NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Solid and Hazardous Materials
50 Wolf Road, Albany, New York 12233-7252

FINAL

STATEMENT OF BASIS

FOR THE

Former BORDEN RESINS FACILITY

108-112 North Main Street
Bainbridge, Chenango County
New York

USEPA ID No.: NYD000691865

November 19, 1998

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
50 Wolf Road, Albany, New York 12233-7250
Phone: (518) 457-6934 FAX: (518) 457-0629

John P. Cahill
Commissioner

FINAL STATEMENT OF BASIS

SELECTION OF CORRECTIVE MEASURES TO ADDRESS SITE CONTAMINATION

at the

Former BORDEN RESINS FACILITY

108-112 North Main Street
Bainbridge, Chenango County
New York

November 19, 1998

The New York State Department of Environmental Conservation (Department) has selected the Final Corrective Measures to address the presence of contamination at the former Borden Resins Facility, currently owned by Cherokee Columbus Real Estate, LLC., (Cherokee). A public comment period occurred from September 23, 1998 to November 9, 1998 on the draft Statement of Basis and the Corrective Measures Implementation (CMI) Plan, dated September 23, 1998. In addition, the Department conducted a public information meeting on October 20, 1998 at the Bainbridge Town Hall, Bainbridge, New York, at which Department staff made a presentation explaining the investigation that was performed and the process that led to the selection of the proposed Final Corrective Measures.

No public comments were received during the public comment period or at the public information meeting. Therefore, the Department has determined that the draft Statement of Basis dated September 23, 1998 shall be the Final Statement of Basis, and the proposed Final Corrective Measures shall be implemented by Cherokee as the Selected Final Corrective Measures.

Cherokee shall implement the Final Corrective Measures pursuant to Article 27, Title 13, Order on Consent, Index #A7-01210-87-09 including any and all incorporations and modifications made to the Order.

Dated: NOV 30 1998

By: Stephen Hammond

Stephen Hammond, P.E.
Director
Division of Solid & Hazardous Materials

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1. INTRODUCTION

The purpose of this Statement of Basis is to inform the public about the results of investigations and studies conducted at the former **Borden Resins Manufacturing Facility, Bainbridge, New York** and to describe the proposed Final Corrective Measures for the site. The New York State Department of Environmental Conservation **(NYSDEC)** has tentatively selected the Final Corrective Measures, or the actions that will be taken by the site owner, to remediate hazardous waste contamination that was released into the soil, sediments and groundwater.

Outlined below, is a proposal to implement Final Corrective Measures and the criteria that will be used to achieve the contaminant reduction goals. This document also specifies how comments may be submitted by the public and how such comments will be considered before NYSDEC issues a Final Decision and Final Statement of Basis which will initiate the chosen Final Corrective Measures.

2. SUMMARY

A. History

Borden is located at 108-112 North Main Street, Bainbridge, New York, Chenango County. From the 1940s until 1981, Borden, Inc. owned and operated a synthetic resin manufacturing facility in Bainbridge, New York. During those operating years, hazardous wastes or hazardous constituents were released into the environment. In November 1990, Borden entered into an Order on Consent **(Order)**[1] with the NYSDEC which required Borden to identify and remediate both on-site and off-site environmental contamination which may have resulted from past operations and waste management practices.

On December 17, 1997, the site was acquired by Cherokee Columbus Real Estate, LLC., **(Cherokee)**. As part of the acquisition, Cherokee assumed the environmental liability and is now the responsible party for completing the remedial activities set forth by the Order.

[1] Order on Consent (Index #A7-0121-87-09) Signed by NYSDEC Commissioner T. Jorling, November 21,1990.

B. Environmental Investigations

As required by the Order, several investigations and studies were conducted, beginning in 1992. The investigations entailed soil, surface water, groundwater, storm sewer and sediment sampling to identify chemicals used and potentially released during past facility operations.

As a result of the investigations, it has been determined that there are elevated levels of polychlorinated biphenyls **(PCBs)** in soils and sediments; and elevated levels of volatile organics compounds **(VOCs)**, formaldehyde, and phenolic compounds in soils and groundwater.

C. Interim Corrective Measures Completed

An interim corrective measure is an action taken to address a situation which requires prompt attention so as to prevent or mitigate a threat or potential threat to human health and/or the environment, pending a final cleanup plan.

During the course of the investigations, high concentrations of PCBs were encountered in soils, and VOCs and phenolic compounds were detected in groundwater. Areas of highly contaminated soils were excavated and shipped off-site for disposal. A groundwater pump and treat system was installed, and continues to operate in the area of the highest groundwater contamination.

More than 2,400 tons of waste resin and contaminated media have been disposed of off-site and 6.75 million gallons of groundwater has been treated. A chronology of the Interim Measures are included in **Table 1**.

D. Final Corrective Measures Proposed

- Remove the remainder of PCB contaminated soils and dispose of off-site;
- Implement an upgraded system to treat contaminated groundwater; Prevent it from moving off-site;
- Remove PCB contaminated sediments from the remaining sewer lines;
- Remove contaminated soil/sediment from a former Lagoon located near the shore of the Susquehanna River;
- Continue long-term groundwater monitoring;
- Amend the deed indicating that contamination exists and restrictions apply.

3. *SCOPE OF DOCUMENT*

This document:

- Requests public review and comment on the proposed Final Corrective Measures;
- Describes the contamination found at the site;
- Provides a brief overview of the regulatory requirements and site history;
- Describes the proposed Final Corrective Measures and the goals to be attained.

4. *PUBLIC COMMENT OPPORTUNITY*

The NYSDEC has selected the proposed Final Corrective Measures for the site. It has been determined that the proposed measures, when implemented, will provide long-term protection of human health and the environment. Changes to the proposed Final Corrective Measures, or the selection of alternative or additional measures may be made if public comments or additional data indicate that such changes would result in a more appropriate solution. The NYSDEC will select the Final Corrective Measures for Borden after the public comment period has ended and comments have been reviewed and considered. The Public Comment Period is from **September 23, 1998 to November 9, 1998.**

A. Document Availability

This document summarizes investigations and studies that can be found in greater detail in the administrative record for the site. The administrative record contains many reports, including investigations and sampling results which the NYSDEC reviewed, evaluated and utilized to select the proposed Final Corrective Measures. A list of all reports and plans are referenced in **Appendix A** of this Statement of Basis, and are available for review. The NYSDEC encourages the public to review the reports and documents in order to gain a more comprehensive understanding of the nature and extent of contamination at the former Borden site.

Copies of the Reports, draft Corrective Measures Implementation Plan, Fact Sheet and Public Notice are available for inspection at the:

NYSDEC
Region 7 Office
615 Erie Boulevard West
Syracuse, New York 13204-2400
Contact Person: Larry Gross
Telephone: 315/426-7551

NYSDEC
Bureau of Hazardous Waste Facilities
50 Wolf Road - Room 460
Albany, New York 12233-7252
Contact Person: Timothy DiGiulio
Telephone: 518/457-9253

and

Bainbridge Free Library
13 N Main St
Bainbridge, NY
Telephone: 607/967-5305

5. *BACKGROUND*

A. Site Description and History

The 210 acre site, of which 10 acres were occupied by manufacturing facilities, is located in Bainbridge, Chenango County **(see Figure 1 and Figure 2),** and was operated by Borden, Inc., from the 1940's until 1981. The Facility ceased operation in March 1981. Since that date, demolition of buildings and environmental activities have been pursued. In December of 1997, Borden sold the property to Cherokee, who retains environmental liability for the property.

During the time the facility operated, Borden manufactured synthetic resins such as phenol-formaldehyde, urea-formaldehyde, melamine-formaldehyde and polyvinyl acetate in large reactor vessels. These resins were used in the production of plywoods and fiber boards as well as molding materials for electrical parts such as telephones and circuit breakers. As a result of past waste management practices, releases of hazardous wastes and hazardous constituents have impacted soil, groundwater and sediments at the site. It is believed that oil from the Facility's Thermonal heater was the source of much of the PCB contamination.

B. Regulatory Overview

The Site is listed as an inactive hazardous waste disposal site in New York State (#709001), Classification 2, as defined under Environmental Conservation Law. This indicates potential for "significant threat to public health or environment." Among the reasons for such a classification, are the levels of PCB contamination detected in soils and sediments, and phenolic contamination in the groundwater.

In November 1990, Borden and the NYSDEC entered into an Order on Consent (Order) requiring investigations to completely identify environmental contamination and set forth a remedial program to address the contamination. With the acquisition of the site, Cherokee is now responsible for completing the remedial activities set forth by the Order. After public review and comment, the NYSDEC will modify the Order to include the Final Corrective Measures addressing the contamination.

6. RCRA INVESTIGATIONS

To determine the corrective actions necessary at the site, a series of investigations were undertaken to identify the impacts from hazardous waste or constituents. Extensive soil, sediment and groundwater investigations were conducted to evaluate all Solid Waste Management Units (SWMUs). A SWMU is an area or suspect area where solid or hazardous wastes may have been managed or released. The purpose of these investigations was to determine the presence, nature, rate, and extent of releases of contamination at the site. Data from hundreds of soil/sediment samples and 40 groundwater monitoring wells were gathered to define the extent of any impacts and a RCRA Facility Investigation (RFI) Report was completed, summarizing this information. This information was used to help make the final recommendations for corrective measures at the site.

The following SWMUs or areas in which investigations were conducted at the site:

- PCB Area;
- Bone Yard;
- River Lagoon;
- Phenol Recovery Area;

- Land Application Area;
- Storm/Process Sewers;
- Gasoline Underground Storage Tank:
- Western Creek;
- Eastern (Beatty) Creek;
- Susquehanna River;
- Groundwater.

AREAS IMPACTED BY HAZARDOUS CONSTITUENTS
at the
FORMER BORDEN SITE

Location	Type of Contamination	Media Investigated	Media Impacted
PCB Area	PCBs/VOCs	Soil & Groundwater	Soil & Groundwater
Bone Yard	PCBs/Formaldehyde	Soil & Groundwater	Soil &Groundwater
River Lagoon	PCBs	Soil & Groundwater	Soil & Sediment
Land Application Area	PCBs	Soil & Groundwater	Soil
Phenol Recovery Area	Phenols, Formaldehyde and VOCs {primarily toluene and other tentatively identified compounds}	Soil & Groundwater	Soil & Groundwater
Storm/Process Sewers	PCBs	Sediment & Water	Sediment

Note: Although there were some low levels of constituents found in stream sediments, all surface water sampling results taken (in Western Creek, Eastern Creek and the Susquehanna River) were below action levels or non-detectable for PCBs, VOCs, Phenols and Formaldehyde.

7. *INTERIM CORRECTIVE MEASURES (ICM)*

During the course of the site investigation, Borden implemented Interim Corrective Measures (ICM) to immediately address the potential spread of contamination. More than 2,400 tons of waste resin and contaminated media were excavated and disposed off-site, and 6.75 million gallons of groundwater have been treated. A chronology of the Interim Measures are included in **Table 1**.

ICMs included:

- Removal of resin and PCB contaminated soils;
- Removal and plugging of contaminated sewer lines;
- Installation of a groundwater pumping and treatment system.

As a result of some of these actions, the NYSDEC believes that potential sources of contamination at the site have been shut off and much of the residual contaminants removed. In these instances, the NYSDEC has determined that the ICMs are protective of human health and the environment and should serve as part of the Final Corrective Measures for the site.

8. *FINAL CORRECTIVE MEASURES, GOALS and CLEAN-UP CRITERIA*

The Final Corrective Measures (**FCMs**) are the actions to be taken which will remedy the contamination located on and off-site. The **Goals** of the Final Corrective Measures are the protection of human health and the environment. Specific clean-up criteria have been established for each environmental media (soil, sediment and groundwater). The **Clean-up Criteria** is the standard or the concentration which must be achieved in soil/sediment and groundwater in order to say the goal has been accomplished.

In summary, the FCMs proposed by the NYSDEC for soils/sediments and groundwater include:

- Remove the remainder of PCB contaminated soils and dispose of off-site;
- Continue to treat contaminated groundwater; Prevent it from moving off-site;
- Remove PCB contaminated sediments from the remaining sewer lines;

- Remove Contaminated soil/sediment from a former Lagoon located on the shore of the Susquehanna River;
- Continue long-term groundwater monitoring;
- Amend the current deed indicating that contamination exists and restrictions apply at the site.

The proposed **Final Corrective Measures**, the **Goals** and **Clean-up Criteria** are outlined below for each media and then for each specific area:

FINAL CORRECTIVE MEASURES & REMEDIAL GOALS

Media	Goal and Type of Remediation to be Performed
Soils and Sediment	**Remediate impacted soils/sediments by excavation and off-site disposal. For PCBs, removal and disposal of all contamination above the EPA's PCB Spill Cleanup Policy[2]. The remedial goal for VOC/phenolic contaminated soil is to remove a hot-spot which is contributing to groundwater contamination.**
Groundwater	**Remediate groundwater to the applicable Groundwater Protection Standards (see Table 2) and prevent the off-site migration of contaminated groundwater with the installation and operation of an air sparging system to enhance biodegradation of contaminants in the groundwater. Remove impacted soils/sediments (as described above) which may act as source of groundwater contamination and perform long-term groundwater monitoring.**
Sediment in Sewers	**Clean out contaminated sediments from sewer lines by high pressure wash, collecting sediment and water for treatment and disposal.**

[2]United States Environmental Protection Agencies (EPAs) Toxic Substances Control Act (TSCA) PCB Spill Cleanup Policy.

A. Soil Cleanup Criteria:

- One part per million (ppm) or less PCBs for soils/sediment in the River Lagoon.
- Ten ppm or less PCBs for unrestricted-use soils at the remainder of the site, provided 10 inches or more of clean soil (one ppm or less PCBs) is placed on top. Deed notification required.
- Twenty-five ppm or less PCBs is the criterion for restricted-use soils at the remainder of the site. Deed notification and restrictions required.
- Remove contaminated soils in the vicinity of the former phenol recovery unit to reduce groundwater contamination.

1. **PCB Area:** The PCB Area is the former location of the Therminal Heater. PCBs released from a Therminol Heater used during the facility's operations have subsequently migrated or were transported to other locations throughout the site. Approximately 500 tons of PCB-contaminated soil and concrete have been excavated from the PCB Area to date. Based upon post-excavation sampling, PCB concentrations in excess of 25 ppm in soils are illustrated on **Figure 3**.

   The soils at the bottom of the excavation are tight silt, and vertical profile sampling demonstrates that no vertical migration of PCBs has occurred beneath the former chimney stack foundation. Near surface soils (<3 feet) include a large fraction of rubble (e.g., bricks, concrete).

   The water table occurs at approximately two feet below grade, thus accounting for the standing water within the existing excavation.

PCB AREA

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Criteria	Final Corrective Measure to be Completed
Soils	PCBs	3,500 ppm	25 ppm or less	Excavate remainder of contaminated soil. Include Deed Restrictions. (500 tons of contaminated soil has been removed to date.)

2. **Bone Yard:** The Bone Yard was an area used to stage and discard the plant's waste materials and equipment. PCB contamination is attributed to disposal of PCB contaminated sewer sediment and/or gravel from the PCB Area. In general, the soils are predominantly silt, and the water table occurs at approximately two feet below grade.

   Approximately 275 tons of buried waste and soil were excavated in 1981. However, these corrective actions were directed primarily at off-spec resins, not PCBs. Based upon a grid sampling program, current PCB contamination in the Bone Yard above 25 ppm is illustrated on **Figure 4**.

BONE YARD

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Goal	Final Corrective Measure to be Completed
Soil	PCBs	14,800 ppm	25 ppm or less	Excavate remainder of contaminated soil. Include Deed Restrictions. (275 tons of contaminated soil has been removed to date.)

3. **River Lagoon:** The River Lagoon was a surface impoundment used as a component of the plant's wastewater treatment system. In 1983, the River Lagoon was re-graded with berm material and re-vegetated. No waste has been removed from this area to date. Soils are predominantly silt and the water table occurs at approximately six feet below grade.

Based upon the results of a grid sampling program, the distribution of PCB contamination in the River Lagoon is illustrated on **Figure 5 and 5A**. The numbers at each boring location represent the highest PCB concentration within the 10 foot sampling zone. The shaded areas represent areas wherein PCBs exceed one ppm within the River Lagoon.

RIVER LAGOON

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Criteria	Final Corrective Measure to be Completed
Soils/Sediment	PCBs	1,100 ppm	1 ppm or less	Excavate contaminated soil and sediments for off-site disposal.

4. **Phenol Recovery Area:** The Phenol Recovery Area (PRA) is the former location of the plant's wastewater treatment systems. Soil contaminant levels exceed impact-to-groundwater criteria and are therefore a likely continuing source of groundwater contamination. As demonstrated in the Phase II RFI Report, the only groundwater contamination requiring corrective action occurs in the Phenol Recovery Area (PRA).

PHENOL RECOVERY AREA

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Criteria	Final Corrective Measure to be Completed
Soils	Phenol/ Volatile Organic Compounds (i.e. benzene, toluene, etc.)	1,700 ppm	50 ppm* or less	Excavate remainder of contaminated soil. Include Deed Restrictions. (135 tons of contaminated soil has been removed to date.)

*Based on a field headspace analysis.

5. **Land Application Areas:** Soil in the Trenches in the Land Application Area - Trenches in the Land Application Area ("Trenches") were used to dispose of biosolids from the wastewater treatment tanks during winter months. No waste has been removed from the Trenches to date. Soils consist predominantly of silt, although particle size ranges to cobbles. The water table occurs at approximately four to six feet below grade.

   Based upon the results of a grid sampling program, the distribution of PCB contamination within the Trenches is illustrated on **Figures 7, 7A and 7B.** The numbers at the boring locations represent the highest PCB concentrations within the 10 foot sampling zone. Shaded areas represent areas where PCBs exceed 25 ppm within the Trenches.

LAND APPLICATION AREA

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Criteria	Final Corrective Measure to be Completed
Soils **(North Area)**	PCBs	18 ppm	25 ppm or less	Deed Restrictions Only
Soils **(Central & South Area)**	PCBs	117 ppm	25 ppm or less	Excavate contaminated soil and sediments for off-site disposal.

6. **Storm/Process Sewers:** The plant's wastewater sewers have been identified as having been conduits for the migration of PCBs from the PCB Area Therminol heater to the wastewater treatment plant (i.e., the PRA) and to the River Lagoon. An illustration of the plant's sewer layout is provided on **Figure 8**.

   a. **Dirty Water Sewers:** The sewer section between the PCB Area and the wastewater treatment plant was referred to as the Dirty Water Sewer SWMU, and was removed as an ICM in 1991 (Table 1). As documented in the Draft RFI Report, post-excavation sampling demonstrated that PCBs above one ppm had been removed. Excavation spoils were landfilled as hazardous and non-hazardous waste, depending upon the results of characterization sampling. Therefore, the Interim Corrective Measure performed on the Dirty Water Sewer has been considered the Final Corrective Measure for this unit.

b. River Lagoon Sewers: Two sewer lines ran from the plant to the River Lagoon. A western sewer line is comprised of 15" and 24" sections. The major part of the 24" section was previously removed due to collapsing and the resultant hazard to cattle and farm equipment. Approximately 1,000 feet of the western sewer remains. Sediment and water samples collected from a manhole indicated PCB concentrations of 5.8 ppm and 0.00028 ppm, respectively. The sewer is full of standing water and it is likely that infiltrating groundwater will have to be addressed with any corrective actions.

The eastern sewer is comprised of a 15" line. Approximately 1,000 feet runs beside or underneath Beatty (Eastern) Creek, and 1,300 feet run across a cultivated field. Sediment and water samples collected from a manhole indicated PCB concentrations of 870 ppm and 0.0003 ppm respectively. It should be noted that the manhole was fitted with an expanding plug to mitigate flow within the sewer. Given the placement of the sewer, infiltrating surface and groundwater will have to be addressed with any corrective actions.

STORM /PROCESS SEWERS

Media Contaminated	Contaminants	Highest Concentration in this Area	Cleanup Criteria	Final Corrective Measure to be Completed
Sediment **(Dirty Water Sewers)**	PCBs	less than 1 ppm	1 ppm	NO FURTHER ACTION NECESSARY (Line removed and 250 tons of contaminated soil disposed to date).
Sediment Water **(West River Lagoon Sewer)**	PCBs PCBs	5.8 ppm 0.00028 ppm	1 ppm 0.0001 ppm	Clean out contaminated sediments from sewer lines by high pressure wash, collecting sediment and water for treatment and disposal. (Partial line removal and plugging completed to date).

Sediment Water **(East River Lagoon Sewer)**	PCBs PCBs	870 ppm 0.0003 ppm	1 ppm 0.0001	Clean out contaminated sediments from sewer lines by high pressure wash, collecting sediment and water for treatment and disposal.

7. **Gasoline Underground Storage Tank:** In October 1991, an underground storage tank was removed from an area near the former resin building (See Figure 2). Although the tank's integrity appeared to be compromised, no significant contamination was observed during tank removal. Groundwater monitoring wells down gradient have not indicated contamination to suggest there was a release from this tank. NO FURTHER ACTION NECESSARY. Groundwater monitoring will continue down gradient to verify this conclusion.

B. GROUNDWATER CLEANUP CRITERIA

Groundwater clean-up criteria are the groundwater protection standards presented in **Table 2**:

1. **Phenol Recovery Area (PRA) Groundwater Contamination:** This area of the site represents the only location where active Corrective Measures are necessary to mitigate groundwater contamination. **Figure 9** illustrates the locations of 19 monitoring wells, sumps, and piezometers within the PRA and vicinity; the locations of former and current waste management units around the PRA; and the approximate boundary of the plume in which contaminants exceed Groundwater Protection Standards.

   Based upon the nature and extent of groundwater contamination, groundwater contamination is attributed to historic releases from the former surface impoundments and phenol recovery unit. Primary constituents of concern are Toluene, Phenolic compounds and Formaldehyde. Additional VOCs are present at lesser concentrations (generally less than 50 ppb). In addition, analytical results from Semi-Volatile analyses have indicated the presence of Tentatively Identified Compounds (TICs).

Interim Corrective Measure (ICM) A groundwater pump-and-treat system was installed as an ICM in the PRA, and has been operating since July 1995. The pump-and-treat system was put in place to address contaminated groundwater and will continue to be utilized until the Final Corrective Measure is in place and effectively operating. **Figure 9A** is a cross section that shows how groundwater is pumped from a sump, treated in a tank, and then treated water is discharged either to the ground or to a stream. **Figures 9B and 9C** illustrate water table contours and flow lines under pumping and non-pumping conditions, respectively.

Groundwater is collected from a french drain at Sump 1 and pumped to a 400,000 gallon above-ground tank for treatment. When the tank is full, groundwater collection is interrupted and a sample of treated water is collected and analyzed. Upon confirmation that treatment requirements are achieved, the tank is discharged as a batch to the creek and/or spray field. Groundwater collection is then resumed.

Proposed Final Corrective Measures - In-Situ Bioremediation/Air Sparging

In-situ bioremediation is the in-place treatment of contaminants utilizing microorganisms. This is similar to the treatment of contaminated groundwater after it is pumped into the tanks, except the destruction of contaminants occurs in the ground enhanced by adding oxygen to the soil. See **Figure 10.** It is believed that this Final Corrective Measure will be successful for this application for the following reasons:

1) Data collected demonstrates that all contaminants are highly biodegradable or treatable (i.e., to non-detectable concentrations) using this method.

2) Contamination is relatively shallow, providing a better treatment scenario.

3) Soil is permeable or porous which provides favorable treatment conditions.

Conceptually, the in-situ bioremediation system would be equivalent to an in place treatment tank. Specifically, air sparging wells would be installed into the aquifer beneath the area of contamination. Oxygen (air) would be injected through the sparge wells to stimulate native aerobic microorganisms which will breakdown and effectively treat the contamination.

In-situ bioremediation has significant advantages over ex-situ (i.e., pump-and-treat) biotreatment, including:

1) It is estimated that the time required to achieve cleanup goals are expected to be significantly less (i.e. seven years v.s twelve years), thus minimizing monitoring and O&M costs.

2) No effluent or discharge is generated, thus minimizing monitoring.

3) No discharge water is generated, thus reducing the difficulty of winter operation (i.e., freeze damage, etc).

Potential disadvantages of in-situ bioremediation is that there is a potential for system failure due to biological or mineral plugging of the aquifer, air channeling may occur, and it does not provide hydraulic control of groundwater contamination. In other words, groundwater continues to flow and is not drawn back for collection as in the ICM pump and treatment system. Therefore, the pump and treatment ICM will remain in place and operable until it is proven that the Insitu Biotreament/Air Sparging system is working effectively.

Phenol Recovery Area

(Primary constituents of concern)

Media Contaminated	Contaminants	Highest Concentration in this Area*	Cleanup Criteria	Final Corrective Measure to be Completed
Groundwater	Toluene	330,000 ppb	5ppb	Remove impacted soil; install and operation of an Insitu Bioremediation/ Air Sparging System. (Temporarily operated and maintain existing Pump and Treat system which has already treated more than 6.75 million gallons.)
	Phenolics	102,000 ppb	1 ppb	
	Semi-Volatile TICS	32,050 ppb	50 ppb	
	Formaldehyde	4,425 ppb	50 ppb	

*Based on groundwater samples collected during calendar years 1996,1997 and 1998.

2. **Boneyard:** Groundwater monitoring has been performed in the Boneyard area since the mid-1980s. As indicated in Table 1, past interim corrective measures were implemented, including the removal of large quantities of waste resin and contaminated soils, and the treatment of contaminated groundwater. Analytical results collected from Boneyard monitoring wells since 1994 have generally indicated non-detectable levels of contaminants of concern. Although some slightly exceeded the applicable standards, the exceedances have generally been preceded and succeeded by non-detectable concentrations of the contaminant of concern.

Boneyard Area

(Primary constituents of concern)

Media Contaminated	Contaminants	Highest Concentration in this Area*	Cleanup Criteria	Final Corrective Measure to be Completed
Groundwater	Formaldehyde	2400 ppb	50 ppb	Remove impacted soil; Continue long-term ground-water monitoring.
	PCBs	0.6 ppb	0.1 ppb	

*Based on groundwater samples collected during calendar years 1996,1997 and 1998.

Groundwater impacts in the Boneyard area will be addressed by continuing to monitor groundwater quality in the Boneyard area. The removal of additional contaminated soils from the Boneyard Area, as described elsewhere in this document, will further benefit groundwater quality in this area. Groundwater sampling will continue at the Bone Yard for applicable constituents and the results will evaluated with respect to the Groundwater Protection Standards (Table 2). Contingent remedial activities may be required if long-term monitoring results indicate significant impacts to groundwater.

It should be noted that recently submitted analytical results have indicated an increased concentration of Formaldehyde for samples collected in May, 1998 (results received August 1998). Confirmation sampling will be requested, and the need for expanded monitoring will be evaluated.

3. **Monitoring Well MW-23:** Monitoring well MW-23 was installed in 1991 for the purpose of monitoring groundwater downgradient from the PCB Area. The analysis of groundwater samples from this well have indicated that groundwater standards have been exceeded for the following Volatile Organic Contaminants: Carbon Tetrachloride, Chloroform and 1,2-Dichloroethane. The cause of the presence of these contaminants is unknown. These constituents have not been identified as being associated with past manufacturing processes, and these constituents have generally not been detected at other monitoring wells. Maximum concentrations for these contaminants were detected in 1994 and results were as follows: Carbon Tetrachloride (337 ppb), Chloroform (513 ppb) and 1,2-Dichloroethane (24 ppb). Subsequently, groundwater monitoring wells were installed upgradient and downgradient in close proximity to MW-23, and a deeper monitoring well was installed adjacent to MW-23. Analytical results for samples collected at each of the new wells were nondetectable for VOCs. Since 1994, groundwater sampling results have indicated a steadily declining trend in total VOC concentrations. Analysis of groundwater samples collected in May 1998 indicated a total VOC concentration of 4 ppb (Carbon tetrachloride - ND, Chloroform - ND, 1,2-Dichloroethane - 4 ppb). Although soil and groundwater removed from the PCB area excavation have not indicated the presence of VOCs, it may be possible that the source of the VOC contamination was removed during past soil excavation activities.

PCB Area
Monitoring Well MW-23
(Primary constituents of concern)

Media Contaminated	Contaminants	Highest Concentration in this Area*	Cleanup Criteria	Final Corrective Measure to be Completed
Groundwater	Carbon Tetrachloride	22 ppb	5 ppb	Remove impacted soil; Continue long-term ground-water monitoring.
	Chloroform	78 ppb	7.0 ppb	
	1,2-Dichloroethane	0.6 ppb	0.1 ppb	

*Based on groundwater samples collected during calendar years 1996,1997 and 1998.

Groundwater sampling will continue to be performed at MW-23 for volatile organic contaminants and PCBs, and the results will be evaluated with respect to the Groundwater Protection Standards (Table 2). Contingent remedial activities may be required if long-term monitoring results indicate significant impacts to groundwater.

9. *POST- REMEDIAL VERIFICATION AND ACTIVITIES*

Cherokee will perform long-term monitoring of the groundwater and perform soil sampling to verify that the remedial criteria have been achieved. The NYSDEC will evaluate the monitoring data and any other available data to determine if additional remedial activities are warranted. Groundwater monitoring will be used to assess the impact, if any, that residual contamination may have on groundwater quality. To ensure proper future use of the property, deed restrictions will notify any future property owners of the presence of hazardous constituents.

A. Groundwater Monitoring

Cherokee will implement a groundwater monitoring program in accordance with an approved plan that will consist of collecting groundwater samples from PCB Area, Boneyard and Phenol Recovery Area. Groundwater samples will be analyzed for PCBs VOCs, Phenolic compounds, Formaldehyde and semi-volatile TICs. The groundwater monitoring data for each monitoring event will be presented to the NYSDEC in a letter report. If analytical results indicate that the applicable groundwater standards continue to be exceeded, NYSDEC may require additional corrective measures as addressed in the Corrective Measures Implementation (CMI) Plan.

B. Storm Sewers

A television camera will verify sediment removal in the pipes prior to excavating or closing them in place.

C. Deed Notification

Implementation of a property deed notification and restrictions which will notify any future owners that the facility had managed hazardous wastes and that residual contaminants are present in certain locations of the site.

D. Financial Assurance

Assurances of financial responsibility for the long-term maintenance and monitoring associated with post-remedial activities is required. Cherokee presently has a Letter of Credit and Trust Fund in the amount of $1,135,575 for these activities.

10. PUBLIC PARTICIPATION

A. Written Comments

How To Provide Your Comments: All written comments will be considered in making the final decision for the Final Corrective Measures that will address the contamination at site. Each person who submits written comments will receive a response. The response will outline any changes that may have occurred as a result of the comments, and will receive a copy of the final decision and final Statement of Basis.

Comments must be sent to:

NYSDEC
Att: Mr. Timothy DiGiulio, P.E.
Division of Solid and Hazardous Materials
50 Wolf Road
Albany, New York 12233-7252

In lieu of, or in addition to the submission of written comments, any interested person may request a public hearing. Any request for a public hearing, must be in writing and must state the nature of the issues proposed to be raised in the hearing. All comments must be submitted in writing no later than **November 9, 1998**.

APPENDIX A

References available for Public Review:

RCRA Facility Investigation Report*, August 1992, prepared by T.M. Gates, Inc.* This report includes sampling results from the first RCRA investigation at the site. The NYSDEC required additional sampling to be conducted to better characterize the extent of contamination.

Phase II RCRA Facility Investigation Report*, August 1996, prepared by T.M. Gates, Inc.* This report includes the results of the additional sampling. This sampling event better characterized the extent of contamination and revealed contamination in storm sewers.

Corrective Measures Study (CMS) Report, *February 1997, revised April 1998 prepared by T.M. Gates, Inc.* This report evaluates options for Final Corrective Measures. Based on the evaluation, a recommendation for the Final Remedy was chosen.

Draft Corrective Measures Implementation Plan (CMIP), *August 1998, prepared by T.M. Gates, Inc. in conjunction with the New York State Department Environmental Conservation.* The purpose of this document is to present specifications for implementation of corrective measures addressing environmental contamination at the former Borden Resin Facility. These requirements include remedial goals and criteria; institutional controls; detailed design, construction, operation, and monitoring plans; and reporting.

Order on Consent, Index #A7-0121-87-09, *November 1990 signed by New York State Department Environmental Conservation and Borden, Inc.* The Order required Borden to identify and remediate (now Cherokee's responsibility) both on-site and off-site environmental contamination resulting from past operations and waste management practices.

Reports on the site-wide groundwater monitoring program:

Semi-Annual Groundwater Monitoring Report, January 27, 1995,prepared by T.M.Gates, Inc. Reports on the site wide groundwater monitoring program.

Semi-Annual Groundwater Monitoring Report, July 19, 1995,prepared by T.M.Gates, Inc.

Semi-Annual Groundwater Monitoring Report and Annual IRM Status Report, February 1996, prepared by T.M. Gates, Inc. Reports on the site wide groundwater monitoring program and the status of interim corrective measures at the Phenol Recovery Area.

Semi-Annual Groundwater Monitoring Report and Annual IRM Status Report, March 1997, prepared by T.M. Gates, Inc. Reports on the site wide groundwater monitoring program and the status of interim corrective measures at the Phenol Recovery Area.

Semi-Annual Groundwater Monitoring and IRM Report, August 1997, prepared by T.M. Gates, Inc. Reports on the site wide groundwater monitoring program and the status of interim corrective measures at the Phenol Recovery Area.

Semi-Annual Groundwater Monitoring and IRM Report, January, 1998, prepared by T.M. Gates, Inc. Reports on the site wide groundwater monitoring program and the status of interim corrective measures at the Phenol Recovery Area.

Semi-Annual Groundwater Monitoring and IRM Report, August, 1998, prepared by Law Engineering and Environmental Services, Inc. Reports on the site wide groundwater monitoring program and the status of interim corrective measures at the Phenol Recovery Area.

BORDEN, INC. - BAINBRIDGE, NEW YORK

TABLE 1

CHRONOLOGIES OF CORRECTIVE ACTIONS COMPLETED THROUGH DECEMBER 1996

SWMU	YEAR(S)	ACTIVITY	DISPOSITION OF WASTES
River Lagoon	1983	Re-graded (filled) lagoon with berm material	Not applicable
Bone Yard	1981	Disposed of 630 tons of stockpiled waste resin	Haz, Non-haz landfills, or Reclamation
	1981	Excavated 275 tons of buried resin and contaminated soil	Hazardous waste landfill
	1981	Biologically treated 500,000 gallons (est'd) of contaminated groundwater	Re-applied to land surface
Phenol Recovery Area	1982-83	Excavated 100 tons of contaminated soil from former lined surface impoundment	Hazardous waste landfill
	1981-90	Biologically treated 4,000,000 gallons (est'd) of contaminated groundwater	Re-applied to land surface
	1991	Excavated 35 tons of contaminated soil from former lined surface impoundment	Non hazardous waste landfill (1995)
	1995-96	Biologically treated 2,000,000 gallons of contaminated groundwater	Re applied to land surface and/or discharged to creek
	1995	Removed 10 tons of sludge, debris from IRM tank	Non hazardous waste landfill
	1996	Carbon treated 250,000 gallons of PCB water in former bio-tank	Re-applied to land surface
	1996	Removed 42 tons of PCB sludge from former bio-tank	Off-site Incineration
PCB Area	1983	Cleaned and removed all PCB Equipment	Incinerated PCB oils
	1987	Excavated 225 tons of contaminated soil	Hazardous waste landfill
	1995	Excavated 270 tons of contaminated soil and slack foundation	Hazardous waste landfill (1996)
PCB Sewers	1991	Excavated 250 tons of contaminated soil and sewer tile	Haz, Non-haz landfills (1995-96)
Resin Excavations	1993	Excavated 500 tons of buried resin and contaminated soil	Non hazardous waste landfill (1995)
Gasoline UST	1991	Removed UST and aerated excavation spoils	Returned to excavation after testing
Paraformaldehyde Fire	1987	Disposed of 65 tons of waste resin and contaminated soil	Hazardous waste landfill

TABLE 2

GROUNDWATER PROTECTION STANDARDS

CONSTITUENT	STANDARD
Total Phenols	1.0 ug/l
Toluene	5.0 ug/l
Formaldehyde	50.0 ug/l
Semivolatile TICs	50.0 ug/l*
PCBs	0.1 ug/l
Benzene	0.7 ug/l
Xylene (total)	5.0 ug/l
Chlorobenzene	5.0 ug/l
1, 2 - Dichlorobenzene	4.7 ug/l
1, 4 - Dichlorobenzene	4.7 ug/l
Ethylbenzene	5.0 ug/l
Chloromethane	5.0 ug/l
Chloroform	7.0 ug/l
Carbon Tetrachloride	5.0 ug/l
1, 2 - Dichloroethane	5.0 ug/l
Isopropylbenzene	5.0 ug/l
Sec-Butylbenzene	5.0 ug/l
Napnthalene	10.0 ug/l
2 - Hexanone	50 0 ug/l
4 - Methyl 2-Pentanone	50.0 ug/l

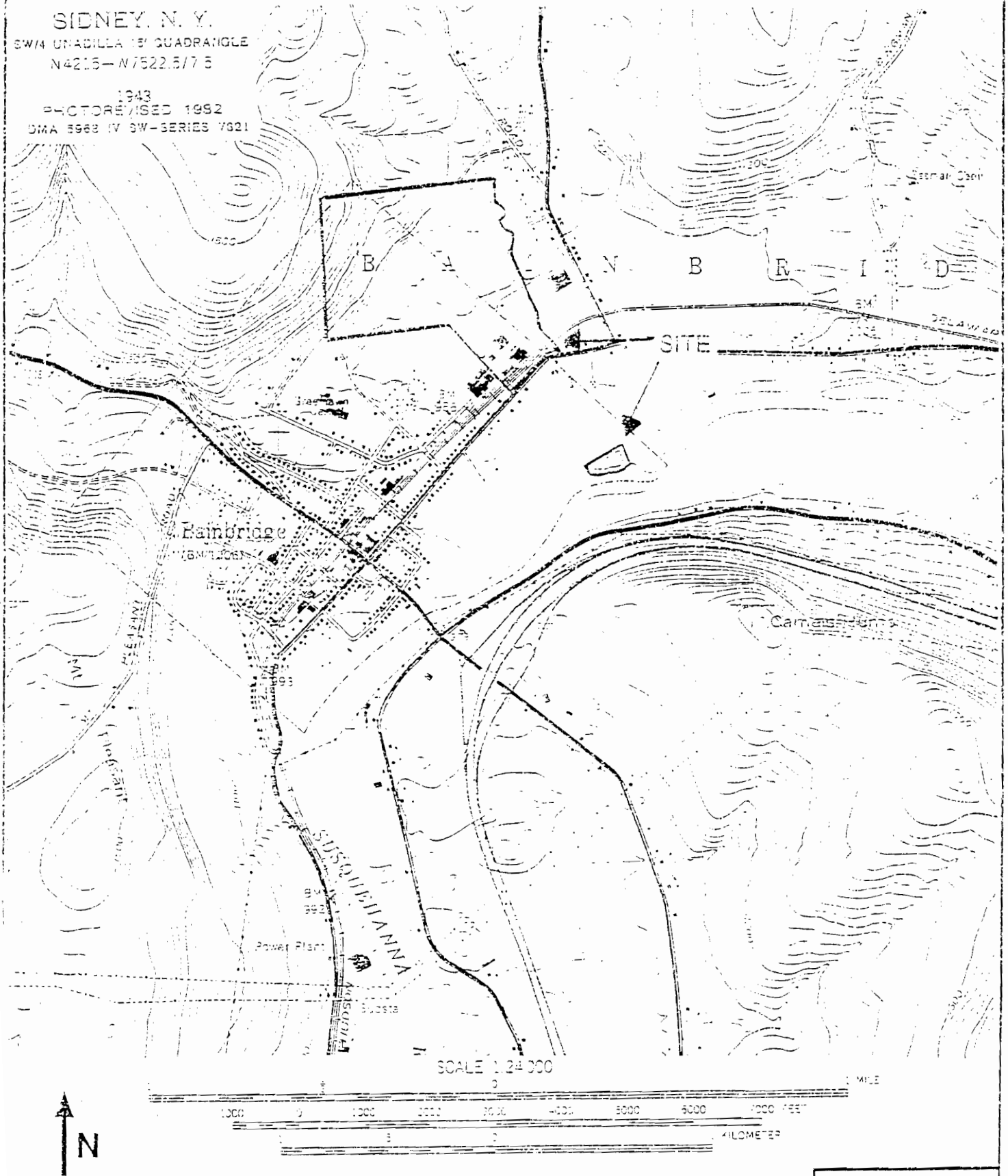
* Chapter 1, State Sanitary Code, Part 5 Drinking Water Supplies, Subpart 5-1. Public Water Supplies, Table 3. Standard for Unspecified Organic Contaminant is 50.0 ug/l. Standard for Total Organic Contaminants is 100 ug/l.

ug/l = part per billion (ppb)

References

1) 6NYCRR Part 703.5(a)(3), September, 1991.
2) USEPA Maximum Concentration Limits, February, 1996.
3) USEPA Health Effects Assessment Summary (HEASTs) Data, May, 1995.
4) Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies Subpart 5-1.

BORDEN, INC. - BAINBRIDGE, NEW YORK
FIGURE 1
SITE LOCATION



T. M. GATES, INC.

Figure 2

PLOT PLAN AND SWMU LOCATIONS

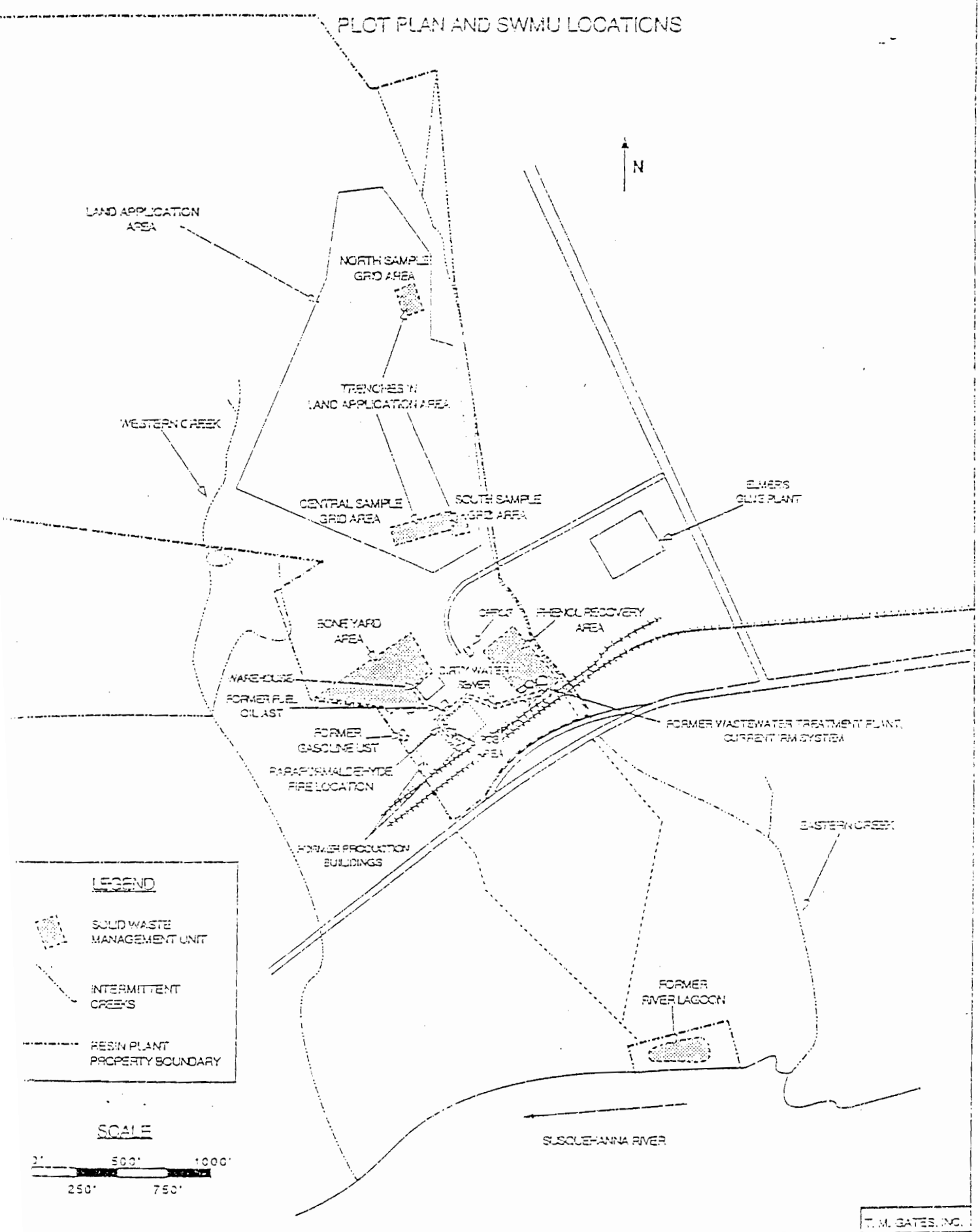
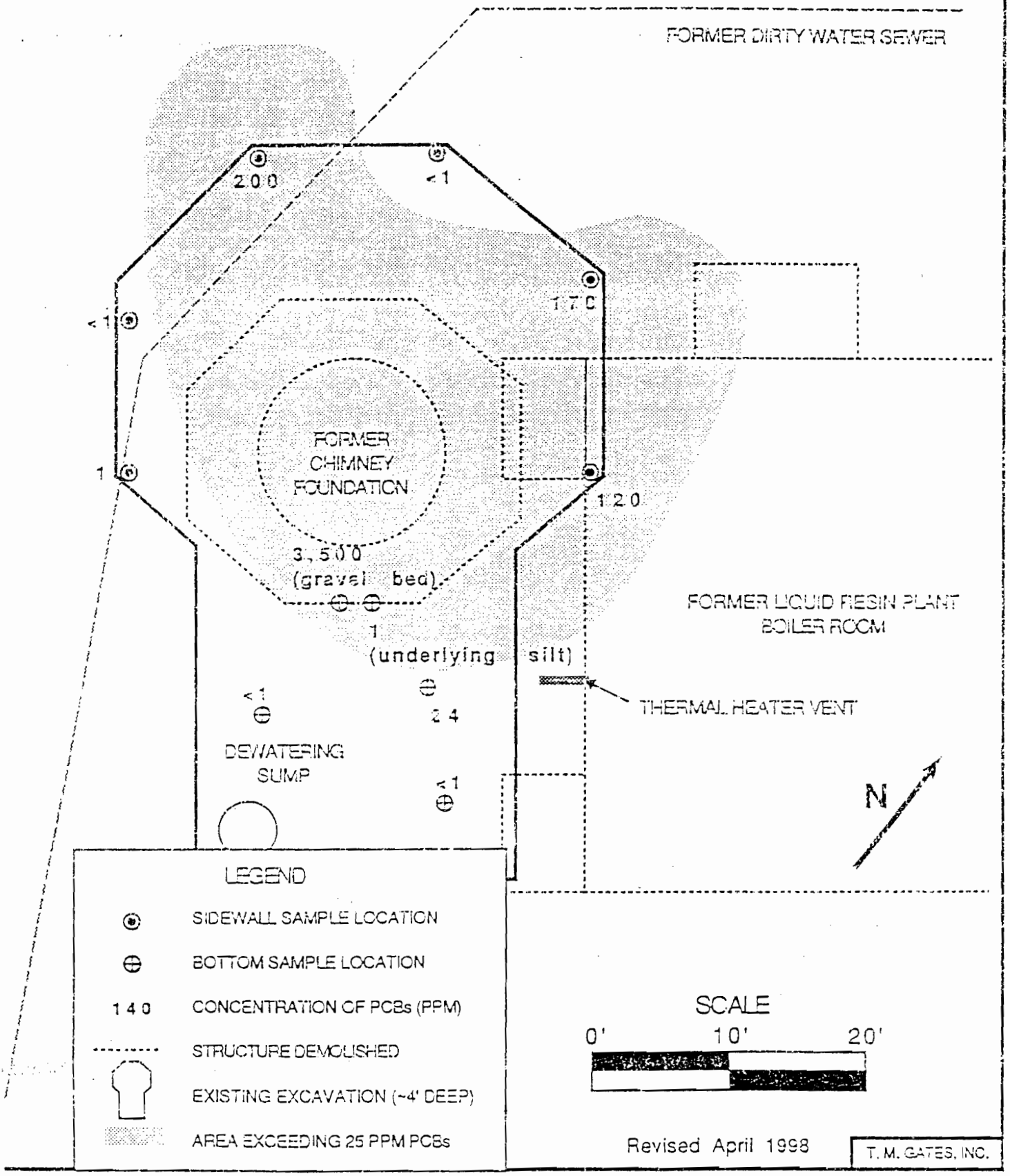


Figure 3

EXISTING PCB CONCENTRATIONS AT THE PCB AREA



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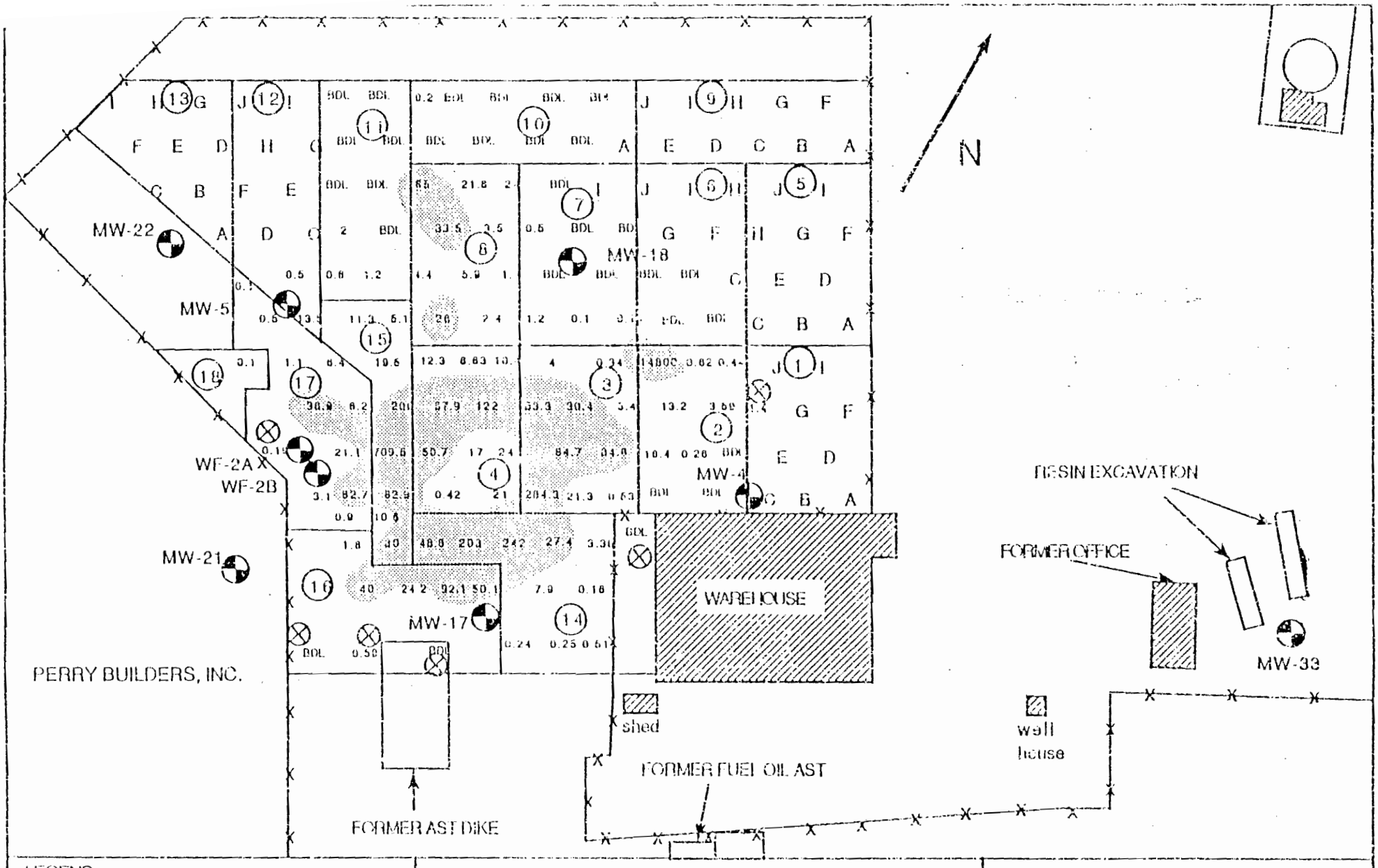

Figure 4

HIGHEST PCB CONCENTRATIONS AND AREA EXCEEDING 25 PPM PCBs BONEYARD

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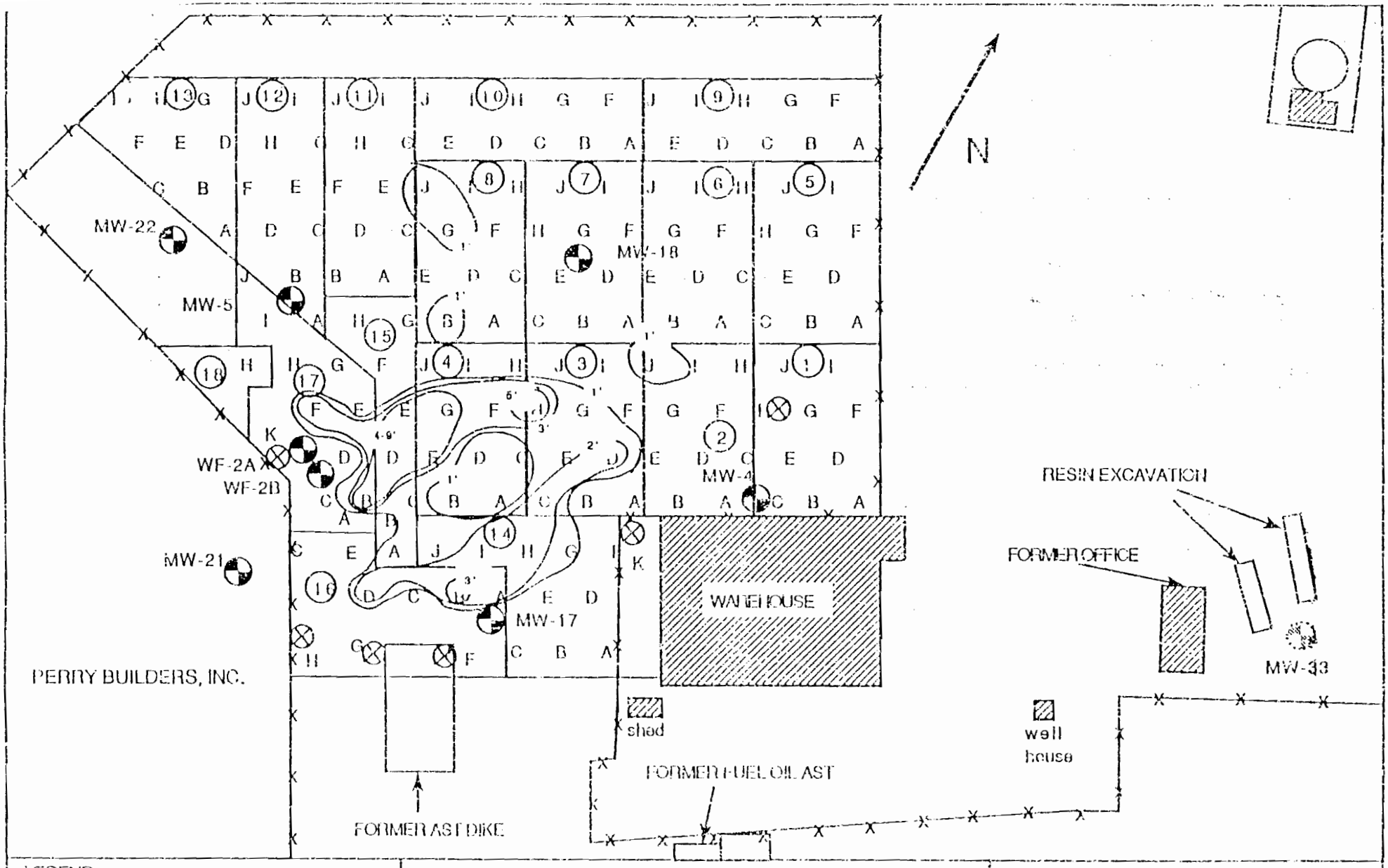

LEGEND

(11) Grid Section Number

K Soil Sample Location

⊗ RFI Phase II Soil Boring

3' 25 PPM Isopleth at Given Depth (in feet)

Figure 4A

DEPTH TO WHICH CONTAMINATION EXCEEDS 25 PPM

BONEYARD

SCALE

0' 50' 100' 200'

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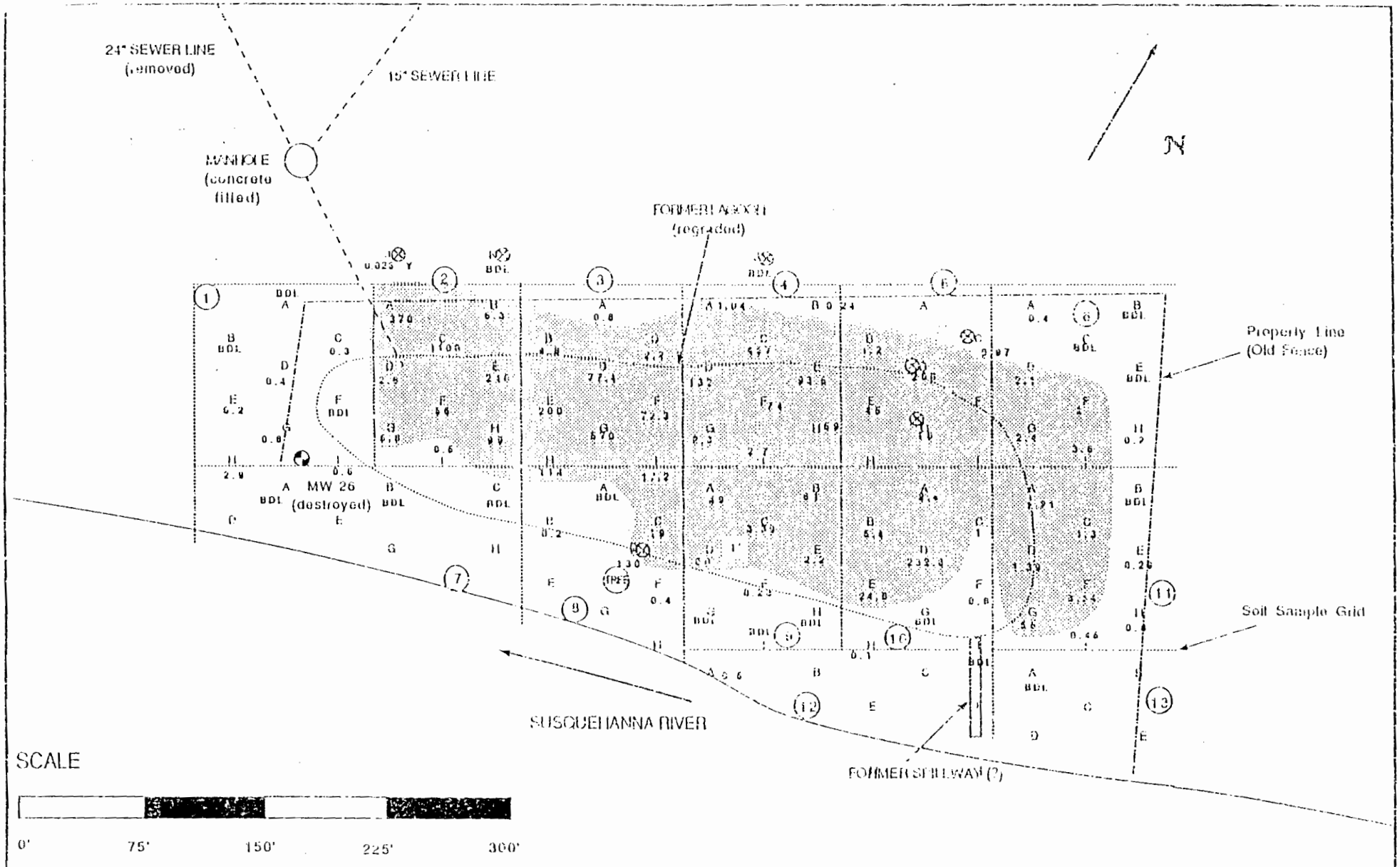


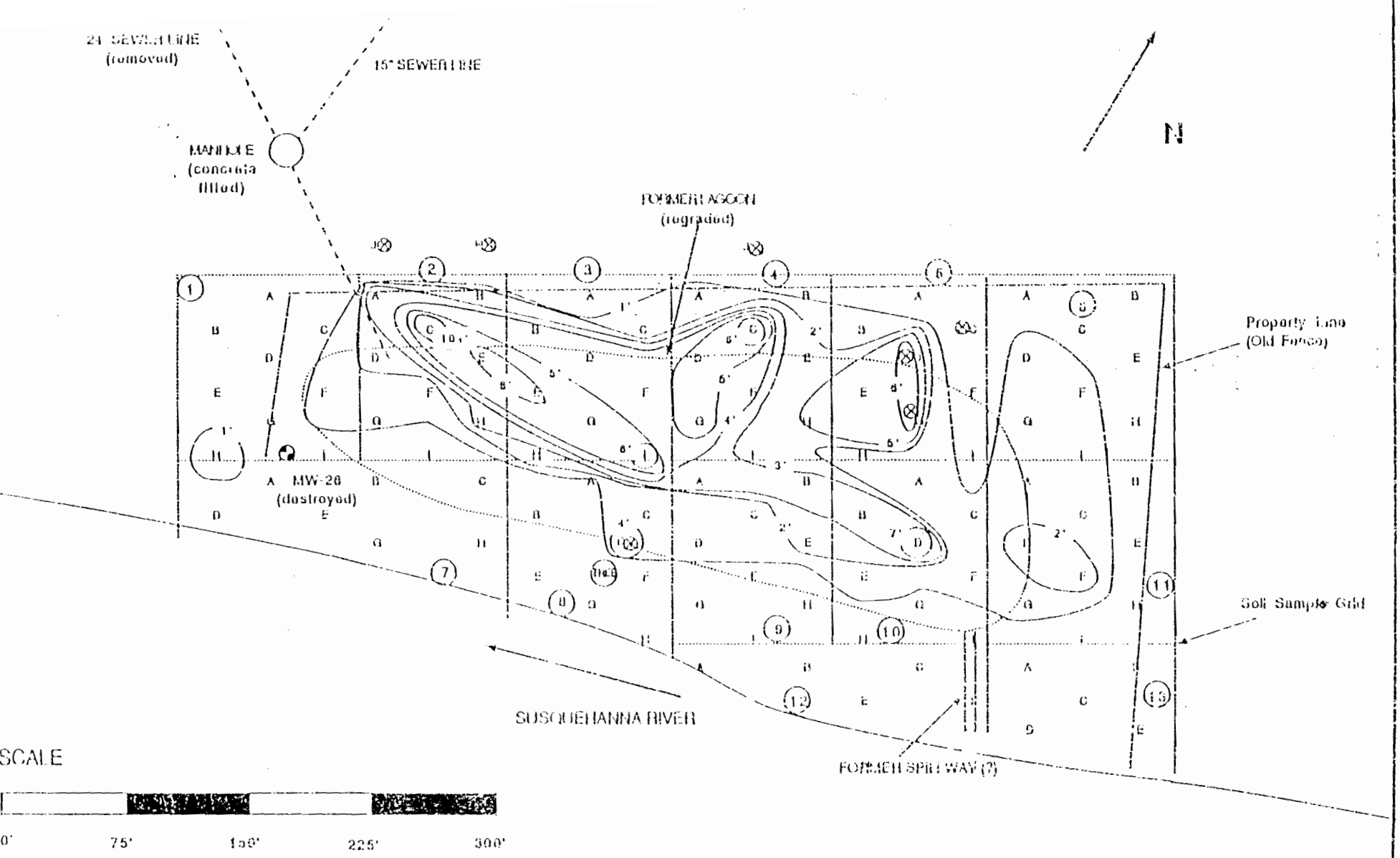
LEGEND

- (4) GRID SECTION NUMBER
- ⊗ PHASE II RFI SAMPLING LOCATION
- F GRID SAMPLE LOCATION
- 9.9 HIGHEST PCB CONCENTRATION WITHIN BORING
- AREA EXCEEDING 1 PPM PCBs

Figure 5

HIGHEST PCB CONCENTRATIONS
AND THE AREA EXCEEDING ONE PPM PCBs
RIVER LAGOON

T. M. GATES INC



LEGEND

(4) GRID SECTION NUMBER

PHASE II RFI SAMPLING LOCATION

F GRID SAMPLE LOCATION

5' ONE PPM ISOPLETH AT GIVEN DEPTH

Figure 5A

DEPTH TO WHICH
CONTAMINATION EXCEEDS ONE PPM
RIVER LAGOON

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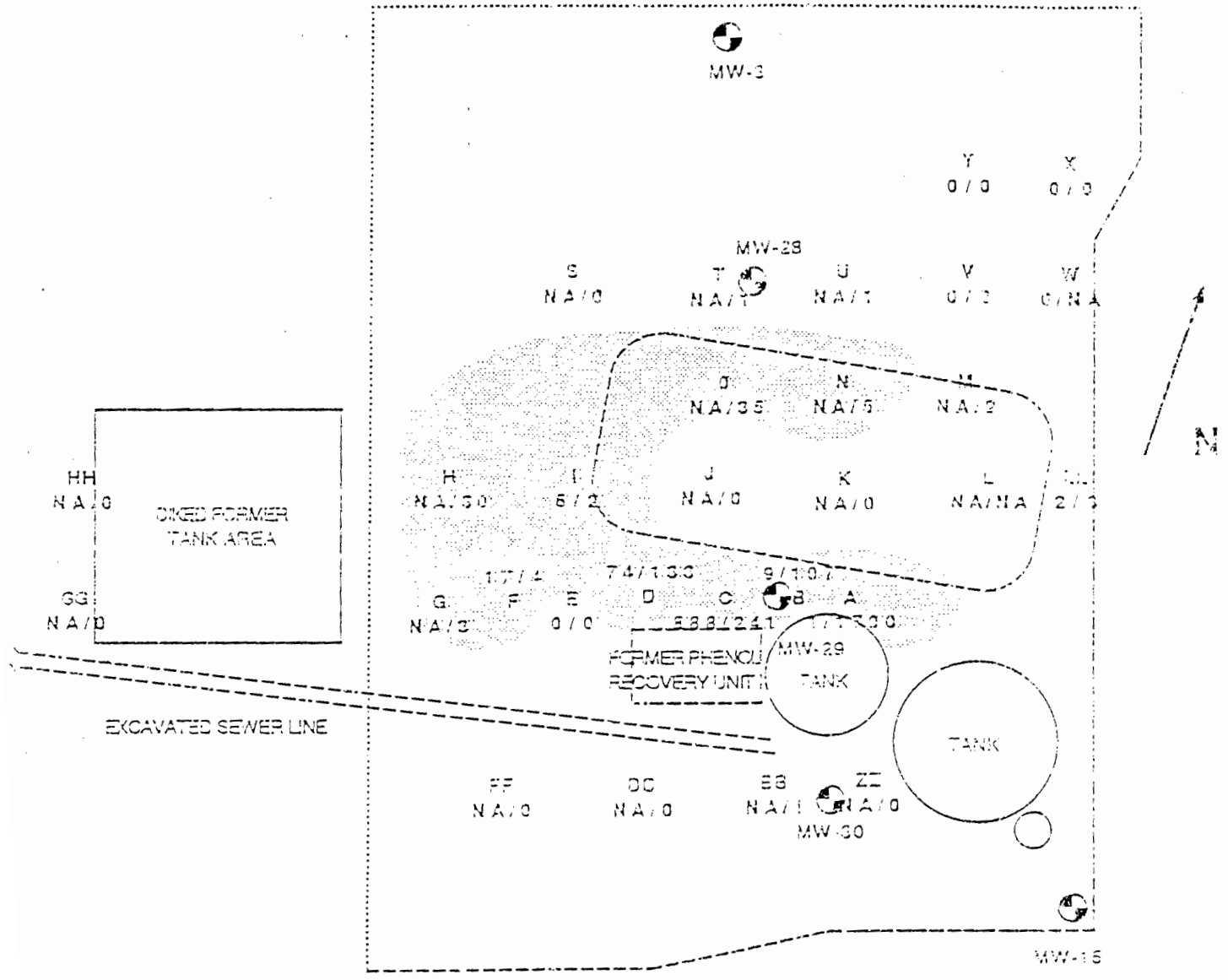
Figure 6

UNSATURATED SOIL SAMPLING LOCATIONS AND SCREENING RESULTS
PHENOL RECOVERY AREA



MONITORING WELL

SCALE
0' 25' 50' 75' 100'

G
N A / 0
SCREENING SAMPLING LOCATIONS
AND PHOTOIONIZATION SCREENING RESULT
(ppm AS BENZENE) AT 2 FEET/4 FEET BELOW GRADE

NA - NOT ANAYLZED

AREA GREATER THAN 2 ppm TOTAL VOCs
IN VAPOR SPACE ABOVE UNSATURATED SOIL SAMPLE

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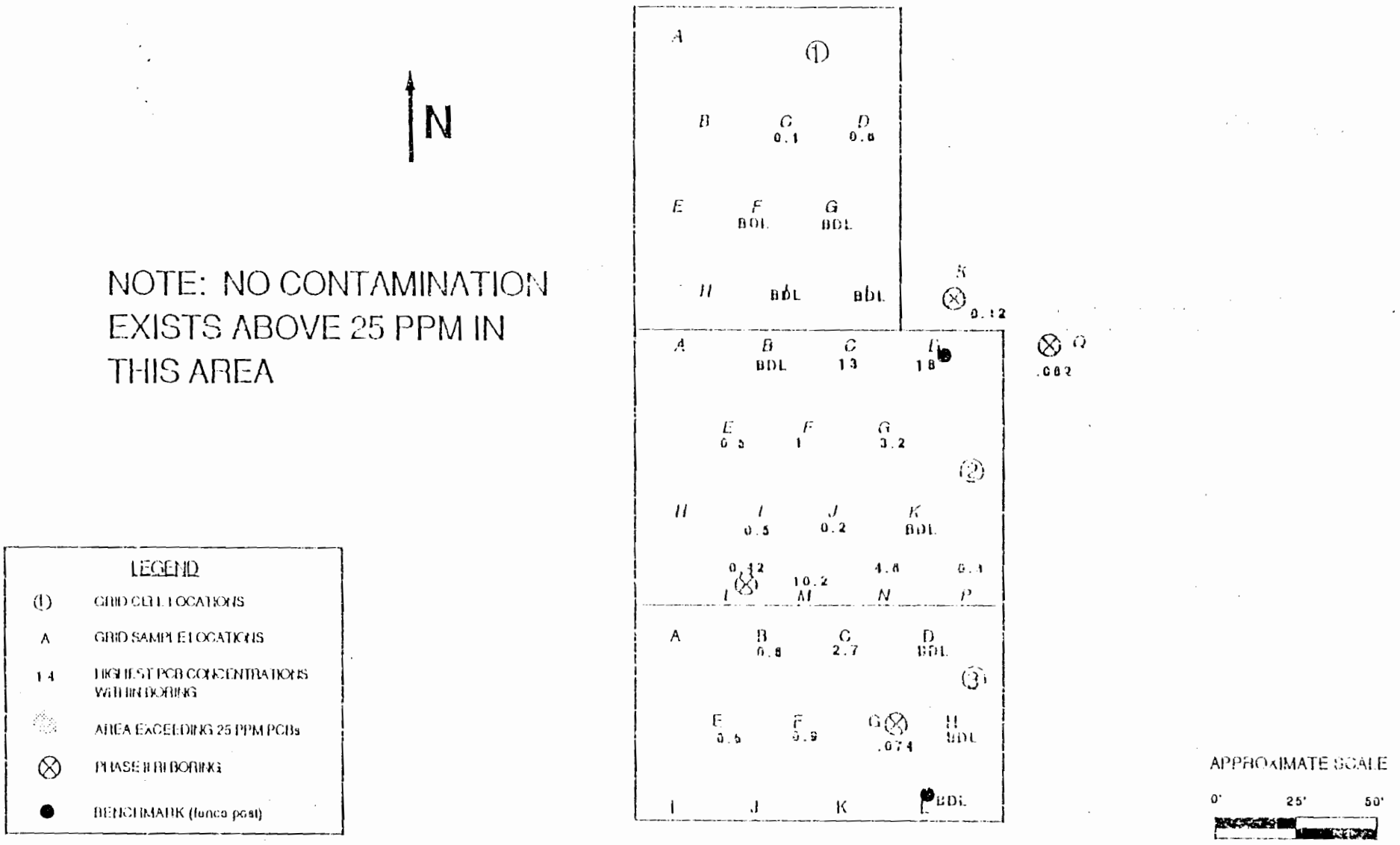

Figure 7

HIGHEST PCB CONCENTRATIONS AND
AREAS EXCEEDING 25 PPM PCBs
NORTH LAND APPLICATION AREA

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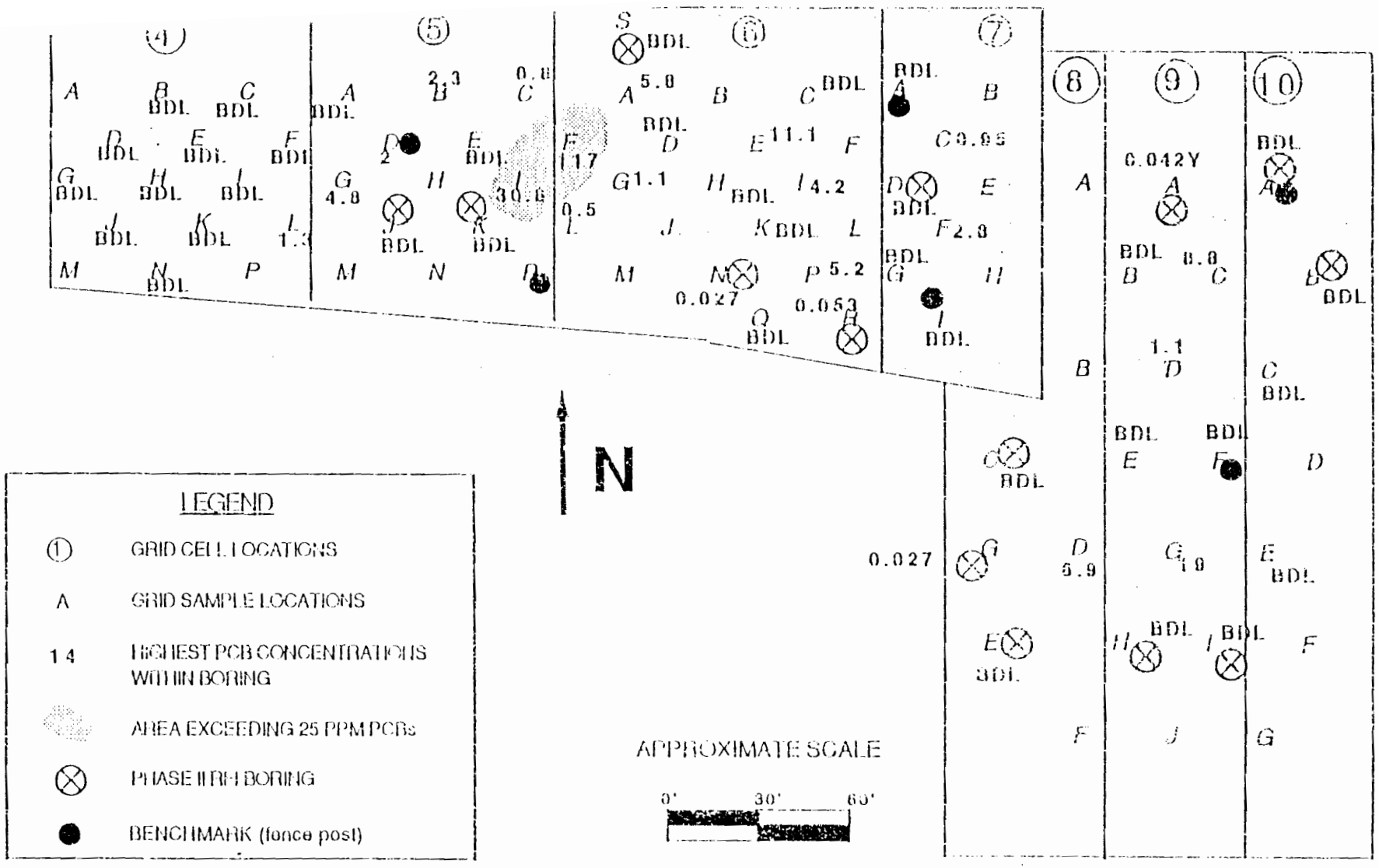


Figure 7A

Revised April 1998

HIGHEST PCB CONCENTRATIONS AND
AREA EXCEEDING 25 PPM PCBs
CENTRAL AND SOUTH TRENCHES OF THE LAND APPLICATION AREA

T.M. Gates, Inc.

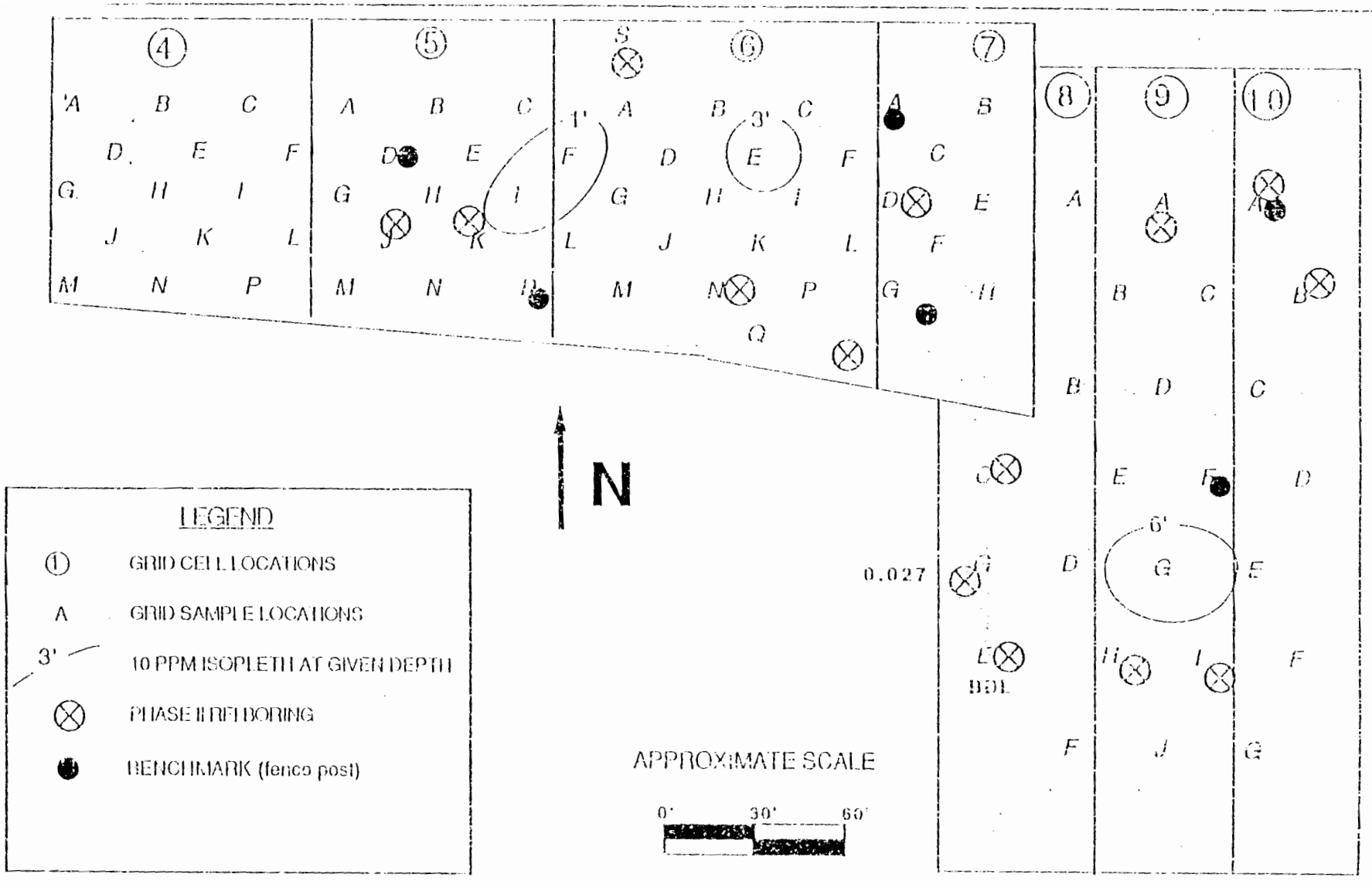


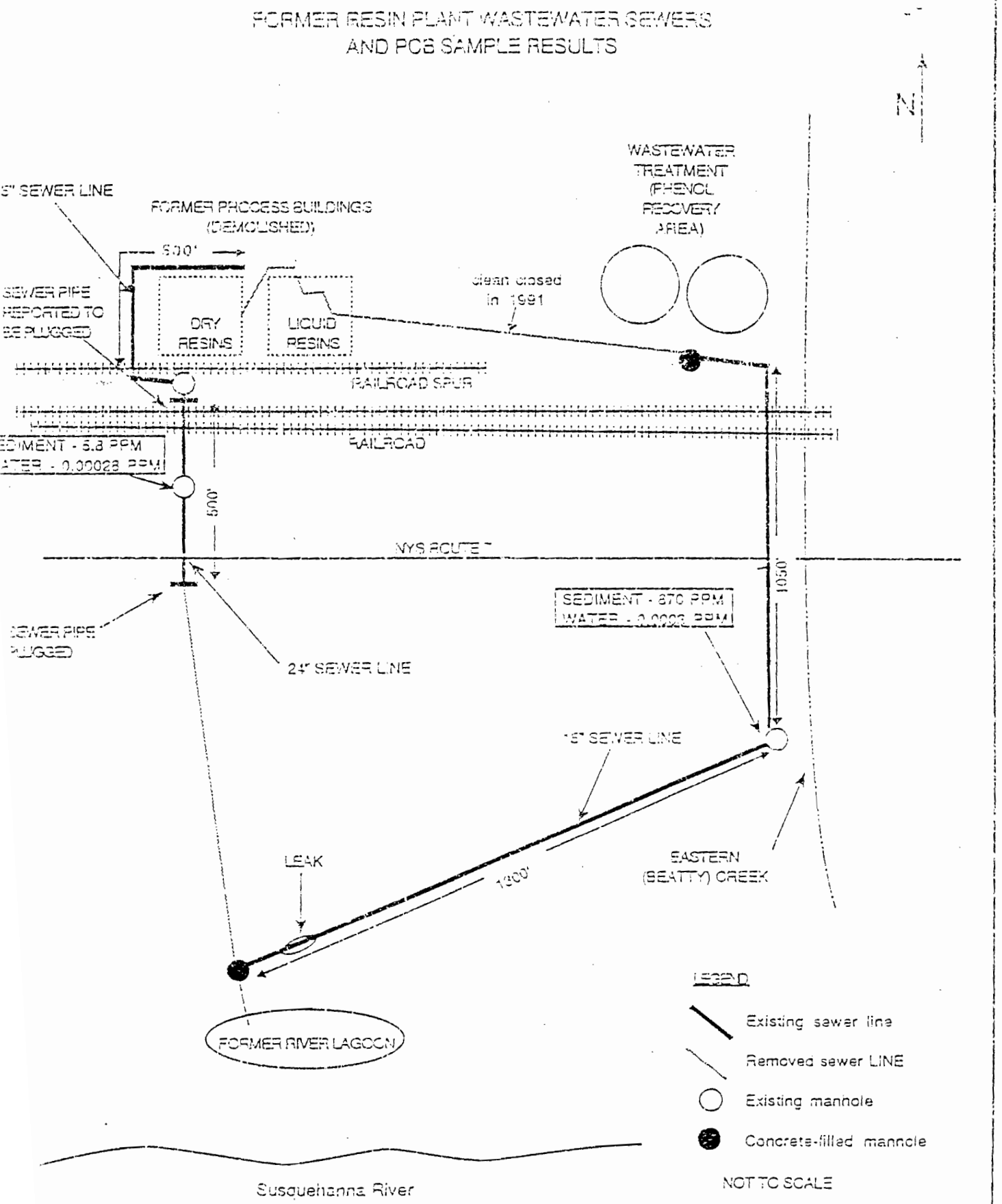
Figure 7B

DEPTH TO WHICH
CONTAMINATION EXCEEDS 10 PPM
CENTRAL AND SOUTH TRENCHES OF THE LAND APPLICATION AREA

T.M. Gates, Inc.

Figure 8

FORMER RESIN PLANT WASTEWATER SEWERS AND PCB SAMPLE RESULTS



T. M. Gates, Inc.

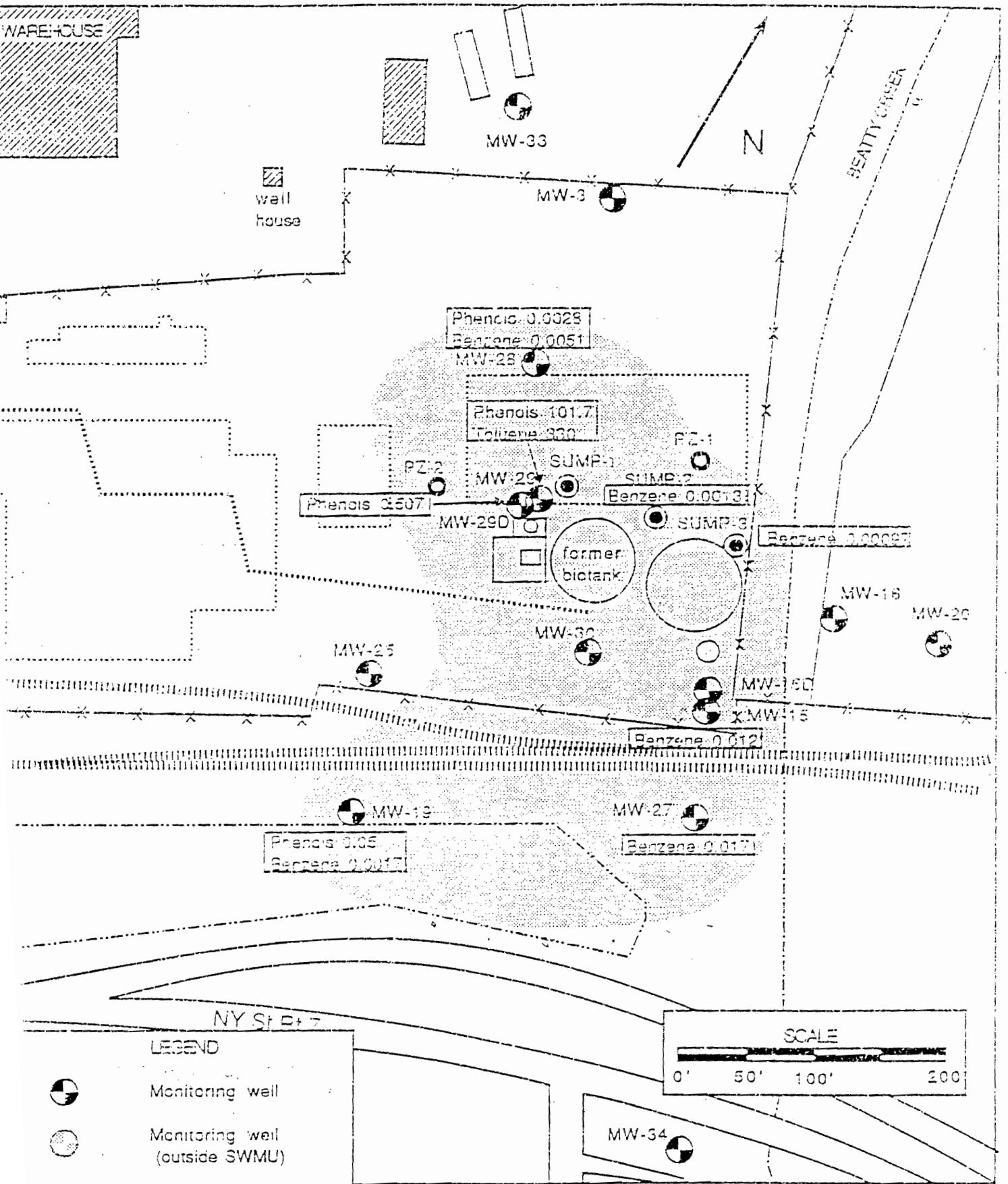


Figure 9

GROUNDWATER CONTAMINATION IN THE PHENOL RECOVERY AREA - NOVEMBER 1996

T. M. Gates, Inc.

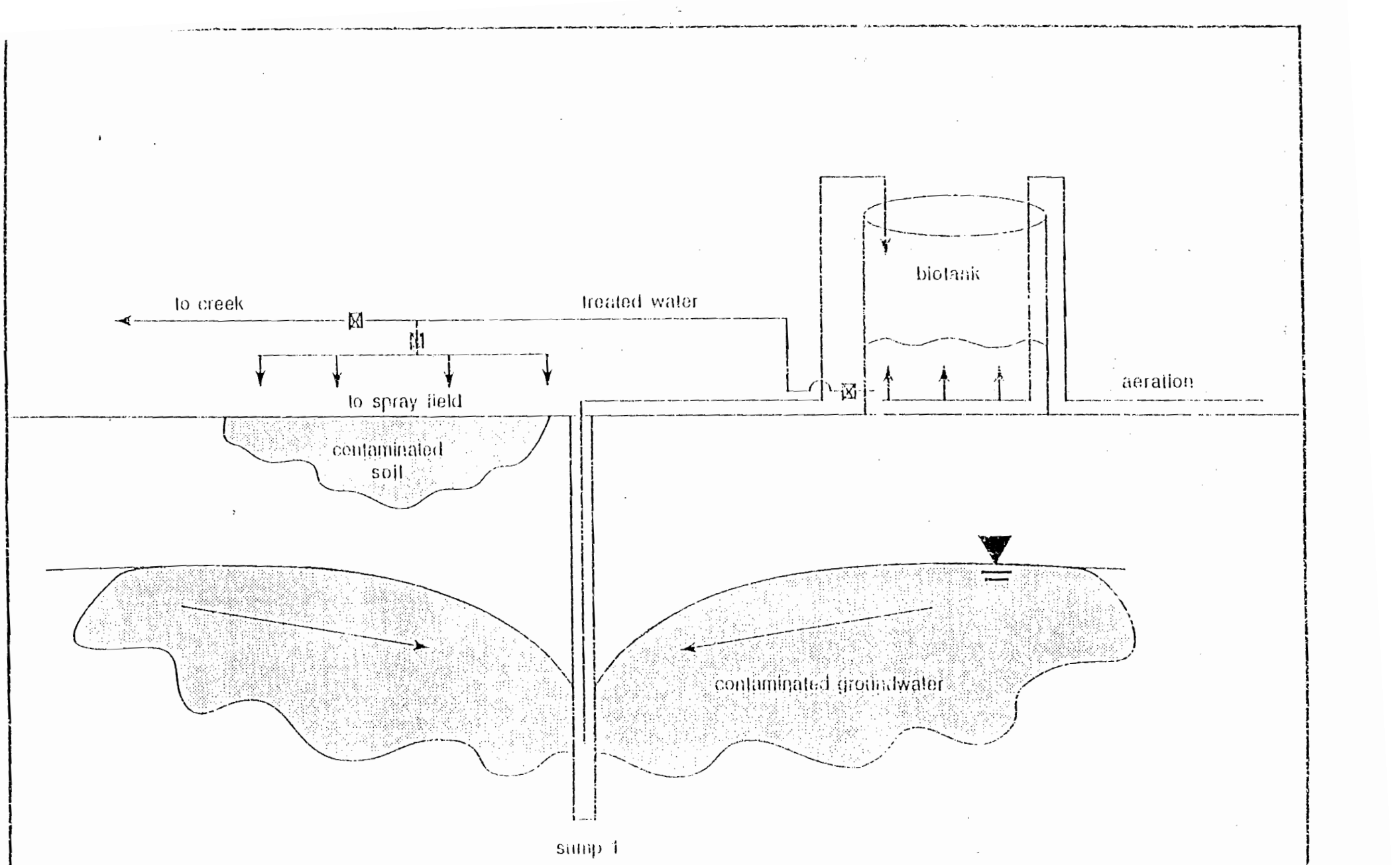


Figure 9A

SCHEMATIC DIAGRAM OF EX-SITU BIOLOGICAL TREATMENT SYSTEM

T. M. GATES, INC.

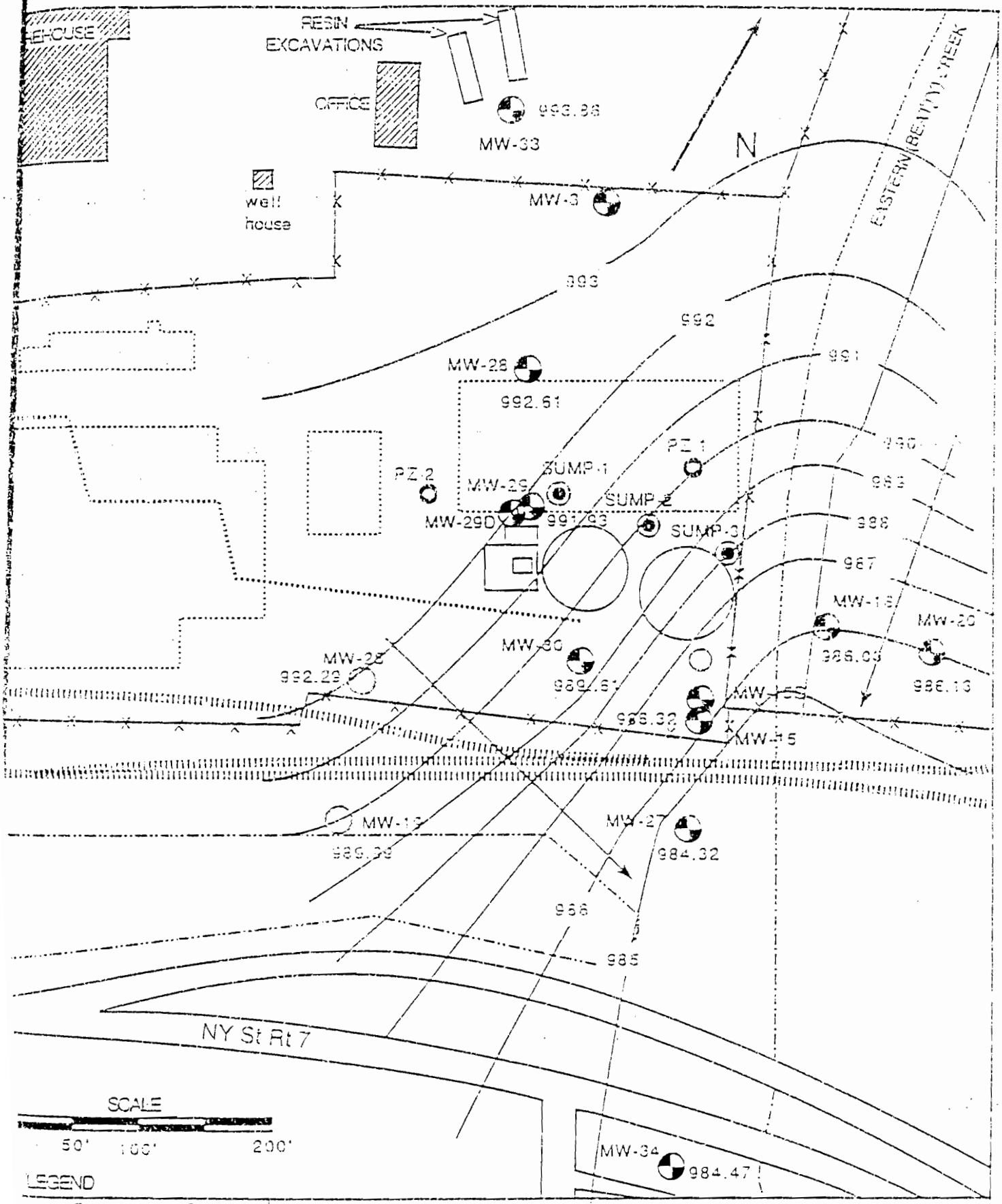


Figure 9B

PHENOL RECOVERY AREA MONITORING WELLS
AND STATIC GROUNDWATER CONTOURS - MAY 1996

T. M. Gates, Inc.

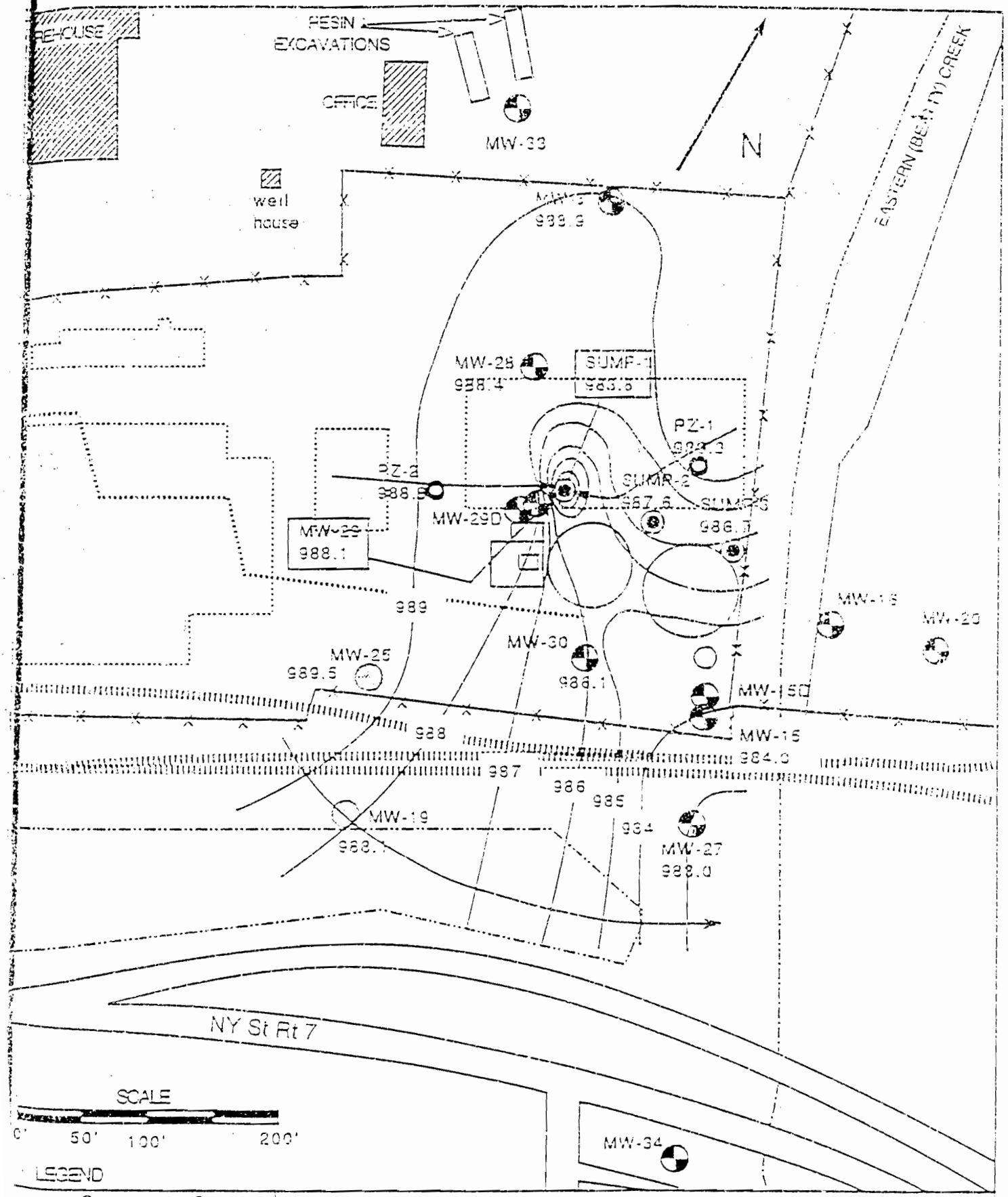


Figure 9C

PHENOL RECOVERY AREA MONITORING WELLS
AND PUMPING GROUNDWATER CONTOURS - AUGUST 1996

T. M. Gates, Inc.

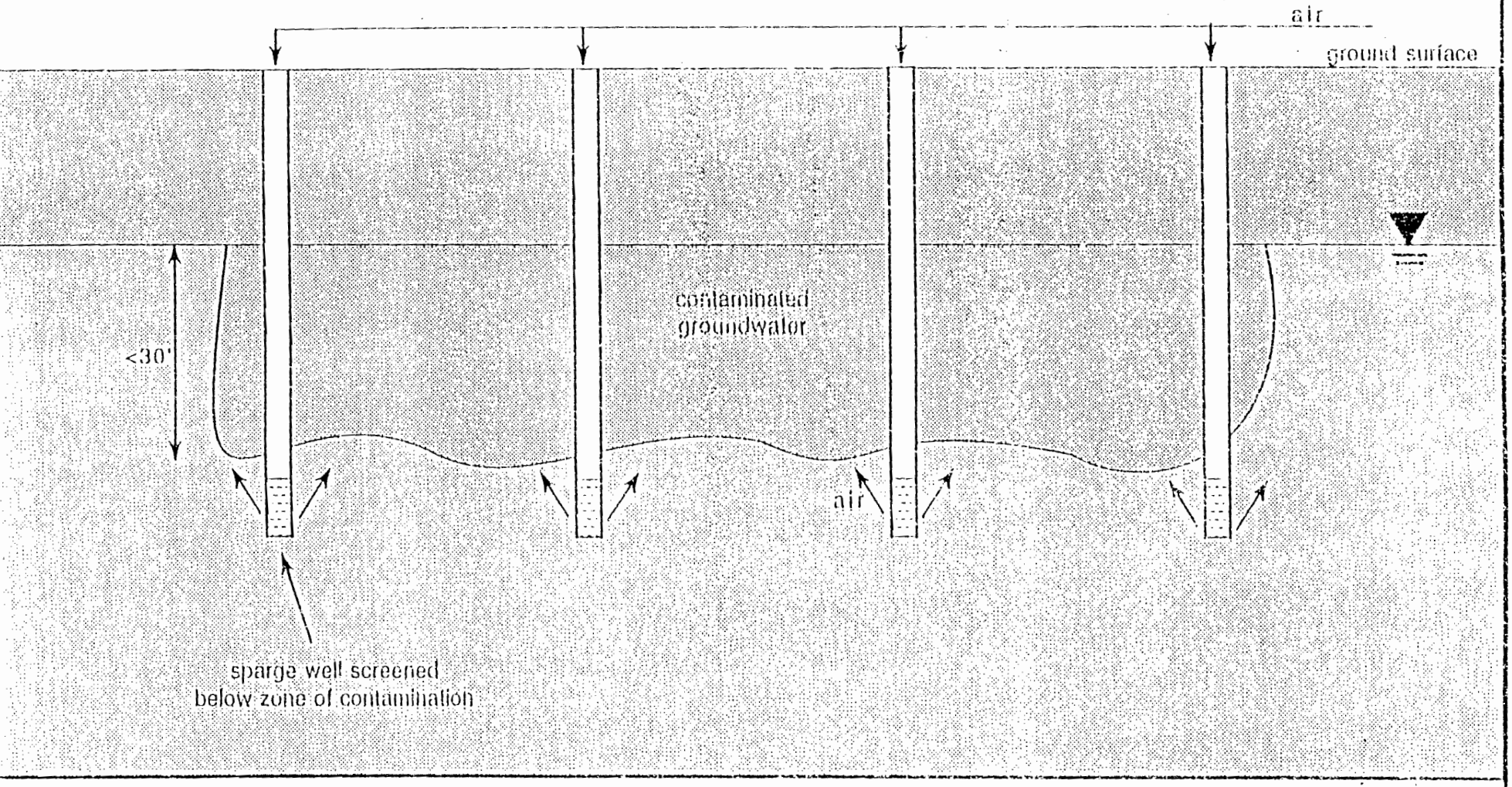


Figure 16

SCHEMATIC DIAGRAM OF IN-SITU BIOREMEDIATION SYSTEM

T. M. GATES, INC.