Fluoranthene (EPA-8270) | 1,100 | NA | **1,700** | **2,100** | ND | ND | **2,100** |
| | Benzo (k) Fluoranthene (EPA-8270) | 1,100 | NA | 740 | 830 | ND | ND | 820 |
| | Benzo (g,h,i) Perylene (EPA-8270) | 50,000 | NA | 740 | 620 | ND | ND | 990 |
| | Chrysene (EPA-8270) | 400 | NA | **1,300** | **1,800** | ND | ND | **2,000** |
| | Fluorene (EPA-8270) | 50,000 | NA | ND | 170 | ND | ND | ND |
| | Fluoranthene (EPA-8270) | 50,000 | NA | 2,400 | 4,600 | ND | 7,600 | 3,600 |
| | Indeno (1,2,3-cd) Pyrene (EPA-8270) | 3,200 | NA | 800 | 750 | ND | ND | 1,000 |
| | Naphthalene (EPA-8270) | 13,000 | NA | ND | ND | ND | ND | ND |
| | Phenanthrene (EPA-8270) | 50,000 | NA | ND | 2,300 | ND | ND | 2,200 |
| | Pyrene (EPA-8270) | 50,000 | NA | 1,800 | 3,600 | ND | 7,500 | 3,000 |
| | 2-Methyl-naphthalene (EPA-8270) | 50,000 | ND | ND | ND | ND | ND | ND |
| | Dibenzo (a,h) Anthracene (EPA-8270) | 14 | NA | ND | ND | ND | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) 2. ND = Not Detected 3. NA = Not Analyzed

# Table 5: Summary of Detected Semi-Volatile Organic Compounds in Soil

Units shown are micrograms per kilogram ($\mu$g/kg) dry weight

| | Compound (Method) | Action Level[1] | MW-5 (Nov. 5, 1998) 0-2' | MW-5 (Nov. 5, 1998) 4-6' | MW-6 (Nov. 5, 1998) 0-2' | MW-6 (Nov. 5, 1998) 2-4' | FB-2 (Nov. 5, 1998) |
|---|---|---|---|---|---|---|---|
| Semi VOCs | Acenaphthene (EPA-8270) | 50,000 | ND | ND | ND | ND | NA |
| | Acenaphthylene (EPA-8270) | 41,000 | 660 | ND | ND | ND | NA |
| | Anthracene (EPA-8270) | 50,000 | 480 | ND | ND | ND | NA |
| | Benzo (a) Anthracene (EPA-8270) | 224 | **1,400** | ND | ND | ND | NA |
| | Benzo (a) Pyrene (EPA-8270) | 61 | **1,500** | ND | ND | ND | NA |
| | Benzo (b) Fluoranthene (EPA-8270) | 1,100 | **2,100** | ND | 690 | ND | NA |
| | Benzo (k) Fluoranthene (EPA-8270) | 1.100 | 650 | ND | ND | ND | NA |
| | Benzo (g,h,i) Perylene (EPA-8270) | 50,000 | 520 | ND | ND | ND | NA |
| | Chrysene (EPA-8270) | 400 | **1,700** | ND | ND | NA | NA |
| | Fluorene (EPA-8270) | 50,000 | ND | ND | ND | 2,800 | NA |
| | Fluoranthene (EPA-8270) | 50,000 | 2,700 | ND | 1,300 | ND | NA |
| | Indeno (1,2,3-cd) Pyrene (EPA-8270) | 3,200 | 600 | ND | ND | ND | NA |
| | Naphthalene (EPA-8270) | 13,000 | ND | 240 | ND | ND | NA |
| | Phenanthrene (EPA-8270) | 50,000 | 1,500 | ND | 1,100 | ND | NA |
| | Pyrene (EPA-8270) | 100 | 2,400 | ND | 1,100 | ND | NA |
| | 2-Methyl-naphthalene (EPA-8270) | 50,000 | ND | ND | ND | ND | NA |
| | Dibenzo (a,h) Anthracene (EPA-8270) | 14 | ND | ND | ND | ND | NA |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) 2. ND = Not Detected 3. NA = Not Analyzed

## Table 5: Summary of Detected Semi-Volatile Organic Compounds in Soil

Units shown are micrograms per kilogram ($\mu$g/kg) dry weight

| | Compound (Method) | Action Level[1] | CC-1 (Nov. 5, 1998) 0-2 | CC-1 (Nov. 5, 1998) 2-4' | CC-2 (Nov. 5, 1998) 0-2' | CC-2 (Nov. 5, 1998) 2-4' | CS-1 (Nov. 5, 1998) 0-2' |
|---|---|---|---|---|---|---|---|
| Semi VOCs | Acenaphthene (EPA-8270) | 50,000 | NA | NA | ND | ND | ND |
| | Acenaphthylene (EPA-8270) | 41,000 | NA | NA | ND | 1,600 | ND |
| | Anthracene (EPA-8270) | 50,000 | NA | NA | ND | 5,400 | ND |
| | Benzo (a) Anthracene (EPA-8270) | 224 | NA | NA | ND | **3,600** | ND |
| | Benzo (a) Pyrene (EPA-8270) | 61 | NA | NA | ND | **630** | ND |
| | Benzo (b) Fluoranthene (EPA-8270) | 1,100 | NA | NA | ND | **3,600** | ND |
| | Benzo (k) Fluoranthene (EPA-8270) | 1,100 | NA | NA | ND | **4,100** | ND |
| | Benzo (g,h,i) Perylene (EPA-8270) | 50,000 | NA | NA | ND | 1,900 | ND |
| | Chrysene (EPA-8270) | 400 | NA | NA | ND | **4,100** | ND |
| | Fluorene (EPA-8270) | 50,000 | NA | NA | ND | 820 | ND |
| | Fluoranthene (EPA-8270) | 50,000 | NA | NA | ND | 7,100 | ND |
| | Indeno (1,2,3-cd) Pyrene (EPA-8270) | 3,200 | NA | NA | ND | 1,600 | ND |
| | Naphthalene (EPA-8270) | 13,000 | NA | NA | **23,000** | 7,600 | 2,500 |
| | Phenanthrene (EPA-8270) | 50,000 | NA | NA | ND | 5,500 | ND |
| | Pyrene (EPA-8270) | 50,000 | NA | NA | ND | 8,600 | ND |
| | 2-Methyl-naphthalene (EPA-8270) | 36,400 | NA | NA | 18,000 | 4,900 | 1,800 |
| | Dibenzo (a,h) Anthracene (EPA-8270) | 41 | NA | NA | ND | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) 2. ND = Not Detected 3. NA = Not Analyzed

## Table 5: Summary of Detected Semi-Volatile Organic Compounds in Soil

Units shown are micrograms per kilogram ($\mu$g/kg) dry weight

| | Compound (Method) | Action Level[1] | CS-2 (Nov. 5, 1998) 0-2 | CS-2 (Nov. 5, 1998) 2-4' | CS-2 (Nov. 5, 1998) 4-6' | CS-3 (Nov. 5, 1998) 0-2' | CS-3 (Nov. 5, 1998) 2-4' |
|---|---|---|---|---|---|---|---|
| Semi VOCs | Acenaphthene (EPA-8270) | 50,000 | ND | ND | 1,100 | ND | ND |
| | Acenaphthylene (EPA-8270) | 41,000 | ND | ND | 670 | ND | 1,500 |
| | Anthracene (EPA-8270) | 50,000 | ND | ND | 3,200 | ND | 2,100 |
| | Benzo (a) Anthracene (EPA-8270) | 224 | **720** | ND | **4,000** | ND | **3,500** |
| | Benzo (a) Pyrene (EPA-8270) | 61 | ND | ND | **3,300** | ND | **3,000** |
| | Benzo (b) Fluoranthene (EPA-8270) | 1,100 | 680 | ND | **3,500** | ND | **3,600** |
| | Benzo (k) Fluoranthene (EPA-8270) | 1,100 | ND | ND | **1,400** | ND | **1,400** |
| | Benzo (g,h,i) Perylene (EPA-8270) | 50,000 | ND | ND | ND | ND | 900 |
| | Chrysene (EPA-8270) | 400 | **680** | ND | **3,600** | ND | **3,300** |
| | Fluorene (EPA-8270) | 50,000 | ND | ND | 1,800 | ND | 1,500 |
| | Fluoranthene (EPA-8270) | 50,000 | 1,900 | ND | 12,000 | 1,200 | 11,000 |
| | Indeno (1,2,3-cd) Pyrene (EPA-8270) | 3,200 | ND | ND | ND | ND | 1,100 |
| | Naphthalene (EPA-8270) | 13,000 | ND | ND | 640 | ND | 1,700 |
| | Phenanthrene (EPA-8270) | 50,000 | 1,300 | ND | 11,000 | ND | 12,000 |
| | Pyrene (EPA-8270) | 50,000 | 1,400 | ND | 7,700 | 1,200 | 7,200 |
| | 2-Methyl-naphthalene (EPA-8270) | 36,400 | ND | ND | ND | ND | ND |
| | Dibenzo (a,h) Anthracene (EPA-8270) | 14 | ND | ND | ND | ND | ND |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) 2. ND = Not Detected 3. NA = Not Analyzed

# Table 6: Summary of Detected Compounds in Groundwater Collected on November 6, 1998

| Compound (USEPA Method) | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | FB-3 | ACTION [1] LEVEL |
|---|---|---|---|---|---|---|---|---|
| **Lead*** (239.2) | 0.003 mg/l | 0.001 mg/l | ND[2] | 0.002 mg/l | 0.003 mg/l | 0.003 mg/l | ND | 0.015 |
| | | | | | | | | |
| **Chlorides** (4500-Cl-C) | 3 mg/l | 4 mg/l | 3 mg/l | 2 mg/l | 20 mg/l | 4 mg/l | ND | NE |
| | | | | | | | | |
| **PAHs** (8270C) | ND | ND | ND | ND | ND | ND | NA | - |
| | | | | | | | | |
| **PCBs** (608) | ND | ND | ND | ND | ND | ND | NA | - |
| | | | | | | | | |
| **VOCs** (8021-B) | | | | | | | | |
| MTBE | 5 µg/l | ND | ND | **380** µg/l | **1,200** µg/l | **1,200** µg/l | ND | 50 |
| 1,2,4-Trimethylbenzene | 1 µg/l | ND | ND | ND | ND | ND | ND | NE[5] |
| p/m xylene | 1 µg/l | ND | ND | ND | ND | ND | ND | 5 |
| Benzene | ND | ND | ND | ND | ND | **73** µg/l | ND | 0.7 |

Notes: 1. Source: NYSDEC TAGM (January 24, 1994) and NYS Department of Health Chapter I State Sanitary Code 2. ND = Not Detected 3. NA = Not Analyzed 4. NE = Not Established
* Dissolved lead analysis