SUPPLEMENTAL FIELD INVESTIGATION WORK PLAN

HAZELTINE CORPORATION

GREENLAWN, NEW YORK

Prepared for:

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October 1991

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1.0 INTRODUCTION

Radian conducted a field investigation of the Hazeltine's premises in Greenlawn, New York (the "Premises") in April and May 1990, in accordance with the Work Plan incorporated in an Order On Consent, dated December 28, 1989, entered into by Hazeltine and the New York State Department of Environmental Conservation (NYSDEC). The investigation included collection of subsurface soil and groundwater samples, and resulted in the issuance of Radian's Field Investigation Report dated January 1991. Following its review of Radian's Report, NYSDEC requested that additional environmental data be collected at the Premises. Specifically, NYSDEC requested further investigation in the area of the surface recharge basin located east of Building 2 (see Figure 1) at the Premises (the "Recharge Basin").

This supplemental work plan describes a proposed scope of work believed to be in accordance with various discussions between representatives of NYSDEC Region 1, Hazeltine and Radian.

The site history, geology/hydrogeology and groundwater evaluation are presented in the Field Investigation Report from Radian Corporation, dated January 1991.

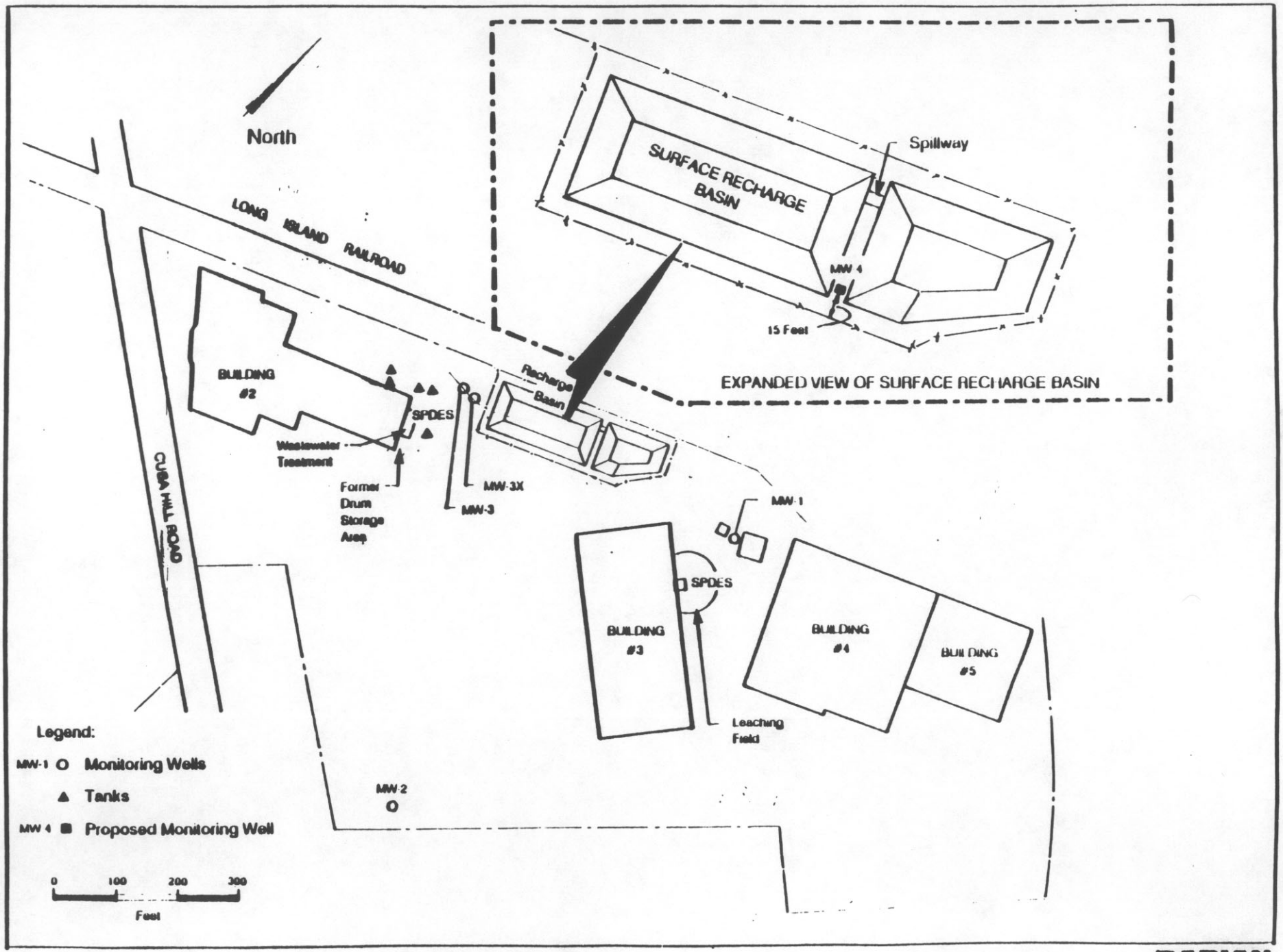

Figure 1. Site Plan, Hazeltine Corporation, Greenlawn, New York

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2.0 SUPPLEMENTAL FIELD INVESTIGATION

2.1 Objectives

The objectives of this supplemental field investigation of the Premises are as follows:

1. Evaluate, in accordance with Task 3 hereof, whether the shallowest groundwater underlying the Recharge Basin has suffered any adverse environmental effect as a result of discharges of process wastewater to the Basin in the past; and

2. Evaluate, in accordance with Task 3 hereof, whether the shallowest groundwater present in the vicinity of the former C-Tank, E-Tank and SPDES Outfall 001A area has suffered any adverse environmental effect caused by these former activities.

Radian has prepared a scope of supplemental work to enable Hazeltine to meet the above objectives. The general elements of this work are described below. Radian will mobilize for the supplemental field investigation within two weeks of receipt of NYSDEC approval of this work plan. In all cases, laboratory analyses will be conducted for those elements and compounds listed in the Target Compounds List (TCL) of volatile organic compounds (VOCs) and metals referenced in the New York State Department of Conservation Laboratory Protocol Document. The Contingency Plan and Quality Assurance provisions of the Consent Order Work Plan will apply to the activities set forth in this Supplemental Work Plan and are incorporated herein. Radian's Health and Safety Plan supersedes the Health and Safety provisions of the Consent Order Work Plan and is included as Attachment 1.

2.2 The Proposed Supplemental Work

In order to accomplish the objectives stated above, the work proposed for the Supplemental Field Investigation consists of the following four tasks:

1. Installation, with concurrent subsurface soil sampling and subsequent groundwater sampling, of one additional monitoring well (MW-4) in the vicinity of the Recharge Basin located east of Building 2 (Objective 1).

2. Resampling of groundwater in monitoring wells MW-1, MW-2 and MW-3X (Objective 2).

3. Evaluation of results in accordance with Task 3 (see 2.2.3).

4. Preparation of a supplemental field investigation report.

NYSDEC, Region 1 Water office, will be notified at least five (5) days in advance of all field work.

2.2.1 Task 1 - Monitoring Well Installation and Soil Sampling

A monitoring well will be installed on the berm between the east and west sides of the Recharge Basin, approximately 15 feet north of the gate to the Basin. The location of this monitoring well is shown as MW-4 on Figure 1. The monitoring well will be installed in the first water-bearing zone encountered and is anticipated to be a maximum of 190 feet deep, unless a local perched water-bearing zone is encountered at a shallower depth. The well will be drilled using cable tool methods. An eight-inch carbon steel casing will be pushed into the ground as drilling and bailing of loose material proceeds.

Split spoon samples will be collected continuously within selected depth intervals and every 10 feet between specified intervals, or more frequently if significant formation changes are encountered. All soil samples collected will be screened by headspace analysis and split samples provided to NYSDEC personnel, upon request. The first continuously sampled interval will extend from the base of the Recharge Basin to approximately 20 feet below the base of the Basin. It is anticipated that this 20-foot interval will extend from approximately 15 to approximately 35 feet below ground

surface. The second depth interval to be continuously sampled will extend from approximately 15 feet above the presumed top of the local perched water zone to five feet below the top of such zone. It is anticipated that this 20-foot interval will extend from approximately 75 to approximately 95 feet below ground surface. If this monitoring well is completed in the regional water table, then a third interval will be continuously sampled extending from approximately 15 feet above the top of the presumed regional water table to five feet below the top of such water table. It is anticipated that this 20-foot interval will extend from approximately 150 to approximately 170 feet below ground surface. Actual sampling depths may vary based on the water level measured in MW-3X at the time of drilling and on visual observations made during drilling.

One soil sample from each of the first and second continuously sampled intervals and two soil samples between the first and second continuously sampled intervals (four samples total) will be selected for laboratory analysis. The sample from the first interval and the two samples from between the first and second continuously sampled intervals will be selected based on visual observations and field headspace analysis results. Assuming that local perched water is not encountered and, therefore, that the well will be installed in the regional water table, a sample from the third sampling interval also will be selected for analysis. The basis for selection of the sample from the second or third continuously sampled intervals will be based primarily on which sample was collected from the zone immediately above the static water level, as appropriate. To a lesser extent, field headspace analysis and visual observations will be used to further refine the sample selection. A minimum of four and a maximum of five soil samples will be analyzed for TCL volatile organic compounds and metals.

Upon reaching the target depth, 4-inch diameter, schedule 40, flush-joint threaded polyvinyl chloride (PVC) casing and screen will be placed inside the 8-inch steel casing. The well screen will be 20-feet in length and will have a No. 10 slot size. The sand pack will be placed from the bottom of the screen to approximately 2-feet above the top of the screen. The sand will be placed in the annulus between the PVC

and steel casings as the 8-inch steel casing is raised. A granular bentonite/potable water slurry will be placed in the annulus from the top of the sand pack to a minimum of two feet above the sand pack. The carbon steel casing will be raised during placement of the sand pack and bentonite seal to facilitate well completion. From the top of the bentonite seal to ground surface, Volclay grout will be placed in the annulus. Excess carbon steel casing will be cut off above the ground surface and the remaining casing will extend below grade to the depth of the bentonite seal. The well will be developed 24 hours after well completion by pumping and bailing until groundwater is sediment-free and groundwater quality measurements of pH, conductivity and temperature stabilize.

2.2.2 Task 2 - Groundwater Sampling

Two rounds of groundwater sampling will be conducted. The first round of samples will be collected from monitoring wells MW-3X and MW-4 upon completion of successful well development of MW-4. The second round of sampling will be conducted eight weeks following the first round and will include all four monitoring wells (MW-1, MW-2, MW-3X and MW-4). Prior to sample collection, the water level in each well will be measured and borehole water volume calculated. Three borehole volumes will be purged from the well by pumping prior to collection of groundwater samples, or if the well is purged dry, the sample will be collected after the well recharges. Water quality measurements of pH, conductivity and temperature will be made during purging.

Sample representativeness will be assessed in the field by Radian based on sample appearance and water quality measurements taken during purging. Consultation with NYSDEC personnel will be conducted prior to sample analysis to assure concurrence. All samples will be collected within 24 hours of purging. Additional sample volume will be provided to NYSDEC personnel for split sampling, if desired. All groundwater samples will be submitted to CompuChem for analysis of TCL volatile organic compounds, TCL total metals and TCL dissolved metals.

2.2.3 Task 3 - Evaluation of Results

As data allows, a groundwater contour map for the site will be prepared. If MW-4 is completed in the perched water zone, and if the water level in this well supports the assumption that this well intercepts the same unit as that of MW-2 and MW-1, then a contour map of the perched water will be prepared. In all scenarios, regional water table data must be used to supplement on-site data for the preparation of a regional water table map, because even if MW-4 is completed in this unit, data from only two on site wells (MW-3X or the replacement well and, perhaps, MW-4) will be available and appropriate for this purpose.

If a representative sample of groundwater cannot be collected from monitoring well MW-3X, then Hazeltine will install a replacement well adjacent to MW-3X. This well will be installed by cable tool, using the same methodology as that described for MW-4. The only exception will be that during installation of a replacement monitoring well for MW-3X, split spoon samples will be collected within the target screened interval only for lithologic determination purposes.

The groundwater in which MW-4 is installed shall be evaluated by comparison with the groundwater in MW-2, which shall be regarded as background. The groundwater in which MW-3X (or the replacement well, if such is necessary) is installed also shall be evaluated by comparison with the groundwater in MW-2, which again shall be regarded as background. If both rounds of groundwater samples taken during this Supplemental Field Investigation from MW-4 or MW-3X, as the case may be, do not contain process-related contaminants from the Premises at concentrations above those in MW-2, then it will be concluded that the groundwater from MW-4 or MW-3X, as the case may be, has not suffered any adverse environmental effect and that Objective No. 1 or Objective No. 2, as the case may be, has been met and the Supplemental Field Investigation Work Plan has been completed with respect to that Objective; if such is not the case with respect to either MW-4 or MW-3X, then Hazeltine will confer with

NYSDEC concerning whether any additional field investigation is warranted with respect to the well in question.

2.2.4 Task 4 - Preparation of Report

Upon successful completion of this supplemental field investigation, an addendum to Radian's January 1991 Field Investigation Report will be prepared and submitted to NYSDEC for review. The addendum will include all field and analytical data collected during the supplemental investigation and conclusions made on the basis of this data. The addendum will be submitted to NYSDEC upon Hazeltine's receipt from Radian Corporation.

Attachment 1

Radian Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN

FOR MONITORING WELLS INSTALLATION, SOIL SAMPLING

AND GROUND-WATER SAMPLING

HAZELTINE CORPORATION

GREENLAWN, NEW YORK

Prepared By:

Radian Corporation
Herndon, Virginia

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1.0 INTRODUCTION

This health and safety plan has been developed to provide guidelines during the field investigation activities associated with the installation of soil borings and monitoring wells at the Hazeltine premises in Greenlawn, NY. Before work commences, the Radian Task Leader, Ross Elliott, must review the following items with all field personnel working on this project:

- Location of first aid;
- Emergency services telephone number;
- On-site emergency response procedures (use the attached form as a guide - Appendix A);
- The health and safety procedures to be followed on this site;
- Location of closest water source; and
- Any applicable facility safety and health procedures.

1.1 Purpose and Scope of the Health and Safety Plan

The purpose of this plan is to inform Radian personnel working on this project of the hazards known or anticipated to be at the site, and the procedures and equipment required to prevent worker injury or illness.

The scope of this health and safety plan is limited to the sampling of existing ground-water wells and installation of one monitoring well in the spillway of the surface recharge basin.

1.2 Radian Responsibilities

The person with the overall responsibility for implementing this health and safety plan and ensuring that all project work is performed safely is the Radian Project Director, Ms. Sarah Stinger. The overall project team responsible for the safe conduct of this project is:

- Program Manager — Kathryn Makeig
- Project Director — Sarah Stinger
- Health and Safety Officer — Laurie Shelby
- On Site Safety Coordinator — Ross Elliott

All Radian personnel are required to follow this health and safety plan.

1.2.1 Responsibilities of the Subcontractors

The subcontractors will provide a site-specific health and safety plan separate from this document that meets all requirements of 29 CFR 1910.120 (OSHA standard for hazardous waste operations and emergency response). The plan will specify health and safety procedures and practices to be followed by the subcontractor's employees during the on-site activities. The subcontractor's health and safety plan is to be followed by all subcontractor field employees. The subcontractor shall identify the site person responsible for safety and health. Subcontractor field personnel should report health and safety problems to the designated site health and safety coordinator. A summary of the subcontractor responsibilities is:

- Identify a site person with the safety and health responsibilities and provide documentation of his/her qualification;
- Develop and implement a site-specific health and safety plan that meets the requirements of 29 CFR 1910.120;
- Provide Radian with written statements certifying project personnel have been trained according to 29 CFR 1910.120; and

- Provide Radian with a physician's written opinion regarding project personnel's ability to work on the site.
- Assure drilling location (on and around spillway) is stable and can support drilling activity and drilling rigs weight.

1.3 Authority

The site safety coordinator, Ross Elliott, has the authority to correct all health and safety deficiencies. The site safety coordinator may increase the level of protective equipment or make other health and safety procedures more stringent if, in his/her judgement, site conditions warrant these changes. The site safety coordinator may lower the level of protection or make health and safety procedures less stringent than those required by this plan only upon approval by a Radian health and safety officer, Laurie M. Shelby (Herndon 703/713-1500) or Tom Weeda (Research Triangle Park 919/541-9100).

Both the subcontractor's safety officer and the Radian safety coordinator have the authority to stop work based on noncompliance with the general terms and conditions of the contract or the respective health and safety plans.

2.0 TRAINING

2.1 General

All on-site project personnel shall have completed the 40-hour off-site health and safety training as specified in the OSHA hazardous waste regulation (29 CFR 1910.120(e)(1)).

Paragraph (e)(2) of the above-referenced regulation requires that each employee receive at least 3 days of on-site training under the direction of a trained, experienced supervisor.

Paragraph (e)(3) of the above-referenced regulation requires that all management and supervisory personnel receive an additional 8 hours of training in managing hazardous waste work.

Annual refresher training (8 hours) is also required under the above-referenced regulation.

Radian certifies that all Radian personnel performing field work on this project meet the necessary general training requirements.

Subcontractors are responsible for supplying Radian's project director with written statements certifying that all of their project personnel meet the OSHA training requirements.

3.0 MEDICAL SURVEILLANCE

All on-site Radian project personnel shall be active participants in Radian's Medical Monitoring Program for hazardous waste workers, having received physicals within the last 12 months.

This site does not present hazards that could cause health effects which would not be detected by Radian's standard medical surveillance program. Therefore, no project-specific medical monitoring is deemed to be necessary for Radian employees.

All subcontractor personnel shall be active participants in a medical surveillance program that meets the requirements of 29 CFR 1910.120. The contractor shall furnish documentation of compliance to the Radian project director before the start of work.

4.0 SITE INFORMATION

4.1 Site Description

The Hazeltine premises is a 23 acre operating manufacturing site located in Greenlawn, NY where electronic systems and equipment are manufactured.

The characteristics of the site that are of concern during this project include the following:

Tank C (concentrated) - An underground tank installed in 1976 was used to store concentrated waste materials from circuit boards plating and metal finishing operations. The expected chemical components are:

(1)	Copper	(6)	Chromium	(11)	Cyanide
(2)	Tin	(7)	Cadmium		
(3)	Lead	(8)	Hydrochloric acid		
(4)	Nickel	(9)	Nitric Acid		
(5)	Silver	(10)	Phenols		

E (equalization) Tanks - Two underground storage tanks installed in 1976 were used to store rinse water and similar chemical constituents as tank C, but less concentrated.

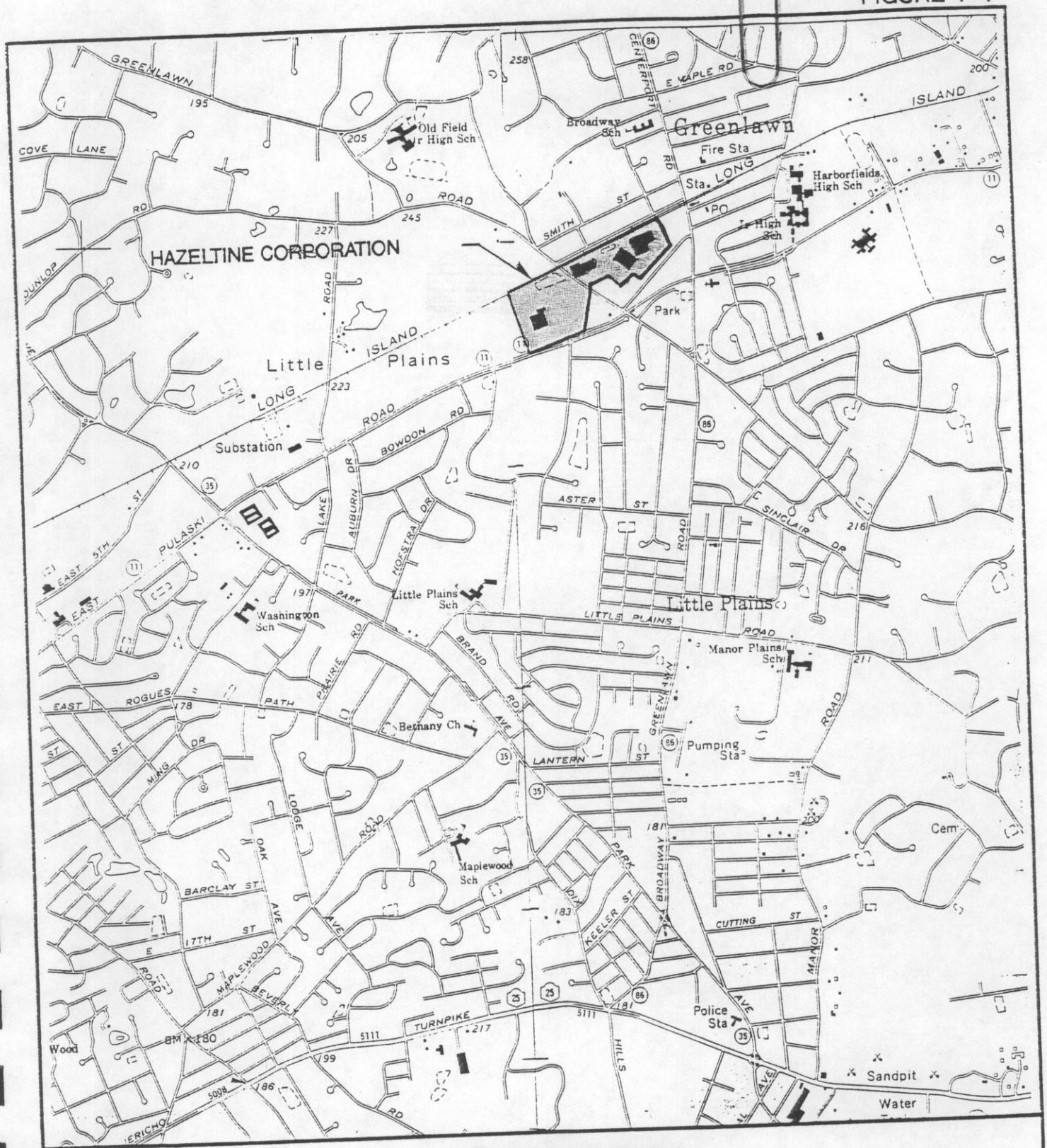
A large recharging basin - The basin is constructed of soil and is located between buildings 2 and 3. The basin was used for disposal of building 3 photo lab rinse water. The expected components are silver, phenols, and cyanide.

Due to the discontinuation of plating operations in Building 2 in 1988 and the conformal coating operation by February 1990, rinse waters are no longer generated at Building 2. Therefore, all three of the underground storage tanks and one of the above ground tanks are currently undergoing RCRA closure.

A septic leach field - The field is located next to building 3. Sanitary waste as well as silver, phenols and cyanide may be present in soils and/or water.

The locations of the existing monitoring wells and proposed additional well are outlined on Diagram 1.

FIGURE 1-1



LOCATION MAP

SCALE: 1" = 2000'

HAZELTINE CORPORATION
GREENLAWN, NEW YORK

SOURCE: NYSDOT HUNTINGTON & GREENLAWN QUADRANGLES (1975)

H2MGROUP
ENGINEERS · ARCHITECTS · PLANNERS · SCIENTISTS · SURVEYORS
TOTOWA, N.J.

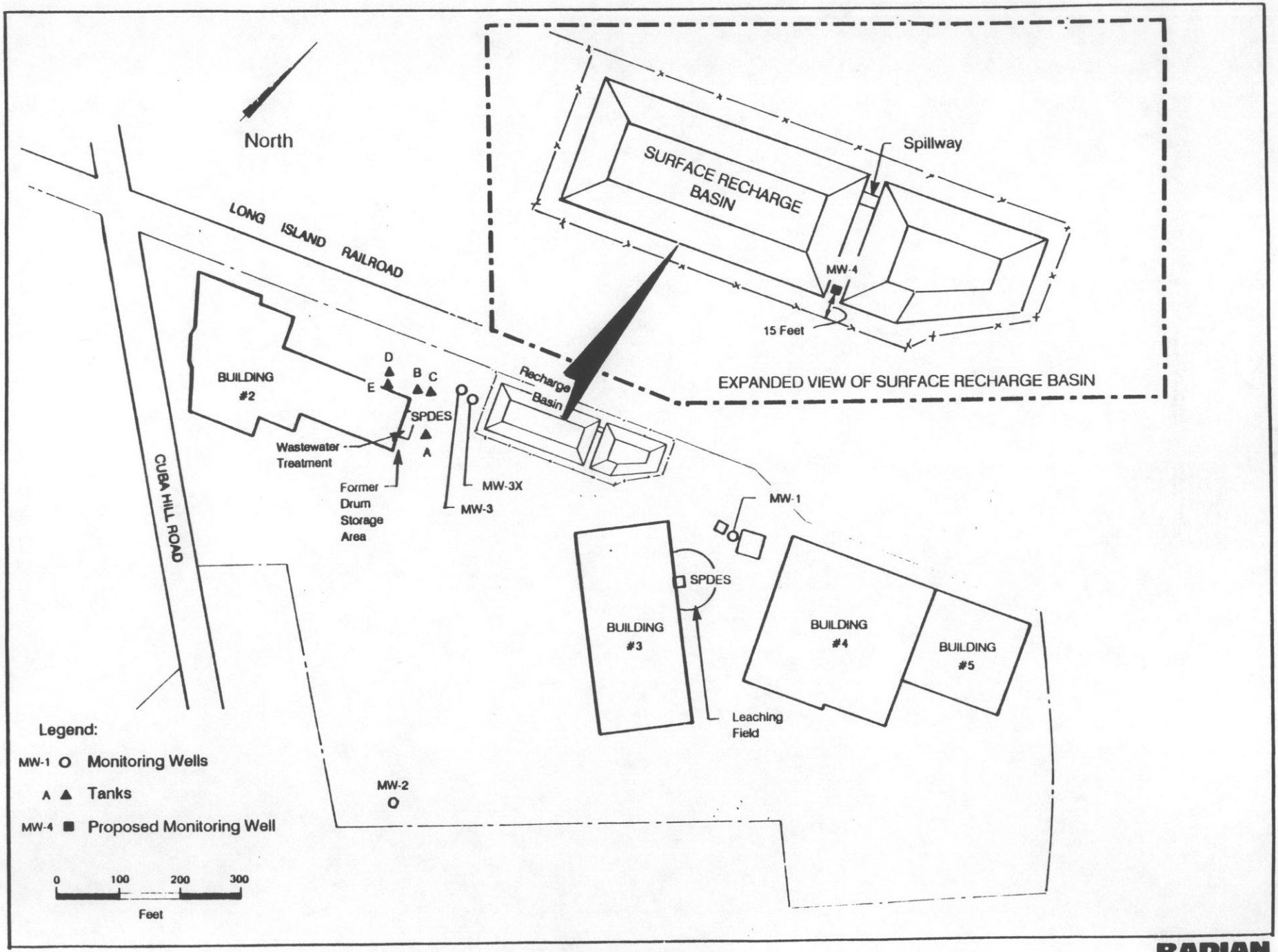


Figure 1. Site Plan, Hazeltine Corporation, Greenlawn, New York

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5.0 HAZARD ANALYSIS AND ABATEMENT TECHNIQUES

This section assesses the chemical and physical hazards that are known to exist at the site, or that may be created by the use of personal protective equipment. Each task, (1) ground-water sampling; and (2) well installation will be addressed separately in this section.

5.1 Ground-Water Sampling

Four monitoring wells will be sampled during this phase of the site investigation (three existing wells and new well MW-4). During the installation of the three existing monitoring wells, integrated and real time air samples were collected. Previous ground water sample results from these three monitoring wells yielded low levels for volatile organic compounds and inorganics. The results for MW-3X indicated metal concentrations which were greater in total and dissolved metals than samples in other on-site monitoring wells. Only concentrations of antimony, barium, iron, and lead were in excess of drinking standards (federal MCLs or NYSAWQS) for MW-3X. The wells which are being re-sampled are listed below:

MW-1 - Near the Building 3 leach pool

MW-2 - Background well

MW-3X - Between the recharge basins and underground storage tanks

5.1.1 Chemical Hazards

Chemicals suspected/known to be present in ground-water during the sampling include:

MW-1 - The hazards include chemical hazards such as phenol, silver and cyanide and biological hazards associated with the septic

waste. (Previous sample results did not indicate concentrations that would create an exposure hazard)

MW-2 - No chemical hazards are expected

MW-3X - The hazards include heavy metals, hydrochloric acid, nitric acid, cyanide, and phenols. (Previous sample results indicated metals to be the only concern. The levels detected did not present an exposure hazard)

Appendix B contains the analytical results from previous sampling episodes.

Heavy metals (cadmium, copper, silver, etc) are capable of producing systemic poisoning by inhalation and dermatitis by skin contact. The heavy metals detected in the soil analysis from the recharging basin were in low concentrations. Generally, low levels of these contaminates in the soils will create a dust hazard that irritates and creates visual discrepancies well before any Threshold Limit Values are reached.

5.2 Monitoring Well Installation

One monitoring well (MW-4) will be installed in the spillway area of the recharge basin. Soil samples will be collected every two feet using a split spoon.

5.2.1 Chemical Hazards

The large recharging basin is constructed of soil and is located between building 2 and 3. The basin was used for disposal of building 3 photo lab rinse water. The expected components are silver, phenols, and cyanide.

Heavy metals, such as silver are capable of producing systemic poisoning by inhalation and dermatitis by skin contact. The heavy metals detected in the soil analysis from the recharging basin were in low concentrations. Generally, low levels of these

contaminates in the soils will create a dust hazard that irritates and creates visual discrepancies well before any Threshold Limit Values are reached.

Phenols are a skin absorption and ingestion hazard. The Threshold Limit Value for phenol is 5 ppm. It is classified as an irritant to the eyes, mucous membrane, and skin. Skin absorption may cause convulsions as well as liver and kidney damage. It does not generally constitute a serious respiratory hazard, due in part to its low volatility. The skin the primary route of entry. Phenols are detectable by odor at a threshold of 0.05 ppm.

Cyanide salts are irritating to the eyes, skin, and respiratory tract. Signs of overexposure include weakness, shortness of breath, confusion, vomiting, slow gasping respiration, unconsciousness, and death. The Threshold Limit Value is 5 mg/m3. Since the soils potentially contain cyanide and acids, the formulation of hydrogen cyanide gas may be a potential health hazard. Although hydrogen cyanide has a characteristic bitter almond odor, its toxic action at hazardous concentrations is so rapid that its odor is of no value as a warning. The Threshold Limit Value - STEL for HCN is 4.7 ppm.. Overexposure to HCN will inhibit cellular respiration which results in chemical asphyxiation. If exposure does occur, let the medical personnel know it is HCN because a specific antidote does exist.

5.2.2 Fall Hazard

Due to the area in which the monitoring well needs to be installed (on the edge of the surface recharge basin, fall protection will be required. The fall protection, secured silt fencing or chicken wire, must be placed around the inside portion of the recharge basin in order to protect drillers and samplers from falling into the basin.

The drill rig must also be at least 2 feet from the edge of the basin. The subcontractor must assure the stability of the soil prior to the start of the installation.

5.2.3 Fire and Explosion Hazards

A limited fire and explosive hazard exists. Underground piping systems should be marked to eliminate contact during the drilling. No smoking within 25 feet of the boreholes shall be allowed during the drilling operation.

A 20-pound A B C fire extinguisher must be available in the exclusion zone during the drilling operation.

5.2.4 Mechanical

Hazards present during drilling operations include being struck by moving equipment, being caught between moving equipment, becoming entwined in rotating tools, and being struck by falling objects. Use common safety sense as protection from these hazards. It is possible that more than one drill rig will be on site. If this occurs, additional safety awareness will be necessary.

5.2.5 Electrical

Electrical hazards associated with drilling include excavation of buried cables, contacting overhead power transmission lines or other energized conductors, and lightning striking during electrical storms. During well installations, the drill rig and any overhead power transmission lines or energized conductors (substation) will be separated by at least 15 feet or the state-mandated safe distance, whichever is greater. Drilling should be halted and personnel are to maintain at least a 15-foot distance from the drilling rig in the event of a lightning storm.

To prevent contact with buried utility lines, the project director or his/her designee must contact local representatives of the telephone, electric, and natural gas companies to have buried lines located and marked. All contact with utility representatives must be documented. Facility personnel must also be contacted to determine the location of buried facility-owned utility or process lines.

5.2.6 Noise

Noise levels in excess of 85 DBA may be present near drilling equipment. Hearing protection will be made available. As a general rule, if one's voice has to be raised to be heard by an individual 3 feet away or less, hearing protection is required.

5.2.7 Site Control

An exclusion zone must be established around the spillway to keep Greenlawn employees away from the sampling and drill rig.

5.3 Air Monitoring Action Plan

Air monitoring will be required during monitoring well installation only. Table 5-1 contains the air monitoring action levels. Respiratory protection is contingent on the air monitoring results. The vapors expected to be encountered during the drilling activities are composed of a variety aromatic, possible chlorinated constituents, and dust. A working limit of 25 ppmv total hydrocarbons is proposed as the maximum acceptable level of exposure without respiratory protection. An OVA 128 FID direct reading instrument and dreager tubes for hydrogen cyanide will be used to monitor the air contaminant concentrations in the breathing zone of the worker closest to the borehole. Readings should be taken at least every 30 minutes. If odor levels increase significantly, readings greater than 25 ppmv are obtained, soil is grossly contaminated, or irritation to

the eyes, nose, throat, or respiratory system occurs, readings should be taken continuously and recorded every 15 minutes.

5.4 Monitoring Well Installation and Groundwater Sampling Personal Protective Equipment (PPE)

Protective equipment that will be worn during ALL phases of the site investigation includes:

- Safety glasses with side shields or chemical splash goggles;
- Hard hats;
- Steel toed and steel shank safety shoes or steel toed boots; and
- Long sleeved cotton work clothes or Tyvek uncoated coveralls on the exterior of work clothing.

During the monitoring well installation and ground water collection, the PPE equipment will be supplemented as follows:

- Nitrile gloves will be worn when handling potentially contamination soils, water, and surfaces.
- Tyvek, uncoated, coveralls will be used to prevent contamination of work clothing and reduce skin contact (visibly contaminated Tyveks must be changed at once).
- Rubber boots or boot covers will be used by all persons handling contaminated soils and water to prevent contamination of leather shoes or boots.

Table 5-1
Air Monitoring and Respiratory Protection Action Plan

Basis: Plating activities require the use of cyanide, thus soils may contain cyanide, and acid. Dreager tubes specific for the cyanide will be used to determine if cyanide compounds are present during drilling activities. Sampling will be repeated every 30 minutes during the drilling. If CN is not detected after 4 consecutive measurements, sampling may be reduced to hourly intervals or less frequent.

RESPONSE LEVEL	INSTRUMENT* READING	ACTION
1	Dreager Tubes < 2mg/m3 CN- Breathing Zone	No action necessary
2	Dreager Tubes 2-10 mg/m3 CN- Breathing Zone	Full face respirator with organic vapor/acid gas/ and HEPA cartridges worn by all persons within 10 feet of borehole.
3	Dreager Tubes >10 mg/m3 CN- Breathing zone	Stop work. Contact Health Safety Officer.
4	Dreager Tubes None Detected - HCN Opening split spoon	No action necessary
5	Dreager Tubes Any discoloration - HCN Opening split spoon	Stop Work. Leave the area.
6	OVA 128 < 25 ppm Breathing Zone	No Action

Table 5-1
Continued

RESPONSE LEVEL	INSTRUMENT* READING	ACTION
7	OVA 128 25-50 ppm	Full face respirator with organic/acid gas/ and HEPA cartridges worn by all persons within 10 feet of borehole.
8	OVA 128 >50 ppm	Stop work. Apply vapor suppression. Contact health and safety officer.

OVA action levels based on 1/2 the PEL (50 ppm) for trichloroethylene.

* Readings are to be taken in the breathing zone of the worker closest to the borehole.

- Hearing protection must be worn by all personnel exposed to noise levels about 85 DBA. (Must be worn by personnel within 5 feet of drill rig when it is operating).

- Full face negative pressure respirators with organic vapor/acid gas/HEPA filter cartridges must be worn as required by the air monitoring plan during Monitoring well installation.

6.0 DECONTAMINATION

For all phases of the site investigation, decontamination of the PPE will, generally, not be done as the PPE specified is for the most part disposable.

Disposable PPE shall be removed, bagged, and left at the site in a controlled manner.

All on-site personnel shall wash their hands, arms, face, and neck prior to eating, drinking, or smoking after performing on-site activities.

All equipment must be decontaminated. This includes the OVA, dreager pump, sampling trowels, and other sampling equipment.

Decontamination and PPE removal shall consist of:

(1) Decontaminating all equipment, sample containers, and other materials by wiping them with a decontamination solution;

(2) Scrub boots in tub of soapy water;

(3) Wash outer gloves and remove (may be reused if not torn)

(4) Remove Tyvek coveralls;

(5) Remove respirator (if applicable), throw away cartridges, and wash respirator in soapy water and rinse; and

(6) Remove inner gloves.

7.0 SAMPLE PRESERVATION

Water samples to be analyzed for various contaminates will be preserved with nitric acid (HNO_3), hydrochloric acid (Hcl), and sulfuric acid (H_2SO_4) before shipment to the analytical laboratory. Nitrile gloves should be worn when handling those corrosive chemicals. Sample preservation should be performed in a well ventilated area to avoid potential accumulation of toxic fumes\vapors. In circumstances where bad weather or poor lighting do not allow preservation at the site, preservation should be performed at a later time or perhaps earlier time. Samples should not be preserved in hotel rooms or other public areas unless no other options are available.

Spill control pillows are to be shipped with preservatives and used to contain spills if necessary.

8.0 HEAT STRESS

8.1 Air Temperature Measurement and Heat Stress Monitoring

During the day-to-day field activities, the Project Safety Officer will be alert for the signs and symptoms of heat stress. A hazard exists when individuals are required to work in warm temperatures while wearing protective clothing. When the ambient air temperature at the site exceeds 70°F and persons are working in impervious clothing or when air temperature exceeds 90°F and persons are working in normal clothing, heat stress may become a problem. If these conditions are encountered, the following precautions will be taken:

- The Project Safety Officer will regularly monitor the ambient air temperature; and
- Workers will be observed for the following signs and symptoms of heat stress:
  - Dizziness,
  - Profuse sweating,
  - Skin color change,
  - Increased heart rate,
  - Body temperatures in excess of 100°F as measured by fever detectors (forehead strips), and
  - Vision problems.

A worker who exhibits any of these symptoms will be immediately relieved of responsibilities and requested to consume electrolyte fluid or cool water while resting in a shaded area. The individual should not return to work until symptoms are not longer recognizable. If symptoms appear critical, persist, or get worse, the field activities supervisor will seek immediate medical attention for the employee. If the individual does resume work, he/she will be monitored for any increase in heart rate or body temperature for the remainder

of their shift. In addition, the worker will be requested to consume electrolyte fluid or cool water every hour.

The site safety and health officer will monitor workers hourly when:

- Symptoms of heat stress are reported or observed;
- Ambient temperatures exceeds 70°F and workers are dressed in impervious clothing; or
- Ambient temperatures exceeds 90°F and workers are dressed in normal clothing.

Workers will be monitored for heat stress conditions by measuring the heart rate (HR) by radial (wrist) pulse for 30 seconds after one minute of rest. The HR after one minute rest should not exceed 110 beats per minute. If higher, the next work period shall be shortened by 33%, while the length of rest period remains the same. If the pulse rate is still 110 beats per minute after one minute of rest in the next rest period, the following work cycle will be shortened by 33%. This shortening of the work period must continue until the worker's HR is no greater than 110 beats per minute.

Appendix A

EMERGENCY RESPONSE GUIDE

ON-SITE EMERGENCY RESPONSE PROCEDURES

Project: Hazeltine Greenlawn Date: 9/4/91

Location: Cuba Hill Road, Greenlawn, NY

Evacuation Signal: One long car horn

When it sounds: Leave the area immediately

Gather with other Radian personnel at (location): Guard station at plant entrance

All clear signal: Two long car horns - short duration or okay from fire and rescue chief

First Aid Station location and phone number: Building 3 rear - middle entrance

Ambulance phone number: 516-261-1616

Fire Department phone number: 516-261-1616

Hospital phone number: 516-351-2000

Address: Huntington, NY

Poison Control: 516-542-2323

Police: 516-351-4400

Appendix B

PREVIOUS ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

VOLATILE ORGANIC ANALYTICAL RESULTS
FOR GROUND-WATER SAMPLES,
HAZELTINE CORPORATION, GREENLAWN, NEW YORK

SAMPLE NUMBER SAMPLE DATE	MW1 05/25/90	MW2 05/25/90	MW3X 05/24/90
Volatile Organics (ug/L)			
Chloromethane	< 10	< 10	< 10
Bromomethane	< 10	< 10	< 10
Vinyl Chloride	< 10	< 10	< 10
Chloroethane	< 10	< 10	< 10
Methylene Chloride	2 J	1 J	2 BJ
Acetone	< 10	< 10	9 J
Carbon Disulfide	2 J	< 5	< 5
1,1-Dichloroethene	< 5	< 5	< 5
1,1-Dichloroethane	< 5	< 5	< 5
1,2-Dichloroethene (total)	< 5	< 5	< 5
Chloroform	< 5	< 5	< 5
1,2-Dichloroethane	< 5	< 5	< 5
2-Butanone	< 10	< 10	< 10
1,1,1-Trichloroethane	< 5	< 5	< 5
Carbon Tetrachloride	< 5	< 5	< 5
Vinyl Acetate	< 10	< 10	< 10
Bromodichloromethane	< 5	< 5	< 5
1,2-Dichloropropane	< 5	< 5	< 5
cis-1,3-Dichloropropene	< 5	< 5	< 5
Trichloroethene	< 5	< 5	< 5
Dibromochloromethane	< 5	< 5	< 5
1,1,2-Trichloroethane	< 5	< 5	< 5
Benzene	< 5	< 5	< 5

< - Less than the specified instrument detection limit (IDL).
B - Analyte found in the associated blank as well as in the sample. Indicated possible/probable blank contamination and warns the data user to take appropriate action.
J - Indicates an estimated value.

VOLATILE ORGANIC ANALYTICAL RESULTS
FOR GROUND-WATER SAMPLES,
HAZELTINE CORPORATION, GREENLAWN, NEW YORK

SAMPLE NUMBER	MW1	MW2	MW3X
SAMPLE DATE	05/25/90	05/25/90	05/24/90
Volatile Organic (Continued) (ug/L)			
Trans-1,3-Dichloropropene	< 5	< 5	< 5
Bromoform	< 5	< 5	< 5
4-Methyl-2-Pentanone	< 10	< 10	< 10
2-Hexanone	< 10	< 10	< 10
Tetrachlorothene	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	< 5	< 5	< 5
Toluene	13	4 J	< 5
Chlorobenzene	< 5	< 5	< 5
Ethylbenzene	< 5	< 5	< 5
Styrene	< 5	< 5	< 5
Total Xylenes	< 5	< 5	< 5

< - Less than the specified instrument detection limit (IDL).
J - Indicates an estimated value.

INORGANIC ANALYTICAL RESULTS
FOR GROUND-WATER SAMPLES,
HAZELTINE CORPORATION, GREENLAWN, NEW YORK

SAMPLE NUMBER	MW1	MW1	MW2	MW2	MW3X	MW3X
ANALYSES	TOTAL	DISSOLVED	TOTAL	DISSOLVED	TOTAL	DISSOLVED
SAMPLE DATE	05/25/90	05/25/90	05/25/90	05/25/90	05/31/90	06/01/90
Metals (ug/L)						
Aluminum	1480 N*	53.2 B	140 BN*	576	164000 N*	396
Antimony	< 39.0	< 39.0	< 39.0	< 39.0	< 39.0	51.8 B
Arsenic	< 3.0 W	< 3.0	< 3.0 W	< 3.0 W	< 15.0	< 3.0 W
Barium	28.8	42.7 B	44.2 B	3.0 B	1850	3.0 B
Beryllium	< 1.0	< 1.0	< 1.0	< 1.0	13.8	< 1.0
Cadmium	6.2 *	< 5.0	< 5.0 *	< 5.0	< 5.0 *	< 5.0
Calcium	3110 B	13200	13000	1660 B	50200	447 B
Chromium	< 7.0 *	< 7.0	< 7.0 *	< 7.0	340 *	< 7.0
Cobalt	< 7.0	< 7.0	< 7.0	< 7.0	159	< 7.0
Copper	15.8 B	18.0 B	6.8 B	7.5 B	451	30.9
Iron	1560 N*	74.5 B	202 N*	156	258000 N*	616
Lead	3.2 S*	< 2.0 W	< 2.0 W*	< 2.0	1670	4.0
Magnesium	1070 B	3430 B	3300 B	595 B	50800	273 B
Manganese	52.6	124	119	16.2	8830	32.1
Mercury	< 0.20	< 0.20	< 0.20	< 0.20	0.28	< 0.20
Nickel	< 34.0	< 34.0	< 34.0	< 34.0	519	< 34.0
Potassium	< 3970	< 3970	< 3970	< 3970	25500	< 3970
Selenium	< 10.0 WN	< 2.0 WN	< 10.0 WN	< 2.0 WN	< 40.0 EN	< 2.0 WN
Silver	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Sodium	38000	42100	39300	42500	73400	53100
Thallium	< 3.0 WN	< 3.0 WN	< 3.0 WN	< 3.0 WN	< 3.0 WN	< 3.0 WN
Vanadium	< 5.0	< 5.0	< 5.0	< 5.0	295	< 5.0
Zinc	64.6	120	66.3	13.7 B*	1460	16.4 B*
Cyanide	< 10.0	NR	< 10.0	NR	< 10.0	NR

< - Less than the specified instrument detection limit (IDL).
* - Duplicate analyses not within control limit.
B - Less than Contract Required Detection Limit (CRDL) but greater than instrument detection limit (IDL).
E - Estimated due to interference.
N - Spike sample recovery not within control limit.
NR - Not required.
S - Calculated by Method of Standard Additions.
W - Post digestion spike for Furnace AA analyses is outside of the 85-100% control limit, while sample absorbence is less than 50% of the spike absorbence.