EPA WORK ASSIGNMENT NUMBER: 004-2L1E
EPA CONTRACT NUMBER: 68-W8-0110
EBASCO SERVICES INCORPORATED

ARCS II PROGRAM

FINAL

REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE
SUFFOLK COUNTY, NEW YORK
VOLUME I OF II

AUGUST, 1990

NOTICE

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A Division of EBASCO SERVICES INCORPORATED

EBASCO

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August 9, 1990
ARCS II-90-303

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SUBJECT: EPA CONTRACT NUMBER: 68-W8-0110
WORK ASSIGNMENT NUMBER: 004-2L1E
CIRCUITRON CORPORATION SITE
EAST FARMINGDALE, NEW YORK
FINAL REMEDIAL INVESTIGATION REPORT

Gentlemen:

Ebasco Services Incorporated is pleased to submit six (6) copies of the Final Remedial Investigation Report for the Circuitron Corporation Site.

If you have any questions or comments, please do not hesitate to call me at (201) 460-6434, or Mr. Richard Zarandona at (201) 460-6232.

Very truly yours,
Dev R. Sachdev
Dr. Dev Sachdev, P.E.
ARCS II Program Manager

cc: S Alvi
J Bologna (6 copies)
M Kuo
M Verdibello
R Zarandona
C Papaioannou
R Rienzo
M Mummaw
M Moese
ARCS II File

August 9, 1990
ARCS II-90-303

Mr. John McGahren
Dr. A. Fayon

SUBJECT: EPA CONTRACT NUMBER: 68-W8-0110
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CIRCUITRON CORPORATION SITE
EAST FARMINGDALE, NEW YORK
FINAL REMEDIAL INVESTIGATION REPORT

ACKNOWLEDGMENT OF RECEIPT

Please acknowledge receipt of enclosure on the duplicate copy of this letter, and return to the sender at the above address.

John McGahren Regional Project Officer	Date Received

EPA WORK ASSIGNMENT NUMBER: 004-2L1E
EPA CONTRACT NUMBER: 68-W8-0110
EBASCO SERVICES INCORPORATED

ARCS II PROGRAM

FINAL

REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE
SUFFOLK COUNTY, NEW YORK

VOLUME I OF II

AUGUST 1990

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FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

TABLE OF CONTENTS (Cont'd)

APPENDICES

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

LIST OF TABLES

LIST OF TABLES (Cont'd)

LIST OF TABLES (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

LIST OF TABLES (Cont'd)

LIST OF TABLES (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

LIST OF TABLES (Cont'd)

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

LIST OF FIGURES

FINAL
REMEDIAL INVESTIGATION REPORT
CIRCUITRON CORPORATION SITE

LIST OF FIGURES (Cont'd)

EXECUTIVE SUMMARY

In September 1988, the U.S. Environmental Protection Agency (USEPA) authorized Ebasco Services Incorporated (Ebasco) to conduct a Remedial Investigation (RI) and Feasibility Study (FS) at the Circuitron Corporation Site located in East Farmingdale, Town of Babylon, Suffolk County, New York. This work was performed in response to Work Assignment Number 004-2L1E of the ARCS-II Contract Number 68-W8-0110.

The Circuitron Corporation Site is located at 82 Milbar Boulevard in East Farmingdale at a Latitude of 40° 44' 58"N and Longitude 73° 25' 07"W. This 0.9 acre site is situated in a densely populated industrial/commercial area just east of Route 110 and the State University of New York (SUNY).

The Circuitron facility was in active operation from 1961 to approximately June 1986, at which time operations were ceased and the facility was vacated by the current owners. During its years of operations Circuitron Corporation was allowed to discharge wastewater from the manufacturing process to groundwater via a New York State authorized industrial leaching pool. The industrial pool had a State Pollutant Discharge Elimination System (SPDES) permit specifying the parameters and concentration allowed to be discharged to the leaching pool.

The site had a history of SPDES permit violations documented by the New York State Department of Environmental Conservation (NYSDEC) and Suffolk County Department of Health Services (SCDHS). The SCDHS collected samples from the industrial leaching pool which indicated that the facility also discharged wastes not specified in their permit. Further investigations of the facility by SCDHS inspectors revealed that wastes were being discharged without treatment; wastes were being discharged to at least two unauthorized leaching pools beneath the floor of the building; and, wastes were also being discharged directly to a storm drain in the southwest corner of the site (EA, 1987). As a result of these illegal waste discharges, the facility owners were under a Consent Order and Stipulated Agreement with SCDHS for clean-up of the site. Circuitron Corporation has since vacated the site without satisfactory compliance with the Consent Order and Stipulated Agreement.

The site was reportedly used as a circuit board manufacturing facility. The processes employed at this type of facility would typically include silk screening, etching of boards and other production activities such as rinsing, washing, painting, etc. The chemicals required for this operation would include degreasers, acids and alkalies, and other. The resulting liquid wastes from this type of facility would be expected to contain heavy metals and organic wastes.

Prior to initiation of the RI and FS activities, the USEPA performed an emergency response action at the site. This action included removal of waste drums from the building, clean-up of underground tanks containing various amounts of liquids and solids, cleaning and removal of above ground tanks from the rear of the building, and general clean-up of suspected contaminated debris from inside the building. This action was performed in the first quarter of 1989. Prior to the performance of these activities, the USEPA sampled the contents of the various tanks and pools beneath the site and provided this information to Ebasco for use as a supplemental data set. This data set was deemed important in determining the relationship between the contents of the tanks and the on and off-site contaminants in soils and groundwater. The USEPA testing results indicated the presence of organics and heavy metals in many of the sediment and water samples from the tanks and pools. Upon completion of the emergency response actions, USEPA also conducted air and wipe sampling of the interior of the Circuitron building. Wipe samples indicated the presence of metals inside the building. The results indicate that the building floors have elevated levels of metals and may need further remediation to assure habitability.

This report is designed to document the results of the RI performed for the USEPA by Ebasco at the Circuitron Corporation Site. The RI consisted of a field sampling and analysis program followed by validation and evaluation of the collected data. The field sampling and analysis work at the site was initiated in May 1989 and completed in December 1989. The validated data were used to complete a baseline risk assessment which provides an evaluation of the potential threat to human health and the environment posed by the contamination on and off-site in the absence of any remedial action. The performance of this RI is consistent with the USEPA "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA-Interim Final" (OSWER Directive 9335.3-01, USEPA, 1989).

The site is at an approximate elevation of 85 feet above mean sea level (MSL) and is mostly flat with a slight slope (1%) up to the south and east. More than 90 percent of the site is covered with a building or asphalt paved surfaces making it mostly impermeable. In the 1950s and prior to development, this area of Long Island was used for mostly agricultural purposes. No streams, lakes or other surface water bodies exist on, or in the immediate vicinity of the site. No wetlands, significant cultural resources or critical environmental habitat are deemed to exist at the site.

The investigations performed during the RI were focused on defining the spatial distribution of metals and organic contaminants in the soils beneath the building and site area. Further, the groundwater upgradient, on-site and downgradient was also evaluated for contaminant concentrations and distributions.

The investigation program included the installation of 14 new monitoring wells, six soil borings and surface soil sampling.

The soils investigation program included sampling from six on-site soil borings, an upgradient deep well boring, and three on-site deep well borings. The program also included sampling of the surface soil in two locations. Soil samples from the borings were generally obtained over various depths to determine the vertical extent of contamination. Surface soil samples were generally taken in the zero to one foot zone only.

Two rounds of groundwater sampling and level measurements were obtained from the 14 newly installed wells. Further, one round of groundwater samples were obtained from the five existing on-site wells, one private well, and one deep municipal well south of the site. The five existing on-site wells were installed by Circuitron Corporation at the request of the SCDHS. All soil and groundwater samples were analyzed for Compound List (TCL) and Target Analyte List (TAL) contaminants. Samples were also analyzed for heavy metals because of their history on the site.

The contamination found in the surface soil at the rear of the building at the south side of the site, primarily consists of 1,1,1-trichloroethane, bis(2-ethylhexyl)phthalate, PCBs and several metals. Since the Circuitron property was formerly used as farmland, the limited presence of the PCBs Arochlor 1260 and Arochlor 1248 may possibly be attributed to the former agricultural activities performed at the site, as well as presence and usage of the above ground tanks containing unknown contaminated liquids at these locations is likely the source of volatile, semivolatile and inorganic surface soil contamination found.

The analytical results of the subsurface soil samples collected from the deep upgradient well boring MW-1D indicate the presence of bis(2-ethylhexyl)phthalate at various depths throughout the Upper Glacial aquifer and the upper portion of the Magothy aquifer. The soils beneath the Circuitron Corporation Site were found to contain concentrations much higher than the upgradient levels.

Evaluation of the analytical results of the subsurface soil samples collected from beneath the Circuitron building indicate the presence of soil contamination. Volatile organic compounds and copper were detected throughout the top 12 feet of soil, while bis(2-ethylhexyl)phthalate was detected at all depths to the groundwater table. The presence of these contaminants could be partially attributed to the existing upgradient contamination. However, the increase of the contaminant concentration beneath the Circuitron building appears to be caused by the illegal discharge of untreated wastes in the authorized and unauthorized leaching pools of the site during the operation of the plating facility.

The soils in the southwest corner of the site were found to be the most contaminated on-site. Volatile organic compounds were detected at all depths throughout the top 40 feet of soil at deep well boring MW-4D. The predominant volatile organic contaminant is 1,1,1-trichloroethane which was detected at a concentration of 100,000 ug/kg at the depth of 22 feet below grade and just 3 feet above the groundwater table. In addition, semivolatile organics were encountered at almost all depths, with bis(2-ethylhexyl)phthalate as the predominant compound. The higher level of contamination detected at this portion of the site appears to be directly related to reported illegal plating of wastes and drainage of solvents from the old plating bath into storm drain SD-3 located just upgradient of MW-4D.

Samples were also obtained of the building floor in areas where it appeared to be significantly chemical stained or corroded. The dominant contaminants in the slab of the silkscreening and plating rooms are aluminum, copper, lead and mercury. The plating room slab was detected to have higher levels of metal than those found in the silkscreening room. This can be attributed to the large amount of debris that previously existed in the plating room, as well as to the chemicals used when the plating facility was in operation. The analytical results also indicate the presence of several organic and semivolatile contaminants.

The groundwater sampling results indicate that, based upon the presence of 1,1,1-trichloroethane in MW-1S, contamination exists in the shallow aquifer upgradient of the site. The 1,1,1-trichloroethane concentrations in the groundwater were found to increase beneath the site indicating the presence of on-site contamination sources. Contaminant concentrations were found to decrease significantly downgradient of the site possibly attributable to dilution or other attenuation processes. Illegal discharges to pool CP-1 on the northwest corner of the building have resulted in contamination of the shallow aquifer at this location (MW-8); discharges to pool LP-1 at the northeast corner of the building do not appear to have influenced the shallow aquifer at the location of MW-2S. Previous discharges of spent solvents into the storm drains at the southwest corner of the site have resulted in soil contamination by 1,1,1-trichloroethane in the area as well as shallow aquifer contamination by this compound (MW-4S). Discharges to the unauthorized leaching pools beneath the Circuitron building have also contributed to contamination of the shallow aquifer as evidenced in wells MW-10, MW-11 and MW-12. The contamination found in the groundwater from these wells primarily consists of 1,1,1-trichloroethane, tetrachloroethene, and copper, which also appears to have migrated downgradient and off-site (MW-5S). However, the horizontal migration of contaminants has yet extended to MW-7S, located approximately 1,500 feet downgradient of the site.

The deep groundwater regime appears to be minimally affected by the contamination found on-site except for copper which was found to be elevated above upgradient concentrations. Elevated copper levels may be associated with copper found in the authorized and unauthorized leaching pool sediments. The data also supports a limited extent of off-site transport of this contaminant, however, it does not yet appear to have extended to MW-7D. Contamination has been discovered in the deep groundwater upgradient of the site which is likely responsible for some contamination found in on-site and downgradient wells.

The contamination detected in the contents (sediments and/or aqueous material) of the leaching pools, sanitary cesspools and storm drains existing beneath the Circuitron Corporation Site consisted of volatile, semivolatile and inorganic compounds at concentrations higher than the background soil concentrations expected to be found in U.S. sandy soils. Therefore, these underground structures currently serve as potential contaminant sources to the soil and/or groundwater below the site. The presence of all the contaminants found in the contents of the pools can be attributed to the illegal discharges of untreated wastes during the operation of the Circuitron plating facility.

Considering the physical/chemical characteristics, the geological/geohydrological/geochemical and hydrological conditions and the distribution and concentrations of contaminants in various site media, contaminants may migrate via several mechanisms from the potential source areas. These include: percolation of contaminants that are leached from the soil, and, airborne transport via entrained dust or the volatilization of contaminants from contaminated soil. Most on-site open areas are paved, therefore, contaminant transport via surface run-off, volatilization, and airborne dust is not deemed significant. Aside from surface runoff, contaminants may also enter surface water via the discharge of contaminated groundwater. However, no nearby surface water bodies were identified as immediate potential receptors of the groundwater. Accordingly, the primary pathway of contamination at the Circuitron Corporation Site is the percolation of contaminants into the soil and the leaching into the groundwater.

A risk assessment was performed in which exposures were evaluated first by comparing concentrations of chemicals in the contaminated exposure medium (e.g., groundwater) at a point of potential exposure, to state of federal environmental standards, criteria, or guidelines that were identified as "Applicable or Relevant and Appropriate Requirements" (ARARs) or other relevant guidelines.

A number of inorganic and organic chemicals exceeded federal and state standards and guidelines for groundwater. The ARARs and other guidance that were used in this comparison were federal Maximum Contaminant Levels (MCLs) and MCL Goals (MCLGs), federal ambient water quality criteria for protection of human health adjusted for drinking water exposure only, state MCLs, and state groundwater standards. The chemicals of concern which exceeded several of these ARARs and other guidelines included copper, chromium, lead, nickel and chlorinated solvents.

For the quantitative assessment of risks, exposure estimates were all combined with the health criteria for the selected chemicals of potential concern to estimate potential risks to human health. As for exposure, risks are estimated for average and maximum plausible exposure scenarios using the upper 95% confidence limit of the containment concentration. The average case combines the average case exposure estimates with generally upper bound cancer slope factors and conservatively derived reference doses. This average case is intended to represent the exposure of a typical individual; however, use of conservative health criteria may result in an overestimation of risk even for the average case. The maximum plausible case combines the maximum plausible exposure estimates with generally conservative reference doses. This scenario is intended to place a conservative upper bound on the potential risks. Although this maximum plausible scenario may have a chance of occurring, the likelihood is extremely small due to the unlikely combination of many conservative assumptions used and the fact that Long Island does not consider the Upper Glacial aquifer a potable source of drinkable water.

It should be kept in mind that the risks in this Risk Assessment are not actual risks but rather conservative estimates of current or potential risks to human health under the specific average or maximum plausible exposure pathways evaluated.

Based on the risk assessment, the only potential exposure of concern is if the Upper Glacial aquifer is developed in the future for use as a potable water supply. These risks are due to the concentrations of inorganic and volatile organic contaminants found in the groundwater of the Upper Glacial aquifer.

Since ARARs are available for the chemical contaminants of concern, and if the Upper Glacial aquifer is assumed to be developed as a public water supply, the remedial action goals for acceptable groundwater quality and contaminant concentrations would be the state or federal groundwater standards or criteria. These would be used because they are considered legally enforceable standards to protect human health.

Based on the ARARs and an evaluation of the chemical data and its associated risks, the following remedial action objectives have been developed for the Circuitron Corporation site:

- o Long term monitoring of the groundwater.
- o Elimination of sources of contamination by:
    - clean up of authorized leaching pool and its interconnected pools:
    - clean up of the two sanitary cesspools;
    - clean up of the three storm drains located on the western portion of the site;
    - removal of the top 35 feet of soil from the southwest corner of the site;
    - removal of the buried drums from beneath the plating room;
    - repair and top coating of floor slab; and,
    - reduction of groundwater contaminant concentration in the Upper Glacial Aquifer underlying the site to the upgradient contaminant concentrations.
- o Additional groundwater investigation for a more adequate delineation of the upgradient and downgradient contamination of the aquifers.

The next phase of this project is the development of a Feasibility Study (FS) which will evaluate feasible remedial alternatives to achieve the remedial response objectives identified above as well as reducing public health risks associated with the Circuitron Corporation Site.

1.0 INTRODUCTION

The United States Environmental Protection Agency (USEPA) on September 26, 1988, authorized Ebasco Services Incorporated (Ebasco) to conduct a Remedial Investigation/Feasibility Study (RI/FS) of the Circuitron Corporation Site, East Farmingdale, New York. The RI/FS was performed in response to Work Assignment Number 004-2L1E under USEPA ARCS II Contract Number 68-W8-0110. Preparation of this report was accomplished pursuant to the approved Work Plan for the Circuitron Corporation Site dated February 17, 1989.

This Remedial Investigation report has been prepared in accordance with USEPA guidance documents such as the 1985 "Guidance on Remedial Investigation Studies Under CERCLA" (USEPA, 1985), the 1988 draft "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (USEPA, 1989), and the Ebasco 1989 "Final Remedial Investigation/Feasibility Study Work Plan" (Ebasco, 1989a).

1.1 REPORT ORGANIZATION

This Remedial Investigation report consists of ten sections and seven appendices. The following discussion identifies the organization of the report and the contents of each section.

Section 1.0, "Introduction", gives a brief description of how this report is organized and presented, lists the remedial investigation objectives, presents the site background information and summarizes the remedial investigations conducted by USEPA and Ebasco in 1989.

Section 2.0, "USEPA Field Investigations", consists of a detailed description of the sampling activities performed by USEPA at the Circuitron Corporation Site prior to the conductance of the Ebasco field investigations. The description of each activity consists of the sampling locations and the sampling methodologies used for the collection of the samples.

Section 3.0, "USEPA Emergency Response Actions", describes the activities conducted for the removal and partial cleanup of the toxic and hazardous wastes present on-site.

Section 4.0, "Ebasco Field Investigations", provides a detailed description of the field activities performed by Ebasco at the Circuitron Corporation Site. The description of each activity includes the locations and methodologies used for the collection of the samples.

Section 5.0, "Physical Characteristics of the Study Area", consists of collected information on the site's demography and land use; a description of the site topography and above and below ground on-site structures; a discussion of the general and site-specific geology; and, a description of surface water hydrology, hydrogeology, groundwater flow and groundwater use in the area of concern.

Section 6.0, "Nature and Extent of Contamination", describes the types and levels of contaminants found in the soil, liquid, and sediment samples collected from the site during the USEPA and the Ebasco field investigations.

Section 7.0, "Contaminant Fate and Transport", discusses the potential routes of migration, and the physical/chemical behavior of contaminants during migration in the various media. Based on site data and literature, the assessment of contaminant fate and transport is presented.

Section 8.0, "Baseline Risk Assessment", presents the risks calculated for various scenarios of exposure to the soil, sediment and groundwater, and qualitatively discusses the potential health risks to exposed populations if no remedial measures were implemented. Risks to both the general public and the environment are addressed.

Section 9.0, "Summary and Conclusions", includes a review of the nature and extent of contamination, pathways of exposure and potential risks posed by the site. It also discusses limitations of the assessments and recommended remedial response objectives.

Section 10.0, "References", lists the literature and documents used in the preparation of this draft remedial investigation report.

As previously mentioned this report also contains seven appendices which contain the following:

> Appendix A presents the Boring Logs for the 20 soil borings that were drilled, including the 14 monitoring wells that were installed upgradient, on-site and downgradient of the Circuitron Corporation Site during the Ebasco field investigation activities. It also includes Table A-1 which summarizes the soil boring survey data. This survey information consists of the north and east coordinates, the ground surface elevation and the top of the riser pipe elevation for the 2 soil borings drilled outside the building, the 14 newly installed monitoring wells and the 5 existing Circuitron wells.
>
> Appendix B presents the Monitoring Well Construction Sheets for the 14 wells installed at the Circuitron Corporation Site during the Ebasco field investigation activities.
>
> Appendix C presents the Round 1 and Round 2 Well Purge Data Sheets for the existing and the newly installed monitoring wells at the Circuitron Corporation Site.

Appendix D presents the results of the soil boring grain size analyses of the soil underlying the Circuitron Corporation Site.

Appendix E presents the analytical data for all samples obtained from the Circuitron Corporation Site during the Ebasco field investigation activities.

Appendix F presents the Target Compound and Analyte Lists.

Appendix G presents the supporting calculations for the risk assessment.

1.2 REMEDIAL INVESTIGATION OBJECTIVES

The objectives of the remedial investigations at the Circuitron Corporation Site are:

- The study in detail of the potential sources of soil and groundwater contamination at the site;
- The study of the horizontal and vertical extent of soil and groundwater contamination;
- The evaluation of the risks to public health; and,
- The formulation of cost effective and reliable remedial alternatives that could be implemented to help prevent or reduce public health risks and the further spread of contamination.

This RI report presents a description of the site investigations performed by the USEPA and Ebasco, the results of these investigations and an assessment of the public health and environmental risks associated with the site. Use was made of previous investigations and studies conducted by the USEPA and the Suffolk County Department of Health Services (SCDHS).

1.3 SITE BACKGROUND INFORMATION

1.3.1 Site Location and Description

The Circuitron Corporation Site is located at 82 Milbar Boulevard, East Farmingdale, Suffolk County, New York. The site is situated on the Nassau County - Suffolk County border in Long Island. The site encompasses approximately 1 acre in an industrial/commercial area just east of Route 110 and the State University of New York, Agricultural and Technical College campus in Farmingdale. The site is generally flat and appears to have a slight slope up to the southeast. The site elevation is approximately 85 to 90 feet above mean sea level (MSL). Figures 1-1 and 1-2 present regional and detailed location maps for the Circuitron Corporation Site.

Figure 1-3 illustrates the site plan and the general location of the above and belowground structures inside and outside the building.

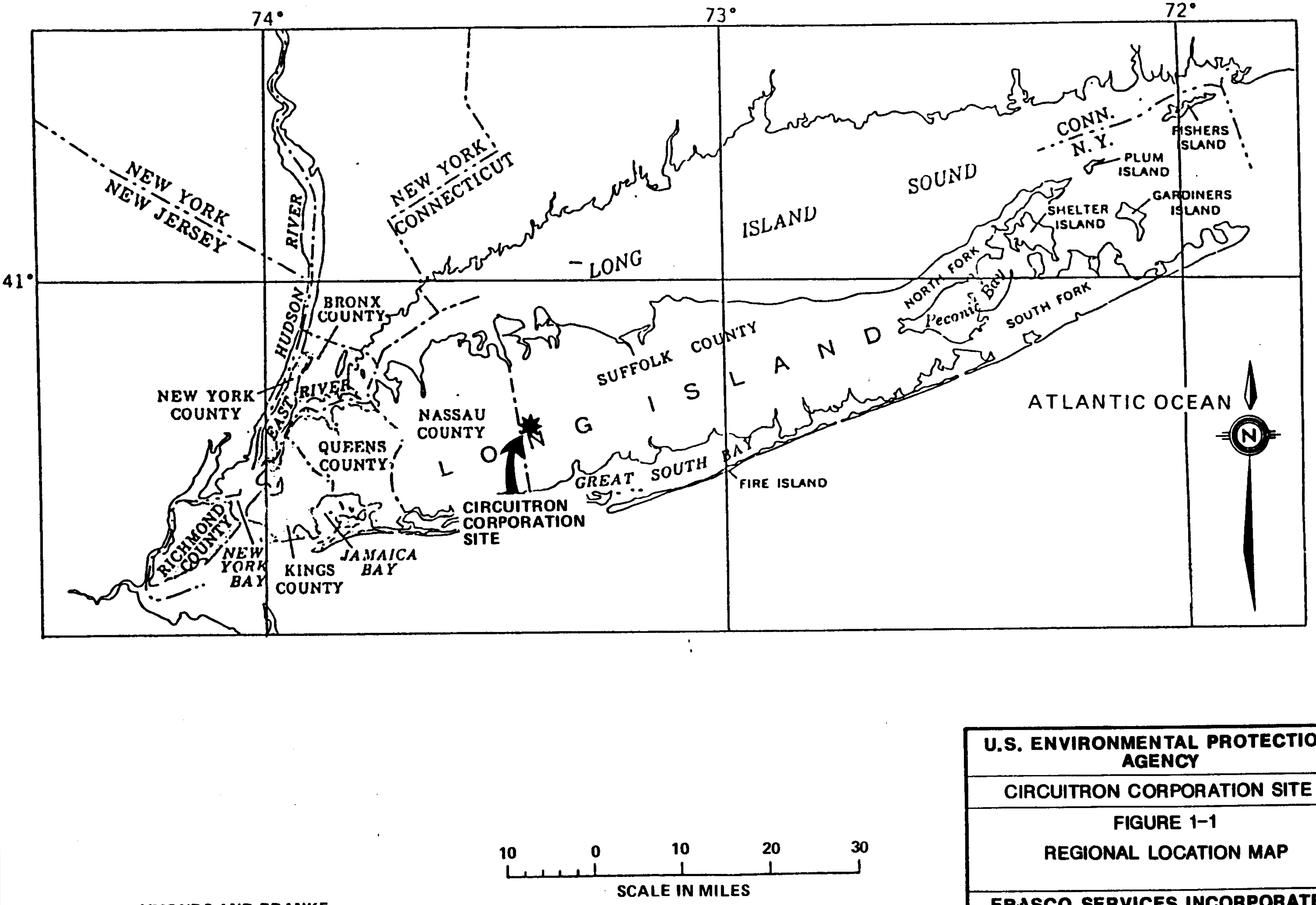
The Circuitron Corporation Site includes a building that is divided into the following four main areas: a) the drilling and silkscreening area, b) the plating room, c) the scrubber room and d) the storage area. Aside from the building, the site is primarily asphalt paved, with the exception of the rear of the building which comprises a small percentage of the site area. The rear of the building and the western side of the site are fenced with a sound chain link fence. The paved area in front of the building was used in the past as a parking lot for the employees of Circuitron Corporation and is presently used as a parking lot by employees of nearby companies.

The Circuitron building is 187 feet wide by 130 feet long and has an internal clearance of 10 to 12 feet from floor to ceiling. It is abandoned and most of the contents have been removed.

At least two unauthorized leaching pools (LP-5 and LP-6) exist below the concrete floor in the plating room (see Figure 1-3). LP-5 is located slightly south from the middle of the plating room, and LP-6 is near the southern corner of the plating room. Sunken areas in the concrete floor of the building towards the middle and the front of the plating room, indicate the presence of two more unauthorized leaching pools (LP-3 and LP-4).

In addition, Figure 1-3 illustrates the presence of: a hole in the floor (H-1) towards the northwest corner of the plating room; a wastewater treatment basin B-1, an oil spill at the southeast corner of the scrubber room, and four underground tanks (UT-1 in the plating room, UT-2 and UT-3 by the oil spill in the scrubber room and UT-4 in the office area).

A series of leaching pools underlies the parking lot in front of the building. These authorized leaching pools include an authorized wastewater discharge pool LP-1 (authorized via a State



SOURCE: MC CLYMONDS AND FRANKE

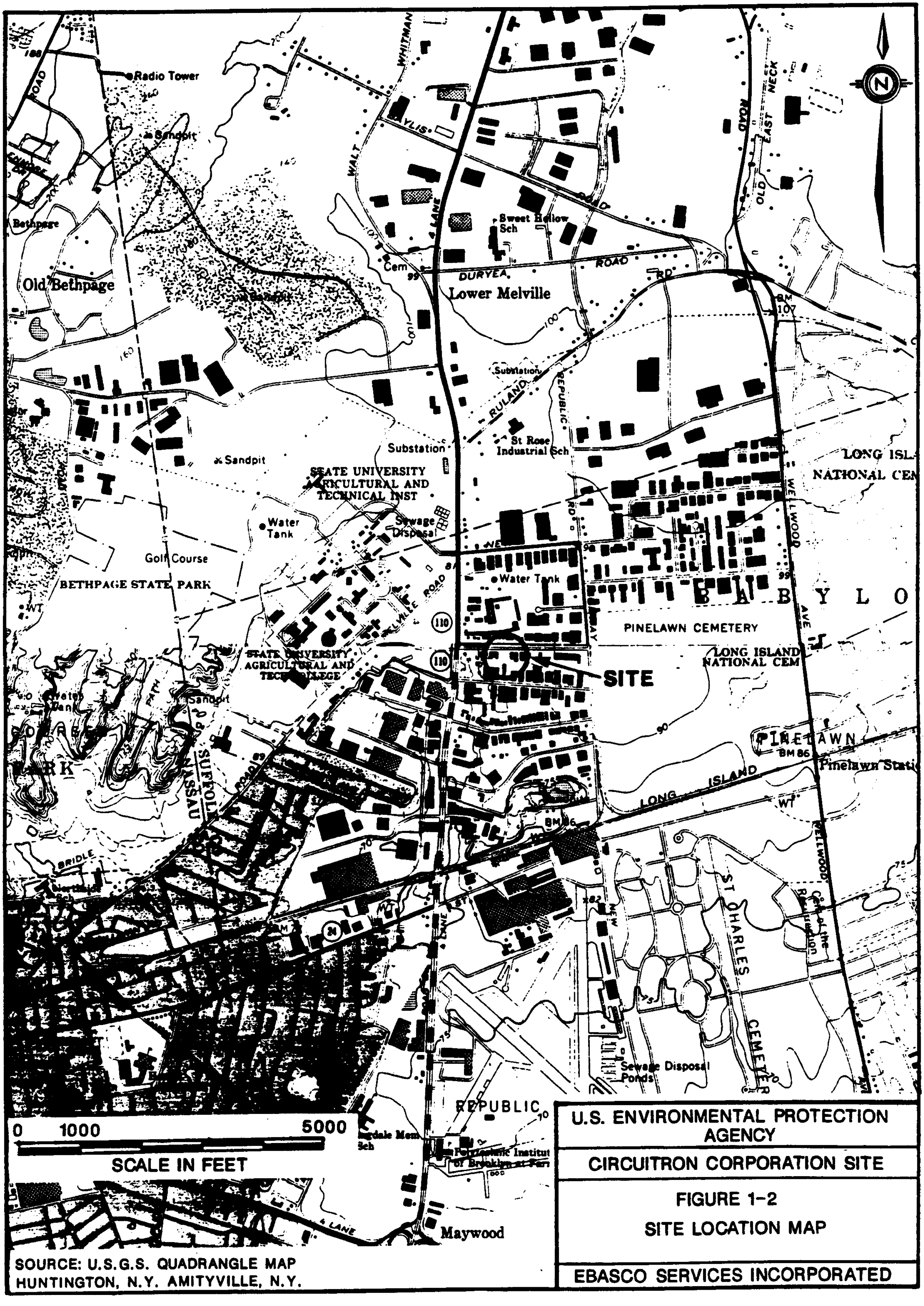
U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 1-1

REGIONAL LOCATION MAP

EBASCO SERVICES INCORPORATED



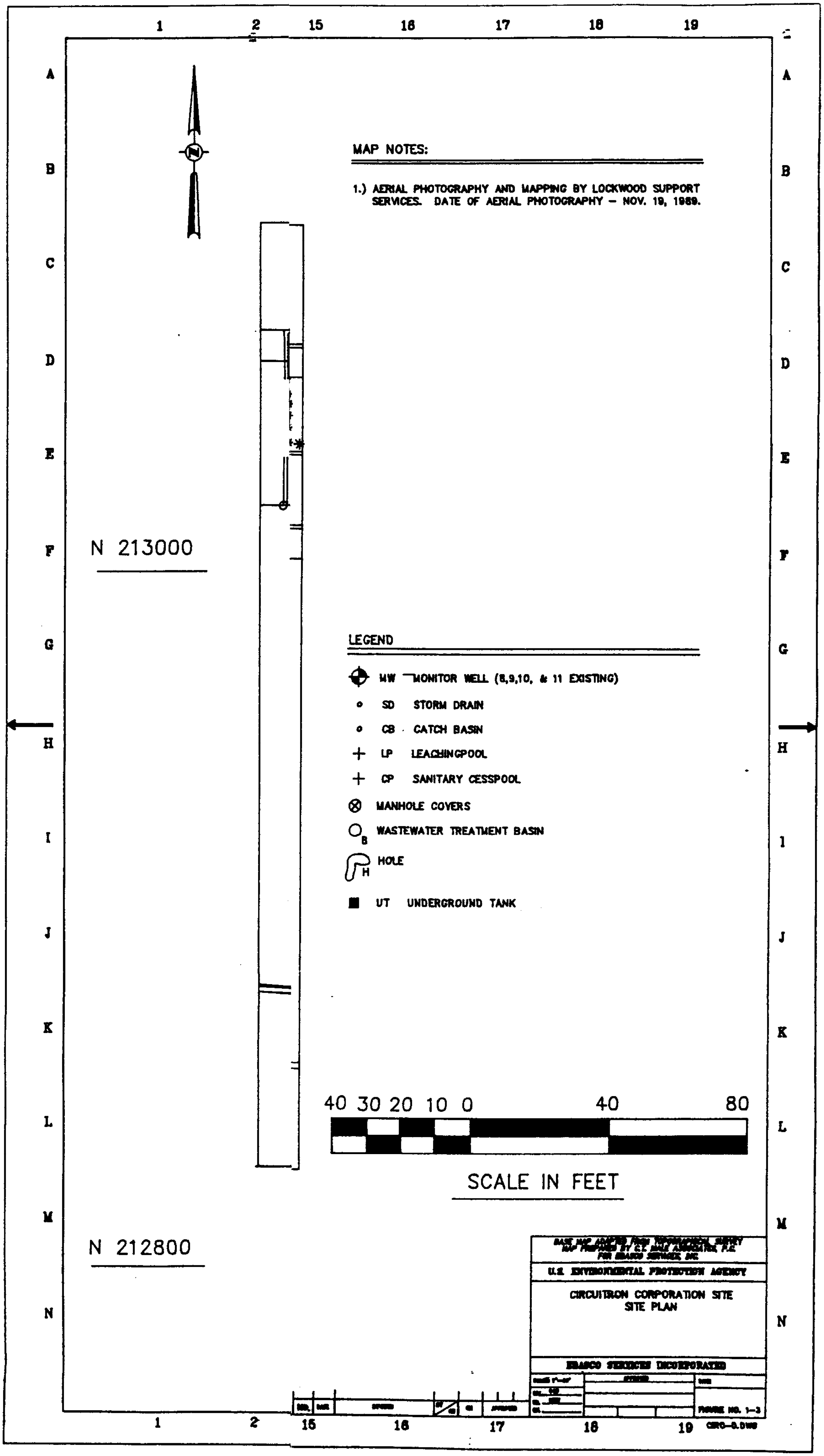
SOURCE: U.S.G.S. QUADRANGLE MAP
HUNTINGTON, N.Y. AMITYVILLE, N.Y.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 1-2
SITE LOCATION MAP

EBASCO SERVICES INCORPORATED



SCALE IN FEET

MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕ MW MONITOR WELL (8,9,10, & 11 EXISTING)
∘ SD STORM DRAIN
∘ CB CATCH BASIN
+ LP LEACHINGPOOL
+ CP SANITARY CESSPOOL
⊗ MANHOLE COVERS
○B WASTEWATER TREATMENT BASIN
H HOLE
■ UT UNDERGROUND TANK

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE
SITE PLAN

EBASCO SERVICES INCORPORATED

FIGURE NO. 1-3

CIRC-0.DWG

Pollution Discharge Elimination System (SPDES) permit) below a manhole located on the north side of the property in front of the laboratory, and the old abandoned leaching pool LP-2 located in the northeast corner of the site (see Figure 1-3).

The main SPDES leaching pool (LP-1) measures approximately 15 feet deep and the distribution pool (LP-2) 5 feet deep. The distribution pool is a concrete ring approximately 4 feet in diameter with a pipe from the building entering at the top, and three pipes at the bottom discharging to at least three separate leaching pools. The bottom of the distribution pool appears to be sand.

At least two sanitary cesspools (CP-1 and CP-2) have been documented to exist below the parking lot in front of the northwest corner of the building (see Figure 1-3). The sanitary cesspools were authorized to accept sanitary wastes only. However, SCDHS analyses indicated that the cesspools may have received hazardous materials (EA, 1987).

A line of interconnected storm drains exists on the western portion of the site (see Figure 1-3). The storm drain depth ranges from 10 feet to approximately 18 feet. Two additional storm drains are located outside the building in an area between the plating room and the storage area in front of the garage door to the scrubber room.

1.3.2 Site History

Circuitron Corporation was an electronic circuit board manufacturing facility. The facility began operations in 1961 under the ownership of the 82 Milbar Corporation, of which Mario Lombardo and Julius D'Amato were principal owners. In 1983, Mario Lombardo sold Circuitron Corporation to F.E.E. Industries, which in turn sold Circuitron Corporation to ADI Electronics. The 82 Milbar Corporation still retains ownership of the property, and ADI Electronics, located at 51 Trade Zone, Ronkonkoma, New York, is the current owner of the Circuitron Corporation. The current owners ceased operations and vacated the site some time between May and the end of June 1986.

The facility had an approved New York State Pollutant Discharge Elimination System (SPDES) permit, No. NY-007 5655, to discharge industrial wastewater to a series of leaching pools located below the parking lot in front of the building. This permit was deleted by NYSDEC on September 12, 1986, based on the July 1, 1986, inspection indicating that discharge had ceased.

Circuitron Corporation had received numerous warnings concerning SPDES permit violations and unauthorized discharges from both the Suffolk County Department of Health Services (SCDHS) and the

New York State Department of Environmental Conservation (NYSDEC). An Order of Consent (SCDHS, 1984) and the Stipulated Agreement (SCDHS, 1985) issued by the SCDHS in 1984 and 1985, respectively, required that all leaching pools and storm drains be remediated; all toxic and hazardous materials be removed from the site including drums, tanks, and piping; and a groundwater quality study be performed. Although Circuitron Corporation installed 5 monitoring wells at the site (MW-8 thru MW-12, as shown in Figure 1-3), there are no engineering or well installation reports available. In addition, the analytical results from the Circuitron Corporation and the SCDHS groundwater sampling of these wells are conflicting. To date, only the unauthorized leaching pool LP-6 in the southern part of the plating room has been cleaned out and backfilled with clean soil (EA, 1987). There are no records available regarding the amount of waste removed from the unauthorized leaching pool or the existence and extent of contaminated soil in and around the leaching pool. Circuitron Corporation has received New York State's largest fine ($175,000) for environmental pollution, and the original owner, Mario Lombardo, has been fined and convicted of a felony in connection with unauthorized discharges.

Circuitron Corporation vacated the site without satisfactory compliance with terms in the Order of Consent (SCDHS, 1984) and the Stipulated Agreement (SCDHS, 1985). Circuitron Corporation has since filed for bankruptcy. The property owner is attempting to block bankruptcy proceedings until the site is remediated. Litigation in this case is ongoing.

Table 1-1 presents a chronology of events at the Circuitron Corporation Site based on background information from the Suffolk County Department of Health Services, the New York State Department of Environmental Conservation, and the NUS Corporation Field Investigation Team (FIT).

1.3.3 Legal Actions

Circuitron Corporation has received numerous warnings and notices concerning SPDES permit violations and in regard to unauthorized discharges at the facility.

In response to the unauthorized discharge of hazardous materials to the storm drain in the southwest corner of the property, the SCDHS charged that Circuitron Corporation failed to comply with the following provisions of the Suffolk County Sanitary Code:

(1) Article 12, Section 1205: discharge of toxic or hazardous material on November 16, 1983, to and/or from their sanitary cesspool system.

(2) Article 12, Section 1217 (c): failure to clean out contaminated cesspool on April 3, 1985, after due notice of the need for such cleanup.

TABLE 1-1

CIRCUITRON CORPORATION SITE

CHRONOLOGY OF EVENTS AT THE CIRCUITRON CORPORATION SITE

1961	Circuitron Corporation begins operation at the site. The Corporation is owned by 82 Milbar Corporation, of which Julius D'Amato and Mario Lombardo are principal owners.
Approx. May 1981	An exchange of Circuitron Corporation stock takes place. Mario Lombardo gets 100 percent ownership of Circuitron Corporation, and Julius D'Amato gets 100 percent ownership of the property and 82 Milbar Corporation.
June 23, 1983	A fire at the facility destroys 95 percent of the east side of the building.
Unknown date, 1983	Circuitron Corporation is purchased by F.E.E. Industries.
November 16, 1983	SCDHS samples the SPDES industrial leaching pool LP-1. Analytical results indicate that permit violations have occurred.
February 2, 1984	SCDHS orders Circuitron Corporation to clean out the SPDES leaching pool.
Unknown date, 1984	ADI Electronics purchases Circuitron Corporation from F.E.E. Industries.
March 1984	The new owners discover that wastewater is being discharged to a storm drain in the southwest corner of the property and they notify SCDHS.
June 4, 1984	SCDHS Commissioner issues a 10-point Order of Consent for cleanup of illegal discharge (IW 84-46) (SCDHS, 1984).
June 27, 1984	Joseph Mignone, President of Circuitron Corporation, agrees to Order of Consent.
July 20, 1984	Circuitron Corporation cleans out the storm drain in the southwest corner as per Order of Consent.
November 1984	Current owners discover unauthorized leaching pool below the floor of the plating room and inform SCDHS.

TABLE 1-1 (Cont'd)

CIRCUITRON CORPORATION SITE

CHRONOLOGY OF EVENTS AT THE CIRCUITRON CORPORATION SITE

December 12, 1984	SCDHS inspectors sample the unauthorizeed leaching pool. One of their inspectors collapses from solvent fumes emanating from the pool.
December 14, 1984	USEPA requests the Field Investigations Team (FIT 2) to perform a Site Inspection/Preliminary Assessment on the site as a result of an article published in <u>Newsday</u>.
March 7, 1985	An Administrative Hearing is held, at which time Circuitron Corporation agrees to terms of a Stipulated Agreement.
March 14, 1985	SCDHS issues the Stipulated Agreement, DHS No. IW0885 (SCDHS, 1985)
March 25, 1985	NUS FIT 2 submits PA / Site Evaluation Report to USEPA, recommended that a groundwater study be conducted.
March 26 to April 5, 1985	SCDHS inspectors dye test the Circuitron Corporation's plumbing as per the Stipulated Agreement.
April 4, 1985	Samples collected indicate that unauthorized leaching pools were receiving discharges of toxic and hazardous materials.
April 1985	ADI Electronics informs SCDHS that Circuitron Corporation will vacate the premises and abandon operations at the site.
Approx. Mid-March Mid-April 1985	Circuitron Corporation installs five groundwater monitoring wells. The wells were never approved by SCDHS. There are no engineering reports or well installation reports available on the monitoring wells.
May 9, 1985	Former owner, Mario Lombardo, pleads quilty to charges of unauthorized disposal of hazardous waste, N.Y.S Environmental Conservation Law, Section 27 09-14. He is fined $50,000 and sentenced to 700 hours of community service.

TABLE 1-1 (Cont'd)

CIRCUITRON CORPORATION SITE

CHRONOLOGY OF EVENTS AT THE CIRCUITRON CORPORATION SITE

May 31, 1985	SCDHS notifies Circuitron Corporation that an environmental cleanup of all toxic and hazardous materials and a groundwater quality study should be required, prior to abandoning the facility.
September 1, 1985	Circuitron Corporation allows their SPDES permit to expire. They continue to discharge to the SPDES leaching pool through March 31, 1986.
September 10, 1985	SCDHS samples the five on-site monitoring wells. Analytical results indicate the presence of 1,1,1-trichloroethane in the three downgradient wells.
October 29,1985	NYSDEC samples the SPDES industrial leaching pool. Analytical results indicate the presence of phenols, 1,1,1-trichloroethane, and 1,1-dichloroethane in excess of N.Y.S. ambient water quality standards.
January 17. 1986	SCDHS samples the SPDES leaching pool. Analytical results indicate the presence of methylene chloride.
Mid-May to End-June, 1986	Circuitron Corporation vacates the facility at some time during this period. They remove all equipment of value and leave the facility in its present condition (Ebasco, 1989a).
May 28, 1986	Over a 12-month period covering 4/85-3/86, NYSDEC noted 104 SPDES permit violations.
July 1, 1986	NYSDEC inspects the Circuitron Corporation facility. They find the building vacated. Employees in neighboring buildings indicate that no one has been at the facility for at least a month. The SPDES industrial pool was dry, and eight 55-gallon drums with a strong solvent odor were left outside behind the building.

TABLE 1-1 (Cont'd)

CIRCUITRON CORPORATION SITE

CHRONOLOGY OF EVENTS AT THE CIRCUITRON CORPORATION SITE

September 12, 1986	NYSDEC officially notifies Circuitron Corporation that it has deleted their SPDES permit based on the July 1, 1986, inspection indicating discharge has ceased.
April 15, 1987	USEPA tasks NUS FIT 2 to conduct a Site Inspection at the Circuitron Corporation Site.
May 14, 1987	NUS FIT 2 conducts a site reconnaissance of the site for sampling to be conducted at a later date.
May 15, 1987	Based on conditions observed at the site, NUS FIT 2 recommends that USEPA conduct an Emergency Response Action at the site.
May 16, 1987	USEPA Emergency Response Team (ERT) and Technical Assistance Team (TAT) inspect the Circuitron facility.
May 18, 1987	ERT recommends a Removal Action at the site.
May 19, 1987	NUS Corporation Region 2 FIT is tasked by USEPA to conduct an Expanded Site Inspection (ESI) at the Circuitron Corporation Site. USEPA requests FIT 2 to complete the Site Inspection Report and Hazard Ranking Model for the site, based on existing state and county data.
June, 1987	A removal assessment by the Response and Prevention Branch (now Removal Branch) reveals approximately 380 containers of varying size within the building.
August 10, 1988	An Action Memorandum is signed authorizing Superfund Removal funds for the action. Sometime during the period of June 1987 to August 10, 1988, the PRP removes a substantial number of the containers left inside the building. Activities are halted due to a request from the USEPA Office of Regional Counsel.

TABLE 1-1 (Cont'd)

CIRCUITRON CORPORATION SITE

CHRONOLOGY OF EVENTS AT THE CIRCUITRON CORPORATION SITE

September 28, 1988	USEPA awards Work Assignment 004-2L1E for the performance of a Remedial Investigation/ Feasibility Study to Ebasco Services Incorporated. The USEPA Contract Number is 68-W8-0110.
October 14, 1988	USEPA officials, Ebasco officials and Julius D'Amato inspect the Circuitron Corporation Site.
November 15, 1988	Ebasco Draft Work Plan submittal.
December 5, 1988	Ebasco Draft FOP submittal.
December 14 to December 16, 1988	USEPA conducts initial sampling activities for combatibility and disposal.
February 17, 1989	Ebasco Final Work Plan submittal.
February 22 to February 23, 1989	USEPA performs additional sampling including the underground structures
February 24, 1989	Ebasco Final FOP submittal.
April 17 to May 10, 1989	USEPA Emergency Response Actions.
May 4, 1989	USEPA performs wipe and air sampling.
May 18, 1989	Ebasco performs a geophysical survey at the Circuitron Corporation Site for the determination of the exact location of underground structures expected to exist below the parking lot and the ground at the rear of the building.
June 8, 1989	USEPA approves the final Work Plan and FOP prepared by Ebasco.
June 13 thru October 10, 1989	Ebasco conducts the field investigation activities at the Circuitron Corporation Site for the collection of data required for the performance of the Remedial Investigation/ Feasibility Study.
December 11, 1989	Ebasco conducts one round of groundwater sampling of downgradient private well S-22003.

To satisfy the above violations, Circuitron Corporation agreed to a SCDHS Order on Consent, No. IW 84-46, on June 27, 1984 (SCDHS, 1984).

In response to additional violations of the Suffolk County Sanitary Code, Circuitron Corporation entered into a Stipulated Agreement, No. IW 0885, with SCDHS on March 7, 1985 (SCDHS, 1985).

In 1984, the former owner of Circuitron Corporation, Mario Lombardo, was charged for discharging organic solvents to unauthorized "hidden" leaching pools between March 1, 1982, and March 22, 1984. He was indicted on 6 felony counts of unlawful dumping of hazardous wastes, under N.Y.S. Environmental Conservation Law (ECL) Section 27, Subsection 09-14; 19 felony counts of offering a false instrument for filing, under Suffolk County Penal Law Section 175, Subsection 135; and 20 misdemeanor counts of violating N.Y.S. ECL Section 17, Subsection 03-01 and 05-01. On May 9, 1985, Mario Lombardo pleaded guilty to unlawful dumping of hazardous wastes, NYS Section 27, Subsection 09-14. He was fined $50,000 and sentenced to 700 hours of community service.

When Circuitron Corporation informed SCDHS that they would be vacating the facility, SCDHS informed the owners that a cleanup of toxic and hazardous materials and a groundwater study would be required. SCDHS also required further off-site groundwater monitoring. Circuitron Corporation refused to adhere to the off-site groundwater monitoring requirement. In addition, the property owner, 82 Milbar Corporation has brought suit against the current facility owners, ADI Electronics, for cleanup of the site.

1.3.4 Previous Investigations

Previous investigations at the Circuitron Corporation Site were performed by the SCDHS and the USEPA. Results of these investigations have documented the contamination of the facility's septic system, SPDES leaching pool system and area storm water drainage system with volatile organics and heavy metals. Tables 1-2 through 1-6 present the SCDHS and USEPA analytical results from these sampling activities.

1.3.4.1 On-Site Contamination

SCDHS sampling at the Circuitron Corporation facility included dye testing of piping systems to determine discharge points. The dye testing revealed that untreated wastewater discharges were going directly to the SPDES leaching pool LP-1; to storm drain SD-3 in the southwest corner of the site; and to at least two

TABLE 1-2

CIRCUITRON CORPORATION SITE

SUMMARY OF SCDHS ANALYTICAL RESULTS SPDES INDUSTRIAL DISCHARGE LEACHING POOL (LP-1) LIQUID SAMPLES

PARAMETER			CONCENTRATION*		
DATE:	04/23/81	10/28/81	11/16/83	05/23/84	12/13/84
Copper	6,000		800,000	12,000	4,400
Lead	1,000		920,000	400	
Iron			560,000		
Nickel			3,000		
Silver			430		
Methylene Chloride		73	83,000		66
1,1,1-Trichloroethane		80	190		580

PARAMETER			CONCENTRATION*		
DATE:	03/26/85	04/08/85	04/17/85	05/07/85	01/17/86
Copper	3,000	2,300	2,700	2,100	
Methylene Chloride		62	37		190
1,1,1-Trichloroethane		60	36		30
Chloroform			47		

Notes: * All results are reported in ug/l

Source: Suffolk County Department of Health Services

TABLE 1-3

CIRCUITRON CORPORATION SITE

SUMMARY OF SCDHS ANALYTICAL RESULTS SANITARY CESSPOOL (CP-1) LIQUID SAMPLES

PARAMETER	CONCENTRATION*				
DATE:	04/23/81	09/02/81	11/16/83	12/13/84	10/17/86
Methylene Chloride	100				
1,1,1-Tri-Chloroethane		3,000			
Copper			1,800		
Iron			3,500		
Lead			200	200	200
Silver			200		

Notes: * All results are reported in ug/l

Source: Suffolk County Department of Health Services

TABLE 1-4

CIRCUITRON CORPORATION SITE

SUMMARY OF SCDHS ANALYTICAL RESULTS DISTRIBUTION POOL (LP-2) LIQUID SAMPLES

PARAMETER	CONCENTRATION*	
DATE:	04/23/81	10/12/81
Methylene Chloride	290	
1,1,1-Trichloroethane	42,000	460
Copper	3,200	
Lead	400	

Notes: * All results are reported in ug/l

Source: Suffolk County Department of Health Services

TABLE 1-5

CIRCUITRON CORPORATION SITE

SUMMARY OF SCDHS ANALYTICAL RESULTS UNAUTHORIZED LEACHING POOLS SAMPLES

A. Unauthorized leaching Pool LP-5 - Middle of Plating Room

	CONCENTRATION*	
	Sediment Sample 11/14/84	Aqueous Sample 11/14/84
Methylene Chloride	1,200	410
1,1,1-Trichloroethane	180,000	11,000
1,1,2-Trichloroethylene	330	30
Tetrachloroethylene	5,100	160
Chloroform	40	
Methy Ethyl Ketone		230
Copper		6,600
Zinc		1,600

B. Unauthorized Leaching Pool LP-6 - South End of Plating Room

	CONCENTRATION*	
	Sediment Sample 04/04/85	Aqueous Sample 04/04/85
Copper	360,000	
Iron	550,000	
Nickel	4,200	
Zinc	470,000	
Lead	3,300,000	
Silver	2,100	
Methylene Chloride		26,000
1,1,1-Trichloroethane		6,500
1,1,2-Trichloroethylene		550
Tetrachloroethylene		4,400
Toluene		6,000

Notes: * All results are reported in ug/l for aqueous samples and ug/kg for sediment samples

Source: Suffolk County Department of Health Services

TABLE 1-6

CIRCUITRON CORPORATION SITE

SUMMARY OF SCDHS ANALYTICAL RESULTS STORM DRAIN (SD-3) LIQUID SAMPLES

Storm Drain - Southwest Corner

PARAMETER		CONCENTRATION*		
	DATE:	12/13/84	04/04/85	01/17/86
Copper		1,400		
1,1,1-Trichloroethane			260	22

Notes: * All results are reported in ug/l

Source: Suffolk County Department of Health Services

unauthorized leaching pools below the floor of the plating room in the building (LP-5 and LP-6). All these structures are illustrated in Figure 1-3. These wastewaters contained mainly heavy metals and solvents.

Analysis of samples collected from LP-1 (see Table 1-2) indicated the presence of particularly high levels of copper (4,400 ppb) and 1,1,1-trichloroethane (580 ppb).

Analysis of samples collected from the sanitary cesspool CP-1 (see Table 1-3) indicate that it may have received organic solvents such as methylene chloride (100 ppb) and 1,1,1-trichloroethane (3,400 ppb), and metals such as copper (1,800 ppb) and iron (3,500 ppb).

In 1981, samples from the distribution pool LP-2 (see Table 1-4) in the northeast portion of the site also indicated that organic solvents, such as 1,1,1-trichloroethane (42,000 ppb), had been discharged. The distribution pool directed wastewater to the three leaching pools in the northeast portion of the site.

Storm drain SD-3 in the southwest corner of the site had been "cleaned" at least once. The details and procedures of this cleaning are not documented. The unauthorized leaching pool LP-6 in the southern end of the plating room has also been cleaned, the sides scraped and the pool backfilled.

The building floor in the area where plating baths were operated is severely corroded. The cement can be removed as a sludge. At one of the locations, SCDHS inspectors were easily able to hammer a copper pipe directly through the concrete and into the ground beneath (EA, 1987). SCDHS tested the cement sludge with pH paper and found the sludge to have a pH of approximately 1.

1.3.4.2 Groundwater Contamination

Five groundwater monitoring wells (MW-8 through MW-12) were installed by Circuitron Corporation in 1985. Their locations are shown on Figure 1-3. These wells were never approved by the SCDHS or NYSDEC and there are no engineering reports providing information on the wells' installation and development. SCDHS sampled the wells on September 10, 1985, and found the three downgradient wells (MW-10, MW-11 and MW-12) to be contaminated with 1,1,1-trichloroethane ranging in concentration from 60 to 520 ppb. Table 1-7 presents SCDHS sampling results from the five on-site wells.

In addition, municipal well S-20041, located at the Gazza Boulevard well field (see Figure 1-4) approximately 1,500 feet south-southeast from the site, has been restricted due to volatile organic contamination.

There are no studies in the Circuitron Corporation Site area conducted prior to the recent USEPA and Ebasco field investigation activities that could determine the extent of groundwater contamination on and downgradient of the site.

TABLE 1-7

CIRCUITRON CORPORATION SITE

SCDHS ON-SITE MONITORING WELL ANALYTICAL RESULTS

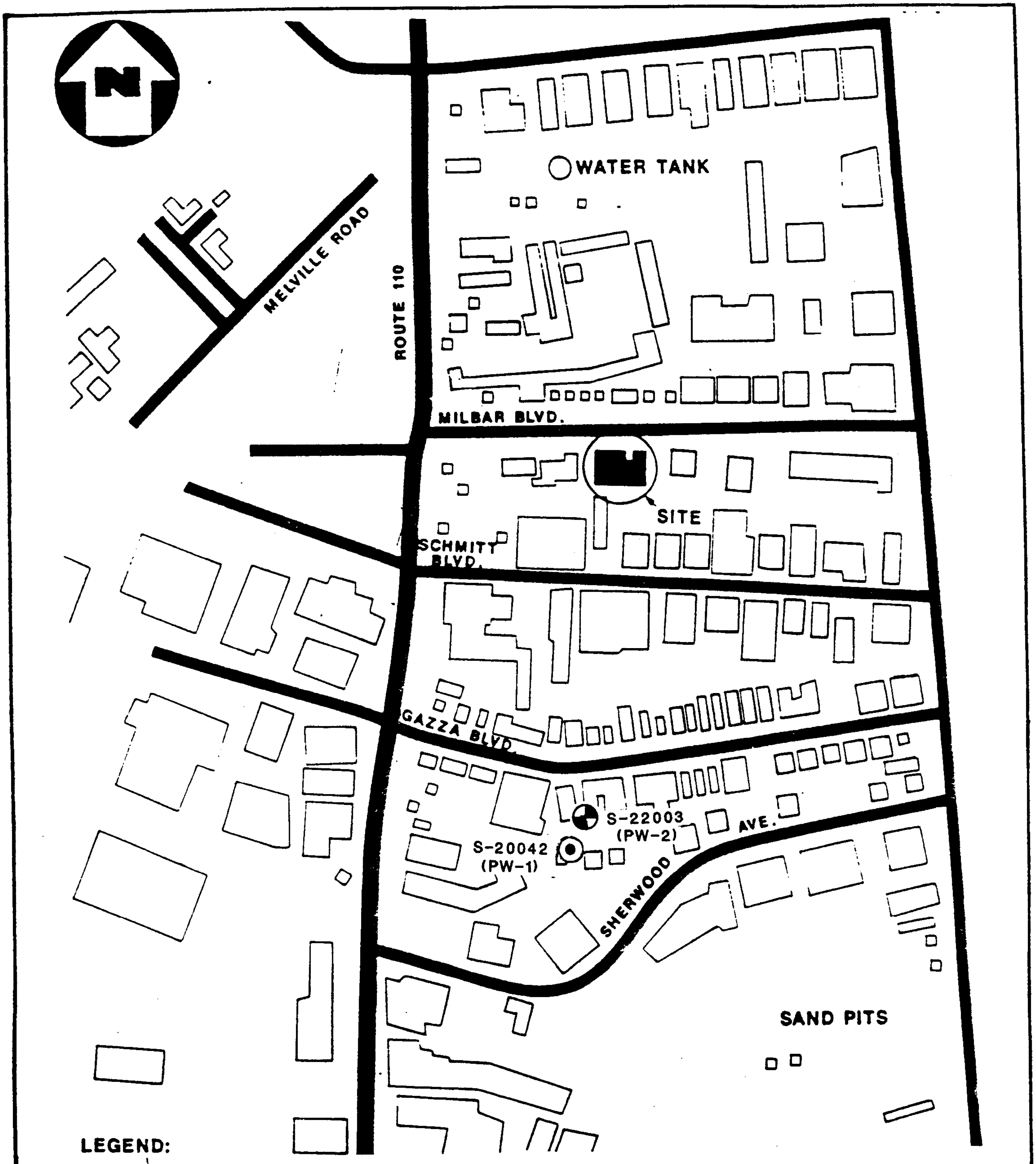
WELL	PARAMETER	CONCENTRATION*
Well MW-8 (north upgradient well)	No Contaminants Detected	-
Well MW-9 (south upgradient well)	No Contaminants Detected	-
Well MW-10 (north downgradient well)	1,1,1-Trichloroethane	60
Well MW-11 (middle downgradient well)	1,1,1-Trichloroethane	120
Well MW-12 (south downgradient well)	1,1,1-Trichloroethane	520

Notes: * All results are reported in ug/l

Wells installed by Circuitron Corporation.

Sampling date: September 10, 1985.

Source: Suffolk County Department of Health Services



LEGEND:

◕ LOCATION OF EXISTING PRIVATE WELLS

⊙ LOCATION OF EXISTING MUNICIPAL COMMERCIAL WELLS

(S-9004) NYSDEC WELL INDEX NUMBERS

0 250 500 750
SCALE IN FEET

SOURCE: NUS CORPORATION

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 1-4

MUNICIPAL AND PRIVATE WELL LOCATIONS

EBASCO SERVICES INCORPORATED

1.3.4.3 Surface Water Contamination

No rivers, lakes or other surface waterbodies are within a 3-mile radius of the Circuitron Corporation Site. Surface water drainage for the site is directed to two storm drains on Milbar Boulevard in the parking lot area and to the line of three storm drains on the west side of the building (see Figure 1-3). The SPDES leaching pool has been observed to be overflowing on at least two occasions. The overflow of the industrial wastewaters was observed entering storm drain SD-1 on Milbar Boulevard (see Figure 1-3), as well as storm drain SD-2 on the western portion of the Circuitron Corporation Site (EA, 1987). The storm drains on Milbar Boulevard discharge to leaching pools which allow the storm water to slowly seep into the ground. These storm drains have never been sampled. The storm drains on the west side of the Circuitron building are interconnected but do not connect with the public storm drains on Milbar Boulevard and instead allow for leaching of stormwater to the groundwater systems. Of these storm drains, SD-3 (see Figure 1-3) has been sampled by the SCDHS in the past and the results are presented in Table 1-6 of this final RI report.

1.3.4.4 Air Contamination

There are no documented incidents of an air release outside the building. Storm drain SD-3 in the southwest corner, which received untreated wastes, has a slotted manhole cover as do the remaining storm drains along the storm drain line. It is possible that air contaminants may have been released from wastewater contaminated with organic solvents. The storm drains were monitored using an HNu photoionization detector, OVA flame ionization detector, and an explosimeter during the May 14, 1987, site inspection by the NUS FIT 2. There were no readings above the background level detected in or above the storm drains.

There is a documented air release from hidden leaching pool LP-6 located inside the building. One of the SCDHS inspectors sampling the pool collapsed while wearing a respirator. SCDHS described waste in the pool as having a strong solvent odor.

1.4 REMEDIAL INVESTIGATION SUMMARY

1.4.1 Initial Activities

The initial tasks of this Work Assignment were the development of a Work Plan (Ebasco, 1989a) and a Field Operations Plan (Ebasco, 1989c) for the RI/FS. Prior to the preparation of project plans, a site visit was performed on October 14, 1988, to familiarize the investigators with the site, determine possible sampling locations and obtain information for developing the Health and Safety Plan.

Following the site visit and the evaluation of the existing data, potential preliminary remedial alternatives were identified in order to scope out the field sampling and analysis program and to specify the appropriate levels of data quality.

1.4.2 EPA Field Investigation Activities and Response Actions

EPA conducted initial sampling activities for compatibility and disposal of the on-site wastes on February 22 and 23, 1989. The sampling activities were performed inside the building and consisted of the collection of:

- Samples of the contents of each of the five underground concrete tanks (UT-1 through UT-5) (note that underground tank UT-1 consisted of four vaults, one of which was actually a meter box);
- Sample of the contents of the north wastewater treatment basin B-1; and
- Soil samples from the three unauthorized leaching pools LP-3, LP-4 and LP-5, as well as from the hole H-1.

The locations of above structures are illustrated on Figure 1-3.

When the collection of the above listed samples was completed, USEPA performed the following response actions:

- Removal and disposal of all liquids, dirt, dust, sludge and general debris from inside the building;
- Removal and disposal of all drums and their contents;
- Pumping out all underground tanks (UT-1 thru UT-4) inside the building and disposal of the contents;
- Pumping out the oil-storage tank UT-5 located at the rear of the building and disposal of the contents;
- Removal and disposal of the three above ground storage tanks located outside the rear of the building; and,
- Pumping out the north wastewater treatment basin B-1 located inside the building and disposal of the contents.

The USEPA removal and clean-up activities commenced in April 17, 1989, and were completed by May 10, 1989.

On May 5, 1989, and during the performance of the above emergency response activities, USEPA collected floor and wall wipe samples from sixteen locations and air samples from four locations (one from each room) throughout the building.

All the liquid and sediment samples were analyzed for the full TCL parameters. The floor and wall wipe samples were analyzed for metals and cyanide only. The air samples were analyzed for volatile organics, metals and cyanide. All the samples collected by the USEPA were sent to a CLP laboratory for DQO level 5 analysis.

1.4.3 EBASCO Field Investigation Activities

The Ebasco field investigation activities commenced on June 13, 1989, were completed on December 11, 1989, and included the following:

- Geophysical survey for the determination of the location of the underground structures that were reported to exist in the front and rear of the building;
- Installation of six soil borings (SB-1 thru SB-6) to a depth of 42 feet below the ground surface;
- Installation of 7 well clusters (MW-1 thru MW-7) with each cluster consisting of a deep (90 - 100 feet) and a shallow (30 to 40 feet) well;
- Soil sampling of the soil borings at 5-foot intervals;
- Soil sampling of four deep wells (MW-1D, MW-2D, MW-3D and MW-4D) with samples taken at 5-foot intervals from the ground surface to the groundwater table and then from the screened interval;
- Two surface soil samples (SS-1 and SS-2) from the rear of the building;
- Two core samples from the building floor slab (one from the silkscreening room and one from the plating room);
- Sediment samples from the SPDES authorized leaching pool LP-1 located at the northeast corner of the site property, the two sanitary cesspools CP-1 and CP-2, located in front of the building below the parking lot, and the three storm drains SD-1, SD-2 and SD-3, located at the western portion of the site;
- Aqueous samples from storm drains SD-1 and SD-2, located in the western portion of the site (no aqueous material was found in storm drain SD-3);
- Two rounds of groundwater sampling of the 14 newly installed monitoring wells; and,
- One round of groundwater sampling of the 5 on-site existing Circuitron monitoring wells, as well as the municipal well (S-20042) and the private well (S-22003) located downgradient of the site on Gazza Boulevard.

Quality assurance/quality control samples were also taken throughout the sampling activities for the verification of the appropriate decontamination of the sampling equipment, installation of the monitoring wells and shipment of the collected samples to their designated laboratories.

Aerial and ground surveying was performed by C.T. Male Associates for the preparation of an accurate topographic map showing all the physical features, structures, contours and soil boring/monitoring well locations and elevations on and around the Circuitron Corporation Site. The aerial photographs of the area were taken on November 9, 1990. The ground survey activities were conducted during the week of December 11, 1990.

1.4.4 Risk Assessment

A public health evaluation was performed to determine the nature of the potential human health concerns posed by the contamination existing in the soil, sediment and groundwater of the Circuitron Corporation Site. However, an environmental health assessment was not conducted for this site, since it is located in a highly industrialized area and there are no potential receptor areas (e.g., lakes, streams) near the site. The public health assessment was based upon available data provided by the USEPA and Ebasco site investigation activities conducted in 1989. This public health evaluation accounts for site-specific characteristics in order to develop a reasonable characterization of the potential risk associated with human exposure to contaminants. Potential exposure pathways were identified with the primary emphasis on groundwater exposure pathways. Dermal contact with site sediments and groundwater was also assessed if removal of these materials was required for the remedial activities. The concentration of the contaminants at exposure points were estimated using environmental fate and transport models and were compared to "Applicable or Relevant and Appropriate Requirements" and USEPA Reference Dose criteria.

2.0 EPA FIELD INVESTIGATIONS

2.1 INTRODUCTION

This section presents a summary of the methods and procedures employed during the remedial investigations conducted at the Circuitron Corporation Site by USEPA TAT (Technical Assistance Team). The USEPA field investigations were performed under Contract No. 68-01-7367, which was awarded on August 10, 1988. All field sampling was performed according to the TAT Sampling Plan (USEPA, 1989a) and the USEPA protocols.

The field sampling activities consisted of:

- Soil, sediment/sludge, liquid, and aqueous sampling, which was performed on February 22 and 23, 1989; and,
- Wipe and air sampling, which was conducted on May 4, 1989.

Figure 2-1 illustrates the soil, sediment/sludge, liquid, and aqueous sampling locations. Figures 2-2 and 2-3 show the wipe and air sampling locations, respectively.

Tables 2-1, 2-2, 2-3 and 2-4 present a summary of the soil, sediment/sludge, liquid and aqueous, wipe and air samples, respectively, collected from the underground structures during the USEPA field activities and the chemical analyses performed.

More information on the methods and procedures performed can be obtained from the TAT Sampling Plan (USEPA, 1989a) and Sampling Plan for Removal Operations at Circuitron Corporation, (USEPA, 1989b).

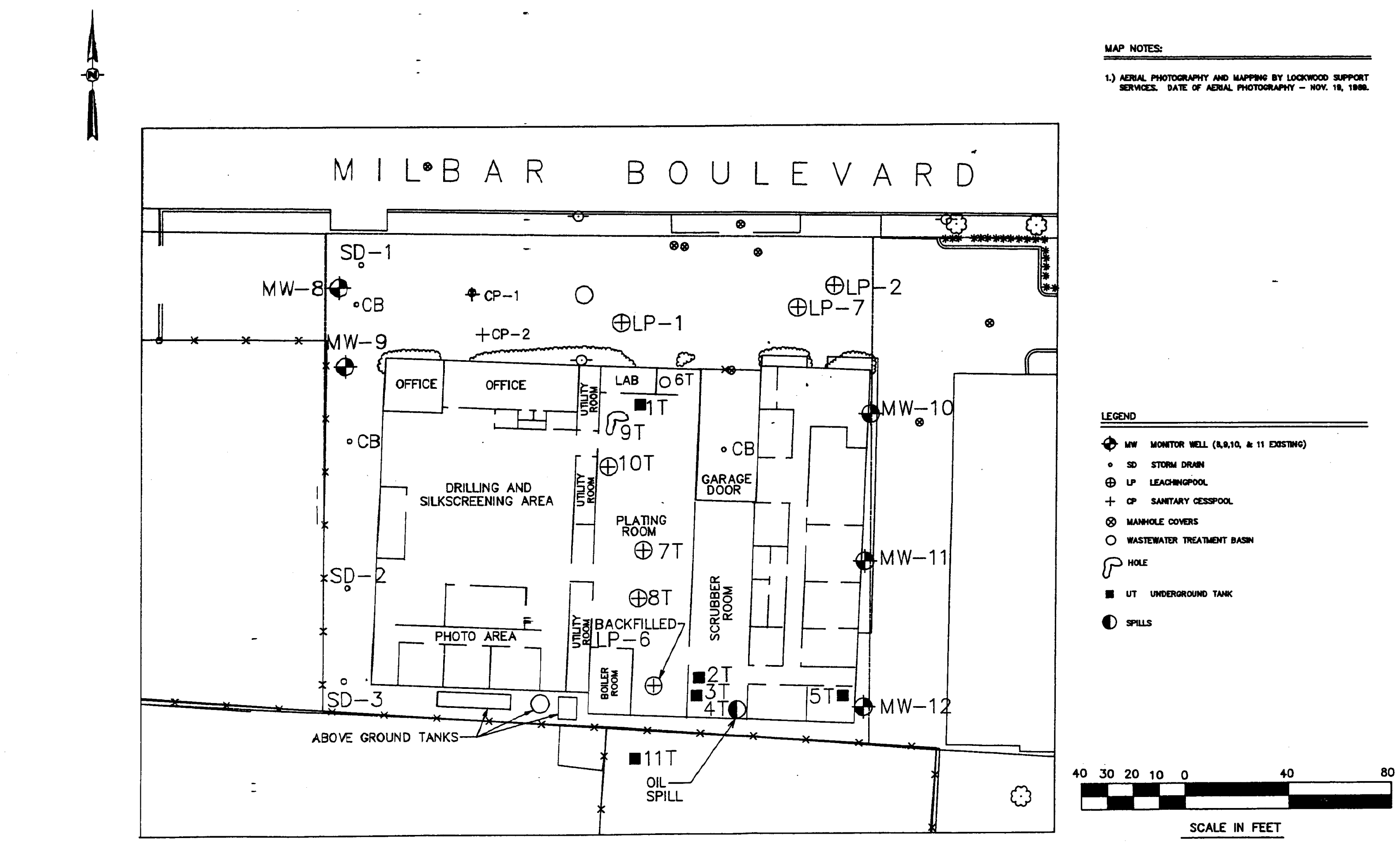
The analytical results of the soil, sediment/sludge, liquid, aqueous, air and wipe sampling can be found in the "On-Scene Coordinator's Report" (USEPA, 1990), are summarized and discussed in Section 6.0 of this RI report and were considered in the determination of sources of the soil and groundwater contamination.

2.2 SOIL SAMPLING

The purpose of conducting the soil sampling was to determine the presence of hazardous contaminants in known and potentially existing unauthorized leaching pools and underground structures at the Circuitron Corporation Site. These structures have been considered as potential sources of contamination.

Soil samples were collected from the following locations:

- The unauthorized leaching pool designated LP-3, located near the west wall of the plating room;



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1988.

LEGEND

⊕	MW	MONITOR WELL (8,9,10, & 11 EXISTING)
∘	SD	STORM DRAIN
⊕	LP	LEACHINGPOOL
+	CP	SANITARY CESSPOOL
⊗		MANHOLE COVERS
○		WASTEWATER TREATMENT BASIN
		HOLE
■	UT	UNDERGROUND TANK
◐		SPILLS

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

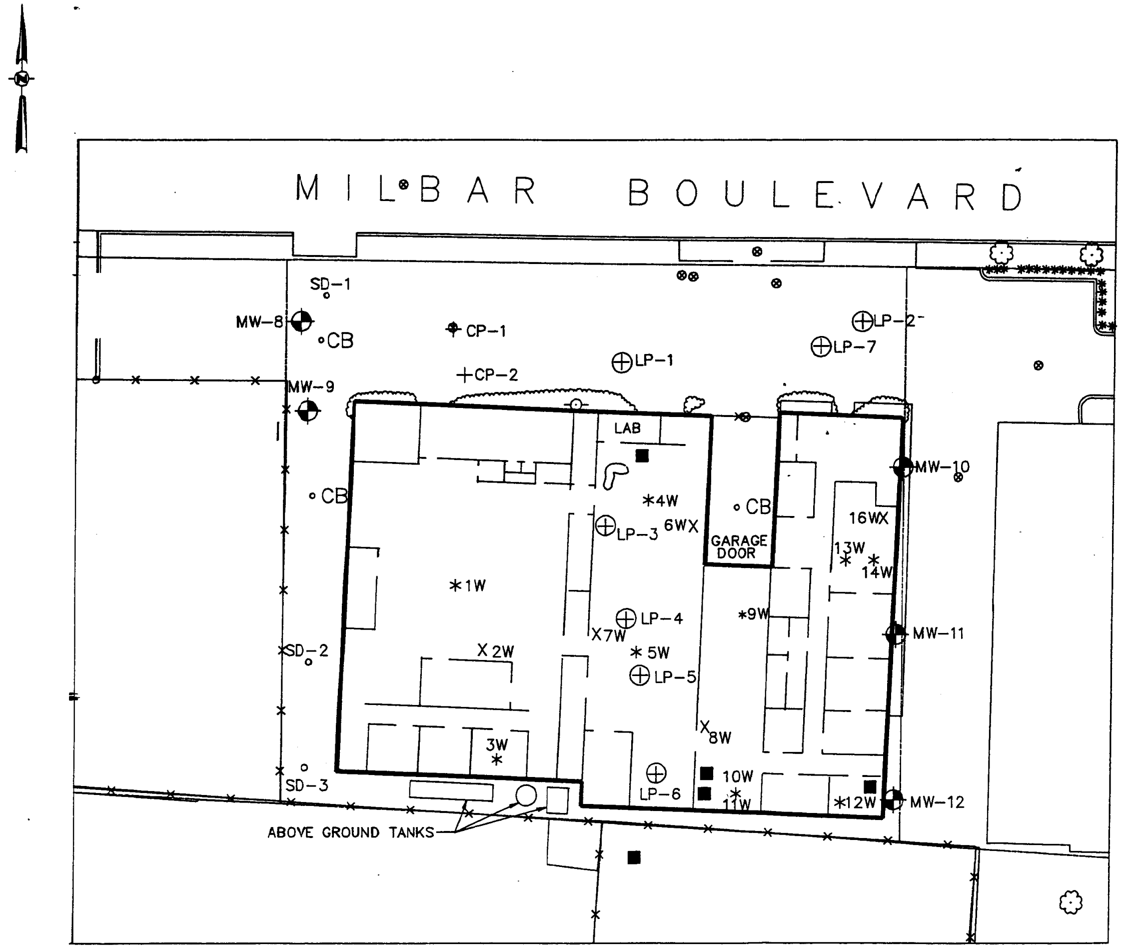
EPA SOIL, SEDIMENT/SLUDGE,
LIQUID AND AQUEOUS
SAMPLING LOCATIONS

EBASCO SERVICES INCORPORATED

FIGURE NO. 2-1

CIRC-1LDWG

SOURCE: FIGURE 1 OF THE "ANALYTICAL REPORT PLANNED REMOVAL ACTION"
PREPARED BY ROY F. WESTON FOR THE EPA TAT, NOVEMBER 1989 (EPA,1989)



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕	MW	MONITOR WELL (8,9,10, & 11 EXISTING)
∘	SD	STORM DRAIN
⊕	LP	LEACHINGPOOL
+	CP	SANITARY CESSPOOL
⊗		MANHOLE COVERS
○		WASTEWATER TREATMENT BASIN
↱		HOLE
■	UT	UNDERGROUND TANK
◐		SPILLS
*		FLOOR -SAMPLE
X		WALL SAMPLE

40 30 20 10 0 40 80

SCALE IN FEET

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY
MAP PREPARED BY C.T. MALE ASSOCIATES, P.C.
FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

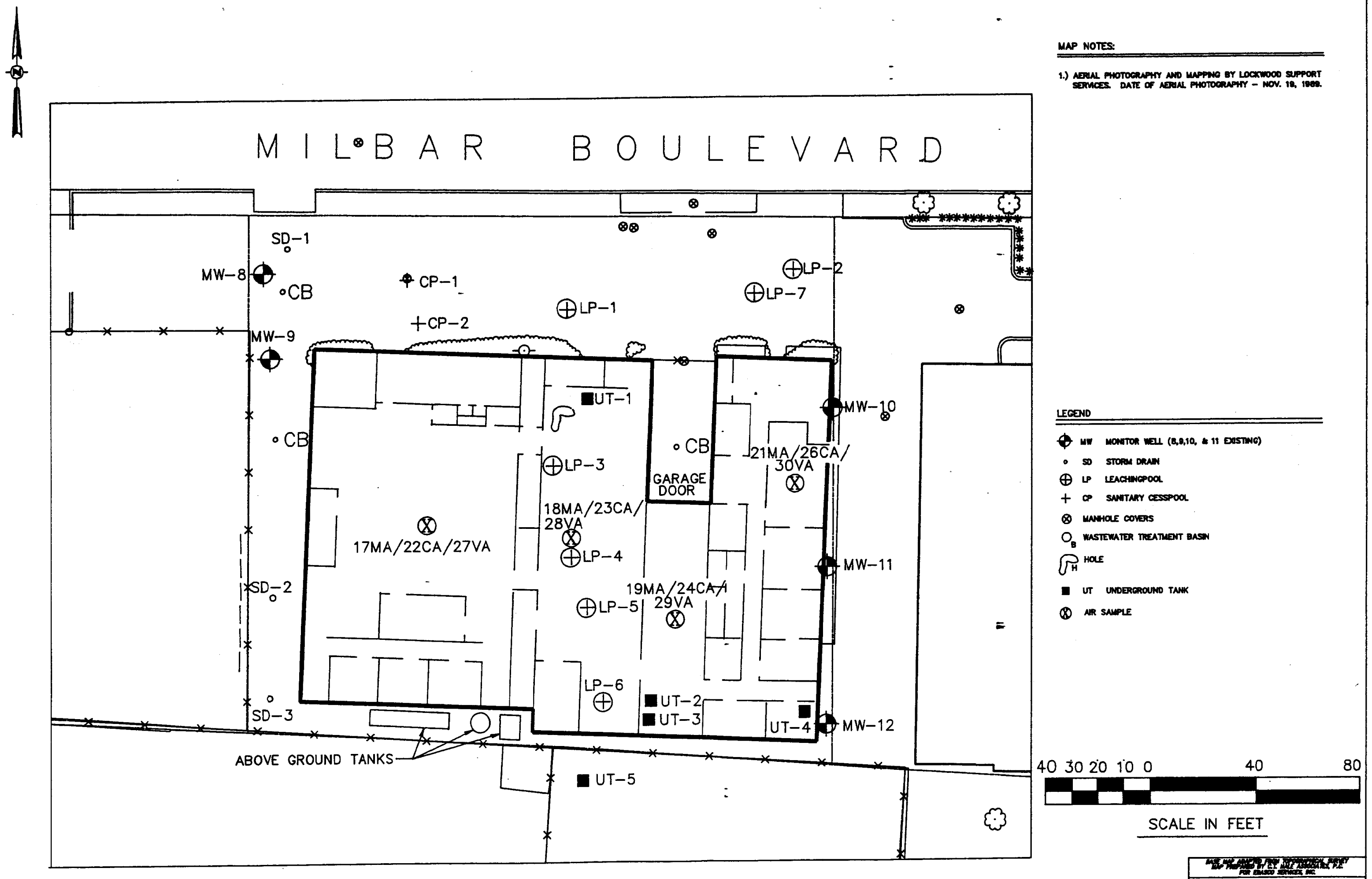
CIRCUITRON CORPORATION SITE
EPA WIPE SAMPLING LOCATIONS

EBASCO SERVICES INCORPORATED

FIGURE NO. 2-2

CIRC-LDWD

SOURCE: FIGURE 1 OF THE "ANALYTICAL REPORT PLANNED REMOVAL ACTION" PREPARED BY ROY F. WESTON FOR THE EPA TAT, NOVEMBER 1989 (EPA,1989)



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY
MAP PREPARED BY C.T. MALE ASSOCIATES, P.C.
FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE
EPA AIR SAMPLING LOCATIONS

EBASCO SERVICES INCORPORATED

FIGURE NO. 2-3

CIRC-1.DWG

SOURCE: FIGURE 1 OF THE "ANALYTICAL REPORT PLANNED REMOVAL ACTION"
PREPARED BY ROY F. WESTON FOR THE EPA TAT, NOVEMBER 1989 (EPA,1989)

TABLE 2-1

CIRCUITRON CORPORATION SITE

SUMMARY OF SOIL SAMPLING CONDUCTED BY EPA ON FEBRUARY 22 AND 23, 1989

SAMPLE #	SAMPLE LOCATION	ANALYSIS
7T	Unauthorized Leaching Pool LP-4	Full TCL and CR+6
8T	Unauthorized Leaching Pool LP-5	Full TCL and CR+6
9T	Hole H-1	Organic TCL Inorganic TCl and CR+6
10T	Unauthorized Leaching Pool LP-3	Full TCL and Cr+6

Source: "On-Scene Coordinator's Report" (USEPA, 1990).

TABLE 2-2

CIRCUITRON CORPORATION SITE

SUMMARY OF SEDIMENT/SLUDGE, LIQUID AND AQUEOUS SAMPLING CONDUCTED BY EPA ON FEBRUARY 22 AND 23, 1989

SAMPLE #	SAMPLE LOCATION	MATRIX	ANALYSIS
1T	North Underground Tank UT-1	Aqueous	Full TCL and Cr+6
2T	South Underground Tank UT-2	Sediment/ Sludge	Full TCL and Cr+6
3T	South Underground Tank UT-3	Aqueous	Full TCL and Cr+6
4T	South Underground Tank UT-3	Sediment/ Sludge	Full TCL and Cr+6
5T	East Underground Tank UT-4	Aqueous	Organic TCL Inorganic TCL and Cr+6
6T	North Wastewater Basin B-1	Aqueous	Organic TCL Inorganic TCL and Cr+6
11T	Fuel Underground Tank UT-5	Liquid	Full TCL and Cr+6

Source: "On-Scene Coordinator's Report" (USEPA, 1990).

TABLE 2-3

CIRCUITRON CORPORATION SITE

SUMMARY OF WIPE SAMPLING CONDUCTED BY EPA ON MAY 4, 1989

SAMPLE #	SAMPLE LOCATION	ANALYSIS
1W	Middle of Drilling and Silkscreening Room Floor	Metals and Cyanide
2W	South Wall of Drilling and Silkscreening Room	Metals and Cyanide
3W	Photo Room Floor	Metals and Cyanide
4W	Northern Portion of Plating Room Floor	Metals and Cyanide
5W	Middle Portion of Plating Room Floor	Metals and Cyanide
6W	East Wall of Plating Room	Metals and Cyanide
7W	West Wall of Plating Room	Metals and Cyanide
8W	West Wall of Scrubber Room	Metals and Cyanide
9W	Northern Portion of Scrubber Room	Metals and Cyanide
10W	Southern Portion of Scrubber Room	Metals and Cyanide
11W	South Wall of Scrubber Room	Metals and Cyanide
12W	Southeast Corner of Office Area Floor	Metals and Cyanide
13W	Northern Portion of Office Area Floor	Metals and Cyanide
14W	Northern Portion of Office Area Floor (duplicate of 13W)	Metals and Cyanide
16W	East Wall of Office Area	Metals and Cyanide

Source: "On-Scene Coordinator's Report" (USEPA, 1990).

TABLE 2-4

CIRCUITRON CORPORATION SITE

SUMMARY OF AIR SAMPLING CONDUCTED BY EPA ON MAY 4, 1989

SAMPLE #	SAMPLE LOCATION	ANALYSIS
17MA	Drilling Room	Metals
22CA	Drilling Room	Cyanide (*)
27VA	Drilling Room	Organic Compounds
18MA	Plating Room	Metals
23CA	Plating Room	Cyanide (*)
28VA	Plating Room	Organic Compounds
19MA	Scrubber Room	Metals
24CA	Scrubber Room	Cyanide (*)
29VA	Scrubber Room	Organic Compounds
21MA	Office Area	Metals
26CA	Office Area	Cyanide (*)
30VA	Office Area	Organic Compounds

Notes: (*) This analysis was performed for aerosol cyanide and gas cyanide.

Source: "On-Scene Coordinator's Report" (USEPA, 1990).

- The unauthorized leaching pool designated LP-4, located towards the middle of the plating room;

- The unauthorized leaching pool, designated LP-5, located southeast of LP-4 (this leaching pool had been sampled in December 1984, but was never cleaned); and,

- A hole through the floor, designated H-1, located near the west wall in the northern portion of the plating room.

The soil sampling locations are shown on Figure 2-1.

The soil samples were collected according to the procedures outlined in the TAT Sampling Plan (USEPA, 1989a) and were analyzed for full TCL parameters and hexavalent chromium. A summary of the soil samples collected and the chemical analyses performed is presented in Table 2-1.

2.3 SEDIMENT/SLUDGE, LIQUID AND AQUEOUS SAMPLING

Prior to the clean-up of the underground tanks existing at the Circuitron Corporation Site, sampling of their contents was conducted in order to examine the compatibility of the existing wastes and determine the procedure required for their appropriate removal and disposal. These structures were also considered as potential sources of soil and groundwater contamination.

The sediment and liquid sampling included the following:

- Collection of a liquid sample from underground tank UT-1, located adjacent to the north wall of the plating room;

- Collection of a sediment/sludge sample from underground tank UT-2, located in the southwest corner of the scrubber room;

- Collection of aqueous and sediment/sludge samples from underground tank UT-3, located in the southwest corner of the plating room;

- Collection of an aqueous sample from underground tank UT-4, located in the southeast corner of the office area;

- Collection of an aqueous sample from the north wastewater basin B-1, located in the room adjacent to the lab; and,

- Collection of a liquid sample from the underground oil-storage tank UT-5, located at the rear of the building.

Figure 2-1 illustrates all the sediment/sludge, liquid, and aqueous sampling locations.

All samples were obtained according to the sampling procedures discussed in the TAT Sampling Plan (USEPA, 1989a) and were analyzed for full TCL parameters and hexavalent chromium. A summary of the sediment/sludge, liquid and aqueous samples collected and the analyses performed is presented in Table 2-2.

2.4 WIPE SAMPLING

Wipe sampling was performed by USEPA inside the building on May 4, 1989, after clean-up of the underground tanks and removal of the drums and debris from the building floors were completed. The purpose of the wipe sampling was to investigate and verify the clean-up of the building interior.

A total of 13 wipe samples were taken from the walls and the floor of all four rooms of the building.

Figure 2-2 illustrates the wipe sampling locations. A summary of the wipe samples collected and the chemical analyses performed are presented in Table 2-3. The samples were collected according to the TAT Sampling Plan (USEPA, 1989a).

2.5 AIR SAMPLING

Air sampling was performed inside the building at the Circuitron Corporation Site on May 4, 1989, after clean-up of the underground tanks and removal of drums and debris from the building floors were completed. The purpose of the air sampling was to investigate and verify the clean-up of the interior of the building and to determine the presence of any emission sources still existing inside the building.

Air samples were collected from the drilling room, plating room, scrubber room, and the office area. The exact locations of the air sampling are shown on Figure 2-3. A summary of the air samples collected and the chemical analyses performed are presented in Table 2-4.

The air samples were collected according to the procedures outlined in the TAT Sampling Plan (USEPA, 1989a).

3.0 EPA EMERGENCY RESPONSE ACTIONS

3.1 INTRODUCTION

This section presents a summary of the emergency response actions performed by the USEPA at the Circuitron Corporation Site, which was performed after the completion of soil, sediment/sludge, liquid, and aqueous sampling and prior to wipe and air sampling. The emergency response actions were conducted in accordance with the TAT Sampling Plan (USEPA, 1989a), the USEPA Protocol, and are described in detail in the "On-Scene Coordinator's Report" (USEPA, 1990).

The Emergency Response Actions commenced on April 14, 1989 and were completed on September 28, 1989. The following activities were included:

- Removal of 20 drums from the interior of the building;
- Removal of the contents of underground tanks UT-1, UT-2, UT-3, and UT-4, located inside the building, and underground tank UT-5, located outside at the rear of the building;
- Removal of the three above ground tanks located at the rear of the building;
- Removal of the contents of the wastewater treatment basin B-1 and the hole H-1 located in the vicinity of the lab;
- Cleanup of the oil spill at the southeast corner of the scrubber room; and,
- Removal of the debris from the building floors.

Prior to their disposal, the wastes were contained in drums and sampled to determine classification as hazardous or non-hazardous. The method of disposal for each type of waste was based on the results of these sampling activities.

Throughout the duration of the USEPA emergency response actions, the air was monitored continuously for volatile emissions.

3.2 REMOVAL ACTIVITIES

3.2.1 Drums

Preliminary investigations at the Circuitron Corporation Site revealed the presence of 380 drums at various locations inside the building. In February 1988, 150 drums were found, and in December 1988, 20 of these remained inside the building. The Potentially Responsible Party (PRP) had allegedly removed most of the drums and shipped them off-site between USEPA site inspections.

The 20 drums remaining on site at the time of the emergency response actions contained both organic solvents and oxidizers.

Nine of the drums were overpacked because of the deteriorated condition of some containers, and compatible wastes were combined. This reduces the total number of drums to 15, that were removed from the site on May 8, 1989. The drums were disposed of by Envirosure, Niagara Falls, NY, via blending and incineration.

3.2.2 Above Ground Tanks

Three above ground tanks were located on-site at the rear of the building. One tank, which had been used for storage of organic solvents, was found to be approximately half full (1,500 gallons). Analysis of the contents showed a mixture of 1,1,1-trichloroethane and methylene chloride. In April 1989, the contents were pumped from the tank to drums which were temporarily stored on-site. All three of the tanks were then rinsed and cut for scrap. On May 8, 1989, the liquid waste, together with other drums from the site were removed and disposed of by Envirosure, Niagara Falls, NY, by blending and incineration. The rinsed scrap metal was loaded into rolloff containers and removed by a scrap dealer.

3.2.3 Underground Tanks

Eight underground tanks were remediated during the USEPA emergency response activities. Seven of these structures are located inside the building, and the remaining tank is located at the rear of the facility between the building wall and the fence.

Four interconnected vaults, one of which is actually a meter box, are located beneath the floor of the plating room. The four vaults were collectively designated as underground tank UT-1 and were apparently used as a treatment system for the plating baths, providing settling for plating wastes. The tanks are connected by overflow piping, and each has an approximate capacity of 500 gallons. At the time of the emergency response action, the three vaults were almost completely filled with liquid. An estimated 1400 gallons of corrosive liquids were pumped from the tanks. These wastes were removed from the site by Chemical Waste Management, Newark, NJ, and disposed of by wastewater treatment.

Two additional underground tanks, designated UT-2 and UT-3, were located in the scrubber room and appeared to have been used in a treatment process. The structures were connected by an overflow, were approximately 7 feet deep and were constructed of fiberglass. The tanks were apparently utilized for solids settling of product rinsing system wastes. One tank contained mostly sludge, and the other contained an estimated 200 gallons of liquid in addition to sludge. The liquid waste was analyzed and found to contain 1,1,1-trichloroethane, methylene chloride, copper, and lead.

During the response activities in April 1989, the liquid was pumped from the tanks and stored temporarily in drums on-site. On May 8, 1989, the sludge was solidified in place, removed from the tanks with a backhoe, and placed in a rolloff container. The fiberglass structures were also removed and placed in the rolloff, and the remaining hole was covered. The sludge and solids were then disposed of by Chemical Waste Management, Emelle, Alabama, in an approved landfill. The liquid waste was also removed from the site in May 1989 and disposed of along with other site wastes by Envirosure, Niagara Falls, NY, via blending and incineration.

Another underground structure located within the building was also remediated during the emergency response action. This tank, UT-4, is located in the southeast corner of the building and consists of a polyethylene drum sunk beneath the floor with both overflow and outflow piping. The drum contained approximately 30 gallons of liquid, which was removed in May 1989 along with the corrosive liquid waste from UT-1, and disposed of by Chemical Waste Management, Newark, NJ, via wastewater treatment.

Underground tank UT-5 is located outside of the building and was allegedly a fuel storage tank. Analysis of the liquid found in the tank showed the presence of organic compounds that may indicate the addition of other material to the fuel. Approximately 400 gallons of liquid was pumped from this tank and temporarily stored on-site during the April 1989 activities. The liquid, in addition to wastes from other drums and tanks, was removed from the site in May 1989 and disposed of by Envirosure, Niagara Falls, NY, by blending and incineration.

3.2.4 Wastewater Treatment Basin B-1 and Hole H-1

Two additional underground structures were found in the plating room and remediated during the emergency response action. The first is a wastewater treatment basin, B-1, which is located in the northeast corner of the plating room next to the lab. This basin consists of 2 polyethylene drums stacked one on top of the other with both inflow and outflow piping. The drums contained approximately 30 gallons of liquid, which was pumped out in May 1989, along with liquid from the other underground structures in the plating room (UT-1 and UT-4). This material was disposed of by Chemical Waste Management, Newark, NJ, using wastewater treatment methods.

The presence of the remaining underground structure, H-1, is indicated by a hole in the floor near the west wall of the plating room. The structure consists of a sunken polyethylene drum with ancillary piping and gravel in the bottom. No liquid was found in the drum, and thus no remediation was performed.

3.2.5 Oil Spills and Debris

During the April 1989 on-site activities, contaminated building debris and crystalline materials from the floors were swept and removed to rolloff containers. Rinsed metal debris from inside the building, including some copper strips, were combined with the rinsed scrap from the removal of the three above ground storage tanks and removed from the site by a scrap dealer. The oil spill, located in the southeast corner of the scrubber room, was also cleaned up at this time. The roof was patched and holes in the floor covered and marked. The rolloff containers were removed from the site and disposed of by Chemical Waste Management, Emelle, Alabama, by landfilling.

An additional 15 drums of organic liquids were generated during the emergency response action. These waste rinse and wash waters were removed from the site in September 1989, and disposed of by Thermal Kem, Rock Hill, SC, via incineration. A 20 pound box of organic solids, consisting of various napthalene compounds, was also removed from the site and disposed of by Thermal Kem at this time.

4.0 EBASCO FIELD INVESTIGATIONS

4.1 INTRODUCTION

This section presents a summary of the methods and procedures employed during the remedial investigations performed at the Circuitron Corporation Site by Ebasco. The field investigations were conducted from June through December 1989. This field investigation was performed in accordance with the USEPA approved project documents including the Work Plan (Ebasco, 1989a) and the Field Operation Plan (Ebasco, 1989c).

The principal objectives of the field investigations were to:

- Delineate the horizontal and vertical extent of the soil contamination in the Upper Glacial aquifer in the vicinity of the site;
- Delineate the horizontal and vertical extent of the groundwater contamination in the Upper Glacial aquifer and top portion of the Magothy aquifer in the vicinity of the site;
- Further characterize sediment and storm sewer contamination;
- Gather data to support a public health risk assessment; and,
- Gather data to adequately evaluate potential remedial action technologies/alternatives.

The sampling and analysis program included the following matrices and the corresponding locations:

- Soil
  - Six soil borings to a depth of 42 feet
  - Four well borings to a depth of 100 feet
  - Two surface soil samples behind the building
- Cement
  - Two cores from the building floor slab
- Groundwater
  - Five existing monitoring wells
  - Fourteen newly installed monitoring wells
  - One municipal well and one private well
- Sediment
  - One SPDES authorized leaching pool
  - Two cesspools
  - Three storm drains

o	Aqueous	- Three storm drains
o	QA/QC	- Trip Blanks - Field Blanks - Water Blanks - Drill Blanks - Duplicates

A detailed description of the sample identification and coordination can be found in the Ebasco FOP (Reference 6).

Figure 4-1 illustrates the locations of the surface soil, subsurface soil, sediment, aqueous and groundwater sampling.

4.2 GEOPHYSICAL SURVEY

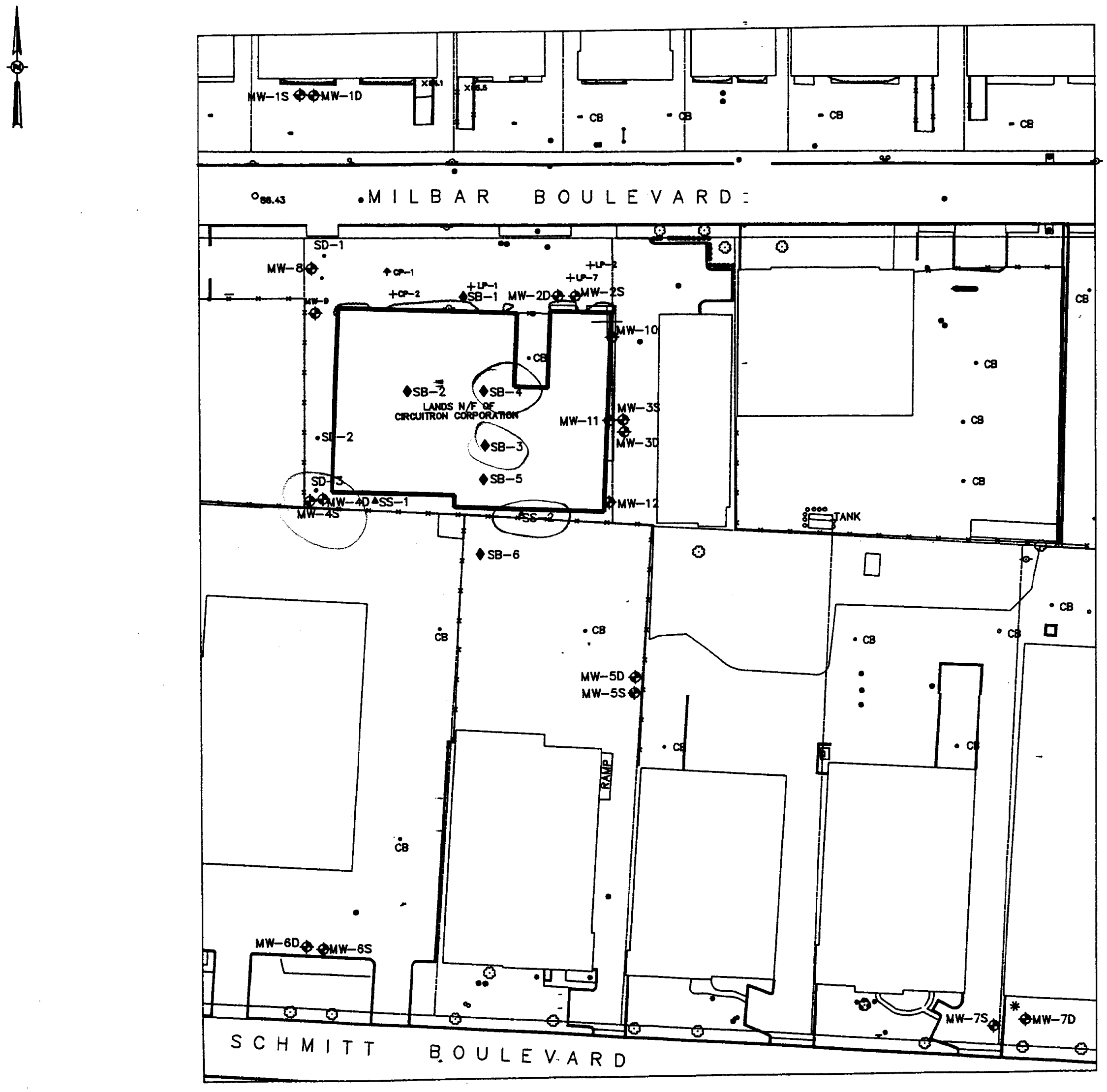
A limited geophysical survey was conducted at the site on May 18, 1989, prior to commencing of the field sampling activities. The primary objective of the geophysical survey was to determine the location and configuration of:

- The SPDES authorized leaching pools located beneath the parking lot in front of the building;
- The old abandoned distribution pool and its leaching pools located underneath the parking lot in front of the northwest corner of the building; and,
- The underground oil storage tank, located at the rear of the building.

These are structures that were reported to exist according to information obtained by the Suffolk County Department of Health Services (SCDHS). Figure 4-2 shows the locations of the "reported structures" as well as those confirmed by the survey. A series of inspections conducted by SCDHS in the early 1980's discovered that several of these structures were receiving illegal discharges.

4.2.1 Instrumentation and Methodology

A GSSI SIR-3 ground penetrating radar unit and a White Eagle II metal detector were used to conduct the geophysical survey. The radar unit was equipped with 500 and 120 MHz transducers but the 500 MHz transducer was determined to be the most appropriate. In addition, a Geonics EM-31 instrument for measuring electromagnetic conductivity was tested at the site but was not considered useful due to an abundance of underground structures which caused interference.



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕	MW	NEWLY INSTALLED 1,2,3,4,5,6 & 7 (8,9,10,11 & 12 EXISTING)
◆	SB	SOIL BORING
•	SD	STORM DRAIN
+	LP	LEACHINGPOOL
+	CP	CESSPOOL
▲	SS	SURFACE SOIL SAMPLING LOCATIONS

DIRECTION OF GROUNDWATER FLOW IS TO THE SOUTHEAST

80 40 0 80 160

SCALE IN FEET

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

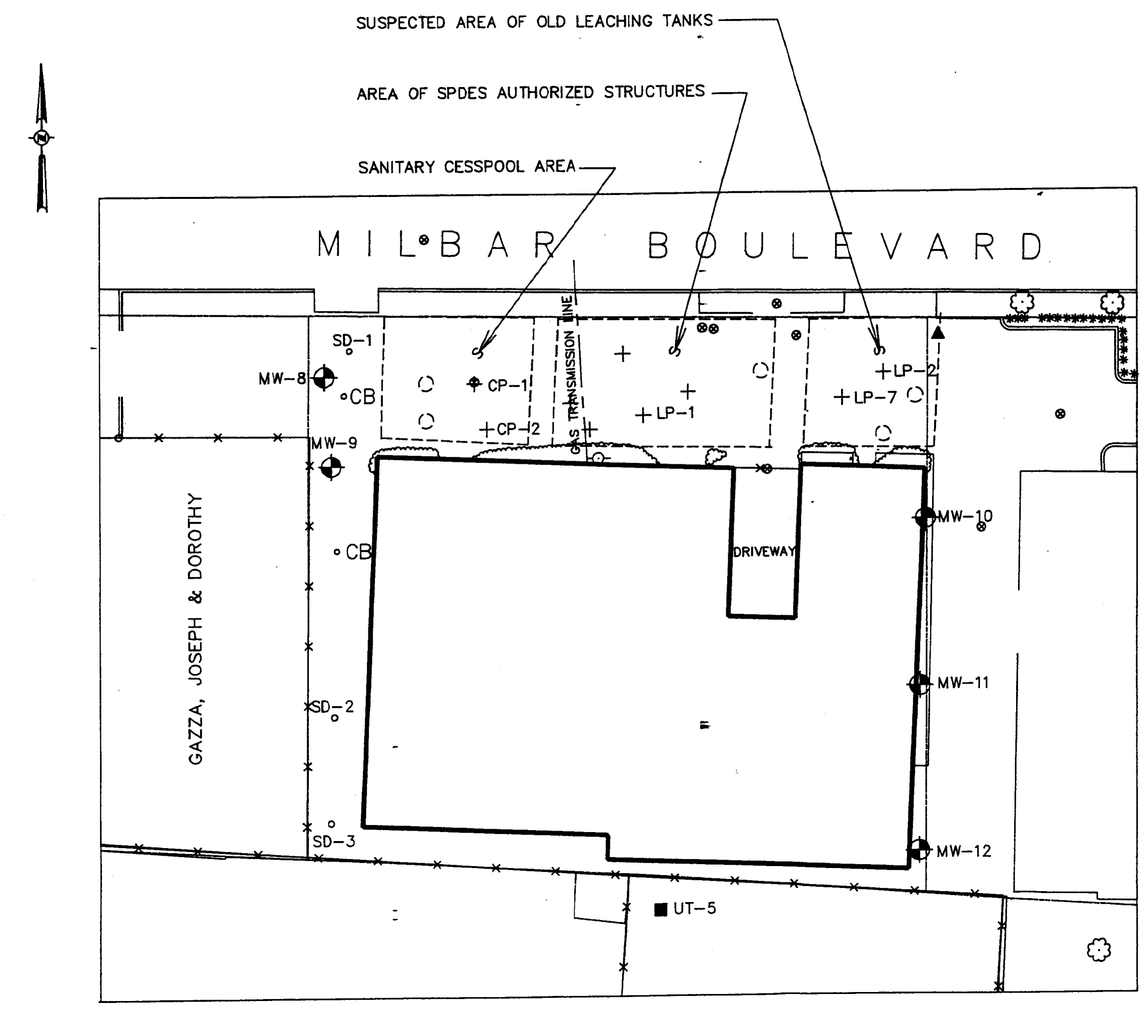
U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

MONITORING WELL, SURFACE SOIL AND SOIL BORING LOCATIONS

EBASCO SERVICES INCORPORATED

FIGURE NO. 4-1



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕	MW	MONITOR WELL (8,9,10, & 11 EXISTING)
∘	SD	STORM DRAIN
+	LP	LEACHINGPOOL
+	CP	SANITARY CESSPOOL
⊗		MANHOLE COVERS
○B		WASTEWATER TREATMENT BASIN
ΓH		HOLE
■	UT	UNDERGROUND TANK (14' X 5')
◌		OTHER "REPORTED" STRUCTURES. LOCATIONS NOT CONFIRMED BY GEOPHYSICAL SURVEY.

40 30 20 10 0 40 80

SCALE IN FEET

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE
GEOPHYSICAL SURVEY SITE PLAN

EBASCO SERVICES INCORPORATED

FIGURE NO. 4-2

CIRC-G.DWG

The ground penetrating radar operates by generating and receiving high-frequency electromagnetic waves from a mobile transducer. Changes in the physical and chemical properties of subsurface material result in variations in the signal received by the GPR antenna. For example, rock/air interfaces (voids), or manmade objects, could generate an identifiable reflection on a GPR record. The reflected GPR signal is printed out on a strip chart as the instrument is being operated, allowing for real time interpretation of radar results. Metal detectors and EM instruments operate by generating an induced electromagnetic field, and then measuring the conductance of the material within the field.

Initial geophysical sweeps in the parking lot in front of the building using the White Eagle II metal detector discovered several areas beneath the patched asphalt in the SPDES and the old abandoned pool areas where metal was present. Some anomalies appeared to be related to metal objects embedded in the pavement. A particularly strong signal was also observed in the central portion of the parking lot within the SPDES area. At that location the pavement patch was removed with a shovel and a buried manhole cover that appeared to be the opening to the distribution tank in the SPDES group of underground structures was discovered.

The ground penetrating radar unit was then calibrated using the accessible SPDES leaching pool and the storm drains, since the depths of these structures could be easily measured. A series of calibration runs were performed to refine the instrument settings as well as to observe the signal response to the various elements (walls, bottom and manhole covers) of these structures.

A general reconnaissance was conducted with both the metal detector and the ground penetrating radar unit. Radar profiles were obtained along east-west trending lines at a spacing of 5 feet in front of the building. Any features of interest were noted and identified for further investigation.

4.2.2 Data and Discussion

The results of the geophysical survey were used to determine the final locations of the soil borings and well clusters in order to prevent interference with the underground structures. The area of the geophysical survey has been divided into four areas, shown on Figure 4-2, in an attempt to target the suspected features. A discussion of the results of the survey is presented below.

SPDES Leaching Pool Area - The SPDES leaching pool area is characterized by an accessible pool LP-1 with a manhole cover and seven other suspected pools in a network arrangement for a total of eight pools. Six locations were shown to have distinctive radar signatures. These are illustrated on Figure 4-2 as structures confirmed by the geophysical survey. Two of these pools appear to have access ports. One of them has a manhole cover which is accessible. This pool was later sampled as part of the Ebasco field investigation activities. The radar profile of the other pool showed a reflection similar to that of the one with the manhole cover. However, if the cover is present, it is buried beneath the asphalt. In addition, the remaining two reported pool locations were similarly targeted with the GPR unit, but the distinctive reflections were not apparent and, therefore, the existence of these pools could not be confirmed. This fact, however, does not preclude their existence altogether.

Old Abandoned Leaching Pool Area - The old abandoned leaching pool area has also been reported to contain a network of leaching pools, but no characteristic void spaces were located with the GPR unit. However, there are holes in the asphalt which are either patched with more asphalt or backfilled with dirt. At two of these disturbed areas (LP-2 and LP-7) an anomaly was noted. The most reasonable interpretation is that these are the reported leaching pools which have been backfilled.

Sanitary Cesspool Area - The sanitary cesspool area consists of two accessible pools, CP-1 and CP-2, with manhole covers and two additional suspected pools in a network arrangement. Only one sanitary cesspool (CP-1) was detected with the metal detector and is shown on Figure 4-2. The locations of the rest of the pools could not be confirmed.

Oil Storage Tank - The existence of the underground oil storage tank UT-5 was confirmed by the radar survey. The tank measures approximately 14 feet long (east-west) and 5 feet wide (north-south).

Five storm drains with slotted covers are located in a line on Milbar Boulevard and along the west side of the building and are suspected to be interconnected. The storm drains are accessible and were therefore used for calibration. The survey did not confirm the presence of any underground conduits connecting them. There are conduits, however, leading to the downspouts of the roof gutters from three of the drains. The metal detector indicated a conduit leading from the northernmost storm drain in the line toward the building. The extent of it, however, could not be determined.

4.3 SURFACE SOIL INVESTIGATION

4.3.1 Sampling Locations

Sampling was conducted in order to determine the extent of surface soils contamination at the Circuitron Corporation Site.

Most of the site property is asphalt paved or covered by a building. The areal extent of exposed surface soils is limited to a strip of property behind the building. This is an area of concern due to the presence of both above ground storage tanks and an underground oil storage tank. The above ground storage tanks were removed from the site by USEPA prior to the beginning of the Ebasco field activities (see Section 3.0). Two surface soil samples were collected from the locations shown on Figure 4-1. The results of the laboratory chemical analyses of the surface soil samples was used in the evaluation of risks posed by the direct ingestion of soils and/or the inhalation of dust.

4.3.2 Sampling Methodology

The surface soil samples were collected from the top 6 inches of soil from locations SS-1 and SS-2, illustrated on Figure 4-1. A decontaminated stainless steel scoop was used to collect the soil, which was then placed in a decontaminated stainless steel bowl. Two 40-ml VOA vials were filled immediately and the remainder of the soil was homogenized before being placed in the remainder of the appropriate sample bottles. Surface soils were analyzed for full TCL parameters.

4.4 SUBSURFACE SOIL SAMPLING

Subsurface soil sampling was performed at the Circuitron Corporation Site in order to determine the horizontal and vertical extent of soil contamination, and to characterize the site subsurface geology. The final locations of the soil borings and well clusters were determined using the geophysical survey results.

4.4.1 Sampling Locations

Borings were drilled at 13 locations both on the site property and on adjacent properties. Well clusters were installed at seven of these locations. Each cluster consisted of a shallow and a deep well (i.e. MW-1S and MW-1D) installed in separate boreholes. The shallow well borings were drilled to a depth of 35 to 40 feet. The deep well borings were drilled to a depth of 100 feet. Well cluster MW-1 is located upgradient of the site property; MW-2 is located in the parking lot in front of the building; MW-3 is located east of the building, downgradient of the site; MW-4 is located west of the building on the site property; and, MW-5, MW-6 and MW-7 are located on properties adjacent or close to and downgradient of the site. The well cluster locations are shown on Figure 4-1.

At the remaining six locations, soil borings were drilled for the purposes of sampling only. These soil borings were drilled to a depth of 42 feet below the ground surface. Soil boring

SB-1 was drilled in the parking lot in front of the building, SB-2 in the silkscreening room of the building, SB-3, SB-4 and SB-5 in the plating room of the building, and SB-6 at the rear of the building downgradient of the underground oil storage tank UT-5. The locations of the soil borings are shown on Figure 4-1.

Monitoring Well Borings - Soil samples for chemical analysis were collected from either the shallow or the deep well boring of clusters MW-1, MW-2, MW-3 and MW-4. The samples were obtained at 5-foot intervals from 0 to 42 feet and from the 95-97 foot interval within their screened interval. Additional soil samples were collected at the discretion of the site geologist.

Soil samples for geological characterization only were collected from the previously mentioned wells at 5-foot intervals from 0 to 42 feet and at 10-foot intervals from there to the bottom of the screened interval. MW-1D was sampled at 5-foot intervals to a depth of 100 feet. Due to the uniformity of the soil samples, it was determined that 10-foot intervals would be sufficient to characterize the strata at the 40-80 foot interval of the boring. Soil samples for geological characterization only were also collected from the remaining well borings drilled during the Ebasco field investigations. These samples were obtained at 10-foot intervals to the bottom of the wells scheduled screened interval.

Soil Borings - The six soil borings were sampled at intervals of 5 feet to a depth of 42 feet below grade. In addition, cement samples were taken from cores of the concrete floor slab at soil boring locations SB-2 and SB-4 located in the silkscreening and plating room of the building, respectively.

4.4.2 Analytical Program

Subsurface soil samples for chemical analysis were collected from either the shallow or the deep monitoring well of clusters MW-1, MW-2, MW-3 and MW-4, as well as from soil borings SB-1 through SB-6. Tables 4-1 and 4-2 present a summary of the subsurface soil samples collected during the Ebasco field investigation activities from the monitoring wells and the soil borings, respectively, and the chemical analyses performed.

TABLE 4-1

CIRCUITRON CORPORATION SITE

SUMMARY OF MONITORING WELL SOIL SAMPLES AND CHEMICAL ANALYSES PERFORMED

WELL BORING # DEPTH	TCL VOA	TCL EXTRACTABLES	TCL INORGANICS	HEXAVALENT CHROMIUM	TOTAL ORGANIC CARBON	GRAIN SIZE
MW-1D						
0-2'	X	X	X			
5'-7'	X	X	X	X		X
10'-12'	X	X	X	X	X	
15'-17'	NR	NR	NR			
20'-22'	X	X	X		X	
25'-27'	DUP	X	X			
30'-32'	X	X	X			X
95'-97'	X	X	X			
MW-2D						
0-2'	X	X	X			
5'-7'	X	X	X	X		
10'-12'	X	X	X	X	X	
15'-17'	X	DUP	X			X
20'-22'	X	X				
25'-27'	DUP	X	X		X	X
30'-32'	X	X	X			
95'-97'	X	X	X			
MW-3D						
0-2'	X	X	X			
5'-7'	X	X	X	X		
10'-12'	X	X	X	X	X	X
15'-17'	X	X	X			
20'-22'	X	X	X		X	
25'-27'	X	X	DUP			
30'-32'	X	X	X			X
95'-97'	X	X	X			
MW-4D						
0-2'	X	X	X			
5'-7'	X	X	X	DUP		
10'-12'	X	X	X	X	X	
15'-17'	X	X	DUP			X
20'-22'	X	X	X		DUP	
25'-27'	X	DUP	X			X
30'-32'	X	X	X			
95'-97'	X	X	X			

Notes:		
	NR:	No Recovery
	DUP:	Duplicate Sample

TABLE 4-2

CIRCUITRON CORPORATION SITE

SUMMARY OF SOIL BORING SAMPLES AND CHEMICAL ANALYSES PERFORMED

SOIL BORING # DEPTH	TCL VOA	TCL EXTRACTABLES	TCL INORGANICS	TOTAL ORGANIC CARBON
SB-1				
0-2'	X	X	X	
5'-7'	X	X	X	
10'-12'	X	X	X	
15'-17'	X	X	X	
20'-22'	X	X	X	
25'-27'	DUP	DUP	DUP	
30'-32'	X	X	X	
35'-37'	X	X	X	
40'-42'	X	X		
SB-2				
0-2'	X	X	X	X
5'-7'	X	X	X	X
10'-12'	NR	NR	NR	NR
15'-17'	X	X	X	X
20'-22'	X	X	X	DUP
25'-27'	X	X	X	X
30'-32'	X	X	X	X
35'-37'	NR	NR	NR	
40'-42'	NR	NR	NR	
SB-3				
0-2'	X	X	X	
5'-7'	X	X	X	
10'-12'	X	X	X	
15'-17'	X	X	X	
20'-22'	X	DUP	DUP	
25'-27'	X	X	X	
30'-32'	DUP	X	X	
35'-37'	NR	NR	NR	
40'-42'	X	X		

Notes:

DUP: Duplicate Sample.
NR: No Recovery.

TABLE 4-2 (Cont'd)

CIRCUITRON CORPORATION SITE

SUMMARY OF SOIL BORING SAMPLES AND CHEMICAL ANALYSES PERFORMED

SOIL BORING # DEPTH	TCL VOA	TCL EXTRACTABLES	TCL INORGANICS	TOTAL ORGANIC CARBON
SB-4				
0-2'	X	X	X	X
5'-7'	X	X	X	X
10'-12'	X	X	X	X
15'-17'	X	DUP	X	X
20'-22'	X	X	X	X
25'-27'	X	X	X	X
30'-32'	X	X	DUP	X
35'-37'	X	X	X	X
40'-42'	DUP	X	X	X
SB-5				
3'-5'	X	X		
5'-7'	DUP	DUP	DUP	
10'-12'	X	X	X	
15'-17'	X	X	X	
20'-22'	X	X	X	
25'-27'	X	X	X	
30'-32'	X	X	X	
35'-37'	X	X	X	
40'-42'	X	X	X	
SB-6				
0-2'	X	X	X	
5'-7'	X	X		
10'-12'	X	X	X	
15'-17'	X	X	X	
20'-22'	DUP	DUP	DUP	
25'-27'	X	X	X	
30'-32'	X	X	X	
35'-37'	NR	NR	NR	
40'-42'	X	X		

Notes: DUP: Duplicate Sample.
NR: No Recovery.

<u>Monitoring Well Borings</u> - A maximum of eight soil samples were collected for chemical analysis from each of the four monitoring well borings (MW-1D, MW-2D, MW-3D and MW-4D). These samples were collected at 5-foot intervals starting from the 0-2 foot interval down to the groundwater table, which was reached at a depth of approximately 23 to 27 feet. At this depth another soil sample was collected. The last sample of each monitoring well boring was collected from within the screened interval of the well at 95-97 feet.

All eight of the samples from each of the four well borings were analyzed for full TCL parameters. In addition, two soil samples from each of the well borings were analyzed for hexavalent chromium, total organic carbon (TOC) and grain size distribution. Soil samples analyzed for hexavalent chromium were derived from the intervals of 5-7 feet and 10-12 feet, as this contaminant was expected to be found near the depth of the bottom of the leading pools. Soil samples analyzed for total organic carbon were collected at the intervals of 10-12 feet and 20-22 feet to provide a consistent profile that could be correlated with the two soil borings that were sampled at 5-foot intervals for total organic carbon, as discussed below. Soil samples for grain size analysis were obtained at the discretion of the geologist to characterize the subsurface profile.

If the amount of soil retrieved from a particular interval was insufficient for collecting a complete chemical sample, then either the sample was collected for partial analysis according to the designated priority, or, in the worst case, no sample was collected at this interval.

The order in which each sample was collected is as follows:

(1) TCL Volatile Organic Compounds;
(2) TCL Extractables;
(3) TCL Inorganics and Cyanide;
(4) Hexavalent Chromium;
(5) Total Organic Carbon; and,
(6) Grain Size Distribution.

<u>Soil Borings</u> - A maximum of nine soil samples were collected from each of the six soil borings SB-1 through SB-6. These samples were collected at 5-foot intervals starting from the interval of 0-2 feet to a depth of 42 feet. All nine of the soil samples from each of the six borings were analyzed for full TCL parameters, except where insufficient soil volume was obtained. All 18 of the samples from soil borings SB-2 and SB-4 were also analyzed for total organic carbon. If the amount of soil retrieved from a particular interval was insufficient for collecting a complete sample, then either the sample was collected for partial analysis according to the designated priority or, in the worst case, no sample was collected at this interval.

The order in which each sample was collected is as follows:

(1) TCL Volatile Organic Compounds;
(2) TCL Extractables;
(3) TCL Inorganics and Cyanide; and,
(4) Total Organic Carbon.

4.4.3 Sampling Methodology

The split spoons used for the subsurface soil sampling were made of stainless steel and had a length of 24 inches and an outside diameter of either 2 or 3 inches. The 2-inch split spoons were used for collecting soil samples needed only for the characterization of the site geology. The 3-inch split spoons, which provide greater sample volume, were used for collecting the soil samples required for chemical analysis.

The borehole was drilled to the appropriate depth using 6-1/4 inch diameter hollow stem augers. The decontaminated split spoon sampler was driven into the ground with blows from a 140 lb hammer falling freely a distance of 30 inches, according to the procedures specified in the FOP (Ebasco, 1989c) as derived from the Standard Penetration Test (ASTM D 1586-84). The spoon was driven to a depth equal to its length, unless the conditions of refusal were met (i.e. greater than 50 blows for a 6-inch penetration). The blow counts were recorded for each 6-inch interval of penetration. The split spoon diameter for each sample taken, as well as the blow counts, are recorded on the boring logs in Appendix A.

After being driven, the split spoon sampler was retrieved from the borehole and disassembled leaving the recovered soil in one half of the sampler. Samples for volatile organic analysis were collected immediately. The soil was then screened with either the HNu (photoionization detector) or the OVA (organic vapor analyzer). These readings were recorded in the log book and are documented on the boring log sheets in Appendix A. The remainder of the soil was placed in a decontaminated stainless steel bowl and homogenized by stirring with a decontaminated stainless steel spoon before being placed in the remainder of the sample bottles. When sample collection was completed, the following information was recorded in the field log book:

- Depth interval at which sample was collected;
- Sample ID;
- Blow counts;
- Sample recovery;
- USCS classification of the soil;
- Material description;
- Date and time of sample collection;
- Instrument readings of the recovered soil; and,
- Chemical analysis to be performed.

Sample bottles were placed on ice and processed for shipping to the designated CLP laboratories.

All soil borings (SB-1 through SB-6) and shallow monitoring wells (MW-1S through MW-7S) were drilled using the hollow stem auger method. The same drilling method was used for drilling the deep monitoring wells (MW-1D through MW-7D) until "running sands" were encountered. This generally occurred just below the water table at a depth of approximately 30 to 35 feet. The wells were then completed with the mud rotary drilling method.

Most of the subsurface soil samples were collected using the hollow stem auger method. In the case of the deep monitoring wells, however, the soil samples collected from within the screened interval at 95-97 feet, were obtained while the mud rotary method was used. Samples of the drilling mud were also collected and were sent for chemical analysis similar to those for the soil samples, in order to detect any possible cross contamination. All subsurface soil samples collected for chemical analyses were obtained according to the procedures outlined in the approved Field Operations Plan (Ebasco, 1989c).

All equipment involved in soil sampling was decontaminated according to the methods outlined in the approved Field Operation Plan (Ebasco, 1989c). All downhole tools (augers, rods, drill bits), hoses (mud rotary drilling) and the back of the drill rig were steam cleaned on the decontamination pad using water from a potable water source. This water was sent for chemical analyses similar to those for the soil samples. Other sampling equipment such as the split spoon samplers, the stainless steel bowls and the stainless steel spoons were decontaminated according to SOP 15 of the Field Operations Plan (Ebasco, 1989c).

4.5 GROUNDWATER INVESTIGATION

This investigation was performed in order to determine the extent of groundwater contamination. As described earlier, illegal disposal was taking place at the site in the form of discharge of untreated waste water into authorized and unauthorized leaching pools, sanitary cesspools and storm drains.

The primary objective of the groundwater sampling was to determine the groundwater quality and the extent of contamination:

(1) Near the water table;
(2) In a deeper interval within the aquifer;
(3) Upgradient of the site;
(4) Downgradient of the site; and,
(5) Directly beneath the site.

4.5.1 Monitoring Well Locations

Seven well clusters were installed at the locations shown on Figure 4-1. Each cluster consists of a shallow monitoring well screened from 2 feet above to 8 feet below the water table at a depth of 30 to 40 feet and a deep monitoring well screened at a depth of 90 to 100 feet below grade. The well clusters' locations were chosen to evaluate groundwater quality upgradient, beneath and downgradient of the site, in an attempt to evaluate and delineate the existence of a groundwater contamination plume. In general, the direction of groundwater flow in the vicinity of the site is to the southeast.

4.5.2 Monitoring Well Construction and Installation

The monitoring wells were drilled using the hollow stem auger and on occasion the mud rotary drilling method. All wells were finished with 4-inch diameter stainless steel screen and riser. The length of each screen is 10 feet and the slot size is 0.020 inches. The riser length ranges from 24 to 28 feet in the shallow wells and is 90 feet in the deep wells. The riser is assembled in 10-foot sections with threaded flush joint couplings. Monitoring well construction is summarized in Table 4-3 and is detailed on the Monitoring Well Completion Sheets in Appendix B.

Shallow Wells - The shallow wells were screened from approximately 2 feet above to 8 feet below the water table surface. The depths of the wells ranged from 34 to 38 feet (to the bottom of well screen). These wells are screened entirely in the Upper Glacial Aquifer.

The well borings were drilled using the hollow stem auger method. The 6-1/4 inch inside diameter augers were advanced to a depth approximately 10 feet below the water table, or 35 to 40 feet below the ground surface. The well screen and casing were assembled and placed down inside the hollow stem of the auger. A graded sand appropriate for the screen slot size was emplaced around the screen in the annulus between the screen and the borehole in two alternating steps. First, some sand was washed down inside the augers around the riser and then the augers were retracted approximately 1 foot at a time to allow the sand to flow out into the borehole. These two steps were repeated until the sand pack was fully in place at least 2 feet above the well screen. A bentonite seal was emplaced by pouring bentonite pellets down the annulus while also alternately retracting the augers. The pellets were then permitted to hydrate for at least one hour before the remainder of the annulus was backfilled with a cement/bentonite grout to prevent surface water from percolating downward to the well screen.

Deep Wells - The deep wells were installed at a depth of 100 feet below grade. Data obtained from boring logs of the East Farmingdale municipal wells (NYSDEC well index numbers S-20041

TABLE 4-3

CIRCUITRON CORPORATION SITE

MONITORING WELL SUMMARY

MONITORING WELL NUMBER	ELEVATION OF TOP OF RISER (FT MSL)	DEPTH FROM TOP OF RISER (FEET)	ELEVATION OF WELL BOTTOM (FT MSL)	LENGTH OF SCREEN (FEET)	ELEVATION OF TOP OF SCREEN (MSL)	UNIT SCREENED (AQUIFER)	SCREEN RISER TYPE	SLOT SIZE	SAND PACK
MW-1S	86.82	35.05	51.77	10.00	61.77	Upper Glacial	4" SS	20	#4 Q ROK
MW-1D	86.94	100.12	-13.18	10.00	-3.18	Magothy	4" SS	20	#4 Q ROK
MW-2S	88.44	35.15	53.29	10.00	63.29	Upper Glacial	4" SS	20	#4 Q ROK
MW-2D	88.22	100.53	-12.31	10.00	-2.31	Magothy	4" SS	20	#4 Q ROK
MW-3S	88.15	38.02	50.13	10.00	60.13	Upper Glacial	4" SS	20	#4 Q ROK
MW-3D	88.37	100.22	-11.85	10.00	-1.85	Magothy	4" SS	20	#4 Q ROK
MW-4S	86.71	33.73	52.98	10.00	62.98	Upper Glacial	4" SS	20	#4 Q ROK
MW-4D	86.79	100.25	-13.46	10.00	-3.46	Magothy	4" SS	20	#4 Q ROK
MW-5S	86.39	34.44	51.95	10.00	61.95	Upper Glacial	4" SS	20	#4 Q ROK
MW-5D	86.75	100.00	-13.25	10.00	-3.25	Magothy	4" SS	20	#4 Q ROK
MW-6S	86.09	34.03	52.06	10.00	62.06	Upper Glacial	4" SS	20	#4 Q ROK
MW-6D	86.19	99.55	-13.36	10.00	-3.36	Magothy	4" SS	20	#4 Q ROK
MW-7S	89.15	36.70	52.45	10.00	62.45	Upper Glacial	4" SS	20	#4 Q ROK
MW-7D	90.05	100.52	-10.47	10.00	-0.47	Magothy	4" SS	20	#4 Q ROK
MW-8	86.16	29.80	56.36	5.00	61.36	Upper Glacial	2" PVC	NA	NA
MW-9	86.94	29.09	57.85	5.00	62.85	Upper Glacial	2" PVC	NA	NA
MW-10	88.68	28.87	59.81	5.00	64.81	Upper Glacial	2" PVC	NA	NA
MW-11	88.42	30.05	58.37	5.00	63.37	Upper Glacial	2" PVC	NA	NA
MW-12	88.79	30.05	58.74	5.00	63.74	Upper Glacial	2" PVC	NA	NA

<u>Notes</u>:

NA: Not Available
SS: Stainless Steel
PVC: Polyvinyl Chloride

and S-20042), as well as from the private well S-22003, indicated that a clay layer exists at a depth of between 80 and 110 feet and marks the top of the Magothy Aquifer. This clay layer, however, was not found beneath the site. Therefore, the deep well borings were terminated at a depth of 100 feet and the well screens were installed at the depth interval of 90 to 100 feet.

Upon subsequent interpretation of the boring logs, it appears that the Magothy Aquifer has been penetrated by the deep wells and that the contact between the Magothy and the Upper Glacial Aquifer is at a depth of approximately 80 feet. This contact is not marked by a clay layer but rather by subtle changes in the grain size distribution and sorting of the sandy subsurface strata. Thus, the deep monitoring wells are generally screened at the contact of the two formations, but due to the lack of hydrogeologic barriers (i.e. confining layers), they are effectively screened at two levels within the same aquifer.

The drilling of the deep well borings commenced with the use of the hollow stem auger method. When the groundwater table was reached at 23 to 27 feet below grade and "running sands" were encountered, the drilling was continued with the mud rotary method. An inorganic bentonite mud was used as the drilling fluid to bring the drill cuttings to the surface and to keep the borehole open. Samples of this mud were obtained for TCL analysis. The borings were advanced to a depth of 100 feet and the rods and bit were retracted leaving the borehole open. The well screen and riser were then assembled and lowered down inside the boring. Due to the depth of the boring and, hence, the long travel distance of particles from the surface, a field determination was made that the tremie method would be the most effective way of emplacing the sand pack and bentonite seal. This was accomplished by lowering a 3/4 inch steel pipe into the annulus between the riser and the borehole and pumping a slurry of sand and water into the borehole, while simultaneously raising the tremie pipe to a height of 2 to 3 feet above the top of the screen. Immediately upon completing the sand pack emplacement, approximately 15 gallons of the thick bentonite slurry already in the hole was pumped out. This resulted in a seal of thick bentonite at least 2 feet thick above the sand pack. The hole was let to set for at least one hour but no more than 24 hours. The annulus was then backfilled with a cement/bentonite slurry via the tremie pipe. Potable water was used to mix the slurry. Samples of this potable water were retained for TCL analysis.

4.5.3 Monitoring Well Development

Development is the process by which the fines in the formation are removed from the well and from the area around the well screen. All newly installed monitoring wells were developed before sampling. Both the deep and the shallow wells were developed by air-lift pumping and surging. An air compressor equipped with an in-line filter was the source to which tubing was attached and lowered down the well. Development was continued at each well location until all fines were removed from the discharge.

4.5.4 Groundwater Sampling Locations

Groundwater samples were obtained from:

(1) The 14 newly installed shallow and deep monitoring wells;

(2) The 5 shallow existing monitoring wells installed by the Circuitron Corporation;

(3) Municipal well S-20042 (PW-1) located at the E. Farmingdale Water District pumphouse on Gazza Blvd; and

(4) Private well S-22003 (PW-2), located at the "House of Plastics" property on Gazza Boulevard.

Newly Installed Monitoring Wells - The 14 newly installed monitoring wells were described above and are shown on Figure 4-1.

On-Site Existing Wells - The 5 existing wells were installed by the Circuitron Corporation. No information is available about their construction. Upon inspection, however, it has been determined that these wells are constructed of 2-inch PVC screen and riser. They range in depth from 29 to 30 feet, with water levels ranging from 26 to 28 feet. Judging from the water levels, the screen length is most likely 5 feet. These wells were sampled previously by the Suffolk County Department of Health Services. They are identified as MW-8 through MW-12 on Figure 4-1 and in Table 4-3.

Municipal and Private Well Sampling - A search of New York State Well Completion Reports revealed 8 private and municipal wells located in the vicinity of the site. Sampling of these wells was planned in order to provide background water quality data as well as to determine the degree of off-site migration. Unfortunately, most of these wells were unavailable for sampling as they are no longer being used or because neither the well nor the owner could be located. Consequently, only two off site wells were sampled, East Farmingdale municipal well S-20042 (PW-1) located at the pump station on Gazza Boulevard and private well S-22003 (PW-2) located at the "House of Plastics property also on Gazza Boulevard. There are a total of two wells located at the pump station on Gouzerd Boulevard corresponding to the NYSDEC designations of S-20041 and S-20042 respectively. The depths of these wells are 268 feet and 585 feet, respectively while the depth of private well S-22003 is 226'4". Well S-20041 is currently not in use. According to the plant operator, it was taken out of service in 1974 due to the presence of contamination (EA, 1987, App. 1.3-6). The well was not sampled during this investigation because the process of purging the well by pumping would have produced an abundance of water. Well S-20042 (PW-1) is still in service and was sampled during this investigation.

Two rounds of groundwater sampling were conducted at the 14 newly installed monitoring wells. A duplicate sample was taken from two of the wells during each round of sampling resulting in a total of 32 samples. The on-site existing Circuitron wells were sampled during the first round of groundwater sampling. A duplicate sample was taken from one of these wells, resulting in a total of 6 samples. In addition, the municipal well PW-1 and the private well PW-2 were sampled during the second round of groundwater sampling.

Each groundwater sample was sent to a CLP laboratory for analysis of the following parameters:

(1) Lower Detection Limit Volatile Organic Compounds;
(2) TCL B/NAs;
(3) TCL Metals (filtered and unfiltered); and,
(4) Hexavalent Chromium.

4.5.5 Sampling Methodology

Monitoring Wells - All monitoring wells were "purged" before sampling to insure that any stagnant water in the well was removed and that fresh formation water was induced into the well. Purging was conducted by first calculating the volume of water standing in the well. This was calculated by subtracting the static water level from the total well depth which gives the length of the water column. The volume of water, or "well volume", could then be calculated as the volume of a cylinder with a length equal to the water column and a radius one-half of the diameter of the well riser. This volume was then converted to gallons. The amount of water to be purged from the well was usually three to five "well volumes".

Certain physical and chemical parameters of the water were measured prior and after the purging of each well volume. These data were recorded on the Well Purge Data Sheets in Appendix C. The parameters recorded are the following:

- pH;
- Temperature;
- Specific conductance;
- Dissolved oxygen; and,
- Redox potential.

Table 4-4 presents the values of the above listed parameters taken during the purging of each volume of each of the monitoring wells during Round 1 and 2 of the groundwater sampling. Table 4-5 presents a summary of the final purged volume readings taken from each of the monitoring wells during Rounds 1 and 2 of the groundwater sampling.

TABLE 4-4

CIRCUITRON CORPORATION SITE

WATER QUALITY PARAMETERS MEASURED DURING PURGING OF THE NEWLY INSTALLED AND THE EXISTING MONITORING WELLS DURING ROUND 1 AND ROUND 2 OF THE GROUNDWATER SAMPLING

WELL	MW-1S		MW-1D		MW-2S		MW-2D		MW-3S		MW-3D	
WATER QUALITY PARAMETERS	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2
1. INITIAL												
pH	6.5	6.9	6.3	6.6	6.8	6.6	6.4	6.3	6.5	6.8	6.8	6.4
Specific Conductance (umhos/cm)	198.0	180.0	178.0	210.0	195.0	170.0	185.0	163.0	140.0	110.0	265.0	273.0
Temperature (oC)	19.0	14.0	17.2	13.0	17.5	NT	20.0	19.5	16.0	19.0	19.0	19.5
Dissolved Oxygen (ppm)	2.8	4.1	9.8	9.4	4.1	4.2	10.5	4.2	6.7	6.7	8.0	2.8
Redox Potential (mu)	120.0	240.0	220.0	340.0	220.0	240.0	245.0	310.0	250.0	280.0	220.0	300.0
2. VOLUME 1												
pH	6.5	6.8	7.1	9.0	7.0	7.3	6.4	6.4	6.5	6.9	6.7	6.7
Specific Conductance (umhos/cm)	330.0	310.0	230.0	230.0	210.0	205.0	190.0	180.0	195.0	170.0	310.0	310.0
Temperature (oC)	17.0	14.0	16.0	13.0	16.0	NT	17.5	15.0	15.5	17.0	18.0	16.0
Dissolved Oxygen (ppm)	4.2	3.8	3.8	4.2	4.2	6.0	2.2	1.8	4.6	3.4	3.2	2.0
Redox Potential (mu)	85.0	130.0	225.0	190.0	90.0	180.0	260.0	310.0	85.0	220.0	240.0	310.0
3. VOLUME 2												
pH	6.6	6.9	6.5	6.7	7.0	7.0	6.0	6.3	6.6	7.0	6.3	6.8
Specific Conductance (umhos/cm)	330.0	370.0	195.0	175.0	220.0	200.0	182.0	170.0	220.0	170.0	273.0	260.0
Temperature (oC)	16.5	14.0	16.5	13.0	16.2	15.0	16.0	15.0	15.0	18.0	17.5	16.0
Dissolved Oxygen (ppm)	4.0	3.4	3.9	4.2	3.2	4.8	1.7	1.8	4.2	5.2	1.1	2.2
Redox Potential (mu)	50.0	140.0	245.0	280.0	80.0	180.0	225.0	330.0	85.0	220.0	235.0	320.0
4. VOLUME 3												
pH	6.6	6.6	6.2	6.5	6.9	6.7	6.1	6.3	6.7	6.8	6.3	6.8
Specific Conductance (umhos/cm)	350.0	330.0	187.0	170.0	210.0	200.0	180.0	170.0	210.0	170.0	255.0	255.0
Temperature (oC)	16.8	14.0	15.5	13.0	16.2	14.5	16.0	15.0	15.0	18.0	17.5	16.0
Dissolved Oxygen (ppm)	3.9	4.4	4.2	3.9	4.2	4.2	2.4	1.8	5.0	4.2	1.2	1.4
Redox Potential (mu)	-20.0	150.0	250.0	280.0	75.0	210.0	230.0	330.0	50.0	200.0	250.0	320.0
5. VOLUME 4												
pH	6.6	6.6	6.2	6.4	6.9	6.8	6.0		6.7	6.8	6.3	6.7
Specific Conductance (umhos/cm)	345.0	330.0	183.0	170.0	205.0	200.0	180.0		210.0	180.0	263.0	255.0
Temperature (oC)	16.0	14.0	15.7	13.0	16.0	15.0	15.5		15.0	18.0	17.0	16.0
Dissolved Oxygen (ppm)	3.9	3.8	4.3	4.0	4.3	4.0	2.7		4.3	3.8	1.2	1.4
Redox Potential (mu)	-20.0	185.0	235.0	310.0	60.0	220.0	225.0		50.0	210.0	250.0	320.0
6. VOLUME 5												
pH					6.9							
Specific Conductance (umhos/cm)					210.0							
Temperature (oC)					16.0							
Dissolved Oxygen (ppm)					4.2							
Redox Potential (mu)					50.0							

NT: Not Taken

TABLE 4-4 (Cont'd)

CIRCUITRON CORPORATION SITE

WATER QUALITY PARAMETERS MEASURED DURING PURGING OF THE NEWLY INSTALLED AND THE EXISTING MONITORING WELLS DURING ROUND 1 AND ROUND 2 OF THE GROUNDWATER SAMPLING

WELL	MW-4S		MW-4D		MW-5S		MW-5D		MW-6S		MW-6D	
WATER QUALITY PARAMETERS	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 2
1. INITIAL												
pH	7.5	6.5	6.6	7.0	6.6	6.2	5.9	5.7	6.0	6.7	6.3	7.0
Specific Conductance (umhos/cm)	90.0	180.0	180.0	195.0	210.0	235.0	135.0	160.0	130.0	75.0	230.0	230.0
Temperature (oC)	16.8	NT	18.0	19.0	17.0	17.5	19.0	19.0	21.0	19.0	20.0	18.0
Dissolved Oxygen (ppm)	7.1	5.9	9.4	5.4	6.1	6.2	8.7	5.0	4.6	5.8	5.6	5.2
Redox Potential (mu)	NT	330.0	220.0	320.0	210.0	340.0	260.0	350.0	280.0	NT	240.0	NT
2. VOLUME 1												
pH	7.3	6.8	9.3	10.4	6.7	6.3	6.0	5.8	6.0	6.9	6.1	7.0
Specific Conductance (umhos/cm)	138.0	220.0	315.0	500.0	220.0	240.0	190.0	170.0	140.0	100.0	220.0	240.0
Temperature (oC)	16.0	14.0	16.0	15.0	17.0	17.5	16.0	14.0	20.0	19.0	16.5	15.0
Dissolved Oxygen (ppm)	6.2	6.7	3.2	3.4	6.0	6.6	2.6	2.3	4.2	5.2	3.1	4.4
Redox Potential (mu)	270.0	260.0	150.0	150.0	210.0	330.0	260.0	350.0	300.0	NT	250.0	NT
3. VOLUME 2												
pH	7.2	6.6	7.1	6.8	6.6	6.3	6.0	5.8	6.3	7.0	5.9	6.5
Specific Conductance (umhos/cm)	130.0	220.0	190.0	190.0	240.0	235.0	187.0	170.0	145.0	110.0	220.0	210.0
Temperature (oC)	16.0	14.0	15.0	15.0	16.5	17.0	15.5	14.0	18.5	18.5	16.5	15.0
Dissolved Oxygen (ppm)	6.0	5.8	3.0	4.2	4.6	6.4	2.5	2.3	4.5	5.4	2.9	3.4
Redox Potential (mu)	290.0	370.0	210.0	290.0	200.0	330.0	250.0	355.0	285.0	NT	255.0	NT
4. VOLUME 3												
pH	7.0	6.6	6.5	7.0	6.6	6.3	6.0	5.7	6.3	7.4	5.8	6.6
Specific Conductance (umhos/cm)	140.0	210.0	182.0	180.0	225.0	240.0	182.0	160.0	142.0	105.0	150.0	200.0
Temperature (oC)	16.0	14.5	15.5	16.0	16.5	17.0	16.0	14.0	10.0	18.5	16.5	15.0
Dissolved Oxygen (ppm)	5.8	6.0	3.0	3.8	5.0	6.2	2.6	2.3	4.6	4.8	3.4	4.6
Redox Potential (mu)	200.0	355.0	210.0	280.0	210.0	320.0	260.0	360.0	285.0	NT	260.0	NT
5. VOLUME 4												
pH	6.8	6.6	6.5	6.8	6.6				6.2	6.9	5.8	6.7
Specific Conductance (umhos/cm)	160.0	230.0	180.0	180.0	230.0				143.0	105.0	220.0	200.0
Temperature (oC)	16.0	14.5	15.5	16.0	16.0				19.0	18.5	15.0	15.0
Dissolved Oxygen (ppm)	5.4	5.4	3.0	4.2	4.8				4.5	5.5	3.0	4.5
Redox Potential (mu)	190.0	350.0	220.0	300.0	210.0				275.0	NT	270.0	NT
6. VOLUME 5												
pH	6.8				6.6						5.8	
Specific Conductance (umhos/cm)	155.0				225.0						220.0	
Temperature (oC)	16.0				17.0						15.0	
Dissolved Oxygen (ppm)	5.2				4.8						3.2	
Redox Potential (mu)	195.0				210.0						270.0	

NT: Not Taken

TABLE 4-4 (Cont'd)

CIRCUITRON CORPORATION SITE

WATER QUALITY PARAMETERS MEASURED DURING PURGING OF THE NEWLY INSTALLED AND THE EXISTING MONITORING WELLS DURING ROUND 1 AND ROUND 2 OF THE GROUNDWATER SAMPLING

WELL	MW-7S		MW-7D		MW-8	MW-9	MW-10	MW-11	MW-12
WATER QUALITY PARAMETERS	ROUND 1	ROUND 2	ROUND 1	ROUND 2	ROUND 1	ROUND 1	ROUND 1	ROUND 1	ROUND 1
1. INITIAL									
pH	6.3	8.2	6.7	7.8	5.3	7.5	5.8	6.8	5.8
Specific Conductance (umhos/cm)	230.0	230.0	145.0	185.0	254.0	62.0	337.0	258.0	150.0
Temperature (oC)	16.0	13.0	18.0	15.0	22.0	19.0	19.5	18.2	23.0
Dissolved Oxygen (ppm)	6.0	6.8	7.4	6.6	0.8	1.0	4.0	5.0	7.0
Redox Potential (mu)	250.0	280.0	250.0	270.0	NT	NT	NT	NT	NT
2. VOLUME 1									
pH	6.4	7.8	9.0	9.6	5.6	6.3	5.8	6.3	5.8
Specific Conductance (umhos/cm)	215.0	210.0	340.0	220.0	250.0	60.0	330.0	270.0	160.0
Temperature (oC)	16.0	13.0	15.0	17.0	20.0	18.5	18.5	17.2	21.0
Dissolved Oxygen (ppm)	4.5	7.0	5.8	4.9	3.0	0.8	5.4	4.7	6.2
Redox Potential (mu)	255.0	330.0	190.0	280.0	NT	NT	NT	NT	NT
3. VOLUME 2									
pH	6.4	7.5	6.8	7.6	7.0	6.8	5.8	6.3	5.8
Specific Conductance (umhos/cm)	220.0	220.0	190.0	125.0	242.0	65.0	320.0	270.0	160.0
Temperature (oC)	15.5	14.0	15.0	13.0	18.0	17.8	17.0	17.8	21.0
Dissolved Oxygen (ppm)	6.0	7.0	5.8	7.0	3.0	1.4	5.0	4.7	9.5
Redox Potential (mu)	260.0	320.0	250.0	320.0	NT	NT	NT	NT	NT
4. VOLUME 3									
pH	6.4	8.2	6.3	7.4	6.0	6.8	6.0	6.3	5.8
Specific Conductance (umhos/cm)	215.0	210.0	190.0	115.0	247.0	60.0	320.0	270.0	160.0
Temperature (oC)	15.0	14.0	15.0	13.0	18.0	17.8	17.0	17.8	21.0
Dissolved Oxygen (ppm)	6.0	7.0	5.9	6.9	2.8	1.4	6.2	8.0	8.3
Redox Potential (mu)	265.0	310.0	255.0	320.0	NT	NT	NT	NT	NT
5. VOLUME 4									
pH		8.0	6.2		7.0				
Specific Conductance (umhos/cm)		200.0	190.0		248.0				
Temperature (oC)		14.0	15.0		18.0				
Dissolved Oxygen (ppm)		6.8	5.8		3.0				
Redox Potential (mu)		310.0	250.0		NT				
6. VOLUME 5									
pH									
Specific Conductance (umhos/cm)									
Temperature (oC)									
Dissolved Oxygen (ppm)									
Redox Potential (mu)									

NT: Not Taken

TABLE 4-5

CIRCUITRON CORPORATION SITE

SUMMARY OF THE FINAL WATER QUALITY PARAMETERS OF THE PURGED WATER OF THE NEWLY INSTALLED AND THE EXISTING MONITORING WELLS DURING ROUND 1 AND ROUND 2 OF THE GROUNDWATER SAMPLING

WATER QUALITY PARAMETERS WELLS	pH	Specific Conductance (umhos/cm)	Temperature (oC)	Dissolved Oxygen (ppm)	Redox Potential (mu)
MW-1S					
Round 1	6.6	345.0	16.0	3.9	-20.0
Round 2	6.6	330.0	14.0	3.8	185.0
MW-1D					
Round 1	6.2	183.0	15.7	4.3	235.0
Round 2	6.4	170.0	13.0	4.0	310.0
MW-2S					
Round 1	6.9	205.0	16.0	4.3	60.0
Round 2	6.8	200.0	15.0	4.0	220.0
MW-2D					
Round 1	6.0	180.0	15.5	2.7	225.0
Round 2	6.3	170.0	15.0	1.8	330.0
MW-3S					
Round 1	6.7	210.0	15.0	4.3	50.0
Round 2	6.8	180.0	18.0	3.8	210.0
MW-3D					
Round 1	6.3	263.0	17.0	1.2	250.0
Round 2	6.7	255.0	16.0	1.4	320.0
MW-4S					
Round 1	6.8	155.0	16.0	5.2	195.0
Round 2	6.6	230.0	14.5	5.4	350.0
MW-4D					
Round 1	6.5	180.0	15.5	3.0	220.0
Round 2	6.8	180.0	16.0	4.2	300.0
MW-5S					
Round 1	6.6	225.0	17.0	4.8	210.0
Round 2	6.3	240.0	17.0	6.2	320.0
MW-5D					
Round 1	6.0	182.0	16.0	2.6	260.0
Round 2	5.7	160.0	14.0	2.3	360.0

NT: Not Taken

TABLE 4-5 (Cont'd)

CIRCUITRON CORPORATION SITE

SUMMARY OF THE FINAL WATER QUALITY PARAMETERS OF THE PURGED WATER OF THE NEWLY INSTALLED AND THE EXISTING MONITORING WELLS DURING ROUND 1 AND ROUND 2 OF THE GROUNDWATER SAMPLING

WATER QUALITY PARAMETERS / WELLS	pH	Specific Conductance (umhos/cm)	Temperature (oC)	Dissolved Oxygen (ppm)	Redox Potential (mu)
MW-6S					
Round 1	6.2	143.0	19.0	4.5	275.0
Round 2	6.9	105.0	18.5	5.5	NT
MW-6D					
Round 1	5.8	220.0	15.0	3.2	270.0
Round 2	6.7	200.0	15.0	4.5	NT
MW-7S					
Round 1	6.4	215.0	15.0	6.0	265.0
Round 2	8.0	200.0	14.0	6.8	310.0
MW-7D					
Round 1	6.2	190.0	15.0	5.8	250.0
Round 2	7.4	115.0	13.0	6.9	320.0
MW-8	7.0	248.0	18.0	3.0	NT
MW-9	6.8	60.0	17.8	1.4	NT
MW-10	6.0	320.0	17.0	6.2	NT
MW-11	6.3	270.0	17.8	8.0	NT
MW-12	5.8	160.0	21.0	8.3	NT

NT: Not Taken

When the purging of each well was completed, water levels were allowed to recover approximately to initial static levels. This occurred fairly rapidly. Groundwater sampling was conducted by using a decontaminated stainless steel bailer for the sample recovery.

The purging of each of the shallow wells was conducted by bailing with the same bailer that was designated for the sampling. Purging of the deep wells was conducted with the use of a submersible pump, since a significantly larger volume of water was involved.

All decontamination and sampling procedures were conducted in accordance with SOP 6 of the approved Field Operations Plan (Ebasco, 1989c).

Municipal Well - Well PW-1 (S-20042) was pumped for 20 minutes prior to sampling. The attendant indicated that the pumping rate of the well is approximately 1,200 gallons per minute, therefore, approximately 24,000 gallons of water were pumped. The volume of the well was calculated to be approximately 3,300 gallons. The sample was obtained from a spigot at the pump head.

Private Well - Private well PW-2 (S-22003) was sampled during Round 2 of the groundwater sampling. The well is used continuously by the "House of Plastics" for the performance and function of their facility. Therefore, the well did not need to be purged. Since the water is not being treated prior to its usage, the groundwater sample was obtained from a potable water tap at the facility.

4.6 AQUEOUS AND SEDIMENT SAMPLING

This portion of the investigation was aimed at sampling the various underground structures on the site property that were reported or suspected of receiving unauthorized wastes from the Circuitron Corporation facility. These include leaching pools LP-1 and LP-2, sanitary cesspools CP-1 and CP-2 and storm drains SD-1, SD-2 and SD-3. A more complete description of these structures is contained in Section 5.0 of this RI report.

The sediment samples consisted of the sludge or accumulated sediments dredged from the bottom of these structures. The aqueous samples consisted of the aqueous material or standing water that was present in some of the structures. The following discussion details the structures that were sampled and the types of samples taken. A summary of the samples collected is provided in Table 4-6.

4.6.1 Sampling Locations

Leaching Pools - Both aqueous and sediment samples were planned to be collected from leaching pools LP-1 and LP-2, according to the FOP (Ebasco, 1989c). The leaching pools in the old

TABLE 4-6

CIRCUITRON CORPORATION SITE

SUMMARY OF SEDIMENT/AQUEOUS SAMPLING

LOCATION	SAMPLE ID	DUPLICATE	MATRIX	FULL TCL	HEXAVALENT CHROMIUM
LP-1	CC-LP1-SE01	CC-LP1-SED1	Sediment	Yes	Yes
CP-1	CC-CP1-SE01	NT	Sediment	Yes	No
CP-2	CC-CP2-SE01	NT	Sediment	Yes	No
SD-1	CC-SD1-AQ01	NT	Aqueous	Yes	No
SD-1	CC-SD1-SE01	NT	Sediment	Yes	No
SD-2	CC-SD2-AQ01	NT	Aqueous	Yes	No
SD-2	CC-SD2-SE01	NT	Sediment	Yes	No
SD-3	CC-SD3-SE01	NT	Sediment	Yes	No

Notes:
LP-1: Authorized SPDES leaching pool
CP-1: Sanitary cesspool
CP-2: Sanitary cesspool
SD-1: Northernmost storm drain
SD-2: Middle storm drain
SD-3: Southernmost storm drain
NT: Not taken

abandoned leaching pool area, however, were found to be filled in and, therefore, were not accessible for sampling. One of the SPDES authorized leaching pools (LP-1) was accessible and a sediment sample was taken from it, however, it did not contain any standing water. An attempt was made to locate an opening to the second leaching pool (LP-2), the existence of which seemed apparent from data obtained during the geophysical survey. However, no opening or manhole cover could be found. In summary, one sediment sample was collected from the leaching pool area, the location of which is designated LP-1 on Figure 4-1. A duplicate sample was also taken from this location.

Cesspools - Two sanitary cesspools are located on the western half of the property underneath the parking lot in front of the building. These are accessible through manhole covers. No aqueous material was present in the cesspools so only sediment samples were collected. The sampling locations are designated as CP-1 and CP-2 on Figure 4-1.

Storm Drains - Three of the five storm drains located along the western boundary of the site were sampled. The locations of these samples are designated SD-1, SD-2 and SD-3 on Figure 4-1. Sediment samples were collected from each of the three storm drains. Aqueous samples were collected from all but SD-3, since no standing water was present at that location.

4.6.2 Sampling Methodology

Aqueous Sampling - Aqueous samples were collected from only two of the storm drains (SD-1 and SD-2). The samples were collected prior to the collection of sediment samples. A stainless steel bailer was lowered into the drain to collect the sample, which was then poured directly into the sample bottles. The bailer was decontaminated according to the procedures specified in SOP 15 of the FOP (Ebasco, 1989c). The samples were preserved as appropriate and shipped to the assigned CLP laboratories for full TCL analysis.

Sediment Sampling - Sediment samples were collected from leaching pool LP-1, sanitary cesspools CP-1 and CP-2, and from storm drains SD-1, SD-2 and SD-3. When the collection of the aqueous samples from the structures was completed, the sediment samples were collected by lowering a decontaminated Ponar dredge sampler to the bottom and retrieving the sediment. The 40-ml VOA vials were filled immediately and the rest of the sediment was homogenized in a stainless steel bowl and then placed in the remainder of the appropriate sample bottles.

All sampling equipment, the dredge, the stainless steel bowl and the stainless steel spoon were decontaminated prior to their use according to the procedures specified in SOP 15 of the FOP (Ebasco, 1989c). The samples were then packaged and shipped to the assigned CLP laboratories for full TCL analysis.

4.7 QUALITY ASSURANCE/QUALITY CONTROL

4.7.1 Equipment Decontamination

All equipment involved in the field sampling activities was decontaminated prior to and subsequent to sampling. Equipment leaving the site was also being decontaminated as called for in the Health and Safety Plan of the FOP (Reference 6). All drilling equipment and well casings were steam-cleaned prior to their use as per ARCS II Field Technical Guidance FT-6.03.

Extraneous contamination and cross contamination was being controlled by the decontamination procedure, by wrapping the sampling equipment with aluminum foil when not in use, and by changing and disposing the sampler's gloves between samples.

4.7.2 Sample Preservation

Acidification of Aqueous Volatile Organic Samples - The aqueous volatile organic samples were acidified prior to the shipment to the assigned CLP laboratory. The acidification of the volatile organic samples was conducted according to the USEPA requirements discussed in the FOP (Reference 6).

Addition of Nitric Acid (HNO_3) to Aqueous Metal Samples - The acidification of both the filtered and unfiltered aqueous metal samples was performed as was outlined in the Ebasco FOP (Reference 6).

Addition of Sodium Hydroxide (NaOH) to Aqueous Cyanide Samples - Prior to the preservation of the aqueous cyanide samples with NaOH, the samples were tested for oxidizing agents. Then the sample was preserved with NaOH. Both procedures were performed according to the USEPA requirements outlined in the FOP (Reference 6).

Filtration of Aqueous Metal Samples - The purpose of filtering the aqueous metal samples was to determine the concentration of dissolved inorganic constituents in the groundwater. The sample filtration was conducted in the field immediately after their collection in order to minimize the changes in the concentration of the substances of interest. The samples were filtered through a MILLIPORE filtration device made of borosilicate glass with a capacity of 500 ml. The filter used was a triton-free cellulose nitrate membrane of 0.45 um nominal pore size. The samples were passed only once through the filtration device. Then they were preserved with HNO_3 to assure that the proper pH was attained. The filtering apparatus cleaned prior to its use for each and every aqueous metal sample by being rinsed with a 10% HNO_3 solution and then with demonstrated analyte-free deionized water.

4.7.3 Blank Samples

Field Blanks - Field blank samples were obtained to evaluate the potential cross contamination due to the repeated use of sampling equipment. Field blank samples were collected by pouring distilled deionized water into or over a particular piece of sampling equipment and capturing this water into the sample container. During soil sampling, field blanks were taken using the decontaminated split spoon samplers. During groundwater sampling, field blanks were taken using the stainless steel decontaminated bailers. Field blanks were also obtained for metals analysis by pouring the distilled deionized water through the filtering apparatus used to filter the groundwater samples.

TRIP BLANKS - A trip blank is an aliquot of distilled deionized water that accompanies samples from the time they are obtained until their shipment to the laboratory. Trip blanks are prepared in the trailer prior to the initiation of sampling by pouring the distilled deionized water into the 40-ml sample bottles. The trip blanks are then placed in the sample coolers with the rest of the sample bottles to be used for the day. They are shipped together with the samples and analyzed for lower detection limit volatiles. Trip blanks are required during aqueous type sampling only and were not collected during soil sampling. The frequency of trip blank collection was one per day during the groundwater sampling, and the aqueous sampling of leaching pools, cesspools and storm drains.

WATER BLANKS - Distilled deionized water was used during sampling activities for decontamination and for preparing both field and trip blank samples. In order to insure that this water is not a source of contamination for samples, it was collected as a sample and analyzed for full TCL parameters.

DRILL BLANKS - Drill blank samples are intended for the analysis of any material introduced into the borehole. The matrix may be soil or water. Drill blanks consisted of the following:

(1) Potable water which was obtained from the East Farmingdale Water District municipal supply and was used for steam cleaning and for mixing the mud used during mud rotary drilling;
(2) The drilling mud after it had been mixed at the borehole location but before being circulated in the hole; and,
(3) Sand used for the sand pack which was emplaced around the well screens.

4.7.4 Field Audits

Field audits by Quality Assurance personnel were performed on-site to determine that the field work was conducted according to the procedures presented in the approved FOP (Ebasco, 1989c) for the site and to the accepted USEPA protocols. Audits were performed on the following days by the following parties:

DATE	COMPANY/AGENCY
6/20-21/89	EBASCO PROGRAM MANAGEMENT QA
9/6-7/89	EBASCO PROGRAM MANAGEMENT QA
9/6/89	EPA MMB QA

4.7.5 Data Validation

Data Quality Objective (DQO) Levels 4 and 5 analytical data were performed by CLP laboratories for this RI/FS. These are the highest levels of analytical QA/QC designed to provide data of the highest quality.

Only analytical data that withstood this rigorous QA/QC procedure, that is only data which were not rejected in the validation process, were considered valid and usable for this RI/FS. Throughout this report and in the Appendices, an analysis marked with an "R" was rejected. This analysis was not used to draw conclusions about contamination concentrations, and did not factor into calculated averages and means.

Owing to the large size of the analytical data base for the RI/FS, the reason for rejecting an individual analysis is not reported here. This information is available and can be provided if requested.

5.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

5.1 DEMOGRAPHY AND LAND USE

The Circuitron Corporation Site is located on Milbar Boulevard, between U.S. Route 110 and Republic Road, in East Farmingdale, Suffolk County, New York. The area immediately surrounding the site consists of active businesses including small industrial and manufacturing facilities. Specifically, the Circuitron Corporation Site is bordered to the east by "W D Equities", a 0.38 acre-property; to the west by "Gazza, Joseph & Dorothy", 0.63-acre property;and to the south by "Fenn, Wright & Manson Properties, Inc." and "Milgray Electronics, Inc.", a 1-acre and 2.99-acre property, respectively.

Within a mile of the site are a mixture of large institutional, industrial and commercial areas, cemeteries, an airport, an amusement park and a State Park. The closest residential community is the Woodland Hills section of East Farmingdale located one mile southwest of the site. The State University Agricultural and Technical College at Farmingdale (SUNY-Farmingdale) is located approximately 1,500 feet west and northwest of the site at the intersection of Route 110 and Melville Road. The college serves a total student population of 10,000 which includes day and evening students, and has a residential dormitory of 1,000 students. The edge of Bethpage State Park is located 0.9 miles northwest of the site. East and southeast of the site are several cemeteries, the closest being the Pinelawn Cemetery which is located approximately 1,500 feet southeast of the site. The Republic Airport, servicing small aircraft and charter flights, is located 0.7 miles south of the site. An amusement park,"Adventureland 110", is located 800 feet north and west of the site on Route 110. Operating from March through October, it offers amusement park rides to the public.

East Farmingdale is an unincorporated hamlet in the Town of Babylon, Suffolk County. Babylon is comprised of eight hamlets and three incorporated villages, and is a densely populated area, with a 1986 population of 205,090. East Farmingdale is bordered on the east by the hamplet of Wyandanch, and on the south by the Hamlet of North Amityville. It shares its northern border with the Town of Huntington, and its western border with the Village of Farmingdale, Town of Oyster Bay, Nassau County.

East Farmingdale is predominantly an industrial area of Babylon. It is one of the most heavily industrialized sections of Suffolk County, and has been characterized frequently by problems associated with industrial pollution. The 1984 residential population of East Farmingdale was 5,636. The residential community of Woodland Hills, within East Farmingdale, located southwest of the Circuitron Corporation site, has a small civic association of 5 to 6 members, which has been vocal on the variety of issues pertaining to land use and the environment.

Prior to its use for industrial purposes, East Farmingdale was characterized largely by agriculture in the late 1950's. As industry became the major land use, by the early 1970's, it became increasingly difficult to cultivate on remaining farmland due to the presence of chemicals in the soil resulting from industrial activity.

Historically, the master plan for Nassau and Suffolk Counties sited industrial communities, like the community in East Farmingdale, to be located in the center of Long Island without consideration for the mid-island's shallow groundwater-recharge zone and its vulnerability to contamination. Presently, new industry is planned for the outer shores of Long Island to avoid future contamination of the groundwater.

5.2 SURFACE FEATURES AND UNDERGROUND STRUCTURES

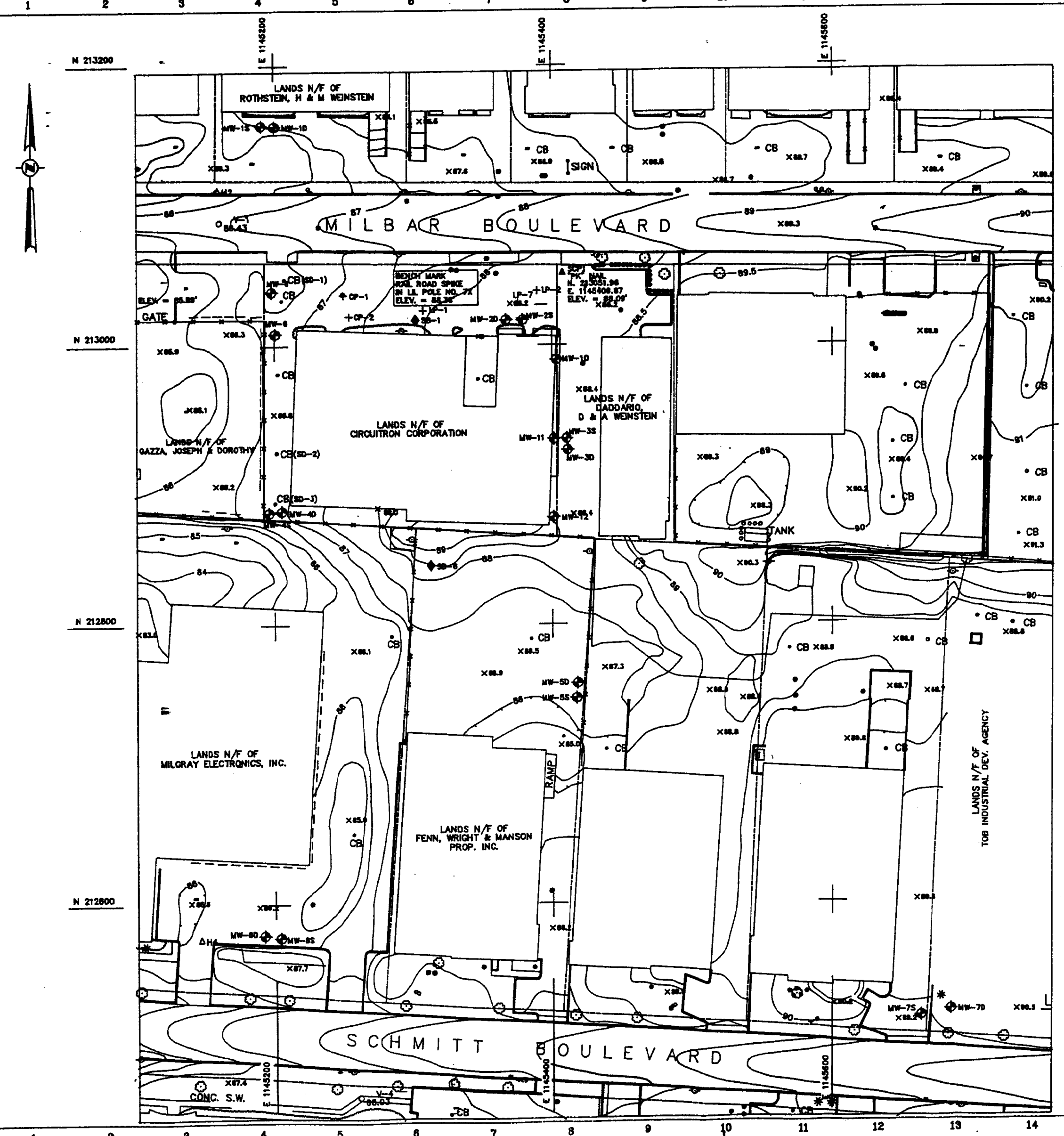
5.2.1 Topography

The surveying activities at the Circuitron Corporation Site were performed by C.T. Male Associates. The activities consisted of:

- Aerial surveying via flying over the 1-acre area on November 19, 1989, to obtain aerial photographs; and
- Ground surveying performed during the week of December 11, 1989, to determine the exact location and elevation of the two soil borings outside the building, the 5 existing Circuitron wells, the 14 newly installed monitoring wells and the leaching pools and sanitary cesspools underneath the parking lot.

The topographic map, compiled from all survey field activities is presented on Figure 5-1. The map includes surface contours at 0.5 foot intervals, the properties upgradient, adjacent and downgradient of the Circuitron Corporation Site, the location of all wells related to this study, soil borings, leaching pools and storm drains existing upgradient, on and downgradient of the site.

The topographic map used in the preparation of this final RI report is the final version.



N 213200

MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 10, 1988.

LEGEND AND ABBREVIATIONS

MW-1	MONITOR WELL	△H1	HORZ. CONTROL POINT		SIGN	✻	CONIFEROUS TREE
SB-1	SOIL BORING	○V-1	VERT. CONTROL POINT		FIRE HYDRANT	⊙	DECIDUOUS TREE
▪ SD-1	STORM DRAIN	X 88.6	SPOT ELEVATION		UTILITY POLE		SHRUB LINE
+ LP-1	LEACH POOL	• CB	CATCH BASIN		UTIL. POLE W/ LIGHT		FENCE
+ CP-1	CESS POOL	▪	CATCHBASIN	•	FLAG POLE		PARKING BUMPERS
▲ SCP1	SITE CONTROL POINT	●	MANHOLE	●	CONIFEROUS BUSH	CONC.	CONCRETE
						S.W.	SIDEWALK

N 213000

N 212800

N 212600

80 40 0 80 160

SCALE IN FEET

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY
MAP PREPARED BY C.T. MALE ASSOCIATES, P.C.
FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

SITE BASIC TOPOGRAPHIC MAP

EBASCO SERVICES INCORPORATED

SCALE AS NOTED

FIGURE NO.5-1

CIRC-N.DWG

Based on the information presented on the topographic map, the site can be characterized as being generally flat with a very gentle 1% slope up to the south and east. The regional slope of the terrain is to the south and southeast. The site is located at an elevation of approximately 85 to 90 feet above mean sea level (MSL).

5.2.2 On-Site Underground Structures

This section provides a physical description of the structures existing underneath the Circuitron Corporation Site. The location of most of these structures was confirmed with the geophysical survey prior to the performance of the field investigation activities by Ebasco. All on-site underground structures are shown on Figure 4-1.

Authorized Leaching Pools - Two authorized leaching pools exist at the site. One is the main SPDES authorized leaching pool, designated as LP-1, which is located towards the center of the parking lot in front of the building. The other one is the old abandoned distribution pool, designated as LP-2, which is located underneath the parking lot in front of the northeast corner of the building.

The main SPDES authorized leaching pool is accessible via a manhole cover. The pool itself consists of a cylindrical open structure with slotted concrete walls. The concrete is fairly corroded as there are exposed reinforcement bars all around the structure and the cement matrix is worn away from the aggregate on the concrete surface. A discharge pipe coming from the direction of the building enters the top of the pool. Neither water nor liquid/sludge material was found in the pool. The SPDES authorized leaching pool was found to contain sediment consisting of two different layers. The top layer of sediment in the pool bottom is a bright blue-green, clay-like, moist and very cohesive material. The material was stratified as indicated by color variations. Beneath this blue-green material is a dark tan sand and gravel layer resembling a slightly discolored sample of the native soil found elsewhere in the pool as residue on the discharge pipe and within the slots of the concrete walls. The depth to the top of the sediment from the ground surface is 13.9 feet and the pool diameter is approximately 10 feet.

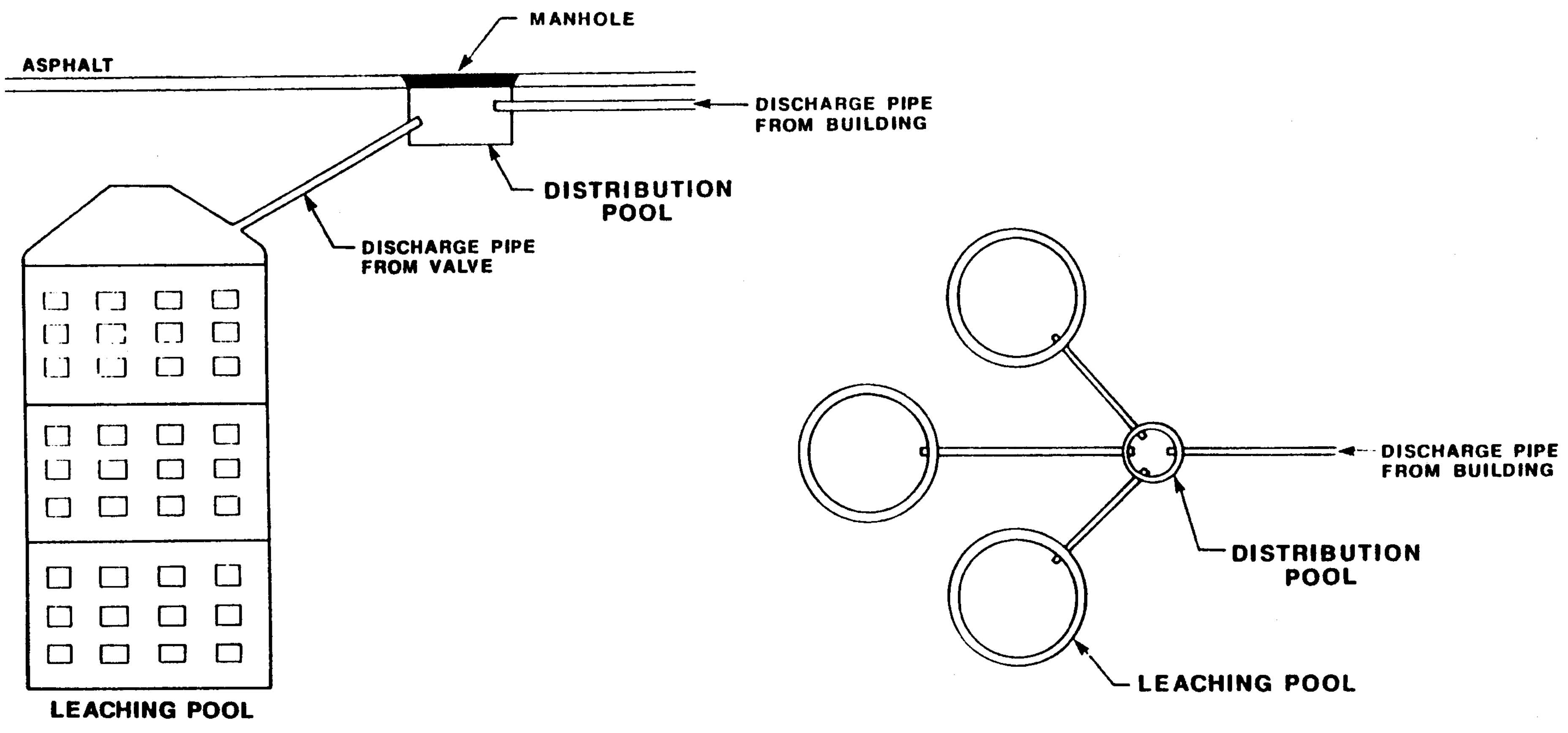
The old abandoned distribution pool is not accessible. This pool has been reported to be a concrete ring approximately 4 feet in diameter with a pipe from the building entering at the top and three pipes at the bottom discharging to at least three separate leaching pools. The bottom of the distribution pool is expected to be sand. The network of leaching pools reported to be present could not be located with the Ground Penetration Radar (GPR) unit. However, the presence of holes in the asphalt, patched with more asphalt or backfilled with dirt, indicate the potential existence of these pools. The most reasonable interpretation of the field and geophysical survey observations is that these reported leaching pools have been backfilled. Figure 5-2 illustrates a conceptual diagram of the reported network of the old abandoned distribution pool.

Unauthorized Leaching Pools - At least two unauthorized leaching pools exist below the concrete floor in the plating room. It was not possible to determine the exact location and configuration of these leaching pools with the geophysical survey because of metal objects (i.e. pipes and rebar) present at the suspected locations. According to reports by the Suffolk County Department of Health Services and the USEPA, one of these pools is located approximately in a middle of the plating room and a second one is at the southern end of the plating room, as shown on Figure 4-1.

The leaching pool in the middle of the plating room was opened and sampled in December 1984. The floor was then recemented so that Circuitron Corporation could continue operation. This pool was never cleaned. The pool in the southern portion of the plating room was reportedly cleaned and backfilled. All visible contamination was removed prior to backfilling. This pool is visible because the pool opening was never resurfaced after backfilling.

Circular sunken area, approximately 2 feet in diameter, and the presence of several PVC pipes extending from the concrete floor in the plating room, may indicate the existence of more unauthorized leaching pools underneath the floor of the building.

Sanitary Cesspools - There are two sanitary cesspools at the site, designated as CP-1 and CP-2 on Figure 4-1. The depth of cesspool CP-1 from the ground surface to the top of the sediment is 16.6 feet. This cesspool has a diameter of approximately 8 feet and is accessible through a solid manhole cover. The sediment found at the bottom of the cesspool CP-1 consists of moist dark brown medium to coarse sand containing organic matter and hair. Cesspool CP-2 is 10.4 feet deep from the ground surface to the top of the sediment found in it. It is approximatley 10 feet in diameter and is accessible through a solid manhole cover. The sediment present at the bottom of the pool is a dark brown and gray organic matter, very moist, cohesive and odorous. No standing water was found in any of the sanitary cesspools during the field investigation activities.



CROSS-SECTIONAL VIEW

TOP VIEW

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 5-2

DIAGRAM OF LEACHING POOL LP-2

EBASCO SERVICES INCORPORATED

<u>Storm Drains</u> - Three of the on-site storm drains were inspected and sampled. They are designated as SD-1, SD-2 and SD-3 on Figure 4-1. All three of these storm drains have slotted manhole covers, which can be removed for access. The depth from the ground surface to the top of the sediment contained in storm drain SD-1 is 10.7 feet. The sediment mainly consists of a black cohesive silt with some organic matter (i.e. leaves, twigs). The depth to the standing water at the time of sampling was 3.95 feet. However, it is likely to change according to amounts of precipitation. The aqueous material found in SD-1 is clear with no coloration, although there was a sheen on the surface. The depth from the ground surface to the top of the sediment in storm drain SD-2 is 10.9 feet. The sediment was found to be black and brown coarse sand and gravel with some silt and organic matter. The siltier material was also darker in color. The aqueous material in this drain was colorless and slightly turbid. At the time of sampling, there was also some floating organic material. The depth from the ground surface to the top of the sediment present in storm drain SD-3 is 12.6 feet. The sediment found in SD-3 was a moist brown coarse sand and gravel with trace organic matter. At the time of sampling, there was no standing water in this storm drain.

5.3 GEOLOGY

5.3.1 <u>Physiography</u>

Regionally, Long Island is part of the Atlantic Coastal Plain physiographic province which extends from Long Island south to the Gulf of Mexico. Beginning in the Cretaceous Period, coastal plain sediments derived from erosion of the highlands were deposited in thick eastward thickening sequences. These deposits lie on a relatively flat Precambrian bedrock surface. Although part of the coastal plain, Long Island is unique in that its major physiographic features are related entirely to Pleistocene glaciation. The southern extent of the Wisconsinan ice sheets included all of Long Island and parts of northern New Jersey.

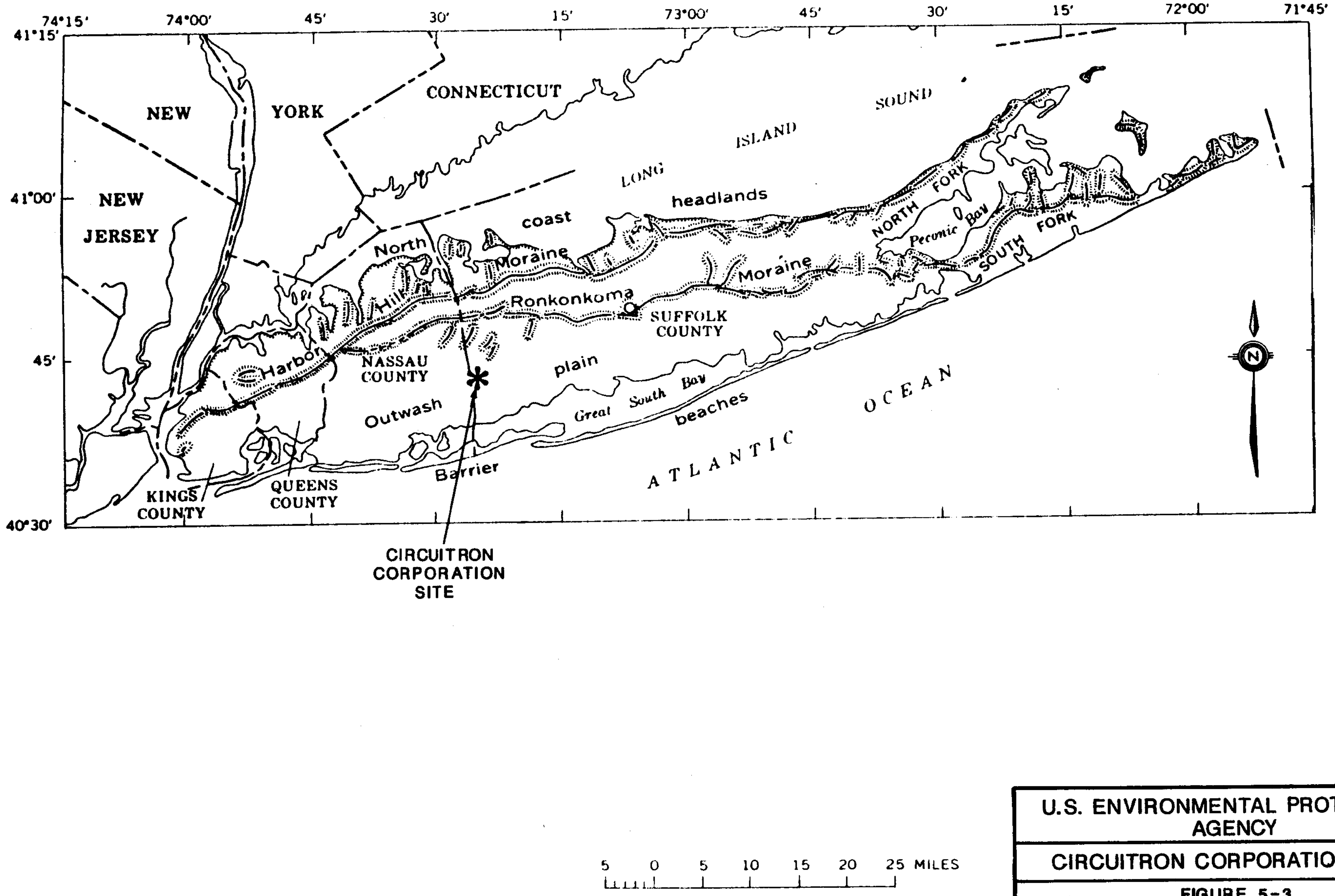
The physiographic features of Long Island are illustrated on Figure 5-3, and are summarized as follows (McClymonds and Franke, 1972, p. E2-E3):

(1) The east-trending hills in the northern and central parts of the island formed by the terminal moraines;

(2) The gently sloping outwash plain that extends southward from the moraines consisting of glaciofluvial deposits;

(3) The steep wave-eroded north shore headlands which consist of ground moraine and recessional outwash; and,

(4) The barrier beaches of the south shore formed by the reworking of sands by waves and longshore currents.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 5-3
MAJOR PHYSIOGRAPHIC FEATURES OF LONG ISLAND

EBASCO SERVICES INCORPORATED

SOURCE: MC CLYMONDS AND FRANKE, 1972

5.3.2 General Geology

Figure 5-4 shows a generalized geologic cross section of the island from north to south in the vicinity of the site. The location of the Circuitron Corporation Site is approximated on this figure, which illustrates the relationships and thicknesses of the unconsolidated sediments relative to the site location.

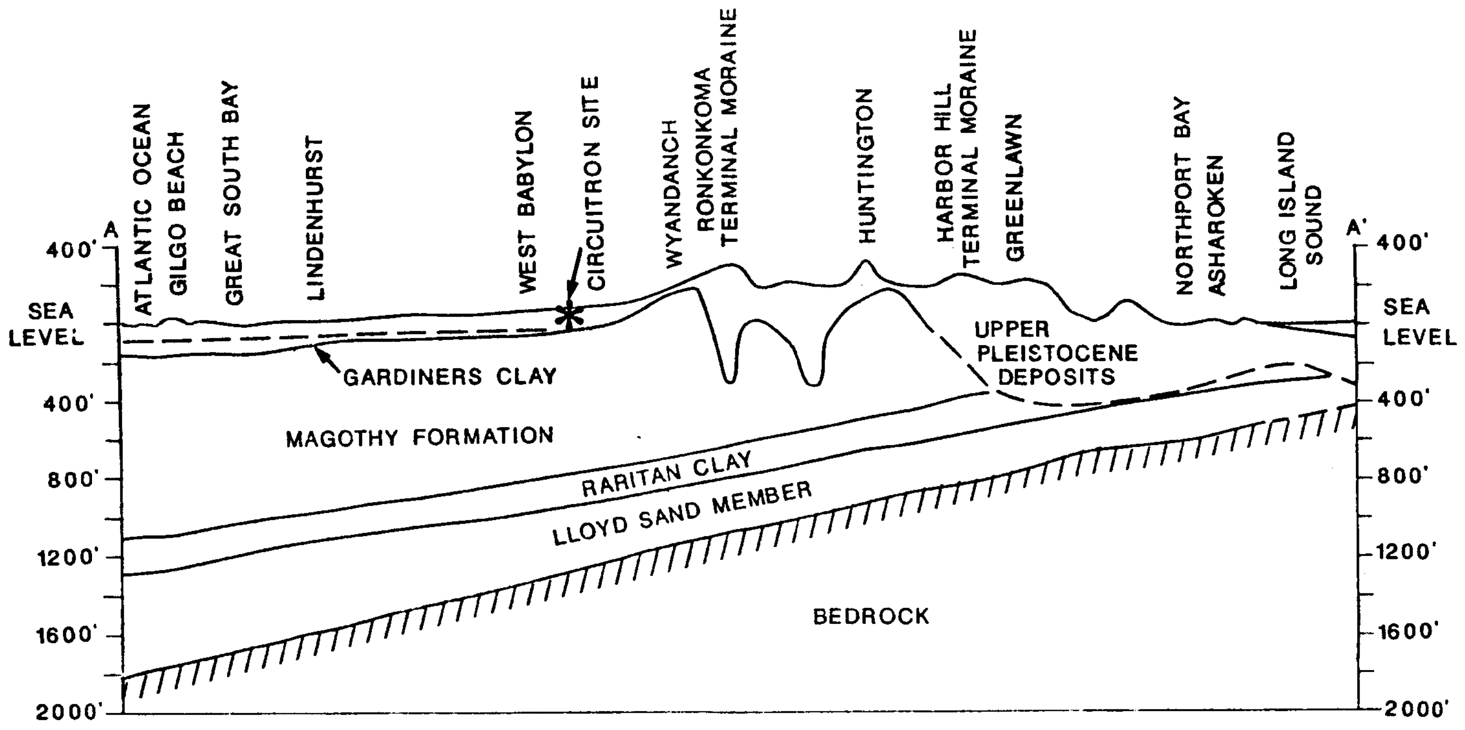
The geology and hydrogeology of Long Island have been widely studied. The areas of study that encompass the Circuitron Corporation Site are referred to in several ways including the mid-island area, the Babylon-Islip area, the Huntington-Smithtown area or simply western Suffolk County. In any case, this area (as well as most of Long Island) is underlain by a wedge-shaped mass of unconsolidated sediments, which overlies the crystalline bedrock and has a maximum thickness of approximately 2,000 feet. These sediments include Cretaceous fluvial and deltaic deposits, Tertiary gravel, and Pleistocene glacial and interglacial marine deposits.

The formations underlying the area from oldest to youngest are the following (Pluhowski and Kantrowitz, 1964, p. 8-9):

- The Raritan Formation of Late Cretaceous age consisting of the Lloyd Sand Member and the Raritan Clay Member;
- The Matawan Group Magothy Formation of Late Cretaceous Age which has been correlated in part with the Magothy Formation of the New Jersey coastal plain;
- The Manneto Gravel of Tertiary Age;
- The Gardiners Clay of Pleistocene Age; and,
- The Upper Pleistocene glacial deposits.

Directly beneath the site both the Mannetto Gravel and the Gardiners Clay are absent. The former is limited to the Nassau-Suffolk County border area north of the site; the latter pinches out to the south of the site. Note that the Mannetto Gravel is not differentiated on the cross section in Figure 5-3 but is grouped with the upper Pleistocene deposits.

Raritan Formation - The origin and deposition of the unconsolidated sediments on Long Island is important in understanding the hydrogeology of Long Island. The Raritan Formation directly overlies the crystalline bedrock which is poorly permeable to virtually impermeable. The Raritan Formation has been divided into two units, the Lloyd Sand Member and the Raritan clay member. The Lloyd Sand Member, at the base of the Raritan clay member, consists of fine to coarse quartzose sand and gravel, commonly with interstitial clay. Other features of the unit include some lenses of clay and silty clay,



SOURCE : "HYDROGEOLOGIC ATLAS 501", HYDRO OF SUFFOLK COUNTY

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

FIGURE 5-4
CROSS SECTION OF LONG ISLAND GEOLOGY-VICINITY OF THE CIRCUITRON CORPORATION SITE

EBASCO SERVICES INCORPORATED

and thin lignite layers and iron concretions (McClymonds and Franke, 1972, p. E6). The Lloyd Sand Member is an important source of water supply on Long Island and is often referred to as the Lloyd aquifer. The maximum thickness of the Lloyd Aquifer is 500 feet. However, its thickness beneath the site is approximately 300 feet. It extends from the top of bedrock at -1175' MSL to an elevation of -875' MSL where it is in contact with the Raritan Clay Member (Jensen and Soren, 1974, pl. 1). The clay member of the Raritan Formation contains clay and silty clay with a few lenses and layers of sand and gravel. This member largely acts as a confining layer for the underlying Lloyd aquifer (McClymonds and Franke, 1972, p. E6). The maximum thickness of the clay member is approximately 300 feet. Its thickness at the site is approximately 155 feet extending from the top of the Lloyd at -875' MSL to an elevation of -720' MSL where it is in contact with the Matawan Group-Magothy Formation, Undifferentiated (Jensen and Soren, 1974, pl. 1).

Matawan Group - Magothy Formation, Undifferentiated - The Matawan Group-Magothy Formation, undifferentiated, consists of fine to medium sand which is clayey in part and interbedded with lenses and layers of coarse sand and clay. Gravel is common at the base of the formation. Lignite, pyrite and iron oxide concretions are also common. The sand is quartzose with the following accessory minerals: muscovite, magnetite, rutile, and garnet (McClymonds and Franke, 1972, p. E6).

The Matawan Group-Magothy Formation, undifferentiated, comprises the Magothy Aquifer (Soren and Cohen, 1971, p. 10) an important source of water supply on Long Island and virtually the only source for community water supplies within at least a 3 mile radius of the site (EA, 1987, App. 1.3-6). The maximum thickness of the Magothy is approximately 1,100 feet (McClymonds and Franke, 1972, p. E6). Its thickness beneath the site is approximately 720 feet extending from the top of the Raritan Clay at -720' MSL to 0' MSL where it is contact with the Upper Pleistocene glacial deposits (Jensen and Soren, 1974, pl. 1).

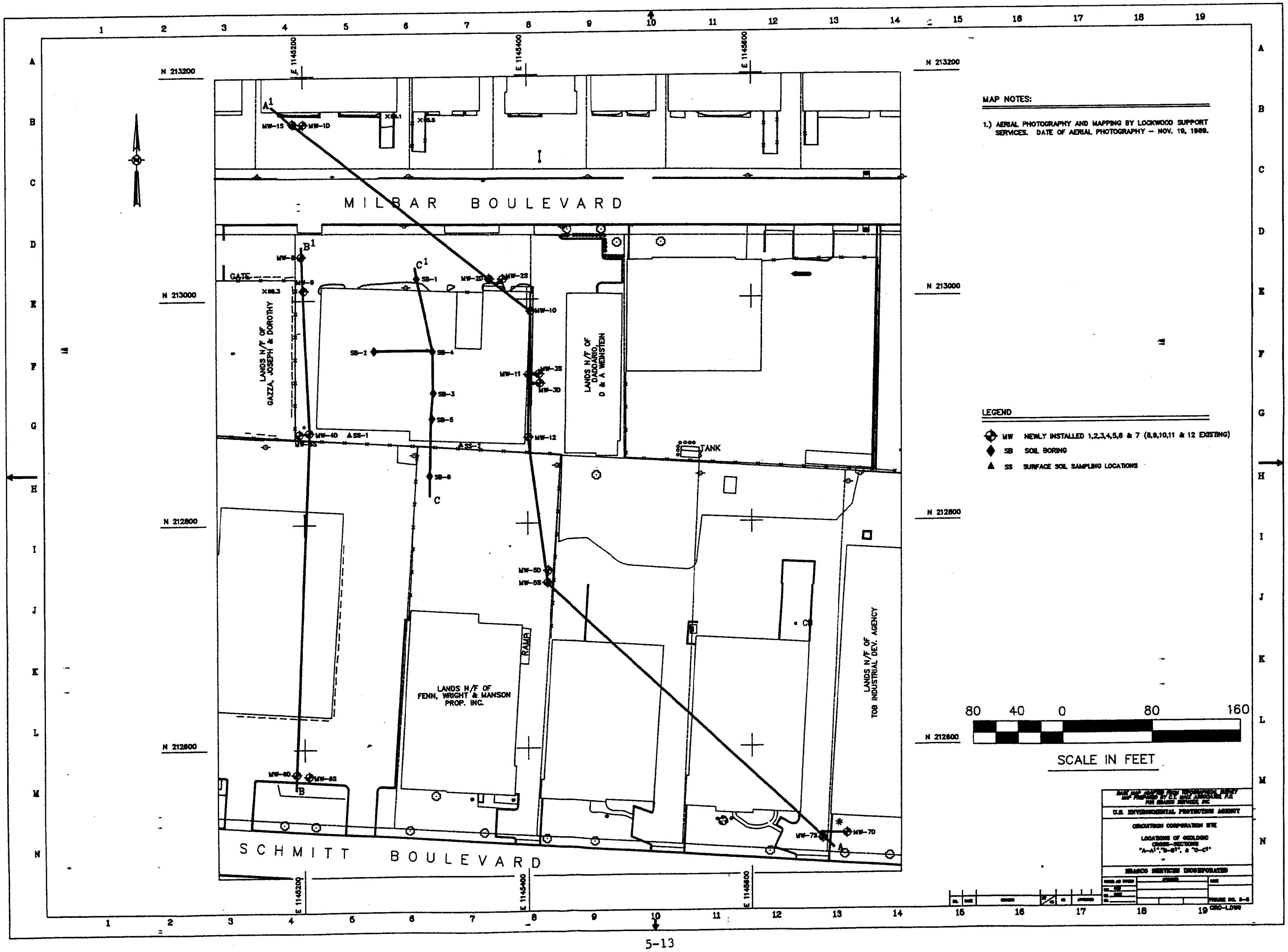
Upper Pleistocene Deposits - The Upper Pleistocene deposits are of glacial origin and were deposited during various stages of Wisconsinan glaciation. These deposits, which include terminal moraines, outwash deposits, ground moraine, and lake deposits, collectively comprise the Upper Glacial Aquifer of Long Island with a maximum thickness of approximately 600 feet (McClymonds and Franke, 1972, p. E5). The terminal moraines are deposits of glacial till which were left by the glaciers as they began to retreat. Forming east trending linear hills on Long Island, they are known as the Ronkonkoma and Harbor Hill Moraines (see Figure 5-3). The most permeable zones of the Pleistocene deposits and therefore the most important source for water supply are the outwash sands and gravels located between and south of the terminal moraines. The Circuitron Corporation Site is situated on the outwash sands of the upper glacial aquifer sand is quartzitic with trace heavy minerals. The gravel is rounded to subrounded and consists mostly of quartz with some gneiss fragments. The USCS classification of the materials in the strata is SW and GW. The standard penetration data indicate an N value ranging from 10 to 71 with a mean value of 30 and with 50% of the values ranging from 18 to 33. The grain size distribution of the recovered samples ranges from fine sand to coarse gravel with the majority of the samples being described as a fine to coarse sand with a gravel fraction ranging from 10% to 35% and less than 3% silt and clay (see Table 5-1 "Grain Size Distribution Analyses"). The top 5 to 7 feet from the surface generally consist of the same material but is often darker in color indicating the presence of either native fill or the original soil profile.

The lower unit extends from the upper contact at between 72 and 80 feet to well below the depth of the deep monitoring well borings, which were terminated at approximately 100 feet below the ground surface. Changes in color and mineralogy at the contact are subtle. However, changes in grain size distribution, sorting and to some extent blow counts (N values) are more distinct. Grain size distribution of the unit ranges from silt to fine gravel but the majority of the samples are described as a tan, medium to fine quartzitic sand. Coloring is generally a uniform tan. However, there are some orange colored laminations in some samples which indicate the presence of silt. These orange laminations are more abundant with increasing depth and are more common in the southerly direction such as in monitoring well borings MW-5D and MW-6D, whereas they are absent in MW-1D.

5.4 SURFACE WATER HYDROLOGY

Surface drainage in the vicinity of the Circuitron Corporation Site occurs in a number of streams located south of the site. These streams ultimately drain into the Atlantic Ocean. All the major streams in the area flow in a southerly direction, are generally less than 3 miles long, and have gentle gradients that average approximately 2 feet per 1,000 feet (Pluhowski and Kantrowitz, 1964, p.19).

The stream nearest to the site is a tributary of Massapequa Creek, approximately 3 miles away. It is not part of the same drainage basin as the Circuitron Corporation Site. Drainage from the vicinity of the site is primarily directed as groundwater recharge which eventually results as seepage from the groundwater into the streams south of the site such as Amityville, Narraskatuck or Carman Creeks (Pluhowski and Kantrowitz, 1964, pl.7). The average base flow of streams, which is the amount of groundwater that recharges a stream as seepage, is approximately 90-95 percent of total average stream flow (Franke and McClymonds, 1972, p. F27). The average direct runoff in urbanized areas, however, is estimated to be more in the order of 10-15 percent of total average stream flow; the reason being that direct runoff from urban areas flows to storm sewers which flow to recharge basins or streams (Franke and



MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕	MW	NEWLY INSTALLED 1,2,3,4,5,6 & 7 (8,9,10,11 & 12 EXISTING)
◆	SB	SOIL BORING
▲	SS	SURFACE SOIL SAMPLING LOCATIONS

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY
MAP PREPARED BY C.T. MALE ASSOCIATES, P.C.
FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

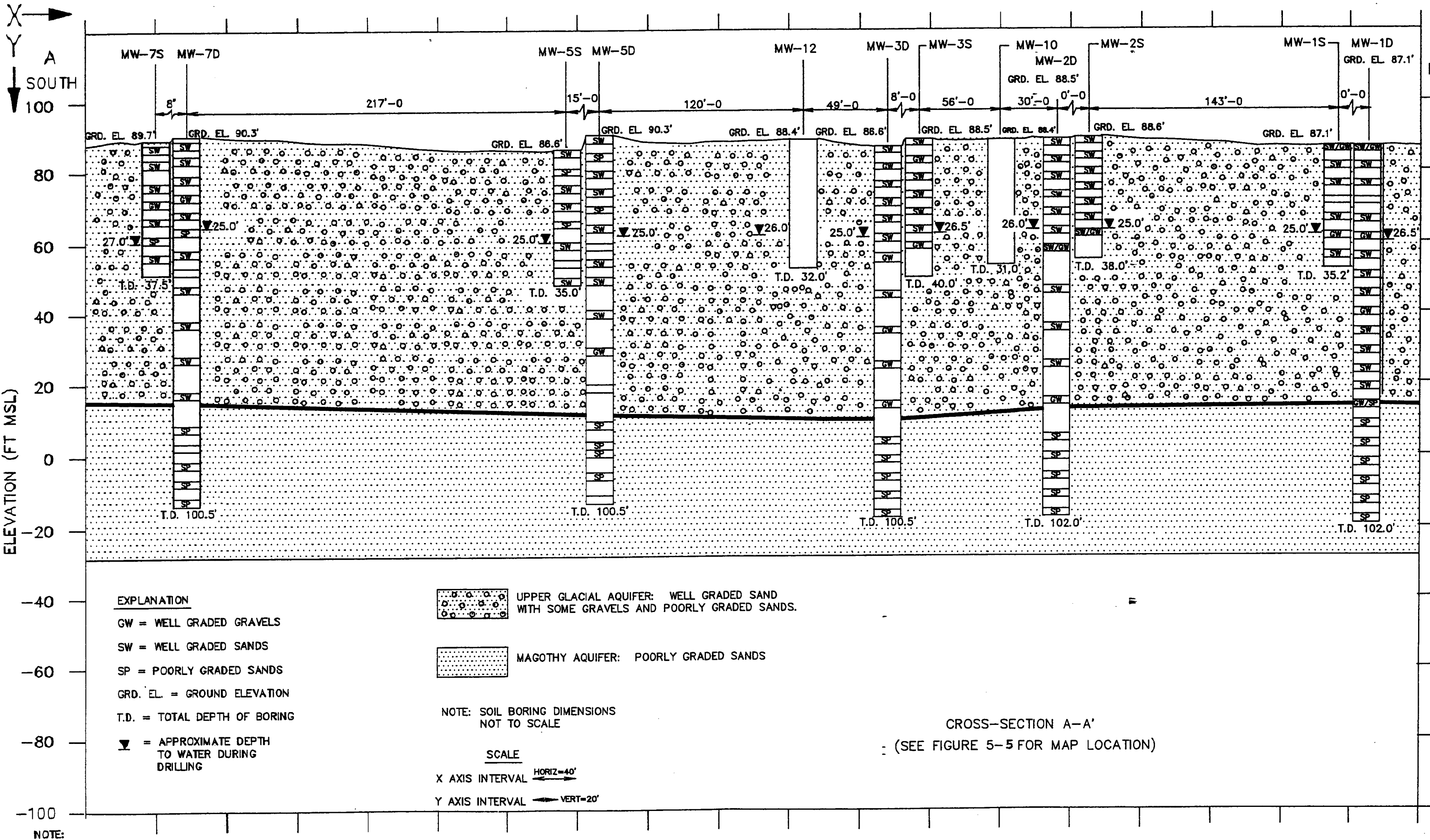
CIRCUTRON CORPORATION SITE

LOCATIONS OF GEOLOGIC
CROSS-SECTIONS
"A-A¹","B-B¹", & "C-C¹"

EBASCO SERVICES INCORPORATED

FIGURE NO. 5-5

CIRC-LDWG



EXPLANATION

GW = WELL GRADED GRAVELS

SW = WELL GRADED SANDS

SP = POORLY GRADED SANDS

GRD. EL. = GROUND ELEVATION

T.D. = TOTAL DEPTH OF BORING

▼ = APPROXIMATE DEPTH TO WATER DURING DRILLING

UPPER GLACIAL AQUIFER: WELL GRADED SAND WITH SOME GRAVELS AND POORLY GRADED SANDS.

MAGOTHY AQUIFER: POORLY GRADED SANDS

NOTE: SOIL BORING DIMENSIONS NOT TO SCALE

SCALE

X AXIS INTERVAL HORIZ=40'

Y AXIS INTERVAL VERT=20'

CROSS-SECTION A-A'

(SEE FIGURE 5-5 FOR MAP LOCATION)

NOTE:

1. VERTICAL EXAGGERATION=2
2. SOILS WERE CLASSIFIED BASED ON VISUAL OBSERVANCE IN THE FIELD IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS).
3. BLANK AREAS WITHIN THE STRATIGRAPHIC COLUMNS REPRESENT FOOTAGE FOR WHICH NO GEOLOGIC INFORMATION WAS OBTAINED.

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED

DEPT. 940 DR DSW

DATE. ______ CH. ___

SCALE. NONE

APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY

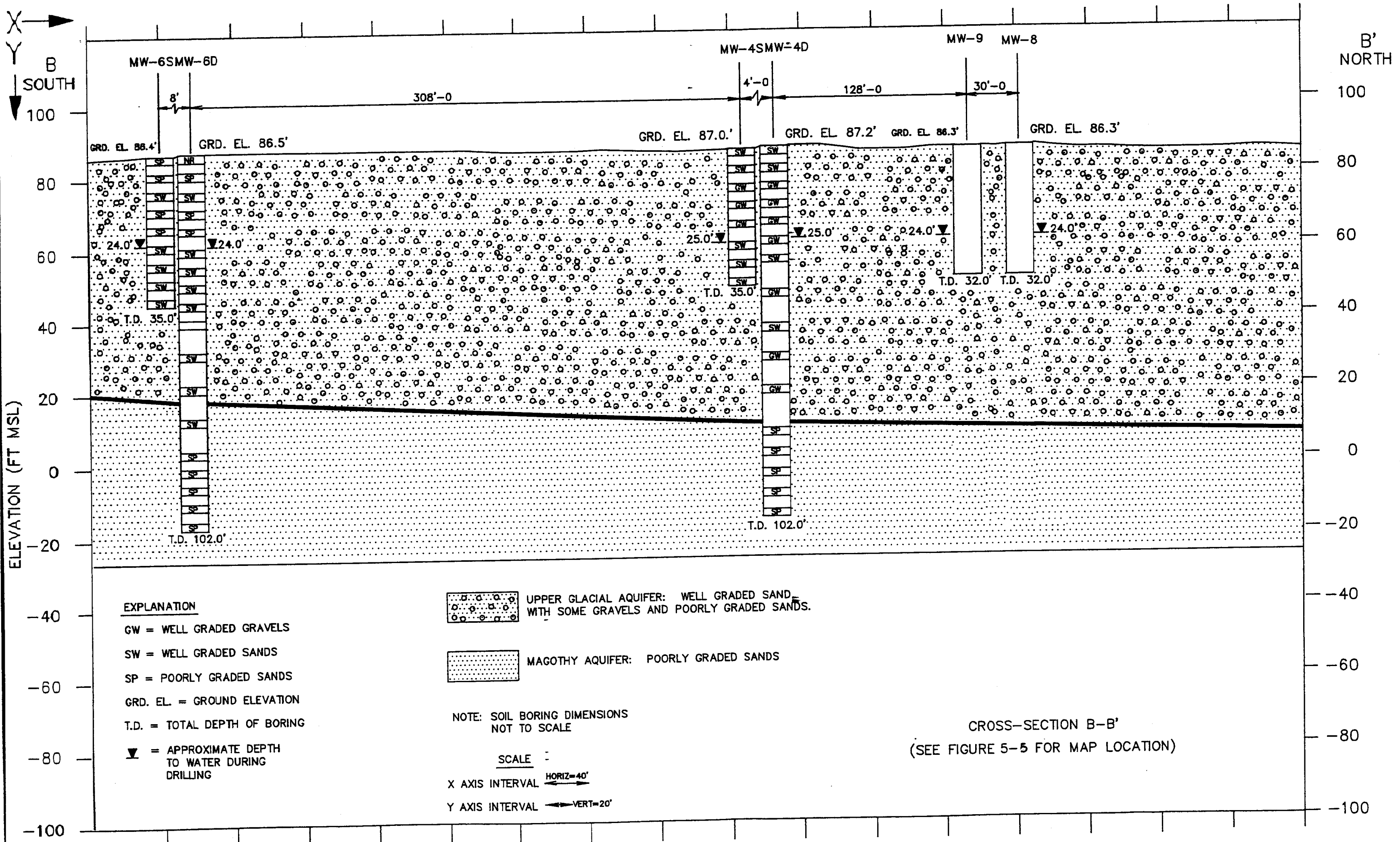
CIRCUITRON CORPORATION SITE

GEOLOGIC CROSS SECTION A-A'
MW-7S,MW-7D,MW-5S,MW-5D,MW-12,MW-3D,MW-3S,
MW-10,MW-2S,MW-2D,MW-1S, AND MW-1D

EPA
8310.068

FIG. NO. 5-6 00

CIRC-D.DWG 11X17



EXPLANATION

GW = WELL GRADED GRAVELS

SW = WELL GRADED SANDS

SP = POORLY GRADED SANDS

GRD. EL. = GROUND ELEVATION

T.D. = TOTAL DEPTH OF BORING

▼ = APPROXIMATE DEPTH TO WATER DURING DRILLING

▨ UPPER GLACIAL AQUIFER: WELL GRADED SANDS WITH SOME GRAVELS AND POORLY GRADED SANDS.

▨ MAGOTHY AQUIFER: POORLY GRADED SANDS

NOTE: SOIL BORING DIMENSIONS NOT TO SCALE

SCALE :

X AXIS INTERVAL HORIZ=40'

Y AXIS INTERVAL VERT=20'

CROSS-SECTION B-B'
(SEE FIGURE 5-5 FOR MAP LOCATION)

NOTE:

1. VERTICAL EXAGGERATION=2
2. SOILS WERE CLASSIFIED BASED ON VISUAL OBSERVANCE IN THE FIELD IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS).
3. BLANK AREAS WITHIN THE STRATIGRAPHIC COLUMNS REPRESENT FOOTAGE FOR WHICH NO GEOLOGIC INFORMATION WAS OBTAINED.

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED
DEPT 940 DR DSW
DATE CH
SCALE NONE
APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY
CIRCUITRON CORPORATION SITE
GEOLOGIC CROSS SECTION B-B'
MW-6S,MW-6D,MW-4S,MW-4D,MW-9 AND MW-8

EPA
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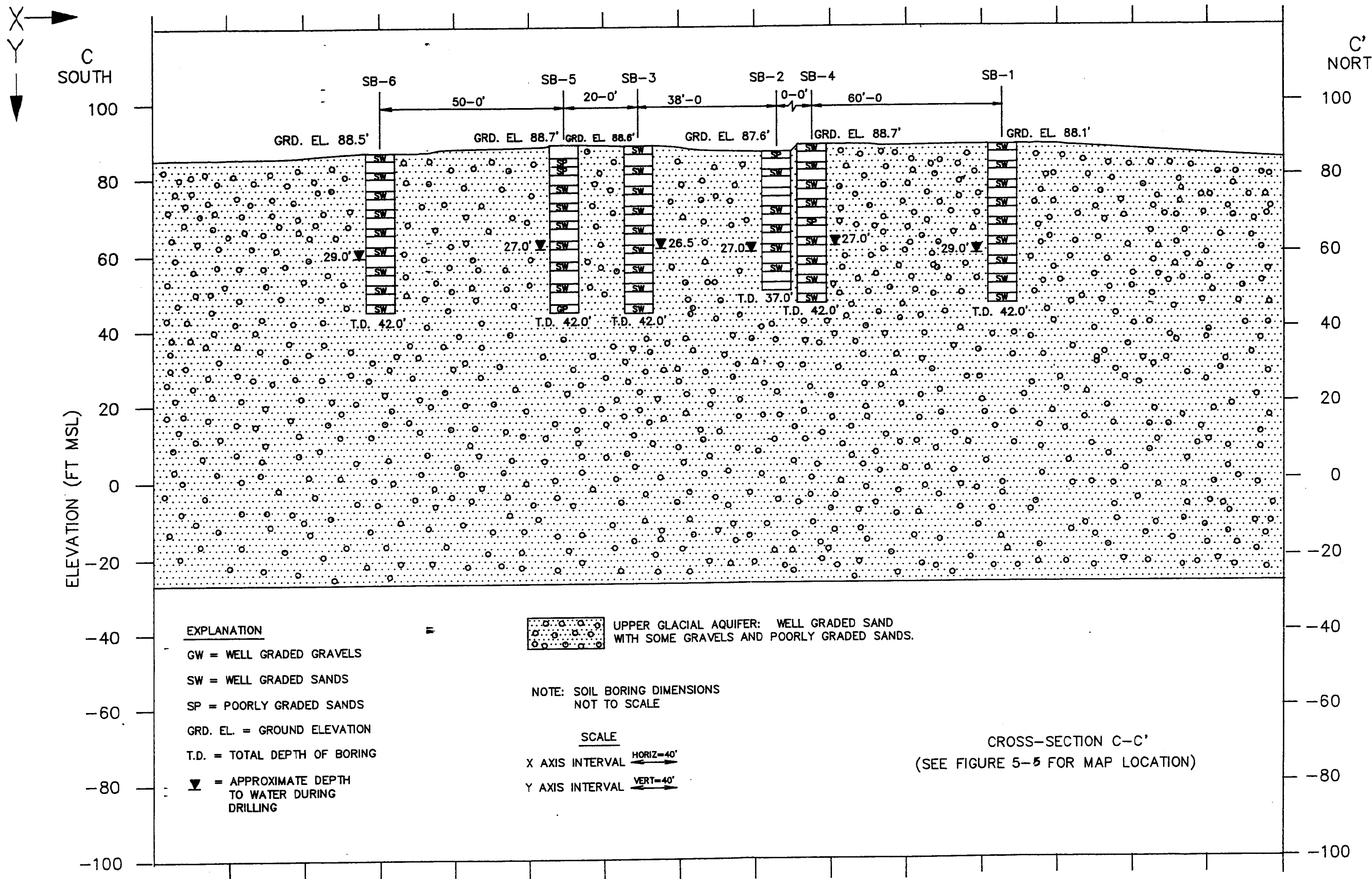
FIG NO. 5-7 00
CIRC-P.DWG 11X17



EXPLANATION

GW = WELL GRADED GRAVELS

SW = WELL GRADED SANDS

SP = POORLY GRADED SANDS

GRD. EL. = GROUND ELEVATION

T.D. = TOTAL DEPTH OF BORING

▼ = APPROXIMATE DEPTH TO WATER DURING DRILLING

▨ UPPER GLACIAL AQUIFER: WELL GRADED SAND WITH SOME GRAVELS AND POORLY GRADED SANDS.

NOTE: SOIL BORING DIMENSIONS NOT TO SCALE

SCALE

X AXIS INTERVAL HORIZ=40'

Y AXIS INTERVAL VERT=40'

CROSS-SECTION C-C'
(SEE FIGURE 5-5 FOR MAP LOCATION)

NOTE:

1. SOILS WERE CLASSIFIED BASED ON VISUAL OBERVANCE IN THE FIELD IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS).
2. BLANK AREAS WITHIN THE STRATIGRAPHIC COLUMNS REPRESENT FOOTAGE FOR WHICH NO GEOLOGIC INFORMATION WAS OBTAINED.

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED

DEPT 940 DR DSW
DATE ____ CH ____
SCALE NONE
APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

GEOLOGIC CROSS SECTION C – C'
SB-6, SB-5, SB-3, SB-2, SB-4, AND SB-1

EPA
8310.068

FIG. NO. 5-8 00

CIRC-R.DWG 11X17

which have a thickness ranging from 70 to 80 feet. The Upper Glacial Aquifer was extensively sampled at the Circuitron Corporation Site and is described in greater detail in Section 5.3.3.

The contact between the Upper Glacial Aquifer and the Magothy Formation is irregular due to the various periods of erosion of the Cretaceous sediments. The surface of the Magothy in the vicinity of the site is characterized by a broad north-south trending valley which originates between moraine deposits corresponding to topographic highs known locally as Half Hollow Hills and Manneto Hills. This broad valley is also reflected at the surface and generally follows the direction of Route 110. On a scale in which the site geology and hydrogeology can be evaluated, however, the irregularity of the contact is not appreciable, that is, it is somewhat uniform.

Other Formations - There are other formations which should be included in a complete discussion of Long Island geology and hydrogeology, however they are not important in the vicinity of the site. The Manneto Gravel is a highly permeable formation but is largely situated above the water table. It is of Tertiary Pliocene Age and its extent is limited to areas north of the site. The Jameco Gravel is a sand and gravel aquifer which overlies the Magothy in Kings, Queens and parts of southern Nassau and Suffolk County. The Gardiners Clay, an interglacial marine deposit of Sangamon age, overlies the Magothy aquifer south of the site where it pinches out. The Gardiners Clay overlies the Jameca where present and constitutes a confining layer for it (McClymonds and Franke, 1972, p. E5).

5.3.3 Site-Specific Subsurface Investigation

During the subsurface soil investigation, soil samples were taken to a depth of 100 feet. Grain size distribution analyses were performed on several of these soil samples. Figure 5-5 shows the three geologic cross-sections used to study the site-specific geology. Figures 5-6, 5-7 and 5-8 illustrate cross-sections A-A', B-B' and C-C', respectively. These cross sections were prepared using the geological information available in the soil boring and well boring logs of Appendix A.

Two units were encountered during the subsurface soil investigation. The upper unit extends to a depth of between 72 and 80 feet and is interpreted to be the outwash deposits of the Upper Glacial aquifer. The lower unit extends beyond that depth and has been interpreted to be sediments of the Magothy aquifer. The contact is characterized by subtle changes in grain size distribution and sorting of the sands found in both units. No low permeability or confining units were encountered.

The Upper Glacial aquifer extends from the surface to a depth of between 72 and 80 feet. It is generally described as a moderately to poorly sorted sand and gravel. The color is usually a uniform tan with occasional rust discoloration. The

TABLE 5-1

CIRCUITRON CORPORATION SITE

GRAIN SIZE DISTRIBUTION

DEPTH	BORING	GRAVEL (%)	COARSE SAND (%)	MEDIUM SAND (%)	FINE SAND (%)	SILT AND CLAY (%)
5'-7'	MW-1D	9.54	10.4	48.7	29.2	2.19
10'-12'	MW-3D	24.70	17.4	36.2	20.4	1.31
15'-17'	MW-2D	35.60	18.7	32.4	11.0	2.31
15'-17'	MW-4D	19.50	22.8	40.2	15.1	2.47
25'-27'	MW-2D	23.70	14.8	36.1	22.6	2.86
25'-27'	MW-4D	26.40	16.2	29.9	26.4	1.13
30'-32'	MW-1D	10.20	14.6	43.4	31.3	0.73
30'-32'	MW-3D	31.20	16.7	37.3	14.3	0.47

Notes:

1. The gravel particle size is greater than 4.75 mm.
2. The coarse sand particle size is greater than 2 mm and less than 4.75 mm.
3. The medium sand particle size is greater than 0.425 mm and less than 2 mm.
4. The fine sand particle size is greater than 0.075 mm and less than 0.425 mm.
5. The silt and clay particle size is less than 0.075 mm.
6. The numbers presented show the percentage by weight of each type of soil in the particulate soil sample.

McClymonds, 1972, p. F39-F42). That which is discharged to streams causes not only an increase in the percentage of direct runoff to streams, but also results in the loss of recharge to the groundwater reservoir that would have occurred under natural conditions.

5.5 HYDROGEOLOGY

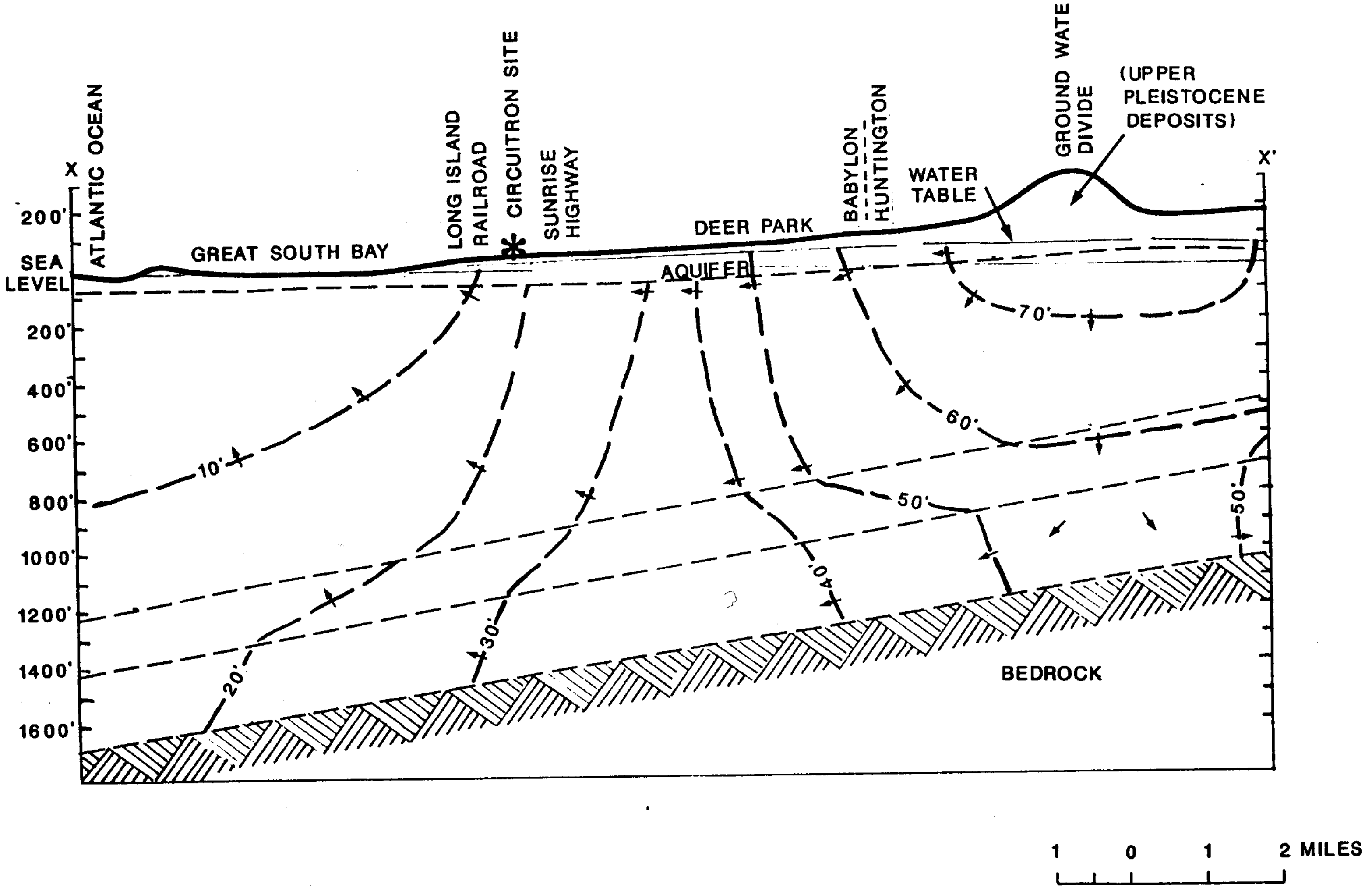
The hydrogeology of Long Island has been widely studied due to the importance of the groundwater reservoir for water supply. Many studies focus on problems such as water table decline and degradation of water quality due to the activities of man. Withdrawal due to pumpage has caused a decrease in water levels and salt water encroachment particularly on western Long Island. Widely used waste water disposal practices such as cesspools and septic tanks have polluted the water table aquifer throughout Long Island resulting in the abandonment of many wells in the Upper Glacial Aquifer. The introduction of sewer systems to alleviate the contamination problem has reduced recharge to the groundwater reservoir, which has contributed to water table decline and salt water encroachment (Franke and McClymonds, 1972, p. F37).

5.5.1 Groundwater Level Measurements

An understanding of groundwater flow direction is crucial in an effort to predict the effects of the introduction of contaminants to the groundwater reservoir. Studies have shown that the natural velocity and direction of groundwater movement are the primary means of longitudinal contaminant dispersion (Perlmutter and Lieber, 1970, p. G47). The movement of groundwater within the aquifers is governed by hydraulic gradients. Water flows from areas of higher hydrostatic head to areas of lower hydrostatic head in the direction of the steepest gradient.

A diagram illustrating flow can be prepared by plotting lines of equal head (equipotential lines) which can be measured from wells or inferred from stream and sea levels. Flow lines showing the path of the groundwater can than be drawn at right angles to the equipotential lines, assuming that the medium is homogenous and isotropic relative to the permeability characteristics. Figure 5-9 illustrates generalized groundwater flow patterns in the area. The figure shows a groundwater divide in the middle of the island beneath the terminal moraines. Near the divide, water moves downward through the Upper Glacial Aquifer into the Magothy and Raritan Formations. The vertical components of flow decrease with increasing distance both north and south of the divide, where flow becomes nearly horizontal. Near the shorelines the flow is reversed and becomes upward from the deeper aquifers to the surface (Soren and Cohen, 1971, p. 15-16).

Although flow in the upper glacial aquifer is shown to be virtually two dimensional in the horizontal direction there is also discharge to streams resulting locally in three dimensional



EXPLANATION

— — 40' — — TRACE OF EQUIPOTENTIAL SURFACE

← DIRECTION OF GROUND WATER FLOW ESSENTIALLY IN PLANE OF SECTION

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CIRCUITRON CORPORATION SITE

FIGURE 5-9
HYDRAULIC PROFILE OF LONG ISLAND IN THE BABYLON-ISLIP AREA

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flow or flow lines which deviate from the general trend. In fact, groundwater contributes 90-95% of the total stream flow on Long Island (Franke and McClymonds, 1972, p. F24-F26). The Circuitron Corporation Site is located in the area between the groundwater divide and the southern shore and is more than three miles from the nearest stream. Therefore, the predominant flow direction is two dimensional and horizontal in the south-southeast direction.

Several rounds of water level measurements were obtained from the five existing and fourteen newly installed monitoring wells at the site to determine the site specific groundwater flow direction.

Table 5-2 presents all the water levels recorded at the site. The water table, determined from measurements in the shallow wells (MW-1S through MW-7S and MW-8 through MW-12), ranges from 23 to 27 feet below the ground surface. There has been an approximate 3-foot rise in the water table elevation from May to December, with the majority of this rise coming between May and July of 1989. Precipitation records showed that an unusually heavy amount of rainfall occurred on Long Island during that time period.

Table 5-2 also shows that the water levels in the Upper Glacial aquifer differ only slightly from the water levels in the Magothy aquifer. This is consistent with the information from the well borings, whereby no low permeability zones were found above the maximum depth of the deep wells at approximately 100 feet below the surface. This suggests limited vertical groundwater movement near the top of the water table in the vicinity of the site, which is consistent with the information discussed previously that groundwater flow near the surface of the water table in this area of Long Island is primarily horizontal.

Figure 5-10 presents the water level elevations in the shallow wells (Upper Glacial aquifer) and the deep wells (Magothy aquifer) recorded on December 11, 1989. This figure shows that the direction of groundwater flow, both in the Upper Glacial and Magothy aquifers, is to the southeast, which is consistent with the regional information presented previously.

The hydraulic gradient in the Upper Glacial aquifer (determined from the shallow wells) is 0.0015 ft/ft. The hydraulic gradient in the Magothy aquifer (determined from the deep wells) is 0.0026 ft/ft. These are both minimal gradients, which is typical of highly permeable materials such as the sands and gravels existing beneath the site. The maximum water level differential from the most northern wells (MW-1S and MW-1D) to the most southern wells (MW-7S and MW-7D) is approximately one foot.

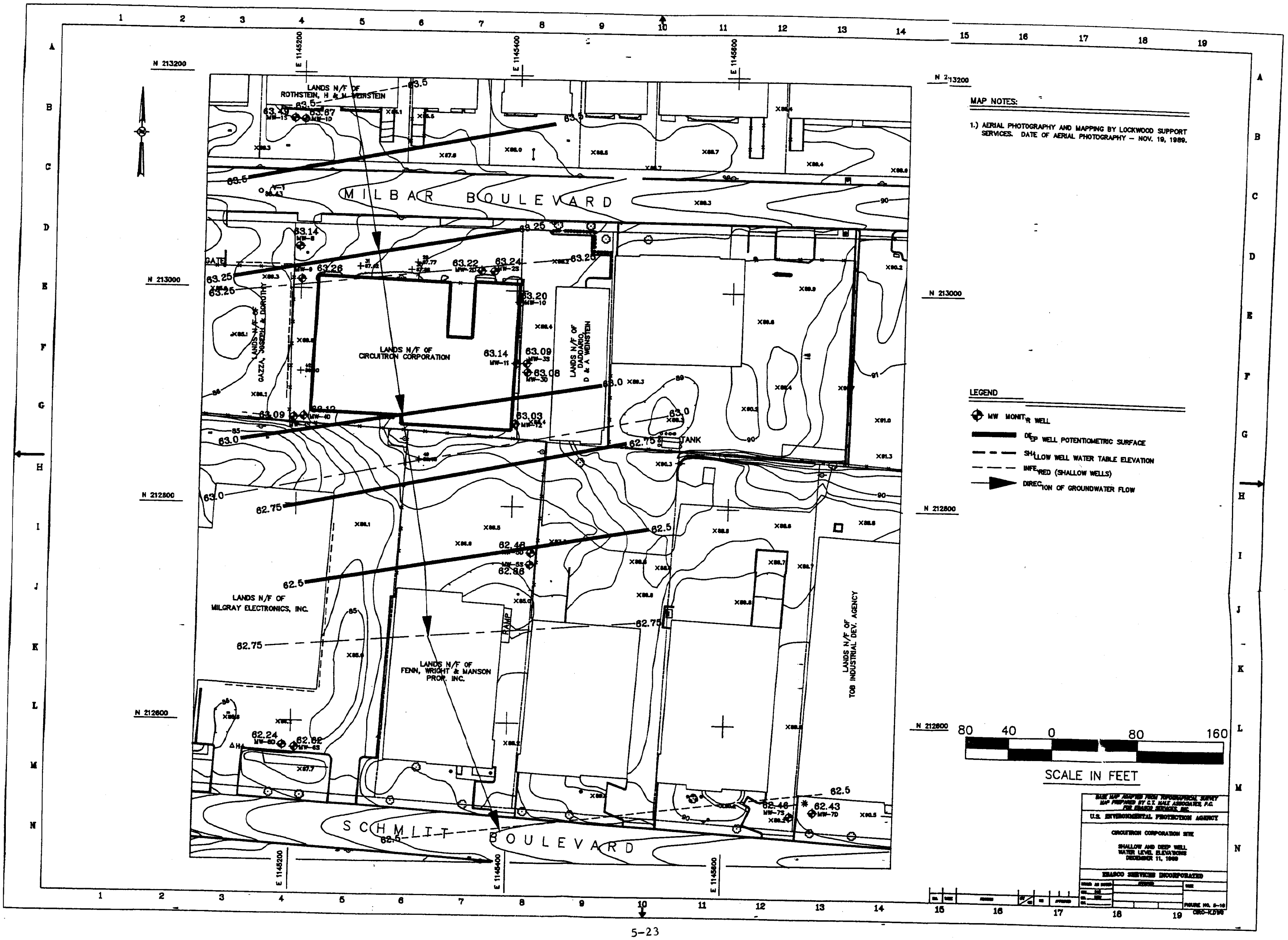
TABLE 5-2

CIRCUITRON CORPORATION SITE

WATER TABLE DEPTHS AND ELEVATIONS(1)

WELL	ELEVATION TOP OF RISER	05/18/89		07/10/89		09/06/89		10/01/89		10/10/89		10/26/89		12/11/89	
NUMBER	(FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)	DEPTH (FEET)	ELEVATION (FT MSL)
MW-1S	86.82					23.78	63.04	22.31	64.51	23.31	63.51	22.94	63.88	23.33	63.49
MW-1D	86.94					23.90	63.04	23.39	63.55	23.43	63.51	23.09	63.85	23.27	63.67
MW-2S	88.44					25.48	62.96	25.21	63.23	25.35	63.09	24.82	63.62	25.20	63.24
MW-2D	88.22					25.37	62.85	24.84	63.38	25.30	62.92	24.78	63.44	25.00	63.22
MW-3S	88.15					25.32	62.83	22.76	65.39	25.12	63.03	24.69	63.46	25.06	63.09
MW-3D	88.37					25.67	62.70	25.28	63.09	25.48	62.89	25.07	63.30	25.29	63.08
MW-4S	86.71					23.85	62.86	23.75	62.96	23.85	62.86	23.34	63.37	23.62	63.09
MW-4D	86.79					24.00	62.79	23.75	63.04	23.67	63.12	25.39	63.40	23.67	63.12
MW-5S	86.39					23.83	62.56	23.49	62.90	23.57	62.82	23.27	63.12	23.53	62.86
MW-5D	86.75					24.21	62.54	23.68	63.07	24.12	62.63	23.50	63.25	24.27	62.48
MW-6S	86.09					23.58	62.51	23.66	62.43	23.76	62.33	23.42	62.67	23.47	62.62
MW-6D	86.19					23.50	62.69	23.48	62.71	23.54	62.65	23.18	63.01	23.95	62.24
MW-7S	89.51					27.55	61.96	27.19	62.32	27.33	62.18	26.77	62.74	27.05	62.46
MW-7D	90.06					27.94	62.12	27.70	62.36	27.47	62.59	27.39	62.67	27.63	62.43
MW-8	86.16	25.80	60.36	23.19	62.97					23.30	62.86			23.02	63.14
MW-9	86.94	26.50	60.44	23.88	63.06					23.96	62.98			23.68	63.26
MW-10	88.68	28.40	60.28	25.61	63.07					25.85	62.83			25.48	63.20
MW-11	88.42	28.07	60.35	25.51	62.91					25.54	62.88			25.28	63.14
MW-12	88.79	28.50	60.29	25.93	62.86					25.97	62.82			25.76	63.03

Note: (1) Depth refers to depth below top of riser.



BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

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CIRCUITRON CORPORATION SITE

SHALLOW AND DEEP WELL
WATER LEVEL ELEVATIONS
DECEMBER 11, 1989

EBASCO SERVICES INCORPORATED

FIGURE NO. 5-10
CIRC-K.DWG

5.5.2 Aquifer Hydraulic Conductivity

Differences in potentiometric head, hydraulic conductivity and the effective porosity of an aquifer determine the groundwater velocity. Hydraulic conductivity is often given in units of gallons per day per square foot (gpd/ft^2) which is defined as the flow through a porous material in gallons per day through a cross sectional area of 1 square foot under a gradient of 1 at 60°F (Fetter, 1980, p. 73-74). Transmissivity is a measure of the amount of water that can be transmitted horizontally by the full saturated thickness of the aquifer under a gradient of 1 and is given as the product of the hydraulic conductivity and the saturated thickness of the aquifer (Fetter, 1980, p. 95). The units for transmissivity are given in gallons per day per foot (gpd/ft) which is the amount in gallons flowing through a vertical strip of the aquifer with a length equal to the thickness of the aquifer and a width of one foot under a gradient of 1.

The water transmitting properties of Long Island have been widely studied and are important for a clear understanding of the aquifers in the area of the site (Upper Glacial aquifer and Magothy aquifer). Values for these properties, such as those given below, can be calculated using specific capacity data from wells. For the Upper Glacial aquifer, in the vicinity of the site, the following estimates have been made: the average hydraulic conductivity is equal to 2,000 gpd/ft^2, the average saturated thickness of the aquifer is equal to 50 feet, and the average transmissivity of the aquifer is equal to 100,000 gpd/ft (McClymonds and Franke, 1972, pl. 1). For the Magothy aquifer, in the vicinity of the site, the following estimates have been made: the average hydraulic conductivity is equal to 400 gpd/ft^2, the average saturated thickness of the aquifer is equal to 700 feet, and the average transmissivity of the aquifer is equal to 280,000 gpd/ft (McClymonds and Franke, 1972, pl. 2).

Aquifer permeabilities vary within the aquifer medium depending on the heterogeneity of the aquifer material. While the transmissivity of an aquifer is almost always associated with the horizontal direction or the direction of flow, the hydraulic conductivity of an aquifer can also be calculated in the vertical direction. Vertical conductivities are usually less than horizontal conductivities due to the nature of stratification or bedding that affect the degree of anisotropy (with respect to permeability) at a given location within the medium. Particularly in the Magothy Formation, beds and lenses of silt and clay impede the vertical movement of water; on the contrary, groundwater moves readily through the coarse outwash deposits of the Upper Glacial aquifer (Soren and Cohen, 1971, p. 1) where stratification is less apparent. Some estimates for the hydraulic conductivity of the Upper Glacial aquifer are 390 ft/d in the horizontal to 160 ft/d in the vertical direction (1:2.4) (Aronson and Others, 1983, p. 25); for the Magothy aquifer 66 ft/d in the horizontal to 6 ft/d in the vertical direction (1:11) (Aronson and Others, 1983, p. 25). Although these data vary widely, they illustrate that the relative vertical permeabilities are much lower in the Magothy aquifer.

5.5.3 Groundwater Flow and Velocity

The regional information on the site-specific hydraulic gradients and the hydraulic conductivity discussed in Sections 5.5.1 and 5.5.2, respectively, can be used to estimate the velocity and quantity of groundwater flow beneath the Circuitron Corporation Site. The general equation for groundwater velocity is presented below:

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

where V = groundwater velocity (ft/day)
K = hydraulic conductivity (ft/day)
i = hydraulic gradient (ft/ft)
n = effective porosity

For the Upper Glacial aquifer, the hydraulic gradient equals 0.0015 ft/ft and the hydraulic conductivity equals 2000 gpd/ft^2 or 267 ft/day. Assuming an effective porosity of 0.25, the groundwater velocity is estimated to approximately 1.6 ft/day.

For the top of the Magothy aquifer the gradient equals 0.0026 ft/ft and the hydraulic conductivity equals 400 gpd/ft^2 or 53 ft/day. Assuming the same effective porosity of 0.25, the groundwater velocity is estimated to approximately 0.5 ft/day.

The quantity of groundwater flowing beneath the site can be calculated from the following equation:

$$Q = KiA$$

where Q = groundwater flow (gallons/day)
K = hydraulic conductivity (gpd/ft^2)
i = hydraulic gradient (ft/ft)
A = cross-sectional area (ft^2)

In this analysis, the cross-sectional area A equals the product of the aquifer's saturated thickness times the width of the flow channel perpendicular to the hydraulic gradient. The width of the flow channel perpendicular to the hydraulic gradient underneath the site is aproximately 250 ft.

For the Upper Glacial aquifer, the saturated thickness equals the depth to the top of the Magothy (approximately 75 ft) minus the depth to the top of the water table (approximately 25 ft) or 50 ft. The cross-sectional area therefore equals 12,500 ft^2.

For the Magothy aquifer, the cross-sectional area that will be evaluated equals the depth penetrated in this investigation. This equals the maximum depth of the deep wells (approximately 100 ft) minus the depth to the top of the aquifer (approximately 75 ft) or 25 ft. The cross-sectional area is therefore 6,250 ft^2.

In the Upper Glacial aquifer, the estimated groundwater flow beneath the site is approximately 37,500 gallons per day. The estimated flow in the top 25 feet of the Magothy aquifer underneath the site is 6,500 gallons per day. From this analysis, it appears that more groundwater moves through the Upper Glacial aquifer underneath the site than moves through the top 25 feet of the Magothy Aquifer beneath the site.

5.5.4 Groundwater Use

Groundwater is the main source of water supply on Long Island. Within a 3-mile radius of the site, it is the sole source of water supply through the development of the Magothy and Upper Glacial aquifers. Several water companies serve this area, East Farmingdale Water District among them. There are 24 supply wells within a 3-mile radius of the site. Of these, all are screened in the Magothy aquifer, except for one which is reported to be screened in the Upper Glacial aquifer. Well depths range from 150 feet to over 700 feet. The supply wells located closest and downgradient of the site belong to the East Farmingdale Water District, Wellfield #2 on Gazza Boulevard. There are 2 wells screened in the Magothy aquifer at depths of 268 and 585 feet. The shallower of the two was taken out of service in 1974 due to elevated levels of trichloroethane. The other well was sampled as part of this investigation.

6.0 NATURE AND EXTENT OF CONTAMINATION

6.1 INTRODUCTION

This section presents a discussion of the concentrations and spatial distributions of the chemical compounds detected at the Circuitron Corporation Site. Potential problem areas were identified based on previous SCDHS and USEPA field investigations (EA, 1987). The Ebasco sampling program (Ebasco, 1989c) was designed to focus on the areas that seemed to require further site investigation and characterization. Tables summarizing the detected compounds or "hits" in the different matrices and maps illustrating the vertical and horizontal extent of the "contaminants of concern", as identified in Section 8.0, are also provided.

All the data used in the study of the nature and extent of contamination at the Circuitron Corporation Site have been obtained from the analyses of the samples by USEPA approved laboratories, have been validated by USEPA and consist of:

(a) Analytical results obtained by SCDHS and USEPA in previous field investigations;

(b) Analytical results obtained by USEPA during their 1989 field investigations; and,

(c) Analytical results obtained by Ebasco during the 1989 field investigations.

The final RI report has been based on the entire volume of analytical results obtained during the SCDHS, USEPA and Ebasco field investigations.

6.2 POTENTIAL SOURCES OF CONTAMINATION

Site history and previous investigations conducted by SCDHS and USEPA indicate that there are several potential sources of contamination at the Circuitron Corporation Site. These sources include the above and below ground tanks, the authorized and unauthorized leaching pools and the several spills and other discharges on and through the floor of the building. All these structures and areas are shown on Figure 1-3.

In order to further investigate the potential sources of contamination and evaluate their adverse impact on the soil and groundwater of the area of concern, the following activities were performed:

a. USEPA activities

- Soil, sediment/sludge, liquid and aqueous sampling of the underground tanks and unauthorized leaching pools;
- Air sampling in the building; and,
- Wipe sampling of the floors and the interior walls of the building.

b. Ebasco activities

- Surface soil sampling;
- Subsurface soil sampling (six soil borings and four deep well borings);
- Sediment sampling of the two leaching pools beneath the parking lot, the two sanitary cesspools and the three storm drains on the western portion of the site;
- Aqueous sampling of three storm drains; and,
- Groundwater sampling of the five existing Circuitron wells (1 round), the 14 newly installed monitoring wells (2 rounds), one private and one municipal well (1 round).

The analytical results from these sampling activities were used to determine spatial extent of soil and groundwater contamination at the site. This data was considered along with historical data to evaluate potential sources of contamination and potential remediation needs.

6.3 BUILDING INVESTIGATIONS

6.3.1 Air

Table 6-1 summarizes the organic and inorganic analytical air results from the Circuitron building conducted by the USEPA on May 4, 1989. Up to eight volatile analytes were quantified in the air samples. Carbon tetrachloride and 1,1-dichloroethane were present at the greatest concentration relative to the other volatile analytes (1.6, 6.79 and 4.11 ug/m^3 in the plating, scrubber room and office area, respectively). It was anticipated that the greatest concentration of volatile organics would be present in the plating room, due to the presence of underground leaching pools. However, review of Table 6-1 shows that the sequence of volatile contamination in ascending order was plating room - office area - scrubber room. Furthermore, the greatest number of volatile analytes was present in the scrubber room. These results may be due to ventilation differences in the building or may suggest that there are

TABLE 6-1

CIRCUITRON CORPORATION SITE

BUILDING AIR SAMPLING ANALYTICAL RESULTS

Analyte	Drilling Room	Plating Room	Scrubber Room	Office Area
A. ORGANICS (Units are ug/m^3)				
1,1-dichloroethane		1.60 NJ	6.79 NJ	4.11 N
Carbon tetrachloride		1.60 NJ	6.79 NJ	4.11 N
Hexane		0.18 NJ	2.90 NJ	0.16 NJ
N-octane		0.18 NJ	2.90 NJ	0.10 NJ
1,2-dichloroethane		ND	ND	0.10 NJ
Benzene		ND	ND	0.16 NJ
Cyclohexane		ND	ND	0.16 NJ
Toluene		ND	ND	0.14 NJ
B. INORGANICS (Units are ug/m^3)				
Aluminum	ND	ND	1.69	ND
Antimony	ND	0.04 J	ND	ND
Copper	0.64 J	ND	ND	ND
Magnesium	ND	0.77	1.06	0.73
Manganese	ND	0.01 J	0.02 J	0.02 J
Cyanide	ND	ND	ND	ND

Notes: 1) Data qualifiers: "NJ" - presumptive identification, estimated value; "N" - presumptive identification; "J" - estimated value

2) ND - not detected

3) Sampling date: May 4, 1989

Source: USEPA, 1990

TABLE 6-2

CIRCUITRON CORPORATION SITE

COMPARISON OF OBSERVED AND BACKGROUND AIR VOLATILE CONCENTRATIONS

Contaminant	On-Site Range1/	Median U.S. Background1/ Indoor	Outdoor
1,1-dichloroethane	1.60-6.79	2/	2/
Carbon tetrachloride	1.60-6.79	2/	0.77
Hexane	0.16-2.90	2/	2/
N-octane	0.16-2.90	2.40	2/
1,2-dichloroethane	ND-0.10	2/	1.55 3/
Benzene	ND-0.16	10.00	5.31
Cyclohexane	ND-0.16	2.50	2/
Toluene	ND-0.14	6.30	7.19

Notes: 1/ Concentrations are in ug/m^3
2/ No value reported
3/ Value reported in average concentration since the median concentration was zero.

Source: Mc Clymonds, N.E. and O.L. Franke, 1972.

additional sources of contamination in the scrubber or office areas. No volatiles were detected in the drilling and silkscreening room.

The reported concentrations should be interpreted in the context of the expected background levels. Shah and Singh (1988) have developed a national volatile organic database for indoor and outdoor air. This report provides concentration data on the average, median and ranges (as quatriles) for 66 volatile organics in outside air and 35 volatile organics in inside air. Table 6-2 compares the observed ranges of the detected volatile analytes to the median concentrations for both indoor and outdoor air. Although the data base from Shah and Singh (1988) does not report information for all the volatile analytes observed at the Circuitron Corporation Site, it does show that the observed concentration ranges are comparable to, or below the U.S. background median concentrations. Based upon these results, it does not appear that the underground storage tanks in the building are a source of volatile organic compounds in the air under the current undisturbed condition.

Up to five inorganic analytes were quantified in the air samples although no more than three were present in any given sample. Aluminum and magnesium were present in the scrubber room at the greatest concentrations (1.69 ug/m^3 and 1.06 ug/m^3, respectively) relative to the other inorganic analytes. Cyanide was not detected in any of the samples. No background concentrations for inorganics are available for comparison to the observed results. This will be further examined in the discussion of the wipe analyses and underground structures.

6.3.2 Building Floors and Walls

The USEPA activities conducted prior to the performance of the Ebasco field investigations included the collection of wipe samples from the interior of the Circuitron building. A total of 16 wipe samples were obtained by wiping areas of 0.25 m^2 from the interior walls and floors of the buildings. The wipe sampling locations are shown on Figure 2-2 of Section 2.0.

Table 6-3 summarizes the inorganic analytical results from the building wipes. Up to 19 analytes were detected in the samples. Review of this table shows several trends. First, the floor wipes were more contaminated both on a concentration basis and with frequency of hits relative to the wall wipes. This was expected due to the abundance of debris on the floors. Second, the greater concentrations of aluminum, calcium, magnesium potassium, and sodium in the floor samples relative to the wall samples can be attributed to the release of these metals from the cracked and unsealed cement floors. These analytes were also present at high concentrations in the floor samples in the renovated office areas. These results can be attributed to the spackling compound dust which was common in the office area. Third, there were high concentrations of iron, lead and copper in the floor wipes from the plating and scrubbing rooms. It was

TABLE 6-3

CIRCUITRON CORPORATION SITE

BUILDING WIPE SAMPLES
INORGANIC ANALYTICAL RESULTS

	DRILLING ROOM		PHOTO ROOM	PLATING ROOM				SCRUBBER ROOM				OFFICE		
Analyte	Floor	Wall	Floor	Floor	Floor	Wall	Wall	Wall	Floor	Floor	Wall	Floor	Floor	Wall
Aluminum	8.172J	1.608J	15.748J	12.620J	62.08J	0.740J	2.824J	0.500J	14.544J	11.724J	8.336J	14.132J	22.888J/12.496J	0.048
Antimony	ND	ND	ND	0.008J	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND
Arsenic	0.012J	0.0008J	0.012J	0.008J	0.036J	ND	0.004J	ND	0.012J	0.004J	0.004J	0.012J	ND/R	ND
Barium	0.536	0.052	2.264	0.160	ND	ND	0.160	0.028	0.484	0.208	0.076	1.260	6.092/0.296	0.060
Cadmium	0.016	ND	0.048J	0.024J	0.044J	ND	0.012	R	0.056	0.068	0.008	0.044J	0.104J/0.064J	ND
Calcium	45.28J	6.484J	57.72J	187.32J	265.40J	4.168J	14.706J	4.984J	48.00J	43.04J	24.140J	148.960J	164.88J/112.36J	1.236
Chromium	0.080J	R	0.104J	0.132J	0.024J	0.024J	0.104J	R	0.256J	0.308J	0.065J	0.152J	0.316J/0.208J	ND
Cobalt	0.020	ND	0.008J	0.012	0.016	ND	ND	ND	0.012	0.012	0.008	0.052J	0.196J/0.128J	ND
Copper	4.436J	1.372J	5.436J	475.20J	76.28J	6.116J	3.176J	0.456J	25.872J	69.48J	6.148J	13.120J	28.268J/21.532J	0.052
Iron	26.948	2.188J	29.296J	47.40J	98.24J	3.008J	35.392J	1.240J	74.40J	14.672J	14.264J	37.412J	15.20J/254.08J	0.344
Lead	2.032J	2.016	6.180J	62.10J	145.00J	0.936J	10.62J	0.196J	16.328J	233.30J	32.08J	7.184J	7.82J/5.49J	0.036
Magnesium	7.924J	0.748	11.692J	7.212J	22.848J	0.520J	2.104J	1.272J	12.940J	11.320J	11.804J	29.956J	40.36J/23.46J	ND
Manganese	0.288J	0.032J	0.548J	0.312J	0.692J	ND	0.023J	0.020J	0.480J	0.352J	0.280	0.409	1.633/1.228J	ND
Nickel	0.148J	R	0.148	R	0.688J	R	0.176	R	0.38J	1.208J	0.128J	0.728J	12.84J/9.412J	ND
Potassium	13.600J	0.680	3.160	31.20	45.60	0.640	1.80	0.520	8.80	7.92	1.640	11.44	12.40/21.20	0.24
Silver	0.048	R	0.432	0.036	0.132	R	0.688	R	0.070	R	R	.003	0.056/0.044	R
Sodium	15.348	1.676	3.20J	20.588J	23.436J	1.216	2.796	0.984	16.772J	9.86	2.268	0.032J	21.928/17.632J	1.332
Zinc	0.968	0.076J	6.46	1.38J	1.528J	0.368J	4.396J	0.108J	2.236J	4.108J	0.448J	4.032J	4.764J/3/860J	R
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.031/0.024	ND

Notes:
1) Units are mg/m^2
2) Data qualifiers: "J" - estimated value; "R" - data unusable
3) ND: Not detected
4) Sampling date: May 4, 1989

Source: USEPA, 1990

noted that these areas contained metallic debris and oil stains. Although the visible debris was removed as part of the emergency response efforts, it appears that residual contamination of metals remains in these areas.

Tables 6-1 and 6-3 can be compared to determine whether the inorganic analytes identified in the air samples can be attributed to the dust associated with the floors or walls in the building. For example, due to their large relative concentrations in the floor wipes, if there is dust resuspension in the plating room, one would expect to see high concentrations of calcium, aluminum, copper, lead, iron and sodium in the air samples from this room. However, these analytes were not identified in the air samples from these rooms (see Table 6-1). Similar results were obtained when the results from the other rooms were compared. Thus, it appears that the inorganic analytes associated with the floors are not a source of contamination for the overlying air when there was no floor disturbance.

6.3.3 Underground Structures

The USEPA underground structure investigation in the building entailed soil, sediment/sludge, liquid and aqueous sampling of the underground tanks and buried unauthorized leaching pools.

6.3.3.1 Sediment/Sludge, Liquid and Aqueous Material

Volatile Compounds

The volatile organic compounds in the liquids and sediments from the underground tanks are shown in Table 6-4 and their locations are illustrated on Figure 2-1 of Section 2.0. Up to ten chlorinated and non-chlorinated aromatic and non-aromatic hydrocarbons were quantified in these samples. Very high concentrations of 1,1,1-trichloroethane and methylene chloride were present in sediments and aqueous samples from tank UT-2 (1,400,000 ug/kg, 5,800,000 ug/kg) and tank UT-3 (13,000 ug/l, 67,000 ug/l), respectively. Both these tanks are located in the southwest corner of the scrubber room and were likely receiving the waste solvent from the scrubbing operation.

The analytical results from tank UT-3 are interesting in that the two aqueous samples differed in their concentrations of volatile organics and the types of analytes detected. The upper aqueous layer was more contaminated than the lower layer; concentrations of 1,1,1-trichloroethane and methylene chloride were 70 and 580 times less concentrated, respectively, in the lower layer than in the upper layer. Both layers were analyzed by the same laboratory and there is good duplication in the bottom layer results so that the data quality is not in question. However, if this was a true aqueous sample, the chlorinated solvents with their greater specific gravity relative to water would be present in the lower phase of the biphasic sample.

TABLE 6-4

CIRCUITRON CORPORATION SITE

VOLATILE ORGANIC COMPOUNDS IN THE SEDIMENT/SLUDGE, LIQUID AND AQUEOUS MATERIAL CONTAINED IN THE UNDERGROUND STRUCTURES 1/

	LOCATION	UT-1	UT-2	TOP LAYER UT-3	BOTTOM LAYER UT-3	UT-3	UT-4	B-1	UT-5
	SAMPLE ID	1T	2T	3T	3T	4T	5T	6T	11T
COMPOUND	MATRIX	AQUEOUS	SEDIMENT	AQUEOUS	AQUEOUS 2/	SEDIMENT	AQUEOUS	AQUEOUS	LIQUID
Acetone		140.0J	-	-	-	-	-	-	-
1,2-Dichloroethane		1.8	-	-	-	-	-	-	-
1,1,1-Trichloroethane		13.4	1400000J	13000J	210J/160J	320000J	3.8	13000	-
Methylene Chloride		-	5800000J	67000J	130J/100J	-	-	14000	420000J
Tetrachloroethene		-	-	27000J	-	-	-	-	-
Chloromethane		-	-	-	39J/33J	-	-	-	-
Benzene		-	-	-	-	-	-	-	47000J
Toluene		-	-	-	-	-	-	-	420000J
Ethylbenzene		-	-	-	-	-	-	-	420000J
1,1-Dichloroethane		-	-	-	21J/21J	-	-	-	-

1/ All concentrations in ug/l (aqueous, liquid) or ug/kg (sediment/sludge)

2/ Values shown are for duplicate samples.

\- Sampling dates: February 22 and 23, 1989

Data qualifiers: J - estimated
M - presence of material verified but not quantified

Source: USEPA, 1990

The aqueous samples from tank UT-1 (plating room) and tank UT-4 (office area) also contained 1,1,1-trichloroethane but at concentrations much lower than seen in the other underground tanks. Acetone and 1,2-dichloroethane were also noted in samples from tank UT-1. Intermediate concentrations of 1,1,1-trichloroethane and methylene chloride were present in the aqueous sample from B-1, which is a wastewater basin located adjacent to the laboratory.

The oil-storage tank UT-5 located outside the building contained high concentrations of methylene chloride, benzene, toluene and ethylbenzene. Total volatile concentration in this tank was 0.13%. It should be noted that UT-5 was the only tank sampled that contained benzene, toluene and ethylbenzene.

Semi-Volatile Compounds

The semi-volatile compounds detected in the sediment/sludge, liquids and aqueous samples of the underground tanks are shown in Table 6-5. Up to 11 aromatic and non-aromatic hydrocarbons were quantified in these samples. Four phthalate compounds dominated this fraction. Only one sediment sample from tank UT-2 in the scrubbing room contained detectable semi-volatile compounds.

As was noted in the volatile analyses, the analytical results from the two aqueous phases in tank UT-3 differed in their concentrations and compositions of semi-volatile compounds. Bis(2-ethylhexyl)phthalate and phenanthrene were present in the upper layer but not in the lower layer. The presence of a single polycyclic aromatic hydrocarbon (PAH) appears to be spurious. For example, if this tank had received any waste oils from the machinery there would be other PAHs as well as some alkane compounds present as tentatively identified compounds (TICs).

The aqueous samples from tank UT-1 and tank UT-4 contained low level concentrations of two to three phthalate compounds. However, these aqueous samples also contained TICs, including sulfonamide compounds and unknown hydrocarbons. Intermediate concentrations of phthalates were present in the aqueous sample from tank UT-4. This sample also contained additional phthalates not previously identified along with PAHs and a phenol derivative, and unknown hydrocarbon TICs.

The oil-storage tank UT-5 located outside the building contained high concentrations of naphthalene. This compound is used in the formulation of lubricants and motor fuels and thus could be attributed to oil use and/or disposal at the facility. However, this could be a spurious result since lubricants and fuel oil should contain other PAHs as well as alkane hydrocarbon TICs.

TABLE 6-5

CIRCUITRON CORPORATION SITE

SEMIVOLATILE AND PESTICIDE/PCB COMPOUNDS IN THE SEDIMENT/SLUDGE, LIQUID AND AQUEOUS MATERIAL CONTAINED IN THE UNDERGROUND STRUCTURES 1/

COMPOUND LOCATION SAMPLE ID MATRIX	UT-1 1T AQUEOUS	UT-2 2T SEDIMENT	TOP LAYER UT-3 3T AQUEOUS	BOTTOM LAYER UT-3 3T AQUEOUS	UT-3 4T SEDIMENT	UT-4 5T AQUEOUS	B-1 6T AQUEOUS	UT-5 11T LIQUID
Di-n-butylphthalate	0.6M	2400J	-	-	-	1.0M	20J	-
Bis(2-ethylhexyl)phthalate	2.0M	102000JD	28000J	-	-	11.0	2200	-
Butylbenzylphthalate	-	5800J	-	-	-	0.4M	130	-
Di-n-octylphthalate	-	1800J	-	-	-	-	-	-
Phenanthrene	-	-	46000J	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	1500	791000J
Dimethylphthalate	-	-	-	-	-	-	200	-
Diethylphthalate	-	-	-	-	-	-	390	-
Benzyl alchohol	-	-	-	-	-	-	110J	-
4-Methylphenol	-	-	-	-	-	-	12J	-
2-Methylnaphthalene	-	-	-	-	-	-	16J	-
n-ethyl-4 methyl Benzenesulfonamide	91.0J	-	-	-	-	-	-	-
Sulfanomide	-	-		-	-	500.0J	-	-
Unidentified Sulfanomide	1150.0J	-	-	-	-	-	-	-
Unidentified Sulfanomide	61.0J	-	-	-	-	-	-	-
Unidentified	-	-	-	-	-	250.0J	159-3900J	-
Unidentified	-	-	-	-	-	36.0J	41J	-
Unidentified	-	-	-	-	-	340.0J	-	-
Unidentified	-	-	-	-	-	40.0J	-	-
Unidentified	-	-	-	-	-	41.0J	-	-
Endosulfan II	-	59JN	-	R	-	-	-	-
Gamma - BHC (Lindane)	-	-	120000JD	R	1100J	-	-	-
Alpha BHCF	-	-	-	R	-	0.2	-	-
Alpha Chlorodane	-	-	-	R	-	-	0.009	-
Gamma Chlorodane	-	-	-	R	-	-	0.016	-
4,4'-DDE	-	-	-	R	-	-	-	-
4,4'-DDT	-	-	-	R	-	-	-	-

1/ All concentrations in ug/l (aqueous, liquid) or ug/kg (sediment/sludge)

Data qualifiers: M - presence of material verified but not quantified
J - estimated
N - not confirmed
D - diluted record reported
R - analytical result unusable

Sampling dates: February 22 and 23, 1989

<u>Source</u>: USEPA, 1990

Pesticide/PCB Compounds

The pesticide/PCB compounds in the sediment/sludge, liquid and aqueous samples obtained from the underground tanks are also shown in Table 6-5. A total of five pesticides were identified in these samples; no PCBs were detected. Maximum concentration (120,000 ug/l) of gamma-BHC (Lindane) was identified in the upper aqueous layer from tank UT-3. The analytical results from the lower layer failed QC review due to gross exceedance of holding time so no comparisons between layers can be made. This compound was also detected at lower concentrations in the sediments from tank UT-3. The aqueous samples from tank UT-4 (office area) and the wastewater basin B-1 (near laboratory) contained low levels of alpha-BHC and two isomers of chlordane, respectively. The history of activity at the Circuitron Corporation Site does not support the contention that pesticides would be routinely used. It appears that their presence may be due to disposal by individuals working or having access to the facility.

Inorganic Analytes

The inorganic analytes and cyanide concentrations in the liquids and sludges of the underground tanks are shown in Table 6-6. The two aqueous layers from tank UT-3 were inadvertently combined by the laboratory before analysis so the inorganic analytes characteristic of the two layers can not be determined.

Tanks UT-2 and UT-3 are both located in the scrubber room and are adjacent to each other. Thus, it would be reasonable to expect that they would have relatively comparable results from the inorganic analyses, assuming that the waste disposal did not discriminate between the tanks. The sediment data from Table 6-6 appears to support this assumption, with the exception of the copper, zinc, and cyanide results. However, the variability of the duplicated sample from tank UT-2 would suggest that even the concentrations of copper, zinc and cyanide would be considered comparable.

The aqueous samples contained greater concentrations of inorganics than the sediments, which was expected since metal solutions are used in the plating industry. Significant concentrations of arsenic, chromium, copper, lead, nickel and zinc were found in the sample from the wastewater basin B-1, which received wastewater from the laboratory or other plant operations. The equally high concentrations of sodium and potassium in these samples suggests that many of the metals may be present as their soluble salts. Based upon these results it appears that B-1 received most of the wastewater from the plating operation.

The "oil-storage tank" UT-5 outside the building contained only three detectable metals (iron, lead and silver) but contained high concentrations of cyanide (1,000 ug/l). The combination of

TABLE 6-6

CIRCUITRON CORPORATION SITE

INORGANIC ANALYTES IN THE SEDIMENT/SLUDGE, LIQUID AND AQUEOUS MATERIAL CONTAINED IN THE UNDERGROUND STRUCTURES [1]

	LOCATION SAMPLE ID	UT-1 1T	UT-2 2T/16T	UT-3 3T	UT-3 4T	UT-4 5T	B-1 6T	UT-5 11T
COMPOUND	MATRIX	AQUEOUS	SEDIMENT	AQUEOUS[2]	SEDIMENT	AQUEOUS	AQUEOUS	LIQUID
Aluminum		310.0M	900.0J / 637J	935.0J	686.0J	8400.0	610000.0	-
Antimony		3.0M	12.3 / 30.10	-	-	11.0	35.0	-
Arsenic		-	6.2 / 8.00	7.4	4.2J	4.0M	210.0	-
Barium		97.0M	13.1 / 8.7	80.8	20.4B	98.0M	140.0M	-
Cadmium		-	- / 2.5 J	-	1.6J	315.0M	338.0	-
Calcium		33000.0	2140.0 / 21700.0	56500.0	1770.0	530.0M	120000.0	-
Chromium (Total)		1092.0	R / R	25.5J	R	40.0M	41700.0	-
Cobalt		-	2.0 / -	7.2	-	-	544.0	-
Copper		98600.0	153000.0 / 88100.0	24800.0	34500.0	7000.0	920000.0	-
Iron		4000.0	2440.0J / 1070J	2990.0	1370.0J	8340.0	890000.0	9550J
Lead		6584.0	1460.0 / 1110	1070.0J	2100.0	1154.0	243400.0	85
Magnesium		2400.0	553.0 / 453	5860.0	516.0	16000.0	109000.0	-
Manganese		80.0M	26.8J / 13.5J	313.0J	13.2	744.0	23600.0	-
Mercury		1.7	1.8 / 1.2	4.2	0.28	2.0	-	-
Nickel		587.0	R / R	157.0	R	297.0	24500.0	-
Potassium		5900.0	- / 633	12700.0J	374.0	880.0	70000.0M	-
Silver		40.0M	3.1J / -	184.0J	-	-	30.0M	1335J
Sodium		17000.0J	847.0 / 627	87200.0	1090.0	18000.0BJ	821000.0JB	-
Vanadium		-	- / -	-	-	-	680	-
Zinc		90.0M	761.0 / 470	1120.0	241.0	12500.0	22500.0	-
Cyanide		8.1M	2.15 / 2.70	-	0.55	7.9M	29.5	1000

[1] All concentrations in ug/l (aqueous, liquid) or mg/kg (sediment/sludge)

[2] Bottom and top layers analyzed together

Data qualifiers:
M - presence of material verified but not quantified
J - estimated
E - outside linear calibration
R - analytical result unusable

Sampling date: February 22 and 23, 1989

Source: USEPA, 1990

the comparatively high silver and cyanide concentrations suggests that wastes from the photo room may have been disposed in UT-5.

Underground Tanks as a Contamination Source

The analytical results have shown that the underground tanks at this site contain high concentrations of volatile and semi-volatile organics, inorganics and cyanide. The contents of these tanks were pumped as part of the USEPA emergency response effort, so that they currently do not serve as a contaminant source to the soil or groundwater below the site. However, the construction and integrity of the tank walls and bottoms is not known so historically they may have served as a contaminant source.

6.3.3.2 Soils Beneath the Building

Volatile Compounds

Table 6-7 summarizes the results of the volatile analyses of the four soil samples taken in the building by the USEPA TAT team. The USEPA soil sampling locations are shown on Figure 2-1 of Section 2.0. Only the sample from the unauthorized leaching pool LP-5 in the plating room contained volatile compounds (1,1,1-trichloroethane, methylene chloride and tetrachloroethene). The composition of the volatile compounds detected was comparable to those found in the underground tanks (Table 6-4). However, since the relative concentrations of the compounds differ, it would suggest that the waste from the degreasing operation was discharged predominantly in this pool. Since LP-5 has no bottom, the discharge is capable of percolating down contaminating the soils and eventually the groundwater. The ~~major factor~~ which would control this percolation would be the discharge rate. Since this was an unauthorized leaching pool, the discharge volume, rate and contents were not monitored. Therefore, a quantitative estimate of the potential contribution to the groundwater from the discharge to this pool cannot be exactly determined.

Semi-Volatile Compounds and Pesticide/PCBs

Table 6-8 summarizes the semi-volatile and pesticide/PCB analyses of the four soil samples taken in the building by the USEPA TAT team. One to four phthalate compounds were detected in these samples with the greatest concentrations seen in the soils from the unauthorized leaching pools LP-3 and LP-5. The phthalates present may have been released from the drum and PVC piping leading to the unauthorized leaching pools.

TABLE 6-7

CIRCUITRON CORPORATION SITE

VOLATILE ORGANIC COMPOUNDS IN THE SOIL BENEATH THE BUILDING[1/]

LOCATION SAMPLE ID COMPOUND	LP-4 7T	LP-5 8T	H-1 9T	LP-3 10T
1,1,1-Trichloroethane	-	5900J	-	-
Methylene Chloride	-	4600J	-	-
Tetrachloroethene	-	1400J	-	-

1/ All concentrations in ug/kg

Data Qualifiers: J - estimated.

Sampling date: February 22 and 23, 1989

Source: USEPA, 1990.

TABLE 6-8

CIRCUITRON CORPORATION SITE

SEMIVOLATILE AND PESTICIDE/PCB COMPOUNDS IN THE SOIL BENEATH THE BUILDING[1/]

LOCATION	LP-4	LP-5	H-1	LP-3
SAMPLE ID	7T	8T	9T	10T
COMPOUND				
Di-n-butylphthalate	-	1100J	120J	330J
Bis(2-ethylhexyl)phthalate	1050J	43000J	2100J	10700JD
Butylbenzylphthalate	-	3900J	340J	4300J
Di-n-octylphthalate	-	850J	-	340J
4,4'-DDE	18J	-	-	-
4,4'-DDT	50J	1600J	58J	-

[1/] All concentrations in ug/kg.

Data qualifiers: J - estimated
D - diluted analysis reported.

Sampling date: February 22 and 23, 1989

Source: USEPA, 1990.

The presence of DDT and DDE (a degradation product of DDT) was an unexpected result typical of discharges from plating facilities. However, since the Circuitron building was constructed on a former farm, any pesticide contamination of soils might be attributed to residues associated with the former site activity or treatment of the building after construction.

Inorganic Analytes

Table 6-9 summarizes the results of the inorganic and cyanide analyses from the soil samples taken by the USEPA TAT team below the building. Up to seventeen inorganics plus cyanide were identified in these samples. Concentrations were comparable between the soils with the exception of chromium, lead, mercury, silver and cyanide.

Summary

The USEPA analytical results of the volatile, semivolatile, pesticide/PCB and inorganic analyses of soils have shown that discharges of waste solvents and plating solutions have resulted in contamination of soils beneath the Circuitron building. The vertical extent of this contamination in the soils beneath the building and outside of the building will be discussed later in this section.

6.4 SOILS INVESTIGATIONS

Upon completion of the USEPA field investigations and emergency response actions, Ebasco commenced the field investigation activities presented in the FOP (Ebasco, 1989c). The soil investigations consisted of sampling the surface soil behind the Circuitron building, subsurface soil at the locations of soil borings SB-1 through SB-6 and well borings MW-1D, MW-2D, MW-3D and MW-4D at 5-foot intervals. The soil and subsurface soil sampling locations are illustrated on Figure 4-1.

Tables 6-10, 6-11, 6-12 and 6-13 present the analytical results for the volatile organics, semivolatile/pesticide/PCBs, inorganics and TOC/cyanide/hexavalent chromium hits detected in the surface and subsurface soils.

Figures 6-1, 6-2 and 6-3 illustrate the vertical distribution of the "contaminants of concern" as defined in Section 8.0 "Risk Assessment", in the subsurface soils of the three geologic cross-sections A-A', B-B' and C-C', respectively. In addition, Figure 6-4 presents the spatial distribution of the "contaminants of concern" in the surface and subsurface soils upgradient, on and downgradient of the Circuitron Corporation Site.

6.4.1 Surface Soil

Surface soil contamination was investigated by collecting samples at two locations to the south of the building (see Figure 4-1). Surface soil sample SS-1 was obtained from an area

TABLE 6-9

CIRCUITRON CORPORATION SITE

METAL COMPOUNDS IN THE SOIL BENEATH THE BUILDING[1]

LOCATION	LP-4	LP-5	H-1	LP-3
SAMPLE ID	7T	8T	9T	10T
COMPOUND				
Aluminum	4920.0	1080.0	2270.0	333.0
Arsenic	7.6	3.3	1.8	1.9B
Barium	16.8B	181.0	13.0	13.1
Calcium	5990.0J	1130.0	3510.0	5870.0
Chromium	10.1	216.0	9.4	5.5J
Copper	1980.0	1020.0	957.0	797.0
Iron	7320.0	5220.0	3900.0	3170.0
Lead	456.0	10000.0	428.0	1260.0
Magnesium	1156.0B	381.0B	695.0B	269.0B
Manganese	92.7	44.7	46.8	5.8J
Mercury	-	3.3M	0.17	0.37M
Nickel	60.1J	106.0J	26.2	11.6
Potassium	339.0	-	-	-
Silver	-	55.0	-	4.6J
Sodium	463.0B	536.0B	722.0B	348.0B
Vanadium	11.7B	4.2B	5.4B	-
Zinc	57.1J	23.0	625.0J	13.6
Cyanide	-	1.45	-	3.5

[1] All concentrations in ug/kg.

Data Qualifiers:
J - estimated
B - compound present below CRDC
M - presence of material verified but not quantified.

Sampling data: February 22 and 23, 1989

Source: USEPA, 1990.

DATE: 08/01/90
PAGE 1

TABLE 6-10
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-MW1D-SL01	CC-MW1D-SL02	CC-MW1D-SL03	CC-MW1D-SL04	CC-MW1D-SL05	CC-MW1D-SL06	CC-MW1D-SL07
EPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0
*TCL VOLATILE PARAMETERS:							
CETONE	---	---	---	---	---	420.000JD	---
,1-DICHLOROETHENE	---	---	---	---	---	---	---
,1-DICHLOROETHANE	---	---	---	---	---	---	---
HLOROFORM	3.000J	3.000J	1.000J	2.000	---	2.000J	3.000J
,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
RICHLOROETHENE	---	---	---	---	---	---	---
,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
ETRACHLOROETHENE	---	---	---	---	---	---	---
OLUENE	---	---	---	---	---	2.000	2.000J
HLOROBENZENE	---	---	---	---	---	---	2.000J
OTAL XYLENES	---	---	---	---	---	---	---
OTAL TICS	NR	NR	NR	NR	NR	NR	NR
IC CONCENTRATION	0.000X	0.000X	0.000X	0.000X	0.000X	0.000X	0.000X

XPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
	ESTIMATED VALUE
	COMPOUND FOUND IN BLANK
--	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
IA	NOT ANALYZED FOR
, R	REJECTED VALUE
IR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-MW1D-SLD5	CC-MW2D-SL01	CC-MW2D-SL02	CC-MW2D-SL03	CC-MW2D-SL04	CC-MW2D-SL05	CC-MW2D-SL06
EPTH INTERVAL (FT)	25.0 - 27.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
**TCL VOLATILE PARAMETERS:							
CETONE	---	---	---	---	---	---	---
,1-DICHLOROETHENE	---	---	---	---	---	---	---
,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	1.000J	2.000J	2.000J	---	---	---	---
,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
RICHLOROETHENE	---	---	---	---	---	---	---
,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
ETRACHLOROETHENE	---	---	---	---	---	---	---
OLUENE	---	34.000	7.000	2.000J	---	1.000J	4.000J
CHLOROBENZENE	---	---	---	---	---	---	---
OTAL XYLENES	---	---	---	---	---	---	---
OTAL TICS	NR	2	1	NR	NR	NR	NR
IC CONCENTRATION	0.000X	31.400J	13.000J	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-MW2D-SL07	CC-MW2D-SL08	CC-MW2D-SLD6	CC-MW3D-SL01	CC-MW3D-SL02	CC-MW3D-SL03	CC-MW3D-SL04
EPTH INTERVAL (FT)	30.0 - 32.0	95.0 - 97.0	25.0 - 27.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0
*TCL VOLATILE PARAMETERS:							
CETONE	---	33.000	---	---	---	---	---
,1-DICHLOROETHENE	---	---	---	---	---	---	---
,1-DICHLOROETHANE	---	---	---	---	---	---	---
HLOROFORM	---	---	1.000J	---	12.000B	---	---
,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
RICHLOROETHENE	---	---	---	---	---	---	---
,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
ETRACHLOROETHENE	---	---	---	---	---	---	---
OLUENE	5.000J	7.000	6.000	---	---	---	---
HLOROBENZENE	---	---	---	---	---	---	---
OTAL XYLENES	---	---	---	---	---	---	---
OTAL TICS	NR	NR	NR	2	NR	NR	NR
IC CONCENTRATION	---	---	---	16.100J	0.000X	0.000X	0.000X

XPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW3D-SL05	CC-MW3D-SL06	CC-MW3D-SL07	CC-MW3D-SL08	CC-MW4D-SL01	CC-MW4D-SL02	CC-MW4D-SL03
DEPTH INTERVAL (FT)	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	---	---	---	---	---	---
1,1,1-TRICHLOROETHANE	---	---	---	---	---	99.000	8.000
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	---	---	---	---
TOLUENE	---	---	---	5.000J	---	87.000	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	NR	3	NR
TIC CONCENTRATION	0.000X	0.000X	0.000X	---	0.000X	167.000J	0.000X

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW4D-SL04	CC-MW4D-SL05	CC-MW4D-SL06	CC-MW4D-SL07	CC-MW4D-SL08	CC-SB1-SL01	CC-SB1-SL02
DEPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	0.0 - 2.0	5.0 - 7.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	2.000J	4.000J	4.000J	5.000J	---	---	---
1,1-DICHLOROETHANE	---	2.000J	2.000J	2.000J	---	---	---
CHLOROFORM	---	---	---	---	---	---	---
1,1,1-TRICHLOROETHANE	3,000.000J	100,000.000	510.000	17,000.000	---	---	---
TRICHLOROETHENE	---	2.000J	1.000J	9.000	---	---	---
1,1,2-TRICHLOROETHANE	---	1.000J	2.000J	---	---	---	---
TETRACHLOROETHENE	7.000	30.000	20.000	100.000	---	---	---
TOLUENE	24.000	36.000	8.000	---	---	7.000	13.000
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	2	1	1	NR	NR	1
TIC CONCENTRATION	0.000X	42.000J	11.000J	11.000J	---	---	5.000J

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB1-SL03	CC-SB1-SL04	CC-SB1-SL05	CC-SB1-SL06	CC-SB1-SL07	CC-SB1-SL08	CC-SB1-SL09
DEPTH INTERVAL (FT)	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	---	---	---	---	---	---
1,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	---	---	---	---
TOLUENE	8.000	2.000J	4.000J	4.000J	4.000J	13.000	3.000J
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	1	NR	NR
TIC CONCENTRATION	---	---	---	---	6.000J	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB1-SLD6	CC-SB2-C001	CC-SB2-SL01	CC-SB2-SL02	CC-SB2-SL03	CC-SB2-SL04	CC-SB2-SL05
DEPTH INTERVAL (FT)	25.0 - 27.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	1,200.000J	---	---	---	22.000J	49.000J
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	1.000J	---	---	---	---	---
1,1,1-TRICHLOROETHANE	---	---	31.000	---	---	---	---
TRICHLOROETHENE	---	---	2.000J	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	24.000	---	---	---	---
TOLUENE	3.000J	4.000J	6.000	0.600J	3.000J	0.600J	6.000
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	1	1	NR	NR	NR	NR
TIC CONCENTRATION	---	61.000J	7.300J	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

DATE: 08/01/90
PAGE 8

SAMPLE ID	CC-SB2-SL06	CC-SB3-SL01	CC-SB3-SL02	CC-SB3-SL03	CC-SB3-SL04	CC-SB3-SL05	CC-SB3-SL06
DEPTH INTERVAL (FT)	30.0 - 32.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	---	1.000J	---	---	---	---
1,1,1-TRICHLOROETHANE	4.000J	---	6.000	---	---	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	2.000J	---	---	---	---
TOLUENE	---	---	---	---	---	---	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	NR	NR	NR
TIC CONCENTRATION	---	0.000X	0.000X	0.000X	0.000X	0.000X	0.000X

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB5-SL01	CC-SB5-SL02	CC-SB5-SL03	CC-SB5-SL04	CC-SB5-SL05	CC-SB5-SL06	CC-SB5-SL07
DEPTH INTERVAL (FT)	3.0 - 5.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	---	---	---	---	---	2.000J
1,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	7.000	---	---	---	---	---	---
TOLUENE	---	---	---	---	---	---	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	NR	NR	NR
TIC CONCENTRATION	0.000X	0.000X	0.000X	0.000X	---	0.000X	0.000X

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB3-SL07	CC-SB3-SL08	CC-SB3-SLD7	CC-SB4-C001	CC-SB4-SL01	CC-SB4-SL02	CC-SB4-SL03
DEPTH INTERVAL (FT)	30.0 - 32.0	40.0 - 42.0	30.0 - 32.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	2.000J	2.000J	1.000J	---	---	2.000J	2.000J
1,1,1-TRICHLOROETHANE	---	---	---	---	6.000	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	---	---	---	---
TOLUENE	---	---	---	3.000J	---	4.000J	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	20.000J	---	---	---
TOTAL TICS	NR	NR	NR	10	NR	NR	NR
TIC CONCENTRATION	0.000X	0.000X	0.000X	702.000J	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID DEPTH INTERVAL (FT)	CC-SB4-SL04 15.0 - 17.0	CC-SB4-SL05 20.0 - 22.0	CC-SB4-SL06 25.0 - 27.0	CC-SB4-SL07 30.0 - 32.0	CC-SB4-SL08 35.0 - 37.0	CC-SB4-SL09 40.0 - 42.0	CC-SB4-SLD9 40.0 - 42.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	3.000J	3.000J	3.000J	3.000J	3.000J	2.000J	1.000J
1,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	---	---	---	---
TOLUENE	2.000J	1.000J	1.000J	---	---	7.000	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	1	NR	NR	NR	NR	NR	NR
TIC CONCENTRATION	8.300JN	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE
SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB5-SL08	CC-SB5-SL09	CC-SB5-SLD2	CC-SB6-SL01	CC-SB6-SL02	CC-SB6-SL03	CC-SB6-SL04
DEPTH INTERVAL (FT)	35.0 - 37.0	40.0 - 42.0	5.0 - 7.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	2.000J	2.000J	---	---	---	---	---
1,1,1-TRICHLOROETHANE	---	---	---	---	---	---	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	10.000	3.000J	---	---
TOLUENE	2.000J	---	3.000	4.000J	13.000	---	---
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	NR	NR	NR
TIC CONCENTRATION	0.000X	0.000X	0.000X	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-10 (CON'T)
CIRCUITRON CORPORATION SITE
VOLATILE ORGANIC COMPOUNDS DETECTED IN THE
SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB6-SL05	CC-SB6-SL06	CC-SB6-SL07	CC-SB6-SL08	CC-SB6-SLD5	CC-SS1-SL01	CC-SS2-SL01
DEPTH INTERVAL (FT)	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	40.0 - 42.0	20.0 - 22.0	0.0 - 0.5	0.0 - 0.5
**TCL VOLATILE PARAMETERS:							
ACETONE	---	---	---	---	---	---	---
1,1-DICHLOROETHENE	---	---	---	---	---	---	---
1,1-DICHLOROETHANE	---	---	---	---	---	---	---
CHLOROFORM	---	---	---	---	---	2.000J	1.000J
1,1,1-TRICHLOROETHANE	---	---	5.000J	---	---	3.000J	---
TRICHLOROETHENE	---	---	---	---	---	---	---
1,1,2-TRICHLOROETHANE	---	---	---	---	---	---	---
TETRACHLOROETHENE	---	---	---	---	---	4.000J	1.000J
TOLUENE	---	6.000	3.000J	2.000J	---	---	57.000B
CHLOROBENZENE	---	---	---	---	---	---	---
TOTAL XYLENES	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	NR	NR	NR	NR
TIC CONCENTRATION	---	---	---	---	---	0.000X	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW1D-SL01	CC-MW1D-SL02	CC-MW1D-SL03	CC-MW1D-SL04	CC-MW1D-SL05	CC-MW1D-SL06	CC-MW1D-SL07
DEPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	37.000J	---	---	---	---	---	42.000
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	17	4	2	NR	3	NR	NR
TIC CONCENTRATION	6,600.000J	10,780.000J	720.000J	0.000X	5,950.000J	0.000X	0.000X
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW1D-SL01	CC-MW1D-SL02	CC-MW1D-SL03	CC-MW1D-SL04	CC-MW1D-SL05	CC-MW1D-SL06	CC-MW1D-SL07
DEPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 3

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW1D-SLD5	CC-MW2D-SL01	CC-MW2D-SL02	CC-MW2D-SL03	CC-MW2D-SL04	CC-MW2D-SL05	CC-MW2D-SL06
DEPTH INTERVAL (FT)	25.0 - 27.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	NR	---	---	---	340.000R	---	---
BENZYL ALCOHOL	NR	---	---	---	---	---	---
BENZOIC ACID	NR	---	---	---	1,600.000R	---	---
ACENAPHTHYLENE	NR	---	---	---	---	---	---
PENTACHLOROPHENOL	NR	---	---	---	1,600.000R	---	---
PHENANTHRENE	NR	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	NR	---	---	---	---	---	---
FLUORANTHRENE	NR	---	---	---	---	---	---
PYRENE	NR	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	NR	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	NR	---	97.000J	70.000J	35.000J	450.000J	83.000J
DI-n-OCTYL PHTHALATE	NR	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	NR	---	---	---	---	---	---
BENZO[a]PYRENE	NR	---	---	---	---	---	---
TOTAL TICS	NR	2	3	1	1	6	5
TIC CONCENTRATION	NR	1,180.000J	7,810.000J	270.000J	550.000J	3,050.000J	2,150.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW1D-SLD5	CC-MW2D-SL01	CC-MW2D-SL02	CC-MW2D-SL03	CC-MW2D-SL04	CC-MW2D-SL05	CC-MW2D-SL06
DEPTH INTERVAL (FT)	25.0 - 27.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
4-4-DDT	---	40.000	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	170.000
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 5

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW2D-SL07	CC-MW2D-SL08	CC-MW2D-SLD4	CC-MW3D-SL01	CC-MW3D-SL02	CC-MW3D-SL03	CC-MW3D-SL04
DEPTH INTERVAL (FT)	30.0 - 32.0	95.0 - 97.0	15.0 - 17.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	40.000J	---	---	43.000J	---	---	42.000J
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	2	4	5	3
TIC CONCENTRATION	0.000X	0.000X	0.000X	610.000J	3,050.000J	3,280.000J	1,240.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW2D-SL07	CC-MW2D-SL08	CC-MW2D-SLD4	CC-MW3D-SL01	CC-MW3D-SL02	CC-MW3D-SL03	CC-MW3D-SL04
DEPTH INTERVAL (FT)	30.0 - 32.0	95.0 - 97.0	15.0 - 17.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 7

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW3D-SL05	CC-MW3D-SL06	CC-MW3D-SL07	CC-MW3D-SL08	CC-MW4D-SL01	CC-MW4D-SL02	CC-MW4D-SL03
DEPTH INTERVAL (FT)	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	---	130.000J	48.000J	---	92.000J	3,500.000	1,500.000
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	4	8	4	NR	2	20	17
TIC CONCENTRATION	4,040.000J	7,620.000J	1,610.000J	0.000X	6,910.000J	243,360.000J	29,030.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 8

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW3D-SL05	CC-MW3D-SL06	CC-MW3D-SL07	CC-MW3D-SL08	CC-MW4D-SL01	CC-MW4D-SL02	CC-MW4D-SL03
DEPTH INTERVAL (FT)	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW4D-SL04	CC-MW4D-SL05	CC-MW4D-SL06	CC-MW4D-SL07	CC-MW4D-SL08	CC-MW4D-SLD6	CC-SB1-SL01
DEPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	25.0 - 27.0	0.0 - 2.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	160.000J	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	91.000J	---	---	120.000J	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	5.000J	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	11,000.000J	20,000.000J	5,900.000J	9,700.000	---	4,800.000J	380.000J
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	18	15	12	4	10	14	1
TIC CONCENTRATION	108,740.000J	119,710.000J	33,760.000J	67,420.000J	33,810.000J	23,040.000J	200.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-MW4D-SL04	CC-MW4D-SL05	CC-MW4D-SL06	CC-MW4D-SL07	CC-MW4D-SL08	CC-MW4D-SLD6	CC-SB1-SL01
DEPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0	25.0 - 27.0	0.0 - 2.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 11

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB1-SL02	CC-SB1-SL03	CC-SB1-SL04	CC-SB1-SL05	CC-SB1-SL06	CC-SB1-SL07	CC-SB1-SL08
DEPTH INTERVAL (FT)	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	410.000J	690.000J	---	260.000J	---	210.000J	110.000J
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	5	2	1	1	1	1	1
TIC CONCENTRATION	2,800.000J	400.000J	100.000J	200.000J	400.000J	400.000J	200.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SB1-SL02	CC-SB1-SL03	CC-SB1-SL04	CC-SB1-SL05	CC-SB1-SL06	CC-SB1-SL07	CC-SB1-SL08
EPTH INTERVAL (FT)	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0
-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB1-SL09	CC-SB1-SLD6	CC-SB2-C001	CC-SB2-SL01	CC-SB2-SL02	CC-SB2-SL03	CC-SB2-SL04
DEPTH INTERVAL (FT)	40.0 - 42.0	25.0 - 27.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0	15.0 - 17.0	20.0 - 22.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	21,000.000	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	25,000.000	---	2,500.000	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	87.000J	110.000J	---	---	---	---	---
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	NR	2	6	NR	NR	1	2
TIC CONCENTRATION	---	500.000J	73,300.000J	0.000X	0.000X	530.000J	2,800.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	18.000J	240.000	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB1-SL09	CC-SB1-SLD6	CC-SB2-C001	CC-SB2-SL01	CC-SB2-SL02	CC-SB2-SL03	CC-SB2-SL04
DEPTH INTERVAL (FT)	40.0 - 42.0	25.0 - 27.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0	15.0 - 17.0	20.0 - 22.0
4-4-DDT	---	---	---	41.000	20.000J	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB2-SL05	CC-SB2-SL06	CC-SB3-SL01	CC-SB3-SL02	CC-SB3-SL03	CC-SB3-SL04	CC-SB3-SL05
DEPTH INTERVAL (FT)	25.0 - 27.0	30.0 - 32.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	1,700.000R	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	700.000J	---	---	180.000J	---	---	---
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	NR	NR	NR	1	3	2	3
TIC CONCENTRATION	0.000X	0.000X	0.000X	210.000X	890.000J	950.000J	1,060.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB2-SL05	CC-SB2-SL06	CC-SB3-SL01	CC-SB3-SL02	CC-SB3-SL03	CC-SB3-SL04	CC-SB3-SL05
DEPTH INTERVAL (FT)	25.0 - 27.0	30.0 - 32.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB3-SL06	CC-SB3-SL07	CC-SB3-SL08	CC-SB3-SLD5	CC-SB4-C001	CC-SB4-SL01	CC-SB4-SL02
EPTH INTERVAL (FT)	25.0 - 27.0	30.0 - 32.0	40.0 - 42.0	20.0 - 22.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0
ASE/NEUTRAL PARAMETERS:							
HENOL	---	---	---	---	17,000.000	---	---
ENZYL ALCOHOL	---	---	---	---	---	---	---
ENZOIC ACID	---	---	---	---	2,900.000J	---	---
CENAPHTHYLENE	---	---	---	---	---	---	---
ENTACHLOROPHENOL	---	---	---	---	---	43.000J	---
HENANTHRENE	---	---	---	---	---	---	---
I-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
LUORANTHRENE	---	---	---	---	---	---	---
YRENE	---	---	---	---	---	---	---
UTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
IS[2-ETHYLHEXYL]PHTHALATE	---	---	---	---	2,100.000	---	---
I-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
ENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
ENZO[a]PYRENE	---	---	---	---	---	---	---
OTAL TICS	NR	NR	NR	2	14	2	1
IC CONCENTRATION	0.000X	0.000X	0.000X	830.000J	278,230.000J	520.000J	680.000J
**PESTICIDE/PCB PARAMETERS:							
ELTA-BHC	---	---	---	---	29.000	---	---
EPTACHLOR	---	---	---	---	20.000	---	---
LDRIN	---	---	---	---	7.900J	---	---
EPTACHLOR EPOXIDE	---	---	---	---	24.000	---	---
4-4-DDE	---	---	---	---	25.000J	---	---
ENDOSULFAN SULFATE	---	---	---	---	97.000	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB3-SL06	CC-SB3-SL07	CC-SB3-SL08	CC-SB3-SLD5	CC-SB4-C001	CC-SB4-SL01	CC-SB4-SL02
EPTH INTERVAL (FT)	25.0 - 27.0	30.0 - 32.0	40.0 - 42.0	20.0 - 22.0	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0
-4-DDT	---	---	---	---	---	24.000	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SB4-SL03	CC-SB4-SL04	CC-SB4-SL05	CC-SB4-SL06	CC-SB4-SL07	CC-SB4-SL08	CC-SB4-SL09
EPTH INTERVAL (FT)	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0
ASE/NEUTRAL PARAMETERS:							
HENOL	---	---	---	---	---	---	---
ENZYL ALCOHOL	---	---	---	---	---	---	---
ENZOIC ACID	94.000J	65.000J	---	---	---	---	---
CENAPHTHYLENE	---	---	---	---	---	---	---
ENTACHLOROPHENOL	---	---	---	---	---	---	---
HENANTHRENE	---	---	---	---	---	---	---
I-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
LUORANTHRENE	---	---	---	---	---	---	---
YRENE	---	---	---	---	---	---	---
UTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
IS[2-ETHYLHEXYL]PHTHALATE	---	85.000J	---	210.000J	110.000J	210.000J	44.000J
I-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
ENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
ENZO[a]PYRENE	---	---	---	---	---	---	---
OTAL TICS	2	NR	2	2	NR	2	2
IC CONCENTRATION	970.000J	0.000X	1,630.000J	2,100.000J	0.000X	1,740.000J	1,300.000J
**PESTICIDE/PCB PARAMETERS:							
ELTA-BHC	---	---	---	---	---	---	---
EPTACHLOR	---	---	---	---	---	---	---
LDRIN	---	---	---	---	---	---	---
EPTACHLOR EPOXIDE	---	---	---	---	---	---	---
-4-DDE	---	---	---	---	---	---	---
NDOSULFAN SULFATE	---	---	---	---	---	---	---

XPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 08/02/90
PAGE 20

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SB4-SL03	CC-SB4-SL04	CC-SB4-SL05	CC-SB4-SL06	CC-SB4-SL07	CC-SB4-SL08	CC-SB4-SL09
EPTH INTERVAL (FT)	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0
-4-DDT	---	---	---	---	---	---	---
ROCLOR 1248	---	---	---	---	---	---	---
ROCLOR 1254	---	---	---	---	---	---	---
ROCLOR 1260	---	---	---	170.000	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB4-SLD4	CC-SB5-SL01	CC-SB5-SL02	CC-SB5-SL03	CC-SB5-SL04	CC-SB5-SL05	CC-SB5-SL06
DEPTH INTERVAL (FT)	10.0 - 12.0	3.0 - 5.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	160.000J	---	---	---	---	---
BIS[2-ETHYLHEXYL]PHTHALATE	450.000J	1,300.000	140.000J	59.000J	---	---	---
DI-n-OCTYL PHTHALATE	---	230.000J	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	NR	20	NR	1	NR	NR	NR
TIC CONCENTRATION	0.000X	24,630.000J	0.000X	240.000J	0.000X	0.000X	0.000X
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID EPTH INTERVAL (FT)	CC-SB4-SLD4 10.0 - 12.0	CC-SB5-SL01 3.0 - 5.0	CC-SB5-SL02 5.0 - 7.0	CC-SB5-SL03 10.0 - 12.0	CC-SB5-SL04 15.0 - 17.0	CC-SB5-SL05 20.0 - 22.0	CC-SB5-SL06 25.0 - 27.0
-4-DDT	---	---	---	---	---	---	---
ROCLOR 1248	---	---	---	---	---	---	---
ROCLOR 1254	---	---	---	---	---	---	---
ROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SB5-SL07	CC-SB5-SL08	CC-SB5-SL09	CC-SB5-SLD2	CC-SB6-SL01	CC-SB6-SL02	CC-SB6-SL03
EPTH INTERVAL (FT)	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0	5.0 - 7.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
ASE/NEUTRAL PARAMETERS:							
HENOL	---	---	---	---	---	---	---
ENZYL ALCOHOL	---	---	---	---	---	---	---
ENZOIC ACID	---	---	---	---	---	---	---
CENAPHTHYLENE	---	---	---	---	---	---	---
ENTACHLOROPHENOL	---	---	---	---	---	---	---
HENANTHRENE	---	---	---	---	---	---	---
I-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
LUORANTHRENE	---	---	---	---	---	---	---
YRENE	---	---	---	---	---	---	---
UTYL BENZYL PHTHALATE	---	---	---	---	---	---	---
IS[2-ETHYLHEXYL]PHTHALATE	---	---	---	130.000J	---	120.000J	---
I-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
ENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
ENZO[a]PYRENE	---	---	---	---	---	---	---
OTAL TICS	NR	NR	NR	NR	11	1	2
IC CONCENTRATION	0.000X	0.000X	0.000X	0.000X	6,300.000J	200.000J	200.000J
**PESTICIDE/PCB PARAMETERS:							
ELTA-BHC	---	---	---	---	---	---	---
EPTACHLOR	---	---	---	---	---	---	---
LDRIN	---	---	---	---	---	---	---
EPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB5-SL07	CC-SB5-SL08	CC-SB5-SL09	CC-SB5-SLD2	CC-SB6-SL01	CC-SB6-SL02	CC-SB6-SL03
DEPTH INTERVAL (FT)	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0	5.0 - 7.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB6-SL04	CC-SB6-SL05	CC-SB6-SL06	CC-SB6-SL07	CC-SB6-SL08	CC-SB6-SLD5	CC-SS1-SL01
DEPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	40.0 - 42.0	20.0 - 22.0	0.0 - 0.5
BASE/NEUTRAL PARAMETERS:							
PHENOL	---	---	---	---	---	---	---
BENZYL ALCOHOL	---	---	---	---	---	---	---
BENZOIC ACID	---	---	---	---	---	---	---
ACENAPHTHYLENE	---	---	---	---	---	---	---
PENTACHLOROPHENOL	---	---	---	---	---	---	---
PHENANTHRENE	---	---	---	---	---	---	---
DI-n-BUTYLPHTHALATE	---	---	---	---	---	---	---
FLUORANTHRENE	---	---	---	---	---	---	---
PYRENE	---	---	---	---	---	---	---
BUTYL BENZYL PHTHALATE	---	---	---	---	---	---	83.000J
BIS[2-ETHYLHEXYL]PHTHALATE	---	---	---	---	---	---	8,000.000
DI-n-OCTYL PHTHALATE	---	---	---	---	---	---	---
BENZO[b]FLUORANTHENE	---	---	---	---	---	---	---
BENZO[a]PYRENE	---	---	---	---	---	---	---
TOTAL TICS	1	3	12	10	1	10	14
TIC CONCENTRATION	200.000J	1,900.000J	3,500.000J	2,500.000J	200.000J	1,900.000J	24,650.000J
**PESTICIDE/PCB PARAMETERS:							
DELTA-BHC	---	---	---	---	---	---	---
HEPTACHLOR	---	---	---	---	---	---	---
ALDRIN	---	---	---	---	---	---	---
HEPTACHLOR EPOXIDE	---	---	---	---	---	---	---
4-4-DDE	---	---	---	---	---	---	---
ENDOSULFAN SULFATE	---	---	---	---	---	---	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

SAMPLE ID	CC-SB6-SL04	CC-SB6-SL05	CC-SB6-SL06	CC-SB6-SL07	CC-SB6-SL08	CC-SB6-SLD5	CC-SS1-SL01
DEPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	40.0 - 42.0	20.0 - 22.0	0.0 - 0.5
4-4-DDT	---	---	---	---	---	---	---
AROCLOR 1248	---	---	---	---	---	---	---
AROCLOR 1254	---	---	---	---	---	---	---
AROCLOR 1260	---	---	---	---	---	---	280.000

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SS2-SL01
EPTH INTERVAL (FT)	0.0 - 0.5
ASE/NEUTRAL PARAMETERS:	
HENOL	---
ENZYL ALCOHOL	---
ENZOIC ACID	---
CENAPHTHYLENE	---
ENTACHLOROPHENOL	---
HENANTHRENE	54.000
I-n-BUTYLPHTHALATE	41.000J
LUORANTHRENE	110.000J
YRENE	91.000J
UTYL BENZYL PHTHALATE	360.000J
IS[2-ETHYLHEXYL]PHTHALATE	1,300.000
I-n-OCTYL PHTHALATE	---
ENZO[b]FLUORANTHENE	160.000J
ENZO[a]PYRENE	52.000J
OTAL TICS	19
IC CONCENTRATION	44,020.000J
**PESTICIDE/PCB PARAMETERS:	
ELTA-BHC	---
EPTACHLOR	8.400R
LDRIN	8.400R
EPTACHLOR EPOXIDE	---
-4-DDE	---
ENDOSULFAN SULFATE	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-11 (CON'T)
CIRCUITRON CORPORATION SITE
SEMIVOLATILE, PESTICIDE AND PCB COMPOUNDS DETECTED
IN THE SURFACE AND SUBSURFACE SOILS (IN UG/KG)

AMPLE ID	CC-SS2-SL01
EPTH INTERVAL (FT)	0.0 - 0.5
-4-DDT	---
AROCLOR 1248	1,200.000
AROCLOR 1254	---
AROCLOR 1260	---

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 1

TABLE 6-12
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

SAMPLE ID	CC-MW1D-SL01	CC-MW1D-SL02	CC-MW1D-SL03	CC-MW1D-SL04	CC-MW1D-SL05	CC-MW1D-SL06	CC-MW1D-SL07
DEPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0
INORGANIC PARAMETERS:							
ALUMINUM	1,490.000	666.000	578.000	619.000	428.000	444.000	433.000
ANTIMONY	---	---	---	---	---	---	---
ARSENIC	1.200BJ	0.800BJ	0.620B J	0.450BJ	0.380BJ	0.340BJ	0.520B
BARIUM	200.000R	200.000R	200.000R	200.000R	200.000R	200.000R	200.000R
BERYLLIUM	5.000R	---	---	---	---	---	---
CADMIUM	---	---	---	---	---	---	---
CALCIUM	1,540.000	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
CHROMIUM	3.300J	1.700B	1.300B	---	1.300B	---	2.400B
COBALT	1.200B	---	---	---	---	---	---
COPPER	5.900	1.200B	1.500B	1.300B	---	---	9.000
IRON	5,840.000	2,570.000	1,720.000	870.000	1,220.000	1,200.000	1,050.000
LEAD	3.400 J	1.100 J	0.740B J	0.660B J	0.420B J	0.480B J	1.500 J
MAGNESIUM	616.000B	305.000B	175.000B	122.000B	123.000B	113.000B	82.000B
MANGANESE	103.000 J	26.700 J	24.200NJ	26.900 J	22.600 J	14.200 J	3.500B
MERCURY	---	---	---	---	---	---	---
NICKEL	1.800B	2.200B	1.300B	---	---	---	4.700B
POTASSIUM	121.000B	96.700B	87.300B	108.000B	76.000B	50.700B	86.000B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	3.500B	1.600B	1.300B	---	---	1.900B	2.600B
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	97.800	97.000	96.900	97.000	89.800	82.800	80.100

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE
AND SUBSURFACE SOILS (IN MG/KG)

DATE: 03/01/90
PAGE 2

AMPLE ID	CC-MW2D-SL01	CC-MW2D-SL02	CC-MW2D-SL03	CC-MW2D-SL04	CC-MW2D-SL06	CC-MW2D-SL07	CC-MW2D-SL08
EPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	25.0 - 27.0	30.0 - 32.0	95.0 - 97.0
NORGANIC PARAMETERS:							
LUMINUM	3,330.000	1,070.000	737.000	601.000	595.000	350.000	1,650.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	2.200J	0.950B J	0.370B	0.720B	---	---	1.600BJ
BARIUM	8.400B	4.200B	2.900B	4.900B	3.800B	2.000B	5.600B
BERYLLIUM	0.160B	---	---	---	---	---	0.220B
CADMIUM	---	---	---	---	---	---	---
CALCIUM	20,500.000	4,840.000	736.000B	717.000B	4,950.000	698.000B	133.000B
CHROMIUM	3.900J	2.100J	6.900	4.600	1.900B	3.600	3.300
COBALT	1.400B	---	---	---	---	---	1.200B
COPPER	4.900B	2.000B	6.200	53.900	50.400	46.200	7.600
IRON	4,440.000	1,970.000	3,250.000	2,030.000	1,560.000	1,790.000	2,940.000
LEAD	8.800 J	2.200 J	0.550B J	1.000BJ	1.800 J	3.400J	3.400 J
MAGNESIUM	12,600.000	2,970.000	509.000B	505.000B	2,920.000	357.000B	93.200B
MANGANESE	93.600 J	55.000 J	45.100	37.300	30.200	15.600	18.400
MERCURY	---	---	---	---	---	---	---
NICKEL	3.200B	---	3.100B	3.200B	3.300B	3.000B	1.600B
POTASSIUM	196.000B	135.000B	92.900B	112.000B	100.000B	68.100B	109.000B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	5.600B	1.800B	5.800B	3.000B	1.800B	---	6.000B
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	96.300	97.200	97.600	97.500	95.400	91.100	81.800

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 3

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-MW3D-SL01	CC-MW3D-SL02	CC-MW3D-SL03	CC-MW3D-SL04	CC-MW3D-SL05	CC-MW3D-SL06	CC-MW3D-SL07
EPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0
NORGANIC PARAMETERS:							
LUMINUM	853.000	1,060.000	637.000	723.000	578.000	979.000	791.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	0.770B	0.680B	0.330B	0.510B	0.490B	0.770B	0.370B
ARIUM	3.300B	4.000B	2.400B	4.500B	3.500B	6.000B	4.500B
ERYLLIUM	---	---	---	---	---	---	---
ADMIUM	---	---	---	---	---	---	---
ALCIUM	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
HROMIUM	2.400J	2.000B	1.200B	1.800B	1.800B	3.100J	2.200B
OBALT	---	1.000B	---	---	---	---	---
OPPER	1.700B	1.600B	---	1.500B	---	2.800B	14.700J
IRON	2,020.000	2,920.000	1,730.000	1,530.000	1,660.000	1,950.000	1,940.000
LEAD	1.100J	0.840BJ	0.640BJ	0.820BJ	0.640BJ	2.000J	0.440BJ
MAGNESIUM	267.000B	345.000B	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
MANGANESE	49.000	65.100	42.300	30.100	24.500	42.600	45.700
MERCURY	---	---	---	---	---	0.100	---
NICKEL	---	1.400B	2.500B	---	---	1.500B	---
POTASSIUM	159.000B	117.000B	90.500B	120.000B	79.300B	153.000B	131.000B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	2.100B	2.300B	---	1.400B	1.800B	1.500B	2.100B
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	98.800	97.600	97.100	97.100	97.200	91.200	86.600

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE
AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-MW3D-SL08	CC-MW3D-SLD6	CC-MW4D-SL01	CC-MW4D-SL02	CC-MW4D-SL03	CC-MW4D-SL04	CC-MW4D-SL05
EPTH INTERVAL (FT)	95.0 - 97.0	25.0 - 27.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0
NORGANIC PARAMETERS:							
LUMINUM	200.000R	995.000	1,070.000	1,150.000	1,030.000	493.000	435.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	0.800B	0.660B	0.820B	0.930B	0.580B	0.410B	0.390B
ARIUM	---	5.500B	4.800B	4.800B	4.700B	2.800B	2.200B
ERYLLIUM	---	5.000R	---	---	---	---	---
ADMIUM	---	---	---	---	---	1.100J	---
ALCIUM	---	5,000.000R	1,790.000	3,800.000	13,800.000	5,000.000R	5,000.000R
HROMIUM	5.200J	8.700J	3.400J	2.300J	3.600J	4.100J	4.400J
OBALT	---	---	0.910B	---	---	---	---
OPPER	---	4.700B	60.300J	185.000J	485.000J	146.000J	33.400J
RON	1,700.000	4,530.000	3,310.000	2,030.000	2,290.000	2,040.000	1,890.000
EAD	5.000R	1.100BJ	38.300	4.700 J	5.600J	5.100J	0.890BJ
AGNESIUM	---	5,000.000R	1,100.000	2,280.000	7,070.000	5,000.000R	5,000.000R
ANGANESE	5.900J	43.300	61.700	39.100	30.400	15.000R	19.200
ERCURY	0.190	---	---	---	---	---	---
ICKEL	---	---	3.900B	3.200B	2.100B	---	---
OTASSIUM	---	160.000B	123.000B	166.000B	160.000B	81.600B	63.600B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	9.500	---	---	---	---
SODIUM	223.000B	---	---	---	---	---	---
VANADIUM	---	4.300B	4.400B	6.200B	3.000B	2.400B	1.500B
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	80.500	90.400	97.500	96.500	96.900	93.600	96.400

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 5

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-MW4D-SL06	CC-MW4D-SL07	CC-MW4D-SL08	CC-MW4D-SLD4	CC-SB1-SL01	CC-SB1-SL02	CC-SB1-SL03
EPTH INTERVAL (FT)	25.0 - 27.0	30.0 - 32.0	0.0 - 0.0	15.0 - 17.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0
NORGANIC PARAMETERS:							
LUMINUM	567.000	662.000	200.000R	434.000	1,580.000 J	1,050.000 J	810.000 J
NTIMONY	---	---	13.800B	---	---	---	---
RSENIC	0.410B	0.440B J	---	0.510B	2.400	2.000	1.700B
ARIUM	3.200B	4.200B	---	2.400B	5.100R	4.800R	4.800R
ERYLLIUM	---	---	---	---	---	---	---
ADMIUM ✓	---	---	---	---	---	---	---
CALCIUM	5,000.000R	5,000.000R	88.200B	5,000.000R	3,460.000	12,200.000	571.000B
CHROMIUM	1.900B	3.700J	---	1.700B	5.000J	3.100J	1.800BJ
COBALT	---	---	---	---	---	---	1.000B
COPPER	20.500J	30.200	---	138.000J	60.100 J	60.500 J	28.800 J
IRON	1,430.000	2,460.000	1,120.000	1,200.000	4,560.000	3,770.000	4,500.000
LEAD ✓	0.720BJ	0.680B J	3.000	5.900J	45.200	33.000	46.900
MAGNESIUM	5,000.000R	5,000.000R	---	5,000.000R	2,260.000	6,970.000	384.000B
MANGANESE	15.000R	15.000R	15.000R	15.000R	65.400 J	62.200 J	48.900 J
MERCURY ✓	---	---	---	---	---	---	---
NICKEL	---	1.700B	---	1.300B	3.500B	3.500B	---
POTASSIUM	92.900B	157.000B	5,000.000R	77.300B	115.000B	133.000B	101.000B
SELENIUM	---	---	---	---	0.690BJ	0.520BJ	0.480BJ
SILVER	---	---	---	---	2.700	3.000	---
SODIUM	---	---	201.000B	---	36.700B	48.000B	36.900B
VANADIUM	1.600B	2.600B	---	1.500B	7.400B	5.800B	4.500B
ZINC	20.000R	20.000R	---	20.000R	6.800J	8.500J	3.800BJ
CYANIDE	---	---	---	---	---	---	2.200
% SOLIDS	83.300	85.900	81.600	94.200	98.200	97.800	97.800

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-SB1-SL04	CC-SB1-SL05	CC-SB1-SL06	CC-SB1-SL07	CC-SB1-SL08	CC-SB1-SLD6	CC-SB2-C001
EPTH INTERVAL (FT)	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	35.0 - 37.0	25.0 - 27.0	0.0 - 0.0
NORGANIC PARAMETERS:							
LUMINUM	251.000 J	282.000 J	109.000 J	99.300 J	102.000 J	108.000 J	5,780.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	1.000B	1.100B	0.980B	1.100B	1.200B	1.400B	6.600
ARIUM	0.520B	0.530B	0.470B	0.640B	0.470B	0.570B	37.400B
ERYLLIUM	---	---	---	---	---	---	---
ADMIUM	---	---	---	---	---	---	---
ALCIUM	44.500B	59.200B	48.100B	58.300B	90.100B	45.200B	89,200.000J
HROMIUM	1.100BJ	2.100J	---	1.400BJ	---	1.300BJ	33.600J
COBALT	---	---	---	---	---	---	4.100B
COPPER	8.300 J	48.900 J	46.800 J	57.100 J	41.000 J	34.300 J	16.500
IRON	1,230.000	2,490.000	1,900.000	2,480.000	2,020.000	1,440.000	10,800.000
LEAD	7.000	24.400	25.100	29.100	56.300	27.700	5.000R
MAGNESIUM	105.000B	113.000B	13.500B	13.200B	---	19.600B	3,710.000
MANGANESE	7.600 J	9.700 J	7.400 J	17.600 J	6.200 J	5.900 J	170.000 J
MERCURY	---	---	---	---	---	---	---
NICKEL	---	---	---	---	---	---	11.500
POTASSIUM	61.700B	120.000B	---	---	31.800B	30.400B	1,330.000
SELENIUM	0.460B J	0.430BJ	---	0.480B J	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	17.500B	24.700B	16.000B	17.200B	32.500B	25.000B	5,000.000R
VANADIUM	1.200B	2.500B	---	---	---	1.500B	17.000
ZINC	2.000BJ	5.200J	1.400BJ	1.600BJ	2.900BJ	2.700BJ	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	97.800	96.500	86.000	90.900	87.700	89.500	NR

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 7

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE
AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-SB2-SL01	CC-SB2-SL02	CC-SB2-SL03	CC-SB2-SL04	CC-SB2-SL05	CC-SB2-SL06	CC-SB3-SL01
EPTH INTERVAL (FT)	0.0 - 2.0	5.0 - 7.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	0.0 - 2.0
NORGANIC PARAMETERS:							
LUMINUM	5,240.000	2,430.000	635.000	760.000	815.000	416.000	2,920.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	3.700	1.600B	---	---	1.300B	1.600B	1.700B
ARIUM	15.100B	7.400B	4.400B	2.900B	3.300B	---	9.700B
ERYLLIUM	---	---	---	---	---	---	5.000R
CADMIUM	0.820B	---	---	---	---	---	1.100J
CALCIUM	3,330.000J	730.000BJ	---	140.000B	205.000B	618.000B	5,000.000R
CHROMIUM	6.500	4.200J	4.100J	5.200J	1.900B	1.900B	5.200
COBALT	7.900B	7.100B	---	---	---	---	1.400B
COPPER	48.000	11.800J	---	7.600J	34.200	50.700	527.000
IRON	7,730.000	5,860.000	1,920.000	2,430.000	2,490.000	1,850.000	5,280.000
LEAD	41.400	6.900	0.660BJ	2.800	1.900J	2.300J	33.200 J
MAGNESIUM	1,500.000	597.000B	171.000B	139.000B	183.000B	280.000B	363.000B
MANGANESE	106.000	112.000	34.300	26.900	37.200	11.400	128.000
MERCURY	0.160	---	---	---	---	---	---
NICKEL	---	---	---	---	---	---	44.000
POTASSIUM	5,000.000R	5,000.000R	5,000.000R	237.000BJ	245.000BJ	228.000BJ	278.000B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	7.100 J	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	13.300J	8.000B	---	5.000B	---	---	5.800B
ZINC	18.100	8.800J	---	---	4.300B	---	20.000R
CYANIDE	2.900	---	---	---	---	---	---
% SOLIDS	94.900	98.000	99.000	98.800	88.400	87.100	96.100

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE
AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID EPTH INTERVAL (FT)	CC-SB3-SL02 5.0 - 7.0	CC-SB3-SL03 10.0 - 12.0	CC-SB3-SL04 12.0 - 15.0	CC-SB3-SL05 20.0 - 22.0	CC-SB3-SL06 25.0 - 27.0	CC-SB3-SL07 30.0 - 32.0	CC-SB3-SLD5 20.0 - 22.0
NORGANIC PARAMETERS:							
LUMINUM	3,850.000	523.000	155.000	103.000	209.000	211.000	92.400
NTIMONY	---	---	---	---	---	---	---
RSENIC	5.400	0.800B	0.410B	0.470B	0.690B	0.680BJ	0.350B
ARIUM	16.600B	4.100B	1.700B	1.500B	1.400B	200.000R	0.930B
ERYLLIUM	5.000R	---	---	---	---	---	---
ADMIUM	1.000B	---	---	---	---	---	---
ALCIUM	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
HROMIUM	22.000	7.000	2.400J	1.600B	1.400B	1.700B	1.300B
COBALT	3.500B	---	---	---	---	---	---
COPPER	1,950.000	119.000J	18.700J	15.100J	19.500J	31.900	14.700J
IRON	16,600.000	3,510.000	1,020.000	100.000R	1,040.000	1,460.000	100.000R
LEAD	278.000 J	54.300	22.900J	15.500 J	8.100 J	4.500 J	15.700J
MAGNESIUM	525.000B	5,000.000R	5,000.000R	5,000.000R	5,000.000R	59.900B	5,000.000R
MANGANESE	110.000	18.700	15.000R	15.000R	15.000R	8.300 J	15.000R
MERCURY	---	---	---	---	---	---	---
NICKEL	28.800	1.600B	---	---	---	---	---
POTASSIUM	472.000B	198.000B	79.500B	44.000B	77.700B	153.000B	57.800B
SELENIUM	---	---	---	---	---	---	---
SILVER	3.600	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	26.100	4.300B	---	---	---	---	---
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	96.000	97.600	97.700	97.600	92.800	85.200	97.600

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE
AND SUBSURFACE SOILS (IN MG/KG)

SAMPLE ID	CC-SB4-C001	CC-SB4-SL01	CC-SB4-SL02	CC-SB4-SL03	CC-SB4-SL04	CC-SB4-SL05	CC-SB4-SL06
DEPTH INTERVAL (FT)	0.0 - 0.0	0.0 - 2.0	5.0 - 7.0	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0
NORGANIC PARAMETERS:							
ALUMINUM	2,390.000	2,510.000	1,070.000	656.000	473.000	428.000	239.000
ANTIMONY	---	---	---	---	---	---	---
ARSENIC	3.300J	2.600J	1.100B J	0.750B J	0.390BJ	0.540BJ	0.360BJ
BARIUM	21.700B	10.000B	6.400B	200.000R	3.400B	4.000B	3.100B
BERYLLIUM	---	---	---	---	---	---	---
CADMIUM	---	---	---	---	---	---	---
CALCIUM	41,600.000J	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
CHROMIUM	10.100	5.100J	3.200J	5.700J	1.600B	2.500J	1.800B
COBALT	---	2.300B	3.900B	---	---	---	---
COPPER	71,200.000	890.000	352.000	76.100	24.500	13.600	21.600
IRON	5,410.000	4,950.000	4,290.000	2,530.000	913.000	1,060.000	1,120.000
LEAD	1,450.000	84.200	109.000	1.700 J	1.200 J	1.100 J	5.300 J
MAGNESIUM	870.000B	369.000B	280.000B	160.000B	112.000B	86.700B	50.100B
MANGANESE	43.300	46.600 J	31.900 J	47.200 J	22.600 J	29.900 J	14.900 J
MERCURY	1.500	---	---	---	---	---	---
NICKEL	68.200	21.100	10.900	5.600B	1.900B	---	---
POTASSIUM	5,000.000R	487.000B	237.000B	115.000B	95.700B	64.100B	66.800B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	1,130.000B	---	---	---	---	---	---
VANADIUM	6.500B	4.600B	3.200B	1.400B	---	1.500B	---
ZINC	181.000	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	83.300	95.700	98.300	98.100	98.300	96.700	93.800

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 10

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE iD EPTH INTERVAL (FT)	CC-SB4-SL07 30.0 - 32.0	CC-SB4-SL08 35.0 - 37.0	CC-SB4-SL09 40.0 - 42.0	CC-SB4-SLD7 30.0 - 32.0	CC-SB5-SL02 5.0 - 7.0	CC-SB5-SL03 10.0 - 12.0	CC-SB5-SL04 15.0 - 17.0
NORGANIC PARAMETERS:							
LUMINUM	328.000J	272.000	207.000	182.000J	881.000	961.000	NR
NTIMONY	---	---	---	---	---	---	---
RSENIC	0.720B J	0.520B J	0.310B J	0.660BJ	0.620B	0.470B	---
ARIUM	2.600B	1.900B	2.600B	1.700B	200.000R	7.700B	200.000R
ERYLLIUM	---	---	---	---	---	---	---
ADMIUM	---	---	---	---	---	---	---
ALCIUM	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R
HROMIUM	3.100J	3.400J	2.100B	2.200B	2.600	3.700	2.100
OBALT	---	---	---	---	---	0.850B	---
OPPER	35.200J	22.800	13.500	19.600J	173.000J	20.400	21.700
IRON	1,780.000	1,350.000	1,340.000	1,390.000	2,330.000	2,960.000	1,740.000
LEAD	19.100 J	6.800 J	8.900 J	8.900 J	6.300J	1.100J	1.500 J
AGNESIUM	112.000B	119.000B	76.400B	72.200B	232.000B	270.000B	145.000B
ANGANESE	20.400 J	12.200 J	9.600 J	11.500 J	47.500	48.700	28.300
ERCURY	---	---	---	---	0.600J	0.100	---
NICKEL	1.800B	---	---	1.600B	4.000B	4.500B	4.800B
POTASSIUM	100.000B	87.600B	95.400B	75.200B	110.000B	209.000B	88.300B
SELENIUM	---	---	---	---	---	---	---
SILVER	---	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	---
VANADIUM	1.600B	---	---	1.800B	1.900B	2.600B	---
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	2.100B
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	83.700	80.500	82.800	82.000	97.200	97.300	97.600

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

DATE: 03/01/90
PAGE 11

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

SAMPLE ID	CC-SB5-SL05	CC-SB5-SL06	CC-SB5-SL07	CC-SB5-SL08	CC-SB5-SL09	CC-SB5-SLD2	CC-SB6-SL01
DEPTH INTERVAL (FT)	20.0 - 22.0	25.0 - 30.0	30.0 - 32.0	35.0 - 37.0	40.0 - 42.0	5.0 - 7.0	0.0 - 2.0
INORGANIC PARAMETERS:							
ALUMINUM	296.000	367.000	251.000	253.000	176.000	847.000	2,750.000J
ANTIMONY	---	---	---	---	---	---	---
ARSENIC	0.410B	---	---	0.400B	---	0.620B	2.300
BARIUM	200.000R	200.000R	200.000R	200.000R	200.000R	200.000R	8.500R
BERYLLIUM	---	---	---	---	---	---	---
CADMIUM	---	---	---	---	---	0.780B	---
CALCIUM	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	5,000.000R	975.000B
CHROMIUM	2.100	1.800B	4.900	2.200B	1.600B	3.000	3.400J
COBALT	---	---	---	---	---	---	1.200B
COPPER	27.300	23.700	24.900	25.900	30.100	56.600J	6.400 J
IRON	1,190.000	1,620.000	1,260.000	1,480.000	1,500.000	2,850.000	5,650.000
LEAD	5.400J	10.200 J	4.900J	3.900J	3.900J	2.000J	4.600
MAGNESIUM	67.400B	116.000B	73.800B	133.000B	55.400B	183.000B	877.000B
MANGANESE	8.800	9.800	4.700	7.700	7.600	48.000	86.900 J
MERCURY	---	0.300	---	---	---	---	---
NICKEL	2.800B	3.300B	3.500B	3.000B	3.900B	2.900B	2.200B
POTASSIUM	60.100B	89.100B	---	48.200B	93.900B	107.000B	192.000B
SELENIUM	---	---	---	---	---	---	0.660BJ
SILVER	---	---	---	---	---	---	---
SODIUM	---	---	---	---	---	---	15.700B
VANADIUM	1.600B	2.000B	1.400B	1.800B	---	2.000B	5.800B
ZINC	20.000R	20.000R	20.000R	20.000R	20.000R	20.000R	11.400J
CYANIDE	---	---	---	---	---	---	---
% SOLIDS	97.500	93.900	93.700	84.200	87.400	97.400	98.500

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-SB6-SL03	CC-SB6-SL04	CC-SB6-SL05	CC-SB6-SL06	CC-SB6-SL07	CC-SB6-SLD5	CC-SS1-SL01
EPTH INTERVAL (FT)	10.0 - 12.0	15.0 - 17.0	20.0 - 22.0	25.0 - 27.0	30.0 - 32.0	20.0 - 22.0	0.0 - 0.5
NORGANIC PARAMETERS:							
LUMINUM	588.000 J	509.000 J	397.000 J	380.000 J	609.000 J	441.000 J	1,620.000
NTIMONY	---	---	---	---	---	---	---
RSENIC	3.000	0.790B	1.100B	0.870B	0.880B	0.780B	1.900B
ARIUM	2.700B	1.600B	0.480B	0.510B	6.500R	0.530B	7.800B
ERYLLIUM	---	---	---	---	---	---	---
ADMIUM	---	---	---	---	---	---	---
ALCIUM	41.000B	30.400B	30.300B	25.900B	59.400B	31.500B	16,600.000J
HROMIUM	3.300J	---	---	---	3.500J	2.800J	4.300J
OBALT	---	---	---	---	---	---	---
OPPER	2.400B	2.600B	2.800B	7.000 J	37.600 J	4.500B	67.700
RON	3,080.000	1,950.000	1,040.000J	916.000	6,670.000	3,300.000J	6,260.000
EAD	1.400R	1.000R	0.830R	0.730R	0.930R	0.830R	20.900
AGNESIUM	124.000B	120.000B	106.000B	88.000B	98.400B	68.100B	7,730.000
ANGANESE	39.500 J	38.100 J	18.800 J	8.100 J	35.200 J	22.300 J	96.500 J
ERCURY	---	---	---	---	---	---	0.150
ICKEL	---	---	---	---	---	---	---
OTASSIUM	75.200B	49.900B	---	32.700B	60.200B	38.300B	578.000B
ELENIUM	---	---	---	0.550BJ	0.570BJ	---	---
ILVER	---	---	---	---	---	---	---
ODIUM	17.800B	14.500B	17.400B	24.200B	22.000B	13.400B	246.000B
ANADIUM	2.100B	1.200B	1.100B	---	3.100B	2.700B	5.300B
INC	4.200J	7.000J	2.000R	2.800R	5.200R	1.900R	41.500
YANIDE	---	---	---	---	---	---	---
% SOLIDS	97.700	98.000	97.400	90.000	90.100	97.700	96.900

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-12 (CON'T)
CIRCUITRON CORPORATION SITE
INORGANIC COMPOUNDS DETECTED IN THE SURFACE AND SUBSURFACE SOILS (IN MG/KG)

AMPLE ID	CC-SS2-SL01
EPTH INTERVAL (FT)	0.0 - 0.5
NORGANIC PARAMETERS:	
LUMINUM	3,280.000
NTIMONY	---
RSENIC	3.900
ARIUM	20.600B
ERYLLIUM	---
ADMIUM	---
ALCIUM	52,500.000J
HROMIUM	31.400J
OBALT	---
OPPER	5,060.000
RON	10,200.000
EAD	44.100
AGNESIUM	30,700.000
ANGANESE	94.100 J
ERCURY	0.260
ICKEL	119.000J
OTASSIUM	336.000B
ELENIUM	---
ILVER	5.500J
ODIUM	245.000B
ANADIUM	8.800B
INC	111.000
YANIDE	---
% SOLIDS	95.200

EXPLANATION OF CODES:

	DETECTED AT CONCENTRATION INDICATED
J	ESTIMATED VALUE
B	COMPOUND FOUND IN BLANK
---	UNDETECTED AT GIVEN INSTRUMENT DETECTION LIMIT (IF REPORTED)
NA	NOT ANALYZED FOR
X, R	REJECTED VALUE
NR	VALIDATED RESULTS NOT RECEIVED OR RESULT NOT REPORTED

TABLE 6-13
CIRCUITRON CORPORATION SITE
TOC, CYANIDE AND HEXAVALENT CHROMIUM DETECTED IN THE SURFACE AND SUBSURFACE SOILS AND IN THE SEDIMENTS (MG/KG)

SAMPLE ID	DEPTH INTERVAL	TOC	CYANIDE	HEXAVALENT CHROMIUM
CC-LP1-SE01		NA	ND	0.0065 UJ
CC-MW1D-SL01	0.0 - 2.0	NA	ND	NA
CC-MW1D-SL02	5.0 - 7.0	NA	ND	0.0065 UJ
CC-MW1D-SL03	10.0 - 12.0	NA	ND	0.0070 J
CC-MW1D-SL04	20.0 - 22.0	NA	ND	NA
CC-MW1D-SL05	25.0 - 27.0	NA	ND	NA
CC-MW1D-SL06	30.0 - 32.0	NA	ND	NA
CC-MW1D-SL07	95.0 - 97.0	NA	ND	NA
CC-MW2D-SL01	0.0 - 2.0	NA	ND	NA
CC-MW2D-SL02	5.0 - 7.0	NA	ND	0.0065 UJ
CC-MW2D-SL03	10.0 - 12.0	144.0	ND	0.0065 UJ
CC-MW2D-SL04	15.0 - 17.0	NA	ND	NA
CC-MW2D-SL06	25.0 - 27.0	286.0	ND	NA
CC-MW2D-SL07	30.0 - 32.0	NA	ND	NA
CC-MW2D-SL08	95.0 - 97.0	NA	ND	NA
CC-MW3D-SL01	0.0 - 2.0	NA	ND	NA
CC-MW3D-SL02	5.0 - 7.0	NA	ND	0.0065 UJ
CC-MW3D-SL03	10.0 - 12.0	228.0	ND	0.0065 UJ
CC-MW3D-SL04	15.0 - 17.0	NA	ND	NA
CC-MW3D-SL05	20.0 - 22.0	549.0 J	ND	NA
CC-MW3D-SL06	25.0 - 27.0	NA	ND	NA
CC-MW3D-SL07	30.0 - 32.0	NA	ND	NA
CC-MW3D-SL08	95.0 - 97.0	NA	ND	NA
CC-MW4D-SL01	0.0 - 2.0	NA	ND	NA
CC-MW4D-SL02	5.0 - 7.0	NA	ND	0.0065 UJ
CC-MW4D-SL03	10.0 - 12.0	1340.0 J	ND	0.0065 UJ
CC-MW4D-SL04	15.0 - 17.0	NA	ND	NA
CC-MW4D-SL05	20.0 - 22.0	2300.0 J	ND	NA
CC-MW4D-SL06	25.0 - 27.0	NA	ND	NA
CC-MW4D-SL07	30.0 - 32.0	NA	ND	NA
CC-MW4D-SL08	95.0 - 97.0	NA	ND	NA
CC-MW4D-SLD4	15.0 - 17.0	NA	ND	NA
CC-MW4D-SLD5	20.0 - 22.0	2700.0 J	ND	NA
CC-SB1-SL01	0.0 - 2.0	NA	ND	NA
CC-SB1-SL02	5.0 - 7.0	NA	ND	NA
CC-SB1-SL03	10.0 - 12.0	ND	2.2	NA
CC-SB1-SL04	15.0 - 17.0	NA	ND	NA
CC-SB1-SL05	20.0 - 22.0	NA	ND	NA
CC-SB1-SL06	25.0 - 27.0	NA	ND	NA
CC-SB1-SL07	30.0 - 32.0	NA	ND	NA
CC-SB1-SL08	35.0 - 37.0	NA	ND	NA
CC-SB1-SLD6	25.0 - 27.0	NA	ND	NA

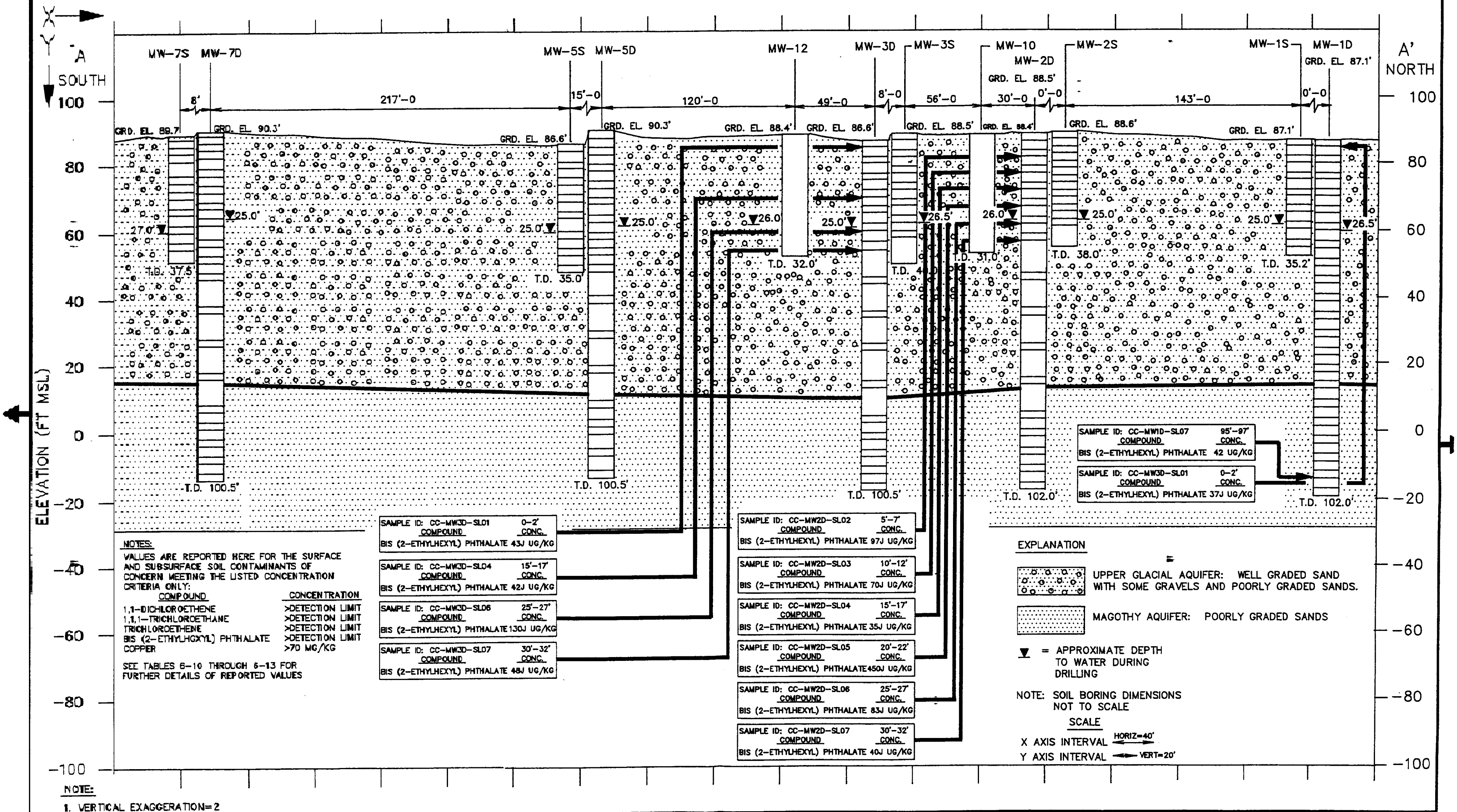
NOTES:
NA = NOT ANALYZED FOR
ND = NOT DETECTED

REVISION NO.1
07/27/90

TABLE 6-13 (CONT'D)
CIRCUITRON CORPORATION SITE
TOC, CYANIDE AND HEXAVALENT CHROMIUM DETECTED IN THE SURFACE AND SUBSURFACE SOILS AND IN THE SEDIMENTS (MG/KG)

SAMPLE ID	DEPTH INTERVAL	TOC	CYANIDE	HEXAVALENT CHROMIUM
CC-SB2-SL01	0.0 - 2.0	2420.0	2.9	NA
CC-SB2-SL02	5.0 - 7.0	690.0	ND	NA
CC-SB2-SL03	15.0 - 17.0	142.0	ND	NA
CC-SB2-SL04	20.0 - 22.0	152.0 J	ND	NA
CC-SB2-SL05	25.0 - 27.0	ND	ND	NA
CC-SB2-SL06	30.0 - 32.0	220.0	ND	NA
CC-SB2-SLD4	20.0 - 22.0	122.0 J	ND	NA
CC-SB3-SL01	0.0 - 2.0	NA	ND	NA
CC-SB3-SL02	5.0 - 7.0	NA	ND	NA
CC-SB3-SL03	10.0 - 12.0	NA	ND	NA
CC-SB3-SL04	12.0 - 15.0	NA	ND	NA
CC-SB3-SL05	20.0 - 22.0	NA	ND	NA
CC-SB3-SL06	25.0 - 27.0	NA	ND	NA
CC-SB3-SL07	30.0 - 32.0	NA	ND	NA
CC-SB3-SLD5	20.0 - 22.0	NA	ND	NA
CC-SB4-SL01	0.0 - 2.0	1490.0	ND	NA
CC-SB4-SL02	5.0 - 7.0	503.0	ND	NA
CC-SB4-SL03	10.0 - 12.0	285.0	ND	NA
CC-SB4-SL04	15.0 - 17.0	112.0	ND	NA
CC-SB4-SL05	20.0 - 22.0	ND	ND	NA
CC-SB4-SL06	25.0 - 27.0	181.0	ND	NA
CC-SB4-SL07	30.0 - 32.0	222.0	ND	NA
CC-SB4-SL08	35.0 - 37.0	ND	ND	NA
CC-SB4-SL09	40.0 - 42.0	188.0	ND	NA
CC-SB4-SLD7	30.0 - 32.0	ND	ND	NA
CC-SB5-SL02	5.0 - 7.0	NA	ND	NA
CC-SB5-SL03	10.0 - 12.0	NA	ND	NA
CC-SB5-SL04	15.0 - 17.0	NA	ND	NA
CC-SB5-SL05	20.0 - 22.0	NA	ND	NA
CC-SB5-SL06	25.0 - 27.0	NA	ND	NA
CC-SB5-SL07	30.0 - 32.0	NA	ND	NA
CC-SB5-SL08	35.0 - 37.0	NA	ND	NA
CC-SB5-SL09	40.0 - 42.0	NA	ND	NA
CC-SB5-SLD2	5.0 - 7.0	NA	ND	NA
CC-SB6-SL01	0.0 - 2.0	NA	ND	NA
CC-SB6-SL02	5.0 - 7.0	NA	ND	NA
CC-SB6-SL03	10.0 - 12.0	ND	2.2	NA
CC-SB6-SL04	15.0 - 17.0	NA	ND	NA
CC-SB6-SL05	20.0 - 22.0	NA	ND	NA
CC-SB6-SL06	25.0 - 27.0	NA	ND	NA
CC-SB6-SL07	30.0 - 32.0	NA	ND	NA
CC-SB6-SLD5	20.0 - 22.0	NA	ND	NA
CC-SS1-SL01	0.0 - 0.5	NA	ND	NA
CC-SS2-SL01	0.0 - 0.5	NA	ND	NA

NOTES: NA = NOT ANALYZED FOR
ND = NOT DETECTED



SAMPLE ID: CC-MW3D-SL01 0-2'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 43J UG/KG

SAMPLE ID: CC-MW3D-SL04 15'-17'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 42J UG/KG

SAMPLE ID: CC-MW3D-SL06 25'-27'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 130J UG/KG

SAMPLE ID: CC-MW3D-SL07 30'-32'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 48J UG/KG

SAMPLE ID: CC-MW2D-SL02 5'-7'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 97J UG/KG

SAMPLE ID: CC-MW2D-SL03 10'-12'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 70J UG/KG

SAMPLE ID: CC-MW2D-SL04 15'-17'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 35J UG/KG

SAMPLE ID: CC-MW2D-SL05 20'-22'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 450J UG/KG

SAMPLE ID: CC-MW2D-SL06 25'-27'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 83J UG/KG

SAMPLE ID: CC-MW2D-SL07 30'-32'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 40J UG/KG

SAMPLE ID: CC-MW1D-SL07 95'-97'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 42 UG/KG

SAMPLE ID: CC-MW3D-SL01 0-2'
COMPOUND CONC.
BIS (2-ETHYLHEXYL) PHTHALATE 37J UG/KG

NOTES:

VALUES ARE REPORTED HERE FOR THE SURFACE AND SUBSURFACE SOIL CONTAMINANTS OF CONCERN MEETING THE LISTED CONCENTRATION CRITERIA ONLY:

COMPOUND	CONCENTRATION
1,1-DICHLOROETHENE	>DETECTION LIMIT
1,1,1-TRICHLOROETHANE	>DETECTION LIMIT
TRICHLOROETHENE	>DETECTION LIMIT
BIS (2-ETHYLHGXYL) PHTHALATE	>DETECTION LIMIT
COPPER	>70 MG/KG

SEE TABLES 6-10 THROUGH 6-13 FOR FURTHER DETAILS OF REPORTED VALUES

EXPLANATION

⁘	UPPER GLACIAL AQUIFER: WELL GRADED SAND WITH SOME GRAVELS AND POORLY GRADED SANDS.
░	MAGOTHY AQUIFER: POORLY GRADED SANDS
▼	= APPROXIMATE DEPTH TO WATER DURING DRILLING

NOTE: SOIL BORING DIMENSIONS NOT TO SCALE

SCALE

X AXIS INTERVAL ⟷ HORIZ=40'

Y AXIS INTERVAL ⟷ VERT=20'

NOTE:

1. VERTICAL EXAGGERATION=2

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED

DEPT. 940 DR DSW
DATE. ____ CH. ___
SCALE. NONE

APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

GEOLOGIC CROSS SECTION A-A'
SUBSURFACE SOIL RESULTS FOR
CONTAMINANTS OF CONCERN

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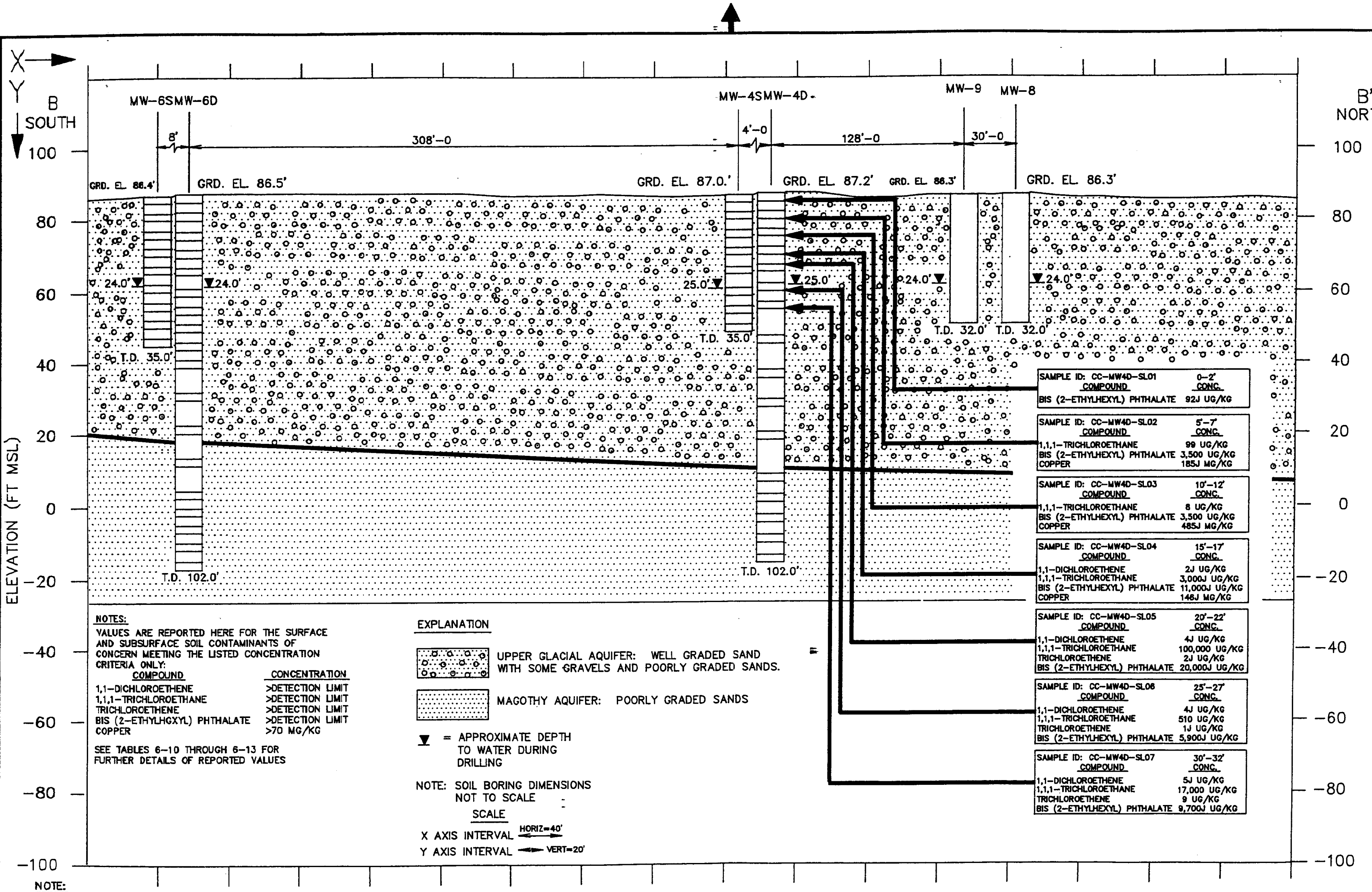
-
FIG. NO. 6-1 00

CIRC-S.DWG 11X17



SAMPLE ID: CC-MW4D-SL01 COMPOUND	0-2' CONC.
BIS (2-ETHYLHEXYL) PHTHALATE	92J UG/KG

SAMPLE ID: CC-MW4D-SL02 COMPOUND	5'-7' CONC.
1,1,1-TRICHLOROETHANE	99 UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	3,500 UG/KG
COPPER	185J MG/KG

SAMPLE ID: CC-MW4D-SL03 COMPOUND	10'-12' CONC.
1,1,1-TRICHLOROETHANE	8 UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	3,500 UG/KG
COPPER	485J MG/KG

SAMPLE ID: CC-MW4D-SL04 COMPOUND	15'-17' CONC.
1,1-DICHLOROETHENE	2J UG/KG
1,1,1-TRICHLOROETHANE	3,000J UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	11,000J UG/KG
COPPER	146J MG/KG

SAMPLE ID: CC-MW4D-SL05 COMPOUND	20'-22' CONC.
1,1-DICHLOROETHENE	4J UG/KG
1,1,1-TRICHLOROETHANE	100,000 UG/KG
TRICHLOROETHENE	2J UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	20,000J UG/KG

SAMPLE ID: CC-MW4D-SL06 COMPOUND	25'-27' CONC.
1,1-DICHLOROETHENE	4J UG/KG
1,1,1-TRICHLOROETHANE	510 UG/KG
TRICHLOROETHENE	1J UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	5,900J UG/KG

SAMPLE ID: CC-MW4D-SL07 COMPOUND	30'-32' CONC.
1,1-DICHLOROETHENE	5J UG/KG
1,1,1-TRICHLOROETHANE	17,000 UG/KG
TRICHLOROETHENE	9 UG/KG
BIS (2-ETHYLHEXYL) PHTHALATE	9,700J UG/KG

NOTES:

VALUES ARE REPORTED HERE FOR THE SURFACE AND SUBSURFACE SOIL CONTAMINANTS OF CONCERN MEETING THE LISTED CONCENTRATION CRITERIA ONLY:

COMPOUND	CONCENTRATION
1,1-DICHLOROETHENE	>DETECTION LIMIT
1,1,1-TRICHLOROETHANE	>DETECTION LIMIT
TRICHLOROETHENE	>DETECTION LIMIT
BIS (2-ETHYLHGXYL) PHTHALATE	>DETECTION LIMIT
COPPER	>70 MG/KG

SEE TABLES 6-10 THROUGH 6-13 FOR FURTHER DETAILS OF REPORTED VALUES

EXPLANATION

▨	UPPER GLACIAL AQUIFER: WELL GRADED SAND WITH SOME GRAVELS AND POORLY GRADED SANDS.
▨	MAGOTHY AQUIFER: POORLY GRADED SANDS
▼	= APPROXIMATE DEPTH TO WATER DURING DRILLING

NOTE: SOIL BORING DIMENSIONS NOT TO SCALE

SCALE

X AXIS INTERVAL ⟷ HORIZ=40'

Y AXIS INTERVAL ⟷ VERT=20'

NOTE:

1. VERTICAL EXAGGERATION=2

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED

DEPT 940 DR DSW

DATE ______ CH ___

SCALE NONE

APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

GEOLOGIC CROSS SECTION B-B' SUBSURFACE SOIL RESULTS FOR CONTAMINANTS OF CONCERN

EPA

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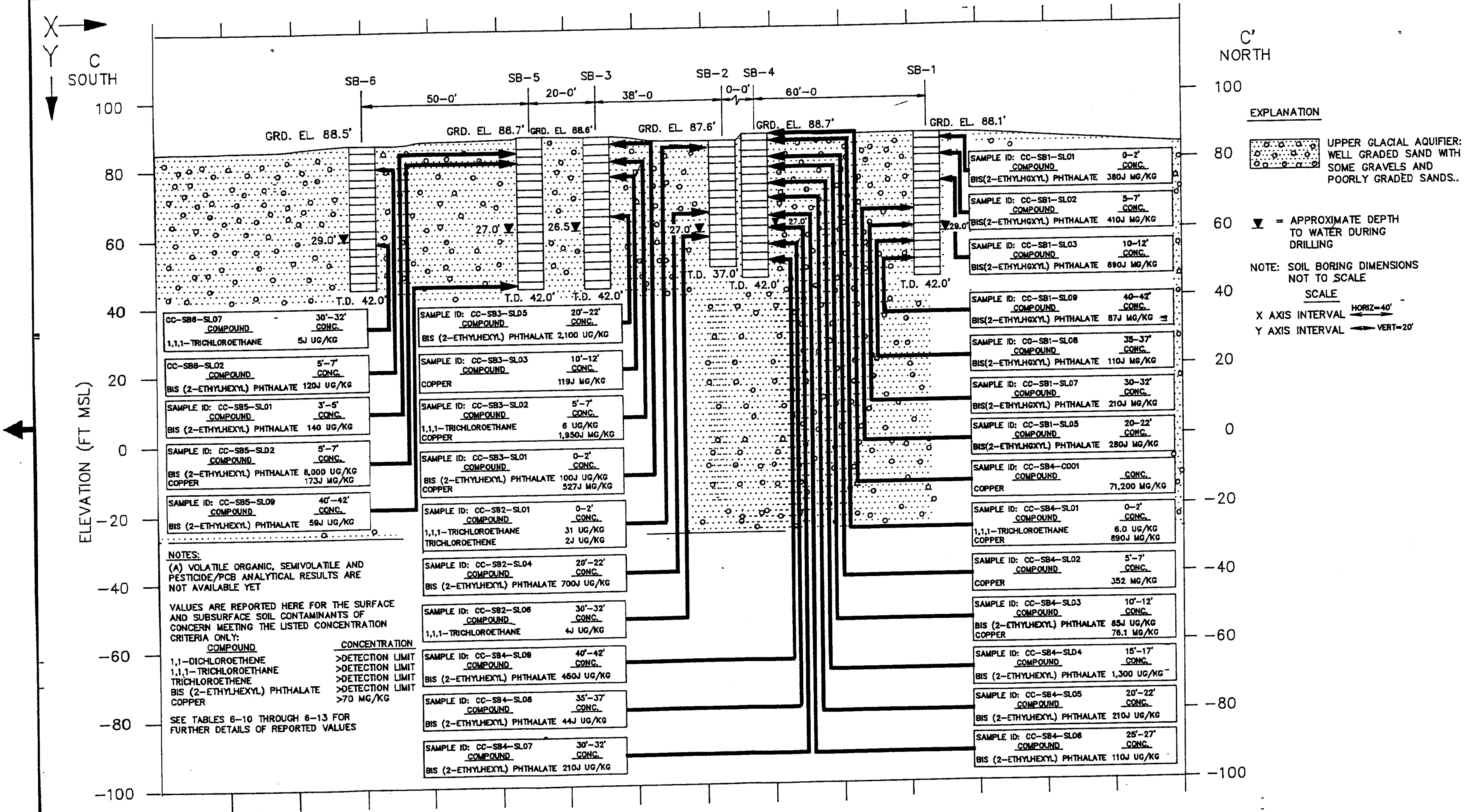
FIG NO. 6-2 00

CIRC-T.DWG 11X17 VERT=20'



NOTES:

(A) VOLATILE ORGANIC, SEMIVOLATILE AND PESTICIDE/PCB ANALYTICAL RESULTS ARE NOT AVAILABLE YET

VALUES ARE REPORTED HERE FOR THE SURFACE AND SUBSURFACE SOIL CONTAMINANTS OF CONCERN MEETING THE LISTED CONCENTRATION CRITERIA ONLY:

COMPOUND	CONCENTRATION
1,1-DICHLOROETHENE	>DETECTION LIMIT
1,1,1-TRICHLOROETHANE	>DETECTION LIMIT
TRICHLOROETHENE	>DETECTION LIMIT
BIS (2-ETHYLHEXYL) PHTHALATE	>DETECTION LIMIT
COPPER	>70 MG/KG

SEE TABLES 6-10 THROUGH 6-13 FOR FURTHER DETAILS OF REPORTED VALUES

REV	DATE	BY	CH	APPROVED	REV	DATE	BY	CH	APPROVED

EBASCO SERVICES INCORPORATED

DEPT 940 DR DSW
DATE ____ CH ____
SCALE NONE
APPROVED

U.S. ENVIRONMENTAL PROTECTION AGENCY

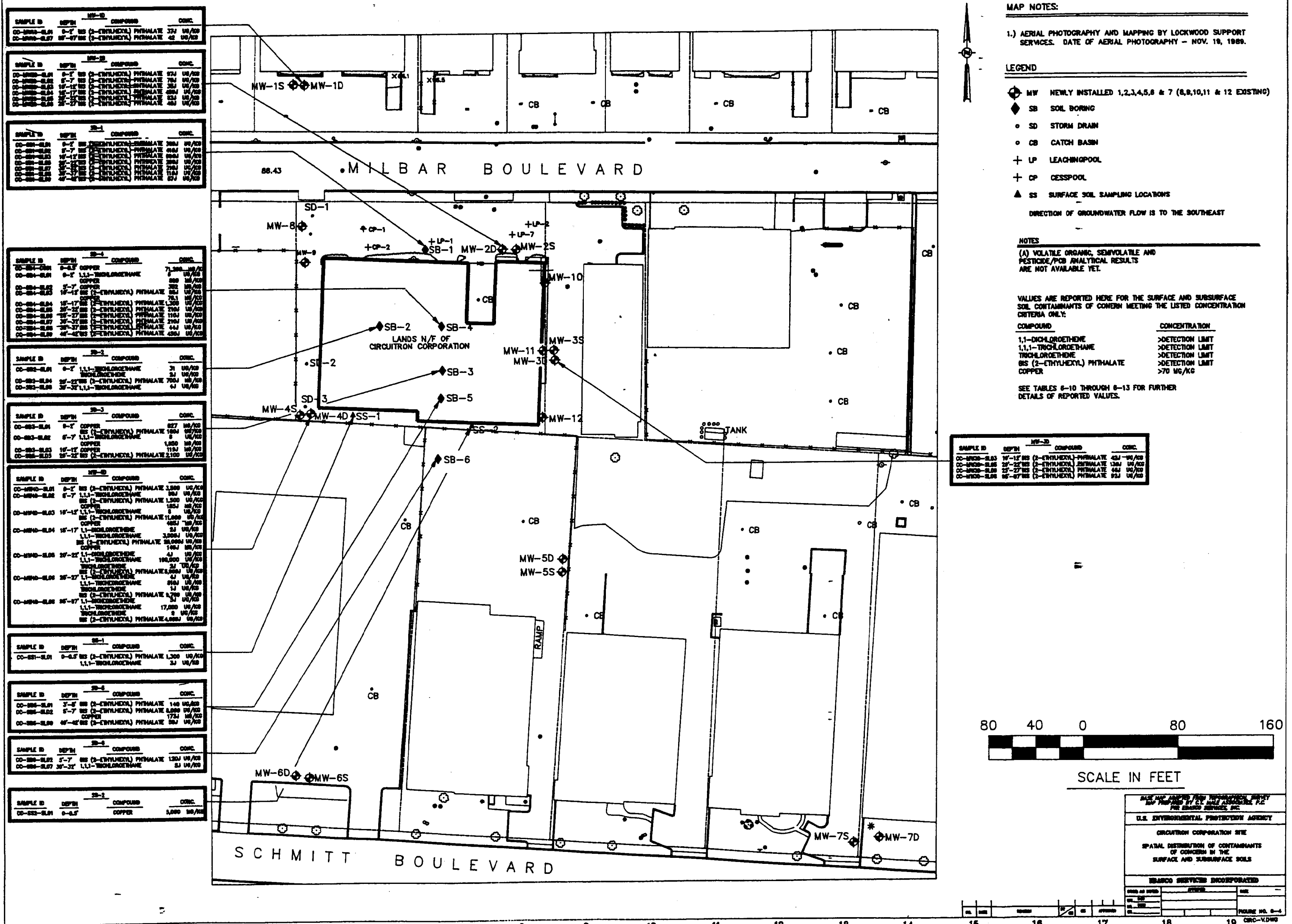
CIRCUITRON CORPORATION SITE

GEOLOGIC CROSS SECTION C - C'
SUBSURFACE SOIL RESULTS FOR
CONTAMINANTS OF CONCERN

EPA
8310.068

FIG. NO. 6-3 00

CIRC-U.DWG 11X17



MW-1D

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-MW1D-SL01	0-2'	BIS (2-ETHYLHEXYL) PHTHALATE	37J UG/KG
CC-MW1D-SL07	35'-37'	BIS (2-ETHYLHEXYL) PHTHALATE	42 UG/KG

MW-2D

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-MW2D-SL01	0-2'	BIS (2-ETHYLHEXYL) PHTHALATE	97J UG/KG
CC-MW2D-SL02	5'-7'	BIS (2-ETHYLHEXYL) PHTHALATE	78J UG/KG
CC-MW2D-SL03	10'-12'	BIS (2-ETHYLHEXYL) PHTHALATE	35J UG/KG
CC-MW2D-SL04	15'-17'	BIS (2-ETHYLHEXYL) PHTHALATE	490J UG/KG
CC-MW2D-SL05	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	83J UG/KG
CC-MW2D-SL06	25'-27'	BIS (2-ETHYLHEXYL) PHTHALATE	48J UG/KG

SB-1

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB1-SL01	0-2'	BIS (2-ETHYLHEXYL) PHTHALATE	300J UG/KG
CC-SB1-SL02	5'-7'	BIS (2-ETHYLHEXYL) PHTHALATE	410J UG/KG
CC-SB1-SL03	10'-12'	BIS (2-ETHYLHEXYL) PHTHALATE	690J UG/KG
CC-SB1-SL05	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	280J UG/KG
CC-SB1-SL07	30'-32'	BIS (2-ETHYLHEXYL) PHTHALATE	790J UG/KG
CC-SB1-SL08	35'-37'	BIS (2-ETHYLHEXYL) PHTHALATE	110J UG/KG
CC-SB1-SL09	40'-42'	BIS (2-ETHYLHEXYL) PHTHALATE	87J UG/KG

SB-4

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB4-CS01	0-0.5'	COPPER	71,300 MG/KG
CC-SB4-SL01	0-2'	1,1,1-TRICHLOROETHANE	6 UG/KG
		COPPER	800 MG/KG
CC-SB4-SL02	5'-7'	COPPER	382 MG/KG
CC-SB4-SL03	10'-12'	BIS (2-ETHYLHEXYL) PHTHALATE	85J UG/KG
		COPPER	78.1 MG/KG
CC-SB4-SL04	15'-17'	BIS (2-ETHYLHEXYL) PHTHALATE	1,300 UG/KG
CC-SB4-SL05	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	210J UG/KG
CC-SB4-SL06	25'-27'	BIS (2-ETHYLHEXYL) PHTHALATE	110J UG/KG
CC-SB4-SL07	30'-32'	BIS (2-ETHYLHEXYL) PHTHALATE	210J UG/KG
CC-SB4-SL08	35'-37'	BIS (2-ETHYLHEXYL) PHTHALATE	44J UG/KG
CC-SB4-SL09	40'-42'	BIS (2-ETHYLHEXYL) PHTHALATE	450J UG/KG

SB-2

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB2-SL01	0-2'	1,1,1-TRICHLOROETHANE	31 UG/KG
		TRICHLOROETHENE	2J UG/KG
CC-SB2-SL04	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	700J UG/KG
CC-SB2-SL06	30'-32'	1,1,1-TRICHLOROETHANE	4J UG/KG

SB-3

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB3-SL01	0-2'	COPPER	827 MG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	180J UG/KG
CC-SB3-SL02	5'-7'	1,1,1-TRICHLOROETHANE	8 UG/KG
		COPPER	1,850 MG/KG
CC-SB3-SL03	10'-12'	COPPER	119J MG/KG
CC-SB3-SL05	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	2,100 UG/KG

MW-4D

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-MW4D-SL01	0-2'	BIS (2-ETHYLHEXYL) PHTHALATE	3,500 UG/KG
CC-MW4D-SL02	5'-7'	1,1,1-TRICHLOROETHANE	98J UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	1,500 UG/KG
		COPPER	185J MG/KG
CC-MW4D-SL03	10'-12'	1,1,1-TRICHLOROETHANE	8 UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	11,000 UG/KG
		COPPER	485J MG/KG
CC-MW4D-SL04	15'-17'	1,1-DICHLOROETHENE	2J UG/KG
		1,1,1-TRICHLOROETHANE	3,000J UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	28,000J UG/KG
		COPPER	140J MG/KG
CC-MW4D-SL05	20'-22'	1,1-DICHLOROETHENE	4J UG/KG
		1,1,1-TRICHLOROETHANE	190,000 UG/KG
		TRICHLOROETHENE	2J UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	3,000J UG/KG
CC-MW4D-SL06	25'-27'	1,1-DICHLOROETHENE	4J UG/KG
		1,1,1-TRICHLOROETHANE	810J UG/KG
		TRICHLOROETHENE	1J UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	9,700 UG/KG
CC-MW4D-SL08	35'-37'	1,1-DICHLOROETHENE	5J UG/KG
		1,1,1-TRICHLOROETHANE	17,000 UG/KG
		TRICHLOROETHENE	9 UG/KG
		BIS (2-ETHYLHEXYL) PHTHALATE	4,000J UG/KG

SS-1

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SS1-SL01	0-0.5'	BIS (2-ETHYLHEXYL) PHTHALATE	1,300 UG/KG
		1,1,1-TRICHLOROETHANE	3J UG/KG

SB-5

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB5-SL01	3'-5'	BIS (2-ETHYLHEXYL) PHTHALATE	140 UG/KG
CC-SB5-SL02	5'-7'	BIS (2-ETHYLHEXYL) PHTHALATE	8,000 UG/KG
		COPPER	173J MG/KG
CC-SB5-SL09	40'-42'	BIS (2-ETHYLHEXYL) PHTHALATE	59J UG/KG

SB-6

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SB6-SL02	5'-7'	BIS (2-ETHYLHEXYL) PHTHALATE	120J UG/KG
CC-SB6-SL07	30'-32'	1,1,1-TRICHLOROETHANE	5J UG/KG

SS-2

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-SS2-SL01	0-0.5'	COPPER	5,000 MG/KG

MW-3D

SAMPLE ID	DEPTH	COMPOUND	CONC.
CC-MW3D-SL03	10'-12'	BIS (2-ETHYLHEXYL) PHTHALATE	42J UG/KG
CC-MW3D-SL05	20'-22'	BIS (2-ETHYLHEXYL) PHTHALATE	130J UG/KG
CC-MW3D-SL06	25'-27'	BIS (2-ETHYLHEXYL) PHTHALATE	46J UG/KG
CC-MW3D-SL08	35'-37'	BIS (2-ETHYLHEXYL) PHTHALATE	92J UG/KG

MAP NOTES:

1.) AERIAL PHOTOGRAPHY AND MAPPING BY LOCKWOOD SUPPORT SERVICES. DATE OF AERIAL PHOTOGRAPHY – NOV. 19, 1989.

LEGEND

⊕	MW	NEWLY INSTALLED 1,2,3,4,5,6 & 7 (8,9,10,11 & 12 EXISTING)
◆	SB	SOIL BORING
○	SD	STORM DRAIN
○	CB	CATCH BASIN
+	LP	LEACHINGPOOL
+	CP	CESSPOOL
▲	SS	SURFACE SOIL SAMPLING LOCATIONS

DIRECTION OF GROUNDWATER FLOW IS TO THE SOUTHEAST

NOTES

(A) VOLATILE ORGANIC, SEMIVOLATILE AND PESTICIDE/PCB ANALYTICAL RESULTS ARE NOT AVAILABLE YET.

VALUES ARE REPORTED HERE FOR THE SURFACE AND SUBSURFACE SOIL CONTAMINANTS OF CONERN MEETING THE LISTED CONCENTRATION CRITERIA ONLY:

COMPOUND	CONCENTRATION
1,1-DICHLOROETHENE	>DETECTION LIMIT
1,1,1-TRICHLOROETHANE	>DETECTION LIMIT
TRICHLOROETHENE	>DETECTION LIMIT
BIS (2-ETHYLHEXYL) PHTHALATE	>DETECTION LIMIT
COPPER	>70 MG/KG

SEE TABLES 6-10 THROUGH 6-13 FOR FURTHER DETAILS OF REPORTED VALUES.

BASE MAP ADAPTED FROM TOPOGRAPHICAL SURVEY MAP PREPARED BY C.T. MALE ASSOCIATES, P.C. FOR EBASCO SERVICES, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CIRCUITRON CORPORATION SITE

SPATIAL DISTRIBUTION OF CONTAMINANTS
OF CONCERN IN THE
SURFACE AND SUBSURFACE SOILS

EBASCO SERVICES INCORPORATED

FIGURE NO. 6-4

CIRC-V.DWG