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Transmitted Via Overnight Courier

January 30, 2007

Mr. Richard Fisher
U.S. Environmental Protection Agency
EPA - New England
One Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

Re: **GE-Pittsfield/Housatonic River Site**
Groundwater Management Area 1 (GECD310)
Groundwater Quality Monitoring Report for Fall 2006

Dear Mr. Fisher:

In accordance with GE's approved *Baseline Monitoring Program Proposal for Plant Site 1 Groundwater Management Area* (September 2000) and *Plant Site 1 Groundwater Management Area Groundwater Quality Interim Report for Spring 2006* (July 2006), enclosed is the *Plant Site 1 Groundwater Management Area Supplemental Groundwater Quality Monitoring Report for Fall 2006*. This report summarizes activities performed as part of the Plant Site 1 Groundwater Management Area (GMA 1) groundwater quality monitoring program during fall 2006, including the results of the supplemental groundwater sampling and analysis round at GMA 1.

Please call Andrew Silfer or me if you have any questions regarding this report.

Sincerely,

Richard W. Gates /MH for

Richard W. Gates
Remediation Project Manager

Enclosure
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Plant Site 1 Groundwater Management Area Supplemental Groundwater Quality Monitoring Report for Fall 2006

January 2007

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Plant Site 1 Groundwater Management Area Supplemental Groundwater Quality Monitoring Report for Fall 2006

(Fall 2006 GMA 1 Groundwater Quality Report)

General Electric Company
Pittsfield, Massachusetts

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General Electric Company

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January 2007

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1. Introduction

1.1 General

On October 27, 2000, a Consent Decree (CD) executed in 1999 by the General Electric Company (GE), the United States Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MDEP), and several other government agencies was entered by the United States District Court for the District of Massachusetts. The CD governs (among other things) the performance of response actions to address polychlorinated biphenyls (PCBs) and other hazardous constituents in soil, sediment, and groundwater in several Removal Action Areas (RAAs) located in or near Pittsfield, Massachusetts that collectively comprise the GE-Pittsfield/Housatonic River Site (the Site). For groundwater and non-aqueous-phase liquid (NAPL), the RAAs at and near the GE Pittsfield facility have been divided into five separate Groundwater Management Areas (GMAs), which are illustrated on Figure 1. These GMAs are described, together with the Performance Standards established for the response actions at and related to them, in Section 2.7 of the Statement of Work for Removal Actions Outside the River (SOW) (Appendix E to the CD), with further details presented in Attachment H to the SOW (Groundwater/NAPL Monitoring, Assessment, and Response Programs). This report relates to the Plant Site 1 Groundwater Management Area, also known as and referred to herein as GMA 1.

In September 2000, GE submitted a Baseline Monitoring Program Proposal for Plant Site 1 Groundwater Management Area (GMA 1 Baseline Monitoring Proposal). The GMA 1 Baseline Monitoring Proposal summarized the hydrogeologic information available at that time for GMA 1 and proposed groundwater and NAPL monitoring activities (incorporating as appropriate those activities that were in place at that time) for the baseline monitoring period at this GMA. EPA provided conditional approval of the GMA 1 Baseline Monitoring Proposal by letter of March 20, 2001. Thereafter, certain modifications were made to the GMA 1 baseline monitoring program as a result of EPA approval conditions and/or findings during field reconnaissance of the selected monitoring locations and, subsequently, during implementation of the baseline monitoring program.

The baseline monitoring program, which was initiated in fall 2001, consisted of four semi-annual groundwater quality sampling events followed by preparation and submittal of reports summarizing the groundwater monitoring results and, as appropriate, proposal of modifications to the monitoring program. The fourth baseline monitoring report for GMA 1, entitled Plant Site 1 Groundwater Management Area Baseline Groundwater Quality Interim Report for Spring 2003 (Spring 2003 GMA 1 Groundwater Quality Report), was submitted to EPA on July 30, 2003. Section 6.1.3 of Attachment H to the SOW provides that if the two-year "baseline" period ends prior to the completion of soil-related response actions at all the RAAs in a GMA, GE may make a proposal to EPA to modify and/or extend the Baseline Monitoring Program based on the results of the initial assessment and the estimated timing of future response actions at the RAAs in the GMA. The approved GMA 1 Baseline Monitoring Proposal also allows GE to propose a modification and/or extension of the baseline monitoring program based on the results of the initial assessment and the estimated timing of future response actions. Therefore, the Spring 2003 GMA 1 Groundwater Quality Report contained a proposal to modify and extend baseline groundwater quality monitoring activities at GMA 1 (under a program referred to as the interim monitoring program) until such time as the soil-related Removal Actions at the GMA 1 RAAs are completed and the specific components of a long-term groundwater quality monitoring program are determined. EPA conditionally approved the Spring 2003 GMA 1 Groundwater Quality Report by letter dated September 23, 2003. Under the approved interim monitoring program, annual water quality sampling (alternating between the spring and fall seasons) at selected GMA 1 wells began in spring 2004, following a limited sampling event in fall 2003 involving the collection of groundwater samples from six wells that did not yet have four complete rounds of sampling as part of the baseline monitoring program.

As part of the interim groundwater quality monitoring program, GE is required to submit reports after each groundwater sampling event to summarize the groundwater monitoring results and related activities and, as appropriate, propose modifications to the monitoring program. The results of the previous round of interim groundwater sampling activities, performed at this GMA in spring 2006, were provided in GE's July 2006 Plant Site 1 Groundwater Management Area Groundwater Quality Interim Report for Spring 2006

(Spring 2006 GMA 1 Groundwater Quality Report), which was conditionally approved by EPA in a letter dated September 27, 2006. That report contained a proposal to perform supplemental sampling activities in fall 2006 at two monitoring wells where elevated concentrations of PCBs were detected in spring 2006. In addition, on October 30, 2006, GE submitted a proposal to install a LNAPL recovery well in the 60s Complex.

The results of the supplemental groundwater sampling activities conducted in fall 2006 are provided in this Plant Site 1 Groundwater Management Area Supplemental Groundwater Quality Monitoring Report for Fall 2006 (Fall 2006 GMA 1 Groundwater Quality Report). It should be noted that this report is intended to provide groundwater quality information for GMA 1. The results of GE's groundwater flow monitoring, as well as assessments of the presence and extent of NAPL at GMA 1 (including summaries of GE's NAPL recovery efforts), are presented in separate semi-annual reports submitted under GE's NAPL monitoring program. The most recent GMA 1 NAPL monitoring report (covering the spring 2006 monitoring period) was submitted to EPA on July 26, 2006 and the NAPL monitoring report for the fall 2006 monitoring period will be submitted to EPA by February 28, 2007. Information on groundwater elevations, flow direction, contaminant migration, and seasonal trends are discussed in the GMA 1 NAPL reports.

1.2 Background Information

As discussed above, the CD and SOW provide for the performance of groundwater-related monitoring and NAPL removal activities at a number of GMAs. Some of these GMAs, including GMA 1, incorporate multiple RAAs to reflect the fact that groundwater may flow between RAAs. GMA 1 encompasses 11 RAAs and occupies an area of approximately 215 acres (Figures 1 and 2). The RAAs within GMA 1 are:

- RAA 1 - 40s Complex;
- RAA 2 - 30s Complex;
- RAA 3 - 20s Complex;
- RAA 4 - East Street Area 2-South;
- RAA 5 - East Street Area 2-North;
- RAA 6 - East Street Area 1-North;
- RAA 12 - Lyman Street Area;
- RAA 13 - Newell Street Area II;
- RAA 14 - Newell Street Area I;
- RAA 17 - Silver Lake Area; and
- RAA 18 - East Street Area 1-South.

GMA 1 contains a combination of GE-owned and non-GE-owned industrial areas, residential properties, and recreational areas, including land formerly owned by GE that has been, or will be, transferred to the Pittsfield Economic Development Authority (PEDA) pursuant to the Definitive Economic Development Agreement (DEDA). The Housatonic River flows through the southern portion of this GMA, while Silver Lake is located along the western boundary. Certain portions of this GMA originally consisted of land associated with oxbows or low-lying areas of the Housatonic River. Re-channelization and straightening of the Housatonic River in the early 1940s by the City of Pittsfield and the United States Army Corps of Engineers (USACE) separated several of these oxbows and low-lying areas from the active course of the river. These oxbows and low-lying areas were subsequently filled with various materials from a variety of sources, resulting in the current surface elevations and topography.

Groundwater flow patterns at GMA 1 generally reflect the topography of the site with flow toward the Housatonic River, except where influenced by features such as Silver Lake, the recharge pond, or by recovery systems which are pumped to induce hydraulic depressions in their vicinity. Although variations occur in groundwater elevations at various wells or portions of GMA 1, overall groundwater flow patterns have remained relatively stable for years. Groundwater flow conditions observed during fall 2006 display

the typical patterns observed at GMA 1, and will be discussed in further detail in GE's upcoming Plant Site 1 Groundwater Management Area NAPL Monitoring Report for Fall 2006.

As discussed in Section 1.1 above, the CD and the SOW provide for the performance of groundwater-related Removal Actions at the GMAs, including the implementation of groundwater monitoring, assessment, and recovery programs. In general, these programs consist of a baseline monitoring program conducted over a period of at least two years to establish existing groundwater conditions and a long-term monitoring program performed to assess groundwater conditions over time and to verify the attainment of the Performance Standards for groundwater. As set forth in the GMA 1 Baseline Monitoring Proposal and Addendum, the baseline monitoring program at this GMA initially involved a total of 65 monitoring wells. Subsequent modifications to the program resulted in the addition of one well (LSSC-08I) and replacement of five wells with substitute monitoring wells (ESA2S-52 for ES2-17, MW-3R for MW-3, GMA1-13 for 95-9, ESA1S-33 for ES1-8, and ES1-23R for ES1-23). All of these wells were monitored for groundwater elevations on a quarterly basis and sampled on a semi-annual basis for analysis of PCBs and/or certain other constituents listed in Appendix IX of 40 CFR Part 264, plus three additional constituents -- benzidine, 2-chloroethylvinyl ether, and 1,2-diphenyhydrazine (Appendix IX+3). The specific groundwater quality parameters for each individual well were selected based on the monitoring objectives of the well.

After the fourth baseline sampling event at most of the wells in GMA 1 in spring 2003, EPA approved the implementation of the interim monitoring program until the completion of the soil-related Removal Actions at the GMA 1 RAAs, at which time a long-term monitoring program will commence. In the Spring 2003 GMA 1 Groundwater Quality Report, GE described its proposed interim groundwater quality monitoring program. Certain specific monitoring tasks were to be performed in fall 2003, and GE submitted its Fall 2003 GMA 1 Groundwater Quality Report providing the results of those tasks. Beginning in spring 2004, as approved by EPA, the interim groundwater quality monitoring program was to consist of annual sampling (alternating between the spring and fall seasons) and analysis for select constituents at 22 GMA 1 wells. Locations selected for

interim groundwater quality monitoring were wells downgradient of known NAPL areas/recovery systems where no additional hydraulic controls are in place, and/or those where analytical results from the baseline monitoring rounds did not conclusively indicate whether long-term monitoring would be necessary.

Since the spring 2004 groundwater sampling event, GE has presented the results of each sampling event in interim groundwater quality monitoring reports and, based on those results, has proposed and implemented modifications to the interim program following EPA approval. The most recent interim groundwater sampling event took place in spring 2006 and, therefore, the next interim groundwater sampling event is schedule for fall 2007. However, in the Spring 2006 GMA 1 Groundwater Quality Report, GE proposed to further assess the concentrations of PCBs observed at wells LSSC-08S and LSSC-18 in spring 2006 by sampling those wells again during fall 2006 and analyzing filtered samples for PCBs. EPA approved the supplemental sampling proposal as part of its conditional approval of the Spring 2006 GMA 1 Groundwater Quality Report. The results of that additional sampling are presented in this report.

1.3 Format to Document

The remainder of this report is presented in four sections. Section 2 describes the groundwater quality-related activities performed at GMA 1 in fall 2006. Section 3 presents the analytical results obtained during the supplemental sampling event performed November 6, 2006, and provides an assessment of the results, including a comparison to the applicable groundwater quality Performance Standards identified in the CD and SOW. Finally, Section 4 proposes additional supplemental groundwater sampling activities, and presents the schedule for future field and reporting activities related to groundwater quality at GMA 1.

2. Field and Analytical Procedures

2.1 General

As noted above, the next interim groundwater monitoring event at GMA 1 is scheduled for fall 2007. During fall 2006, GE conducted supplemental sampling activities involving the collection and analysis of groundwater samples at two monitoring wells within GMA 1, as described in Table 1. The construction details of the wells are also provided in Table 1 and the fall 2006 field sampling data are presented in Appendix A. This section discusses the field procedures used to collect groundwater samples and the methods used to analyze the samples. All activities were performed in general accordance with GE's approved Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP).

2.2 Groundwater Sampling and Analysis

The fall 2006 supplemental groundwater sampling event was performed on November 6, 2006. Groundwater samples were collected from two groundwater monitoring wells (LSSC-08S and LSSC-18). The groundwater samples were collected by the low-flow techniques specified in the FSP/QAPP. Low-flow sampling techniques using a bladder pump were utilized for the purging and collection of groundwater samples during this sampling event. Each monitoring well was purged utilizing low-flow techniques until field parameters (including temperature, pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) stabilized prior to sample collection. Field parameters were measured in combination with the sampling activities at the monitoring wells. The stabilized field parameter measurements are presented below and the field sampling data are provided in Appendix A.

Parameter	Units	Stabilized Readings	
		LSSC-08S	LSSC-18
Turbidity	Nephelometric turbidity units (NTU)	6.0	0.0
pH	pH units	6.84	6.78
Specific Conductivity	Millisiemens per centimeter	3.221	0.960
Oxidation-Reduction Potential	Millivolts	-85.1	15.5
Dissolved Oxygen	Milligrams per liter	0.46	1.60
Temperature	Degrees Celsius	13.20	12.35

The collected groundwater samples were submitted to SGS Environmental Services, Inc. of Wilmington, North Carolina (SGS) for laboratory analysis. In addition, to provide additional data to support a laboratory comparison initiated by GE at GMA 4 (described in a letter to EPA dated November 7, 2006), split samples were also sent to Northeast Analytical of Schenectady, New York (NEA) for analysis. The groundwater samples were filtered and analyzed for PCBs by each laboratory using EPA Method 8082.

Following receipt of the analytical data from the laboratories, the preliminary results were reviewed for completeness and compared to the Massachusetts Contingency Plan (MCP) Method 1 GW-3 standards, and to the MCP Upper Concentration Limits (UCLs) for groundwater. The preliminary analytical results were presented in the next monthly report on overall activities at the GE-Pittsfield/Housatonic River Site. Finally, the data were validated in accordance with the FSP/QAPP and the validated results were utilized in the preparation of this report. The data validation reports are provided in Appendix C. As discussed in the data validation reports, 100% of the fall 2006 groundwater quality data are considered to be useable. The validated analytical results are summarized and discussed in Section 3 below.

3. Fall 2006 Analytical Results

3.1 General

A description of the fall 2006 groundwater analytical results is presented in this section. An assessment of these results relative to the applicable GW-3 groundwater quality Performance Standards established in the CD and SOW and the MCP UCL for PCBs in groundwater is also provided.

3.2 Groundwater Sample Results

Filtered groundwater samples from two monitoring wells (LSSC-08S and LSSC-18) were analyzed for PCBs by two separate laboratories as part of the fall 2006 supplemental sampling event. The PCB analytical results are provided in Table 2 and Table 3 (those tables also provide comparisons to the MCP Method 1 GW-3 standards and MCP UCL for PCBs in groundwater, as discussed below). As shown in those tables, similar detected PCB concentrations were reported by both laboratories. At well LSSC-08S, the samples analyzed by SGS contained a total PCB concentration of 0.00032 ppm, with a duplicate sample concentration of 0.0006 ppm. Samples from the same well analyzed by NEA contained reported PCB concentrations of 0.00057 ppm and 0.00069 ppm. For well LSSC-18, no PCBs were detected in the SGS sample, with a detection limit of 0.00011 ppm, while a total PCB concentration of 0.000099 ppm was reported by NEA.

3.2.1 Fall 2006 Groundwater Results Relative to GW-3 Performance Standards

For the purpose of generally assessing current groundwater quality conditions, the analytical results from the fall 2006 groundwater sampling event were compared to the applicable groundwater Performance Standards for GMA 1, as well as in relation to the MCP UCLs for groundwater (discussed in Section 3.2.2 below).

The fall 2006 groundwater analytical results and a comparison of those results with the applicable MCP Method 1 GW-3 standard for PCBs are presented in Table 2. The filtered groundwater samples from monitoring well LSSC-08S contained PCBs at concentrations above the applicable MCP Method 1 GW-3 standard of 0.0003 ppm in each of the split samples analyzed by SGS and NEA. Duplicate samples were analyzed by each laboratory at this well and the highest reported concentrations (0.00066 ppm in the SGS samples and 0.00069 ppm in the NEA samples) were approximately two times the applicable standard. At well LSSC-18, the results from each laboratory were well below the GW-3 standard. The results from well LSSC-18 reported by NEA showed only a trace PCB concentration, while no PCBs were detected in the split sample analyzed by SGS.

3.2.2 Fall 2006 Comparison to Upper Concentration Limits

In addition to comparing the fall 2006 groundwater analytical results with GW-3 standards, the analytical results from both wells sampled were compared with the UCLs for groundwater specified in the MCP (310 CMR 40.0996(7)). As shown in Table 3, neither of the fall 2006 sample results from wells LSSC-08S or LSSC-18 was above the UCL for PCBs in groundwater of 0.005 ppm.

3.3 Overall Assessment of Groundwater Analytical Results

The information presented herein is based on the laboratory results obtained during the fall 2006 groundwater sampling event, supplemented with historical groundwater analytical data when applicable. Graphs illustrating historical total filtered PCB concentrations for both wells sampled in fall 2006 are presented in Appendix B. A review of the graphs contained in Appendix C indicates that the filtered PCB concentrations have generally reverted to the levels that had been detected in these wells prior to the previous sampling event, where elevated concentrations were observed. However, the samples from well LSSC-08S still contained slightly higher PCB concentrations than observed during prior baseline and interim monitoring events prior to spring 2006. The PCB

concentrations in the samples from well LSSC-18 reverted to the prior low levels detected prior to spring 2006 in each sample analyzed. These results suggest that the spring 2006 results from these wells may have been anomalous. To evaluate further PCB concentrations at these locations, as discussed below, GE proposes to conduct an additional supplemental monitoring round at wells LSSC-08S and LSSC-18 in spring 2007.

The SOW requires that interim response actions must be proposed for baseline sampling results which exceed Method 1 GW-3 standards at downgradient perimeter monitoring wells, in which: (a) such an exceedance had not previously been detected, or (b) there was a previous exceedance of the Method 1 GW-3 standard and the groundwater concentration is greater than or equal to 100 times the GW-3 standard (if the exceedance was not previously addressed). These interim response actions may include: (1) further assessment activities, such as resampling, increasing the sampling frequency to quarterly, additional well installation, and/or continuing the baseline monitoring program; (2) active response actions; and/or (3) the conduct of a site-specific risk evaluation and proposal of alternative risk-based GW-3 Performance Standards.

One of the wells sampled during the fall 2006 supplemental sampling event contained PCB concentrations greater than the Method 1 GW-3 standard for PCBs. However, since previous exceedances of this standard were observed at this well, the levels detected in fall 2006 were consistent with the prior detected concentrations, and the reported fall 2006 PCB concentrations are less than 100 times the MCP Method 1 GW-3 standard, additional interim response actions are not required under the SOW. Nonetheless, GE proposes to conduct an additional supplemental round of sampling at well LSSC-08S in spring 2007. Although that location registered significantly lower PCB concentrations in fall 2006 than observed during the previous sampling round, the results are still greater than the MCP Method 1 GW-3 standard and slightly above all historical data, excluding the spring 2006 sampling event. Therefore, GE proposes to collect filtered samples for PCB analysis from this well in spring 2007. For well LSSC-18, the fall 2006 PCB results were below the MCP Method 1 GW-3 standard and consistent with prior historical data at this location (excluding the elevated spring 2006 results). However, GE also proposes to

collect filtered samples for PCB analysis from this well in spring 2007 to provide additional spring data for comparison to the anomalous spring 2006 results.

Based on the results of that additional sampling, GE may propose to continue an increased sampling frequency at one or both of these locations, return to the approved schedule for the interim groundwater sampling program, or make another proposal.

4. Schedule of Future Activities

4.1 General

In spring 2004, GE initiated the interim groundwater monitoring program to be conducted until completion of the soil-related Removal Actions at the RAAs that comprise GMA 1. Aside from completing baseline sampling events at certain locations that could not be sampled during every round of the initial two-year baseline monitoring program (which was accomplished), the interim monitoring program is designed to obtain additional data from locations where it is not yet clear whether the initial baseline groundwater quality results indicate that the well may require future monitoring in a long-term monitoring program.

This section contains a description of the schedule for future groundwater quality monitoring activities and reporting for GMA 1. As discussed in Section 3.3 above, GE has proposed additional supplemental sampling activities at wells LSSC-08S and LSSC-18, based on the results of the 2006 interim groundwater sampling event and the fall 2006 supplemental groundwater sampling event. This section also provides a schedule for the upcoming fall 2007 interim monitoring event, and associated reporting activities. A summary of the approved interim sampling program is provided in Table 4. That table also lists the proposed spring 2007 supplemental sampling activities for wells LSSC-08S and LSSC-18.

4.2 Field Activities Schedule

If approved by EPA, GE will conduct the proposed supplemental sampling discussed in Section 3.3 above in spring 2007, in conjunction with groundwater sampling activities that will be performed at the other GMAs. The next full interim groundwater quality sampling round is scheduled for October 2007.

Prior to performance of these activities, GE will provide EPA with 7 days advance notice to allow the assignment of field oversight personnel.

4.3 Reporting Schedule

GE will continue to provide the results of preliminary groundwater analytical data in its monthly reports on overall activities at the GE-Pittsfield/Housatonic River Site.

Following completion of one year of groundwater elevation monitoring at Newell Street Area II wells GMA 1-25 through GMA1-28, GE will prepare a brief letter to EPA summarizing the monitoring results, including representative groundwater elevation contour mapping. The final round of water level monitoring at these locations is scheduled to be conducted in April 2007, and, as previously approved by EPA, GE will submit the summary letter to EPA by June 30, 2007.

GE will submit a Spring 2006 Supplemental Groundwater Quality Report for GMA 1 to EPA by July 31, 2007. That report will present and discuss the validated results of the spring 2007 supplemental sampling event and propose further modifications to the interim sampling program based on those results, if necessary.

GE will submit the Fall 2007 Interim Groundwater Quality Report for GMA 1 by January 31, 2008, in accordance with the reporting schedule approved by EPA. That report will present the final, validated fall 2007 interim sampling results and a brief discussion of the results, including any proposals to further modify the interim monitoring program, if necessary. GE will also include an updated summary of available groundwater monitoring results and analytical data collected at the adjacent East Street Mobil Site, to the extent that such information is available to GE.

Subsequent annual Interim Groundwater Quality Reports for GMA 1 will be submitted by January 31 where sampling activities were performed in the prior fall, or by July 31 where sampling activities were performed in the prior spring.

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Tables

Table 1
Fall 2006 Supplemental Groundwater Quality Monitoring Activities

Plant Site 1 Groundwater Management Area
Supplemental Groundwater Quality Monitoring Report For Fall 2006
General Electric Company - Pittsfield, Massachusetts

Well Number	Monitoring Well Usage	Survey Coordinates		Well Diameter (inches)	Ground Surface Elevation (feet AMSL)	Measuring Point Elevation (feet AMSL)	Depth to Top of Screen (feet BGS)	Screen Length (feet)	Top of Screen Elevation (feet AMSL)	Base of Screen Elevation (feet AMSL)
		Northing	Easting							
RAA 12 - Lyman Street Area										
LSSC-08S	GW-3 Perimeter (Downgradient)	532408.9	130817.2	2	983.6	983.11	5.0	10.0	978.6	968.6
LSSC-18	GW-3 Perimeter (Downgradient)	532664.7	131107.5	2	987.6	987.32	9.0	10.0	978.6	968.6

NOTES:

1. The listed wells were utilized during fall 2006 for supplemental groundwater quality sampling. Split samples were collected by BBL, an ARCADIS company (BBL), and submitted to Northeast Analytical, Inc. (NEA) and SGS Environmental Services, Inc. (SGS) for analysis of PCBs (filtered).
2. feet AMSL: Feet above mean sea level
3. feet BGS: Feet below ground surface

Table 2
Comparison Of Groundwater Analytical Results To MCP Method 1 GW-3 Standards

Plant Site 1 Groundwater Management Area
Supplemental Groundwater Quality Monitoring Report For Fall 2006
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Sample ID:	Method 1	LSSC-08S		LSSC-18	
Laboratory:	GW-3	SGS	NEA	SGS	NEA
Parameter Date Collected:	Standards	11/06/06	11/06/06	11/06/06	11/06/06
PCBs-Filtered					
Aroclor-1016	Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1221	Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1232	Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1242	Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1248	Not Listed	0.00032 J [0.00066 J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1254	Not Listed	ND(0.00010) J [ND(0.00010) J]	0.00057 [0.00069]	ND(0.00011) J	0.000099
Aroclor-1260	Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Total PCBs	0.0003	0.00032 J [0.00066 J]	0.00057 [0.00069]	ND(0.00011) J	0.000099

Notes:

1. Split samples were collected by BBL, an ARCADIS company (BBL), and submitted to Northeast Analytical, Inc. (NEA) and SGS Environmental Services, Inc. (SGS) for analysis of PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, Blasland Bouck & Lee, Inc. (approved May 29, 2004 and resubmitted June 19, 2004).
3. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
4. Only those constituents detected in one or more samples are summarized.
5. Field duplicate sample results are presented in brackets.
6. Shading indicates that value exceeds GW-3 Standards.

Data Qualifiers:

J - Indicates that the associated numerical value is an estimated concentration.

Table 3
Comparison Of Groundwater Analytical Results To MCP UCLs For Groundwater

Plant Site 1 Groundwater Management Area
Supplemental Groundwater Quality Monitoring Report For Fall 2006
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter	Sample ID: / Laboratory: / Date Collected:	MCP UCL for GroundWater	LSSC-08S		LSSC-18	
			SGS 11/06/06	NEA 11/06/06	SGS 11/06/06	NEA 11/06/06
PCBs-Filtered						
Aroclor-1016		Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1221		Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1232		Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1242		Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1248		Not Listed	0.00032 J [0.00066 J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Aroclor-1254		Not Listed	ND(0.00010) J [ND(0.00010) J]	0.00057 [0.00069]	ND(0.00011) J	0.000099
Aroclor-1260		Not Listed	ND(0.00010) J [ND(0.00010) J]	ND(0.00013) [ND(0.00018)]	ND(0.00011) J	ND(0.000022)
Total PCBs		0.005	0.00032 J [0.00066 J]	0.00057 [0.00069]	ND(0.00011) J	0.000099

Notes:
1. Split samples were collected by BBL, an ARCADIS company (BBL), and submitted to Northeast Analytical, Inc. (NEA) and SGS Environmental Services, Inc. (SGS) for analysis of PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, Blasland Bouck & Lee, Inc. (approved May 29, 2004 and resubmitted June 19, 2004).
3. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
4. Only those constituents detected in one or more samples are summarized.
5. Field duplicate sample results are presented in brackets.

Data Qualifiers:

J - Indicates that the associated numerical value is an estimated concentration.

Table 4
Interim Groundwater Quality Monitoring Program Activities - 2007

Plant Site 1 Groundwater Management Area
Supplemental Groundwater Quality Monitoring Report For Fall 2006
General Electric Company - Pittsfield, Massachusetts

Well Number	Monitoring Well Usage	Sampling Schedule & Analyses	
		Proposed Supplemental Analyses (Spring 2007 Only)	Annual Interim Analyses (Next Round: Fall 2007)
RAA 2 - 30s COMPLEX			
RF-02	GW-3 Perimeter (Downgradient)	NONE	PCB
RAA 4 - EAST STREET AREA 2-SOUTH			
3-6C-EB-14	GW-3 Perimeter (Downgradient)	NONE	VOC
GMA1-13	GW-3 General/Source Area Sentinel	NONE	PCB
E2SC-23	GW-3 Perimeter (Downgradient)	NONE	PCB
E2SC-24	GW-3 Perimeter (Downgradient)	NONE	PCB
ES2-02A	GW-3 Perimeter (Downgradient)	NONE	VOC
ESA2S-64	GW-3 Perimeter (Downgradient)	NONE	VOC
HR-G3-MW-1	GW-3 Perimeter (Downgradient)	NONE	PCB
RAA 5 - EAST STREET AREA 2-NORTH			
ES1-05	GW-3 Perimeter (Downgradient)	NONE	PCB
ES1-27R	GW-3 General/ Source Area Sentinel	NONE	PCB
RAA 6 - EAST STREET AREA 1-NORTH			
ESA1N-52	GW-2 Sentinel/ GW-3 General/Source Area Sentinel	NONE	PCB
RAA 12 - LYMAN STREET AREA			
LS-29	GW-3 General/ Source Area Sentinel	NONE	PCB
LSSC-08S	GW-3 Perimeter (Downgradient)	PCB	PCB
LSSC-16S	GW-2 Sentinel	NONE	VOC (+5 SVOC)
LSSC-18	GW-3 Perimeter (Downgradient)	NONE	PCB
MW-4R	GW-3 Perimeter (Downgradient)	NONE	VOC
RAA 13 - NEWELL STREET AREA II			
N2SC-07S	GW-3 Perimeter (Downgradient)	NONE	PCB
RAA 18 - EAST STREET AREA 1 SOUTH			
72R	GW-2 Sentinel/ GW-3 General/Source Area Sentinel	NONE	VOC(+5 SVOC)/ PCB/Metals/ Cyanide
139R	GW-2 Sentinel/GW-3 Perimeter (Downgradient)	NONE	PCB
GMA1-6	GW-2 Sentinel/ GW-3 General/Source Area Sentinel	NONE	VOC(+5 SVOC)/ PCB
GMA1-18	GW-2 Sentinel/ GW-3 General/Source Area Sentinel	NONE	PCB

NOTES:

1. Modifications to the interim groundwater quality monitoring program were proposed in the July 2006 Plant Site 1 Groundwater Management Area Groundwater Quality Monitoring Interim Report for Spring 2006. The wells and analytical parameters listed above represent the approved interim monitoring program per EPA's September 27, 2006 Conditional Approval Letter related to that report.
2. The wells proposed for annual groundwater quality sampling will be sampled for the listed parameters on an annual basis, alternating between the spring and fall seasons, during the interim period between the completion of the baseline monitoring program and the initiation of a long-term monitoring program. The next scheduled interim sampling round will be conducted in fall 2007 (although certain wells are proposed for supplemental sampling in fall 2006).
3. Wells that are proposed for supplemental analysis will only be sampled for the listed parameters in spring 2007.
4. All analyses for PCB, metals, and cyanide conducted under the interim monitoring program will be performed on filtered samples only.

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Figures

LEGEND:

GMA 1 (PLANT SITE 1)

COMPRISED OF:

- RAA 1–40s COMPLEX
- RAA 2–30s COMPLEX
- RAA 3–20s COMPLEX
- RAA 4–EAST STREET AREA 2–SOUTH
- RAA 5–EAST STREET AREA 2–NORTH
- RAA 6–EAST STREET AREA 1–NORTH
- RAA 12–LYMAN STREET AREA (INCLUDING FORMER OXBOWS B, D AND E)
- RAA 13–NEWELL STREET AREA II
- RAA 14–NEWELL STREET AREA I
- RAA 17–SILVER LAKE AREA
- RAA 18–EAST STREET AREA 1–SOUTH (NAPL/GROUNDWATER ONLY)

GMA2	GMA 2–FORMER OXBOWS J&K
GMA3	GMA 3–PLANT SITE 2
GMA4	GMA 4–PLANT SITE 3
GMA5	GMA 5–FORMER OXBOWS A&C

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. – FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND & BOUCK ENGINEERS, P.C. P.C. CONSTRUCTION PLANS.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARIES/LIMITS ARE APPROXIMATE.

0 500' 1000'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
GMA 1 INTERIM MONITORING PROGRAM

GROUNDWATER MANAGEMENT AREAS

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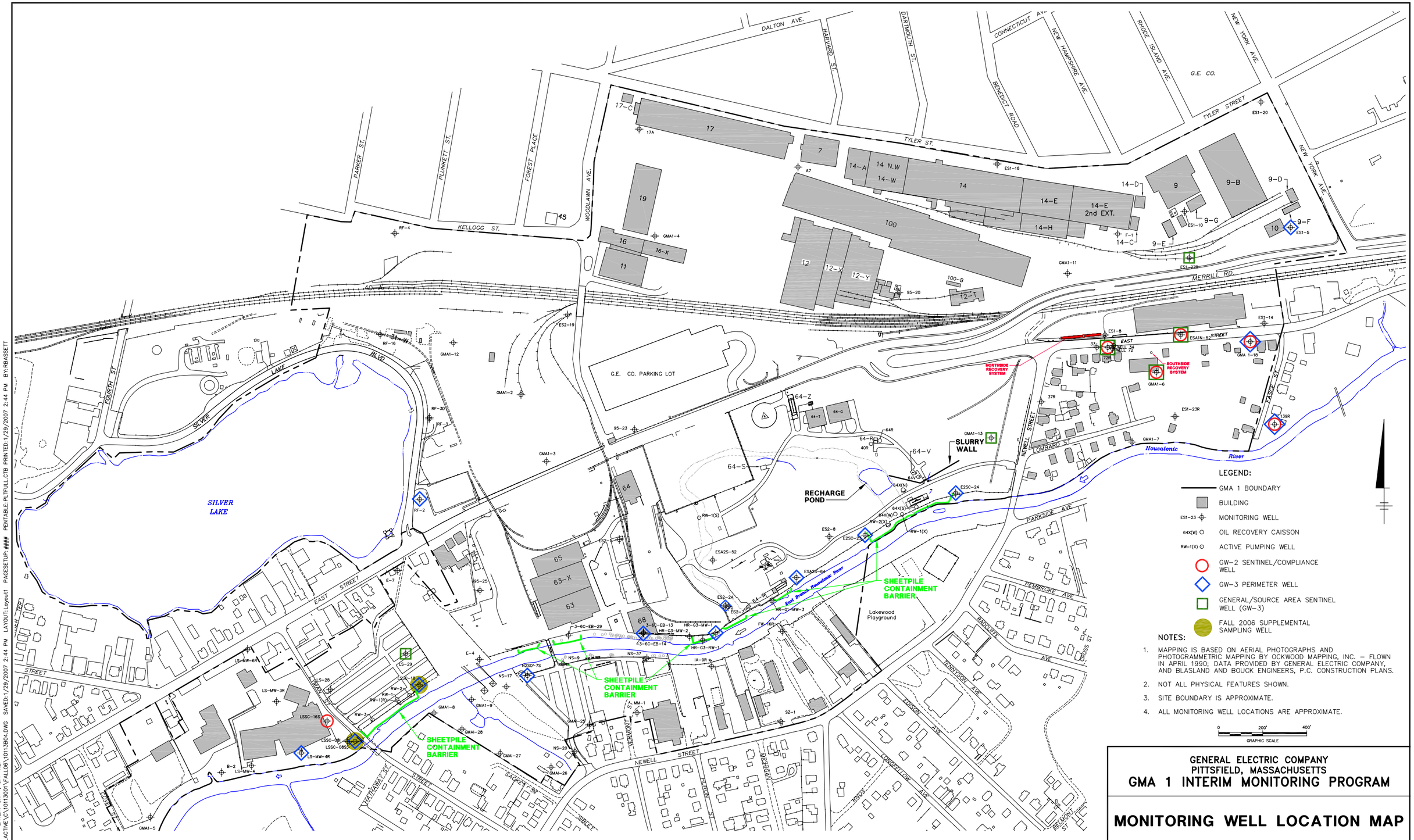
Infrastructure, environment, facilities

FIGURE
1

SYR-85-GMS DMW RCB LAYER: ON=*; OFF=*REF*
G:\CAD\GE-CAD\GE_ACTIVE\C\10113001\FALL06\10113B01.DWG SAVED:1/29/2007 2:34 PM LAYOUT:Layout1 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:1/29/2007 2:42 PM BY:RBASSETT
PROJECTNAME:----
XREFS:
10113X08
10113X00
IMAGES:

SYR-GMS DMW RCB LAYER: ON=*, OFF=REF*
G:\CAD\GE-CAD\GE_ACTIVE\C\1011300I\FALL06\1011B04.DWG SAVED:1/29/2007 2:44 PM BY:RBASSETT
PROJECTNAME:----- LAYOUT:Layout1 PAGESETUP:### PENTABLE:PLTFULL.CTB PRINTED:1/29/2007 2:44 PM BY:RBASSETT
XREFS: IMAGES:
1011XR8
1011XR9



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

GMA 1 INTERIM MONITORING PROGRAM

MONITORING WELL LOCATION MAP

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Infrastructure, environment, facilities

FIGURE
2

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Appendices

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Appendix A

Field Sampling Data

GROUNDWATER SAMPLING LOG

Well No. LSSC-08S
Key No. N/A
PID Background (ppm) 0.0
Well Headspace (ppm) 0.0

Site/GMA Name GMA 1
Sampling Personnel SWO/MM
Date 11/6/2006
Weather Cool, Mostly Sunny

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point 0.25' Meas. From Grade
Well Diameter 2"
Screen Interval Depth 5'-15' Meas. From BGS
Water Table Depth 12.11' Meas. From TIC
Well Depth 14.45' Meas. From TIC
Length of Water Column 2.34'
Volume of Water in Well 0.38 gallon
Intake Depth of Pump/Tubing 13.5' Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Sample Time 1545
Sample ID LSSC-08S
Duplicate ID GMA1-DUP-1
MS/MSD —
Split Sample ID —

Required	Analytical Parameters:	Collected
( )	VOCs (Std. list)	( )
( )	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
(X)	PCBs (Dissolved)	(X)
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 1500
Pump Stop Time 1605
Minutes of Pumping 65
Volume of Water Removed 1.7 gallons
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump (X)
Peristaltic Pump ( ) Submersible Pump ( ) Other/Specify ( )
Pump Type: Marschalk - System One
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI-556 MPS, Hach 2100P Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1520	100	0.53		14.41	6.73	3.139	21	1.76	-101.9
1523		0.61		14.19	6.97	3.158	18	1.26	-102.9
1526		0.69		13.80	7.07	3.156	13	1.07	-101.5
1529		0.77		13.63	7.04	3.163	9	0.91	-98.6
1532		0.85		13.55	7.01	3.177	9	0.75	-96.2
1535		0.92		13.42	6.92	3.212	7	0.56	-91.6
1538		1.00		13.26	6.88	3.220	6	0.48	-88.4
1541		1.08		13.20	6.84	3.221	6	0.46	-85.1

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS Slight chemical odor

SAMPLE DESTINATION

Laboratory: TGS / NEA
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator:

GROUNDWATER SAMPLING LOG

Well No. LSSC-18
Key No. NA
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GMA 1 - Lyman
Sampling Personnel KIC, SAB
Date 11/6/16
Weather mid 50's.

WELL INFORMATION

Reference Point Marked? Y N
Height of Reference Point ____ Meas. From ____
Well Diameter 2"
Screen Interval Depth 9-19 Meas. From Ground
Water Table Depth 14.28 Meas. From TIC
Well Depth 18.59 Meas. From TIC
Length of Water Column 4.31
Volume of Water in Well 0.70 gallon
Intake Depth of Pump/Tubing 16.5 Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y N

Sample Time 1555
Sample ID LSSC-18
Duplicate ID ____
MS/MSD LSSC-18 MS/MSD.
Split Sample ID ____

Required	Analytical Parameters:	Collected
( )	VOCs (Std. list)	( )
( )	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
(X)	PCBs (Dissolved)	(X)
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 1450
Pump Stop Time 1615
Minutes of Pumping 85
Volume of Water Removed 4.5 gallon
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump (X)
Peristaltic Pump ( ) Submersible Pump ( ) Other/Specify ( )
Pump Type: Marschalk - System One
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI-556MPS, Hach 2100P Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1450	200	—	—	—	—	—	10	—	—
1455	200	0.26	14.41	12.70	6.69	.962	3	3.95	27.1
1500	200	0.53	14.42	12.44	6.72	.958	3	3.57	25.2
1505	200	0.79	14.44	12.36	6.33	.956	3	3.27	26.1
1510	200	1.06	14.45	12.52	6.75	.958	2	2.58	23.6
1515	200	1.32	14.48	12.58	6.75	.955	2	2.39	21.2
1520	200	1.58	14.48	12.36	6.78	.950	1	2.10	19.6
1525	200	1.85	14.44	12.45	6.76	.949	1	1.91	17.9

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

SAMPLE DESTINATION

Laboratory: SGS / ~~APPL~~ NEA
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator: [signature]

GROUNDWATER SAMPLING LOG

Well No. L55C-18

Site/GMA Name GMA-1
Sampling Personnel KIC, SAB
Date 11/6/06
Weather

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1530	200	2.11	14.44	12.45	6.78	.952	1	1.86	17.1
1535	200	2.38	14.43	12.45	6.79	.954	1	1.83	17.1
1540	200	2.64	14.44	12.42	6.74	.956	1	1.71	16.1
1545	200	2.91	14.44	12.41	6.76	.960	0	1.64	16.1
1550	200	3.17	14.44	12.35	6.78	.960	0	1.60	15.5

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

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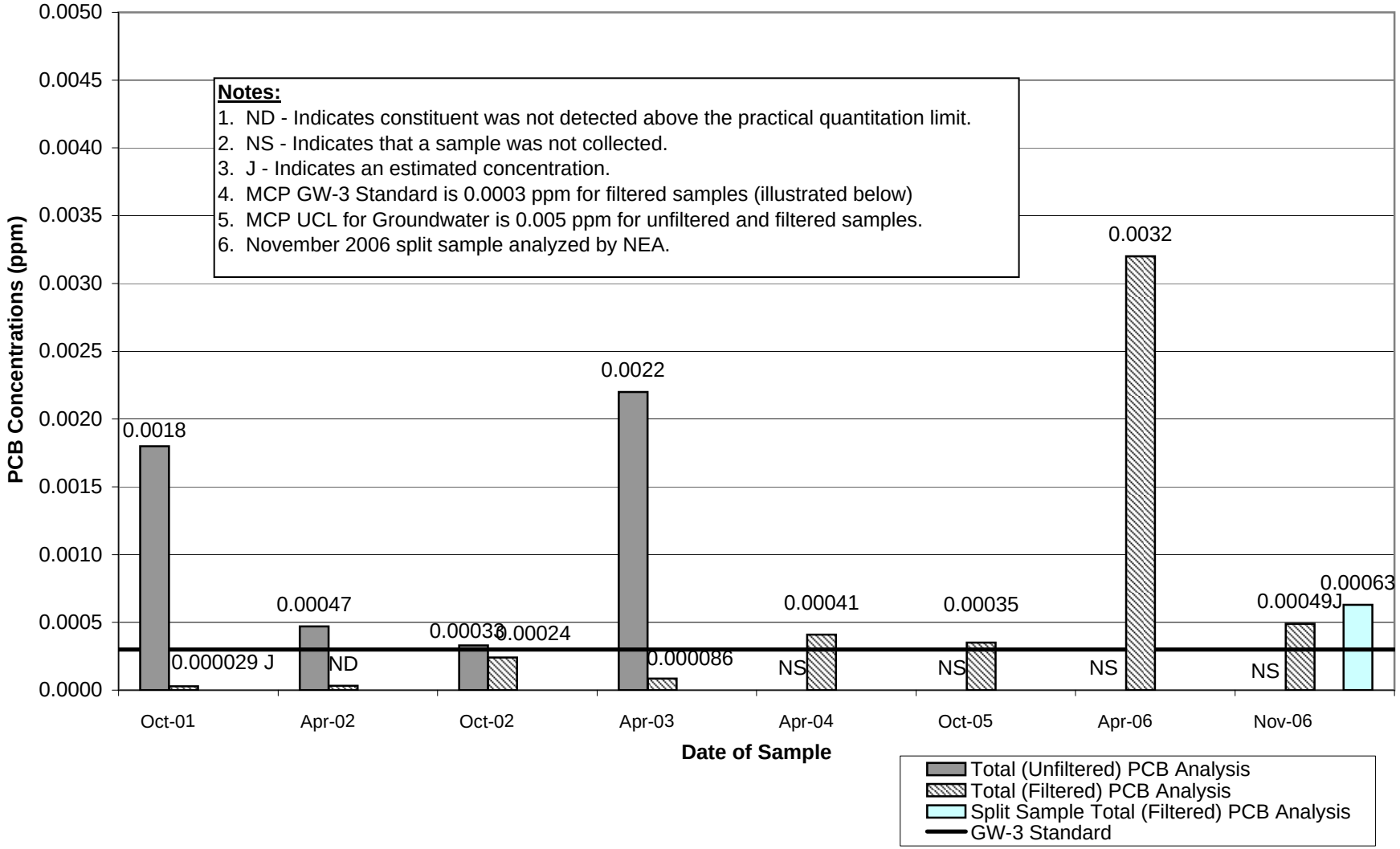
Appendix B

Historical Groundwater Data

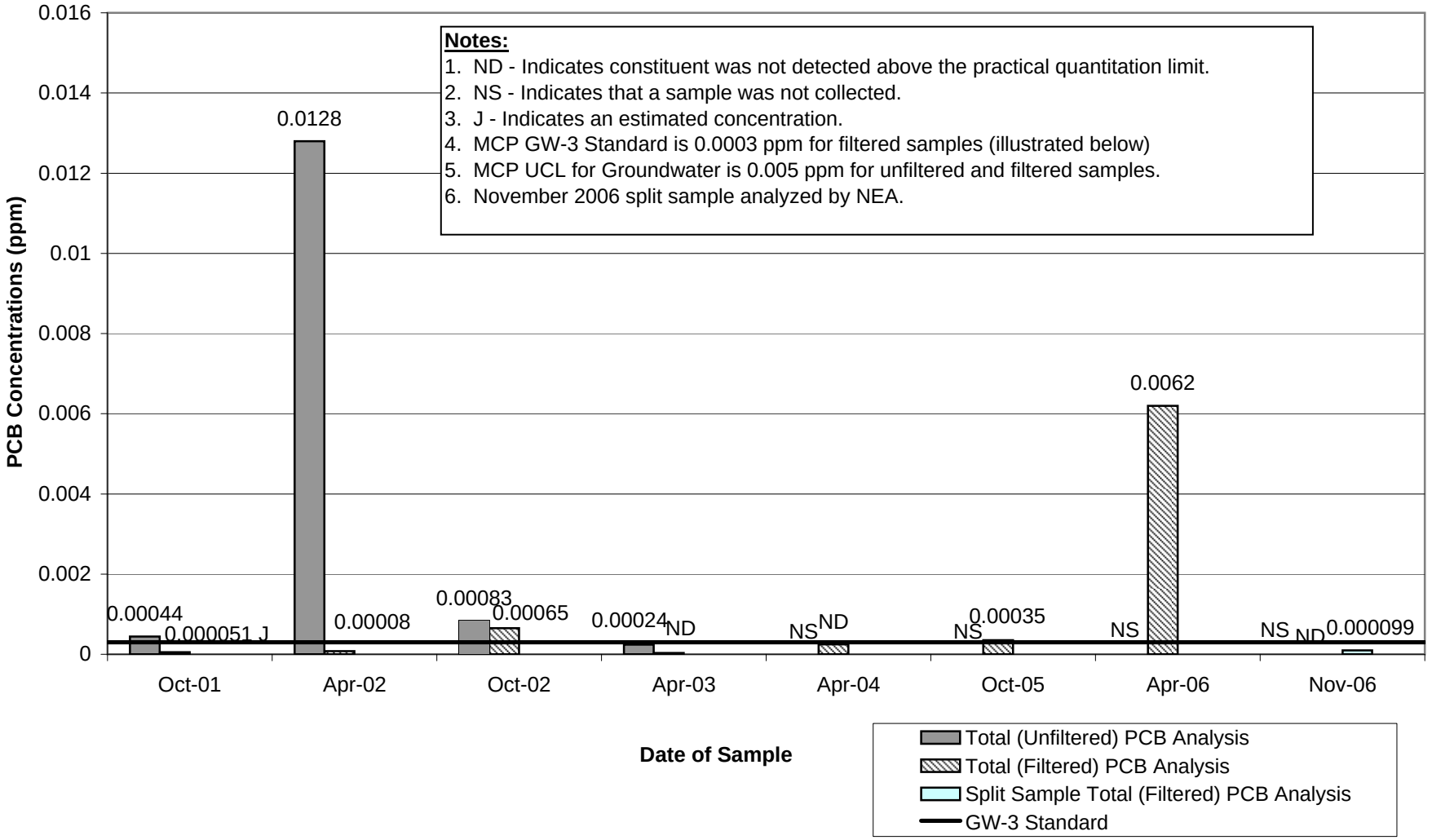
Appendix B

Groundwater Management Area 1
General Electric Company
Pittsfield, Massachusetts
Well LSSC-08S Historical PCB Concentrations



Appendix B

Groundwater Management Area 1
General Electric Company
Pittsfield, Massachusetts
Well LSSC-18 Historical PCB Concentrations



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Appendix C

Data Validation Reports

APPENDIX C-1
GROUNDWATER SAMPLING DATA VALIDATION REPORT
GROUNDWATER MANAGEMENT AREA 1 – FALL 2006

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

1.0 General

This appendix summarizes the Tier I and Tier II data reviews performed for groundwater samples collected during Remedial Investigation activities at Groundwater Management Area 1 (GMA 1) , located at the General Electric Company facility in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) by SGS Environmental Services, Inc. (formerly Paradigm Analytical Labs, Inc.) of Wilmington, North Carolina. Data validation was performed for three polychlorinated biphenyl (PCB) samples.

2.0 Data Evaluation Procedures

This appendix outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- Field Sampling Plan/Quality Assurance Project Plan, General Electric Company, Pittsfield, Massachusetts, Blasland, Bouck & Lee, Inc. (BBL; FSP/QAPP, approved May 25, 2004 and resubmitted June 15, 2004);

- Region I Tiered Organic and Inorganic Data Validation Guidelines, USEPA Region I (July 1, 1993);

- Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, USEPA Region I (February 1, 1988) (Modified November 1, 1988); and

- Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, USEPA Region I (Draft, December 1996).

A tabulated summary of the Tier I and Tier II data evaluations is presented in Table C-1. Each sample subjected to evaluation is listed in Table C-1 to document that data review was performed, as well as present the highest level of data validation (Tier I or Tier II) that was applied. Samples that required data qualification are listed separately for each parameter (compound or analyte) that required qualification.

The following data qualifiers were used in this data evaluation.

J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).

U The compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and (for solid samples only) percent moisture. Non-detect sample results are presented as ND(PQL) within this report and in Table C-1 for consistency with documents previously prepared for this investigation.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required qualification are presented as ND(PQL) J within this report and in Table C-1 for consistency with documents previously prepared for this investigation.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

3.0 Data Validation Procedures

The FSP/QAPP provides (in Section 7.5) that all analytical data will be validated to a Tier I level following the procedures presented in the Region I Tiered Organic and Inorganic Data Validation Guidelines (USEPA guidelines). Accordingly, 100% of the analytical data for these investigations were subjected to Tier I review. The Tier I review consisted of a completeness evidence audit, as outlined in the USEPA Region I CSF Completeness Evidence Audit Program (USEPA Region I, 7/31/91), to ensure that all laboratory data and documentation were present. In the event data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the USEPA Region I Tier I data completeness requirements.

As specified in the FSP/QAPP, approximately 25% of the laboratory sample delivery group packages are to be randomly chosen to be subjected to Tier II review. A Tier II review was also performed to resolve data usability limitations identified from laboratory qualification of the data during the Tier I data review. Since only two samples and a duplicate were analyzed for this round, a Tier II evaluation was performed on all data. The Tier II data review consisted of a review of all data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the Region I Data Validation Functional Guidelines. The Tier II review resulted in the qualification of data for several samples due to minor QA/QC deficiencies. Additionally, all field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subjected to Tier I and Tier II data evaluations is presented in the following table.

Summary of Samples Subjected to Tier I and Tier II Data Validation

Parameter	Tier I Only			Tier I &Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	2	1	0	3
Total	**0**	**0**	**0**	**2**	**1**	**0**	**3**

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in USEPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented below for each analytical method.

4.0 Data Review

The continuing calibration criterion requires that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF for PCBs be less than 15%. Sample data for detect and non-detect compounds with %D values that exceeded the continuing calibration criteria were qualified as estimated (J). A summary of the compounds that exceeded the continuing calibration criterion and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to Continuing Calibration of %D Values

Analysis	Compound	Number of Affected Samples	Qualification
PCBs	Aroclor-1016	3	J
	Aroclor-1221	3	J
	Aroclor-1232	3	J
	Aroclor-1242	3	J
	Aroclor-1248	3	J
	Aroclor-1254	3	J
	Aroclor-1260	3	J
	Total PCBs	3	J

Field duplicate samples were analyzed to evaluate the overall precision of laboratory and field procedures. The RPD between field duplicate samples is required to be less than 30% for water sample values greater than five times the PQL for organics. Sample results that exceeded these limits were qualified as estimated (J). The compounds that did not meet field duplicate RPD requirements and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to Field Duplicate RPD Deviations

Analysis	Compound	Number of Affected Samples	Qualification
PCBs	Aroclor-1248	2	J
	Total PCBs	2	J

5.0 Overall Data Usability

This section summarizes the analytical data in terms of its completeness and usability for site characterization purposes. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I and Tier II data validation reviews. Data completeness with respect to usability was calculated separately for inorganic and each of the organic analysis. The percent usability calculation also includes quality control samples collected to aid in the evaluation of data usability. Therefore, field/equipment blank, trip blank, and field duplicate data determined to be unusable as a result of the validation process are represented in the percent usability value tabulated in the following table.

Data Usability

Parameter	Percent Usability	Rejected Data
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

5.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included a field duplicate and an MS/MSD sample. For this analytical program, 66.7% of the data required qualification due to field duplicate RPD deviations. None of the data required qualification due to MS/MSD RPD deviations.

5.2 Accuracy

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, Laboratory Control Standards (LCSs), MS/MSD samples, and surrogate compound recoveries. For this analytical program, 100% of the data required qualification due to calibration deviations. None of the data required qualification due to MS/MSD recovery deviations, LCS recovery deviations, or surrogate compound recovery deviations.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in MDEP-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with USEPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical program, none of the data required qualification for exceeding holding time requirements.

5.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. The USEPA SW-846[1] analytical methods presented in the FSP/QAPP are updated on occasion by the USEPA to benefit from recent technological advancements in analytical chemistry and instrumentation. In most cases, the method upgrades include the incorporation of new technology that improves the sensitivity and stability of the instrumentation or allows the laboratory to increase throughput without hindering accuracy and precision. Overall, the analytical methods for this investigation have remained consistent in their general approach through continued use of the basic analytical techniques (e.g., sample extraction/preparation, instrument calibration, QA/QC procedures). Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions. Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions.

5.5 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. This analytical data set had an overall usability of 100%.

[1] Test Methods for evaluating Solid Waste, SW-846, USEPA, Final Update III, December 1996.

Table C-1
Analytical Data Validation Summary
Groundwater Management Area 1 - Fall 2006 (SGS)

General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
G135-220	GMA1-DUP-1 (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1016	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	LSSC-08S (Filtered)
						Aroclor-1221	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1232	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1242	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1248	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	0.00066 J	
						Aroclor-1248	Field Duplicate RPD (Water)	70.5%	<30%	0.00066 J	
						Aroclor-1254	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1260	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Total PCBs	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	0.00066 J	
						Total PCBs	Field Duplicate RPD (Water)	70.5%	<30%	0.00066 J	
G135-220	LSSC-08S (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1016	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1221	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1232	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1242	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1248	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	0.00032 J	
						Aroclor-1248	Field Duplicate RPD (Water)	70.5%	<30%	0.00032 J	
						Aroclor-1254	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Aroclor-1260	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00010) J	
						Total PCBs	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	0.00032 J	
						Total PCBs	Field Duplicate RPD (Water)	70.5%	<30%	0.00032 J	
G135-220	LSSC-18 (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1016	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1221	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1232	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1242	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1248	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1254	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Aroclor-1260	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	
						Total PCBs	CCAL %D (Aroclor-1016, 1260)	44.7%, 36.0%	<15%	ND(0.00011) J	

APPENDIX C-2
GROUNDWATER SAMPLING DATA VALIDATION REPORT
GROUNDWATER MANAGEMENT AREA 1 - FALL 2006

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

1.0 General

This appendix summarizes the Tier I and Tier II data reviews performed for groundwater samples collected during Remedial Investigation activities at Groundwater Management Area 1 (GMA 1) , located at the General Electric Company facility in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) by Northeast Analytical, Inc. (NEA) of Schenectady, New York. Data validation was performed for three PCB samples.

2.0 Data Evaluation Procedures

This appendix outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- Field Sampling Plan/Quality Assurance Project Plan, General Electric Company, Pittsfield, Massachusetts, Blasland, Bouck & Lee, Inc. (BBL; FSP/QAPP, approved May 25, 2004 and resubmitted June 15, 2004);

- Region I Tiered Organic and Inorganic Data Validation Guidelines, USEPA Region I (July 1, 1993);

- Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, USEPA Region I (February 1, 1988) (Modified November 1, 1988); and

- Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, USEPA Region I (Draft, December 1996).

A tabulated summary of the Tier I and Tier II data evaluations is presented in Table C-2. Each sample subjected to evaluation is listed in Table C-2 to document that data review was performed, as well as present the highest level of data validation (Tier I or Tier II) that was applied. Samples that required data qualification are listed separately for each parameter (compound or analyte) that required qualification.

The following data qualifiers were used in this data evaluation.

J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).

U The compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and (for solid samples only) percent moisture. Non-detect sample results are presented as ND(PQL) within this report and in Table C-1 for consistency with documents previously prepared for this investigation.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required qualification are presented as ND(PQL) J within this report and in Table C-2 for consistency with documents previously prepared for this investigation.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

3.0 Data Validation Procedures

The FSP/QAPP provides (in Section 7.5) that all analytical data will be validated to a Tier I level following the procedures presented in the Region I Tiered Organic and Inorganic Data Validation Guidelines (USEPA guidelines). Accordingly, 100% of the analytical data for these investigations were subjected to Tier I review. The Tier I review consisted of a completeness evidence audit, as outlined in the USEPA Region I CSF Completeness Evidence Audit Program (USEPA Region I, 7/31/91), to ensure that all laboratory data and documentation were present. In the event data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the USEPA Region I Tier I data completeness requirements.

As specified in the FSP/QAPP, approximately 25% of the laboratory sample delivery group packages are to be randomly chosen to be subjected to Tier II review. A Tier II review was also performed to resolve data usability limitations identified from laboratory qualification of the data during the Tier I data review. Since only two samples and a duplicate were analyzed for this round, a Tier II evaluation was performed on all data. The Tier II data review consisted of a review of all data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the Region I Data Validation Functional Guidelines. The Tier II review resulted in the qualification of data for several samples due to minor QA/QC deficiencies. Additionally, all field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subjected to Tier I and Tier II data evaluations is presented in the following table.

Summary of Samples Subjected to Tier I and Tier II Data Validation

Parameter	Tier I Only			Tier I &Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	2	1	0	3
Total	**0**	**0**	**0**	**2**	**1**	**0**	**3**

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in USEPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented below for each analytical method.

4.0 Data Review

Aroclor identification criteria require that the Aroclor pattern resemble that of the pattern established throughout the analysis of the standards of the target Aroclors. Sample results qualified by the laboratory (i.e. Aroclor-1248 not present) were reviewed for Aroclor identification. Sample data that did not match Aroclor patterns that were established through the analysis of target Aroclor standards were qualified with a "U" and the Total PCB content was adjusted to reflect the qualification of the Aroclor as non-detect. The PCB compounds that did not meet Aroclor identification criteria and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to Identification Deviations

Analysis	Compounds	Number of Affected Samples	Qualification
PCBs	Aroclor-1221	3	U
	Aroclor-1248	3	U

5.0 Overall Data Usability

This section summarizes the analytical data in terms of its completeness and usability for site characterization purposes. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I and Tier II data validation reviews. Data completeness with respect to usability was calculated separately for inorganic and each of the organic analysis. The percent usability calculation also includes quality control samples collected to aid in the evaluation of data usability. Therefore, field/equipment blank, trip blank, and field duplicate data determined to be unusable as a result of the validation process are represented in the percent usability value tabulated in the following table.

Data Usability

Parameter	Percent Usability	Rejected Data
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

5.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included a field duplicate. For this analytical program, none of the data required qualification due to field duplicate RPD deviations.

5.2 Accuracy

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, Laboratory Control Standards (LCSs), and surrogate compound recoveries. For this analytical program, 100% of the data required qualification due to Aroclor identification deviations. None of the data required qualification due to instrument calibration, LCS recovery deviations, or surrogate compound recovery deviations.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in MDEP-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with USEPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical program, none of the data required qualification for exceeding holding time requirements.

5.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. The USEPA SW-846[1] analytical methods presented in the FSP/QAPP are updated on occasion by the USEPA to benefit from recent technological advancements in analytical chemistry and instrumentation. In most cases, the method upgrades include the incorporation of new technology that improves the sensitivity and stability of the instrumentation or allows the laboratory to increase throughput without hindering accuracy and precision. Overall, the analytical methods for this investigation have remained consistent in their general approach through continued use of the basic analytical techniques (e.g., sample extraction/preparation, instrument calibration, QA/QC procedures). Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions. Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions.

5.5 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. This analytical data set had an overall usability of 100%.

[1] Test Methods for evaluating Solid Waste, SW-846, USEPA, Final Update III, December 1996.

Table C-2
Analytical Data Validation Summary
Groundwater Management Area 1 - Fall 2006 (NEA)

General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
06110046_Rev00	GMA1-DUP-1 (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1221	Aroclor-1221 not present	0.00035	-	ND(0.00018)	LSSC-08S (Filtered)
						Aroclor-1248	Aroclor-1248 not present	0.00200	-	ND(0.00018)	
						Total PCBs	Aroclor-1221/1248 not present	0.00304	-	0.00069	
06110046_Rev00	LSSC-08S (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1221	Aroclor-1221 not present	0.00033	-	ND(0.00013)	
						Aroclor-1248	Aroclor-1248 not present	0.00170	-	ND(0.00013)	
						Total PCBs	Aroclor-1221/1248 not present	0.00260	-	0.00057	
06110046_Rev00	LSSC-18 (Filtered)	11/6/2006	Water	Tier II	Yes	Aroclor-1221	Aroclor-1221 not present	0.000095	-	ND(0.000022)	
						Aroclor-1248	Aroclor-1248 not present	0.000350	-	ND(0.000022)	
						Total PCBs	Aroclor-1221/1248 not present	0.000544	-	0.000099	