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**MCP PHASE I REPORT  
FOR LYMAN STREET PARKING LOT  
(OXBOW AREA D) AND  
CURRENT ASSESSMENT SUMMARY  
FOR USEPA AREA 5A**

**VOLUME I OF IV**

**General Electric Company**

**Pittsfield, Massachusetts**

**February 1994**



**BLASLAND, BOUCK & LEE, INC.**  
ENGINEERS & SCIENTISTS

OUTSIDE THE RIVER  
Site: GE  
Break: 21  
Other: 5933

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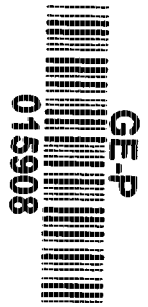
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VOLUME I OF IV

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

FEBRUARY 1994

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5933

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## ACKNOWLEDGMENT

This report has been prepared by Blasland, Bouck & Lee, Inc. of Syracuse, New York, on behalf of the General Electric Company. This report is based upon previous work performed at this site by Geraghty & Miller, Inc., Albany, New York, Golder Associates, Inc., of Mt. Laurel, New Jersey, and Zorex Environmental Engineers of Pittsfield, Massachusetts.

## SECTION 1 - INTRODUCTION

### 1.1 General

This report has been prepared on behalf of GE by Blasland, Bouck & Lee, Inc., to meet two sets of requirements applicable to the General Electric Company (GE) facility in Pittsfield, Massachusetts. First, the report constitutes a Phase I - Limited Site Investigation Report on the Lyman Street Parking Lot (former Oxbow Area D), as required by the Massachusetts Department of Environmental Protection (MDEP), pursuant to the Massachusetts Contingency Plan (MCP) and a Consent Order executed by GE and the MDEP in May 1990. Second, this document constitutes a Current Assessment Summary (CAS) Report for the area designated as USEPA Area 5a, pursuant to the requirements of a permit issued to GE by the United States Environmental Protection Agency (USEPA) under the corrective-action provisions of the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). That permit was originally issued in February 1991 and was reissued, as modified, effective January 3, 1994.

GE previously submitted a MCP Phase I Report for the Lyman Street Parking Lot to the MDEP on March 16, 1992 (Blasland & Bouck, March 1992). That report was conditionally approved by the MDEP in a letter dated August 7, 1992. The MDEP's August 7, 1992 letter also provided classification of the Lyman Street Site as a priority disposal site under the MCP for which further remedial response action is necessary. It also stated that a Scope of Work (SOW) for a Phase II - Comprehensive Site Assessment was required to be submitted within 90 days of the date of the letter. In response, GE submitted a MCP Phase II SOW on November 5, 1992 (Blasland & Bouck, November, 1992).

When the MCP Phase I Report and the Phase II SOW were prepared, the USEPA Corrective-Action Permit (the "Permit") was stayed pending resolution of

an appeal of the Permit by GE and others. Following that appeal, USEPA modified certain portions of the Permit and issued final Permit modifications on December 1, 1993. The modified Permit became effective on January 3, 1994.

The MDEP and the USEPA have executed a Memorandum of Understanding (MOU) that provides for coordination between them in reviewing GE's submittals. As part of the MOU, certain submittals prepared by, or on behalf of GE, pursuant to the Permit and the May 1990 Consent Order are to be prepared jointly in order to facilitate a coordinated agency review.

The MCP Phase I Report and the Phase II SOW previously submitted to the MDEP were not prepared to serve as documents subject to joint agency review. As such, these two documents have been revised to serve this purpose. As indicated above, this report is not only a revised MCP Phase I Report, but also a Current Assessment Summary. The November 1992 MCP Phase II SOW has also been revised to serve as a MCP Phase II SOW and a RCRA Facility Investigation (RFI) Proposal pursuant to the Permit and is being submitted concurrently with this document under separate cover. In addition, a Preliminary Health and Environmental Assessment (HEA) Proposal is being submitted under separate cover.

## 1.2 Background Information

Prior to World War II, the stretch of the Housatonic River which flows through Pittsfield, Massachusetts, was characterized as a meandering stream. As such, the river contained a series of alternating bends, or oxbows, as well as lowland areas.

In an effort to reduce the flooding potential of the Housatonic River, the City of Pittsfield, in a joint program with the U.S. Army Corps of Engineers during the 1940s, altered the natural course of the river to form a relatively straight channel. In order to accomplish this, a total of 11 oxbows or lowland

areas, which had previously conveyed river flows, were deliberately isolated from the newly formed channel of the river.

These former oxbows were subsequently filled with various materials. There are no known records as to the specific sources or types of material used as fill (apart from recent sampling data). Oxbow Area D, one of the 11 areas which had been isolated from the river channel and then filled, was later paved for use as the existing Lyman Street Parking Lot. This lot is surrounded by a high fence, except along the steep and vegetated riverbank. Figure 1-1 presents a general location plan of the Lyman Street Parking Lot Site, including 500 feet and one-half mile radii, while Figure 1-2 provides a more detailed illustration of the physical features associated with the site.

A significant number of investigations have been conducted at and near the Lyman Street Parking Lot Site. A summary of studies performed to date is presented in Table 1-1. A brief discussion of these studies is provided below.

Between August 1986 and May 1987, GE conducted three separate investigations in the vicinity of the Lyman Street Parking Lot to assess groundwater and/or soil quality at the site. These investigations were conducted on GE property north, northwest, and northeast of the Lyman Street Parking Lot Site (Geraghty & Miller, December 1990).

In October 1988, well points were installed adjacent to each of the 11 former oxbow areas to determine whether these areas were affecting the quality of groundwater discharging to the Housatonic River (Geraghty & Miller, December, 1990). Groundwater samples collected from wellpoint WP-6, adjacent to the Lyman Street Parking Lot Site, revealed the presence of several volatile and base/neutral priority pollutant compounds, notably chlorobenzene and benzene, as well as trace levels of PCBs.

Additional investigations were carried out at the site in August 1989, including the drilling and sampling of six soil borings. Two of those borings

were located within the former river channel of this oxbow and were completed as monitoring wells. The results of these investigations indicated the presence of PCBs as well as several volatile and base/neutral organic compounds in both the soil and the groundwater (Geraghty & Miller, December 1990).

In May 1990, GE and the MDEP executed a Consent Order requiring investigations and studies of the Housatonic River and its former oxbow areas under the MCP. In June 1990, pursuant to that Consent Order, GE submitted a MCP Phase II SOW for the Housatonic River and its oxbows (Blasland & Bouck, June 1990a). That SOW called for the drilling of five additional soil borings in Oxbow Area D (the Lyman Street Parking Lot Site), with two of them to be completed as monitoring wells.

In August 1990, during a reconnaissance, via canoe, of the Housatonic River by personnel from GE and the MDEP, seepages of small amounts of oil were observed entering the river in the vicinity of the Lyman Street Parking Lot Site. In order to contain any release of oil into the river, GE promptly installed, as a short-term measure (STM), an oil-absorbent boom along the river bank in this area. In addition, based on the results of a water and sediment sample collected near the boom, GE offered to immediately implement the activities described in the Housatonic River MCP SOW for the Lyman Street Parking Lot. Additional details on both the progression of STM activities and those proposed as part of on-going activities are described in Section 9.

By letter of August 24, 1990, the MDEP conditionally approved the Housatonic River MCP SOW and directed GE to propose an additional STM to address the seepage of oil into the river adjacent to the Lyman Street Parking Lot Site. In September and October 1990, the field activities described in the Housatonic River SOW for the Lyman Street Parking Lot Site were carried out by Geraghty & Miller; and on December 3, 1990, GE submitted to the MDEP an



initial proposal for additional STMs at that site (Geraghty & Miller, December 1990).

On December 27, 1990, the MDEP notified GE that the Lyman Street Parking Lot Site would henceforth be treated as a separate "Related Site" under the May 1990 Consent Order, and would be classified as within Phase I of the MCP process. On January 4, 1991, the MDEP approved GE's initial STM proposal for the site. The activities described in that initial proposal were then carried out and reported to the MDEP, together with an STM design proposal on May 10, 1991 (Geraghty & Miller, May 1991). In the meantime, Geraghty & Miller had reported to GE the results of the MCP field investigations carried out at the site in the fall of 1990 (Geraghty & Miller, March 1991).

GE's May 1991 STM proposal was designed to address the presence of light non-aqueous phase liquids (LNAPLs) that had been identified at the site. However, while that report was under review by the MDEP, GE notified the MDEP that, due to the potential presence of dense non-aqueous phase liquids (DNAPLs) at the Lyman Street Parking Lot, further hydrogeologic assessment at the site and future evaluation of potential STMs would be necessary before finalizing the STMs. GE then retained Golder Associates of Mt. Laurel, New Jersey (Golder), to develop a revised proposal for such work, and that proposal was submitted to the MDEP on August 29, 1991 (Golder, August 1991). The MDEP conditionally approved that revised proposal by letter of October 9, 1991.

On January 6, 1992, a report presenting Golder's further hydrogeologic assessment of the site, its evaluation of possible STMs, and a proposal for specific STM activities at the site was submitted to the MDEP (Golder, January 1992). The MDEP conditionally approved that report and proposed an STM by letter dated February 11, 1992. Additional information regarding that STM, as well as prior STMs implemented at the Lyman Street Parking Lot Site, is presented in Section 6 of this document.

The MDEP's letter of October 9, 1991 also reiterated that a Phase I Report on the Lyman Street Site would be required. However, it noted that no additional field work, apart from that proposed by Golder, would be necessary and that the Phase I Report could incorporate the results of Golder's investigation to the extent possible. A MCP Phase I Report was prepared on behalf of GE by Blasland & Bouck Engineers, P.C., and submitted to the MDEP on March 12, 1992. In accordance with MDEP's letter of October 9, 1991, that report incorporated the results of prior activities and reports that had been submitted to the MDEP on the Lyman Street Parking Lot Site.

The MCP Phase I Report was conditionally approved by the MDEP on August 7, 1992. The MDEP concurred with GE's recommendation to classify the Lyman Street Parking Lot Site as a priority site at which further remedial response action is necessary.

Following submission of the MCP Phase I Report, a number of additional actions were taken at the site. In April 1992, GE closed the Lyman Street Parking Lot and locked the gates to further restrict access. In addition, GE has proceeded with STM activities outlined in the January 1992, Golder STM Proposal. These activities are discussed in more detail in Section 9.

### 1.3 Format of Document

This document is divided into several sections. Section 2 describes the location history of the site, including discussions of the solid waste management unit (SWMU) at the site, previous site ownership and use, hazardous materials found at the site, disposal methods, and the history of releases. Section 3 describes the geographic location of the site, site mapping and photographs, physical site characterization, description of present conditions, utility locations, and potential migration pathways. Section 4 presents a brief discussion of investigations performed prior to the May 1990 Consent Order and a more

detailed discussion of the more recent MCP Investigations, including a discussion of the results of soil boring and groundwater sampling programs, as well as hydrogeologic and geophysical information. Section 5 presents information and the results related to several miscellaneous soil investigations performed at the Lyman Street Parking Lot Site. Section 6 provides a summary of ambient air monitoring at the site as part of a GE facility air monitoring program under the MCP. Section 7 presents a discussion of the fate and transport characteristics associated with those constituents found at the site. Section 8 discusses migration pathways and exposure potential at the site. Section 9 reviews the existing and planned short-term/interim measures designed to prevent or minimize the release of oil and hazardous materials from the site. Section 10 identifies remaining data needs. Section 11 presents conclusions and future activities at the site. In addition, Appendices A through N provide supporting information referenced in this report.

## SECTION 2 - LOCATION HISTORY/SWMU IDENTIFICATION

### 2.1 General

Lyman Street Parking Lot (Oxbow Area D) is the designation used by GE and the MDEP to refer to an area which has been the subject of several past investigations, including a recent MCP Phase I investigation. As mentioned in Section 1.2 and explained in more detail below, this area was once comprised of a former Housatonic River oxbow. The oxbow was cut off from the river, subsequently filled, and was paved to construct a parking lot which exists today. It is difficult to determine the precise location of the former oxbow. However, as explained in more detail in Section 4, based on the review of both analytical and boring log information, as well as historical aerial photographs, the former oxbow area appears to be located almost entirely within the paved and fenced portion of the Lyman Street Parking Lot proper, with a small portion possibly extending into the adjacent GE Lot No.2, located immediately to the north as shown in Figure 1-2. Specifically, the available data associated with Lot No. 2 indicate the presence of fill material characteristic of the Lyman Street Parking Lot to a depth of approximately six feet in the vicinity of boring LS-10. PCBs were also detected in this area from 0 to 24 feet at concentrations ranging from 0.1 to 8.9 parts per million (ppm). The remaining 10 soil borings located north of the Lyman Street Parking Lot did not contain any fill material.

As discussed in Section 1.1, the Lyman Street Parking Lot Site is also subject to regulation by the USEPA pursuant to a RCRA Corrective-Action Permit that became effective on January 3, 1994. The Permit divides the GE facility and other affected properties into various areas to facilitate the investigation of releases from Solid Waste Management Units (SWMUs) at the GE Facility. The Permit identifies the former oxbow located within the Lyman Street Parking Lot area as SWMU G-21. In the context of this report, the Lyman Street Parking Lot

(Oxbow Area D) and USEPA Area 5a are hereafter referred to as the Lyman Street Parking Lot Site, and are described further below.

The remainder of this section provides summaries of past and present site owners (Section 2.2) and past and present site uses (Section 2.3); a description of hazardous materials present (Section 2.4); a history of disposal methods (Section 2.5); and a summary of oil and hazardous materials releases (Section 2.6).

## 2.2 Past and Present Site Owners

According to information obtained at the Pittsfield Registry of Deeds and from GE, the area now referred to as the Lyman Street Parking Lot (GE Lot No. 3) was acquired by GE as a series of small parcels between 1913 and 1942. Specifically, the eastern half of the parcel, not including any of the former oxbow area proper, was purchased from Lyman J. and Nancy M. Read on May 16, 1913. The western portion of the parking lot, not including any of the former oxbow area, was purchased from Edward J. Read and Emma Dickinson on March 16, 1942. The area of the parking lot between the southern boundary of the former oxbow and the northern edge of the rechannelized river was originally comprised of two parcels which were acquired by GE via land court certificate dated February 24, 1920. Prior to that time, these two parcels were owned by Gustav Ullrich.

The parcel of land referred to as GE Lot No. 2 was obtained by GE from Ermino S. Barbalunga and Martin A. Pullano, Jr., on December 26, 1957. Lot No. 2 was leased to July Associates between 1986 and 1992 for use as a parking area for nearby commercial businesses. It is currently vacant.

### 2.3 Past and Present Site Uses

Based upon a review of available historic aerial photographs (Section 3.3) and a City of Pittsfield map (Appendix B) of the Housatonic River, the following site uses have been determined.

Prior to the early 1940s, the area that now comprises the Lyman Street Parking Lot contained an oxbow of the East Branch of the Housatonic River. By 1942, as revealed on a July 13, 1942 aerial photograph, the Housatonic River had been rerouted and the Lyman Street Oxbow was cut off from the river. Ponded water was present in the oxbow at that time, and was contained within what appears to be an earthen berm (see Figure 3-2).

A subsequent aerial photograph was taken in 1956 (Figure 3-2) and shows the site covered by a parking lot. The parking lot was used for GE employee parking until GE closed it in April 1992 and locked the gates to further restrict access.

Based on the review of historical aerial photographs, GE Lot No. 2, located immediately to the north of the Lyman Street Parking Lot, appears to have remained vacant from 1942 to 1974. It received limited commercial use between 1974 and 1979. Between 1986 and 1990, the lot was leased to July Associates to support parking needs associated with several commercial businesses. The northwestern portion of the lot is paved, while the remainder of the lot is unpaved. Lot No. 2 is currently vacant and unused.

### 2.4 Hazardous Materials Description

There are no known records for materials disposed of at the Lyman Street Parking Lot Site. The only related information is analytical data collected at the site. Site-specific data indicate the presence of free-phase oil and various constituents in the groundwater and soils of the site. Table 2-1 presents a listing of hazardous constituents and corresponding minimum and maximum

concentrations found to date in soil, groundwater, and oil as part of site investigation activities. This table indicates the presence at the site of certain constituents associated with activities at the GE facility, including PCBs. It also indicates the presence of other constituents, including several semivolatile organic compounds (SVOCs) which may be related to coal gasification byproducts from the Berkshire Gas Company, which operated a coal gasification facility near the site until the early 1970s. A more detailed summary of the analytical data from the site is provided in Section 4. Section 7 provides a discussion regarding fate and transport characteristics of these constituents.

## 2.5 History of Disposal Methods

There is no known information on disposal methods at the Lyman Street Parking Lot Site. As noted in Section 1.2, it is believed that, as part of or after the Housatonic River rechannelization project in the early 1940s, this former oxbow was filled with various materials of unknown origin.

## 2.6 Summary of Oil and Hazardous Materials Releases

Releases of oil and hazardous materials at the Lyman Street Parking Lot occurred as a result of non-documented disposal activities. In addition, as discussed in Section 1.2, seepages of small amounts of oil have occurred within a "boomed-off" riverbank section of the Housatonic River. These seepages are being addressed as part of MDEP-approved STM activities which are currently being implemented and which also constitute a proposed Interim Measure under the RCRA Corrective-Action Permit (see Section 9).

## SECTION 3 - LOCATION DESCRIPTION/ENVIRONMENTAL SETTING

### 3.1 General

Section 3 provides a location description in terms of the geographic location of the site, available site mapping and photographs, a physical site characterization, description of present conditions, utility locations, and potential migration pathways.

### 3.2 Geographic Location of Site

The general geographic location of the site is illustrated in Figure 1-1. The Universal Transverse Mercator (UTM) coordinates of the Lyman Street Parking Lot Site are approximately 4,700,000 meters north by 645,000 meters east. The longitude and latitude of the area are approximately 73° 15' 42" and 42° 27' 05", respectively.

There are several parcels which border the Lyman Street Parking Lot and GE Lots Nos. 1 and 2. Figure 3-1 illustrates these parcels and presents corresponding City of Pittsfield Tax Assessors' property identification numbers. Table 3-1 lists the names and addresses of the owners of these parcels.

### 3.3 Site Mapping and Photographs

#### 3.3.1 Site Mapping

Figure 1-1 provides a general location plan of the Lyman Street Parking Lot Site. This figure was prepared using USGS 7.5 x 15 minute quadrangle topographic mapping and includes topographic contours and elevations; streets, roads, highways, and other manmade structures; and water features. Figure 1-2 provides a more detailed site plan including 2-foot interval topographic contours and other physical site features such as related property boundaries, fencing, and vegetation. More detailed 1-



foot interval topographic mapping is also included in Appendix A. This mapping also presents the approximate location of the former oxbow which was present in this area. The approximate location of the former oxbow was obtained from mapping prepared by the City of Pittsfield in 1940. That mapping has been reproduced and is included in Appendix B.

### 3.3.2 Site Photographs

Table 3-2 presents a summary list of available aerial photographs which depict the Lyman Street Parking Lot Site. Representative aerial photographs have been reproduced to illustrate the progression of change related to this site. These photographs are presented in Figure 3-2 and include a photograph taken in 1942 showing the former river oxbow once present in this area, a photograph taken in 1956 showing the paved parking lot present today, and a photograph taken in 1990 which serves to illustrate recent site conditions.

## 3.4 Physical Characterization

### 3.4.1 Climate, Topography, Surface Drainage and Vegetation

In general, the Pittsfield, Massachusetts area is characterized by a temperate climate with warm humid summers and cold winters. Annual precipitation in the form of rain and snowfall averages approximately 46 inches per year, distributed fairly evenly from month to month. The mean annual temperature is approximately 46°F, based on data recorded at the nearby Pittsfield Municipal Airport. The mean summer temperature is 68°F, while the mean winter temperature is 28°F. Prevailing winds are from the west as shown by wind directional data collected during 1992 as part of the Facility Air Monitoring Program. These data, illustrated in Figure 3-3, were collected at a meteorological station located at GE's East Street

Area 2 Site (also known as USEPA Area 4) which is located approximately 1,200 feet to the east of the Lyman Street Parking Lot Site.

The topography of the Lyman Street Site is characterized by relatively flat land sloping gently from northeast to southwest towards Lyman Street. The southeastern edge of the site, however, slopes abruptly down to the Housatonic River. Topographic information is provided in Figures 1-1 and 1-2 as well as Appendix A.

Surface drainage at the Lyman Street Site occurs largely in the form of runoff toward catch basins located in Lyman Street, although portions of the site drain directly to the Housatonic River.

As for vegetation, the majority of the Lyman Street Site is covered by pavement. As a result, vegetation at the site is limited to the steep embankment bordering the Housatonic River. Typical tree species include cottonwood, ashleaf maple, American elm, trembling aspen, and red osier dogwood. Other woody and herbaceous vegetation may include black raspberry, honeysuckle, riverbank grape, wild strawberry, cypress spurge, dames rocket, rough cinquefoil, spotted knapweed, and yarrow.

#### 3.4.2 Geology

Pittsfield is situated in the Housatonic River Basin between the Berkshire Hills to the east and the Taconic Range to the west. Bedrock in the Pittsfield area consists of an assemblage of north-south trending metamorphic units (gneiss, schist, and marble), resulting from a series of Paleozoic mountain-building episodes which occurred 520 to 480 million years ago. The bedrock is overlain by a series of unconsolidated materials formed by glacial scouring and deposition, as well as pre- and post-glacial fluvial modification of the landscape.

The main axis of the Housatonic River is underlain by carbonate rock (marble, limestone, and dolomite) of the Cambrian-Ordovician Stockbridge

Group. These rock types are less resistant and erode more easily than the schist and phyllite of the Taconic Range and the gneiss and schist of the Berkshire Highlands.

The unconsolidated surficial geologic deposits within the basin (excluding swamps and alluvium) are of Pleistocene glacial origin (1.6 million to 10,000 years ago), and are classified as either stratified (glaciofluvial and glaciolacustrine) or nonstratified (till) deposits. The thickness of stratified and till deposits have been reported as 240 feet and 90 feet, respectively (Norvitch et al, 1968). Till predominates in the upland areas, and stratified deposits occur primarily along the lower slopes. More recent alluvial and swamp deposits are found mainly in the valley bottoms.

The specific geology of the Lyman Street Site is characterized by artificial materials of unknown origin (sand, gravel, glass, brick, wood, metal), which occupy a former oxbow channel of the Housatonic River. The fill materials overlie a stratified, well sorted, fine to coarse sand, interbedded with gravelly sand (Golder, January 1992). This layer is interpreted to be of fluvial origin, since it clearly follows the course of the former channel. Beneath the upper sand/fill layer lies an overconsolidated silt unit, reported to be of glaciogenic origin (Golder, January 1992). A second, lower sandy unit is found below the silt layer, which may be representative of earlier glacial origin. Beneath the lower sand unit, Cambrian-Ordovician age bedrock is encountered.

Further details regarding the regional and site geology are presented in Section 3 of the Golder hydrogeological assessment (Golder, January 1992). That document is included as Appendix M (separately bound as Volume III of this report).

### 3.4.3 Hydrogeology

The Housatonic River Basin in which the city of Pittsfield lies receives an average of 46 inches of precipitation per year. Approximately 22 inches per year escapes by evaporation and transpiration to the atmosphere, while the remaining 24 inches per year is lost as runoff or is collected in reservoirs, lakes, and ponds.

Aquifers and water bodies within the Housatonic River basin are recharged by precipitation in the form of rainfall and melting snow. The stratified and nonstratified surficial deposits are not considered productive aquifers, while the carbonate bedrock may provide sufficient water for domestic and industrial use only from wells which are installed within a solution or fault zone (Norvitch et al, 1968).

Further details regarding regional and site-specific hydrogeology are presented in sections 4.1 and 4.2 of Golder's hydrogeologic assessment (Golder, January 1992) (see Appendix M). Further discussion of site-specific hydrogeology is also presented in Section 4.2.5 of this report.

### 3.5 Description of Present Conditions

The Lyman Street Parking Lot itself is paved and surrounded by a high fence which runs around the perimeter of the parking lot, except along the riverbank, where access is restricted by a guard rail as well as the steep and vegetated riverbank. As mentioned in Section 2.3, this paved and fenced area was used as a parking lot for GE employees until its closure in April 1992. GE has locked the gates of the parking lot to further restrict access. The riverbank adjacent to the parking lot is heavily vegetated, primarily with trees and brush. Lot No. 2, located to the north of the Lyman Street parking lot, is fenced on several sides and is partially paved. The small southern portion of Lot No. 2 which appears to contain fill material is currently unpaved.

As described in Section 1.2, oil seepage has occurred along the riverbank adjacent to the Lyman Street Parking Lot. The site presently contains a portable groundwater treatment facility which treats groundwater as part of an STM, as discussed in Section 9. An oil boom system, with oil absorbent pads is in place to collect oil, if released, into the Housatonic River.

As illustrated in Figure 1-1, there appear to be no institutions indicated by the USGS within a 500-foot radius of the Lyman Street Parking Lot Site boundary. The population residing within a one-half mile radius of the site boundary is estimated to be approximately 3,200 individuals. This is based on a review of 1990 aerial photographs of the area which indicate approximately 800 homes to be located within this radius. For purposes of estimating the population within one-half mile of this site, a total of four people were assumed to reside in each home.

### 3.6 Utility Locations

Utility locations in the vicinity of the Lyman Street Parking Lot Site are restricted to storm sewer and sanitary sewer lines under Lyman Street, and an electric supply line to the light pole, the air monitoring station and the groundwater treatment unit located in the parking lot. A 48-inch municipal storm sewer line exists across the Housatonic River. In addition, bordering the eastern side of the site are overhead powerlines owned by Northeast Utilities Service Company.

### 3.7 Other Site Information

#### 3.7.1 Identification of Water Supplies

The Lyman Street Site is bordered on the southeast by the Housatonic River. The river is not used for a public water supply, and there are no other water supply locations at or near the site. According to the City

of Pittsfield Department of Public Utilities, municipal and industrial water supply is obtained from a number of water bodies located several miles to the south and to the east, including the Sandwash Reservoir, Cleveland Brook Reservoir, Farnham Reservoir, Sackett Reservoir, Ashley Lake and Ashley Reservoir. In the past, Onota Lake (located 2.5 miles to the northwest) had been used as an emergency municipal water supply.

### 3.7.2 Past and Present Land Use

The land comprising the Lyman Street Parking Lot Site includes GE Lot No. 3 and a small portion of GE Lot No. 2. These parcels, as well as adjacent lands bordering the site, are currently zoned for general industrial use (I-G), as indicated on the Pittsfield Zoning Map (Appendix C). Lot No. 3, which includes the majority of the former oxbow channel, is paved and was used in the past as a parking area for GE employees. A portion of Lot No. 2 is presently paved and was once used to support parking needs related to several local commercial businesses; however, the entire parcel presently remains vacant and unused. Aside from investigative/remedial activities, no other changes in current land use are expected in the foreseeable future.

### 3.7.3 Surface Water Identification

There are no surface waters on the Lyman Street Site. However, the site is bordered on the southeast by the Housatonic River. In addition, Silver Lake is located approximately 0.15 miles (800 feet) northwest of the site, and Goodrich Pond is located approximately 0.8 miles (4200 feet) east of the site (Figure 1-1).

The maximum elevation at the site is approximately 988 feet above MSL, placing the overall site entirely within the 100-year floodplain of the Housatonic River, as estimated by the Federal Emergency Management Agency (FEMA, 1987). Except for the steep riverbank area, the minimum

land surface elevation is approximately 982 feet above MSL, or approximately two feet higher than the 10-year floodplain as estimated by recent HEC-2 modeling performed as part of the Housatonic River investigations (see Figure 1-2).

#### 3.7.4 Environmentally Sensitive Areas

The Massachusetts Wetlands Protection Act identifies specific resource areas such as wetlands subject to protection. Resource area designations under this Act which are applicable to the Lyman Street Parking Lot Site include the floodplain, riverbank, and a buffer zone located 100 feet from the riverbank. The National Wetlands Inventory, performed by the U.S. Department of the Interior - Office of Biological Services, classifies only the adjacent Housatonic River as wetlands (identified as riverine, lower perennial, and open water).

The majority of the Lyman Street Parking Lot Site consists of a paved parking lot, with the only vegetated area present in the narrow strip along the riverbank. Except as discussed above, this area has not been designated as an area of critical environmental concern or a protected area, and there is no evidence that the small riverbank area at this site constitutes a critical habitat for any species.

## SECTION 4 - HYDROGEOLOGIC INVESTIGATIONS

### 4.1 General

A large number of hydrogeological investigations have been conducted at the Lyman Street Parking Lot Site as part of activities that began in the mid- to late-1980s. Section 4.2 summarizes investigations conducted at Lots No. 2 and No. 3 prior to the Consent Order signed by GE and the MDEP in May 1990. These initial investigations involved the installation of several borings (which were visually logged by a hydrogeologist) and monitoring wells, the screening of soil samples with a PID, and the collection and analysis of several groundwater samples for a variety of analytical constituents.

Section 4.3 presents the results of various MCP investigations that have been obtained primarily as part of several STM evaluations that have been conducted at the site. The soil boring program and the associated analytical data, boring logs, and presence and extent of fill material are described in Section 4.3.1. Section 4.3.2 presents information related to groundwater monitoring including descriptions of all site wells and piezometers (Section 4.3.2.1); groundwater, LNAPL and DNAPL elevation data (Section 4.3.2.2); groundwater analytical data (Section 4.3.2.3); DNAPL analytical and physical characterization data (Section 4.3.2.4); hydrogeologic testing including the results of pump tests and slug tests conducted at the site (Section 4.3.3); the results of several geophysical investigations (Section 4.3.4); soil gas data (Section 4.3.5); and an overall hydrogeologic assessment (Section 4.3.6).

### 4.2 Pre-MCP Investigations

Three separate hydrogeologic investigations were conducted in the mid- to late-1980s at the Lyman Street Parking Lot and/or Lot No. 2 prior to the



Consent Order executed by GE and the MDEP in May 1990. Each of these investigations is described below.

#### 4.2.1 November 1986 Investigation

The first investigation was conducted on November 10 - 11, 1986 by Geraghty & Miller, Inc. on behalf of GE. This investigation involved the installation of five soil borings (two of which were converted to temporary monitoring wells) at locations B-1 through B-5 as illustrated on Figure 4-1. Soil samples were collected continuously at 2-foot depth intervals to total depths ranging from 16 to 18 feet below ground surface. Each soil sample was screened in the field using a portable organic analyzer (TIP meter), but none was submitted for laboratory analysis as neither organic vapors nor oil staining were noted in any of the soil samples. Groundwater samples were collected from wells B-2W and B-5W and submitted to ERCO of Cambridge, Massachusetts for analysis of VOCs.

The results of this investigation indicated that the subsurface materials are comprised of unconsolidated sediments ranging from gravel to silt with no fill material being noted. Groundwater was encountered between 9 and 12.5 feet below the ground surface. TIP meter results ranged from 0.1 to 4.0 parts per million (ppm), which were indicated to be within the range of background levels. This resulted in the decision not to submit any soil samples for further laboratory analysis.

Groundwater collected from well B-2W exhibited the presence of tetrachloroethene at 0.023 ppm as well as 1,1,1-trichloroethane at 0.0023 ppm. Trace levels of trichloroethene and chloroform were also noted in well B-2W. Groundwater at well B-5W exhibited the presence of tetrachloroethene at 0.016 ppm, 1,1,1-trichloroethane at 0.0022 ppm, and toluene at 0.0027 ppm. More details related to this investigation, including boring logs, are presented in Appendix D.

#### 4.2.2 May 1987 Investigation

The second investigation was conducted on May 18-19, 1987 by Geraghty & Miller, Inc. on behalf of GE. This investigation involved the installation of six soil borings. Soil borings SB-1 through SB-5 were installed in the northern corner of the Lyman Street Parking Lot while boring SB-6 was installed in the southern portion of Lot No. 2 as illustrated in Figure 4-1. Soil samples were collected continuously at 2-foot depth intervals to total depths ranging from 16 to 22 feet below grade. Each soil sample was screened with a portable photoionization detector (PID), but none was submitted for further analysis.

Fill material was detected in borings SB-1 through SB-5 (located in the Lyman Street Parking Lot) at depths ranging from 10 to approximately 18 feet below grade. The fill material consisted of sand and silt with bricks, nails, cinders, and glass being noted. No fill material was found at boring SB-6 (in Lot No. 2). Groundwater was encountered between 10 and 15 feet below grade. An oil sheen was observed in several samples from borings SB-2 through SB-5 at depths of 12 to 16 feet below grade. PID screening results ranged from 0 to 70 PID units (from 12- to 14-feet at boring SB-5). Additional information on this investigation, including boring logs, are presented in Appendix E.

#### 4.2.3 August 1989 Investigation

An investigation was performed by Geraghty and Miller in August 1989 and involved the drilling and sampling of six soil borings (LS-1 through LS-6) at the locations illustrated in Figure 4-1. The two soil borings (LS-2 and LS-4) which were located within the former river channel of this oxbow were completed as monitoring wells. Groundwater samples collected from these two wells were analyzed for PCBs, VOCs, and base/neutral organic compounds. The analytical results of these

groundwater samples are summarized in Table 4-1. These results indicated that PCBs were present in the groundwater at concentrations ranging from 0.018 to 0.8 ppm. The VOCs detected at the highest concentrations in these samples were carbon tetrachloride at 4.0 ppm in LS-4 and chlorobenzene at 2.5 ppm in LS-2. A number of base/neutral organic compounds were also detected in these groundwater samples.

To evaluate the fill material in this area, the soil samples collected from borings LS-2 and LS-4 were composited and submitted for laboratory analysis. A total of eight soil samples representing four depth intervals from each boring were analyzed for PCBs, VOCs, and base/neutral organic compounds. The soil samples from boring LS-2 were also analyzed for Acid Extractable compounds. The analytical results of these soil samples are summarized in Table 4-2. The results of the PCB analysis indicated that PCBs are present at concentrations as high as 25,000 ppm. The highest concentrations of PCBs in both of these borings were detected in the composite sample representing the soil interval within the water table's zone of fluctuation.

The volatile and semi-volatile organic analyses performed on the soil samples collected from borings LS-2 and LS-4 indicated the presence of similar compounds as those observed in the groundwater samples. The organic compounds detected in the highest concentrations included chlorobenzene, carbon tetrachloride, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene (see Table 4-2). A more detailed discussion regarding this investigation is presented in Appendix F.

#### 4.3 MCP Investigations

Following the execution of the Consent Order by GE and the MDEP, the MCP investigations at the Lyman Street Site have included the field investigations

performed in the fall of 1990 (when the site was still being addressed as part of the MCP Phase II investigation of the Housatonic River and its former oxbows, rather than as a separate "Related Site") and the investigations performed as part of the various STM studies and activities at the site. The scope and results of the MCP investigations carried out in the fall of 1990 are presented in a letter report by Geraghty & Miller (March 1991), which is included as Appendix G to this report. The scope and results of the STM-related investigations have been presented to the MDEP in reports prepared by Geraghty & Miller (May 1991) and Golder Associates (January 1992). The Golder (1992) report is included as Appendix M to this document (separately bound), and an appendix from the Geraghty & Miller (May 1991) report providing the results of a pump test conducted by them is presented in Appendix H to this document.

The results of both these sets of MCP investigations are summarized in Section 4.3.1 through 4.3.5 of this report. The laboratory analytical data sheets supporting these results are presented in an organized way in Appendix N (separately bound as Volume IV of this report).

#### 4.3.1 Soil Borings and Data

A soil boring and well installation program was carried out by Geraghty & Miller during September and October 1990. During this program, a total of seven borings (LS-7 through LS-13) were drilled at the Lyman Street Site, as shown in Figure 4-1. One boring (LS-8) was drilled through the material within the former river channel, while the others were drilled outside the former channel. Boring LS-9 was drilled to a depth of 2 feet below the bottom of the existing fill material. Borings LS-10 through LS-13 were drilled to approximately 12 to 16 feet below the water table and were subsequently completed as monitoring wells. In all boreholes, soil samples were collected continuously in 2-foot intervals to the depth of the borings. In addition, one surficial soil/sediment sample

(LS-Soil) was collected from the river bank at the eastern limb of former Oxbow Area D.

Fill materials were observed in all seven borings at depths ranging from approximately 0 to 16 feet below ground level. Borings LS-7, LS-8, LS-11, LS-12, and LS-13 contained sand as well as fragments of brick and cinders. Fine sand and silt were encountered from 22 to 24 feet at borings LS-8 and LS-11 and from 20 to 26 feet at boring LS-13. Boring LS-9 contained cinders in addition to sand. Sandy gravel was also observed at borings LS-9 (18 to 20 feet), LS-12 (20 to 22 feet), and LS-13 (18 to 20 feet). Boring LS-10 contained fill material composed of well-sorted coarse to medium sand to approximately 6 feet below grade, fine to coarse sand and gravel to a depth of 18 feet, and silt from 18 feet to the bottom of the boring at 24 feet below grade.

All soil samples from borings LS-7 through LS-11, and those from alternating intervals at borings LS-12 and LS-13, were analyzed for PCBs. The PCB results are presented in Table 8 of Appendix G and summarized in Table 4-3 of this report; they are also shown on Figure 4-2. The results of the PCB analyses indicate that PCBs, predominantly Aroclor 1254, were detected in all borings. The highest concentrations were measured at borings LS-11 (290,000 ppm in the 4- to 6- foot depth interval) and LS-8 (8,300 ppm in the 12- to 14-foot depth interval). The river bank sample (LS-Soil) contained both Aroclors 1254 (16 ppm) and 1260 (7.9 ppm). In general, PCB concentrations presented above were produced by a modified EPA Method 8080 analysis. Although PCBs were also analyzed as part of the pesticide scan, these results were not generally used in previous reports.

Soil samples were screened with a portable photoionization detector (PID), and those that produced a headspace reading greater than 10 PID

units were submitted for analysis of volatile organic compounds (VOCs) (by EPA Method 8240). The soil sample within each boring that exhibited the highest PID reading was analyzed for the constituents listed in Appendix IX of 40 CFR Part 264, plus three additional constituents (benzidine, 2-chloroethyl vinyl ether, and 1,2-diphenylhydrazine) (Appendix IX+3), as was the surficial sediment sample (LS-Soil) collected from the river bank. The analytical results of soil samples collected during the soil boring program (apart from the PCB results, discussed above) are presented in Tables 2 through 7 of Appendix G and are summarized in Tables 4-4 through 4-8 of this report.

Several VOCs were present in soil borings LS-8 and LS-9, including chlorobenzene (3.3 to 8.6 ppm at LS-8 and 0.19 to 1.3 ppm at LS-9), ethylbenzene (0.08 to 28 ppm at LS-8 and 0.63 to 3.9 ppm at LS-9), total xylenes (7.7 ppm at LS-8 and 2.2 to 3.1 ppm at LS-9), and 2-chloroethyl-vinyl-ether (1.5 ppm at both LS-8 and LS-9). Chlorobenzene (0.05 ppm to 45 ppm) and trichloroethene (0.009 to 3.5 ppm) were detected in soil boring LS-11. Only 4-methyl-2-pentanone was detected at soil boring LS-7 at a concentration of 0.032 ppm. Carbon tetrachloride (0.31 ppm), tetrachloroethene (0.2 ppm) and trichloroethene (0.4 ppm) were detected at soil boring LS-12. The river bank sample (LS-Soil) contained 0.021 ppm chlorobenzene, 0.009 ppm methylene chloride, and 0.005 ppm 1,1,2,2-tetrachloroethane.

Semivolatile organic compounds (SVOCs) were detected at each soil boring with the exception of soil boring LS-10. Only fluorene was detected at soil boring LS-7 at a concentration of 2.5 ppm. The results of the analysis for the soil sample from LS-11 indicate only the presence of 1,2,4-trichlorobenzene at 89 ppm. Soil borings LS-8 and LS-9 contained several SVOCs at concentrations ranging from 2.2 ppm 1,4-

dichlorobenzene to 15 ppm phenanthrene detected at LS-8 and 4.7 ppm benzo(ghi)perylene to 110 ppm phenanthrene detected at LS-9. The river bank sample contained measurable concentrations of two SVOCs, namely pyrene (1.6 ppm), and bis(2-ethylhexyl)phthalate (1.8 ppm).

There were no organo-phosphorus pesticides or herbicides detected above the detection limit in soil samples from borings LS-7 through LS-11 or the surficial soil/sediment sample LS-Soil. Organochlorine pesticides were detected in samples from each soil boring except LS-10, including 4,4'-DDE (160 ppm at LS-8), Aldrin (0.017 ppm at LS-7, 36 ppm at LS-8, and 57 ppm at LS-11), BHC-beta (0.021 ppm at LS-9), and Endosulfan I. (55 ppm at LS-8, and 0.059 ppm at LS-9). There were no dioxin compounds detected above the detection limit in the samples from soil borings LS-7 through LS-11 or the surficial soil sample LS-Soil. Furan compounds were detected at borings LS-8 and LS-11, and at surficial soil sample LS-Soil. Total tetrachlorodibenzofuran was detected at concentrations of 0.001 ppm, 0.321 ppm, and 0.0087 ppm at LS-Soil, LS-8, and LS-11, respectively. Total hexachlorodibenzofuran was detected at LS-Soil (0.0006 ppm) and LS-11 (0.0064 ppm). Total pentachlorodibenzofuran was detected at LS-Soil (0.00083 ppm), LS-8 (0.176 ppm) and LS-11 (0.0062 ppm).

The results of the metals analyses indicate that several metals were detected in the soils. The detected concentrations of metals in LS-Soil and LS-7 through LS-9 were similar to the concentrations detected in boring LS-10. Concentrations detected at boring LS-11 were an order of magnitude higher than the metals detected in the other borings and the surficial soil sample (see Table 4-8).

#### 4.3.2 Groundwater Monitoring

A groundwater monitoring program, which followed the previous soil boring and well installation program, was conducted at the Lyman Street Site during September and October 1990 to characterize groundwater quality at the site (Geraghty & Miller, December 1990). The results of this groundwater monitoring program are presented in the report attached as Appendix G and are discussed in Section 4.3.2.3.

A second monitoring program was conducted between September and November 1991 (Golder, January 1992). The purpose of this investigation was to identify hazardous constituents in the non-aqueous phase liquids (NAPL) collected from the monitoring wells, and to characterize the extent to which NAPL is present at the site. The results of this program were used to recommend a STM to prevent further intermittent seepage of NAPL from the Lyman Street Site into the adjacent boomed section of the Housatonic River. The results of this monitoring program are discussed in Section 4.3.2.4.

##### 4.3.2.1 Description of Wells and Piezometers

A total of six monitoring wells were sampled during the 1990 groundwater sampling program. Monitoring wells LS-2 and LS-4 were originally installed as part of the August 1989 soil boring/well installation program as described in Section 4.2.3, while the remaining wells, LS-10, LS-11, LS-12, and LS-13, were installed during the MCP soil boring and well installation program of September and October 1990 (see Section 4.3.1). A summary of well construction information including total depth, surface elevation, measuring point elevation, screened interval and placement is included in Table 4-9. A summary of information such as well diameter, drilling methods, well construction material, and screen slot size is presented in the well



construction diagrams contained in Appendix C of the January 1992 Golder Report (included herewith in Appendix M).

Wells LS-2 and LS-4 are located within the former river channel, as shown in Figure 4-1. The borings were installed to 22 feet below grade using the hollow-stem auger drilling method. The monitoring wells were installed by placing the screen and casing assembly through the hollow auger string. The wells consist of 2-inch diameter PVC casing with 10-foot-long, 0.010-inch slotted PVC screens. Well LS-2 is screened in the upper sand unit at a depth of 8 to 18 feet below grade. Well LS-4 is screened in the upper sand unit at a depth of 9 to 19 feet below grade. A gravel pack was placed in the annular space opposite the screens to 2 to 3 feet above the screens. Above this, 2 feet of bentonite pellets were added to the annulus between the well casing and the borehole wall for proper sealing. A cement grout was added up to ground surface during the extraction of the augers.

The four wells installed as part of the MCP investigations (LS-10 through LS-13) are located outside the former river channel, as shown in Figure 4-1. The borings were installed in the same manner as previously described except that a 15-foot long screen was used and the bentonite seal was 2 to 3 feet thick.

Installation of well LS-10 was initiated with a soil boring drilled to a depth of 24 feet. A well screen, surrounded with sand packing, was set at a depth of 8 to 23 feet below grade. The well contains a 2-inch diameter casing grouted with cement from the ground surface to a depth of 3 feet, and a bentonite seal located at a depth of 3 to 6 feet. Installation of Well LS-10 was performed on September 19, 1990. Wells LS-11, LS-12, and LS-13 were installed in a manner

similar to that described above for well LS-10, although placement of materials within each well varied somewhat. Well LS-11, installed on September 18, 1990, was also drilled to a depth of 24 feet, although the well screen was set at a depth of 9 to 24 feet below grade. Borings for wells LS-12 and LS-13 were drilled to 26 feet deep. The well screen in LS-12, installed on September 20, 1990, was set at a depth of 7 to 22 feet below grade. Well LS-13 was screened from 10 to 25 feet below grade. Well LS-13 was installed on September 21, 1990.

A total of seven additional monitoring wells were also utilized during the 1991 sampling and analysis program. Monitoring wells LS-20 and LS-21 and recovery well RW-1 were installed as part of the aquifer pump test program of April 1991 (Geraghty & Miller, May 1991). The results of the aquifer test are discussed in Section 4.3.3.1. Monitoring wells LS-22 through LS-25 were installed specifically to address the extent of NAPL and provide more detailed hydrogeologic information at the Lyman Street Site (Golder, January 1992). The locations of these wells are shown on Figure 4-1, and a summary of the well construction information for them is included in Table 4-9 as well as Table 4 of Appendix M.

Recovery well RW-1 was installed in the east limb of the former river channel through a 36-inch diameter borehole drilled 21 feet below grade using the cable tool drilling method. This 24-inch diameter stainless steel well contains a 3-foot sump attached to the well screen (to house a submersible pump). The 10-foot long, 0.020-inch slotted screen is set at a depth from 8 to 18 feet below grade, and is surrounded by gravel. A 2-foot bentonite seal was placed above the gravel, while the remainder of the well casing was grouted with a

cement/bentonite mixture. Well RW-1 was installed between April 5 and April 9, 1991.

Monitoring wells LS-20 and LS-21 were installed following completion of six boreholes (LS-16 through LS-21, Figure 4-1). Each of the borings was terminated upon encountering the underlying silt layer at a depth of approximately 19 to 20 feet below grade. These borings were drilled between March 7 and 11, 1991, to define the lateral extent of the eastern limb of the former river channel (Geraghty & Miller, May 1991). Wells LS-20 and LS-21 are located at the boundaries of the former oxbow, and were originally used to monitor groundwater levels during the aquifer pump test (Section 4.3.3 of this report). Both wells are composed of 2-inch diameter PVC well casing with 10-foot long, 0.010-inch slotted PVC screens. A sand packing was placed in the annular space opposite the screens to a height of 2 feet above the screens. Above this is a 2-foot layer of bentonite and then a cement bentonite grout mixture to the surface. Well LS-20 is screened in the upper sand unit from 8 to 18 feet below grade. Well LS-21 is screened from 8 to 18 feet below grade in the upper sand unit with the bottom 2 feet of screen spanning the silt layer.

Of the four additional monitoring wells installed in October and November 1991 to investigate the extent of NAPL at the Lyman Street Site, three of the wells (LS-22, LS-24, and LS-25) were located outside the eastern limb of the former river channel, while one well (LS-23) was located within the eastern limb of the former channel, as shown on Figure 4-1. All borings were drilled using the hollow-stem auger method, with the well casings installed through the augers.

Wells LS-22 and LS-23 were installed on October 30, 1991, into boreholes drilled to 28 feet and 16 feet below grade, respectively.

The flush-mounted wells consist of 2-inch PVC casings with 5-foot long, 0.010-inch slotted PVC screens. A sand pack was placed in the annular space surrounding the screens followed by a bentonite seal and a cement/bentonite grout. Well LS-22 is screened in the silt layer from 22.25 to 27.5 feet below grade. Well LS-23 is screened in the fill layer from 10.1 to 15.25 feet below grade.

Well LS-24 was placed in a 22-foot deep boring, and consists of a 4-inch diameter stainless steel riser with an 11.5-foot long, 0.010-inch slotted stainless steel screen. A sand pack was placed in the annular space surrounding the screen to 2.65 feet above the screen, followed by a 2.5-foot bentonite seal and a cement/bentonite grout.

Well LS-25 was installed using a "telescopic" casing method. The boring was initially advanced to 16 feet below grade and continuously sampled to a depth of 24 feet. The 6-inch diameter outer steel casing was installed to 24 feet below grade through the augers, and a cement bentonite grout was placed in the annular space between the casing and the formation to completely seal the borehole. After allowing the grout to set, the boring was advanced to a total depth of 43 feet below grade. A 1-inch diameter PVC riser connected to a 5-foot long, 0.010-inch slotted PVC screen was installed. A sand pack was placed in the annular space surrounding the screen and extended to 3 feet above the screen. A 4-foot bentonite seal was placed above the sand pack. The boring was grouted with a cement/bentonite mixture to within 2 feet of ground surface. Well LS-25, installed on November 18, 1991, is screened from 36.8 to 41.8 feet below grade in the sand unit underlying the silt layer.

In addition, during August and November 1992, a total of five well-point piezometers (P-1 through P-5) and one additional recovery

well (RW-2) were installed at the Lyman Street Parking Lot Site at the locations shown on Figure 4-1. The piezometers were installed by Clean Berkshires, Inc., on August 4, 1992 (P-1 through P-3) and November 17, 1992 (P-4 and P-5). The recovery well RW-2 was installed by Empire Soils, Inc. on November 4-5, 1992. Well construction details related to these piezometers and the recovery well are included in Table 4-9, while well construction diagrams are included as Appendix I.

#### 4.3.2.2 Water Level Data

Groundwater and light non-aqueous phase liquid (LNAPL) levels in several monitoring wells were measured on April 10, 1991, September 5, 1991, and November 21, 1991, as shown in Tables 7, 8, and 9, respectively, of Appendix M, which are reproduced as Tables 4-10 through 4-12 of this report. In addition, DNAPL levels were also measured on September 5, 1991 (see Table 4-11).

Groundwater levels decreased by approximately 1 to 2 feet between April 10 and September 5, 1991, although groundwater levels were only 0.5 to 1 foot lower on November 21 than they had been on April 10, 1991. Groundwater phreatic surfaces were estimated from the water level data recorded on April 10 and November 21, 1991, and are presented in Figures 12 and 13, respectively, of Appendix M.

In addition to these efforts, a large amount of groundwater elevation monitoring data has been generated through the performance of STM activities at the site. As currently performed, groundwater elevation monitoring is performed on a weekly basis at nine wells and five piezometers, and on a monthly basis at five additional wells. Data collected as part of this monitoring between January 1992 and August 1993 are presented in Appendix J along with illustrations of

groundwater contours corresponding to monitoring performed on August 6, 1992, November 5, 1992, and June 10, 1993. Additional information on STM activities is described in Section 9.

#### 4.3.2.3 Groundwater Sampling and Analysis

Groundwater samples were collected from monitoring wells LS-2 and LS-4 in September 1990 to characterize groundwater quality within the former river channel. Initial results revealed the presence of free-phase oil in both wells, measured at thicknesses of 1.53 feet in LS-2 and 0.15 feet in LS-4.

The groundwater samples from wells LS-2 and LS-4 were analyzed for Appendix IX+3 constituents. Results of the laboratory analyses are presented in Tables 9 through 15 of Appendix G and summarized in Tables 4-13 through 4-18 of this report. PCB Aroclor 1254 was found in LS-2 at a concentration of 0.9 ppm and in LS-4 at 0.009 ppm (Table 4-13). The results of the VOC analysis, as summarized in Table 4-14, indicate that well LS-2 contained chlorobenzene (14 ppm) and total xylenes (7.8 ppm). Well LS-4 contained total xylenes (1.8 ppm), carbon tetrachloride (1.9 ppm), chlorobenzene (0.88 ppm), trichloroethene (0.33 ppm), chloroform (0.18 ppm), ethylbenzene (0.11 ppm), and benzene (0.081 ppm).

The analytical results for SVOCs, as summarized in Table 4-15, indicate the presence of several compounds at both wells LS-2 and LS-4, including acenaphthene, 1,4-dichlorobenzene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, and 1,2,4-trichlorobenzene. In addition, 1,2-dichlorobenzene and 1,3-dichlorobenzene were detected at well LS-2, and acenaphthylene, anthracene, fluoranthene, and pyrene were detected at well LS-4. Concentrations ranged from 0.011 ppm of fluorene and 1,2-

dichlorobenzene at well LS-2 to 4.4 ppm naphthalene at well LS-4. There were no detectable levels of organochlorine pesticides, organophosphorus pesticides or herbicides at wells LS-2 and LS-4. As presented in Table 4-15, only one dioxin isomer (hexachlorodibenzodioxin) was detected at well LS-2 at a concentration of 0.00003 ppm. Furan compounds were detected at both wells at concentrations ranging from 0.000031 to 0.00271 ppm. A summary of the metals, cyanide, and sulfide analyses is included in Table 4-18. Low levels of several metals and sulfide were detected in LS-2 and LS-4. Cyanide was not detected at either well.

In order to characterize groundwater quality outside the former oxbow, samples were collected from wells LS-10, LS-11, LS-12, and LS-13 in October 1990 (Figure 4-1). Wells LS-10 and LS-11 were analyzed for Appendix IX+3 constituents, while LS-12 and LS-13 were analyzed for both Target Compound List (TCL) and Target Analyte List (TAL) constituents. Laboratory results are included in Tables 4-13 through 4-18.

As shown in Table 4-13, well LS-10, located upgradient of the former river channel, contained PCB Aroclor 1254 at a concentration of 0.0018 ppm. Well LS-11 contained 0.12 ppm of PCB Aroclor 1254. Well LS-12 contained PCB Aroclor 1254 at a concentration of 1.2 ppm. Well LS-13 contained PCB Aroclor 1254 at a concentration of 1.8 ppm.

The results of the VOC analyses, presented in Table 4-14, indicate only a low concentration of tetrachloroethene (0.018 ppm) in well LS-10. Several VOCs were detected in wells LS-11, LS-12 and LS-13, including benzene, carbon tetrachloride, chlorobenzene, chloroform, ethylbenzene, tetrachloroethene, trichloroethene, and total xylenes. Concentrations ranged from 0.03 ppm benzene to 2.6 ppm

chlorobenzene. There were no detectable levels of SVOCs at well LS-10. Only 1,2,4-trichlorobenzene was detected at well LS-12 at a concentration of 0.26 ppm. As indicated in Table 4-15, SVOCs were detected at wells LS-11 and LS-13 and consisted of dichlorobenzenes and polynuclear aromatic hydrocarbons. As shown in Table 4-16, low levels of the organochlorine pesticides Aldrin (0.0013 ppm) and BHC-beta (0.0004 ppm) were detected at well LS-11, and endosulfan I was detected at well LS-12 at a concentration of 0.011 ppm. There were no detectable levels of organophosphorus pesticides, herbicides, or dioxin/furan compounds. High levels of several metals were detected at wells LS-12 and LS-13 as presented in Table 4-18. Only low concentrations of several metals were detected at wells LS-10 and LS-11.

#### 4.3.2.4 Sampling and Analysis of NAPL

Sampling of existing wells LS-2, LS-4, and LS-12, as well as additional wells LS-21 and RW-1, was performed again between September 4 and 6, 1991 (Golder, January 1992). Dense non-aqueous phase liquid (DNAPL) samples were collected using a peristaltic pump and analyzed for Appendix IX+3 constituents as shown in Table 13 of Appendix M, which is summarized in Table 4-19. In addition, single phase samples of DNAPL, collected from wells RW-1, LS-4, and LS-12, and multiple phase samples of both DNAPL and light non-aqueous phase liquids (LNAPL), collected from well LS-21, were analyzed for density and viscosity, as shown in Table 12 of Appendix M, reproduced as Table 4-20.

DNAPL was detected at wells RW-1, LS-4, LS-12, and LS-21. Traces of materials which are potentially DNAPLs were detected at wells LS-13 and LS-20. Laboratory analyses indicated that one major



component of the DNAPLs at the Lyman Street Site is PCB Aroclor 1254, which ranges from 9.8 percent of the DNAPL at LS-21 to 66 percent of the DNAPL at LS-12. Other compounds which comprised the DNAPL samples collected from the monitoring wells include chlorinated benzenes (ranging from an estimated 0.23 percent of the DNAPL at LS-21 to 1.1 percent at LS-4); polynuclear aromatic hydrocarbons (PAHs) (0.15 percent of the DNAPL detected at LS-21, 1.2 percent at RW-1, and 13.4 percent at LS-4); aromatic VOCs (ranging from 0.01 percent of the DNAPL at LS-12 to 0.04 percent at LS-4); hydrocarbon VOCs (0.001 percent of the DNAPL at RW-1, 0.02 percent at LS-12, and 0.06 percent at LS-4); and the solvent VOCs including acetone, 2-hexanone, and methylene chloride (estimated at 0.03 percent of the DNAPL at LS-4).

The results of the physical analyses of the DNAPLs indicate that the density of the samples ranges from 1.076 grams per milliliter (g/ml) to 1.165 g/ml, while viscosity ranges from 33 to 44 centistokes. The density of the LNAPLs ranged from 0.92 to 0.93 g/ml, while the LNAPL viscosity ranged from 65 to 67 centistokes. In comparison, a groundwater sample collected from well LS-2 had a density of 0.99 g/ml and a viscosity of 1.4 centistokes.

#### 4.3.3 Hydrogeologic Testing

Hydrogeologic testing was initially conducted in April 1991, and consisted of an eight-hour aquifer pump test (see Section 4.3.3.1 of this report). The pump test was performed in RW-1 and water levels were recorded in several adjacent observation wells (Geraghty & Miller, December 1990). Additionally, a number of slug tests were performed in November 1991 to assess the hydraulic conductivity of specific geologic units.

#### 4.3.3.1 Pump Tests

An eight-hour aquifer pumping test was performed using well RW-1 as the pumping well on April 10, 1991 from 8:30 a.m. to 4:30 p.m. A 0.25 horsepower submersible pump, placed 0.5 feet above the well sump, was selected to provide a target pumping rate of 6 gallons per minute (gpm). However, the actual pumping rate varied from 6.7 gpm (in the first 10 minutes) to 4.4 gpm (in the last 30 minutes).

Groundwater levels at RW-1 and in a number of nearby site monitoring wells were recorded prior to the start of pumping, as well as at specific time intervals throughout the test. With 30 minutes remaining in the test, pumping was terminated due to a lack of water in the well, and wells were monitored until groundwater at RW-1 had recovered to within 95 percent of the pre-pumping level, which required a total time of 1.75 hours. Water levels recorded during the test are provided in Appendix H, which is taken from the Geraghty & Miller (May 1991) report.

During the eight-hour pump test, approximately 4.76 feet of drawdown was observed at RW-1. Drawdown at LS-4 was measured to be 0.44 feet, and drawdowns at wells LS-20 and LS-21 were 0.23 feet and 0.22 feet, respectively. The pumping of groundwater from RW-1 had little influence on levels elsewhere at the site, based on the small drawdowns observed in other site monitoring wells.

Initial analysis of the test data using Jacob semi-log straight line and type curve matching techniques estimated transmissivity ranging from 0.0727 square feet per minute (sf/min) at RW-1 to 0.8164 sf/min at LS-20 (Geraghty & Miller, May 1991). In addition, the overall average aquifer transmissivity was estimated to be 0.4642 sf/min (equivalent to 5,000 gallons per day per foot, gpd/ft) with an

approximate storage coefficient of 0.02 (dimensionless). Based on an average transmissivity of 5,000 gpd/ft and a pumping rate of 5.5 gpm, a hydraulic capture zone of 113 feet around RW-1 (approximately 57 feet to either side of RW-1) was predicted. This initial analysis indicated that the capture zone of RW-1 at the test pumping rate would include the area at wells LS-20 and LS-21, and therefore could be used to control flow of free-phase oil within the former oxbow.

These same data were later reanalyzed to correct for the variable pumping rate experienced over the course of the test, as well as to account for the delayed yield of the unconfined aquifer which exists at the site (Golder, January 1992). Both a variable rate correction technique and the Neuman method for unconfined aquifers were applied to the original April 10, 1991 data. The rate-corrected data were also reanalyzed using the Jacob semi-log straight line technique for purposes of comparison. Results of both the original and corrected analyses are summarized in Table 11 of Appendix M.

Based on the reanalysis, the transmissivity for well RW-1, estimated as 359 gpd/ft by the Neuman method, compares favorably to the 394 gpd/ft estimate provided by the Jacob analysis using the rate-corrected data. In addition, both methods predicted a hydraulic conductivity of  $2.1 \times 10^{-3}$  centimeters per second (cm/s). Finally, a capture zone for RW-1 at the test pumping rate(s) of a radius of 53 feet was calculated using the corrected data.

#### 4.3.3.2 Slug Tests

Additional hydrogeologic testing was performed during the weeks of November 4 and 18, 1991 in a number of site monitoring wells (Golder, January 1992). Hydraulic conductivity was measured at an existing well (LS-20) and four additional wells (LS-22 through LS-25).

Rising head permeability tests were performed at wells LS-20, LS-22, LS-24, and LS-25. A falling head test was performed at LS-23 due to the limited depth of the water column at this well.

Water level recovery was measured manually for LS-22 and LS-25. In the remaining wells, water level changes (rising at LS-20 and LS-24 and falling at LS-23) were measured using a pressure transducer and data logger system. The results of the slug tests, presented in Table 6 of Appendix M, indicate that the hydraulic conductivity in the upper sand/fill layer ranges from  $9 \times 10^{-3}$  cm/s to  $4 \times 10^{-2}$  cm/s. The hydraulic conductivity of the lower sand layer is approximately  $4 \times 10^{-4}$  cm/s, while that of the silt layer, which separates the upper and lower sand layers, is approximately  $6 \times 10^{-6}$  cm/s.

#### 4.3.4 Geophysical Investigations

Geophysical investigations performed at the Lyman Street Site include an electromagnetic survey and a Subsurface Interface Radar (SIR) survey (Golder, January 1992).

An electromagnetic survey was performed between September 4 and 6, 1991 along six profiles using an EM31-D instrument. Each profile was sampled at stations located at intervals of 25 feet. At each sampling station, a total of three conductivity measurements were recorded, each one based on a particular instrument mode. Figure 14 of Appendix M presents the interpreted apparent conductivities at shallow soil depths, while Figures 15 and 16 of Appendix M show survey results at deeper levels of investigation. The results of the electromagnetic survey are discussed further in Section 6 of Appendix M.

The SIR survey was performed between September 11 and 23, 1991 to determine the thickness of the fill layer occupying the former river channel. Measurements were attempted using a PR-8304 Profiling

Recorder coupled to both 100- and 300-megahertz (Mhz) transducers. Neither transducer was capable of penetrating the fill material. The SIR was able to detect the possible presence of buried metal objects along profile D-D', which was consistent with the results of the previous electromagnetic survey.

#### 4.3.5 Summary of Soil Gas Data

As discussed above, during the installation of the various soil borings at this site, headspace screening of split-spoon soil samples has been performed with a PID. PID headspace readings give a qualitative estimate of the concentration of volatile constituents present in the soil gas. The PID readings from the various borings at the site are included in Appendices D through G and Appendix M.

PID readings obtained at the Lyman Street Parking Lot itself ranged from 0 to 620 PID units. Samples with elevated PID readings were generally found at depth, and were generally associated with areas of NAPL-stained soil or NAPL presence either in or near the former oxbow. The vertical profile of PID readings in most borings in these areas shows an increase from background levels near the surface to higher levels at a depth of 6 to 8 feet or greater, as illustrated for borings LS-9, LS-11, and LS-12 in Table 1 of Appendix G. This PID information indicates that volatile constituents may be present in subsurface materials containing NAPLs, but that vertical migration of constituents in subsurface gas to the ground surface does not appear to be occurring.

The PID data indicate further that the extent of materials with elevated PID readings is generally limited to those areas of the site containing NAPLs (generally the former oxbow and the immediately surrounding area). PID data collected north of the Lyman Street Parking Lot in Lot No. 2 were similar to background levels despite the presence of fill material in

boring LS-10. Similarly, borings SB-1 through SB-4 in the northeastern corner of the Lyman Street Parking Lot exhibited background PID concentrations.

#### 4.3.6 Overall Hydrogeologic Assessment

The hydrogeologic character of the Lyman Street Parking Lot Site was investigated during previous studies performed by Geraghty & Miller (November 1989, December 1990, and May 1991) and Golder (January 1992). The information provided by these various studies, as presented above, is appropriate for MCP Phase I and RFI requirements.

##### 4.3.6.1 Information on Geology and Soils

The near-surface underlying geology at the Lyman Street Parking Lot Site consists of fill materials and natural unconsolidated deposits, underlain by metamorphic bedrock (Golder, January 1992). The fill materials contain varying amounts of poorly sorted silt, sand, and gravel with occasional fragments of wood, metal, wire, cinders, glass, concrete, brick, and other ceramic materials (Geraghty & Miller, December 1990). The unconsolidated deposits are mainly composed of fine to coarse sand, with some silt and gravel. Three distinct unconsolidated hydrogeologic units underlie the fill material. These units include a relatively permeable sand unit which follows the course of the former river channel and is interpreted as a fluvial deposit. Beneath this unit lies a less permeable, overconsolidated silt aquitard unit, which appears to be of glacial origin. The third unit is a deeper sand layer, which underlies the silt layer. The metamorphosed Stockbridge Formation underlies the unconsolidated units at a depth of approximately 50 feet below ground surface, based on drilling information from boring LS-14. Geologic cross sections are presented in Figures 6, 7, 8, 10, and 11 of Appendix M. The cross section

locations are presented in Figure 2 of Appendix M. Figures 4 and 5 of Appendix M present the interpreted top of sand and silt elevation contours.

Subsurface fill/soils at the site have been sampled and analyzed in numerous borings. The sampling results show the presence of PCBs, VOCs, SVOCs, polychlorinated dibenzofurans (PCDFs), a few pesticides, and several metals. A preliminary interpretation of the soil analytical data collected to date is presented below:

- The soil PCB data collected to date generally indicate that while the fill material is sometimes co-existent with PCBs, a much stronger relationship exists between the presence of NAPLs and elevated levels of PCBs. This point is demonstrated by the PCB data associated with soil borings LS-9 and LS-10 where fill material was detected to depths of 14 and 6 feet below the ground surface, respectively. The maximum PCB concentrations associated with these zones were 16 and 8.9 ppm, respectively, while the remaining PCB concentrations were equal to 2.3 ppm or less. Soil boring LS-8 contains fill material from the ground surface to a depth of 12 feet, but the depth interval of elevated PCB concentrations is from 8 to 22 feet below the ground surface, which corresponds to a zone of either NAPL-stained material or NAPL presence. While additional soil borings such as LS-2 and LS-11 have both fill material and NAPL present in the areas of elevated PCB concentrations, current information indicates that the sole presence of fill material does not necessarily indicate a corresponding presence of PCBs.

- On a spatial basis, areas of elevated PCB concentrations in soil correspond to areas where NAPLs are present (generally in or very near the former oxbow). These NAPLs are being monitored as part of STM activities as described in Section 9. Low concentrations of PCBs have been found at borings LS-7 (to the northwest of the former oxbow), LS-9 (to the east of the former oxbow), and LS-10 (to the north) as illustrated on Figure 4-2. Additional information on the spatial extent of PCBs at the site will be collected during Phase II/RFI activities, as described in the separately bound MCP Phase II SOW/RFI Proposal.
- Soil samples from five soil borings and one surface sample were analyzed for polychlorinated dibenzo-p-dioxins (PCDDs) as well as PCDFs. PCDDs were not detected in any of the samples. PCDFs were not detected in those samples which exhibited PCB concentrations of less than 1 ppm (LS-7, LS-9, and LS-10). Low concentrations of PCDFs were detected at LS-soil (PCB concentration of 24 ppm) while higher PCDF concentrations were detected at LS-8 and LS-11, which had PCB concentrations of 3,900 and 11,000 ppm. The presence of PCDFs in soil samples with elevated PCB concentrations is not unexpected as PCDFs are a known contaminant within PCB mixtures.
- Generally low concentrations of VOCs have been detected in soil at the site. VOC concentrations detected to the east, north, northwest, and west of the former oxbow at LS-9, LS-10, LS-7, and LS-12, respectively, were generally below 1 ppm, with several VOCs up to 3.9 ppm in the 14- to 16-foot



interval at LS-9. Higher levels of VOCs were detected either in or very near the former oxbow at concentrations up to 45 ppm at borings LS-8 and LS-11. The higher levels of VOCs present in soil appear to be related to material present in the former oxbow at the site.

- The presence and extent of SVOCs in fill/soil at the site are similar, in general, to the VOCs. SVOC concentrations of 1.4 ppm or less were detected at LS-10 and LS-7 to the north and northwest of the former oxbow. SVOC concentrations up to 89 ppm were detected in soil borings LS-8 and LS-11. A number of these SVOCs (e.g., anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b&k)fluoranthene, chrysene, fluorene, fluoranthene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene) may be related to coal gasification byproducts from the Berkshire Gas Company, which operated nearby until the early 1970s. One difference between the distribution of SVOC and the VOC and PCB constituents is the presence of relatively elevated concentrations of a number of SVOCs in boring LS-9 at concentrations up to 110 ppm. The SVOCs found at LS-9 (which were in an interval without a detected PCB presence) included 2-methylnaphthalene (35 ppm), naphthalene (91 ppm), phenanthrene (110 ppm) and pyrene (90 ppm), which may be related to coal gasification byproducts from the former Berkshire Gas facility.

#### 4.3.6.2 Information Relating to Groundwater

The phreatic water table is located above the upper sand unit and ranges from 8 to 14 feet below ground surface. The depth to the

water table corresponds approximately to the depth of fill material within the former river channel. The water level analyses (Appendix J) indicate that groundwater flow is southeast across the site toward the Housatonic River. The data also suggest that groundwater recharge is predominantly northwest of the site, and the discharge area is at the river. Because of the close proximity to the river, the local near-surface groundwater flow pattern for the site is similar to the predominant regional groundwater flow pattern (i.e., toward the river).

Hydraulic conductivity tests indicate that the hydraulic conductivity in the upper sand/fill layer ranges from  $9 \times 10^{-3}$  cm/s to  $4 \times 10^{-2}$  cm/s; hydraulic conductivity in the lower sand layer is about  $4 \times 10^{-4}$  cm/s; and hydraulic conductivity in the silt aquitard layer that separates the upper and lower sand layers is about  $6 \times 10^{-6}$  cm/s (Golder, January 1992).

Horizontal hydraulic gradients for the site range from  $7 \times 10^{-3}$  ft/ft to  $3 \times 10^{-2}$  ft/ft, and upward vertical hydraulic gradients are reported to be  $2 \times 10^{-1}$  ft/ft, which is an order of magnitude greater than the horizontal gradient (Golder, January 1992).

Groundwater flow velocities associated with the site have been calculated using hydraulic conductivity and horizontal gradient values reported by Golder (January 1992) and the following formula provided by Heath (1989):

$$V = (K/n) \times (dh/dl), \text{ where:}$$

V = Groundwater velocity,

K = Hydraulic conductivity,

n = porosity (estimated), and

dh/dl = horizontal gradient.

Porosity values typically range from 25 to 50 percent for sand and 35 to 50 percent for silt (Freeze & Cherry, 1979; Driscoll, 1986). Because the fill material is composed primarily of sand and gravel, it is considered part of the same hydrogeologic unit as the natural sand layer beneath it. Using mean values for porosity, hydraulic conductivity, and gradient, the mean horizontal groundwater flow velocities associated with the upper sand/fill unit have been calculated to be approximately  $1.2 \times 10^{-3}$  cm/sec (1250 ft/yr), while the vertically upward velocities associated with the silt unit have been calculated to be approximately  $2.8 \times 10^{-6}$  cm/sec (2.9 ft/yr). It should be noted that these calculations are not applicable to sections of the site where NAPL is present since these areas comprise multiphase flow systems. In such a system, the actual groundwater flow velocities are reduced because the presence of NAPL reduces the effective permeability of the media. Additionally, the flow velocity for NAPL is significantly slower than that of groundwater since it is much more viscous.

Existing reports provide stratigraphic and hydrogeologic data identifying unconsolidated soils and their relationship to potential zones of higher and lower permeability. These reports indicate the following relative to potential groundwater transport of constituents:

- the sand/fill unit is a zone of relatively higher permeability and contains specific organic and inorganic constituents;
- the sand/fill unit is located within the former river channel oxbow;
- the underlying silt aquitard is three orders of magnitude less hydraulically conductive than the upper sand/fill unit; and

- the hydraulic conductivity of the lower sand layer is one to two orders of magnitude less conductive than the upper sand/fill unit.

Specific organic and inorganic constituents, including NAPLs, have been detected above and below the water table surface (Golder, January 1992). The present distribution of LNAPLs and DNAPLs is significantly influenced by different migration mechanisms (Golder, January 1992). Potential migration of LNAPL is driven by groundwater surface influences (i.e., the direction of flow corresponds with the gradient of the water table). The migration of DNAPL is primarily influenced by the difference in density between the DNAPL and groundwater and the site stratigraphy. DNAPLs have in some areas percolated downward to the base of the upper fill/sand unit, and have accumulated on the silt aquitard unit. Potential DNAPL movement is most likely influenced by the topography of the aquitard unit.

Groundwater quality monitoring has been conducted at the site on several occasions, initially by Geraghty & Miller (November 1989) using wells LS-2 and LS-4 and later by Geraghty & Miller (March 1991) using several of the 11 currently existing groundwater monitoring wells. These monitoring efforts have shown the presence of various constituents in the groundwater at the site, including PCBs, VOCs, SVOCs, PCDDS/PCDFs, and inorganics. As in the soil, the SVOCs detected in groundwater include a number of constituents that may be related to the former Berkshire Gas coal gasification facility near the site (see Table 4-15).

A preliminary interpretation of the available groundwater analytical data indicates that the downgradient wells (LS-2, LS-11, and LS-4) contain generally higher concentrations of constituents that were

detected in other wells at the site. Groundwater collected near the downgradient edge of the site at recovery wells RW-1 and RW-2 is treated at the portable groundwater treatment facility located on the parking lot as part of STM activities. To date, approximately 3.4 million gallons of groundwater have been treated at this facility.

Groundwater analytical data collected at well LS-10 indicates that limited constituents are present in groundwater at this location. Tetrachloroethane and 1,1,1-trichloroethane were detected at concentrations of 0.018 and 0.004 ppm, respectively. These constituents were also detected further upgradient as part of several unrelated investigations as described in Section 4.2.1. Low levels of PCBs were also detected in groundwater at this location (0.0018 ppm), which is not unexpected since PCB concentrations up to 8.9 ppm were detected in soil at this location.

Finally, specific monitoring for NAPLs was performed by Golder in September 1991. This monitoring showed the nature and type of constituents in the DNAPL at the site (see Table 4-19). As shown by this monitoring, the DNAPL at the site contains high levels of PCBs, as well as a number of VOCs and SVOCs, including high levels of several SVOCs potentially associated with the coal gasification byproducts of Berkshire Gas.

## SECTION 5 - MISCELLANEOUS SOILS INVESTIGATIONS

In accordance with agreements between GE and the MDEP, certain excavation activities at the GE facility, whether they be associated with construction, demolition, landscaping, or other miscellaneous site work, are to be accompanied by a sampling and analysis program to assess the potential presence of chemical constituents in the excavated soils and thus to assist in determining the appropriate disposition of the materials. Three such sampling and analysis programs have been conducted at the Lyman Street Parking Lot Site.

The first sampling program was conducted on June 26, 1991, and involved the sampling and analysis of soil excavated during the installation of a fence post at the Lyman Street Parking Lot. One sample was collected, screened with a PID, and analyzed for PCBs. The location of this sample, designated LSPLFE-C1, is shown on Figure 5-1. PID results for this sample ranged from 8.2 to 8.4 units and averaged 8.3 units. PCBs were detected in the soil sample at 26 ppm. Additional information related to this event is contained in Appendix K.

The second sampling program involved the collection and PCB analysis of 10 surficial soil samples (0 to 4-inch depth intervals). These samples were collected on April 21, 1992, along a soil berm located on the north and west perimeters of the Lyman Street Parking Lot (Figure 5-1). These samples were collected to provide soil PCB data to support the air monitoring study discussed in Section 6 below. PCB concentrations of these samples ranged from less than 1 ppm to 60 ppm and averaged 8.5 ppm. Appendix K provides additional information related to this sampling event.

The third sampling program was conducted on May 1, 1992 and involved the sampling and analysis of asphalt and grit material excavated during the installation of the air monitoring station on the parking lot (Figure 5-1). Two

samples were collected and analyzed for PCBs. PCBs were detected in one sample at 2.6 ppm, but were below detection in the other sample. Appendix K provides more information related to this sampling event.

In addition, cuttings from soil borings installed at the site have been tested for PCBs and Toxicity Characteristic Leaching Procedure (TCLP) in order to determine soil disposition alternatives.

## SECTION 6 - AIR MONITORING

On August 20, 1991, GE began a year-long Facility Air Monitoring Program to quantify levels of PCBs in the ambient air at and near its Pittsfield facility in accordance with the Facility Air Monitoring MCP SOW (Blasland & Bouck, August 1990). In addition to the collection of meteorological information, air samplers were placed at certain locations based on a siting study. The Lyman Street Parking Lot Site was included in this program, with an ambient air monitoring station located at that site. The year-long program involved the collection of air samples every 12 days. Final samples were collected in August 1992. The results of this program were submitted to the MDEP and USEPA on a quarterly basis and were presented in a final report which was submitted in November 1992 (Zorex, November 1992). Those results are summarized in Table 2 of that report, which is reproduced as Table 6-1 of this report.

Based on the results of the 1991-1992 ambient air monitoring program, it was determined that additional ambient air PCB data were necessary to more accurately identify suspected sources of airborne PCBs observed at certain air monitoring stations and, if possible, estimate the emission rate from the identified sources. The Lyman Street Parking Lot Site was determined to be an area for which additional air monitoring was needed. A Scope of Work which proposed activities to obtain the additional air data for the Lyman Street Parking Lot Site (along with two additional areas) was submitted to the MDEP on January 29, 1993 (Zorex, January 1993) and was revised in early March 1993. In a letter dated March 17, 1993, the MDEP conditionally approved that plan.

The additional ambient air monitoring activities were conducted between May 4, 1993 and August 17, 1993. The activities conducted at the Lyman Street Parking Lot Site included the assessment of high-elevation (2 to 6 meters above the ground) air at a location in the east-central portion of the parking lot and



low-elevation (near ground) air at a location along the bank of the Housatonic River. These locations and corresponding elevations were chosen to assess the riverbank adjacent to the Lyman Street Parking Lot as a potential source of PCBs in ambient air observed at the Lyman Street Parking Lot Site air monitor.

The results of these additional monitoring activities were summarized and evaluated in a report submitted to the MDEP (with a copy to USEPA) on November 8, 1993 (Zorex, November 1993). Book 1 of 3 of that report is included with this document as Appendix L. For the Lyman Street Parking Lot Site, the results of these activities, as discussed in Section 6.3.2 of Appendix L, showed substantially greater PCB concentrations in the low-elevation air samples from the riverbank than in the high-elevation samples from the parking lot area. However, the data were insufficient to allow a comparison of the PCB chromatograms for these two areas, and hence the report concluded that it was not possible to identify the riverbank as the source of the PCBs recorded at the high-elevation monitor.

This report also pointed out that the method used to obtain the low-elevation samples (a low-volume sampling technique) differed from the method used for the high-elevation samples (a high-volume sampler), and that there was some question about the validity of the low-volume method and the comparability of the two methods. Hence, it proposed additional air sampling (at the Silver Lake sampling location) to evaluate the validity of the low-volume sampling method and its consistency with the high-volume method (see Section 8.0 of Appendix L).

## SECTION 7 - FATE AND TRANSPORT CHARACTERISTICS

### 7.1 General

Various chemical constituents have been detected in the soils and groundwater at the Lyman Street Parking Lot Site. The information presented in this section provides a general characterization of the environmental fate and transport properties associated with the constituents observed in one or both of these media. This section discusses only those compounds that were found at levels above the quantitation limit or contract-required detection limit, and excludes those which were also found in associated blank samples (thus indicating laboratory contamination) or were detected in only one or two isolated samples at low concentrations. Information concerning the range of detected concentrations and areas of distribution for compounds observed in soils and groundwater is presented in Section 4. The fate and transport discussions which follow are intended to be general in nature for the various constituent groups and are not site-specific fate and transport characteristics. Therefore, this section of the report is not intended to identify those processes actually occurring at the Lyman Street Parking Lot site, but only to provide information on potential fate and transport mechanisms.

### 7.2 Characterization of Detected Hazardous Materials

Due to the number of constituents detected, discussions of compound-specific environmental fate and transport properties address representative groups of chemicals. These groups of chemicals and the constituents within each group exhibit specific properties that determine their potential behavior in the environment.

Volatile organic compounds (VOCs) detected at the Lyman Street Parking Lot Site include ketones, aromatics, and halogenated compounds. Semivolatile

organic compounds detected include polychlorinated benzenes, ketones, polynuclear aromatic hydrocarbons (PAHs), and phthalate esters. In addition, PCBs, PCDDs/PCDFs, pesticides, sulfides, and metals were detected and are discussed in the following sections.

Table 7-1 presents the water solubility, log octanol/water partitioning coefficient ( $\log K_{ow}$ ), vapor pressure, and Henry's Law Constant for the organic compounds detected in the soils and groundwater at the Lyman Street Parking Lot Site. These properties provide considerable insight into the fate and transport of a compound in the environment. Depending on their vapor pressure, highly water-soluble chemicals are less likely to volatilize and are generally more likely to biodegrade (Howard, 1989). Water solubility can also affect adsorption and desorption on soils. Compounds which are more soluble are more likely to desorb from soils. Water solubility can also affect possible transformation by hydrolysis, photolysis, oxidation, and reduction (Verschueren, 1983). The log octanol/water partition coefficient correlates well with a compound's tendency to bioconcentrate and adsorb to soil (Howard, 1989). Generally, the higher the compound's log octanol/water partitioning coefficient, the higher the compound's affinity for adsorption and the lower its mobility in groundwater. Henry's Law Constant provides an indication of the tendency of a compound to volatilize, and thus provides a means for ranking the relative volatilities of chemicals from water (Verschueren, 1983). Henry's Law Constants can be obtained directly from literature or can be calculated by dividing a compound's vapor pressure by its water solubility. The Henry's Law Constant can be used to calculate the rate of evaporation from water. The information presented in Table 7-1 will be referenced, as appropriate, during the discussion of the various groups of compounds detected.

### 7.2.1 Volatiles

VOCs detected at the Lyman Street Parking Lot Site include ketones, aromatics, and halogenated compounds. As indicated in Table 7-1, the water solubilities and vapor pressures of these compounds range from moderate to high and their log  $K_{ow}$  values are relatively low.

#### 7.2.1.1 Ketones

Ketones are one class of volatile organics present at the Lyman Street Parking Lot Site. Investigations have detected low concentrations of 4-methyl-2-pentanone in site soils and groundwater. As a chemical class, ketones are characterized by high water solubility and high volatility.

In surface soils, ketones are subject to competing processes of dissolution, photolysis, and volatilization. As such, these substances are prone to dissolve into infiltrating precipitation and move into underlying soils or volatilize to the atmosphere. Transport in the soil-gas phase from deeper soils will be substantially limited, however, by partitioning of the gas phase into the soil water, biodegradation, and the general heterogeneous nature of soils (USEPA, 1989).

In subsurface environments, 4-methyl-2-pentanone tends to be highly mobile. In moist environments or during heavy precipitation events, 4-methyl-2-pentanone is prone to leaching. Downward migration may occur as it dissolves into the soil water which may be transported through the soil column. However, aerobic biodegradation of 4-methyl-2-pentanone may limit transport to groundwater (Howard, 1989).

#### 7.2.1.2 Aromatics

Aromatic compounds detected at the Lyman Street Parking Lot Site include benzene, toluene, ethylbenzene, and xylenes. In the upper

soil, the competing processes of volatilization to the atmosphere and downward migration with infiltrating precipitation (both of which would be limited by the presence of pavement) are the dominant fate processes. Generally, aromatics are highly mobile (as liquid or gas) in soil (ATSDR, March 1989; 1990; Swann et al., 1983). However, upward migration from subsurface soils in the soil-gas phase and subsequent volatilization to the atmosphere will be substantially limited by partitioning of the gas phase into the soil water, adsorption (to a small extent), biodegradation, and the general heterogeneous nature of soils (USEPA, 1989).

In deeper soil, the most likely transport mechanism is dissolution into soil water and downward migration through the soil. Competing processes of biodegradation and limited adsorption to soil organic matter may decrease the quantities of the chemicals released to groundwater. Aromatics are generally capable of biodegrading under both aerobic and anaerobic conditions. Ethylbenzene, however, has been found to be resistant to biodegradation under anaerobic conditions (Howard, 1989). Soil adsorption is expected to be moderate for ethylbenzene and xylenes, and low for benzene and toluene (Howard, 1989 and 1990).

#### 7.2.1.3 Halogenated Compounds

Halogenated VOCs detected at low concentrations at the Lyman Street Parking Lot Site include carbon tetrachloride, chlorobenzene, chloroform, methylene chloride, tetrachloroethene, trichloroethene, and 2-chloroethyl vinyl ether. These halogenated VOCs are characterized by their volatility and relatively high water solubility. In the surficial soil, volatilization into the atmosphere may occur. Due to their high solubility in water, these compounds may leach downward through the

soil column with percolating soil water. Biodegradation of the halogenated VOCs under aerobic conditions is generally regarded as being very slow to nonexistent. Biotransformation of halogenated organic compounds via reductive dehalogenation has been demonstrated under anaerobic conditions (Wilson et al., 1986). Slow biodegradation may occur under anaerobic conditions where acclimated microorganisms exist (Howard, 1990). Chemical hydrolysis may also be an important degradation mechanism for 2-chloroethyl vinyl ether in moist acidic soil and/or soils with acidic areas such as clay soil or humic materials (HSDB, 1993).

#### 7.2.2 Semivolatiles

Semivolatiles detected at the Lyman Street Parking Lot Site include polychlorinated benzenes, ketones, PAHs, and phthalate esters.

##### 7.2.2.1 Polychlorinated Benzenes

The polychlorinated benzenes detected at the Lyman Street Parking Lot Site include 1,2,3-, and 1,2,4-trichlorobenzene, and 1,2-, 1,3-, and 1,4-dichlorobenzene.

Polychlorinated benzenes exhibit moderate volatility. In surface soils, volatilization into the atmosphere is expected to occur. Adsorption to soil particles and residence within the soil matrix is also a dominant fate of polychlorinated benzenes. The potential for dissolution of these compounds into soil water and possible transport to underlying soils or groundwater may occur under certain circumstances (CHEMFATE, 1989). In sandy or mineral soils with low organic content, polychlorinated benzenes are more likely to leach through the soil, whereas in organic soils mobility should be greatly reduced. Biodegradation in soil and water is generally expected to be quite slow, but loss via this route may be significant in situations

where acclimation of the microbial population has taken place (HSDB, April 1990a).

#### 7.2.2.2 Ketones

Isophorone was detected at low levels in groundwater at the Lyman Street Parking Lot Site. Isophorone behaves much like volatile ketones in the environment with the exception of a slower volatilization rate. Refer to section 7.2.1.1 for a discussion of the environmental fate and transport properties of ketones.

#### 7.2.2.3 PAHs

At the Lyman Street Parking Lot Site, a variety of PAHs were detected in soils and sediments. PAHs are semivolatile compounds that have low water solubilities (Table 7-1). PAHs have a strong tendency to adsorb to soil particles and organic matter. The PAHs with higher molecular weights tend to be less water soluble and have higher affinity for adsorption to soil. Within the soil environment, biodegradation of PAHs is also related to molecular weight. PAHs with lower molecular weights tend to undergo microbial degradation more rapidly than the PAHs with higher molecular weights. The lower molecular weight PAHs may also be subject to volatilization, but to a much lesser extent than VOCs.

#### 7.2.2.4 Phthalate Esters

Phthalate esters detected at low concentrations at the Lyman Street Parking Lot Site include bis(2-ethylhexyl)phthalate and butylbenzylphthalate in soils. The relatively low solubility and low volatility of bis(2-ethylhexyl)phthalate and butylbenzylphthalate should limit their mobility in soils, with butylbenzylphthalate being somewhat more mobile (USEPA, April 1986). Adsorption onto organic soil constituents is reported to be especially strong for bis(2-

ethylhexyl)phthalate. Biodegradation screening studies indicate that bis(2-ethylhexyl)phthalate and butylbenzylphthalate readily biodegrade in soil under aerobic conditions; however, under anaerobic conditions degradation is much slower (USEPA, 1989)

### 7.2.3 PCBs

The fate and transport of PCBs in the environment are greatly influenced by their low water solubility and high affinity for soil organic matter. This generally limits aqueous-phase concentrations to low parts-per-billion levels unless significant amounts of solvents, oils, or colloids are present (Baker et al., 1986; Dragun, 1989). In general, the adsorption of PCBs to soils increases with increasing soil organic content, decreasing soil particle size, and increasing congener chlorination (Lyman et al., 1982; Pignatello, 1989). PCBs could potentially volatilize from soil, but strong adsorption to soils tends to limit the extent of volatilization (ATSDR, 1991).

PCBs are fairly persistent in the environment, and degradation via chemical oxidation and hydrolysis in soil is generally insignificant. PCBs may, however, be subject to loss via photolysis, biotransformation, and biodegradation (ATSDR, 1991). Experimental evidence indicates that PCBs are susceptible to biodegradation under both aerobic and anaerobic conditions. In general, the degradability of PCB congeners under aerobic conditions increases as the degree of chlorination decreases. Variations in this trend exist and are attributed to preferential degradation determined by chlorine substitution patterns (ATSDR, 1991).

Laboratory research has shown that the lesser chlorinated PCB congeners are subject to aerobic biodegradation by microorganisms indigenous to soils. Aerobic biodegradation results in a complete breakdown of the PCBs, causing a net decrease in total molar PCB



concentration. Various breakdown products have been identified and include chlorinated catechol, chlorobenzoic acid, and carbon dioxide (Bedard et al., 1987; Hanklin and Sawney, 1984; Fries and Marrow, 1984).

As with aerobic biodegradation, preferential degradation of meta- and para-substituted congeners has been observed under anaerobic conditions, although biotransformation is apparently also related to the chlorination pattern on the congeners (Rhee et al., June 1993, April 1993; Quensen et al., 1988). Laboratory research has shown that PCBs undergo reductive dechlorination under anaerobic conditions by indigenous microorganisms; however, the extent and rate of dechlorination varies among congeners and soil collection locales (Rhee et al., June 1993, April 1993; Nies and Vogel, 1990). Study results indicate that the more highly chlorinated PCBs are transformed to less chlorinated congeners by anaerobes (Quensen et al., 1988) and that the lower chlorinated PCBs may be further degraded to carbon dioxide, water, and chloride by aerobes (Chen et al., 1988; Quensen et al., 1990).

#### 7.2.4 PCDDS/PCDFs

At the Lyman Street Parking Lot Site, PCDDs were not detected in soil, but one PCDD isomer was detected in one groundwater monitoring well at a low level. In addition, a few PCDF congeners were detected at low levels in a few soil and groundwater samples.

The majority of the information available on the fate and transport of PCDDs and PCDFs relates to 2,3,7,8-tetrachlorodibenzodioxin (TCDD), while some information is also available for 2,3,7,8-tetrachlorodibenzofuran (TCDF). These are the most toxic PCDD/PCDF congeners. Neither 2,3,7,8-TCDD nor 2,3,7,8-TCDF was detected at the Lyman Street Parking Lot Site. However, although there are significant differences in toxicity between these congeners and other PCDD/PCDF congeners, the

environmental fate and transport data on 2,3,7,8-TCDD and 2,3,7,8-TCDF may be regarded as generally representative of the entire class of PCDDs and PCDFs due to similarities in physical/chemical properties.

This information indicates that, based on their very low water solubilities and consequently high organic carbon adsorption coefficients ( $K_{oc}$  values), PCDDs and PCDFs are expected to strongly adsorb to most soils, thereby limiting migration of the compounds (HSDB, April 1990b).

#### 7.2.5 Pesticides

Pesticides detected at the Lyman Street Parking Lot Site include 4,4'-DDE, aldrin, beta-BHC, and endosulfan I. The fate and transport properties of these compounds are likely to vary due to differences in their chemical and physical properties. Aldrin, beta-BHC, and endosulfan are organochlorine insecticides, and 4,4'-DDE is a chlorinated degradation product of the organochlorine insecticide, 4,4-DDT.

4,4'-DDE, aldrin, beta-BHC, and endosulfan bind strongly to soil and are expected to be essentially immobile. Biodegradation is a significant fate process for beta-BHC and endosulfan, but proceeds very slowly and will be relatively insignificant for 4,4'-DDE and aldrin (Howard 1991; USEPA, June 1986). Volatilization of aldrin from soils is also a potentially significant fate process, but is relatively insignificant for the other pesticides (Howard, 1991; USEPA, June 1986).

#### 7.2.6 Metals

A number of naturally occurring metals were detected in the soils and groundwater at the Lyman Street Parking Lot Site. Metals are cycled within the environment, forming various species with different physical and chemical properties. Metal species may be transformed from one inorganic or organometallic species to another, but the inorganic element itself does not degrade.

Certain inorganic species are highly water soluble, while others are extremely insoluble. The movement of a particular metal into and within groundwater is determined by the amount and form of the metal, the groundwater's chemical and physical properties, and the composition of the soil or waste solution with which the metal is associated (USEPA, 1988). The soil properties affecting metal retention/release and transport include bulk density, surface area, particle-size distribution, pH, redox conditions, ion exchange capacity, amount of organic matter, type and amount of metal oxides, and type and amount of clay minerals (USEPA, 1988). Adsorption to soil organic matter, at levels commonly found in surface soils and sediments, is one of the primary immobilizing processes for metals (USEPA, 1988). The form in which an inorganic element exists is highly dependent upon the chemical characteristics of the site such as pH, oxygen level, and ionic characteristics.

#### 7.2.7 Sulfides

Sulfides were detected in the soil and groundwater at the Lyman Street Parking Lot Site. Sulfur is cycled within the environment, and sulfides are part of the sulfur biogeochemical cycle. Sulfides are produced by biological processes and other natural sources, and are common in the environment (Manahan, 1991). The fate of sulfides in the environment depends on site-specific conditions such as the presence of microbes, pH, and the availability of oxygen. Sulfide gases can be characterized as having an offensive odor (Grady and Lim, 1980). Sulfides (i.e., non-metal sulfides) are rapidly converted to sulfur dioxide and sulfate in the presence of oxygen and, therefore, do not persist in air. Insoluble metal sulfides are oxidized to relatively soluble metal sulfates upon exposure to air. The predominant metal sulfide found in the environment is iron sulfide (Manahan, 1991). Under anaerobic conditions, sulfides are relatively stable compounds.

## SECTION 8 - MIGRATION PATHWAYS AND EXPOSURE POTENTIAL

### 8.1 General

In accordance with Section 40.0483(1)(f) of the MCP, this section provides brief discussions regarding potential migration pathways (Section 8.2), the potential for human exposure (Section 8.3), and potential impacts to environmental receptors (Section 8.4) associated with the Lyman Street Parking Lot Site.

### 8.2 Potential Migration Pathways

Section 4 of this report provides a comprehensive discussion of the available analytical and hydrogeological data which serve to characterize the Lyman Street Parking Lot Site. Based on this information the following potential migration pathways have been identified:

- Volatilization, dust migration, and surface runoff from surficial soil;
- Leaching or direct releases from soil/fill to groundwater;
- Subsurface transport via oil; and
- Subsurface transport via groundwater flow.

These potential migration pathways are discussed in more detail in the following subsections.

#### 8.2.1 Migration from Surficial Soil

As explained in Section 3.5 and illustrated in Figure 1-2, the majority of the Lyman Street Parking Lot Site is presently covered with pavement. As a result, the potential for significant migration of chemicals from soil in paved areas is effectively negated. The areas of the site not covered with pavement include the berm located along the northern and western perimeters of the parking lot, the very southern portion of GE Lot No. 2 near monitoring well LS-10, and the steep, vegetated riverbank located

between the parking lot and the Housatonic River. Surficial soil in these areas could potentially be a source of chemicals to the atmosphere via volatilization and dust migration or to surface water via surface water runoff. However, the light vegetation covering the berm and the substantial vegetation covering the riverbank area would reduce the potential for migration of chemicals from surficial soil in these areas.

Analytical data regarding surficial soil in the southern portion of Lot No. 2 and the riverbank area are limited; however, sampling of these areas is being proposed as part of Phase II/RFI activities as described in the MCP Phase II SOW/RFI Proposal. Further, the riverbank area has been and will continue to be assessed as a potential source area for PCB air emissions as part of the air monitoring activities discussed in Section 6.

#### 8.2.2 Migration from Subsurface Soil/Fill

As part of MCP and prior investigations of the site, a number of soil borings have been installed to characterize subsurface soil/fill materials. These investigations have identified the presence of VOCs, PAHs, chlorinated benzenes, inorganics, PCBs, and PCDFs in subsurface materials. The migration of constituents detected in these subsurface materials may occur as a result of dissolution in groundwater via direct contact and/or as a result of leaching via infiltrating precipitation. Current conditions of the site (i.e., presence of pavement and dense vegetation) limit the extent to which precipitation can infiltrate soil/fill at the majority of the site. The analytical data related to groundwater indicates the presence of various constituents which could have possibly leached from subsurface soil/fill materials.

### 8.2.3 Migration Via Oil

As discussed in Section 4, both LNAPL and DNAPL have been determined to be present in subsurface soil/fill materials and in contact with groundwater at the site. The migration of constituents in these materials may be occurring as a result of leaching. The primary transport pathway for these constituents is groundwater. The presence of various constituents in groundwater at the site indicates that leaching of certain constituents from NAPLs has probably occurred. In addition, the migration of NAPL to the Housatonic River could occur via intermittent oil seeps which have been observed along with the riverbank area. As explained in more detail in Section 9, STM activities are currently being implemented to address these oil seeps and to recover and treat groundwater at the site. These activities also result in the recovery of quantities of NAPLs.

### 8.2.4 Migration Via Groundwater

As mentioned above, the analytical data for groundwater at the site indicate the occurrence of leaching of constituents from subsurface soil/fill materials and/or NAPL to the groundwater. Overall, groundwater movement in this area is in a southeasterly direction toward the Housatonic River. The former oxbow is potentially acting as a conduit for transport of observed constituents, although the extent to which this is occurring is undefined. The primary transport pathway for constituents found in groundwater at the site is to the Housatonic River; however, as mentioned above and discussed in more detail in Section 9, STM activities currently being implemented at the site include the recovery and treatment of groundwater from two recovery wells located at southeastern edge of the parking lot.

### **8.3 Potential for Human Exposure**

The present site conditions and foreseeable future site uses result in a low potential for human exposure at the Lyman Street Parking Lot Site. Specifically, as indicated previously in Section 3, the majority of the site is covered with pavement and once served as a parking lot for GE employees. This parking lot is no longer in use. It is fenced on three sides, with the gates locked, and the fourth side is the riverbank which is steep, vegetated, and separated from the parking lot with a guardrail. The small, southern portion of the adjacent GE-owned lot (Lot No. 2) which is included as part of the site is likewise not in use. That portion of Lot No. 2 is presently not fenced or paved.

The potential for human exposure to hazardous constituents at the Lyman Street Parking Lot Site is discussed in Section 2.3 of the Preliminary Health and Environmental Assessment (HEA) Proposal which is being submitted concurrently with this report. As shown there, potential human receptors include trespassers and workers at the site who may be exposed to surface soil (in unpaved areas) and air during the brief periods when they are present at the site. In addition, people living or working near the site may be exposed to air that could be affected by constituents at the site.

### **8.4 Potential Impacts to Environmental Receptors**

The only portion of Lyman Street Parking Lot Site which could be of any value to wildlife is the vegetated portion of the riverbank, as the rest of the site is either paved or barren. Although individual small mammals, song birds, amphibians, and reptiles may be present along the riverbank in this area, this area is too small to support a community of wildlife. An assessment of the potential impacts to environmental receptors will be provided in the HEA for this site, as discussed in Section 3, Task 10, of the Preliminary HEA Proposal being submitted concurrently with this report.

## SECTION 9 - OIL SEEPAGE CONTROL MEASURES

### 9.1 General

GE has been active in the containment, recovery, and abatement of the oil seeps adjacent to the parking lot along the bank of the Housatonic River since their discovery in August 1990. These on-going activities have been performed to date under MDEP review and approval as STMs under the MCP. Now that the Corrective-Action Permit has become effective, these activities will now be conducted as an STM/Interim Measure under the review and approval of the MDEP and USEPA. To this end, an Interim Measure Proposal entitled "Control of Oil Seepage Into the Housatonic River" (GE, February 1994) has been developed and submitted to USEPA under separate cover, with a copy to MDEP. Section 9.2 describes the STM activities that have taken place at the Lyman Street Parking Lot to date and Section 9.3 summarizes GE's current plan for continuing seepage control activities as an STM under the MCP and as an Interim Measure under the USEPA Permit. (Although the recently revised MCP now refers to STMs as Immediate Response Actions (IRAs), this report continues to refer to GE's seepage control activities as STMs for convenience, since they began as STMs. In the present context, the term STM should be deemed equivalent to an IRA under the revised MCP.)

### 9.2 Review of Prior STM Activities

#### 9.2.1 Initial Activities

As part of the conditional approval of the Housatonic River MCP Phase II SOW in August 1990, the MDEP required that a STM be implemented to address the seeps of oil entering the river from the bank adjacent to the Lyman Street Parking Lot. The purposes of this STM were to: 1) reduce any oil discharge to the river that may occur while investigation



activities are ongoing at the Lyman Street Parking Lot and until corrective measures could be studied and implemented; and 2) provide investigative information to be used as a basis for a supplemental STM proposal. In general, the following requirements were conditionally approved by the MDEP and summarized in a report to the MDEP (Geraghty & Miller, December 1990):

- Install and maintain an absorbent boom along the riverbank in the vicinity of the oil seep and provide monthly reports on its operation and maintenance;
- Immediately implement the MCP Scope of Work for the Lyman Street Parking Lot [which was described in the "Housatonic River MCP Phase II Scope of Work", (Blasland & Bouck, June, 1990)] as part of the STM;
- Perform additional field activities to define the lateral extent and thickness of the oil body;
- Implement a passive oil recovery system (such as manual bailing or use of a portable skimmer unit) for the recovery of oil from existing monitoring wells at the site on at least a weekly basis, and submit data on oil thickness, water levels, and volume of oil recovered with the monthly reports;
- Collect a river sediment sample in the area of the bank seep for analysis of PCBs, VOCs, and SVOCs; and
- Prepare a summary report of these STM investigations and a scope of work for any further STM proposals.

#### 9.2.2 Supplemental STM Activities

The activities described in Section 9.2.1 were completed and summarized in a report to the MDEP (Geraghty & Miller, December 1990). The December 1990 report presented the scope of a supplemental STM

proposal to further mitigate the seeps of oil from the Lyman Street Parking Lot into the Housatonic River. As part of this supplemental proposal, the following STM activities were proposed:

- The oil boom system would continue to be operated.
- GE would continue to monitor area wells and to passively collect oil from them.
- In an effort to intercept and collect the oil seeping into the Housatonic River, GE would install a steel sheet piling (as a flow barrier) and an oil recovery well in the eastern limb of the former oxbow. It was proposed, however, to install the oil recovery well first and to perform a pump test to evaluate its effectiveness before continuing with implementation of the rest of this STM.
- A monitoring well system would be installed to evaluate the effectiveness of the STM, as well as to act as an "early warning" system should the oil migrate away from the barrier/collector.
- The ongoing monitoring program would be revised as needed.

GE then prepared specifications for the installation of an oil recovery well and two observation wells. Plans were also developed for the performance of an aquifer pump test in this area. Observation wells LS-20 and LS-21 were installed in March 1991. In April 1991, following MDEP's conditional approval of these plans and specifications, a 24-inch diameter recovery well (RW-1) was installed in the eastern limb of the former oxbow. On April 10, 1991, an 8-hour aquifer pump test was performed to determine if a sufficient cone of groundwater depression could be created to facilitate possible future oil collection activities.

In accordance with the conditions of the STM proposal to the MDEP, GE provided a report summarizing the results of the aquifer test, and the proposed course of action for the remaining STM components (Geraghty

& Miller, May 1991). One of these components was a design proposal for an on-site groundwater treatment system.

### 9.2.3 Re-evaluation of Proposed STMs

During the course of the sampling activities which followed the submittal of the STM design proposal, DNAPL was tentatively identified in well RW-1. Golder Associates was then retained by GE to confirm the existence of DNAPL, to further assess the hydrogeology of the site and to determine the potential impacts (if any) of the DNAPL upon the proposed STM.

Various process options were initially screened based upon engineering feasibility and effectiveness, technical reliability, cost-effectiveness, and protection of human health and the environment. In general, the process options which warranted further consideration included: 1) containment of groundwater and NAPL using sheet piles and extraction wells; and 2) collection of groundwater and NAPL from the underlying aquifer using a series of extraction wells. Based upon these process options, four specific alternatives were formulated, in addition to the previously proposed STM passive recovery system using sheet pile walls to isolate the flow of groundwater and NAPL. The four additional alternatives proposed the use of an active recovery approach using one or more extraction wells, either alone or in combination with sheet pile walls. The STM alternatives were described in detail in a report entitled "Additional Hydrogeologic Assessment and Short-Term Measure Evaluation and Proposal - Lyman Street" (Golder, January 1992).

Evaluation of the alternatives was, in large part, based on projections of groundwater flow using the numerical groundwater flow model FLOWPATH. A discussion of the model and the results of the individual alternative evaluations are presented in the January 1992 Golder report.

Based upon the results of the evaluation of alternatives, it was determined that the previous STM proposal submitted to the MDEP would not likely eliminate the oil seeps because:

- light non-aqueous phase liquid (LNAPL) would continue to migrate laterally around the sheet pile wall;
- the bank located between the wall and the river would continue to seep oil; and
- the increased hydraulic head upgradient of the wall could result in increased DNAPL migration.

Therefore, the original STM was not recommended for implementation.

The STM proposed in the January 1992 Golder Report consisted of a combination of the remaining alternatives implemented, as necessary, in a staged approach. The measures which had already been implemented - i.e., the placement of oil absorbent booms, the collection of oil from existing monitoring wells, and regular riverbank inspections -- were to be maintained. In addition, an active recovery plan was to be implemented by pumping groundwater and NAPL from well RW-1. Groundwater collected from well RW-1 was to be treated at an on-site portable groundwater treatment system, while NAPL would be disposed of at GE's Thermal Oxidizer. After an initial period of active recovery, an evaluation would be made regarding the necessity for additional groundwater flow control. If pumping of well RW-1 did not provide an adequate capture zone to prevent migration of LNAPL into the river, one or more additional extraction wells would be installed. Finally, results of the continued groundwater monitoring and riverbank inspections would be used to determine if placement of sheet pile walls were necessary. If so, a limited subsurface investigation would be conducted to determine the location, depth, and engineering specifications for placement of the wall.

#### 9.2.4 Implementation of Active Recovery

This proposed STM was conditionally approved by the MDEP on February 11, 1992, and the on-site portable treatment system was designed and constructed. An emergency exclusion from the National Pollution Discharge Elimination System (NPDES) was granted by the USEPA on July 8, 1992, and pumping of recovery well RW-1 was initiated on August 10, 1992. The on-site portable groundwater treatment system provides treatment for groundwater containing PCBs, oil and grease, and other volatile and semivolatile organic constituents. The primary treatment processes include oil/water separation, pH adjustment, chemical addition, flocculation, clarification, filtration, and carbon adsorption. The treatment components are installed within three mobile trailers to allow a rapid demobilization of the treatment system from the site during flooding events, if necessary. Although the anticipated maximum treatment rate was 15 gpm for the Lyman Street STM, the treatment system was designed to allow (with some modifications) treatment of a 50 gpm flow rate.

Because of the positive effects of pumping RW-1 (i.e., accumulation of the NAPL and the existence of drawdown along the riverbank), GE recommended in September 1992 that pumping continue in well RW-1. Additionally, to provide further hydraulic control along the riverbank, it was proposed that a second recovery well be installed near the edge of the parking lot between monitoring wells LS-20 and LS-24. This well would correspond to that designated as RW-3 in the January 1992 Golder report. As modeled in the report, pumping groundwater from this well would cause a cone of depression to form which would extend fully to the riverbank. Pumping of this new well would also add to the drawdown associated with the pumping of RW-1, because their cones of depression

would overlap to some degree. It was anticipated that this added drawdown would be sufficient to reverse the normal groundwater flow direction even when the river stage was low.

The MDEP approved the installation of the additional recovery well, and that new well (now designated RW-2) was installed on November 5, 1992. Recovery well RW-2 was activated on November 20, 1992.

During the period from November 1992 through July 1993, in accordance with various correspondences with the MDEP, GE made several modifications to the portable groundwater treatment system to improve its performance (including: piping modifications, addition of a pH probe, adjustments to the polymer used, and addition of a sludge dewatering system).

In August 1993, GE submitted an evaluation of the Lyman Street STM as requested by the MDEP in a February 26, 1993 letter. The report was entitled "Effectiveness Evaluation of Short-Term Measures, Lyman Street Site (Oxbow Area D)" (Golder, August 1993). The report concluded that the groundwater pumping of recovery wells RW-1 and RW-2 was effectively mitigating the intermittent bank seeps along the edge of the Housatonic River. The recommendations of that report were conditionally approved by the MDEP on October 6, 1993. GE proposed certain additional modifications to the STM in a letter of October 28, 1993, and the MDEP approved them on November 24, 1993. The current STM program, as agreed upon by GE and the MDEP, consists of the elements outlined in Section 9.3.

### 9.3 Current and Planned Oil Seepage Control Measures

GE's current plans for continuing efforts to address the oil seepage from the riverbank, as they have been approved by the MDEP as STMs under the

MCP and as they are described in the Interim Measure Proposal on this topic submitted to USEPA under separate cover, involve the following elements:

- Continued operation and maintenance of the boom system in the Housatonic River in the area of this seep, including regular inspections at a frequency of three times per week (five times per week during winter), with maintenance as necessary;
- Removal and replacement of boom sections as needed (due to pending oil saturation or damage);
- Removal of oil sheens by using absorbent materials or manual skimmers on at least a monthly basis;
- Continued oil and water-level monitoring at RW-1, RW-2, LS-2, LS-4, LS-12, LS-20, LS-21, LS-23, LS-24, P-1, P-2, P-3, P-4, P-5 on a weekly basis and at LS-10, LS-11, LS-13, LS-22, and LS-25 on a monthly basis, with measurements of the river stage on a weekly basis;
- Passive recovery of oil, including both LNAPL and DNAPL, from on-site wells according to the following criteria:
  - No passive recovery of LNAPL from wells within the cone of influence of recovery wells RW-1 and RW-2 (i.e., wells LS-4, LS-21, and LS-23);
  - Passive recovery of LNAPL from the riverbank well points if they contain LNAPL at thicknesses greater than 0.25 feet;
  - Passive recovery of LNAPL from the other on-site wells, which are located outside the cone of influence of recovery wells RW-1 and RW-2, if LNAPL thickness is greater than 0.25 feet;
  - Passive recovery of DNAPL from any on-site well when the DNAPL thickness reaches 1 foot; and

- Removal of LNAPL or DNAPL from well RW-1 on at least a monthly basis unless product thickness is less than an inch;
- Continued active oil recovery from wells RW-1 and RW-2 with treatment of recovered groundwater at the on-site portable groundwater treatment unit;
- Continued submission of monthly monitoring reports summarizing water level and product measurement for all wells gauged and the amount of product recovered (LNAPL and DNAPL reported separately), findings of the absorbent boom inspections, and a groundwater contour map; and
- Submission of an annual STM summary report containing information on the volumes of groundwater and oil recovered, and an assessment of the effectiveness of the active recovery system.



## SECTION 10 - IDENTIFICATION OF DATA NEEDS

As stated previously, prior investigations and activities at the Lyman Street Parking Lot Site have fulfilled the MCP Phase I requirements, with MDEP concurrence. These investigations, as documented herein, have also produced much of the information required for an MCP Phase II - Comprehensive Site Assessment. In addition, the existing information documented herein fulfills many of the requirements for an RFI for USEPA Area 5a pursuant to the Corrective-Action Permit.

Several data needs have been identified based on comparison of existing site information with the MCP Phase II and RFI requirements. These data needs include:

- Better delineation of the extent and the presence of hazardous constituents;
- Better delineation of the location and elevation of the former oxbow channel and the silt aquitard layer, which appears to be controlling the location and migration potential for DNAPL;
- Better delineation of the extent of NAPLs at the site -- including, in particular, the extent of LNAPL in the western limb of the former oxbow;
- Additional information on groundwater quality;
- Better description of the relationship of the Housatonic River and the groundwater flow regime;
- Development of additional up-to-date water level contour maps;
- Additional information on groundwater migration rates and estimates of the potential migration of NAPL and the principal dissolved-phase constituents;

- Additional information on the types and concentrations of hazardous constituents in surface soils at the site (which are located along the river bank and in the southern portion of Lot No. 2);
- Additional information on background levels of hazardous materials;  
and
- Assessment of potential risks to human health and the environment associated with constituents present at the site.

These data needs will be addressed through the activities described in the separately bound MCP Phase II SOW/RFI Proposal for the Lyman Street Parking Lot and the Preliminary HEA Proposal being submitted concurrently with this document.

## SECTION 11 - CONCLUSIONS AND FUTURE ACTIVITIES

### 11.1 Conclusions

As discussed in the previous sections of this report, numerous investigative and STM-related activities have been conducted at the Lyman Street Parking Lot Site. The following is a summary of the key findings of the work to date:

- The extent of the Lyman Street Parking Lot Site includes the paved and fenced Lyman Street Parking Lot, the riverbank of the Housatonic River adjacent to the Lyman Street Parking Lot (which is not fenced, but has a guard rail along the edge of the parking lot), and a small portion of an unpaved area to the north. The area to the north is included in the site definition based on a visual characterization of a boring placed in that area where fill material, containing PCBs up to 8.9 ppm, was found that is consistent in nature with some of the fill materials characterized in the Lyman Street Parking Lot.
- Fill materials have been detected beneath the Lyman Street Parking Lot. The extent of fill materials has been fairly well defined, although additional data collection activities are proposed to better define the extent of these materials in several areas.
- The presence of LNAPL and DNAPL has been confirmed at the site. A number of on-going STM-related activities have been implemented to reduce the occurrence of intermittent oil seeps into the boomed area of the Housatonic River as well as to assist in active and passive recovery of these materials. These activities are described in Section 9.
- Through an evaluation of boring logs and several geophysical efforts, the site's hydrogeology has been well defined, although additional

information is needed in several areas. One of the findings of this previous work is the definition of the bottom of the former oxbow, which consists of a silt aquitard, that may influence both the location and potential movement of DNAPL at the site.

- A number of constituents (notably including PCBs, chlorobenzene, ethylbenzene, xylenes, naphthalene, phenanthrene, and pyrene) have been detected in site soil and groundwater. A data need has been identified that involves further investigation of the extent of these constituents in these media.
- Groundwater samples collected upgradient of the Lyman Street Site have been found to contain several VOCs (tetrachloroethene and 1,1,1-trichloroethane) at concentrations at or below 0.0023 ppm. A data need has been identified involving further investigation of groundwater quality upgradient of the site.
- Surficial soils (located on a berm inside the fenced perimeter of the Lyman Street Parking Lot) have been sampled and analyzed for PCBs as part of several miscellaneous soils investigations. PCBs were found to range from 0.8 to 60 ppm. A data gap has been identified related to the potential presence of constituents in the surficial soils along the riverbank and in the southern portion of Lot No. 2.
- Air monitoring conducted at the site has detected the presence of PCBs in the ambient air at the site under various meteorological conditions. Additional air sampling has been proposed (at the Silver Lake Site) to evaluate the validity of the low-volume sampling method used for the low-elevation samples taken from the riverbank area of the site.
- As discussed in Section 4, groundwater from the Lyman Street Site discharges to the Housatonic River. Analytical groundwater data from

the site indicates the presence of PCBs and a number of VOCs and SVOCs. While these constituents may be entering the Housatonic River with groundwater, previous sampling and Appendix IX-3 analysis of the surface water samples in the Housatonic River both upstream and downstream of the Lyman Street Parking Lot Site was conducted as discussed in Section 5.4.4 of the MCP Interim Phase II Report/CAS for Housatonic River (Blasland & Bouck, December 1991). The results of this sampling activity, presented in Table 5-6 of that report, did not indicate any significant contribution of PCBs or VOC/SVOC constituents to the water column from the Lyman Street Parking Lot Site. Those constituents were not detected in the water column at the Lyman Street Bridge (just downstream of the site) at concentrations above their quantitation limits, except for chlorobenzene, which was not found at a significantly higher concentration than in upstream samples.

Based on the Preliminary Site Assessment and Interim Site Classification forms contained in the MCP Phase I Report for Lyman Street Parking Lot (Oxbow Area D) (Blasland & Bouck, March 1992), the MDEP has classified the site as being a priority site for which further remedial response is necessary. The future activities for the site are discussed below.

### 11.2 Future Activities

Section 10 of this document has identified several data needs concerning the presence and extent of hazardous materials at the Lyman Street Parking Lot/USEPA Area 5a. The separately bound MCP Phase II SOW/RFI Proposal for this site describes activities intended to address those data needs. Following MDEP/USEPA approval of this MCP Phase I Report/CAS and the separately bound MCP Phase II SOW/RFI Proposal, the activities described in the latter document will be performed. After the performance of these activities, all data will be

compiled, presented, and interpreted in a MCP Interim Phase II Report/RFI Report, which will be submitted for MDEP/USEPA review and approval. At the same time, a Risk Assessment Scope of Work/Supplemental HEA Proposal (which will be more detailed than the Preliminary HEA Proposal being submitted concurrently with this document) will be submitted for MDEP/USEPA review and approval. If, upon review of the Interim Phase II/RFI Report, it should be determined that supplemental field investigations are necessary, these investigations will be proposed and (after approval) carried out, and a Supplemental MCP Phase II Report/RFI Report will be submitted for review prior to performance of the risk assessment. After performance of the risk assessment activities, the MCP Final Phase II Report (including the risk assessment) and the Health and Environmental Assessment Report will be submitted, together with a Media Protection Standards Proposal for this site.



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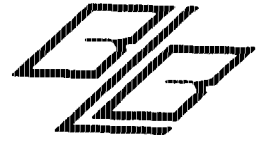
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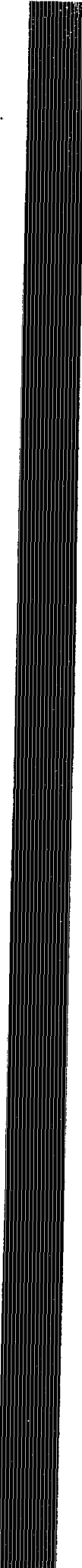


TABLE 1-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5

SUMMARY OF STUDIES CONDUCTED RELATED TO THE LYMAN STREET PARKING LOT SITE: 1986 - 1993

Author	Title and Date of Study/Report
G&M	Soil and Groundwater Quality Investigation at the General Electric Lyman Street Site Pittsfield, Massachusetts, August 1986.
G&M	Environmental Assessment of General Electric Property in the Vicinity of Lyman Street Pittsfield, Massachusetts, November 1986.
G&M	Lyman Street - Third Assessment, May 1987.
G&M	Placement of Well Points Along the Banks of the Housatonic River, October 1988.
G&M	Hydrogeological Investigation of Old Oxbow Areas, August 1989.
B&B	Housatonic River MCP Phase II Scope of Work, June 1990.
B&B	Housatonic River MCP Phase II Supplemental Data Summary, June 1990.
G&M	Short Term Measures Proposal, Housatonic River Oxbow Area D, December 1990.
G&M	Installation of Recovery Well, Observation Wells, and Performance of Aquifer Pump Test, Housatonic River, Oxbow Area D, Pittsfield, Massachusetts, January 1991.
G&M	Amended Report on the Housatonic River Oxbow Area D Soil Boring, Well Installation, and Groundwater Sampling Program, March 1991.
G&M	Aquifer Test Results and Short Term Measures Design, Housatonic River, Oxbow Area D, May 1991.
Golder	Work Plan for Short-Term Measures and Additional Hydrogeologic Assessment, Oxbow Area D, Lyman Street, Pittsfield, Massachusetts, August 1991.
Golder	Additional Hydrogeologic Assessment and Short-Term Measures Evaluation and Proposal, Oxbow Area D, Lyman Street, Pittsfield, Massachusetts, January 1992.
B&B	MCP Phase I Report for Lyman Street Parking Lot (Oxbow Area D), March 1992.
G&M	Lyman Street Soil Boring and Recovery Well Installation, November 1992.
B&B	Lyman Street Parking Lot (Oxbow Area D) MCP Phase II Scope of Work, November 1992.
Golder	Effectiveness Evaluation of Short-Term Measures, Lyman Street Site (Oxbow Area D), August 1993.

Abbreviations:

G&M = Geraghty & Miller, Inc., Plainview, New York.

B&B = Blasland & Bouck Engineers, P.C., Syracuse, New York.

Golder = Golder Associates, Inc., Mt. Laurel, New Jersey.

TABLE 2-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT AND  
CAS FOR USEPA AREA 5ASUMMARY OF HAZARDOUS CONSTITUENTS DETECTED TO DATE

Analyte	Detected Concentration Range (ppm)		
	Soil	Groundwater	Oil
POLYCHLORINATED BIPHENYLS (PCBs)	0.09 - 290,000	0.0018 - 2.1	98,000 - 660,000
<b>PESTICIDE/HERBICIDE COMPOUNDS</b>			
1. 4,4'-DDE	ND - 160F	ND	NA
2. aldrin	ND - 57F	ND - 0.0013D	NA
3. beta-BHC	ND - 3.0	ND - 0.0004	NA
4. endosulfan I	ND - 55F	ND - 0.011D	NA
<b>VOLATILE ORGANIC COMPOUNDS</b>			
1. benzene	ND - 0.019	ND - 0.34	ND
2. ethylbenzene	ND - 28	ND - 0.11	ND - 6.3
3. methylene chloride	ND - 0.034	ND - 1.2D	ND
4. chlorobenzene	ND - 45E	ND - 14	ND - 23
5. xylenes (total)	ND - 7.7	ND - 7.8	ND
6. toluene	ND - 0.26E	ND	ND - 2.7
7. carbon tetrachloride	ND - 4.6D	ND - 4.0	ND - 3.9
8. chloroform	ND - 0.026	ND - 0.18	ND
9. trichloroethene	ND - 3.5	ND - 0.33	ND - 3.7
10. 4-methyl-2-pentanone	ND - 0.032	ND	ND
11. tetrachloroethene	ND - 0.2	ND - 0.018	ND
12. 1,1,2,2-tetrachloroethane	ND - 0.005	ND	ND
13. 2-chloroethyl vinyl ether	ND - 1.5	ND	ND
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			
1. acenaphthene	ND - 47D	ND 1.2D	ND
2. benzo(a)anthracene	ND - 17	ND - 0.28	ND - 2,900
3. benzo(a)pyrene	ND - 13	ND - 0.11	ND - 2,700
4. benzo(b+k)fluoranthene	ND - 15.5	ND - 0.22	ND - 3,100
5. benzo(g,h,i)perylene	ND - 4.7	ND - 0.085	ND - 1,500
6. chrysene	ND - 15	ND - 0.16	ND - 2,600
7. fluoranthene	ND - 32D	ND - 0.42	ND - 5,500
8. fluorene	ND - 30D	ND - 0.64	ND - 4,500
9. indeno(1,2,3-cd)pyrene	ND - 3.9	ND - 0.062	ND
10. phenanthrene	ND - 110D	ND - 2.3D	ND - 17,000
11. pyrene	ND - 80D	ND - 0.82D	ND - 9,100
12. anthracene	ND - 33	ND - 0.3	ND - 3,400

Table 2-1  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT AND  
CAS FOR USEPA AREA 5A

SUMMARY OF HAZARDOUS CONSTITUENTS DETECTED TO DATE

Analyte	Detected Concentration Range (ppm)		
	Soil	Groundwater	Oil
<b>SEMIVOLATILE ORGANIC COMPOUNDS (cont'd)</b>			
13. bis(2-ethylhexyl)phthalate	ND - 1.8	ND	ND
14. naphthalene	ND - 91D	ND - 9.5D	ND - 47,000
15. acenaphthylene	ND - 6.4	ND - 0.16	ND - 1,200
16. 2-methylnaphthalene	ND - 35D	ND - 0.63D	ND - 14,000
17. 1-methylnaphthalene	ND	ND	ND - 18,000
18. 1,2-dichlorobenzene	ND	ND - 0.047	ND
19. 1,3-dichlorobenzene	ND - 32	ND - 0.24	ND - 380
20. 1,4-dichlorobenzene	ND - 220	ND - 1.5D	ND - 1,700
21. 1,2,3-trichlorobenzene	ND	ND	ND - 1,400
22. 1,2,4-trichlorobenzene	ND - 89E	ND - 0.58	ND - 8,600
23. benzylbutylphthalate	ND	ND - 0.48	ND
<b>METALS</b>			
1. aluminum	ND	0.544 - 2.79	NA
2. barium	6.0 - 232	ND - 2.0	NA
3. chromium	2.0 - 56	ND - 0.03	NA
4. lead	9.0 - 803	ND - 0.35	NA
5. silver	ND - 1.8	ND	NA
6. mercury	ND - 0.3	ND - 0.00023	NA
7. copper	17 - 1,050	ND - 0.0273	NA
8. nickel	2.0 - 62	ND - 0.03	NA
9. zinc	23.5 - 768	0.029 - 0.298	NA
10. cadmium	ND - 1.7	ND	NA
11. calcium	ND	66.6 - 189	NA
12. iron	ND	1.33 - 10.5	NA
13. manganese	ND	1.16 - 1.8	NA
14. sodium	ND	27.2 - 84.5	NA
15. magnesium	ND	23.1 - 60.3	NA
16. cobalt	3.0 - 9.0	ND	NA
17. vanadium	1.0 - 9.0	ND - 0.02	NA
18. beryllium	ND - 0.2	ND - 0.002	NA
19. thallium	ND - 22	ND	NA

Table 2-1  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT AND  
CAS FOR USEPA AREA 5A

SUMMARY OF HAZARDOUS CONSTITUENTS DETECTED TO DATE

Analyte	Detected Concentration Range (ppm)		
	Soil	Groundwater	Oil
<b>METALS (cont'd)</b>			
20. tin	ND - 50	ND	NA
<b>SULFIDE</b>	ND - 180	ND - 4.4	NA
<b>POLYCHLORINATED DIBENZO-P-DIOXIN (PCDD)/POLYCHLORINATED DIBENZOFURAN (PCDF) COMPOUNDS</b>			
1. TCDF	ND - 0.321	ND - 0.00141 (I)	NA
2. PeCDF	ND - 0.176	ND - 0.00167 (I)	NA
3. HxCDF	ND - 0.0064	ND - 0.00271 (I)	NA
4. HxCDD	ND	ND - 0.0000033 (I)	NA

Notes:

1. Only detected constituents are shown. Estimated concentrations are not summarized.
2. Soil concentrations are reported on a dry-weight basis.
3. ND - Not detected.
4. NA - Not analyzed.
5. D - Analysis was performed at a secondary dilution factor.
6. F - Constituent peak was offscale, therefore it was out of the linear range of the instrument.
7. E - The compound concentrations exceeded the calibration range of the GC/MS instrument for that specific analysis.
8. (I) - Possible interferences by polychlorinated diphenylethers were noted by the analytical laboratory.
9. The soil boring data used in the determination of the above ranges included LS-2, LS-4, LS-Soil, LS-7, LS-8, LS-9, LS-10, LS-11, LS-12, and LS-13.
10. The monitoring well data used in the determination of the above ranges included LS-2, LS-4, LS-10, LS-11, LS-12, and LS-13.
11. The oil sample data used in the determination of the above ranges primarily included information presented by Golder, January 1992 - Table 13.



TABLE 3-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF PROPERTY OWNERS ADJACENT TO THE LYMAN STREET PARKING LOT SITE

Property Identification	Owner/Address
19-8-2	Western Massachusetts Electric Company * PO Box 2010 West Springfield, MA 01101
19-8-7	R. James Bridges PO Box 684 Pittsfield, MA 01201
19-8-8	Nicholas Real Estate Trust Elizabeth J. Quigley TR. 500 Main Street Great Barrington, MA 01230
19-8-9	Frank Maffuccio 762 East Street Pittsfield, MA 01201
19-8-10	July Development Associates Nominee Trust C. Jeffery Cook TR. 66 West Street Pittsfield, MA 01201
19-8-12	Johnson Family Nominee Realty Trust Gary A. Johnson TR. 694 East Street Pittsfield, MA 01201
19-4-23	Philip E. Massery 10 Lyman Street Pittsfield, MA 01201

Notes:

1. Property ownership information was obtained from the City of Pittsfield Tax Assessors' office and is current through December 31, 1991.
2. Refer to Figure 3-1 for illustration of parcel locations.
3. \* - Although City of Pittsfield tax information presents parcel 19-8-2 as being owned by Western Massachusetts Electric Company, other available information indicates this parcel to be owned by Northeast Utilities Service Co., 33 West Street, Pittsfield, MA 01201.

TABLE 3-2

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT AND  
CAS FOR USEPA AREA 5A

SUMMARY OF HISTORICAL AERIAL PHOTOGRAPHS TAKEN WHICH  
DEPICT THE LYMAN STREET PARKING LOT

Date	Photographer	Approximate Scale of Photos
July 13, 1942 <sup>*</sup>	National Archives, Washington, D.C.	1:16,300
November 24, 1956 <sup>*</sup>	Col-East, Inc., North Adams, MA	1:9,600
October 3, 1957	Col-East, Inc., North Adams, MA	1:25,000
July 3, 1960	Col-East, Inc., North Adams, MA	1:2,400
April 14, 1969	Col-East, Inc., North Adams, MA	1:4,800
July 1, 1974	Col-East, Inc., North Adams, MA	1:2,400
March 21, 1979	Col-East, Inc., North Adams, MA	1:6,000
November 3, 1981 (portion of site only)	Col-East, Inc., North Adams, MA	1:2,400
April 13, 1983	Quinn Associates, Inc., Horsham, PA	1:12,000
November 1, 1987	Col-East, Inc., North Adams, MA	1:19,200
April 23, 1990 <sup>*</sup>	Lockwood Mapping, Inc., Rochester, NY	1:6,000
August 8, 1990	Col-East, Inc., North Adams, MA	1:6,000

Note:

1. \* = Photographs reproduced - see Figure 3-2.

TABLE 4-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF PRE-MCP GROUNDWATER ANALYTICAL DATA - FORMER OXBOW AREA D  
(Results are Presented in Parts Per Million, ppm)

WELL ID:	LS-2	LS-4
Polychlorinated Biphenyls (PCBs)	0.8 (filtered)	0.018
Volatile Organic Compounds (ppm)		
Benzene	0.34	ND(0.5)
Carbon Tetrachloride	ND(0.25)	4.0
Chlorobenzene	2.5	0.67
Chloroform	ND(0.25)	0.17J
Toluene	0.057J	0.11J
Trichloroethene	ND(0.25)	0.49J
Base/Neutral Organic Compounds		
Acenaphthene	1.2D	0.085
Acenaphthylene	0.075	0.16
Anthracene	0.3	0.27
Benzo(a)anthracene	0.28	0.25
Benzo(b)fluoranthene	0.14	0.11
Benzo(k)fluoranthene	ND(0.027)	0.11
Benzo(a)pyrene	0.11	0.11
Benzo(g,h,i)perylene	ND(0.027)	0.085
Benzyl butyl phthalate	0.48	ND(0.024)
Bis(2-ethylhexyl)phthalate	0.021J	ND(0.024)
Chrysene	0.12	0.16
1,2-Dichlorobenzene	0.047	0.009J
1,3-Dichlorobenzene	0.24	0.013J
1,4-Dichlorobenzene	1.5D	0.093
2,4-Dinitrotoluene	ND(0.027)	0.022J
Fluoranthene	0.19	0.42
Fluorene	0.64	0.36
Indeno(1,2,3-cd)pyrene	ND(0.027)	0.062
Naphthalene	2.4D	9.5D
Phenathrene	2.3D	1.3D
Pyrene	0.82D	0.63
1,2,4-Trichlorobenzene	0.58	0.51

## Notes:

1. Samples were collected by Geraghty & Miller, Inc., during August 1989 and submitted to IT Analytical Services for analysis of PCBs and priority pollutant volatile and semivolatile constituents.
2. Only detected constituents are shown.
3. The only PCBs detected were identified as Aroclor 1254; however, both samples exhibited alteration of standard Aroclor patterns.
4. ND(0.5) - compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. J - indicates an estimated value less than the CPL-required quantitation limit.
6. D - Analysis was performed at a secondary dilution factor.

TABLE 4-2

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF PRE-MCP SOIL ANALYTICAL DATA - FORMER OXBOW AREA D  
(Results are Presented in Parts Per Million, ppm)

BORING ID:	LS-2					LS-4			
	(0-4)	(4-8)	(4-8)PE	(8-12)	(18-22)	(0-6)	(6-12)	(12-18)	(18-22)
<b>Polychlorinated Biphenyls (PCBs)</b>									
Aroclor 1254	5.3	7,300	NA	25,000	19	17	1,100	830	190
Aroclor 1260	0.73	ND(300)	NA	ND(1,400)	ND(0.75)	ND(1)	ND(80)	ND(50)	ND(5)
Total PCBs	6.0	7,300	NA	25,000	19	17	1,100	830	190
<b>Volatile Organic Compounds</b>									
Benzene	ND(0.005)	ND(0.005)	ND(0.005)	0.019	ND(0.005)	ND(0.005)	0.004J	ND(0.62)	ND(0.025)
Carbon Tetrachloride	ND(0.005)	ND(0.005)	ND(0.005)	4.6D	ND(0.005)	ND(0.005)	ND(0.005)	1.0	0.045
Chlorobenzene	ND(0.005)	ND(0.005)	0.002J	34D	0.031	ND(0.005)	12D	5.3	0.011J
Chloroform	ND(0.005)	ND(0.005)	ND(0.005)	0.026	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.62)	ND(0.025)
Ethylbenzene	ND(0.005)	ND(0.005)	ND(0.005)	0.23E	0.005J	ND(0.005)	ND(0.005)	ND(0.62)	ND(0.025)
Methylene Chloride	0.009	0.008	0.006	0.010	0.004J	0.009	0.014	0.33J	0.034
Tetrachloroethene	ND(0.005)	0.002J	0.002J	0.004J	ND(0.005)	ND(0.005)	0.002J	ND(0.62)	ND(0.025)
Toluene	0.004J	0.005	0.004J	0.26E	0.002J	0.001J	0.033	0.26J	0.008J
Trichloroethene	0.005	0.013	0.014	0.38E	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.62)	ND(0.025)
<b>Base/Neutral Organic Compounds</b>									
Acenaphthene	ND(7.8)	ND(2.0)	NA	5.8J	ND(0.97)	ND(4.0)	1.1J	1.3J	0.2J
Acenaphthylene	6.1J	0.61J	NA	ND(16)	ND(0.97)	6.4	4.6	1.7J	0.36J
Anthracene	5.3J	0.49J	NA	5.8J	ND(0.97)	5.2	5.3	3.4	0.69J

(See notes on Page 3)

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TABLE 4-2  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF PRE-MCP SOIL ANALYTICAL DATA - FORMER OXBOW AREA D  
(Results are presented in parts per million, ppm)

BORING ID:	LS-2					LS-4			
	(0-4)	(4-8)	(4-8)RE	(8-12)	(18-22)	(0-5)	(6-12)	(12-18)	(18-22)
Base/Neutral Organic Compounds (Cont'd)									
Benzo(a)anthracene	8.2	1.2J	NA	ND(16)	ND(0.97)	9.0	10	3.8	0.66J
Benzo(b)fluoranthene	5.3J	0.54J	NA	ND(16)	ND(0.97)	4.9	5.8	1.9J	0.32J
Benzo(k)fluoranthene	4.4J	0.48J	NA	ND(16)	ND(0.97)	5.6	4.3	1.6J	0.36J
Benzo(a)pyrene	5.0J	0.43J	NA	ND(16)	ND(0.97)	5.0	4.0	2.4J	0.59J
Benzo(g,h,i)perylene	3.2J	0.33J	NA	ND(16)	ND(0.97)	4.3	2.9J	1.2J	0.26J
Bis(2-ethylhexyl)phthalate	ND(7.8)	0.38J	NA	ND(16)	0.31J	ND(4.0)	0.65J	0.43J	0.12J
Chrysene	7.4J	0.85J	NA	4.6J	ND(0.97)	7.3	6.8	3.0	ND(0.98)
Dibenzo(a,h)anthracene	1.4J	ND(2.0)	NA	ND(16)	ND(0.97)	ND(4.0)	ND(3.9)	ND(2.9)	ND(0.98)
Di-n-butylphthalate	ND(7.8)	0.66J	NA	ND(16)	ND(0.97)	ND(4.0)	ND(3.9)	ND(2.9)	ND(0.98)
1,2-Dichlorobenzene	ND(7.8)	ND(2.0)	NA	3.7J	ND(0.97)	ND(4.0)	ND(3.9)	ND(2.9)	ND(0.98)
1,3-Dichlorobenzene	ND(7.8)	ND(2.0)	NA	32	ND(0.97)	ND(4.0)	0.76J	ND(2.9)	ND(0.98)
1,4-Dichlorobenzene	ND(7.8)	ND(2.0)	NA	220	ND(0.97)	ND(4.0)	4.0	1.4J	ND(0.98)
Fluoranthene	17	ND(2.0)	NA	ND(16)	ND(0.97)	20	18	5.7	1.1
Fluorene	2.5J	0.53J	NA	3.8J	ND(0.97)	2.5J	3.1J	3.2	0.84J
Indeno(1,2,3-cd)pyrene	2.6J	0.28J	NA	ND(16)	ND(0.97)	3.3J	2.3J	0.96J	0.19J
Naphthalene	ND(7.8)	ND(2.0)	NA	21	ND(0.97)	ND(4.0)	0.66J	26	5.9

(See notes on Page 3)

TABLE 4-2  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF PRE-MCP SOIL ANALYTICAL DATA - FORMER OXBOW AREA D  
(Results are presented in parts per million, ppm)

BORING ID:	LS-2					LS-4			
SAMPLE DEPTH (FT.):	(0-4)	(4-8)	(4-8)RE	(8-12)	(18-22)	(0-6)	(6-12)	(12-18)	(18-22)
<u>Base/Neutral Organic Compounds (Cont'd)</u>									
Nitrobenzene	ND(7.8)	ND(2.0)	NA	2.1J	ND(0.97)	ND(4.0)	ND(3.9)	ND(2.9)	ND(0.98)
Phenanthrene	21	2.8	NA	20	ND(0.97)	23	24	13	3.5
Pyrene	18	ND(2.0)	NA	23	ND(0.97)	18	15	7.6	1.9
1,2,4-Trichlorobenzene	ND(7.8)	0.33J	NA	300D	ND(0.97)	ND(4.0)	ND(3.9)	1.7J	0.92J

Notes:

1. Samples were collected by Geraghty & Miller, Inc. during August 1989 and submitted to IT Analytical Services for analysis of PCBs and priority pollutant volatile and semivolatile constituents.
2. Only detected constituents are shown.
3. NA - Not analyzed.
4. ND - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. RE - Sample was re-extracted and re-analyzed.
6. J - Indicates an estimated value less than the CLP-required quantitation limit.
7. D - Analysis was performed at a secondary dilution factor.
8. E - Compound concentration exceeded calibration range of the GC/MS instrument for that specific analysis.

TABLE 4-3

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS PCB DATA  
(Results Are Presented in Dry-Weight Parts Per Million, ppm)

Boring Identification	Depth (Feet)	Aroclor 1254	Aroclor 1260	Total Aroclors
LS-Soil	Surface	16	7.9	23.9
LS-7	0-2	130	ND (9)	130
LS-7	2-4	1.5	ND (0.2)	1.5
LS-7	4-6	4.7	ND (0.7)	4.7
LS-7	6-8	15	ND (2)	15
LS-7	8-10	21	ND (4)	21
LS-7	10-12	13	ND (2)	13
LS-7	12-14	0.09	ND (0.05)	0.09
LS-7	14-16	0.27	ND (0.05)	0.27
LS-7	16-18	1.1	ND (0.2)	1.1
LS-8	0-2	5.6	ND (0.7)	5.6
LS-8	2-4	130	ND (10)	130
LS-8	4-6	8.1	ND (0.4)	8.1
LS-8	6-8	1.9	6.2	8.1
LS-8	8-10	2,900	ND (200)	2,900
LS-8	10-12	5,800	ND (200)	5,800
LS-8	12-14	8,300	ND (300)	8,300
LS-8	14-16	4,800	ND (200)	4,800
LS-8	16-18	3,900	ND (200)	3,900
LS-8	18-20	2,500	ND (200)	2,500
LS-8	20-22	990	ND (80)	990
LS-8	22-24	130	ND (7)	130

TABLE 4-3  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS PCB DATA  
(Results Are Presented in Dry-Weight Parts Per Million, ppm)

Boring Identification	Depth (Feet)	Aroclor 1254	Aroclor 1260	Total Aroclors
S-9	0-2	7.2	8.5	16
LS-9	2-4	1.5	ND (0.08)	1.5
LS-9	4-6	1.8	ND (0.08)	1.8
LS-9	6-8	1.6	ND (0.09)	1.6
LS-9	8-10	2.3	ND (0.2)	2.3
LS-9	10-12	2.0	ND (0.1)	2.0
LS-9	12-14	2.1	ND (0.1)	2.1
LS-9	14-16	1.8 D	ND (1.1)	1.8 D
LS-9	16-18	1.5	ND (0.07)	1.5
LS-9	18-20	0.61	ND (0.05)	0.61
LS-10	0-2	0.51	ND (0.05)	0.51
LS-10	2-4	8.9	ND (0.6)	8.9
LS-10	4-6	0.45	ND (0.05)	0.45
LS-10	6-8	3.1	ND (0.2)	3.1
LS-10	8-10	0.1	ND (0.05)	0.1
LS-10	10-12	0.14J	ND (0.18)	0.14J
LS-10	12-14	1.4	ND (0.07)	1.4
LS-10	14-16	0.73	ND (0.05)	0.73
LS-10	16-18	4.4	ND (0.2)	4.4
LS-10	18-20	0.28	ND (0.05)	0.28
LS-10	20-22	0.31	ND (0.05)	0.31
LS-10	22-24	0.46	ND (0.05)	0.46



TABLE 4-3  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS PCB DATA  
(Results Are Presented in Dry-Weight Parts Per Million, ppm)

Boring Identification	Depth (Feet)	Aroclor 1254	Aroclor 1260	Total Aroclors
LS-11	0-2	24	ND (1)	24
LS-11	2-4	1,300	ND (90)	1,300
LS-11	4-6	290,000	ND (10,000)	290,000
LS-11	6-8	2,000	ND (80)	2,000
LS-11	8-10	22,000	ND (800)	22,000
LS-11	10-12	11,000 D	ND (4,800)	11,000 D
LS-11	12-14	640	ND (20)	640
LS-11	14-16	4,700	ND (200)	4,700
LS-11	16-18	440	ND (20)	440
LS-11	18-20	9.3	ND (0.8)	9.3
LS-11	20-22	14	ND (0.8)	14
LS-11	22-24	6.1	ND (0.4)	6.1
LS-12	2-4	0.84	1.4	2.2
LS-12	6-8	3.9	1.0	4.9
LS-12	10-12	0.65	0.31	0.96
LS-12	14-16	0.21	0.08	0.29
LS-12	18-20	310	ND (20)	310
LS-12	24-26	23	ND (0.7)	23
LS-13	2-4	1,100	1,200	2,300
LS-13	6-8	580	ND (100)	580
LS-13	10-12	330	84	410
LS-13	14-16	3,700	ND (200)	3,700

(See notes on Page 4)

TABLE 4-3  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS PCB DATA  
(Results Are Presented in Dry-Weight Parts Per Million, ppm)

Boring Identification	Depth (Feet)	Aroclor 1254	Aroclor 1260	Total Aroclors
LS-13	18-20	560	ND (20)	560
LS-13	22-24	70	ND (4)	70

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for PCB analysis.
2. ND (2) - Compound was analyzed for, but not detected. The number in parenthesis is the detection limit.
3. J - Indicates an estimated value less than the CLP-required quantitation limit.
4. D - Analysis was performed at a secondary dilution factor.

TABLE 4-4

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP SOILS APPENDIX IX +3 VOLATILES DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Boring Identification: Depth (feet):	LS-Soil (Surface)	LS-7 (14-16)	LS-8 (16-18)	LS-8* (20-22)	LS-8* (22-24)	LS-9 (14-16)	LS-9RE (14-16)	LS-9* (16-18)	LS-10 (10-12)
Acetone	ND(0.01)	0.01J	ND (1.5)	NA	NA	0.79J	ND(1.8)	NA	0.01BJ
Acetonitrile	ND(0.1)	0.044J	ND(15)	NA	NA	ND(18)	ND(18)	NA	ND(0.11)
Benzene	ND(0.005)	ND(0.007)	ND(0.74)	ND(2.5)	ND(0.005)	ND(0.74)	ND(0.74)	0.024J	ND(0.005)
Carbon Tetrachloride	ND(0.005)	ND(0.007)	ND(0.74)	ND(2.5)	ND(0.005)	ND(0.74)	ND(0.74)	ND(0.025)	ND(0.005)
Chlorobenzene	0.021	ND(0.007)	8.6	3.3	ND(0.005)	1.0	1.3	0.19	ND(0.005)
Chloroform	ND(0.005)	0.001J	ND(0.74)	ND(2.5)	ND(0.005)	0.26J	ND(0.74)	ND(0.025)	0.001BJ
Ethylbenzene	ND(0.005)	ND(0.007)	0.44J	28	0.08	2.4	3.9	0.63	ND(0.005)
4-Methyl-2-Pentanone	ND(0.01)	0.032	ND(1.5)	NA	NA	ND(1.8)	ND(1.8)	NA	ND(0.011)
Methylene Chloride	0.009	0.001J	ND(0.74)	0.88J	0.002J	0.42BJ	0.2J	ND(0.025)	0.004BJ
Tetrachloroethene	ND(0.005)	ND(0.007)	ND(0.74)	ND(2.5)	ND(0.005)	ND(0.74)	ND(0.74)	ND(0.025)	ND(0.005)
Toluene	ND(0.005)	0.005J	ND(0.74)	1.1J	0.003J	ND(0.74)	ND(0.74)	ND(0.025)	ND(0.005)
Trichloroethene	ND(0.005)	ND(0.007)	ND(0.74)	ND(2.5)	ND(0.005)	ND(0.74)	ND(0.74)	ND(0.025)	ND(0.005)
Xylenes (total)	ND(0.005)	ND(0.007)	7.7	NA	NA	2.2	3.1	NA	ND(0.005)
2-Chloroethyl vinyl ether	ND(0.01)	ND(0.013)	1.5	ND(5)	ND(0.01)	1.5	1.5	ND(0.05)	ND(0.011)
1,1,2,2-Tetrachloroethane	0.005	ND(0.007)	ND(0.74)	ND(2.5)	ND(0.005)	ND(0.74)	ND(0.74)	ND(0.025)	ND(0.005)

(See notes on Page 3)

1 of 3

TABLE 4-4  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS APPENDIX IX+3 VOLATILES DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Boring Identification: Depth (feet):	LS-11* (8-10)	LS-11 (10-12)	LS-11DL (10-12)	LS-11* (12-14)	LS-11* (14-16)	LS-11* (16-18)	LS-12* (20-22)	LS-12DL* (20-22)
Acetone	NA	ND(1.9)	ND(19)	NA	NA	NA	NA	NA
Acetonitrile	NA	ND(19)	ND(190)	NA	NA	NA	NA	NA
Benzene	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	ND(0.025)	ND(0.625)
Carbon Tetrachloride	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	0.31	ND(0.625)
Chlorobenzene	23	45E	37D	13	11	0.051	ND(0.025)	ND(0.625)
Chloroform	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	0.025BJ	ND(0.625)
Ethylbenzene	ND(0.63)	ND(0.95)	ND(9.5)	0.23J	0.14J	ND(0.005)	ND(0.25)	ND(0.625)
4-Methyl-2-Pentanone	NA	ND(1.9)	ND(19)	NA	NA	NA	NA	NA
Methylene Chloride	ND(0.63)	0.25J	ND(9.5)	0.23J	0.30J	0.004J	0.016BJ	ND(1.25)
Tetrachloroethene	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	0.20	0.16J
Toluene	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	0.018J	ND(0.625)
Trichloroethene	2.2	0.78J	ND(9.5)	0.61J	3.5	0.009	0.40	ND(0.625)
Xylenes (total)	NA	0.91J	ND(9.5)	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	ND(1.3)	ND(1.9)	ND(19)	ND(1.3)	ND(1.3)	ND(0.01)	ND(0.05)	ND(1.25)
1,1,2,2-Tetrachloroethane	ND(0.63)	ND(0.95)	ND(9.5)	ND(0.63)	ND(0.63)	ND(0.005)	ND(0.025)	ND(0.625)

(See notes on Page 3)

TABLE 4-4  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS APPENDIX IX +3 VOLATILES DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 volatile constituents, unless otherwise indicated.
2. Only detected constituents are shown.
3. \* - Samples were analyzed for priority pollutant volatile constituents.
4. RE - Indicates re-extraction of sample.
5. DL or D - Analysis was performed at a secondary dilution factor.
6. ND(0.01) - Sample was analyzed for, but not detected. The number in parentheses is the detection limit.
7. B - Analyte was also detected in the associated blank.
8. J - Indicates an estimated value less than the CLP-required quantitation limit.
9. E - The compound concentration exceeded the calibration range of the GC/MS instrument for that specific analysis.
10. NA - Not analyzed.

TABLE 4-5

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
ANDCAS FOR USEPA AREA 5ASUMMARY OF MCP SOILS APPENDIX IX + 3 SEMIVOLATILES DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Sample Identification: Depth (feet):	LS-Soil (Surface)	LS-7 (14-16)	LS-8 (16-18)	LS-8 DL (16-18)	LS-9 (14-16)	LS-9 DL (14-16)	LS-10 (10-12)	LS-11 (10-12)
Acenaphthene	0.38J	ND(2.2)	3.7	3.5DJ	45E	47D	ND(1.1)	ND(4.9)
Acenaphthylene	0.26J	0.35J	0.69J	0.82	5.7	7.1DJ	ND(1.1)	ND(4.9)
Anthracene	0.31J	0.25J	ND(1.9)	ND(5.8)	33	32D	ND(1.1)	ND(4.9)
Benzo(a)Anthracene	0.43J	0.52J	ND(1.9)	ND(5.8)	17	21DJ	ND(1.1)	ND(4.9)
Benzo(a)Pyrene	0.41J	0.42J	1.3J	1.1DJ	13	15DJ	ND(1.1)	ND(4.9)
Benzo(b)Fluoranthene	0.51J	0.44J	1.1J	1.0DJ	5.5	7.5DJ	ND(1.1)	1.0J
Benzo(k)Fluoranthene	0.63J	0.53J	1.1J	1.2DJ	10	8.8DJ	ND(1.1)	0.62J
Benzo(ghi)Perylene	ND(1.2)	ND(2.2)	ND(1.9)	ND(5.8)	4.7	6.9DJ	ND(1.1)	ND(4.9)
Bis (2-ethylhexyl) phthalate	1.8	0.76J	1.8	1.7DJ	1.0J	ND(23)	0.42J	ND(4.9)
Chrysene	0.58J	0.60J	2.4	2.2DJ	15	20DJ	ND(1.1)	ND(4.9)
Dibenzofuran	ND(1.2)	ND(2.2)	0.77J	0.83DJ	1.9J	2.5DJ	ND(1.1)	ND(4.9)
Di-n-butyl Phthalate	ND(1.2)	ND(2.2)	ND(1.9)	ND(5.8)	ND(2.3)	ND(23)	0.13J	ND(4.9)
1,2-Dichlorobenzene	ND(1.2)	ND(2.2)	ND(1.9)	ND(5.8)	ND(2.3)	ND(23)	ND(1.1)	1.4J
1,3-Dichlorobenzene	ND(1.2)	ND(2.2)	2.8	2.9DJ	0.29J	ND(23)	ND(1.1)	ND(4.9)
1,4-Dichlorobenzene	0.27J	ND(2.2)	2.2	ND(5.8)	ND(2.3)	ND(23)	ND(1.1)	1.3J
Fluorene	0.38J	ND(2.2)	2.5	2.9DJ	24	30D	ND(1.1)	ND(4.9)
Flouranthene	0.99J	0.93J	ND(1.9)	ND(5.8)	31	32D	ND(1.1)	ND(4.9)

TABLE 4-5  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP SOILS APPENDIX IX +3 SEMIVOLATILES DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Sample Identification: Depth (feet):	LS-Soil (Surface)	LS-7 (14-16)	LS-8 (16-18)	LS-8 DL (16-18)	LS-9 (14-16)	LS-9 DL (14-16)	LS-10 (10-12)	LS-11 (10-12)
Indeno (1,2,3-cd) Pyrene	ND(1.2)	0.26J	0.46J	ND(5.8)	3.9	5.1DJ	ND(1.1)	ND(4.9)
2-Methylnaphthalene	ND(1.2)	ND(2.2)	8.6	9.6D	32	35D	ND(1.1)	1.0J
N-Nitrosodiphenylamine	ND(1.2)	ND(2.2)	ND(1.9)	ND(5.8)	1.9J	2.4DJ	ND(1.1)	ND(4.9)
Naphthalene	ND(1.2)	ND(2.2)	3.8	3.7DJ	73E	91D	ND(1.1)	0.93J
Phenanthrene	0.85J	0.94J	15	11D	89E	110D	ND(1.1)	ND(4.9)
Pyrene	1.6	1.4J	ND(1.9)	ND(5.8)	62E	80D	ND(1.1)	ND(4.9)
1,2,4,5-Tetrachlorobenzene	ND(1.2)	ND(2.2)	ND(1.9)	ND(5.8)	ND(2.3)	ND(23)	ND(1.1)	1.7J
1,2,4-Trichlorobenzene	ND(1.2)	ND(2.2)	0.43J	ND(5.8)	ND(2.3)	ND(23)	ND(1.1)	89E

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX +3 semivolatile constituents.
2. Only detected constituents are shown.
3. DL or D - Analysis was performed at a secondary dilution factor.
4. ND(2.2) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. J - Indicates an estimated value less than the CLP-required quantitation limit.
6. E - The compound concentration exceeded the calibration range of the GC/MS instrument for that specific analysis.
7. N - Nitrosodiphenylamine was detected as diphenylamine.

TABLE 4-6

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP SOIL APPENDIX IX+3 PESTICIDES/HERBICIDES DATA  
(Results are Presented in Dry-Weight Parts Per Million, ppm)

Sample Identification: Depth (feet):	LS-Soil (Surface)	LS-7DL (14-16)	LS-8 (16-18)	LS-8DL (16-18)	LS-9 (14-16)	LS-9DL (14-16)	LS-10 (10-12)	LS-11 (10-12)	LS-11DL (10-12)
Aldrin	ND(3.0)	0.017D	36F	150DJ	ND(0.011)	ND(0.056)	ND(0.0088)	57F	170DJ
BHC-beta	3.0	ND(0.011)	ND(19)	ND(190)	0.021	0.013DJ	ND(0.0088)	ND(24)	ND(240)
4,4'-DDE	ND(0.4)	ND(0.021)	160F	ND(370)	ND(0.022)	ND(0.11)	ND(0.018)	ND(48)	ND(480)
Endosulfan I	ND(0.4)	ND(0.011)	55F	ND(190)	0.053F	0.059D	ND(0.0088)	ND(24)	ND(240)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 organochlorine and organophosphorus pesticide and herbicide constituents.
2. Only detected constituents are shown.
3. DL or D - Analysis was performed at a secondary dilution factor.
4. ND(3.0) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. J - Indicates an estimated value less than the CLP-required quantitation limit.
6. F - Constituent peak was shown to be offscale, therefore it was out of the linear range of the instrument.



TABLE 4-7

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP SOILS APPENDIX IX +3 PCDD/PCDF DATA  
(Results are Presented in Dry-Weight Parts Per Million, ppm)

Sample Identification: Depth (feet):	LS-SOIL (Surface)	LS-7 (14-16)	LS-8 (16-18)	LS-9 (14-16)	LS-10 (10-12)	LS-11 (10-12)
Total Tetrachlorodibenzofuran	0.001(l)	ND(0.000034)	0.321	ND(0.0004)	ND(0.00039)	0.0087
Total Pentachlorodibenzofuran	0.00083(l)	ND(0.00005)	0.176	ND(0.00028)	ND(0.00024)	0.0062
Total Hexachlorodibenzofuran	0.0006(l)	ND(0.00011)	ND(0.0568)	ND(0.0004)	ND(0.00015)	0.0064

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) constituents.
2. Only detected constituents are shown.
3. (l) - Possible interferences from polychlorinated diphenylethers were noted by the analytical laboratory.
4. ND(0.000034) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.

TABLE 4-8

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP SOILS APPENDIX IX+3 METALS DATA  
(Results are Reported in Parts Per Million, ppm)

Sample Identification: Depth (Feet):	LS-Soil (Surface)	LS-7 (14 - 16)	LS-8 (16-18)	LS-9 (14-16)	LS-10 (10-12)	LS-13 (10-12)
Barium	19.3	42.4	18	8.8	6.0	232
Beryllium	0.2	0.1	ND(0.1)	0.1	ND (0.1)	0.2
Cadmium	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.7
Chromium	7.0	8.0	3.0	12	2.0	58
Cobalt	4.0	6.0	4.0	3.0	5.0	9.0
Copper	17	20	82	17	19	1,050
Lead	19	16	11	14	9.0	803
Mercury	ND(0.1)	ND(0.1)	0.1	0.1	ND(0.1)	0.3
Nickel	7.0	8.0	6.0	2.0	7.0	62
Silver	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.8
Thallium	ND(3)	22	10	ND(3)	ND(3)	ND(3)
Tin	ND(2)	ND(2)	6.0	5.0	3.0	50
Vanadium	6.0	7.0	2.0	2.0	1.0	9.0
Zinc	41	47.8	33.4	34.5	23.5	768
Sulfide	180	130	ND(18)	140	ND(20)	130

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 metals.
2. Only detected constituents are shown.
3. ND(3) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.

TABLE 4-9

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT AND  
CAS FOR USEPA AREA 5A

## MONITORING WELL CONSTRUCTION AND WATER LEVEL SUMMARY

Well ID	Date Completed	Total Depth (feet BGS)	Surface Elevation (feet MSL)	Measuring Point (MSL)	Water Levels (feet MSL)			Screened Interval (feet BGS/MSL)	Unit(s) Screened
					Apr 10-91	Sep 5-91	Nov 21-91		
LS-2	8/23 - 24/89	22.0	983.81	983.32	972.37*	971.26*	971.67*	8-18 / 975.61-995.61	Fill/Upper Sand
LS-4	8/24 - 25/89	22.0	984.86	984.51	972.17*	971.21*	971.89*	9-19 / 975.66-995.66	Fill/Upper Sand
LS-10	9/19/90	24.0	985.38	985.26	NA	973.54	973.91	8-23 / 977.38-992.38	Upper Sand and Silt
LS-11	9/18/90	24.0	983	982.78	972.48	971.38	971.99	9-24 / 974.0-999.0	Fill, Upper Sand, and Silt
LS-12	9/20/90	26.0	982.58	982.43	972.48	971.42	971.97	7-22 / 975.58-990.58	Upper Sand
LS-13	9/21/90	26.0	985.06	984.85	973.7	971.55	973	10-25 / 975.06-990.06	Fill, Upper Sand, and Silt
LS-20	3/1/91	19.0	985.78	985.64	972.6	971.53	972.15	8-18 / 977.78-997.78	Upper Sand
LS-21	3/11/91	18.5	983.94	983.42	972.37	971.07*	971.84*	8-18 / 975.94-995.94	Fill(?), Upper Sand, and Silt
LS-22	10/30/91	28.0	NA	985.2	NA	NA	972.63	22.25-27.25 / NA	Silt
LS-23	10/30/91	16.0	NA	984.38	NA	NA	971.89*	10.1-15.1 / NA	Fill
LS-24	11/1/91	22.0	NA	986.58	NA	NA	NA	10.45-20.45 / NA	Fill
LS-25	11/19/91	43.0	NA	985.75	NA	NA	975.29	35.8-41.8 / NA	Lower Sand and Silt
RW-1	4/5 - 9/90	21.0	984.88	984.82	972.21	971.1*	971.74*	8/18 / 975.88-995.88	Fill, Upper Sand, and Gravel
P-1	8/4/92	9	976.6	976.31	NA	NA	NA	3.5-8.5 / 970.7-985.7	NA
P-2	8/4/92	6.5	974.2	976.2	NA	NA	NA	1.0-6.0 / 973.2-988.2	NA
P-3	8/4/92	11	978.6	980.31	NA	NA	NA	4.5-10.5 / 974.1 - 988.1	NA
P-4	11/17/92	7.3	976.3	977.14	NA	NA	NA	2.7 - 6.9 / 973.6-989.4	NA
P-5	11/17/92	6.8	975.4	980.27	NA	NA	NA	2.1-6.3 / 973.3-989.1	NA
RW-2	11/4-5/92	22	986	985.92	NA	NA	NA	11-21 / 975-985	Fill/Upper Sand Unit

## Notes:

- Information based on Golder (January 1992 and August 1993) and Geraghty & Miller (December 1991).
- BGS = Below ground surface.
- MSL = Mean sea level.
- NA = Not Available.
- \* = Groundwater levels are corrected for the presence of light non-aqueous phased liquids (LNAPLs).

TABLE 4-10

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

LNAPL AND WATER LEVEL DATA - APRIL 10, 1991

Well ID.	Measuring Point Elevation (Feet MSL)	Depth to LNAPL (Feet)	LNAPL Elevation (Feet MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet MSL)	Corrected Groundwater Elevation (Feet MSL)
LS-02	983.32	10.83	972.49	11.33	971.99	972.37
LS-04	984.51	12.24	972.27	12.66	971.85	972.17
LS-11	982.78	NA	NA	10.30	972.48	NA
LS-12	982.43	NA	NA	9.97	972.46	NA
LS-13	984.65	NA	NA	10.95	973.70	NA
LS-20	985.64	NA	NA	13.04	972.60	NA
LS-21	983.42	11.04	972.38	11.10	972.32	972.37
RW-01	984.82	NA	NA	12.61	972.21	NA

Notes:

1. \* - Groundwater Elevation corrected for presence of LNAPL.
2. NA - Not Applicable.
3. MSL - Mean Sea Level.

Reference:

Information was reproduced from Golder, January 1992 - Table 7.

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

## LNAPL, DNAPL, AND WATER LEVEL DATA - SEPTEMBER 5, 1991

Well ID.	Measuring Point Elevation (Feet MSL)	Depth to LNAPL (Feet)	LNAPL Elevation (Feet MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet MSL)	Corrected Groundwater Elevation (Feet MSL)	Depth to DNAPL (Feet)	DNAPL Elevation (Feet MSL)	Comments
LS-02	983.32	11.92	971.40	12.50	970.82	*971.26	NA	NA	Silt at the bottom of the well
LS-04	984.51	13.28	971.23	13.37	971.14	*971.21	16.95	967.56	Sediments at 18.48 feet BGS
LS-10	985.26	NA	NA	11.72	973.54	NA	NA	NA	Probe came out clean
LS-11	982.78	NA	NA	11.4	971.38	NA	NA	NA	Probe clean
LS-12	982.43	NA	NA	11.01	971.42	NA	20.76	961.67	Sediments at 23.34 feet BGS
LS-13	984.65	NA	NA	13.10	971.55	NA	NA	NA	Trace DNAPL on the probe tip
LS-20	985.64	NA	NA	14.11	971.53	NA	NA	NA	Probe muddy, slight oily smell
LS-21	983.42	12.13	971.29	13.24	970.18	*971.07	16.78	966.64	Sediments at 17.63 feet BGS
RW-01	984.82	13.67	971.15	13.86	970.96	*971.10	21.02	963.80	LNAPL and DNAPL present in this well

Notes:

- \* - Groundwater Elevation corrected for presence of LNAPL
- NA - Not applicable
- MSL - Mean Sea Level
- BGS - Below Ground Surface

Reference:

Information was reproduced from Golder, January 1992 - Table 8.

TABLE 4-12

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ALNAPL AND WATER LEVEL DATA - NOVEMBER 21, 1991

Well ID.	Measuring Point Elevation (Feet MSL)	Depth to LNAPL (Feet)	LNAPL Elevation (Feet MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet MSL)	Corrected Groundwater Elevation (Feet MSL)
LS-02	983.32	11.40	971.92	12.41	970.91	971.67
LS-04	984.51	12.69	971.82	13.19	971.32	971.69
LS-10	985.26	NA	NA	11.35	973.91	NA
LS-11	982.78	NA	NA	10.79	971.99	NA
LS-12	982.43	NA	NA	10.46	971.97	NA
LS-13	984.65	NA	NA	11.65	973.00	NA
LS-20	985.64	NA	NA	13.49	972.15	NA
LS-21	983.42	11.70	971.72	12.01	971.41	971.64
LS-22	985.20	NA	NA	12.57	972.63	NA
LS-23	984.38	12.63	971.75	12.89	971.49	971.69
LS-24	986.58	NA	NA	NA	NA	NA
LS-25	985.75	NA	NA	10.46	975.29	NA
RW-01	984.82	13.06	971.76	13.14	971.68	971.74

Notes:

1. \* - Groundwater Elevation corrected for presence of LNAPL.
2. NA - Not Applicable.
3. MSL - Mean Sea Level.

Reference:

Information was reproduced from Golder, January 1992 - Table 9.

TABLE 4-13

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP GROUNDWATER PCB DATA

Well Identification:	Aroclor 1254	Aroclor 1260	Total Aroclors
LS-2	0.90	ND(0.1)	0.90
LS-4	0.009	ND(0.001)	0.009
LS-10	0.0018	ND(0.001)	0.0018
LS-11	0.12D	ND(0.0021)	0.12D
LS-12	1.2D	ND(0.02)	1.2D
LS-13	2.1	ND(0.05)	2.1

Notes:

1. Samples were collected by Geraghty & Miller, Inc. during September and October 1990 and submitted to IT Analytical Services for PCB analysis.
2. ND(0.01) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
3. D - Analysis was performed at a secondary dilution factor.

TABLE 4-14

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP GROUNDWATER APPENDIX IX+3 VOLATILES DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-4DL	LS-10	LS-11	LS-11DL	LS-12*	LS-13*
Benzene	0.27J	0.081	ND(0.5)	ND(0.005)	0.082	0.058J	ND(0.01)	0.03
Carbon Disulfide	ND(1.0)	0.031J	ND(0.5)	ND(0.005)	ND(0.005)	ND(0.1)	ND(0.01)	ND(0.013)
Carbon Tetrachloride	ND(1.0)	1.9	1.7D	ND(0.005)	ND(0.005)	ND(0.1)	0.15	ND(0.013)
Chlorobenzene	14	0.88	1.2D	ND(0.005)	1.6E	2.6	0.035	0.4
Chloroform	ND(1.0)	0.18	0.22DJ	ND(0.005)	ND(0.005)	0.021J	0.038	ND(0.013)
Ethylbenzene	0.89J	0.11	ND(0.5)	ND(0.005)	0.078	0.049J	ND(0.01)	0.036
Methylene Chloride	0.31J	0.014J	1.2D	ND(0.005)	ND(0.005)	0.024J	ND(0.01)	ND(0.013)
Tetrachloroethene	ND(1.0)	ND(0.05)	0.12DJ	0.018	ND(0.005)	ND(0.1)	0.01	0.005J
Toluene	ND(1.0)	ND(0.06)	0.21DJ	ND(0.005)	0.003J	ND(0.1)	ND(0.01)	ND(0.013)
Trichloroethene	ND(1.0)	0.33	0.28DJ	ND(0.005)	0.014	ND(0.1)	0.32	ND(0.013)
Xylenes(total)	7.8	1.8	ND(2.0)	ND(0.005)	0.12	0.03J	0.054	0.26
1,1,1-Trichloroethane	ND(1.0)	ND(0.05)	ND(0.5)	0.004J	ND(0.005)	ND(0.1)	ND(0.01)	ND(0.013)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 volatile constituents, unless stated otherwise.
2. Only detected constituents are shown.
3. \* - Samples were analyzed for Target Compound List volatiles.
4. ND(1.0) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. J - Indicates an estimated value less than the CLP-required quantitation limit.
6. DL or D - Analysis was performed at a secondary dilution factor.
7. E - Compound concentration exceeded the calibration range of the GC/MS instrument for that specific analysis.



TABLE 4-15

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP GROUNDWATER APPENDIX IX+3 SEMIVOLATILES DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-10	LS-11	LS-12*	LS-13*
Acenaphthene	0.014	0.016	ND(0.01)	ND(0.01)	ND(0.01)	0.032
Acenaphthylene	0.003J	0.025	ND(0.01)	ND(0.01)	ND(0.01)	0.005J
Acetophenone	0.003J	ND(0.01)	ND(0.01)	ND(0.01)	NA	NA
Anthracene	0.003J	0.017	ND(0.01)	ND(0.01)	ND(0.01)	0.015J
Benzo(a)anthracene	ND(0.01)	0.009J	ND(0.01)	ND(0.01)	ND(0.01)	0.01J
Benzo(a)pyrene	ND(0.01)	0.008J	ND(0.01)	ND(0.01)	ND(0.01)	0.007J
Benzo(b)fluoranthene	ND(0.01)	0.004J	ND(0.01)	ND(0.01)	ND(0.01)	0.004J
Benzo(k)fluoranthene	ND(0.01)	0.006J	ND(0.01)	ND(0.01)	ND(0.01)	0.005J
Benzo(ghi)perylene	ND(0.01)	0.004J	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.02)
Benzyl alcohol	0.004J	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.02)
Chrysene	ND(0.01)	0.009J	ND(0.01)	ND(0.01)	ND(0.01)	0.01J
Dibenzofuran	ND(0.01)	0.006J	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.02)
1,2-Dichlorobenzene	0.011	0.005J	ND(0.01)	0.004J	0.002J	ND(0.02)
1,3-Dichlorobenzene	0.11	0.008J	ND(0.01)	0.014	ND(0.01)	0.035
1,4-Dichlorobenzene	0.42D	0.064	ND(0.01)	0.025	0.006J	0.053
Fluorene	0.011	0.053	ND(0.01)	ND(0.01)	ND(0.01)	0.022

(See notes on Page 2)

1 of 2

TABLE 4-15  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP GROUNDWATER APPENDIX IX+3 SEMIVOLATILES DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-10	LS-11	LS-12*	LS-13*
Fluoranthene	0.003J	0.018	ND(0.01)	ND(0.01)	ND(0.01)	0.02
Indeno(1,2,3-cd)pyrene	ND(0.01)	0.003J	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.02)
2-Methylnaphthalene	0.04	0.63D	ND(0.01)	0.013	ND(0.01)	0.059
4-Methylphenol	0.004J	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.02)
3-Nitroaniline	ND(0.05)	0.002J	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.1)
Naphthalene	0.16	4.4D	ND(0.01)	0.25	ND(0.01)	0.21
Phenanthrene	0.015	0.094	ND(0.01)	0.003J	ND(0.01)	0.063
Phenol	0.003J	ND(0.01)	ND(0.01)	ND(0.01)	0.003J	ND(0.02)
Pyrene	0.005J	0.037	ND(0.01)	ND(0.01)	ND(0.01)	0.033
1,2,4-Trichlorobenzene	0.059	0.10	ND(0.01)	0.004J	0.26	ND(0.02)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 semivolatiles constituents, unless stated otherwise.
2. Only detected constituents are shown.
3. \* - Samples were analyzed for Target Compound List semivolatiles.
4. ND(0.01) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. J - Indicates an estimated value less than the CLP-required quantitation limit.
6. D - Analysis was performed at a secondary dilution factor.

TABLE 4-16

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF MCP GROUNDWATER APPENDIX IX+3 PESTICIDES/HERBICIDES DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-10	LS-11DL	LS-12	LS-12DL	LS-13
Aldrin	ND(0.01)	ND(0.0005)	ND(0.00005)	0.0013D	ND(0.001)	ND(0.01)	ND(0.0025)
BHC-beta	ND(0.0006)	ND(0.004)	ND(0.00005)	0.0004	ND(0.001)	ND(0.01)	ND(0.0025)
Endosulfan I	ND(0.03)	ND(0.0005)	ND(0.00005)	ND(0.0001)	0.0078F	0.011D	ND(0.0025)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 organochlorine and organophosphorus pesticide and herbicide constituents.
2. Only detected constituents are shown.
3. ND(0.01) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.  
DL or D - Analysis was performed at a secondary dilution factor.
- .. F - Constituent peak was shown to be offscale, therefore it was out of the linear range of the instrument.

TABLE 4-17

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP GROUNDWATER APPENDIX IX+3 PCDD/PCDF DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-10	LS-11
<b>Polychlorinated dibenzo-p-dioxins (PCDDs)</b>				
Total Hexachlorodibenzodioxin	0.0000033	ND (0.0000741)	ND (0.000004)	ND (0.0000053)
<b>Polychlorinated dibenzofurans (PCDFs)</b>				
Total Tetrachlorodibenzofuran	0.0000313	0.00141(I)	ND (0.000001)	ND (0.0000015)
Total Pentachlorodibenzofuran	0.000138	0.00167(I)	ND (0.00000075)	ND (0.0000023)
Total Hexachlorodibenzofuran	0.000503E	0.00271(I)	ND (0.00000062)	ND (0.0000045)

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of PCDD/PCDF constituents.
2. Only detected constituents are shown.
3. ND (0.0000741) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
4. E - The compound exceeded the calibration range of the GC/MS instrument for that specific analysis.
5. (I)- Possible interferences from polychlorinated diphenylethers were noted by the analytical laboratory.

TABLE 4-18

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP GROUNDWATER APPENDIX IX+3 METALS DATA  
(Results are Reported in Parts Per Million, ppm)

Well Identification:	LS-2	LS-4	LS-10	LS-11	LS-12**	LS-13**
Aluminum	NA	NA	NA	NA	0.544	2.79
Arsenic	ND (0.03)	ND (0.03)	ND (0.03)	ND (0.03)	ND (0.002)	0.0028J*
Barium	2.0	0.51	0.12	0.25	0.0283J*	0.33
Beryllium	0.001	0.002	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Calcium	NA	NA	NA	NA	66.6	189
Chromium	0.03	0.01	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Cobalt	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.021J*
Copper	0.10	0.15	0.03	0.01	0.0165J*	0.0273
Iron	NA	NA	NA	NA	1.33	10.5
Lead	0.35	0.12	ND (0.03)	ND (0.03)	ND (0.002)	0.0061
Magnesium	NA	NA	NA	NA	23.1	60.3
Manganese	NA	NA	NA	NA	1.16	1.8
Mercury	ND(0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.002)	0.00023
Nickel	0.03	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.0354J*
Potassium	NA	NA	NA	NA	1.13J*	1.92J*
Silver	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	0.0056J*
Sodium	NA	NA	NA	NA	84.5	27.2
Vanadium	0.02	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Zinc	0.19	0.22	0.21	0.029	0.0399	0.298
Sulfide	3.0	4.4	ND (0.2)	ND (0.2)	NA	NA

Notes:

1. Samples were collected by Geraghty & Miller, Inc., during September and October 1990 and submitted to IT Analytical Services for analysis of Appendix IX+3 metals, unless otherwise stated.
2. Only detected constituents are shown.
3. \*\* - Samples were analyzed for the Target Analyte List metals.
4. ND (0.03) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
5. NA - Not analyzed.
6. J\* - Indicates an estimated which is greater than the instrument detection limit, but less than the CLP-required detection limit.

TABLE 4-19

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP DNAPL APPENDIX IX+3 DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Well Identification:	LS-4	LS-12	LS-21	RW-01
<b>VOLATILE ORGANIC COMPOUNDS</b>				
2-Hexanone	250J	ND(13)	ND(9.5)	ND(5.4)
Acetone	20J	ND(8J)	ND(6.0)	ND(3.4)
1,2-Dichloroethene	ND(18)	ND(4.1)	ND(3.1)	0.77J
Benzene	3.6J	0.87J	1.0J	0.67J
Carbon Tetrachloride	530J	130J	ND(3.1)	3.9
Chlorobenzene	20J	ND(4.1)	49J	23
Chloroform	13J	3.4J	ND(3.1)	0.91J
Ethylbenzene	34J	3.8J	6.2J	6.3
Methylene Chloride	4.7J	ND(4.1)	ND(3.1)	ND(1.8)
Tetrachloroethene	ND(18)	8.7J	ND(3.1)	0.44J
Toluene	16J	1.1J	4.6J	2.7
Total Xylenes	300J	92J	120J	82J
Trichloroethene	61J	89J	ND(3.1)	3.7
<b>SEMIVOLATILE ORGANIC COMPOUNDS</b>				
1,2,3,5 & 1,2,4,5-Tetrachlorobenzene	290J	200J	ND(300)	90J
1,2,3,4-Tetrachlorobenzene	ND(1,200)	190J	ND(300)	ND(350)
1,2,3-Trichlorobenzene	1,400	1,200	110J	470
1,2,4-Trichlorobenzene	8,600	7,200	56J	2,200
1,2-Dichlorobenzene	ND(1,200)	ND(780)	53J	47J
1,3-Dichlorobenzene	ND(1,200)	ND(780)	380	150J
1,4-Dichlorobenzene	650J	100J	1,700	1,100
1-Methylnaphthalene	18,000	ND(780)	190J	1,800
2-Methylnaphthalene	14,000	ND(780)	130J	1,400
Acenaphthene	1,000J	ND(780)	92J	300J
Acenaphthylene	1,200	ND(780)	ND(300)	120J

TABLE 4-19  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

SUMMARY OF MCP DNAPL APPENDIX IX+3 DATA  
(Results are Reported in Dry-Weight Parts Per Million, ppm)

Well Identification:	LS-4	LS-12	LS-21	RW-01
<b>SEMIVOLATILE ORGANIC COMPOUNDS (Cont'd)</b>				
Anthracene	3,400		41J	440
Benzo(a)anthracene	2,900	ND(780)	ND(300)	330J
Benzo(a)pyrene	2,700	ND(780)	ND(300)	250J
Benzo(b+k)fluoranthene	3,100	ND(780)	ND(300)	ND(350)
Benzo(g,h,i)perylene	1,500	ND(780)	ND(300)	ND(350)
Chrysene	2,600	ND(780)	ND(300)	320J
Dibenzofuran	300J	ND(780)	68J	110J
Fluoranthene	5,500	ND(780)	150J	650
Fluorene	4,500	ND(780)	120J	680
Indeno(1,2,3-cd)pyrene	1,100J	ND(780)	ND(300)	ND(350)
Naphthalene	47,000	ND(780)	430	2,800
Phenanthrene	17,000	ND(780)	270J	1,800
Pyrene	9,100	ND(780)	110J	820
bis(2-Ethylhexyl)phthalate	ND(1,200)	ND(780)	47J	ND(350)
<b>POLYCHLORINATED BIPHENYLS (PCBs)</b>				
Aroclor 1254	450,000	660,000	98,000	490,000

Notes:

- Information was reproduced from Golder, January 1992 - Table 13.
- Samples were collected by Golder Associates, Inc., during September 4-6, 1991 and submitted to CompuChem Laboratories for analysis of PCBs and Appendix IX+3 volatile and semivolatile constituents.
- Only detected constituents are shown.
- ND(3.4) - Compound was analyzed for, but not detected. The number in parentheses is the detection limit.
- J - Indicates an estimated value less than the CLP-required quantitation limit.
- D - Analysis was performed at a secondary dilution factor.

TABLE 4-20

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

NAPL PHYSICAL PROPERTIES

Well Identification	Phase	Density (g/ml)	Viscosity (Centistokes)
LS-12	DNAPL	1.1650	44.35
LS-4	DNAPL	1.0910	32.95
LS-21	LNAPL	0.9333	67.16
LS-21	LNAPL/WATER/DNAPL	0.9980	*
LS-2	LNAPL	0.9205	65.68
LS-2	WATER	0.9892	1.43
RW-1	DNAPL	1.0760	42.43

NOTE:

- \* - Unable to determine viscosity due to sample nature -- does not flow uniformly

REFERENCE:

Information was reproduced from Golder, January 1992 - Table 4-12.



TABLE 6-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTSMCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5ASUMMARY OF AMBIENT AIR PCB CONCENTRATIONS: AUGUST 20, 1991 - AUGUST 14, 1992  
(Results Are Presented in Micrograms Per Cubic Meter [ $\mu\text{g}/\text{m}^3$ ])

Monitor Identification: Location Description:	002 NWL	003 LYM	004 H78	005 OP3	006 BCC	007 64Y	001 <sup>1</sup> 64YC	008 32S
Mean Concentration <sup>2</sup> :	0.0062	0.0013	0.0007	<0.0005	<0.0005	0.0011	0.0011	0.0050 <sup>3</sup>
Mean Spring <sup>2</sup> :	0.0097	0.0016	0.0008	0.0006	<0.0005	0.0012	0.0009	(-)
Mean Summer <sup>2,4</sup> :	0.0117	0.0029	0.0011	0.0010	<0.0005	0.0022	0.0020	(-)
Mean Fall <sup>2</sup> :	0.0028	0.0006	<0.0005	<0.0005	<0.0005	0.0006	0.0007	(-)
Mean Winter <sup>2</sup> :	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	(-)
Max. 24 Hour Concentration:	0.030	0.0059	0.0035	0.0019	0.0015	0.0037	0.0041	0.0071
Date of Occurrence:	06/15/92	08/02/92	06/05/92	07/19/92	08/14/92	07/21/92	08/02/92	08/02/92
Min. 24 Hour Concentration <sup>5</sup> :	ND <sup>6</sup>	ND	ND	ND	ND	ND	ND	0.0035
Date of Occurrence:	(-) <sup>7</sup>	(-)	(-)	(-)	(-)	(-)	(-)	07/09/92
Total # of Valid Samples:	30	30	30	31	31	29	29	6
% Below the Detection Limit:	26.7	46.7	76.7	74.2	83.9	37.9	37.9	0

Notes:

1. Co-located with Monitor 007.
2. Averages are calculated using one-half the detection limit for non-detect events.
3. Based on six sampling events between June 15, 1992 and August 14, 1992.
4. Observations from summer 1991 and 1992 were combined to produce summer averages.
5. Sampling Stations 001 through 007 had several observations of non-detect.
6. ND - Below the detection limit of 0.0005  $\mu\text{g}/\text{m}^3$ .
7. (-) - Indicates that a non-detect was recorded on several occasions.

Reference:

Information was reproduced from Zorex, November 1992 - Table 2.

TABLE 7-1

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

PHYSICAL AND CHEMICAL PROPERTIES OF SELECT CONSTITUENTS

Constituent	Water Solubility* (mg/L)	LOG Kow	Vapor Pressure* (mm Hg)	Henry's Law Constant* (atm-m <sup>3</sup> /mole)
<b>VOLATILE ORGANIC COMPOUNDS</b>				
<u>Ketones</u>				
4-Methyl-2-pentanone	20,400	1.19	1.45	9.4E-5
<u>Aromatics</u>				
Benzene	1791	2.13	95.2	5.42E-3
Ethylbenzene	161	3.15	9.53	8.44E-3
Toluene	534.8	2.73	28.4	5.94E-3
Xylene (1,2-)	175	3.12	6.6	5.19E-3
Xylene (1,3-)	146	3.20	8.3	7.19E-3
Xylene (1,4-)	156	3.15	8.7	7.60E-3
<u>Halogenated Compounds</u>				
Carbon tetrachloride	805	2.83	113.8	3.04E-2
Chlorobenzene	471.7	2.84	11.9	3.45E-3
2-Chloroethyl vinyl ether	15,000	0.99	30	2.5E-4
Chloroform	7,220	1.97	246	4.35E-3
Methylene chloride	13,000	1.25	434.9	2.68E-3
Tetrachloroethene	150.3	3.4	18.49	1.49E-2
Trichloroethene	1,100	2.42	69	1.03E-2
<b>SEMIVOLATILE ORGANIC COMPOUNDS</b>				
<u>Polychlorinated Benzenes</u>				
1,2-Dichlorobenzene	156	3.38	1.47	1.2E-3
1,3-Dichlorobenzene	111 (20°C)	3.60	2.3	1.8E-3
1,4-Dichlorobenzene	87	3.52	1.76	1.5E-3
1,2,3-Trichlorobenzene	16.6	4.05	0.2	1.25E-3
1,2,4-Trichlorobenzene	48.8 (20°C)	4.02	0.29	1.42E-3

TABLE 7-1  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

PHYSICAL AND CHEMICAL PROPERTIES OF SELECT CONSTITUENTS

Constituent	Water Solubility* (mg/L)	LOG Kow	Vapor Pressure* (mm Hg)	Henry's Law Constant* (atm-m <sup>3</sup> /mole)
<b>SEMIVOLATILE ORGANIC COMPOUNDS (cont'd)</b>				
<u>Ketones</u>				
Isophorone	12,000	2.2	0.38	5.8E-6
<u>PAHs</u>				
Acenaphthene	3.88	3.92	0.004-0.03	1.55E-4
Acenaphthylene	3.93	3.94	9.0E-4	1.13E-5
Anthracene	0.03-0.075	4.45	2.67E-6	6.5E-5
Benzo(a)anthracene	0.009	5.66	3.08E-8	9.75E-7
Benzo(b)fluorantene	0.0015	6.12	5.0E-7	1.11E-4
Benzo(k)fluoranthene	0.0008	6.12	9.6E-10	4.0E-7
Benzo(g,h,i)perylene	0.00026	7.23	1.33E-8 (20°C)	1.44E-7
Benzo(a)pyrene	0.001-0.004	5.97	5.5E-9	1.82E-6
Chrysene	0.002	5.66	3.08E-8	9.46E-5
Fluoranthene	0.26	4.95	1.0E-8	1.26E-8
Fluorene	1.98	4.18	7.0E-4	8.39E-5
Indeno(1,2,3-c,d)pyrene	0.000022	6.58	1.0E-10	1.6E-6
1-Methylnaphthalene	29	3.87	0.07	2.6E-4
2-Methylnaphthalene	25	3.86	0.05	3.74E-4
Naphthalene	31.7	3.30	0.082	4.24E-4
Phenanthrene	1.00	4.46	2.0E-4	3.95E-5
Pyrene	0.129-0.165	4.88	2.5E-6	1.1E-5
<u>Phthalate Esters</u>				
Bis(2-ethylhexyl)phthalate	0.3	5.11	6.45E-6	1.1E-5
Butylbenzylphthalate	13	4.72	1.06E-4	1.2E-6

TABLE 7-1  
(Continued)

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS

MCP PHASE I REPORT FOR LYMAN STREET PARKING LOT  
AND CAS FOR USEPA AREA 5A

PHYSICAL AND CHEMICAL PROPERTIES OF SELECT CONSTITUENTS

Constituent	Water Solubility* (mg/L)	LOG Kow	Vapor Pressure* (mm Hg)	Henry's Law Constant* (atm-m <sup>3</sup> /mole)
<b>SEMIVOLATILE ORGANIC COMPOUNDS (cont'd)</b>				
<b>PCBs</b>				
Aroclor 1254**	0.012	6.5	7.71E-5	2.0E-3
<b>Polychlorinated Dibenzo-p-dioxins and Dibenzofurans**</b>				
TCDFs	0.000419	5.82	2.0E-6	1.48E-5
PCDFs	0.000515	6.92	3.5E-7	2.63E-5
HxCDFs	0.00000825	7.7	3.2E-8	2.78E-5
HxCDDs	0.00000442	10.36	5.0E-9	4.46E-5
<b>Pesticides</b>				
4,4'-DDE	0.12	7.00	6.5E-6 (20°C)	6.8E-5
Aldrin	0.02	6.5	3.75E-5 (20°C)	4.96E-4
Beta-BHC	0.24	3.8	2.8E-7 (20°C)	4.5E-7
Endosulfan I	0.45-0.51	3.83	1.0E-5	1.12E-5

Notes:

- Summary includes organic compounds detected in soils or groundwater above the quantitation limit.
- \* = At 25°C unless noted otherwise.
- \*\* = This constituent is actually a mixture (or group) of chemical compounds. Each chemical compound has its own physical and chemical properties. The values presented here for this constituent are representative values for this mixture (or group) of compounds.
- NA = Not Available.
- TCDFs = Tetrachlorodibenzofurans.
- PCDFs = Pentachlorodibenzofurans.
- HxCDFs = Hexachlorodibenzofurans.
- HxCDDs = Hexachlorodibenzo-p-dioxins.

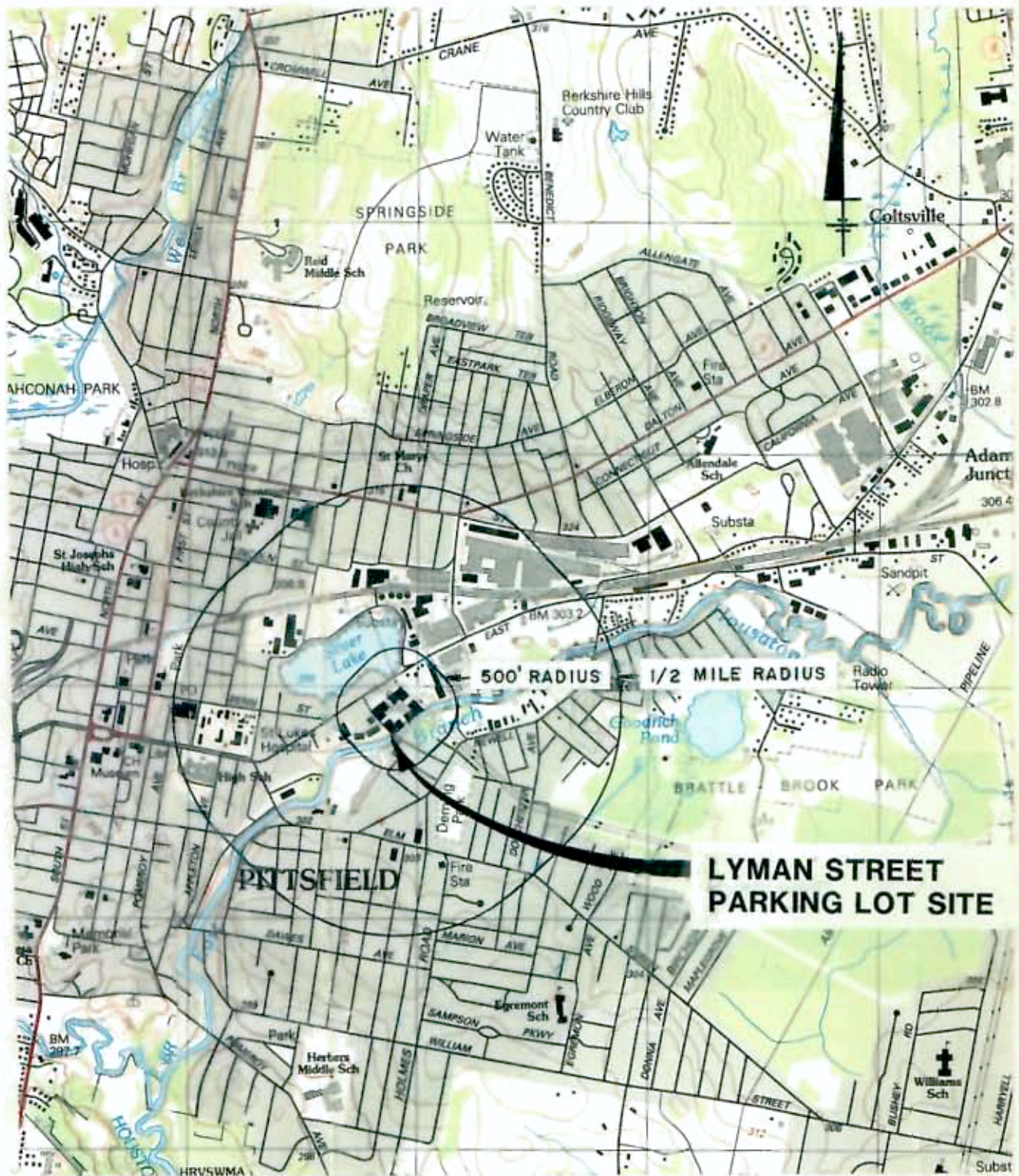
References:

(Howard, 1989; 1990a; 1990b; 1991; 1993; CHEMFATE, 1989; Hansch and Leo, 1985; Hartley and Kidd, 1987; USEPA, 1980; Verschueren, 1983; Mackay et.al. 1992; USEPA April 1986, June 1986).



# Figures



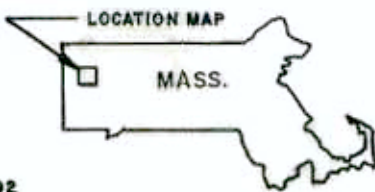


**LYMAN STREET  
PARKING LOT SITE**

REFERENCE: PITTSFIELD EAST MASS. QUAD.

2000' 0 2000'

APPROX. SCALE: 1" = 2000'



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PARKING LOT/CAS FOR USEPA AREA 5A

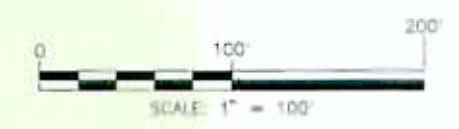
LOCATION PLAN

FIGURE  
1-1





- LEGEND:**
- - - - - APPROX. SITE BOUNDARY
  - - - - - APPROX. PROPERTY BOUNDARY
  - — — — — LIMIT OF APPROX. 10-YEAR FLOODPLAIN
  - - - - - EDGE OF WATER
  - — — — — PAVED ROADWAY
  - - - - - UNPAVED ROADWAY
  - LIGHT POLE (NON UTILITY)
  - ⊙ MANHOLE
  - 970 — INDEX ELEVATION CONTOUR
  - — — — — INTERMEDIATE ELEVATION CONTOUR
  - ~ ~ ~ ~ ~ VEGETATION
  - x - x - FENCE LINE



- NOTES:**
1. THE BASE MAP FEATURES PRESENTED ON THIS FIGURE WERE PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
  2. THE LIMIT OF FLOODPLAIN REPRESENTS THE APPROXIMATE 10-YEAR FLOODPLAIN. DELINEATION OF 10-YEAR FLOODPLAIN IS BASED ON HEC-2 HYDRAULIC MODELING PERFORMED BY BLASLAND & BOUCK ENGINEERS, P.C. (1991) AND AVAILABLE TOPOGRAPHIC MAPPING.
  3. PROPERTY BOUNDARY INFORMATION OBTAINED FROM CITY OF PITTSFIELD'S TAX ASSESSORS' OFFICE AND IS CURRENT THROUGH DECEMBER 31, 1991.

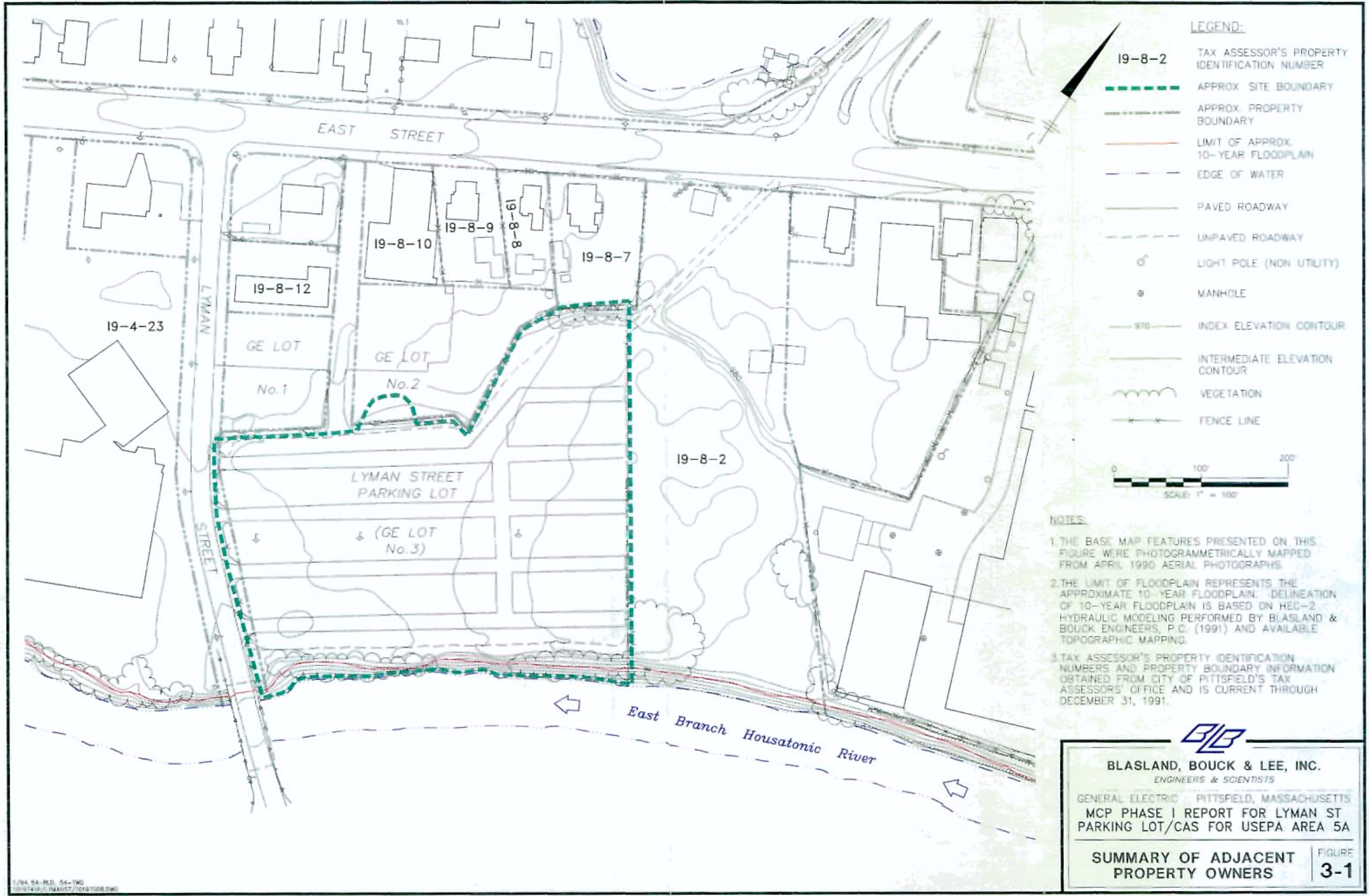


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MCP PHASE I REPORT FOR LYMAN ST  
PARKING LOT/CAS FOR USEPA AREA 5A

**SITE PLAN** FIGURE 1-2





- LEGEND:**
- 19-8-2 TAX ASSESSOR'S PROPERTY IDENTIFICATION NUMBER
  - APPROX. SITE BOUNDARY
  - APPROX. PROPERTY BOUNDARY
  - LIMIT OF APPROX. 10-YEAR FLOODPLAIN
  - EDGE OF WATER
  - PAVED ROADWAY
  - UNPAVED ROADWAY
  - ♂ LIGHT POLE (NON UTILITY)
  - ⊗ MANHOLE
  - 970 INDEX ELEVATION CONTOUR
  - INTERMEDIATE ELEVATION CONTOUR
  - ~ VEGETATION
  - FENCE LINE



- NOTES:**
1. THE BASE MAP FEATURES PRESENTED ON THIS FIGURE WERE PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
  2. THE LIMIT OF FLOODPLAIN REPRESENTS THE APPROXIMATE 10-YEAR FLOODPLAIN. DELINEATION OF 10-YEAR FLOODPLAIN IS BASED ON HEC-2 HYDRAULIC MODELING PERFORMED BY BLASLAND & BOUCK ENGINEERS, P.C. (1991) AND AVAILABLE TOPOGRAPHIC MAPPING.
  3. TAX ASSESSOR'S PROPERTY IDENTIFICATION NUMBERS AND PROPERTY BOUNDARY INFORMATION OBTAINED FROM CITY OF PITTSFIELD'S TAX ASSESSORS' OFFICE AND IS CURRENT THROUGH DECEMBER 31, 1991.

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 PARKING LOT/CAS FOR USEPA AREA 5A

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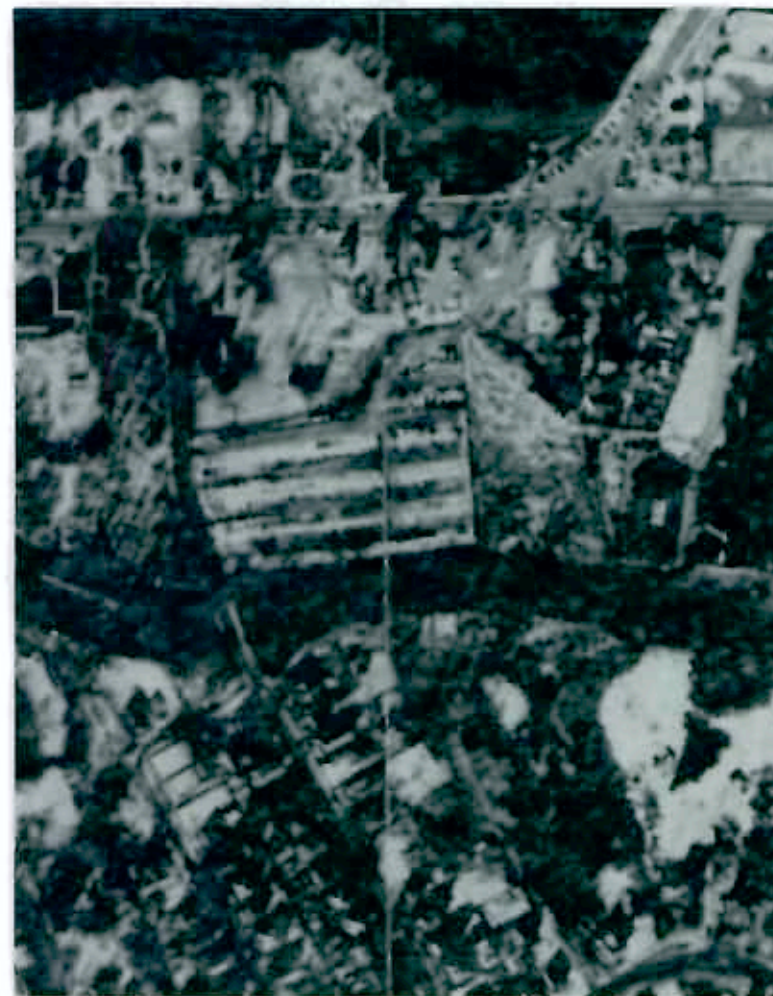
**SUMMARY OF ADJACENT  
 PROPERTY OWNERS**

**FIGURE  
 3-1**





DATE: JULY 13, 1942



DATE: NOVEMBER 24, 1956



DATE: APRIL 23, 1990



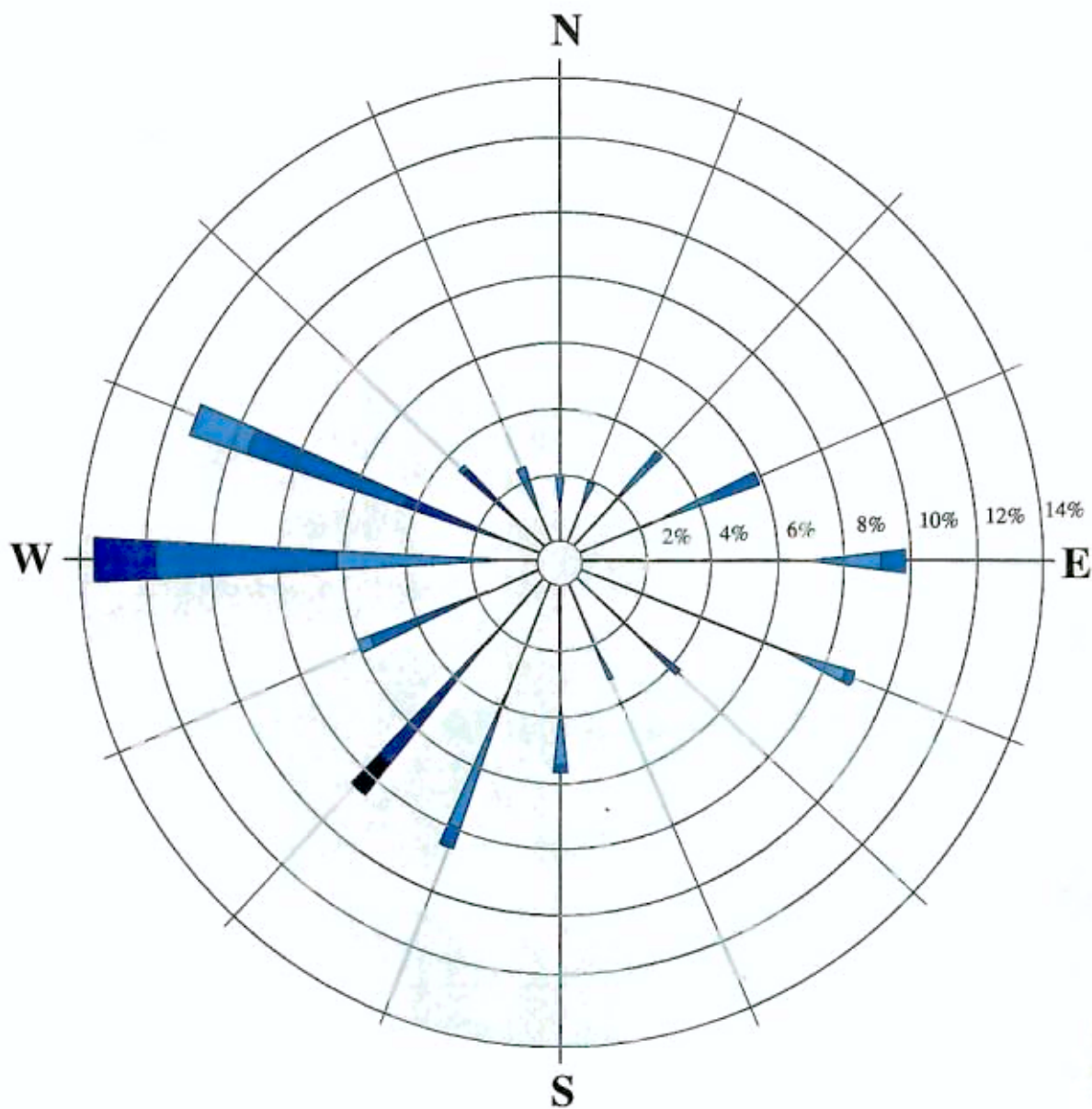
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STREET PARKING LOT/CAS FOR USEPA AREA 5A

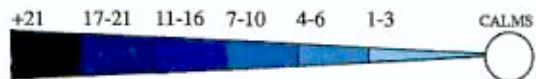
SELECT HISTORICAL  
AERIAL PHOTOGRAPHS

FIGURE  
3-2





**WIND SPEED (KNOTS)**



**NOTES:**

1. INFORMATION WAS COLLECTED BY ZOREX ENVIRONMENTAL ENGINEERS, INC., DURING JANUARY 1 THROUGH DECEMBER 31, 1992 FROM A METEOROLOGICAL STATION LOCATED IN EAST STREET AREA 2/USEPA AREA 4.
2. FREQUENCIES INDICATE DIRECTION FROM WHICH THE WIND IS BLOWING.
3. CALM WINDS 2.94%.



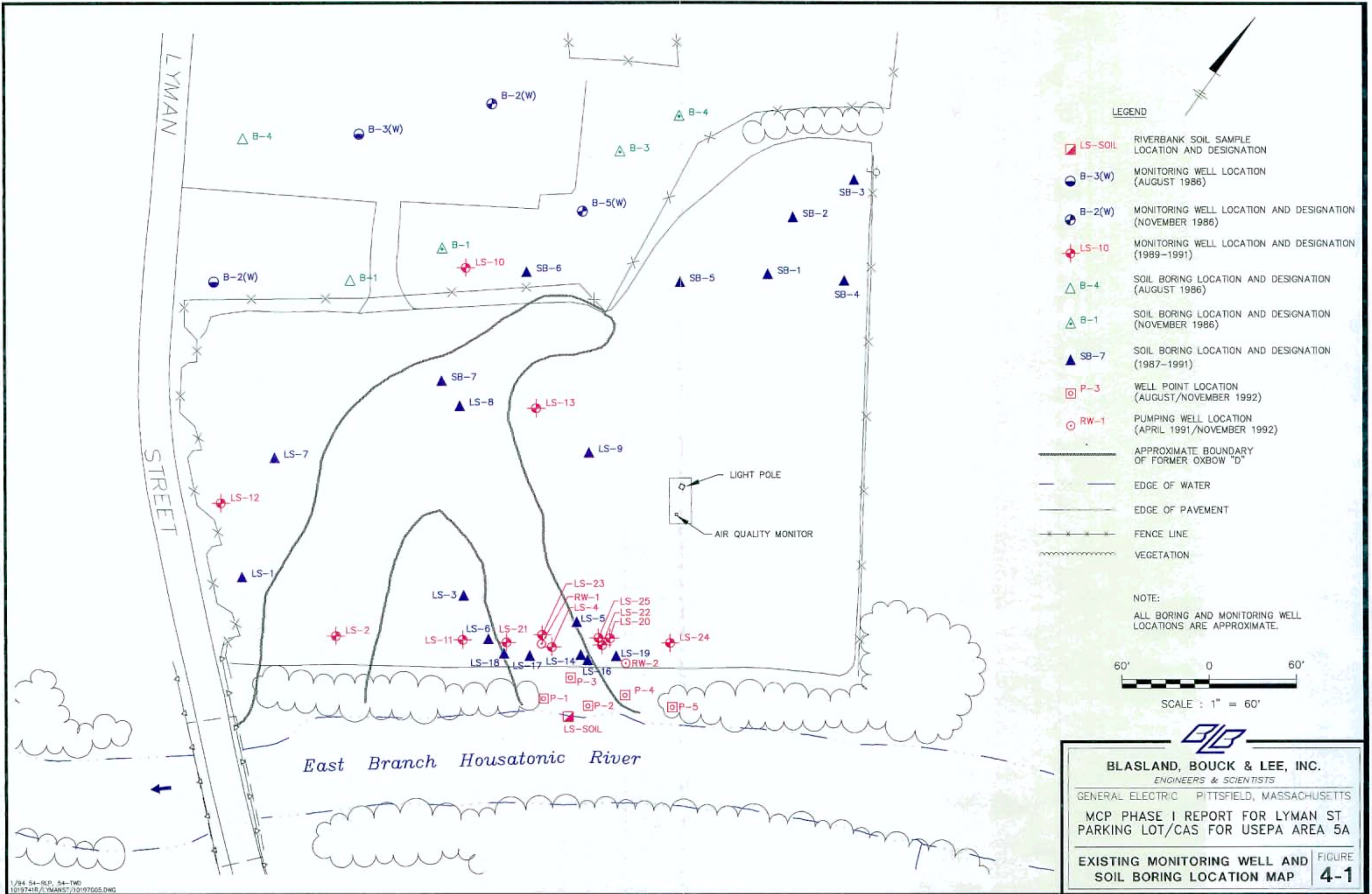
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PARKING LOT/CAS FOR USEPA AREA 5A**

**1992 WIND ROSE**

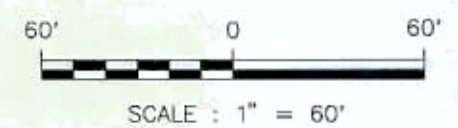
**FIGURE  
3-3**



LEGEND

- LS-SOIL RIVERBANK SOIL SAMPLE LOCATION AND DESIGNATION
- B-3(W) MONITORING WELL LOCATION (AUGUST 1986)
- B-2(W) MONITORING WELL LOCATION AND DESIGNATION (NOVEMBER 1986)
- LS-10 MONITORING WELL LOCATION AND DESIGNATION (1989-1991)
- B-4 SOIL BORING LOCATION AND DESIGNATION (AUGUST 1986)
- B-1 SOIL BORING LOCATION AND DESIGNATION (NOVEMBER 1986)
- SB-7 SOIL BORING LOCATION AND DESIGNATION (1987-1991)
- P-3 WELL POINT LOCATION (AUGUST/NOVEMBER 1992)
- RW-1 PUMPING WELL LOCATION (APRIL 1991/NOVEMBER 1992)
- APPROXIMATE BOUNDARY OF FORMER OXBOW "D"
- EDGE OF WATER
- EDGE OF PAVEMENT
- FENCE LINE
- VEGETATION

NOTE:  
ALL BORING AND MONITORING WELL LOCATIONS ARE APPROXIMATE.



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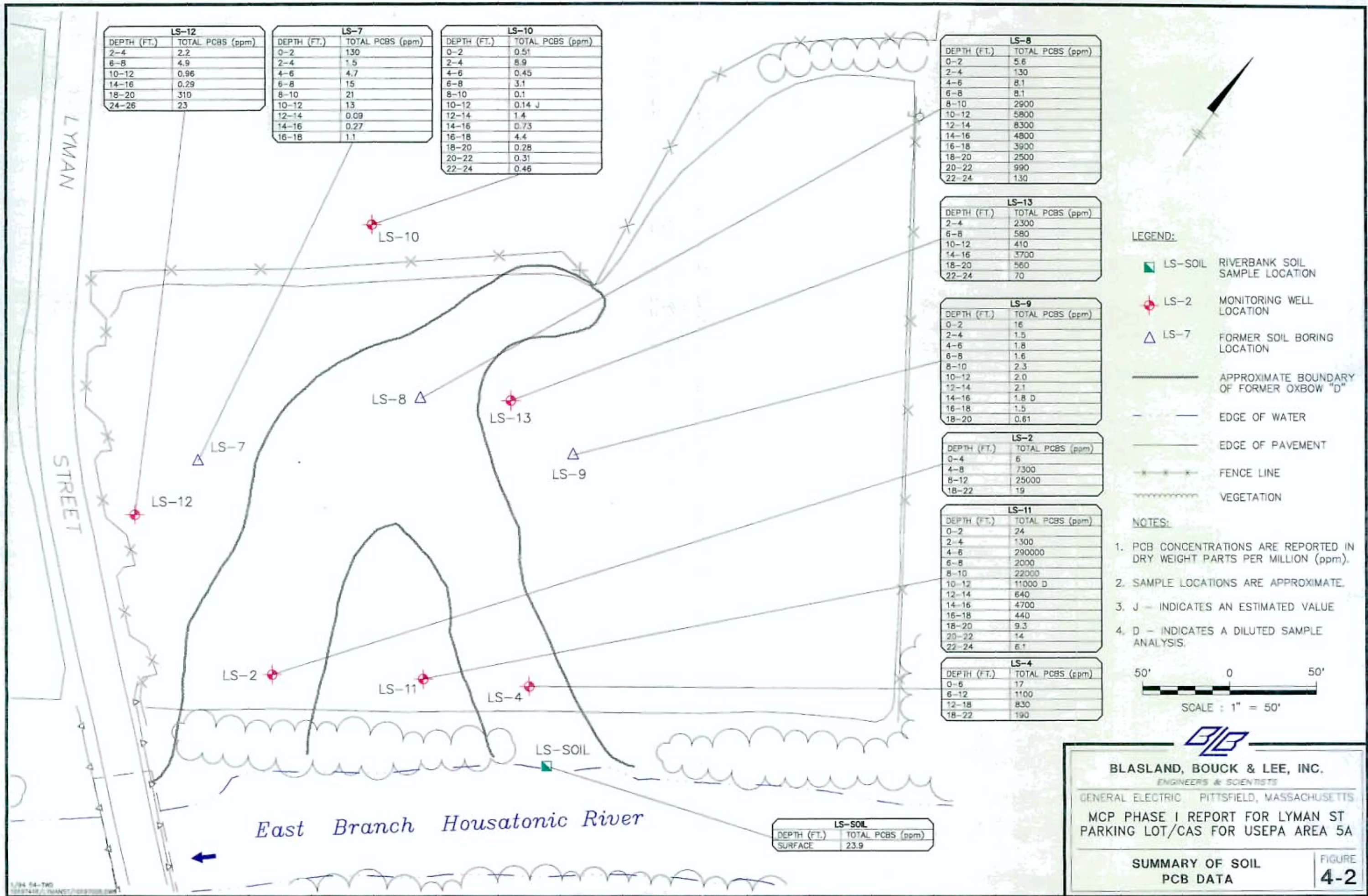
MCP PHASE I REPORT FOR LYMAN ST  
PARKING LOT/CAS FOR USEPA AREA 5A

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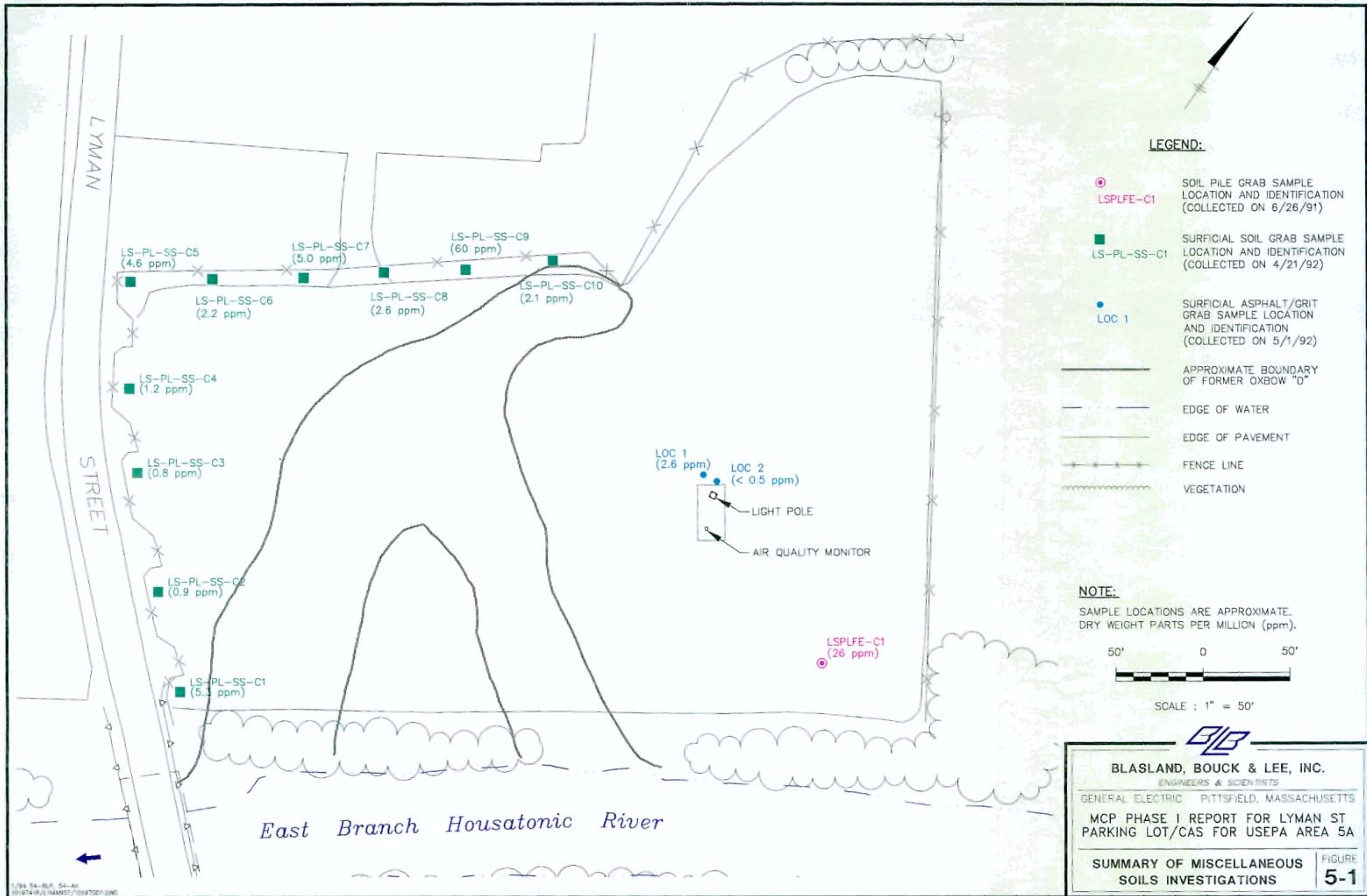
EXISTING MONITORING WELL AND SOIL BORING LOCATION MAP

FIGURE  
**4-1**









LYMAN

STREET

East Branch Housatonic River

LS-PL-SS-C5  
(4.6 ppm)

LS-PL-SS-C7  
(5.0 ppm)

LS-PL-SS-C9  
(60 ppm)

LS-PL-SS-C10  
(2.1 ppm)

LS-PL-SS-C6  
(2.2 ppm)

LS-PL-SS-C8  
(2.6 ppm)

LS-PL-SS-C4  
(1.2 ppm)

LS-PL-SS-C3  
(0.8 ppm)

LS-PL-SS-C2  
(0.9 ppm)

LS-PL-SS-C1  
(5.1 ppm)

LOC 1  
(2.6 ppm)

LOC 2  
(< 0.5 ppm)

LIGHT POLE

AIR QUALITY MONITOR

LSPLFE-C1  
(26 ppm)

50' 0 50'

SCALE : 1" = 50'