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FILE

Transmitted Via Federal Express

May 31, 2006

Susan C. Svirsky, Project Manager
United States Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: EPA Review of General Electric's March 2006 *Bench-Scale Study Report for Silver Lake Sediments*,
GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts
Silver Lake Area (GECD600)

Dear Ms. Svirsky:

This Letter has been prepared in response to discussions between the General Electric Company (GE) and the Environmental Protection Agency (EPA), and the EPA's May 2, 2006 conditional approval letter related to the March 2006 *Bench-Scale Study Report for Silver Lake Sediments* (Report). Provided below is a discussion of GE's responses to EPA's May 2, 2006 comments.

For convenience, EPA comments have been provided in italics, followed by GE's response in standard format. Where EPA comments require revisions to the Report, those revisions are described in the GE responses and are implemented, as appropriate, in the enclosed revised Report

Comment 1: Provide core retention depths versus penetration depths for both Stage 1 and Stage 3 samples.

Response 1: A table providing the sediment penetration and estimated recovery depths for all cores collected as part of the bench-scale investigative activities has been provided in Appendix A.

Comment 2: Note if cores were in a horizontal or vertical position when being processed for analyses.

Response 2: While being cut and sectioned for analysis, Stage 1 and Stage 3 sediment cores were kept in an upright, vertical position. The text of the Report has been modified to reflect this practice.

Comment 3: Page 3-2, Section 3.1.1 (Table 1). Explain why sample intervals differed among cores and tests. Indicate if sample intervals are depths below sediment surface.

Response 3: Sample intervals shown in Table 1 represent the depth below the top of the sediment surface within the core. The geotechnical analysis laboratory (Geotechnics Laboratories in Pittsburgh, Pennsylvania) was provided with approximate 3-ft cores containing materials from the surface sediments of Silver Lake. The laboratory was instructed to process each core in a similar fashion and collect representative subsamples for geotechnical analysis. While processing and sectioning each core to achieve

sufficient volume for the various geotechnical tests, there were some variations in the sample intervals selected amongst the cores. The geotechnical results are considered representative of the top three feet of sediment in each core. Notes have been added to Table 1 to explain the selection of sample intervals for respective geotechnical analyses.

Comment 4: Page 3-2, Section 3.1.2. For the purposes of assessing performance across the stages in the Bench-Scale tests, the Pilot Study, and the final cap, it is important to document the geotechnical properties of the isolation layer materials used for the various stages of the project. Analyze residual isolation materials from the Bench-Scale Study, if available, for the geotechnical properties agreed for the Pilot Study.

Response 4: Isolation layer materials used in the Bench-Scale Study have been analyzed for total organic carbon (TOC) and grain size distribution. Table 3 of the Report has been modified to include the results of the grain-size analysis of the isolation material in addition to the TOC results previously reported.

Comment 5: Page 3-3, Section 3.2.1. Note that the test water depths differ from those that will be encountered in implementation in the lake, which may influence the depth of mixing. This should be a factor evaluated during the Pilot Study.

Response 5: A note has been inserted into the text in Section 3.2.1 stating that test water depths differ from those which will be encountered throughout most of the lake during full-scale implementation. The effect, if any, of the water depth on the depth of mixing will be evaluated for various water depths during the Pilot Study.

Comment 6: Page 3-4, Section 3.2.2. Discuss what techniques were used to determine if mixing had occurred, and discuss observations of mixing.

Response 6: During performance of the Bench-Scale Study, indications of mixing of cap materials and native sediments, if any, were noted based on visual observation during cap placement and during core sectioning activities. As noted in the text, there were visual observations of mixing in some Stage 1 cores during cap material application, with such mixing limited to the first ½-inch above the sediment/cap interface. This mixing was discussed in Section 3.3.3.2 as a possible explanation of low level PCB detections in the 0-2 inch interval of Stage 1 Cores B and F.

Comment 7: Page 3-6, Section 3.3.1 (Figure 6). Provide a timeline specifying date of sediment collection, initiation and termination of cap placement, and measurement of consolidation rates. Is there an explanation for the stepwise decrease in cores on 3/29-3/30 and 4/21, and a slight expansion in three cores on 4/14; if so explain in the text and/or provide as a footnote to the figure.

Response 7: Figure 6 has been modified to include notation of time-related events (e.g., initiation and termination of cap placement, end of test) with respect to the performance of Stage 1 activities. Noted decreases in sediment elevations between 3/29 and 3/30 (maximum decrease of approximately 1 inch in Core F) are thought to be the result of vibration associated with heavy equipment operating outside the trailer in which the study was being conducted. Increases in sediment elevations noted on or after 4/14 were limited to just three Stage 1 cores with a maximum "expansion" of 1/8-inch. It is likely that this is an anomalous record; possibly a result of normal margin of error in the visual measurement as opposed to an actual change in sediment elevation or condition. Text has been added to Section 3.3.3.1 to discuss these observations.

Comment 8: Section 3.2.2 and Table 2 and 6. It is unfortunate that the analytical results from the samples (0-6") from the cores collected at locations A through F on March 21 did not indicate the range in PCB concentrations (based upon analyses conducted from 0-36" interval) upon which the study was designed. The maximum sediment PCB concentration in Stage 1 testing was 250 mg/kg (Location D, Table 6) while in the Stage 1 pre-design, Locations C through F had concentrations near to and in excess of 2,000 mg/kg. Provide further discussion on the differing depths for which the cores were analyzed for the different stages. Note in the text that, due to these differences in sample depths, it is unknown if the design objective of testing cap performance for sediment with different PCB concentrations (including very high concentrations) was achieved, because the lower strata of the cores was not included in the samples sent for analysis. This will require that during the Pilot Study, care must be taken to further evaluate various issues (PCB release, gas flux, and cap recontamination) that may not have been fully characterized for circumstances with very high PCB concentrations.

Response 8: Cores collected as part of Pre-Stage 1 activities were analyzed for transport and disposal characterization only, and as such, the entire 0-36 inch depth increment was homogenized and analyzed as one sample. It is not appropriate to compare that data to 0- to 6-inch sample PCB results, even though they were collected at the same location. As previously discussed in the *Pre-Design Investigation Report for Silver Lake Sediments* (Sediments PDI; BBL, 2004), the PCB concentrations in Silver Lake sediments are significantly lower in the surface sediments relative to subsurface sediments. Consistent with the approved Bench-Scale Work Plan, sediment samples were collected from the 0-6 inch interval below the sediment/cap interface. In general, the PCB concentrations obtained from surface sediments during the Bench Study are comparable to those found in the surface (i.e., 0-1 foot) sediment samples obtained during the Sediments PDI, and the concentration assumed in the Silver Lake Response Action Conceptual Design (*Statement of Work for Removal Actions Outside the River, BBL 1999*). GE believes that in all likelihood, analysis of sediments from the Stage 1 cores at lower depths (i.e., below the 0- to 6-inch interval) would have indicated PCB detections similar to those reported in the Pre-Stage 1 cores. GE believes the design objectives specified in the Bench-Scale Work Plan were achieved. Text has been added to Section 3.3.3.2 to clarify the selection of sample depths.

Comment 9: Section 4. Include photographs similar to those for Stage 1 showing project set-up and close-ups of each of the cores, specifically showing the isolation materials in-situ, to the extent available.

Response 9: As requested, photographs depicting the Stage 3 test set-up and in-situ isolation materials have been included in Section 4 of the text.

Comment 10: Page 4-5, 4.1.3.1. It is unlikely that the presence of the geotextile influenced the consolidation rates. Possible reasons for the differences in consolidation include the differences in the height of the sediment column between cores, or possible core recovery which included layers with differing in-situ water content. Provide further discussion of this issue.

Response 10: Section 4.1.3.1 correctly states that the maximum consolidation in Stage 3 cores was observed in Core D10; a core that included a geotextile layer between the sediment and cap materials. GE concurs that the presence of geotextile in this core did not likely influence the extent of sediment consolidation. Text has been modified in Section 4.1.3.1 to remove any possible inference that the presence of a geotextile layer in this core had any influence on the consolidation.

Comment 11: Describe how much, if any of the consolidation occurred in the isolation layer versus the underlying sediment in the text and in Table 7. In addition, discuss the differences in amount of

consolidation observed between the Stage 1 and Stage 3 cores, and clarify the meaning of "initial sediment elevation" versus the descriptions of sediment recovery thicknesses provided in the text (there appear to be discrepancies between them).

Response 11: To estimate sediment consolidation, daily measurements of material elevation were taken with respect to an arbitrary fixed datum specific to each core in both Stage 1 and 3. The measured sediment elevations reported in Tables 5 and 7 do not represent sediment thickness within the core and are completely without respect to sediment recovery measurements. During both stages, independent measurements of both the top of sediment elevation, and the top of cap elevation were made, and the changes in the respective measurements represent the daily consolidation (or expansion) in the respective materials. As requested, Tables 5 and 7 have been revised to include the daily measurement of the top-of-cap elevation, and sentences have been added to Sections 3.3.3.1 and 4.1.3.1 describing the extent of consolidation noted in the isolation layer material during Stages 1 and 3.

Comment 12: Page 4-5, 4.1.3.1 (Figure 12). As with the previous comment for Stage 1 (Figure 6), provide a timeline of activities and any explanatory notes on changes in the core consolidation rates. Discuss why Core D14 (sediment only) showed marked expansion a week and then again a month after start of the test (was such an expansion noted immediately after removal from the lake?). Delete any measurements for Core 16 after the time of failure and provide an explanatory footnote on the figure for termination of the test.

Response 12: Figure 12 has been modified to include notation of time-related events (e.g., initiation and termination of cap placement, activation of simulated groundwater flux, early termination of Core 16) with respect to the performance of Stage 3 activities. The increase in sediment elevation observed in Core D14 starting on 7/20 is believed to be a result of the activation of the simulated groundwater flux through the core. Later, more gradual increases in sediment elevation (5/8-inches over two weeks) may be the continued effects of the groundwater flux, the result of changes in barometric pressures or differences in overburden water pressures experienced (i.e., from the lake bottom to the lab). Text has been added in Section 4.1.3.1 to discuss these observations.

Comment 13: Page 4-5, 4.1.3.2, 2nd paragraph. Discuss how the observations of mixing could affect the interpretation of the data, and discuss observations of mixing in the text.

Response 13: As previously documented in paragraphs 3, 4 and 5 of Section 4.1.3.2, limited mixing of cap material was visually observed during cap placement in Core D12, and is the likely cause of low levels of PCB and TPH present in the 0-2 inch layer of cap material. No edits to the text have been made in response to Comment 13.

Comment 14: Page 4-7, 4.1.3.3. Is there an explanation regarding the increase in the PCB concentration (however slight) in the final month of monitoring? Also, while it is noted in the text that "...these values are two orders of magnitude lower than the concentrations noted in the composite baseline sample collected from Stage 1 cores.", it should be clarified that the underlying sediment in 4 of the Stage 1 pre-design cores was approximately an order of magnitude higher in concentration than the concentration measured in the top 6" in Stage 3 cores.

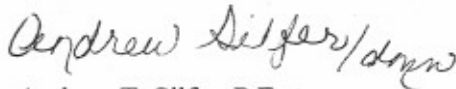
Response 14: No visual observations or other analytical results were obtained during Stage 3 of the Bench Study which would substantiate an actual increase in the PCB water column concentrations in the final month of monitoring. As previously noted in the text, these detections are only marginally above (or even below) reported instrument detection limits and do not significantly differ from the non-detect results

reported for similar overburden water samples collected earlier in Stage 3 (i.e., they could be the result of analytical variability, as reported by the laboratory). The text has been expanded to reflect this.

Text that previously compared the Stage 3 PCB water column results to the Stage 1 results, and more specifically to Core D14, has been removed.

This revised Report is intended to supersede and replace the version previously submitted in March of 2006. Please feel free to contact me with any additional questions.

Sincerely,



Andrew T. Silfer, P.E.
GE Project Coordinator

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REPORT

***Bench-Scale Study Report for
Silver Lake Sediments***

**General Electric Company
Pittsfield, Massachusetts**

**Originally Submitted March 2006
Revised May 2006**



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1. Introduction

1.1 General

In 2003, the General Electric Company (GE) performed several pre-design investigation activities related to placement of an engineered cap over sediments within Silver Lake in Pittsfield, Massachusetts (Figure 1). The pre-design activities were performed to verify a number of key design parameters and assumptions documented in Attachment K of the *Statement of Work for Removal Activities Outside the River* (SOW; BBL, 1999). The SOW is Appendix E to the Consent Decree executed in 1999 by GE, the United States Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MDEP), and several other government agencies, and entered by the United States District Court for the District of Massachusetts on October 27, 2000. The results of these pre-design activities were presented in the *Pre-Design Investigations Report for Silver Lake Sediments* (Sediments PDI Report; BBL, 2004a), which was conditionally approved by EPA in a letter dated November 30, 2004. That report proposed the performance of several supplemental pre-design investigations, including the performance of a bench-scale study of cap placement, sediment consolidation, and PCB transport.

This bench-scale study report presents the results of the bench-scale investigations described in the *Bench-Scale Study Work Plan for Silver Lake Sediments* (Work Plan) that was submitted to EPA on January 20, 2005, and conditionally approved by EPA in a letter dated February 25, 2005. The Work Plan described the bench-scale study approach and test procedures designed to address the following objectives, which had first been developed and presented to EPA in a letter dated September 15, 2004, which letter was conditionally approved by EPA in a letter dated November 30, 2004:

- Use column studies to preliminarily evaluate the geotechnical and physical responses of the sediments (i.e., mixing and consolidation) due to placement of cap materials at varying rates of sand placement both with and without a geotextile;
- Further assess the interrelationships between TPH and NAPL that may be present in the sediment and PCB mobility during and following cap placement, through observation and direct measurement of mixing and migration of PCBs, TPH, and/or NAPL in column consolidation studies; and
- Determine the presence and significance of gas-induced transport of PCBs through existing sediments and proposed cap materials in column studies.

The bench-scale study was undertaken to identify potential refinements to the conceptual design, as described in Attachment K to the SOW that should be considered during detailed design activities related to the engineered cap to be placed over Silver Lake sediments.

Overall, the results of this bench-scale study, which show no discernible indication of: consolidation based, groundwater induced, or TPH and/or gas enhanced PCB mobility, led to the following general conclusions:

- The cap material characteristics and configurations used for the bench-scale tests provided effective barriers in isolating PCBs within the sediment column and mitigating upward migration into the cap material and into the overlying water column: and

-
- During the course of the bench-scale study, no observations were made or results obtained that suggest that modifications to the conceptual cap design are warranted.

A description of the results which support these conclusions are provided in this Report.

1.2 Format of Report

This report is organized as follows:

- Section 1 presents general background information and highlights the objectives and general conclusions of the study;
- Section 2 presents the general approach of the bench-scale study and describes the intent of each of the three stages;
- Section 3 presents the test procedures and set-up employed in the performance of Stage 1 of the bench-scale study, and presents the results of the pre-Stage 1 and Stage 1 test activities (including the proposal for elimination of Stage 2 of the study);
- Section 4 presents the test procedures and test set-up employed in the performance of the Stage 3 of the bench-scale study, and presents the results of Stage 3 test activities;
- Section 5 discusses conclusions regarding the results of the bench-scale study as they relate to the stated objectives of the bench-scale study;
- Section 6 provides a description of future activities and schedule; and
- Section 7 provides a list of references used to prepare this report.

2. Bench-Scale Study Approach

As discussed in the Sediments PDI Report, and later supplemental investigation reports, conservative design parameters and assumptions were used in the conceptual design of the Silver Lake cap. Given the physical conditions at the lake and potential options related to cap configuration and placement techniques, EPA and GE agreed that it would be appropriate to conduct a bench-scale study to further verify some of the key design parameters and assumptions.

As described in the Work Plan, the bench-scale study was to consist of a series of column studies conducted on relatively undisturbed sediment cores, performed in three sequential stages, with each stage building on the knowledge acquired from the previous stage. This iterative approach allowed for the opportunity to modify the performance and schedule of the later stages of the bench-scale study in the event that information developed during initial bench-scale study activities suggested that substantive changes to the bench-scale study assumptions or procedures were warranted.

The first two stages of the bench-scale study were to involve placement of isolation layer materials on relatively undisturbed Silver Lake sediments within a fixed column and a static environment. The third stage of the study was to involve a similar column study, but performed within a dynamic environment created by the addition of simulated groundwater movement as well as an apparatus to collect any gasses generated during the study. As proposed in the Work Plan, the stages of the bench-scale study are summarized in further detail below.

In Stage 1, sediment cores were to be collected from six locations representing varying sediment types and characteristics, to evaluate the range (if any) of the physical and chemical responses of such various sediment types to the placement of cap materials. Specifically, the core collection locations were chosen to represent the following range of sediment conditions:

- Location A is in the vicinity of relatively higher TPH concentrations;
- Location B is in an area where the sediment has relatively higher sand content than other portions of the lake;
- Location C is in a deep, flat-bottomed portion of Silver Lake where relatively softer sediments exist;
- Location D is representative of relatively steep bed slope conditions and is in an area that is a potential candidate for the pilot study;
- Location E is representative of relatively shallow bed slope conditions found in the western end of the lake; and
- Location F (added to the bench study at the request of EPA) is in the vicinity of relatively high PCB concentrations found in sediments that are subject to removal as discussed in the SOW.

These six sediment sample locations are depicted on Figure 2.

Prior to the initiation of Stage 1 activities, sediment cores were to be collected from the six locations described above. These cores were to be collected for the analysis of certain pre-consolidation sediment conditions.

Additionally, three cores were to be collected from one location for the evaluation of the cap material placement rate discussed in the Work Plan.

Bench-scale column consolidation studies performed on the Stage 1 cores were to utilize the same capping materials, cap configurations, and placement rates in each core (i.e., these test parameters were not varied among the columns). Chemical analysis of Stage 1 sediment and cap material samples was to be used to assess the potential for PCBs and NAPL (if any) to be transported through the capping materials under static conditions. Additionally, the combination of Stage 1 PCB and TPH analytical results, and sediment consolidation measurements and observations, were to be used in the selection of the sampling location and cap placement rates to be carried forth for Stage 2 and Stage 3 activities.

Stage 2 sediment cores were to be collected from one location (selected based on Stage 1 test results). The consolidation studies performed on these cores were to include varied capping materials and cap configurations. Therefore, the objective of the Stage 2 study was to evaluate the potential effects of different capping materials and configurations on cap placement, as well as any effects various cap configurations may have on the potential for PCB transport, thereby providing information on optimal cap configurations and placement rates. Additionally, Stage 2 consolidation studies were to evaluate the potential benefits of adding a geotextile layer between the sediment and isolation layer materials.

In Stage 3, sediment cores were to be collected from one location (selected based on Stage 1 test results). A multi-pathway transport column test was to be performed on these cores in a simulated dynamic sediment/groundwater environment created by the addition of simulated groundwater flux and the collection of any gas released from the sediment or cap materials. Thus, the purpose of Stage 3 was to further investigate the potential for PCBs and NAPL to be transported through the capping materials, and evaluate the impacts of a dynamic environment on such transport.

In accordance with the EPA approved Work Plan, at the conclusion of each stage of the bench-scale study, excess or used materials (e.g., sediments, cap materials, Lexan column material) were disposed of at the Building 71 On-Plant Consolidation Area (OPCA). Similarly, overburden water collected in sediment cores, or used during the course of the study, was sent to GE's Building 64G Groundwater Treatment Plant for treatment.

3. Stage 1 Performance and Results

Stage 1 of the bench-scale study consisted of a sediment consolidation study to investigate the general physical and chemical response of native sediments to the placement of capping materials within a controlled laboratory setting. During the performance of Stage 1 activities, test parameters (e.g., cap composition, cap placement rate, core environment) were not varied. This section presents the sediment collection and consolidation study activities performed prior to and during the completion of Stage 1 of the bench-scale study. This section also presents the physical and analytical results of the Stage 1 investigations and provides discussion as they relate to the completion of the remainder of the bench-scale study.

3.1 Pre-Stage 1 Sediment and Isolation Layer Material Characterization

3.1.1 Sediment Characterization

Prior to the initiation of Stage 1 activities, on March 8, and 9, 2005, sediment cores were collected from locations A through F to characterize pre-consolidation geotechnical properties. The cores were collected using eight-foot long, four-inch diameter Lexan tubes. Core collection locations are displayed on Figure 2. Core collection was performed in a manner consistent with the requirements of the *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP; BBL, 2004b). Field measurements such as water depth, sediment penetration, sediment recovery, and visual observations were recorded at the time of sediment collection. Detailed records of the sediment penetration and recovery depths for these sediment cores are included in Appendix A. Immediately upon collection, one core from each location was cut at the sediment/water interface and capped at both the top and bottom. These cores were then transported in an upright position to Geotechnics Laboratories in Pittsburgh, Pennsylvania, and were kept in an upright position while being processed for analyses. As prescribed in the Work Plan, as well as in EPA's conditional approval letter, sediment samples were analyzed for the following geotechnical properties:

- Particle size distribution (American Society for Testing and Materials (ASTM) Method D-421/4222);
- Wet- and dry-density;
- Porosity;
- Moisture content (ASTM Method D-2216);
- Atterberg limits (ASTM D-4318); and
- Specific gravity (ASTM D-854).

Analysis of the cores confirmed prior reports that surface sediments in Silver Lake are generally very moist, low-strength materials that exhibit characteristics of a low-permeability silt. Grain-size analysis indicated the greatest fraction of solid materials to be silts and clays. Complete results of the geotechnical analyses are provided in Table 1. Note that geotechnical sample intervals, taken from within the approximate 3-ft core provided to the laboratory, are a function of the specific test (listed above) and material volume requirements. The geotechnical analytical results presented in Table 1 are considered representative of the entire 3-ft sediment core.

Additionally, composite samples representing the full depth of sediment in the cores were collected and delivered to North East Analytical Laboratories (NEA) in Schenectady, NY for analysis of PCBs for disposal characterization purposes. Sediment PCB concentrations ranged from 190 to 4,800 ppm, with the highest

concentration found in sediments collected from location E. Complete PCB analytical results for these samples are available in Table 2.

3.1.2 Isolation Layer Material Characterization

As stated in Attachment K of the SOW, the cap to be placed over Silver Lake sediments is to include a chemical isolation layer with a minimum total organic carbon (TOC) content of 0.5%. The isolation layer material placed in the bench-scale study was a 4:1 mixture of uniformly graded sand and topsoil. Sand used in the isolation layer materials mixture was obtained from Colarusso Sand and Gravel in Greenport, NY. The topsoil was purchased in a prepackaged bag from a local hardware store. A sample of the isolation layer material was delivered to North East Analytical Laboratories (NEA) in Schenectady, NY for TOC analysis using the Lloyd Khan method. Analysis of the isolation layer materials used in the bench-scale testing had an average TOC content of 1.2%, which is well above the minimum standard set forth in the SOW. Additionally, a sample of the isolation material was sent to Geotechnics for analysis of grain size distribution. Complete results of these analyses are presented in Table 3.

3.2 Pre-Stage 1 Trial Columns

3.2.1 Trial Column Collection and Procedures

At the same time as the collection of the geotechnical characterization cores discussed above, five cores were collected from Location C, for use as trial columns to verify the selected isolation layer material placement rate prior to initiating Stage 1 tests. These five trial cores were collected in 8-foot long 4-inch diameter Lexan tubes with each core having approximately 3- to 4-feet of sediment in the tube. Detailed records of the sediment penetration and recovery depths for these sediment cores are included in Appendix A. Immediately upon recovery of the core, each end of the collection tube was capped with approximately 2- to 3-feet of water column retained above the sediment (Note that while 2- to 3-feet of water was maintained above the sediments throughout performance of the study, these water depths differ from those anticipated to be encountered throughout most of the lake during full-scale implementation. The effect, if any, of the water depth on the depth of mixing will be evaluated in the proposed Pilot Study). Once collected, the five pre-trial cores were transported in an upright position to a trailer on the GE facility in Pittsfield.

Upon arrival at the study location the cores were anchored in place in an upright position. Prior to being anchored in place, the bottom of each capped core was placed inside of two nested 10-gallon containers to provide containment in the event of a spill or leak. A photograph of the test set-up is displayed in Figure 3

A specific goal of the trial core tests was to evaluate the isolation layer material placement rate proposed in the Work Plan. As presented in the Work Plan, the bench-scale study cores were to have a total of 12 inches of isolation layer material applied (i.e., deposited over the native sediments through the overburden water) over the course of four days (i.e., three inches per day). During the trial experiments,



Figure 3: Trial Column Set-up

along with the cap placement rate proposed in the Work Plan, several other placement rates were tested to see if they were more suitable for actual cap placement. The four placement rates tested in the trial cores were as follows:

- Two cores had three inches of isolation layer material placed over three minutes on four consecutive days for a total of 12 inches of isolation layer material;
- One core had three inches of isolation layer material placed over three minutes on day one, and nine inches placed over nine minutes the following day for a total of 12 inches of isolation layer material;
- One core had 12 inches of isolation layer material placed over 12 minutes for a total of 12 inches of isolation layer material; and
- One core had 12 inches of isolation layer material placed in one minute for a total of 12 inches of isolation layer material.

3.2.2 Trial Column Results and Observations

Each of the trial cores was allowed to consolidate for several days following cap placement and observations were made regarding both the sediment and isolation layer materials, as well the success of the respective placement rates. During cap application, there was minor mixing of native sediment visually observed in the first lift of isolation layer materials in the two cores that received 12 inches of isolation layer materials in one day, and these placement rates were removed from further consideration in an effort to minimize the potential for such mixing to occur.

In each of the test cores, during placement of isolation materials, there appeared to be some separation of the finer grained materials during settling. This apparent separation and differential settling were exhibited in a striated appearance within the isolation layer materials regardless of the material placement rate. In those cores where the entire twelve inches of isolation layer material was placed in one lift, the lower several inches appeared to be primarily sand and the upper several inches primarily fines. In those cores where isolation layer materials were placed in a series of multiple smaller lifts, a repeating pattern of apparent sands and fines was observed in the core. A picture of the striations observed following the placement of isolation layer materials in one inch lifts is displayed in Figure 4.

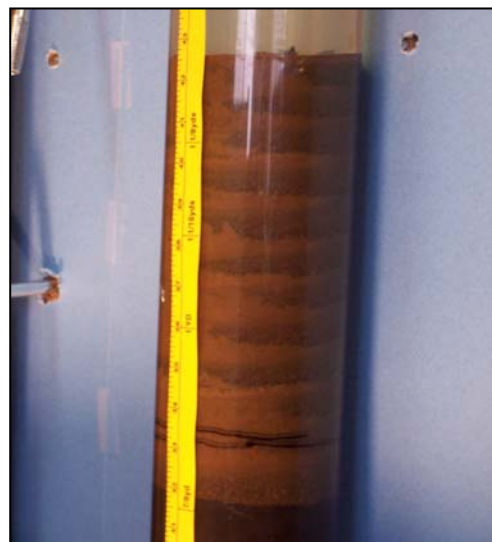


Figure 4: Fine Material Separation

In an effort to achieve a more homogenous cap composition, and maximize the distribution of fines and sand throughout the one foot cap, it was decided that isolation materials would be applied in one inch lifts, such that there were fines present in each successive one inch increment of the cap. Ultimately, it was determined that an application rate of three inches of isolation layer material per day, applied in lifts of 1 inch per minute was most appropriate for use during the remainder of the bench-scale study.

3.3 Stage 1 Activities

3.3.1 Stage 1 Core Collection and Test Set-up

On March 21, 2005, Stage 1 cores were collected from six locations labeled A through F, as shown on Figure 2. The cores were collected in 8-foot long 4-inch diameter Lexan tubes with each core having approximately 3 feet of sediment in the tube. Immediately upon recovery, each end of the collection tube was capped, with 2- to 3-feet of water column retained above the sediment. Detailed records of the sediment penetration and recovery depths for these sediment cores are included in Appendix A. Core collection methods, and test set-up procedures were similar to those described above for the trial test cores. A picture of the Stage 1 cores during setup is displayed in Figure 5.

To establish baseline water conditions prior to cap placement, a water sample was collected from each core, and composited for laboratory analysis. The composited unfiltered water sample was analyzed by NEA for PCB (SW-846 method 8082), and by SGS Environmental Services (SGS) in Charlestown, West Virginia for TPH (MADEP-VPH-98-1/MADEP-EPH-98-1). PCBs were detected at 0.002 ppm, while TPHs were not detected. As noted, this water sample was not filtered, and the detection of PCB at this level may be due to the presence of fines suspended in the respective water columns above the sediments as a result of sample collection and transport activities. These baseline chemical analysis results are included in Table 4.



Figure 5: Stage 1 Test Set-up

3.3.2 Stage 1 Test Procedures

As prescribed in the Work Plan, approximately twelve inches of isolation layer material were added to each core over the course of four days. Starting on March 22, 2005, isolation layer materials were placed in three 1 inch lifts per day, with each lift deposited in the core over one minute. Successive lifts in each core were placed several hours apart, such that, to the extent practicable, the previous lift had settled out of the water column. During the application of isolation layer materials there were some observations of limited mixing between the top of the sediment and the bottom of the first lift of isolation layer materials; such mixing did not appear to extend beyond the first one half inch in any core. Additionally, during isolation layer material placement, there were no observations noted of gas bubbles being released.

Throughout the Stage 1 consolidation study, the sediment and overburden water were maintained at room temperature in the original cores in which the sediment samples were obtained. Following cap placement, consolidation of the sediment and isolation layer materials was monitored until consolidation was observed to be complete. Daily measurements were made of the elevations of the top of the native sediment, the top of the isolation layer material, and top of the overburden water. Each of the elevation measurements was made with respect to an arbitrary core-specific datum that was established prior to cap application. Over the duration of the consolidation period, there were a few observations noted of gas bubbles being released through the top layer of the cap, but the origin of the gas is unclear (i.e.; the sediment or isolation layer materials) and such releases did

not appear to create new or additional mixing, and were not observed to disrupt the integrity of the cap materials.

3.3.3 Stage 1 Results

3.3.3.1 Stage 1 Consolidation Results

The Stage 1 consolidation tests ran for 45 days. As discussed above, each Stage 1 core had 12-inches of isolation layer material placed on top of the sediment within the tubes, placed in 1-inch lifts. During placement of the first 1-inch of isolation layer materials, some limited mixing of sediments with the isolation layer material at the sediment/cap interface was visually observed.

Consolidation of cap materials in Stage 1 cores ranged from no consolidation to 3/8-inch. Consolidation in Stage 1 sediments ranged from 1.1 to 3.7 inches, with an average consolidation of 2.3 inches. As shown on Figure 6, the majority of sediment consolidation was complete within the first 20 days of the test period. As anticipated, based on geotechnical analysis, Location D, which had the highest moisture content and the highest fraction of silts and clays, exhibited the greatest sediment consolidation over the course of Stage 1, while location A, which had the highest fraction of sands and gravels, exhibited the least consolidation. During the course of Stage 1 tests, there were no observations made of either shear or rotational failure in the capped sediments, meaning the sediments within the columns successfully supported the weight of the isolation layer materials. Larger decreases in sediment elevation were observed on 3/29-3/30. These observations are believed to be a result vibration associated with heavy equipment operation outside the trailer in which the study was performed. The slight measured increase in sediment elevations noted on or after 4/14 in three Stage 1 cores most likely do not represent real increases but, rather, only the normal margin of error in visual measurements of this type. Complete Stage 1 consolidation results are included in Table 5, which displays the entire Stage 1 record of daily measurement of sediment and cap elevation measurements. Daily sediment elevation measurements are illustrated on Figure 6. Timeline notations, detailing performance of sediment collection and initiation and termination of isolation layer placement, are also included on Figure 6.

3.3.3.2 Stage 1 Sediment/Cap Material Analytical Results

At the end of the consolidation test period, the overburden water was drained from each core, and the cores were removed from the Lexan tubes and sectioned for chemical analysis. During the sectioning process, observations of visible mixing were noted in Cores B and F, as further discussed below. Core sections were cut from the upper sediment layer (0- to 6-inches below the apparent sediment/cap interface); and the following cap layers (measurements relative to the sediment/cap interface): 0- to 2-inch, 2- to 4-inch, 4- to 6-inch, and the remaining material greater than 6-inches above the sediment cap interface of each core (See Figure 7). Visual observations and material descriptions were made of each core section, and the sample material comprising each section was homogenized prior to laboratory sample collection. In all, six sediment samples and twenty-four isolation layer material samples were collected. Sediment samples were analyzed for PCBs and TPH, and isolation layer material samples were analyzed for PCBs, TPH, and TOC.

In summary, sediment PCB concentrations ranged from 26 to 250 parts per million (ppm), with the highest concentration reported in the sample obtained from location D. PCBs were reported in only 5 of the 24 isolation layer material segments, with overall PCB concentrations ranging from non-detect (ND) to 0.37 ppm. There were no PCBs detected in any of the isolation layer material segments collected from Cores A, C, D (which had

the highest Stage 1 PCB concentrations in sediment), or E. The isolation layer material segment PCB results from locations B and F had low level PCB detections in the 0- to 2-inch cap segment; a likely result of mixing observed during placement of the first lift of cap materials placed in these cores. Low-level PCB concentrations were also detected in three other cap segments of the isolation layer materials at locations B and F, although given their distribution they do not present a continuous gradient indicative of upward transport. As noted in Table 6 and depicted on Figure 8, no trends or consistent patterns in PCB presence or concentration with respect to depth were noted in any of the cores.

Note that the PCB detections found in the 0- to 6-inch increment of the Stage 1 cores were lower than the PCB detections in homogenized samples from the entire core (0- to 36-inches; as in Pre-Stage 1 cores), as would be expected, given that PCB concentrations in Silver Lake sediments are generally significantly lower in the surface sediments relative to subsurface sediments. GE believes that, in all likelihood, had the full depth of these cores been analyzed, PCB results for the entire core would have been similar to those seen in Pre-Stage 1 cores. In general, the concentrations of PCBs in sediment shown in Table 6 are comparable to the PCB concentrations in samples previously collected from the 0- to 1-foot increment investigation (as detailed in the Sediments PDI Report) and, represent the PCB concentrations expected to be found at the surface of Silver Lake.

TPH results in Stage 1 sediment samples ranged from ND to 2,600 ppm, with TPHs only reported above the detection limits in samples collected from locations A (2,600 ppm) and D (2,500 ppm). No TPHs were reported in any of the 24 Stage 1 isolation layer material samples. Further, during core processing there were no observations of NAPL or sheens in any of the 24 Stage 1 isolation layer material samples. Since there were no TPHs detected in any isolation layer samples with PCB detections, there is no indication that the presence of TPH in Silver Lake sediment plays a role in PCB mobility. Complete Stage 1 TPH results are tabulated in Table 6, and are illustrated on Figure 9.

Stage 1 isolation layer segments were also analyzed for TOC. In summary, the TOC concentrations in the Stage 1 isolation layer materials samples ranged from 0.9% in core A, to 1.7% in cores B, C, and F. Analysis of each of the Stage 1 isolation layer material samples indicated a TOC concentration greater than the minimum TOC content of 0.5% specified in the Technical Attachment K of the SOW. Stage 1 TOC analytical results are tabulated in Table 6.

3.4 Elimination of Stage 2

Stage 2 of the Bench-Scale Study was intended to involve the selection of one core collection location in the lake (based on Stage 1 results) and performance of a second round of consolidation studies that involved various potential cap configurations, and the implementation of various isolation layer material placement rates. Given the placement rates evaluated during the pre-Stage 1 tests, coupled with the physical and chemical results from Stage 1 of the study discussed above, GE believed that the objectives for Stage 2, as proposed in the Work Plan, had essentially been satisfied. In a letter to EPA dated June 13, 2005, GE discussed the results of Stage 1 consolidation tests and chemical analyses and proposed that Stage 2 of the bench-scale study be eliminated. EPA conditionally approved this proposal in a letter dated June 23, 2005, and agreed that GE could proceed to Stage 3 of the study in accordance with the following conditions:

- One of the test cores would include a gravel layer on top of the isolation layer to simulate an armor layer; and

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- Core location D, having exhibited the longest duration and greatest amount of total consolidation and containing the highest PCB and second highest TPH concentrations during Phase 1, would be used for the collection of Stage 3 cores.

4. Stage 3 Performance and Results

The Stage 3 column consolidation study consisted of longer duration consolidation tests conducted to further evaluate potential PCB mobility associated with placement of a cap over native sediments. Additionally, Stage 3 considered the influence of an upward groundwater flux and potential in-situ gas generation on PCB transport. This section presents the sediment collection, consolidation study activities, and the physical and analytical results of Stage 3 investigations.

4.1 Stage 3 Activities

4.1.1 Stage 3 Core Collection and Test Set-up

On July 13, eight sediment cores were collected from location D for the performance of Stage 3 consolidation tests. As in Stage 1, sediment cores were collected in 8-foot long, 4-inch diameter Lexan tubes. Each collected core was immediately capped at both ends, with approximately 3- to 4-feet of sediment and 2- to 3-feet of water retained above the sediment. Detailed records of the sediment penetration and recovery depths for these sediment cores are included in Appendix A. The procedures for the sediment core collection and handling were the same as those previously discussed for the Stage 1 consolidation tests. Of the eight cores collected, five were used in the performance of Stage 3 activities, while the remaining three cores were maintained as spares until it was apparent they were not needed, and they were then properly disposed of as discussed previously.

As specified in the Work Plan, the Stage 3 core test apparatus had several components such that a dynamic multi-pathway environment was created for the performance of the consolidation studies and the investigation of potential PCB transport into and through isolation layer materials. Each core had three attachments: one that created an upward groundwater flux through the sediment column; one that collected any water in excess of two feet above the top of the cap; and one that collected any potential gases generated in the sediment and water column during the course of Stage 3. A photo of the Stage 3 cores is shown in Figure 10 and an illustration of the Stage 3 core set-up is displayed on Figure 11.

As with the previous tests, sediments and the overlying water were maintained in the original collection tubes. Upon arrival at the trailer within the GE facility, a series of fittings were attached to the bottom of each of the five cores placed into the Stage 3 consolidation test apparatus. Each core was anchored to the trailer wall in an upright position, with the fittings and the bottom of each core in two nested 10-gallon containers. The fittings at the bottom of each core enabled the delivery of simulated groundwater to the bottom of the sediment column. Within each



Figure 10: Stage 3 Test Set-Up

fitting, near the point of the groundwater flux to the sediment core, a series of filter plates supported the bottom of the sediment column, and provided for sufficient diffusion of the flow to minimize the potential for short-circuiting of the water through the sediments.

The simulated groundwater for each core was stored in individual reservoir bags which were elevated above each respective core such that a hydraulic head was created sufficient to establish the approximate target seepage rate of 2.74 liters per square meter per day (i.e., the assumed value used in the conceptual capping design). It should be noted that this value is more than one order of magnitude greater than the greatest groundwater seepage rate measured in Silver Lake as part of previous pre-design activities. It was determined that in a four-inch diameter core, a volumetric flow rate of approximately 20 milliliters per day (mL/d) would approximate the desired seepage rate. The water used in the reservoir bags was Silver Lake surface water that had been degassed (via boiling). As necessary, the groundwater reservoir bags were refilled with degassed Silver Lake water and the elevation of the reservoir bags adjusted to maintain appropriate hydraulic head and related seepage rates. Near the top of each core, a drain line was also added so that as groundwater passed through the sediment column, the water column height was maintained at approximately 2 feet above the sediment.

In addition to the provision of a groundwater flux, the top of each core was fitted with a funnel and collection bag to allow collection of any gas bubbles and associated particulates transported upwards with the gas. Within each funnel, a layer of glass wool was positioned to collect particulate or potential NAPL materials that may be associated with any potential gas (bubble) related transport. To facilitate isolation layer material placement, the groundwater supply and gas collection implements were not activated until after the isolation layer material placement was complete and the isolation layer materials appeared to have settled out of the water column.

4.1.2 Stage 3 Test Procedures

Starting on July 14, 2005, using the same application rate used in Stage 1 (3 inches per day at 1-inch per minute), isolation layer materials were gradually added to the five Stage 3 cores with the following cap configurations:

- Core D10 – 12 inches of isolation layer material with a geotextile layer [1.5 ounce (oz)/square yard (yd²) non-woven polyester geofabric] placed between the isolation layer material and underlying sediment.
- Core D11 – 12 inches of isolation layer material with a geocomposite layer (a 12 oz./yd² high-loft polyester core filled with isolation layer material and bonded to two layers of 1.5 oz./yd² non-woven polyester geofabric) placed between the isolation layer material and underlying sediment.
- Core D12 – 12 inches of isolation layer material only.
- Core D16 – 12 inches of isolation layer material and 6 inches of 3-inch diameter and smaller armor stone.
- Core D14 – No isolation layer or other cap materials (for use as a baseline in the comparison of other core results).

A representation of the Stage 3 cap configurations is displayed on Figure 12.

Geotextile layers in Cores D10 and D11 were immersed in the water column and allowed to sink to the top of the native sediment within the tube. Because the geocomposite layer in D11 was filled with isolation layer material, it sank to the top of the sediment without assistance and did not need to be adjusted. The single geotextile layer in Core D10 had to be pushed to the bottom of the water column with a section of rigid Tygon tubing so that it laid flat across the top of the sediment face. Following the positioning of these geotextile layers, the application of isolation layer materials proceeded in the same fashion as in Stage 1, until 12 inches of isolation layer material had been added, as appropriate. A picture of in-situ isolation materials is displayed in Figure 13.

During the application of isolation layer materials to the Stage 3 cores, there was a visual observation of some potential mixing in one core. Specifically, during placement of the first lift of isolation layer material to Core D12, there appeared to be some mixing of isolation layer material with a thin layer of surficial sediment. Such mixing was visually observable in both the water column, as sediment materials were displaced by the falling isolation layer materials, and in the capping layer after the first lift had completely settled. There did not appear to be mixing in any of the other cores, nor were there any observed gas bubbles released in any of the cores while isolation layer materials were being placed. At the end of the cap application period, each core (with the exception of Core D14) had a total of approximately 12 inches of isolation layer material. As noted, Core D16 also had a 6-inch layer of 3-inch diameter, or smaller, armor stone placed on top of the cap.

Following the completion of cap application activities, the groundwater flux component was activated on July 20, 2005. There were no immediately observable changes in the condition of the cap or sediments following the activation of the groundwater flux. Over the course of the study, there were, at times, observable preferential pathways, where the simulated groundwater could be seen traveling up the inside wall of the core (a phenomenon not expected to occur in the field). All such pathways were observed to close off naturally within a few minutes. At no time did there appear, in any of the cores, to be a distinct short-circuited flow path from the bottom of the core to the overburden water that bypassed the sediment and isolation layer materials. Average groundwater flow in the cores ranged from approximately 18.6 to 24.0 mL/d, as measured by the average of the daily volumetric discharge from the reservoir bag. At approximately monthly intervals during the test period, the overlying water column in each core was sampled and analyzed for PCBs.



Figure 13: Stage 3 Cap Materials

Similarly, following the completion of cap placement, the gas collection system was also activated on July 20, 2005. On several occasions, observers noted the periodic release of one or more gas bubbles from the surface of some of the cores, with a small amount of gas accumulation noted in the gas collection bags attached to each of the cores by the end of Stage 3. Consistent with the approved Work Plan, at the end of the test period the glass wool in each column, including Core D14, was analyzed for PCBs and TPH.

Note that during the performance of routine test maintenance activities on September 22, 2005, Core D16 was inadvertently separated from the fitting at the bottom of the core. When this happened, sediment materials were

released from the bottom of the tube and spilled into the secondary containment bucket. Approximately 4 to 5 inches of sediment materials were lost before the bottom of the tube could be repositioned in the fitting. As this occurred, the entire sediment and isolation layer column slid down the inside of the Lexan tube, creating the potential for cross contamination and putting at question the integrity of the isolation layer core in this column. Following this event, GE communicated with EPA and it was decided to remove Core D16 from the remainder of the study (while recognizing the potential limitations), and process the core for analysis as described in the Work Plan and discussed below.

4.1.3 Stage 3 Results

4.1.3.1 Stage 3 Consolidation Results

The Stage 3 consolidation tests ran for 150 days (with the exception of Core D16 as noted above), and featured the upward flux of simulated groundwater through the sediment column and isolation layer materials. Similar to Stage 1, periodic measurements were made of the elevations of the top of the native sediment, the top of the isolation layer material, and the top of the overburden water. Each respective measurement was made relative to an arbitrary core-specific datum established prior to cap application. Stage 3 sediment consolidation is estimated as the decrease in sediment elevation over the duration of Stage 3 tests. The array of sediment, geotextile, and cap configurations established for Stage 3 tests are discussed in Section 4.1.2 and shown on Figure 13. Complete Stage 3 consolidation results are included in Table 7, which include the entire Stage 3 record of daily sediment and cap elevation measurements. Daily sediment elevation measurements are illustrated on Figure 14.

Consolidation of isolation layer materials in Stage 3 cores ranged from 1 1/4-inch to 1 3/8-inch. Consolidation in Stage 3 sediments in the various test columns ranged from 1.4 to 2.3 inches, with an average consolidation of 1.9 inches. In the four test columns that contained isolation materials, the greatest sediment consolidation occurred in Core D10, which coincidentally contained a geotextile layer between the sediment and isolation layer material. The differences in isolation layer material and sediment consolidation between Stage 1 and Stage 3 may be a result of the simulated groundwater flux present in Stage 3 cores.

The sediments in Core D14, which had no isolation materials, exhibited a net expansion of approximately 0.5 inches over the course of Stage 3 testing, a likely result of the difference in water pressure at the bottom of the lake (i.e., under twenty feet of water) relative to the bench-scale setting. Note that a sharp increase in sediment elevation was noted in Core D14 beginning on July 20. This expansion of sediments in Core D14 is coincident with and is believed to be a result of the activation of the simulated groundwater flux. Also note that more gradual increases in sediment elevation (approximately 5/8-inches over two weeks) observed later in the study may be the continued effects of the groundwater flux, the result of changes in barometric pressures or differences in overburden water pressures experienced (i.e., from the lake bottom to the lab).

As shown on Figure 14, consistent with the Stage 1 results, the majority of sediment consolidation was complete within the first few weeks of the test period. During the course of Stage 3 tests, there were no observations made of either shear or rotational failure in the capped sediments, and the sediments within the columns successfully supported the weight of the isolation layer materials. Timeline notations, detailing performance of sediment collection and initiation and termination of isolation layer placement, are also included on Figure 6.

4.1.3.2 Stage 3 Sediment/Cap Analytical Results

As in Stage 1, at the end of the consolidation test period, the overburden water was drained from each core, and the cores were sectioned for chemical analysis. Core sections were cut from the upper sediment layer (0- to 6-inches below the apparent sediment/cap interface); and the following cap layers (measurements relative to the sediment/cap interface): 0- to 2-inch, 2- to 4-inch, 4- to 6-inch, and the remaining layer greater than 6-inches above the sediment cap interface of each core. As noted above, Core D16, was processed and sampled on November 22, 2005, while the remaining cores were processed on December 13 and 14, 2005.

During the sectioning process, observations of any visible mixing were recorded. Material descriptions were made of each core section, and the sample material comprising each section homogenized prior to laboratory sample collection. Sediment samples were analyzed for PCBs and TPH, and isolation layer material samples were analyzed for PCBs, TPH, and TOC.

In summary, the PCB concentrations in the 0-6 inch sediment samples (below the cap) ranged from 148 to 182 ppm, with the highest concentration detected in Core D16. With regard to the isolation layer material, PCBs were reported in only one of the 16 isolation layer material samples (Core D12, the sand only cap, in the 0-2 inch segment), at a concentration of 0.30 ppm. It should be noted that during sectioning, there were slight traces of black fragments, which appeared to be signs of mixing from the sediment column, seen in the first cap layer in Core D12, which may explain the low PCB detection in the 0-2 inch segment of the D12 isolation layer material. Complete Stage 3 PCB analytical results are tabulated in Table 8 and illustrated in Figure 15.

Each Stage 3 sediment and cap core segment also underwent TPH analysis, in a manner similar to Stage 1. During core processing sheens were noted in each of the native sediment samples, but no NAPL or sheens were observed in any of the 16 Stage 3 isolation layer material samples. The TPH concentrations in the Stage 3 sediment samples ranged from 10,100 ppm in Core D12, to 19,000 ppm in Core D16. With regard to the isolation layer material, TPHs were reported in six of the 16 samples with the highest concentration (24 ppm) reported in the 4- to 6-inch cap layer in Core D10 (sand with geotextile). The detections noted in 0- to 2-inch layers are likely the result of mixing (D12) and disturbance of the cores (D16) observed during the test. Regardless, in each case the reported TPH concentrations were only slightly higher than the detection limits, and did not present a continuous gradient indicative of upward transport. Stage 3 TPH results are tabulated in Table 8, and illustrated in Figure 16.

Taken together, these results show no readily identifiable gradient or pattern in the TPH data, indicating no probable mechanism for upward transport. Additionally, aside from the coincident detections of PCB and TPH in one isolation layer segment (0-2 inch in Core D12) that is a likely result of mixing during cap placement, the data does not indicate a relationship between TPH presence and any enhanced mobility of PCBs.

Stage 3 isolation layer segments were also analyzed for TOC, in a manner similar to Stage 1. In summary, the TOC concentrations in the Stage 3 isolation layer materials samples ranged from 0.5% in Core D11, to 1.5%, also in Core D11. Analysis of each of the Stage 3 isolation layer material samples indicated a TOC concentration equal to or greater than the targeted minimum TOC content of 0.5%.

4.1.3.3 Overburden Water Analytical Results

Stage 3 also featured periodic collection and analysis of overburden water samples from each column. Over the course of the study, four such unfiltered samples were collected and analyzed for PCBs from each column, with

the exception of Core D16, which had only two such samples collected before it was removed from the test. Results of the Stage 3 overburden water sample analysis are provided in Table 9. Of the four cores with isolation layer materials present, during the first three overburden water sampling events (August, September, and November) there were no reported PCBs in the overburden water. At the studies end in December, low levels of PCBs were detected ranging from 0.000028 to 0.000037 ppm in the overlying water. These detections are only marginally above (or even below) reported instrument detection limits and do not significantly differ from the non-detect results reported for similar overburden water samples collected earlier in Stage 3 (i.e., they may be the result of analytical variability, as reported by the laboratory).

4.1.3.4 Gas Flux Analytical Results

During the course of Stage 3 activities, small amounts (not volumetrically measurable) of gas generated from within the sediment or isolation layer materials, were noted in the filtered gas collection bags at the top of each test column, indicating the gas collection system was operable in each core. At the conclusion of Stage 3, the glass filters at the top of each column were analyzed for PCBs and TPH. No PCBs or TPH was detected in any filter samples, with the exception of the filter removed from Core D14 (which did not contain any cap materials). PCB and TPH detections in the D14 filter were 0.112 ppm and 18.3 ppm, respectively. Glass filter analytical results are provided in Table 8.

It should be noted Stage 3 tests were performed at room temperature, which is well above temperatures anticipated in the natural environment at the bottom of Silver Lake. Performance of these tests at room temperature likely increased the generation of gas within the sediment and isolation layer materials, and may also have enhanced the solubility and transportability of both PCBs and TPH. Taken together, these factors indicate that ebullition, or the conditions for gas bubble generation during Stage 3, were conservative, and likely significantly greater than would be expected in the lake bottom. Regardless, although some gas was apparently generated during the Stage 3 consolidation tests, the lack of PCB detections on the filter materials installed to capture particulates associated with rising gas bubbles indicates there is no enhanced PCB mobility induced by generation of gas bubbles within the sediment.

5. Bench-Scale Study Conclusions

Overall, the results of this bench-scale study -- which show no discernible indication of: consolidation based, groundwater induced, or TPH and/or gas enhanced PCB mobility -- led to the following general conclusions:

- The cap material characteristics and configurations used for the bench-scale tests, in particular in those configurations including geofabrics, provided effective barriers in isolating PCBs within the sediment column and mitigating upward migration into the cap or through to the overlying water column; and
- During the course of the bench-scale study, no observations were made or results obtained that suggest modifications to the conceptual cap design or the approach to an upcoming field-level pilot study are warranted.

These conclusions are further supported considering these additional facts and findings:

- Consolidation of sediment in the cores ranged from 1.1 to 3.7 inches (average 2.3 inches) during Stage 1, and from 1.4 to 2.3 inches (average 1.9 inches) during Stage 3 tests. Consolidation to a stable condition occurred relatively rapidly (within 20 days or so).
- Sediment cores used for Stage 3 testing were collected from Location D, which had the highest PCB concentrations, second highest TPH concentrations, and most challenging physical characteristics from a geotechnical standpoint.
- Test cores that featured geotextile fabrics between the isolation layer materials and native sediment showed no mixing at the isolation layer material/sediment interface during cap placement.
- In those cores without geofabrics, mixing of the sediment and isolation layer materials was minimal and, where observed, was confined to the first 0- to 2-inch layer of isolation layer material.
- Where PCBs or TPH were detected in isolation layer materials above the 0-2 inch layer, those detections were very near the detection limits, and were observed in layers exhibiting no discernable continuous gradients or patterns that could be associated with systematic upward mobility of chemical constituents.
- Of the 40 isolation layer segments processed and sampled during Stage 1 and Stage 3 activities, there were no observations of NAPL or sheens.
- The data and analyses generated through performance of this bench-scale study show no distinct correlation between the presence of TPH and the presence and/or mobility of PCBs.
- With regard to the assessment of potential gas induced transport, no PCBs or TPHs were detected in the filter media of any of test columns containing cap material.

6. Future Activities and Schedule

The next step in the evaluation of placing an engineered cap over Silver Lake sediments will be the performance of a pilot study. After submitting numerous pre-design investigation reports which detailed conceptual models and assumptions related to potential cap designs, and holding discussions with EPA and other agencies, GE proposed, and EPA agreed to, the performance of a field-scale pilot study to better understand key aspects related to the placement of an engineered cap. A *Pilot Study Work Plan for the Silver Lake Area Removal Action* (PS Work Plan) will be developed to describe the pilot study activities proposed for addressing the sediments within Silver Lake. The results of the pilot study activities, in combination with information and experience from prior investigations, including the results of this successful bench-scale study, will be used to support the subsequent evaluation and design of the response actions necessary to achieve the performance standards for this RAA.

The PS Work Plan will also evaluate and report on the sufficiency of available information to support the preparation of a *Conceptual Removal Design/Removal Action Work Plan* (Conceptual RD/RA Work Plan) for the Silver Lake sediments.

Based on the anticipated scope and duration of the potential pilot study activities, GE proposes to submit a Pilot Study Work Plan by June 1, 2006, with an anticipated initiation of pilot study activities by fall 2006, or spring 2007.

7. References

- BBL. 1999. *Technical Attachment K to the Silver Lake Sediment Response Action Conceptual Design.*
- BBL. 2004a. *Pre-Design Investigations Report for Silver Lake Sediments.*
- BBL. 2004b. *Field Sampling Plan/Quality Assurance Project Plan.*
- BBL. 2005. *Bench-Scale Study Work Plan for Silver Lake Sediments*

Tables

**TABLE 1
GEOTECHNICAL TESTING RESULTS**

**BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

Location	Sample ID	Sampling Interval (ft)	Moisture Content (%) (ASTM D 2216)	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Porosity, n	Atterberg Limits (ASTM D 4318)	Grain-Size Analysis (ASTM 422 - USDA Summary)				Specific Gravity @ 20°C (ASTM D 854)
								Gravel	Sand	Silt	Clay	
A	SL-BS-SE-A1	1.9 - 2.1					non-plastic					
		2.1 - 2.3	163.5	69.9	26.5	0.80		4%	39%	44%	13%	
		2.3 - 2.5										2.14
B	SL-BS-SE-B1	1.2 - 1.4	141.5	69.2	28.6	0.79		3%	13%	64%	20%	
		1.4 - 1.6					LL =73, PL = 56, PI=17, MH					
		1.6 - 1.8										2.20
C	SL-BS-SE-C1	1.9 - 2.1					LL =77, PL = 52, PI=25, MH					
		2.1 - 2.3	135.5	73.5	31.2	0.80		2%	7%	66%	25%	
		2.3 - 2.5										2.48
D	SL-BS-SE-D1	1.4 - 1.6	328.3	59.5	13.9	0.90						
		1.9 - 2.1					LL =78, PL = 56, PI=22, MH					
		2.1 - 2.3						1%	5%	81%	13%	
		2.3 - 2.5										2.27
E	SL-BS-SE-E1	0 - 2.5										2.40
		1.9 - 2.1					non-plastic					
		2.1 - 2.3	156.6	70.6	27.5	0.82		1%	10%	82%	7%	
F	SL-BS-SE-F1	1.9 - 2.1					non-plastic					
		2.1 - 2.3	127.9	76.6	33.6	0.77		3%	31%	57%	9%	
		2.3 - 2.5										2.35

Note:

1. Sediment samples were collected by BBL and delivered to Geotechnics, Inc. for geotechnical characterization.
2. Sample intervals are measured with respect to distance below sediment surface.
3. Sample intervals selected for sectioning and analysis are a function of the respective specific tests and material volume requirements. Geotechnical results presented here are considered representative of the top three feet of sediment in each core.

TABLE 2
PRE-CHARACTERIZATION PCB ANALYTICAL RESULTS
BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID	Depth (Feet)	Date Collected	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCBs
BS-SE-A2	0-3	3/9/2005	ND(270) [ND(140)]	ND(270) [ND(140)]	ND(270) [ND(140)]	ND(270) [ND(140)]	ND(270) [ND(140)]	2600 AF [970 AF]	450 AG [230 AG]	3050 [1200]
BS-SE-B2	0-3	3/9/2005	R	R	R	R	R	120 J	70 J	190 J
BS-SE-C7	0-3	3/9/2005	ND(70) J	ND(70) J	ND(70) J	ND(70) J	2500 J	260 J	ND(70) J	2760 J
BS-SE-D2	0-3	3/9/2005	ND(110) J	ND(110) J	ND(110) J	ND(110) J	2300 J	140 J	ND(110) J	2440 J
BS-SE-E2	0-3	3/9/2005	ND(340)	ND(340)	ND(340)	ND(340)	ND(340)	4400 AF	400 AG	4800
BS-SE-F2	0-3	3/9/2005	ND(89)	ND(89)	ND(89)	ND(89)	1800 PE	120 AF	ND(89)	1920

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical Inc. for analysis of PCBs.
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.

Data Qualifiers:

- AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
- AG - Aroclor 1260 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
- PE - Aroclor 1248 is being used to report an altered PCB pattern exhibited by the sample. Actual Aroclor 1248 is not present in the sample, but is reported to more accurately quantify PCBs present .
- in a sample that has undergone environmental alteration.
- J - Indicates that the associated numerical value is an estimated concentration.
- R - Data was rejected due to a deficiency in the data generation process

**TABLE 3
CAP MATERIAL TOC ANALYTICAL RESULTS**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)**

Parameter	Sample ID:	BACKFILL-5
Total Organic Carbon		
TOC - Replicate 1		9,700
TOC - Replicate 2		12,000
TOC - Replicate 3		14,000
TOC - Average		12,000
TOC - % RSD		19
Total Organic Carbon		
TOC - Replicate 1		9,700
TOC - Replicate 2		12,000
TOC - Replicate 3		14,000
TOC - Average		12,000
TOC - % RSD		19
Grain Size Distribution		
% Gravel		4
% Sand		74
% Silt/Clay		22

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc. (BBL) on March 22, 2005, and submitted to Northeast Analytical, Inc. for analysis of total organic carbon (TOC).
2. % RSD - Percent relative standard deviation.
3. Samples were collected by BBL on May 22, 2006 and submitted to Geotechnics Laboratory for grain size analysis.

TABLE 4
OVERBURDEN WATER BASELINE ANALYTICAL RESULTS
BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Parameter	Sample ID: Date Collected:	SL-BS-W1 03/22/05
Extractable Petroleum Hydrocarbons		
C11-C22 Aromatic Hydrocarbons		ND(0.20)
C19-C36 Aliphatic Hydrocarbons		ND(5.0)
C9-C18 Aliphatic Hydrocarbons		ND(1.0)
Volatile Petroleum Hydrocarbons		
C5-C8 Aliphatic Hydrocarbons		ND(0.40)
C9-C10 Aromatic Hydrocarbons		ND(0.20)
C9-C12 Aliphatic Hydrocarbons		ND(1.0)
Total Petroleum Hydrocarbons		ND(0.20)
PCBs-Unfiltered		
Aroclor-1016		ND(0.0015)
Aroclor-1221		ND(0.0015)
Aroclor-1232		ND(0.0015)
Aroclor-1242		ND(0.0015)
Aroclor-1248		ND(0.0015)
Aroclor-1254		0.0024 AF
Aroclor-1260		ND(0.0015)
Total PCBs		0.0024

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to SGS Environmental Services, Inc. for analysis of EPH/VPH, and Northeast Analytical, Inc. for analysis of PCBs.
2. ND - Analyte was not detected. The number in parentheses is the associated detection limit.

Data Qualifiers:

AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.

TABLE 5
STAGE 1 CORE CONSOLIDATION DATA
BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Date	Day #	Elevation (inches)											
		Core A		Core B		Core C		Core D		Core E		Core F	
		Sediment	Cap	Sediment	Cap	Sediment	Cap	Sediment	Cap	Sediment	Cap	Sediment	Cap
3/21/2005	0	31.20	31.20	40.80	40.80	33.60	33.60	34.80	34.80	37.20	37.20	36.00	36.00
3/22/2005	1	31.80	31.80	41.40	41.40	34.20	34.20	35.40	35.40	37.80	37.80	36.60	36.60
3/23/2005	2	30.60	33.35	40.68	43.43	33.60	36.48	34.80	37.55	37.20	40.08	35.40	38.40
3/24/2005	3	30.96	36.46	40.80	46.30	33.12	38.50	34.56	40.06	37.20	42.83	34.80	40.80
3/25/2005	4	--											
3/26/2005	5	--											
3/27/2005	6	--											
3/28/2005	7	30.84	41.34	40.44	50.94	32.76	43.76	34.20	44.95	36.72	47.72	34.80	46.55
3/29/2005	8	--											
3/30/2005	9	30.38	40.63	40.44	50.94	32.64	43.39	34.20	44.70	36.72	47.72	34.80	46.55
3/31/2005	10	30.25	40.50	39.88	50.38	32.00	42.75	33.63	44.38	36.25	47.13	34.00	45.63
4/1/2005	11	30.25	40.50	39.88	50.25	31.88	42.63	33.50	44.13	36.13	47.00	33.88	45.50
4/2/2005	12	--											
4/3/2005	13	--											
4/4/2005	14	30.13	40.38	39.75	50.13	31.63	42.25	33.25	43.875	35.88	46.75	33.75	45.25
4/5/2005	15	30.13	40.38	39.75	50.13	31.63	42.25	33.13	43.750	35.88	46.75	33.63	45.25
4/6/2005	16	30.13	40.38	39.63	50.13	31.50	42.25	33.00	43.625	35.88	46.63	33.63	45.25
4/7/2005	17	30.13	40.38	39.63	50.13	31.50	42.25	33.00	43.500	35.88	46.63	33.63	45.25
4/8/2005	18	30.13	40.38	39.63	50.00	31.50	42.13	32.88	43.375	35.75	46.50	33.63	45.13
4/9/2005	19	--											
4/10/2005	20	--											
4/11/2005	21	30.13	40.25	39.50	49.88	31.25	41.88	32.25	42.750	35.50	46.25	33.38	44.88
4/12/2005	22	30.13	40.25	39.50	49.88	31.25	41.88	32.25	42.750	35.50	46.25	33.38	44.88
4/13/2005	23	30.13	40.25	39.50	49.88	31.25	41.88	32.13	42.750	35.50	46.25	33.38	44.88
4/14/2005	24	30.25	40.25	39.50	49.88	31.25	41.88	32.13	42.750	35.63	46.25	33.50	45.00
4/15/2005	25	--											
4/16/2005	26	--											
4/17/2005	27	--											
4/18/2005	28	30.13	40.25	39.50	49.88	31.13	41.75	31.63	42.250	35.50	46.25	33.38	44.88
4/19/2005	29	30.13	40.25	39.50	49.88	31.13	41.75	31.50	42.125	35.50	46.25	33.38	44.88
4/20/2005	30	30.13	40.25	39.50	49.88	31.13	41.75	31.50	42.000	35.50	46.25	33.38	44.88
4/21/2005	31	30.13	40.25	39.50	49.88	31.13	41.75	31.50	42.000	35.50	46.25	33.38	44.88
4/22/2005	32	30.13	40.25	39.38	49.75	30.75	41.38	31.13	41.750	35.38	46.13	33.25	44.75
4/23/2005	33	--											
4/24/2005	34	--											
4/25/2005	35	30.13	40.25	39.25	49.75	30.75	41.38	31.13	41.750	35.38	46.13	33.25	44.75
4/26/2005	36	30.13	40.25	39.25	49.75	30.75	41.38	31.25	41.750	35.25	46.13	33.25	44.75
4/27/2005	37	30.13	40.25	39.25	49.75	30.75	41.38	31.25	41.750	35.25	46.13	33.25	44.75
4/28/2005	38	30.13	40.25	39.25	49.75	30.75	41.38	31.25	41.750	35.25	46.13	33.25	44.75
4/29/2005	39	30.13	40.25	39.25	49.75	30.75	41.38	31.25	41.750	35.25	46.00	33.25	44.75
4/30/2005	40	--											
5/1/2005	41	--											
5/2/2005	42	30.13	40.25	39.25	49.75	30.63	41.25	31.25	41.750	35.25	46.00	33.25	44.75
5/3/2005	43	30.13	40.25	39.25	49.75	30.63	41.25	31.13	41.750	35.25	46.00	33.25	44.75
5/4/2005	44	30.13	40.25	39.25	49.75	30.63	41.25	31.13	41.750	35.25	46.00	33.25	44.75
5/5/2005	45	30.13	40.25	39.25	49.75	30.63	41.25	31.13	41.625	35.25	46.00	33.25	44.75

Note:

1. Elevations represented in this table were measured based on an arbitrary core-specific basis established prior to cap placement activities.

**TABLE 6
STAGE 1 ANALYTICAL DATA**

**BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)**

Sample ID: Sample Depth(Inches): Parameter Date Collected:	SL-BS-SE-A3-SED 0-6 05/05/05	SL-BS-SE-A3-CAP 0-2 05/05/05	SL-BS-SE-A3-CAP 2-4 05/05/05	SL-BS-SE-A3-CAP 4-6 05/05/05	SL-BS-SE-A3-CAP 6-9.75 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	1900	ND(500)	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	41	ND(100)	ND(100)	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	190	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	2600	ND(500)	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(5.0)	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1221	ND(5.0)	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1232	ND(5.0)	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1242	ND(5.0)	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1248	ND(5.0)	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1254	86 AF	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Aroclor-1260	110 AG	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Total PCBs	196	ND(0.060)	ND(0.061)	ND(0.059)	ND(0.060)
Total Organic Carbon					
TOC - Replicate 1	120000	8100	11000	10000	9700
TOC - Replicate 2	140000	9800	12000	12000	12000
TOC - Replicate 3	150000	8100	8000	9900	12000
TOC - Replicate 4	NA	NA	NA	NA	NA
TOC - Average	140000	8700	10000	11000	11000
TOC - % RSD	10	11	21	8.1	13

TABLE 6
STAGE 1 ANALYTICAL DATA

BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID: Sample Depth(Inches): Date Collected:	SL-BS-SE-B3-SED 0-6 05/05/05	SL-BS-SE-B3-CAP 0-2 05/05/05	SL-BS-SE-B3-CAP 2-4 05/05/05	SL-BS-SE-B3-CAP 4-6 05/05/05	SL-BS-SE-B3-CAP 6-10.25 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200) [ND(200)]	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	ND(100)	ND(100) [ND(100)]	ND(100)	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100) [ND(100)]	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	300	ND(100) [ND(100)]	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(5.6)	ND(0.061) [ND(0.060)]	ND(0.064)	ND(0.065)	ND(0.060)
Aroclor-1221	ND(5.6)	ND(0.061) [ND(0.060)]	ND(0.064)	ND(0.065)	ND(0.060)
Aroclor-1232	ND(5.6)	ND(0.061) [ND(0.060)]	ND(0.064)	ND(0.065)	ND(0.060)
Aroclor-1242	ND(5.6)	ND(0.061) [ND(0.060)]	ND(0.064)	ND(0.065)	ND(0.060)
Aroclor-1248	ND(5.6)	ND(5.6) [ND(0.060)]	ND(0.064)	ND(0.065)	ND(0.060)
Aroclor-1254	120 AF	0.11 AF [0.12 AF]	ND(0.064)	0.090 AF	0.17 AF
Aroclor-1260	110 AG	ND(0.061) [0.063 AG]	ND(0.064)	ND(0.065)	0.066 AG
Total PCBs	230	0.11 [0.18]	ND(0.064)	0.09	0.24
Total Organic Carbon					
TOC - Replicate 1	110000	8800 [11000]	7500	8100	11000
TOC - Replicate 2	110000	13000 [7800]	6400	9700	12000
TOC - Replicate 3	110000	41000 [9200]	20000	12000	15000
TOC - Replicate 4	NA ¹	7000	14000	NA ¹	NA ¹
TOC - Average	110000	17000 [9400]	12000	10000	13000
TOC - % RSD	2.4	92 [19]	54	22	19

TABLE 6
STAGE 1 ANALYTICAL DATA

BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID: Sample Depth(Inches): Parameter Date Collected:	SL-BS-SE-C8-SED 0-6 05/05/05	SL-BS-SE-C8-CAP 0-2 05/05/05	SL-BS-SE-C8-CAP 2-4 05/05/05	SL-BS-SE-C8-CAP 4-6 05/05/05	SL-BS-SE-C8-CAP 6-10.5 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	ND(620)	ND(500)	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	100	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(4.6)	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1221	ND(4.6)	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1232	ND(4.6)	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1242	ND(4.6)	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1248	ND(4.6)	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1254	62 AF	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Aroclor-1260	40 AG	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Total PCBs	105	ND(0.059)	ND(0.060)	ND(0.058)	ND(0.058)
Total Organic Carbon					
TOC - Replicate 1	95000	7600	18000	18000	8900
TOC - Replicate 2	95000	11000	18000	17000	8100
TOC - Replicate 3	96000	7600	7900	7800	11000
TOC - Replicate 4	NA	NA	23000	23000	NA
TOC - Average	95000	8800	17000	16000	9200
TOC - % RSD	0.66	23	38	38	14

TABLE 6
STAGE 1 ANALYTICAL DATA

BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID: Sample Depth(Inches): Parameter Date Collected:	SL-BS-SE-D3-SED 0-6 05/05/05	SL-BS-SE-D3-CAP 0-2 05/05/05	SL-BS-SE-D3-CAP 2-4 05/05/05	SL-BS-SE-D3-CAP 4-6 05/05/05	SL-BS-SE-D3-CAP 6-10 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	1900	ND(500)	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	310	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	2500	ND(500)	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(7.3)	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1221	ND(7.3)	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1232	ND(7.3)	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1242	ND(7.3)	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1248	ND(7.3)	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1254	150 AF	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Aroclor-1260	100 AG	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Total PCBs	250	ND(0.061)	ND(0.061)	ND(0.062)	ND(0.062)
Total Organic Carbon					
TOC - Replicate 1	130000	9000	7500	8800	12000
TOC - Replicate 2	120000	12000	4800	12000	8700
TOC - Replicate 3	130000	8700	14000	8700	9300
TOC - Replicate 4	NA	NA	7300	NA	NA
TOC - Average	130000	9900	8500	9800	9900
TOC - % RSD	3.6	19	48	19	16

TABLE 6
STAGE 1 ANALYTICAL DATA

BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID: Sample Depth(Inches): Date Collected:	SL-BS-SE-E3-SED 0-6 05/05/05	SL-BS-SE-E3-CAP 0-2 05/05/05	SL-BS-SE-E3-CAP 2-4 05/05/05	SL-BS-SE-E3-CAP 4-6 05/05/05	SL-BS-SE-E3-CAP 6-10.75 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200) [ND(200)]	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	ND(100)	ND(100) [ND(100)]	18.3 J	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100) [ND(100)]	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	ND(100)	ND(100) [ND(100)]	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	ND(500)	ND(500) [ND(500)]	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(0.78)	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1221	ND(0.78)	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1232	ND(0.78)	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1242	ND(0.78)	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1248	ND(0.78)	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1254	16 AF	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Aroclor-1260	9.7 AG	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Total PCBs	26.1	ND(0.058) [ND(0.060)]	ND(0.058)	ND(0.060)	ND(0.060)
Total Organic Carbon					
TOC - Replicate 1	84000	8200 [12000]	8100	16000	8600
TOC - Replicate 2	82000	15000 [8500]	6800	12000	8900
TOC - Replicate 3	83000	19000 [8500]	10000	9800	12000
TOC - Replicate 4	NA ¹	9800 [NA ¹]	NA ¹	NA ¹	NA ¹
TOC - Average	83000	13000 [9600]	8300	13000	10000
TOC - % RSD	1.1	38 [20]	19	24	21

TABLE 6
STAGE 1 ANALYTICAL DATA

BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)

Sample ID: Sample Depth(Inches): Parameter Date Collected:	SL-BS-SE-F3-SED 0-6 05/05/05	SL-BS-SE-F3-CAP 0-2 05/05/05	SL-BS-SE-F3-CAP 2-4 05/05/05	SL-BS-SE-F3-CAP 4-6 05/05/05	SL-BS-SE-F3-CAP 6-10.75 05/05/05
Extractable Petroleum Hydrocarbons					
C11-C22 Aromatic Hydrocarbons	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
C19-C36 Aliphatic Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
C9-C18 Aliphatic Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
Volatile Petroleum Hydrocarbons					
C5-C8 Aliphatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C10 Aromatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
C9-C12 Aliphatic Hydrocarbons	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons	ND(500)	ND(500)	ND(500)	ND(500)	ND(500)
PCBs					
Aroclor-1016	ND(6.3)	ND(0.062)	ND(0.063)	ND(0.060)	ND(0.063)
Aroclor-1221	ND(6.3)	ND(0.062)	ND(0.063)	ND(0.060)	ND(0.063)
Aroclor-1232	ND(6.3)	ND(0.062)	ND(0.063)	ND(0.060)	ND(0.063)
Aroclor-1242	ND(6.3)	ND(0.062)	ND(0.063)	ND(0.060)	ND(0.063)
Aroclor-1248	ND(6.3)	ND(0.062)	ND(0.063)	ND(0.060)	ND(0.063)
Aroclor-1254	100 AF	0.15 AF	0.29 AF	ND(0.060)	ND(0.063)
Aroclor-1260	13 AG	ND(0.062)	0.076 AG	ND(0.060)	ND(0.063)
Total PCBs	113	0.15	0.37	ND(0.060)	ND(0.063)
Total Organic Carbon					
TOC - Replicate 1	53000	19000	8800	9800	15000
TOC - Replicate 2	55000	13000	16000	25000	7400
TOC - Replicate 3	58000	20000	13000	12000	8600
TOC - Replicate 4	NA [†]	NA [†]	15000	9700	14000
TOC - Average	55000	17000	13000	14000	11000
TOC - % RSD	4.6	22	23	50	34

**TABLE 6
STAGE 1 ANALYTICAL DATA**

**BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in dry weight parts per million, ppm)**

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical, Inc. and SGS Environmental Services, Inc. for analysis of PCBs, total organic carbon (TOC) and EPH/VPH.
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. NA - Not Analyzed.
4. NA¹ - Not Analyzed - TOC Replicate 4 is only analyzed and reported by laboratory when the % RSD of Replicate 1 thru Replicate 3 is greater than 25%.
5. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
6. % RSD - Percent relative standard deviation.

With the exception of EPH/VPH, only those constituents detected in one or more samples are summarized.

Solid matrix samples are presented in dry weight.

Data Qualifiers:

AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.

AG - Aroclor 1260 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.

TABLE 7
STAGE 3 CORE CONSOLIDATION DATA
BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

		Elevation (inches)								
		Core D10		Core D11		Core D12		Core D14	Core D16	
Date	Day #	Sediment	Cap	Sediment	Cap	Sediment	Cap	Sediment	Sediment	Cap
07/13/05	0	104	--	104	--	104	--	104	104	--
07/14/05	1	103.75	105.50	104	107	103.63	105.38	104	103.50	106.5
07/15/05	2	103.50	107.50	103.88	108.50	103.38	107.13	104	103.25	108.875
07/16/05	3	103.38	110.00	103.88	111.00	103.25	109.50	104	103	111.375
07/19/05	6	103.25	114.13	103.63	114.88	103	114	104	102.75	115
07/20/05	7	102	112	102.63	113.50	102.75	113.63	104.25	102.63	114.75
07/21/05	8	102	112	102.63	113.50	102.75	112.63	105.00	102.63	114.75
07/22/05	9	102	112	102.63	113.50	102.75	112.63	104.25	102.63	114.75
07/25/05	12	102	112	102.50	113.38	102.75	112.63	104.25	102.63	114.75
07/26/05	13	102	112	102.50	113.38	102.75	112.63	104.25	102.63	114.625
07/27/05	14	102	112	102.38	113.38	102.63	112.63	104.25	102.63	114.625
07/28/05	15	102	112	102.38	113.38	102.63	112.63	104.25	102.63	114.625
07/29/05	16	102	112	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/01/05	19	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/02/05	20	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/03/05	21	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/04/05	22	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/05/05	23	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/08/05	26	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/09/05	27	101.88	111.50	102.38	113.38	102.63	112.63	104.25	102.63	114.625
08/10/05	28	101.88	111.50	102.38	113.38	102.63	112.63	104.38	102.63	114.75
08/11/05	29	101.88	111.50	102.38	113.38	102.63	112.63	104.50	102.63	114.75
08/12/05	30	101.88	111.50	102.38	113.38	102.63	112.63	104.50	102.63	114.75
08/15/05	33	101.88	111.50	102.38	113.63	102.63	112.63	104.63	102.63	114.75
08/16/05	34	101.88	111.50	102.38	113.38	102.63	112.63	104.63	102.63	114.75
08/17/05	35	101.75	111.38	102.38	113.63	102.63	112.50	104.75	102.63	114.75
08/18/05	36	101.75	111.38	102.38	113.63	102.63	112.50	104.75	102.63	114.75
08/19/05	37	101.75	111.38	102.38	113.63	102.63	112.50	104.75	102.63	114.75
08/22/05	40	101.75	111.38	102.38	112.63	102.63	112.50	104.63	102.63	114.75
08/23/05	41	101.75	111.38	102.38	112.63	102.63	112.50	104.63	102.63	114.75
08/24/05	42	101.75	111.38	102.38	112.63	102.63	112.50	104.63	102.63	114.75
08/25/05	43	101.75	111.38	102.38	112.63	102.63	112.50	104.63	102.63	114.75
08/26/05	44	101.75	111.38	102.38	112.63	102.63	112.50	104.63	102.63	114.75
08/29/05	47	101.75	111.25	102.38	112.63	102.63	112.38	104.63	102.63	114.75
08/31/05	49	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/01/05	50	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/02/05	51	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/06/05	55	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/07/05	56	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/08/05	57	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/09/05	58	101.75	111.25	102.38	112.50	102.63	112.38	104.63	102.63	114.75
09/12/05	61	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/13/05	62	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/14/05	63	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/15/05	64	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/16/05	65	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/19/05	68	101.75	111.38	102.38	112.50	102.63	112.38	104.63	102.75	114.75
09/22/05	71	101.75	111.00	102.38	112.25	102.63	111.75	104.63	102.00	113.75

TABLE 7
STAGE 3 CORE CONSOLIDATION DATA
BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

		Elevation (inches)								
		Core D10		Core D11		Core D12		Core D14	Core D16	
09/26/05	75	101.75	110.88	102.38	112.25	102.63	111.75	104.50	101.75	113.625
09/29/05	78	101.75	110.88	102.38	112.25	102.63	111.75	104.50	101.75	113.625
10/03/05	82	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/06/05	85	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/10/05	89	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/13/05	92	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/17/05	96	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/24/05	103	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
10/27/05	106	101.75	111.00	102.38	112.25	102.63	111.75	104.50	--	--
11/01/05	111	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
11/22/05	132	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
11/29/05	139	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--
12/06/05	146	101.75	110.88	102.38	112.25	102.63	111.75	104.50	--	--

Note:

1. Elevations represented in this table were measured based on an arbitrary core-specific basis established prior to cap placement activities.

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Sample ID: Matrix: Sample Depth(Inches): Date Collected:	SL-BS-SE-D10-SED Sediment 0-6 12/14/05	SL-BS-SE-D10-CAP Cap 0-2 12/14/05	SL-BS-SE-D10-CAP Cap 2-4 12/14/05	SL-BS-SE-D10-CAP Cap 4-6 12/14/05	SL-BS-SE-D10-CAP Cap 6-11 12/14/05	SL-BS-SE-D10-F Filter 0-0 12/14/05
Parameter						
Extractable Petroleum Hydrocarbons						
C11-C22 Aromatic Hydrocarbons	3400 J	ND(10) J	ND(11) J	12 J	ND(12) J	ND(9.3) J
C19-C36 Aliphatic Hydrocarbons	9500 J	ND(4.8) J	ND(5.1) J	12 J	ND(5.5) J	ND(4.4) J
C9-C18 Aliphatic Hydrocarbons	3300 J	ND(3.6) J	ND(3.8) J	ND(3.7) J	ND(4.1) J	ND(3.3) J
Total Petroleum Hydrocarbons	16200 J	ND(3.6) J	ND(3.8) J	24 J	ND(4.1) J	ND(3.3) J
Unadjusted C11-C22 Aromatic Hydrocarbons	3600 J	ND(10) J	ND(11) J	12 J	ND(12) J	ND(9.3) J
2-Methylnaphthalene	2.1 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Acenaphthene	2.2 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Acenaphthylene	2.6 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Anthracene	4.2 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Benzo(a)anthracene	9.0 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Benzo(a)pyrene	9.4 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Benzo(b)fluoranthene	14 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Benzo(g,h,i)perylene	5.5 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Benzo(k)fluoranthene	3.7 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Chrysene	12 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Dibenzo(a,h)anthracene	7.8 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Fluoranthene	26 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Fluorene	ND(1.5) J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Indeno(1,2,3-cd)pyrene	7.8 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Naphthalene	1.9 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Phenanthrene	13 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Pyrene	24 J	ND(0.60) J	ND(0.63) J	ND(0.62) J	ND(0.68) J	ND(0.55) J
Volatile Petroleum Hydrocarbons						
C5-C8 Aliphatic Hydrocarbons	ND(140)	ND(8.4)	ND(9.2)	13	17	ND(21) J
C9-C10 Aromatic Hydrocarbons	220	ND(4.2)	ND(4.6)	ND(4.6)	ND(5.2)	ND(10) J
C9-C12 Aliphatic Hydrocarbons	150	ND(4.2)	ND(4.6)	ND(4.6)	ND(5.2)	ND(10)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(140)	ND(8.4)	ND(9.2)	13	17	ND(21)
Unadjusted C9-C12 Aliphatic Hydrocarbons	380	ND(4.2)	ND(4.6)	ND(4.6)	ND(5.2)	ND(10)
Benzene	ND(3.4) J	ND(0.21) J	ND(0.23) J	ND(0.23) J	ND(0.26) J	ND(0.52) J
Ethylbenzene	ND(3.4) J	ND(0.21) J	ND(0.23) J	ND(0.23) J	ND(0.26) J	ND(0.52) J
m&p-Xylene	ND(6.7) J	ND(0.42) J	ND(0.46) J	ND(0.46) J	ND(0.52) J	ND(1.0) J
Methyl tert-butyl ether	ND(3.4) J	ND(0.21) J	ND(0.23) J	ND(0.23) J	ND(0.26) J	ND(0.52) J
Naphthalene	ND(6.7) J	ND(0.42) J	ND(0.46) J	ND(0.46) J	ND(0.52) J	ND(1.0) J
o-Xylene	ND(3.4) J	ND(0.21) J	ND(0.23) J	ND(0.23) J	ND(0.26) J	ND(0.52) J
Toluene	ND(3.4) J	ND(0.21) J	ND(0.23) J	ND(0.23) J	ND(0.26) J	ND(0.52) J

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Parameter	Sample ID: Matrix: Sample Depth(Inches): Date Collected:	SL-BS-SE-D10-SED Sediment 0-6 12/14/05	SL-BS-SE-D10-CAP Cap 0-2 12/14/05	SL-BS-SE-D10-CAP Cap 2-4 12/14/05	SL-BS-SE-D10-CAP Cap 4-6 12/14/05	SL-BS-SE-D10-CAP Cap 6-11 12/14/05	SL-BS-SE-D10-F Filter 0-0 12/14/05
PCBs							
Aroclor-1016		ND(5.6)	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1221		ND(5.6)	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1232		ND(5.6)	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1242		ND(5.6)	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1248		ND(5.6)	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1254		73 AF	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Aroclor-1260		75 AG	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Total PCBs		148	ND(0.058)	ND(0.059)	ND(0.061)	ND(0.064)	ND(0.060)
Total Organic Carbon							
Total Organic Carbon		NA	NA	NA	NA	NA	NA
TOC - Replicate 1		NA	6400	7800	5700	12000	NA
TOC - Replicate 2		NA	9600	5600	7700	5900	NA
TOC - Replicate 3		NA	10000	25000	10000	4900	NA
TOC - Replicate 4		NA	13000	5200	7300	6500	NA
TOC - Average		NA	9900	11000	7700	7300	NA
TOC - % RSD		NA	28	87	24	43	NA

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Parameter	Sample ID: SL-BS-SE-D11-SED Matrix: Sediment Sample Depth(Inches): 0-6 Date Collected: 12/13/05	SL-BS-SE-D11-CAP Cap 0-2 12/13/05	SL-BS-SE-D11-CAP Cap 2-4 12/13/05	SL-BS-SE-D11-CAP Cap 4-6 12/13/05	SL-BS-SE-D11-CAP Cap 6-11 12/13/05	SL-BS-SE-D11-F Filter 0-0 12/13/05
Extractable Petroleum Hydrocarbons						
C11-C22 Aromatic Hydrocarbons	2600 J	ND(10) J	ND(11) J	ND(11) J	ND(11) J	ND(24) J
C19-C36 Aliphatic Hydrocarbons	6800 J	ND(4.9) J	5.8 J	ND(5.1) J	ND(5.3) J	ND(11) J
C9-C18 Aliphatic Hydrocarbons	2200 J	ND(3.7) J	ND(3.7) J	ND(3.8) J	ND(4.0) J	ND(8.5) J
Total Petroleum Hydrocarbons	11600 J	ND(3.7) J	5.8 J	ND(3.8) J	ND(4.0) J	ND(8.5) J
Unadjusted C11-C22 Aromatic Hydrocarbons	2800 J	ND(10) J	ND(11) J	ND(11) J	ND(11) J	ND(24) J
2-Methylnaphthalene	1.6 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Acenaphthene	2.4 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Acenaphthylene	1.8 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Anthracene	5.6 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Benzo(a)anthracene	9.4 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Benzo(a)pyrene	12 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Benzo(b)fluoranthene	15 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Benzo(g,h,i)perylene	6.9 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Benzo(k)fluoranthene	4.8 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Chrysene	12 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Dibenzo(a,h)anthracene	9.4 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Fluoranthene	22 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Fluorene	3.4 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Indeno(1,2,3-cd)pyrene	9.4 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Naphthalene	ND(1.5) J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Phenanthrene	16 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Pyrene	25 J	ND(0.61) J	ND(0.62) J	ND(0.63) J	ND(0.66) J	ND(1.4) J
Volatile Petroleum Hydrocarbons						
C5-C8 Aliphatic Hydrocarbons	ND(50)	ND(8.5)	ND(8.5)	ND(8.9)	ND(9.7)	ND(27)
C9-C10 Aromatic Hydrocarbons	41	ND(4.3)	ND(4.2)	ND(4.5)	ND(4.8)	ND(13)
C9-C12 Aliphatic Hydrocarbons	ND(25)	ND(4.3)	ND(4.2)	ND(4.5)	ND(4.8)	ND(13)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(50)	ND(8.5)	ND(8.5)	ND(8.9)	ND(9.7)	ND(27)
Unadjusted C9-C12 Aliphatic Hydrocarbons	37	ND(4.3)	ND(4.2)	ND(4.5)	ND(4.8)	ND(13)
Benzene	ND(1.3) J	ND(0.21) J	ND(0.21) J	ND(0.22) J	ND(0.24) J	ND(0.67) J
Ethylbenzene	ND(1.3) J	ND(0.21) J	ND(0.21) J	ND(0.22) J	ND(0.24) J	ND(0.67) J
m&p-Xylene	ND(2.5) J	ND(0.43) J	ND(0.42) J	ND(0.45) J	ND(0.48) J	ND(1.3) J
Methyl tert-butyl ether	ND(1.3) J	ND(0.21) J	ND(0.21) J	ND(0.22) J	ND(0.24) J	ND(0.67) J
Naphthalene	ND(2.5) J	ND(0.43) J	ND(0.42) J	ND(0.45) J	ND(0.48) J	ND(1.3) J
o-Xylene	ND(1.3) J	ND(0.21) J	ND(0.21) J	ND(0.22) J	ND(0.24) J	ND(0.67) J
Toluene	ND(1.3) J	ND(0.21) J	ND(0.21) J	ND(0.22) J	ND(0.24) J	ND(0.67) J

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Parameter	Sample ID: SL-BS-SE-D11-SED Matrix: Sediment Sample Depth(Inches): 0-6 Date Collected: 12/13/05	SL-BS-SE-D11-CAP Cap 0-2 12/13/05	SL-BS-SE-D11-CAP Cap 2-4 12/13/05	SL-BS-SE-D11-CAP Cap 4-6 12/13/05	SL-BS-SE-D11-CAP Cap 6-11 12/13/05	SL-BS-SE-D11-F Filter 0-0 12/13/05
PCBs						
Aroclor-1016	ND(6.1)	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1221	ND(6.1)	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1232	ND(6.1)	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1242	ND(6.1)	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1248	ND(6.1)	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1254	75 AF	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Aroclor-1260	79 AG	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Total PCBs	154	ND(0.059)	ND(0.061)	ND(0.059)	ND(0.050)	ND(0.058)
Total Organic Carbon						
Total Organic Carbon	NA	NA	NA	NA	NA	NA
TOC - Replicate 1	NA	9000	5600	6100	7200	NA
TOC - Replicate 2	NA	15000	6100	4900	6100	NA
TOC - Replicate 3	NA	32000	8200	4400	17000	NA
TOC - Replicate 4	NA	5900	5200	NA ¹	8500	NA
TOC - Average	NA	15000	6300	5200	9800	NA
TOC - % RSD	NA	76	21	17	52	NA

TABLE 8
STAGE 3 ANALYTICAL DATA

BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Sample ID:	SL-BS-SE-D12-SED	SL-BS-SE-D12-CAP	SL-BS-SE-D12-CAP	SL-BS-SE-D12-CAP	SL-BS-SE-D12-CAP	SL-BS-SE-D12-CAP	SL-BS-SE-D12-F
Matrix:	Sediment	Cap	Cap	Cap	Cap	Cap	Filter
Sample Depth(Inches):	0-6	0-2	2-4	4-6	6-11	0-0	
Date Collected:	12/14/05	12/14/05	12/14/05	12/14/05	12/14/05	12/14/05	12/14/05
Parameter							
Extractable Petroleum Hydrocarbons							
C11-C22 Aromatic Hydrocarbons	2200 J	ND(11) J	ND(10) J	ND(11) J	11 J	ND(6.1) J	
C19-C36 Aliphatic Hydrocarbons	6100 J	19 J	ND(4.8) J	ND(5.0) J	ND(5.2) J	ND(2.9) J	
C9-C18 Aliphatic Hydrocarbons	1800 J	ND(3.8) J	ND(3.6) J	ND(3.7) J	ND(3.9) J	ND(2.2) J	
Total Petroleum Hydrocarbons	10100 J	19 J	ND(3.6) J	ND(3.7) J	11 J	ND(2.2) J	
Unadjusted C11-C22 Aromatic Hydrocarbons	2300 J	ND(11) J	ND(10) J	ND(11) J	11 J	ND(6.1) J	
2-Methylnaphthalene	ND(1.6) J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Acenaphthene	1.8 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Acenaphthylene	ND(1.6) J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Anthracene	3.6 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Benzo(a)anthracene	8.6 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Benzo(a)pyrene	8.6 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Benzo(b)fluoranthene	14 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Benzo(g,h,i)perylene	6.8 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Benzo(k)fluoranthene	4.2 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Chrysene	11 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Dibenzo(a,h)anthracene	9.3 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Fluoranthene	26 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Fluorene	ND(1.6) J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Indeno(1,2,3-cd)pyrene	9.3 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Naphthalene	ND(1.6) J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Phenanthrene	14 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Pyrene	24 J	ND(0.63) J	ND(0.60) J	ND(0.62) J	ND(0.65) J	ND(0.36) J	
Volatile Petroleum Hydrocarbons							
C5-C8 Aliphatic Hydrocarbons	ND(160)	17	ND(9.1)	ND(12)	ND(9.8)	ND(36)	
C9-C10 Aromatic Hydrocarbons	130	ND(4.6)	ND(4.5)	ND(5.9)	ND(4.9)	ND(18)	
C9-C12 Aliphatic Hydrocarbons	ND(82)	ND(4.6)	ND(4.5)	ND(5.9)	ND(4.9)	ND(18)	
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(160)	17	ND(9.1)	ND(12)	ND(9.8)	ND(36)	
Unadjusted C9-C12 Aliphatic Hydrocarbons	190	ND(4.6)	ND(4.5)	ND(5.9)	ND(4.9)	ND(18)	
Benzene	ND(4.1) J	ND(0.23) J	ND(0.23) J	ND(0.30) J	ND(0.24) J	ND(0.89) J	
Ethylbenzene	ND(4.1) J	ND(0.23) J	ND(0.23) J	ND(0.30) J	ND(0.24) J	ND(0.89) J	
m&p-Xylene	ND(8.2) J	ND(0.46) J	ND(0.45) J	ND(0.59) J	ND(0.49) J	ND(1.8) J	
Methyl tert-butyl ether	ND(4.1) J	ND(0.23) J	ND(0.23) J	ND(0.30) J	ND(0.24) J	ND(0.89) J	
Naphthalene	ND(8.2) J	ND(0.46) J	ND(0.45) J	ND(0.59) J	ND(0.49) J	ND(1.8) J	
o-Xylene	ND(4.1) J	ND(0.23) J	ND(0.23) J	ND(0.30) J	ND(0.24) J	ND(0.89) J	
Toluene	ND(4.1) J	ND(0.23) J	ND(0.23) J	ND(0.30) J	ND(0.24) J	ND(0.89) J	

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Parameter	Sample ID: Matrix: Sample Depth(Inches): Date Collected:	SL-BS-SE-D12-SED Sediment 0-6 12/14/05	SL-BS-SE-D12-CAP Cap 0-2 12/14/05	SL-BS-SE-D12-CAP Cap 2-4 12/14/05	SL-BS-SE-D12-CAP Cap 4-6 12/14/05	SL-BS-SE-D12-CAP Cap 6-11 12/14/05	SL-BS-SE-D12-F Filter 0-0 12/14/05
PCBs							
Aroclor-1016		ND(6.4) J	ND(0.060)	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1221		ND(6.4) J	ND(0.060)	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1232		ND(6.4) J	ND(0.060)	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1242		ND(6.4) J	ND(0.060)	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1248		ND(6.4) J	ND(0.060)	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1254		69 J	0.16 AF	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Aroclor-1260		93 J	0.14 AG	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Total PCBs		162 J	0.3	ND(0.059)	ND(0.058)	ND(0.059)	ND(0.057)
Total Organic Carbon							
Total Organic Carbon		NA	NA	NA	NA	NA	NA
TOC - Replicate 1		NA	6000	12000	21000	15000	NA
TOC - Replicate 2		NA	9400	3900	6900	9100	NA
TOC - Replicate 3		NA	8800	4100	6900	9800	NA
TOC - Replicate 4		NA	6400	9200	3700	9000	NA
TOC - Average		NA	7700	7300	9600	11000	NA
TOC - % RSD		NA	22	55	81	25	NA

TABLE 8
STAGE 3 ANALYTICAL DATA

BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Sample ID: Matrix: Sample Depth(Inches): Date Collected:	SL-BS-SE-D16-SED Sediment 0-6 11/22/05	SL-BS-SE-D16-CAP Cap 0-2 11/22/05	SL-BS-SE-D16-CAP Cap 2-4 11/22/05	SL-BS-SE-D16-CAP Cap 4-6 11/22/05	SL-BS-SE-D16-CAP Cap 6-11 11/22/05	SL-BS-SE-D16-Filter Filter 0-0 11/22/05	SL-BS-SE-D14-F Filter 0-0 12/13/05
Extractable Petroleum Hydrocarbons							
C11-C22 Aromatic Hydrocarbons	5200	R	R	R	R	ND(8.0)	13 J
C19-C36 Aliphatic Hydrocarbons	11000	14 J	R	5.5 J	R	ND(3.8)	5.3 J
C9-C18 Aliphatic Hydrocarbons	2800	R	R	R	R	ND(2.8) J	ND(3.2) J
Total Petroleum Hydrocarbons	19000	14 J	R	5.5 J	R	ND(8.0)	18.3 J
Unadjusted C11-C22 Aromatic Hydrocarbons	5400	R	R	R	R	NA	NA
2-Methylnaphthalene	2.0	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Acenaphthene	2.5	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Acenaphthylene	2.4	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Anthracene	7.3	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Benzo(a)anthracene	13	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Benzo(a)pyrene	13	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Benzo(b)fluoranthene	20	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Benzo(g,h,i)perylene	7.5	ND(0.61)	ND(0.59)	ND(0.59)	1.1	ND(0.47)	ND(0.53) J
Benzo(k)fluoranthene	4.7	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Chrysene	15	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Dibenzo(a,h)anthracene	11	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Fluoranthene	34	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Fluorene	3.8	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Indeno(1,2,3-cd)pyrene	11	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Naphthalene	ND(1.3) J	ND(0.61) J	ND(0.59) J	ND(0.59) J	ND(0.61) J	ND(0.47) J	ND(0.53) J
Phenanthrene	20	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Pyrene	36	ND(0.61)	ND(0.59)	ND(0.59)	ND(0.61)	ND(0.47)	ND(0.53) J
Volatile Petroleum Hydrocarbons							
C5-C8 Aliphatic Hydrocarbons	ND(44)	ND(15)	ND(15)	ND(15)	ND(15)	ND(10) J	ND(39)
C9-C10 Aromatic Hydrocarbons	ND(22)	ND(7.5)	ND(7.3)	ND(7.3)	ND(7.5)	ND(5.2) J	ND(20)
C9-C12 Aliphatic Hydrocarbons	ND(22)	ND(7.5)	ND(7.3)	ND(7.3)	ND(7.5)	ND(5.2) J	ND(20)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(44)	ND(15)	ND(15)	ND(15)	ND(15)	ND(10)	ND(39)
Unadjusted C9-C12 Aliphatic Hydrocarbons	ND(22)	ND(7.5)	ND(7.3)	ND(7.3)	ND(7.5)	ND(5.2)	ND(20)
Benzene	ND(1.1) J	ND(0.38) J	ND(0.36) J	ND(0.37) J	ND(0.38) J	ND(0.26) J	ND(0.98) J
Ethylbenzene	ND(1.1) J	ND(0.38) J	ND(0.36) J	ND(0.37) J	ND(0.38) J	ND(0.26) J	ND(0.98) J
m&p-Xylene	ND(2.2) J	ND(0.75) J	ND(0.73) J	ND(0.73) J	ND(0.75) J	ND(0.52) J	ND(2.0) J
Methyl tert-butyl ether	ND(1.1) J	ND(0.38) J	ND(0.36) J	ND(0.37) J	ND(0.38) J	ND(0.26) J	ND(0.98) J
Naphthalene	ND(2.2) J	ND(0.75) J	ND(0.73) J	ND(0.73) J	ND(0.75) J	ND(0.52) J	ND(2.0) J
o-Xylene	ND(1.1) J	ND(0.38) J	ND(0.36) J	ND(0.37) J	ND(0.38) J	ND(0.26) J	ND(0.98) J
Toluene	ND(1.1) J	ND(0.38) J	ND(0.36) J	ND(0.37) J	ND(0.38) J	ND(0.26) J	ND(0.98) J

**TABLE 8
STAGE 3 ANALYTICAL DATA**

**BENCH SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Parameter	Sample ID: Matrix: Sample Depth(Inches): Date Collected:	SL-BS-SE-D16-SED Sediment 0-6 11/22/05	SL-BS-SE-D16-CAP Cap 0-2 11/22/05	SL-BS-SE-D16-CAP Cap 2-4 11/22/05	SL-BS-SE-D16-CAP Cap 4-6 11/22/05	SL-BS-SE-D16-CAP Cap 6-11 11/22/05	SL-BS-SE-D16-Filter Filter 0-0 11/22/05	SL-BS-SE-D14-F Filter 0-0 12/13/05
PCBs								
Aroclor-1016		ND(5.1)	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	ND(0.050)
Aroclor-1221		ND(5.1)	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	ND(0.050)
Aroclor-1232		ND(5.1)	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	ND(0.050)
Aroclor-1242		ND(5.1)	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	ND(0.050)
Aroclor-1248		ND(5.1)	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	ND(0.050)
Aroclor-1254		85 AF	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	0.058 AF
Aroclor-1260		97 AG	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	0.054 AG
Total PCBs		182	ND(0.061)	ND(0.057)	ND(0.061)	ND(0.061)	ND(0.061)	0.112
Total Organic Carbon								
Total Organic Carbon		NA	9000	10000	8900	ND(730)	NA	NA
TOC - Replicate 1		NA	NA	NA	NA	NA	NA	NA
TOC - Replicate 2		NA	NA	NA	NA	NA	NA	NA
TOC - Replicate 3		NA	NA	NA	NA	NA	NA	NA
TOC - Replicate 4		NA	NA	NA	NA	NA	NA	NA
TOC - Average		NA	NA	NA	NA	NA	NA	NA
TOC - % RSD		NA	NA	NA	NA	NA	NA	NA

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical, Inc., and Alpha Woods Hole Laboratories, for analysis of PCBs, total organic carbon (TOC) and EPH/VPH.
 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. Initial Aliphatic and Aromatic EPH results in Core D16 cap sections were rejected due to suspected instrument carryover. Results displayed here are a result of re-extraction and analysis. Non-detect results in these samples have been rejected as the re-analysis was not within the analytical method prescribed extraction times. Detected values have been qualified as estimated, NA - Not Analyzed.
- NA¹ - Not Analyzed - TOC Replicate 4 is only analyzed and reported by laboratory when the % RSD of Replicate 1 thru Replicate 3 is greater than 25%.
- ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
- % RSD - Percent relative standard deviation.
- With the exception of EPH/VPH, only those constituents detected in one or more samples are summarized.
- Solid matrix samples are presented in dry weight.

Data Qualifiers:

- AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
- AG - Aroclor 1260 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
- J - Indicates that the associated numerical value is an estimated concentration.
- R - Data have been rejected due to failure to meet analytical method prescribed sample extraction times.

**TABLE 9
STAGE 3 OVERBURDEN WATER PCB ANALYTICAL RESULTS**

**BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)**

Core	Sample ID	Date Collected	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCBs
D10	SL-BS-D10-1	8/17/2005	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)
	SL-BS-D10-2	9/26/2005	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)
	SL-D10-WATER-1	11/2/2005	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)
	SL-BS-D10-W7	12/13/2005	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	0.000037 AG	0.000037
D11	SL-BS-D11-1	8/17/2005	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)
	SL-BS-D11-2	9/26/2005	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)
	SL-D11-WATER-1	11/2/2005	ND(0.000043)	ND(0.000043)	ND(0.000043)	ND(0.000043)	ND(0.000043)	ND(0.000043)	ND(0.000043)	ND(0.000043)
	SL-BS-D11-W7	12/13/2005	ND(0.000028)	ND(0.000028)	ND(0.000028)	ND(0.000028)	ND(0.000028)	ND(0.000028)	0.000028 AG	0.000028
D12	SL-BS-D12-1	8/17/2005	ND(0.000025)	ND(0.000025)	ND(0.000025)	ND(0.000025)	ND(0.000025)	ND(0.000025)	ND(0.000025)	ND(0.000025)
	SL-BS-D12-2	9/26/2005	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)
	SL-D12-WATER-1	11/2/2005	ND(0.000040)	ND(0.000040)	ND(0.000040)	ND(0.000040)	ND(0.000040)	ND(0.000040)	ND(0.000040)	ND(0.000040)
	SL-BS-D12-W7	12/13/2005	ND(0.000022)	ND(0.000022)	ND(0.000022)	ND(0.000022)	ND(0.000022)	ND(0.000022)	0.000029 AG	0.000029
D14	SL-BS-D14-1	8/17/2005	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)	ND(0.000031)
	SL-BS-D14-2	9/26/2005	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	ND(0.000034)	0.00025 AF	0.00030 AG	0.00055
	SL-D14-WATER-1	11/2/2005	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	ND(0.000042)	0.000043 AF	0.000044 AG	0.00087
	SL-BS-D14-W7	12/13/2005	ND(0.000024)	ND(0.000024)	ND(0.000024)	ND(0.000024)	ND(0.000024)	0.000073 AF	0.000096 AG	0.000169
D16	SL-BS-D16-1	8/17/2005	ND(0.000027)	ND(0.000027)	ND(0.000027)	ND(0.000027)	ND(0.000027)	ND(0.000027)	ND(0.000027)	ND(0.000027)
	SL-BS-D16-2	9/26/2005	ND(0.000037)	ND(0.000037)	ND(0.000037)	ND(0.000037)	ND(0.000037)	ND(0.000037)	ND(0.000037)	ND(0.000037)

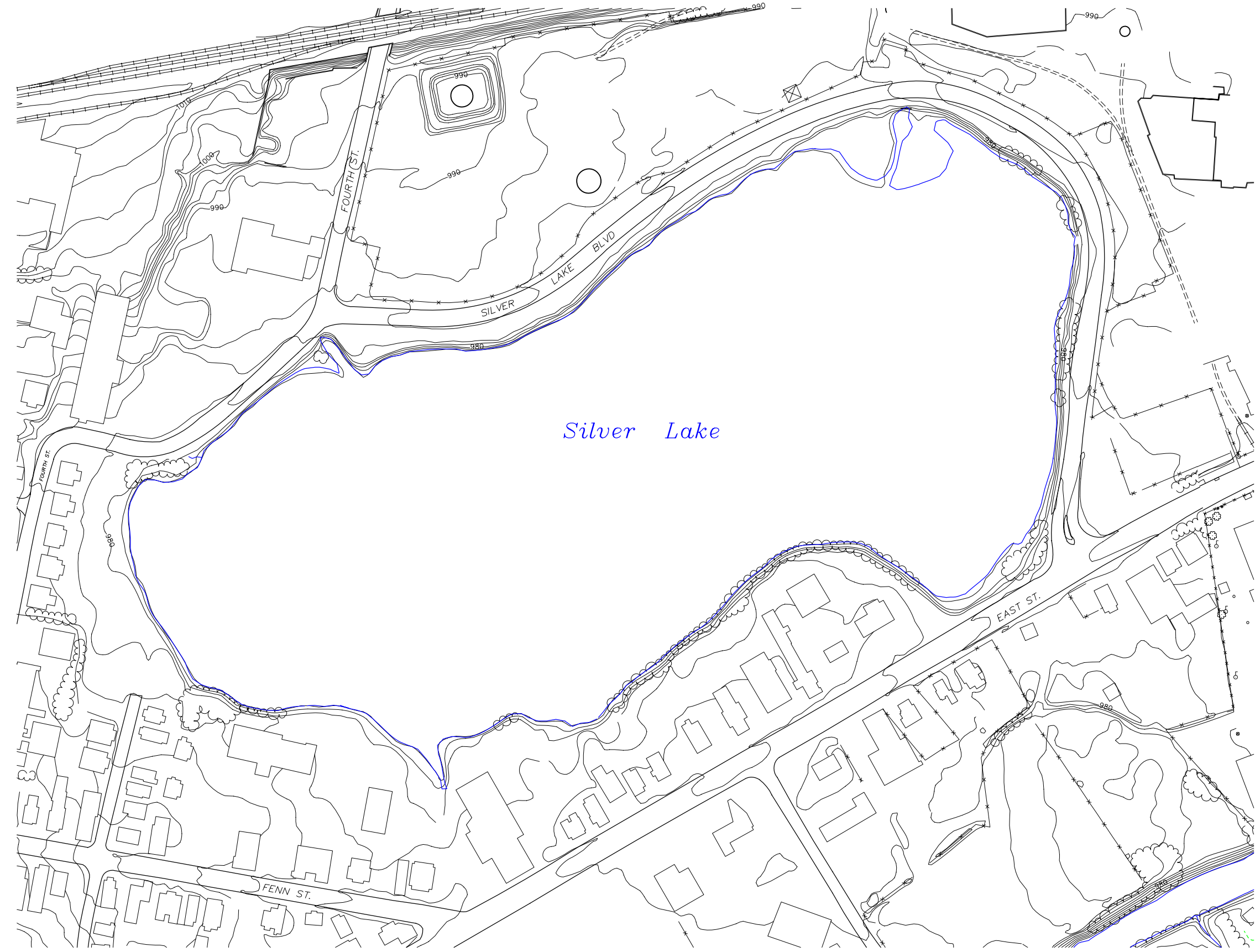
Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical, Inc. for analysis of PCBs.
 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).
- ND - Analyte was not detected. The number in parenthesis is the associated detection limit.




Data Qualifiers:

- AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
AG - Aroclor 1260 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.

Figures




LEGEND

-  EDGE OF WATER
-  RAILROAD
-  VEGETATION

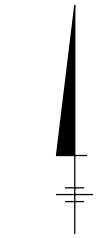
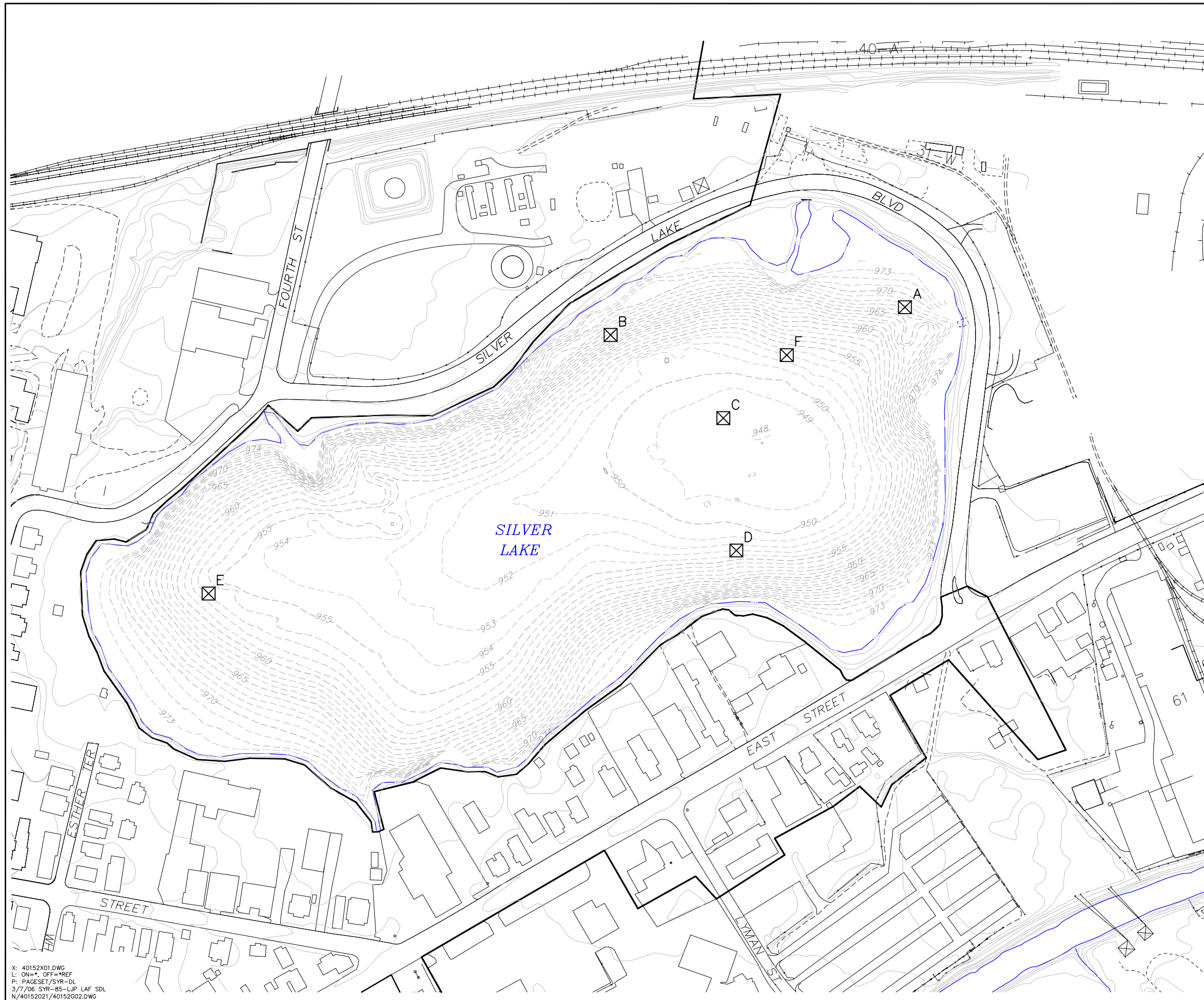
NOTES:

1. THE BASE MAP FEATURES PRESENTED ON THIS FIGURE WERE PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
2. TAX BOUNDARY INFORMATION OBTAINED FROM CITY OF PITTSFIELD'S TAX ASSESSOR'S OFFICE AND IS CURRENT THROUGH SEPTEMBER 5, 1997.



<p>GENERAL ELECTRIC COMPANY PITTSFIELD, MASSACHUSETTS BENCH-SCALE STUDY REPORT FOR SILVER LAKE SEDIMENTS</p>	
<p>SILVER LAKE SITE MAP</p>	
	<p>FIGURE 1</p>

X: 40152X02.DWG, X03.DWG
 L: ON=*, OFF=*REF
 P: PAGESET/SYR-DL
 3/6/06 SYR-85-LJP LAF SDL
 N/40152021/40152001.DWG

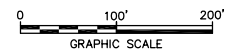


LEGEND

- ELEVATION CONTOUR
- ⊠ A SAMPLING LOCATION AND LOCATION NAME
- EDGE OF WATER
- PAVED ROADWAY
- ||||| RAILROAD
- FENCELINE

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 AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARY IS APPROXIMATE.
4. ALL LOCATIONS ARE APPROXIMATE.
5. THE CONTOUR INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY OCEAN SURVEYS, INC. ON 10-13 JUNE 2003 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO OSI.

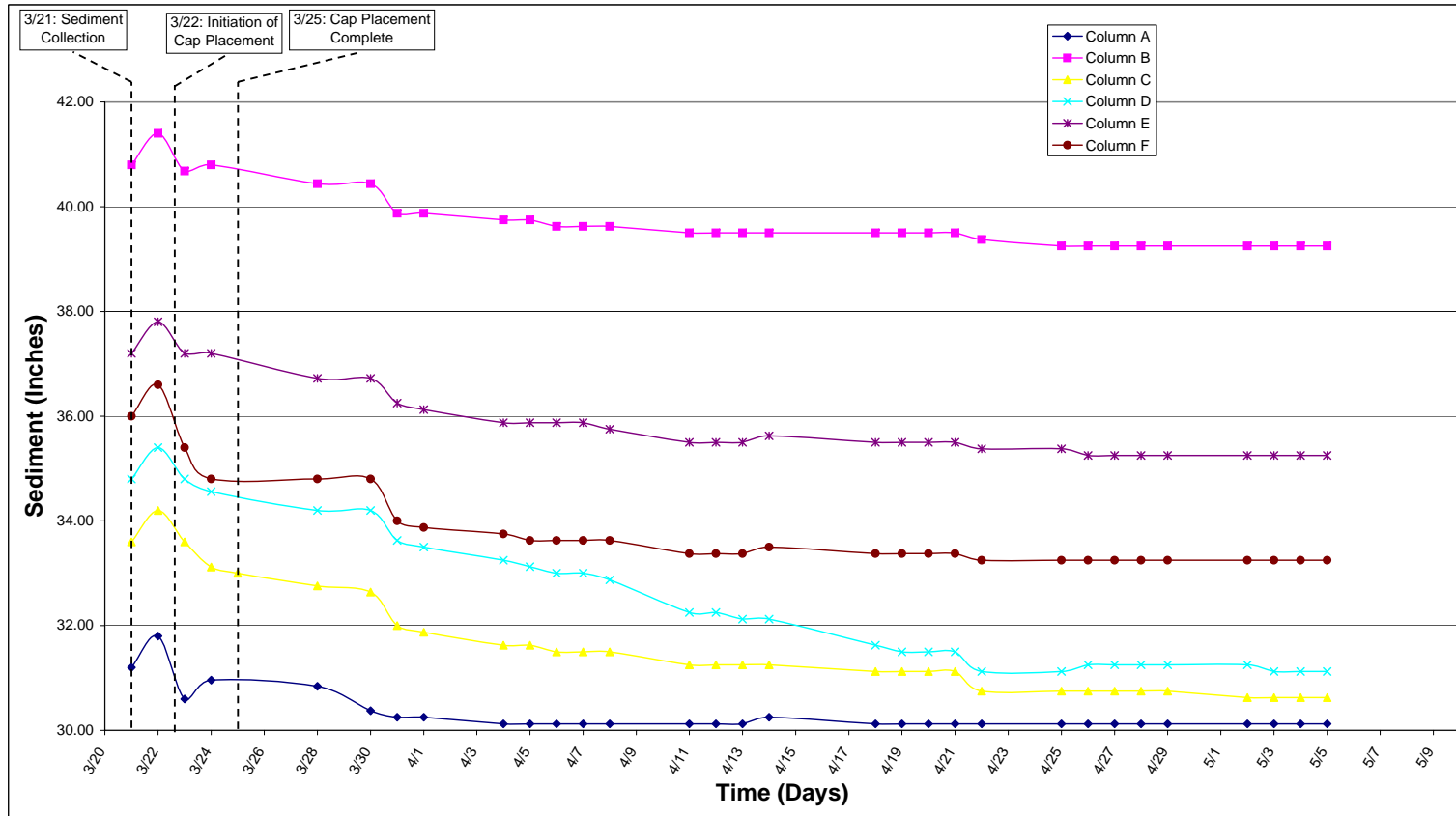


GENERAL ELECTRIC COMPANY
 PITTSFIELD, MASSACHUSETTS
**BENCH-SCALE STUDY REPORT FOR
 SILVER LAKE SEDIMENTS**

**BENCH-SCALE STUDY
 SAMPLE LOCATIONS**



X: 40152X01.DWG
 L: ON=*, OFF=*REF
 P: PAGESET/SYR-DL
 3/7/06 SYR-85-LJP LAF SDL
 N/40152021/40152002.DWG



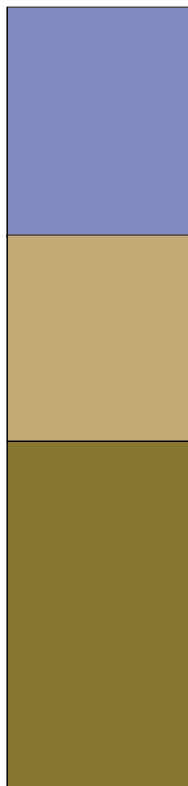
GENERAL ELECTRIC COMPANY
 PITTSFIELD, MASSACHUSETTS
**BENCH-SCALE STUDY FOR
 SILVER LAKE SEDIMENTS**

**STAGE 1
 SEDIMENT CONSOLIDATION RESULTS**

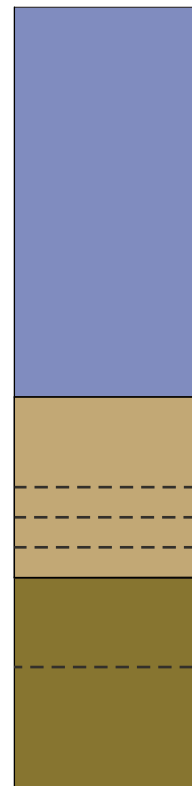
BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers, scientists, economists

**FIGURE
 6**

Pre-Consolidation Column



Post-Consolidation Column

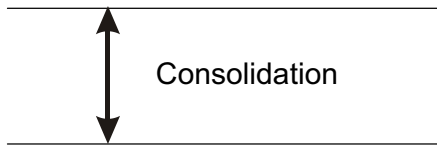


Post-Consolidation Sample Intervals




> 6-inch

4- to 6-inch
2- to 4-inch
0- to 2-inch

0- to -6-inch



KEY:

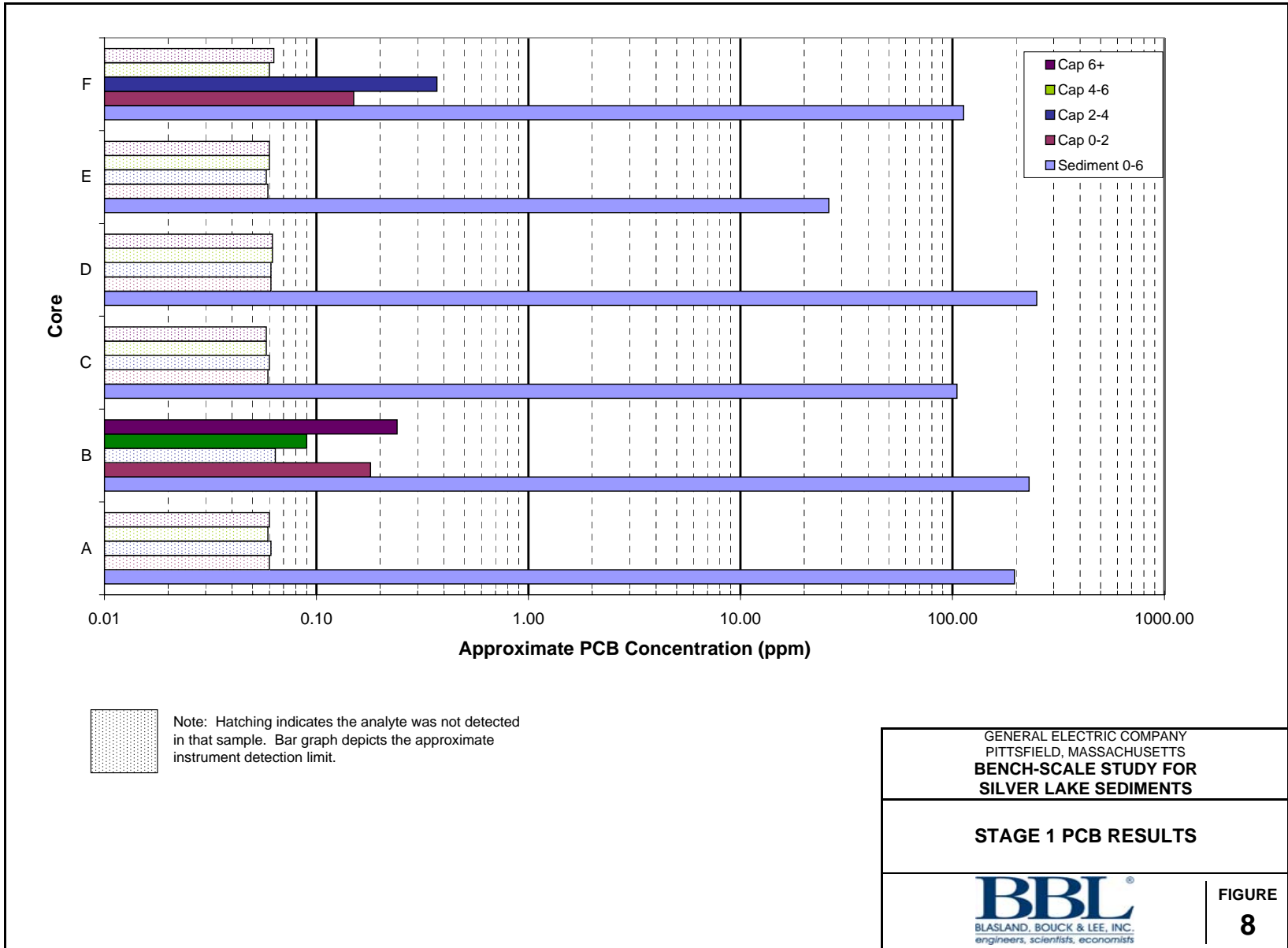
-  Silver Lake Water
-  Isolation Layer
-  Silver Lake Sediments

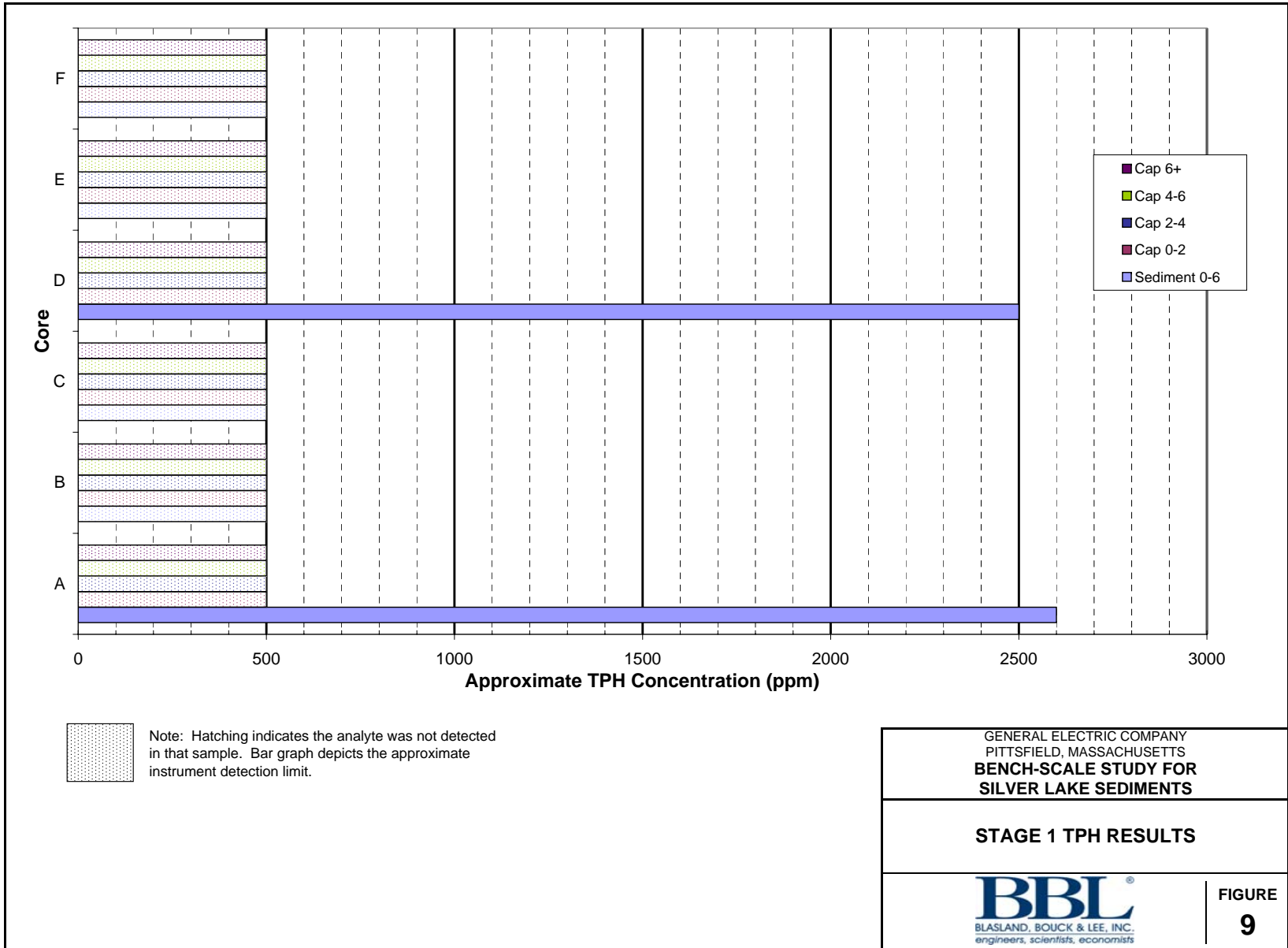
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
**BENCH-SCALE STUDY
FOR SILVER LAKE SEDIMENTS**

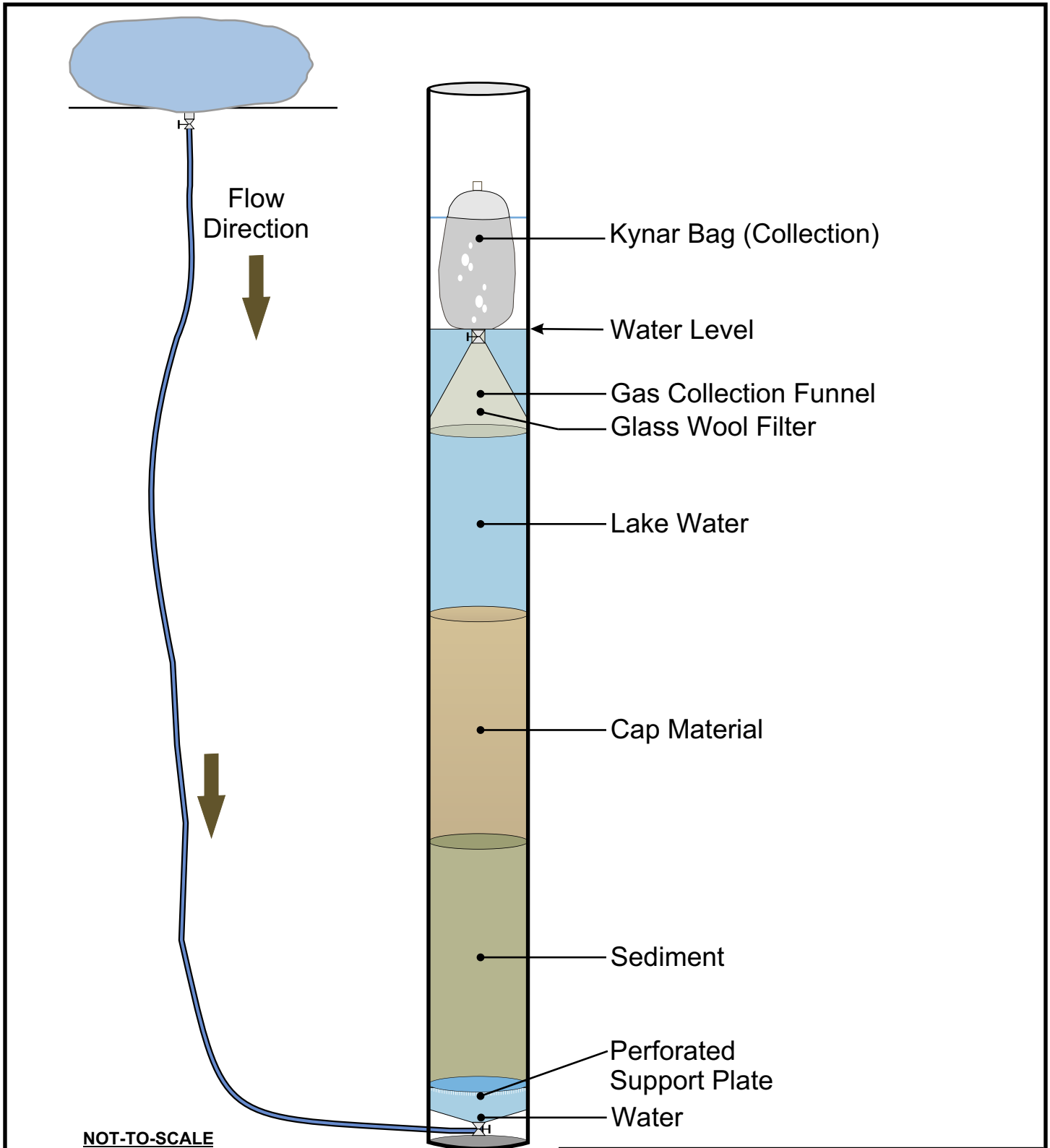
**STAGE 1 CONSOLIDATION COLUMN
SCHEMATIC AND POST-CONSOLIDATION
SAMPLE INCREMENTS**



FIGURE
7







NOT-TO-SCALE

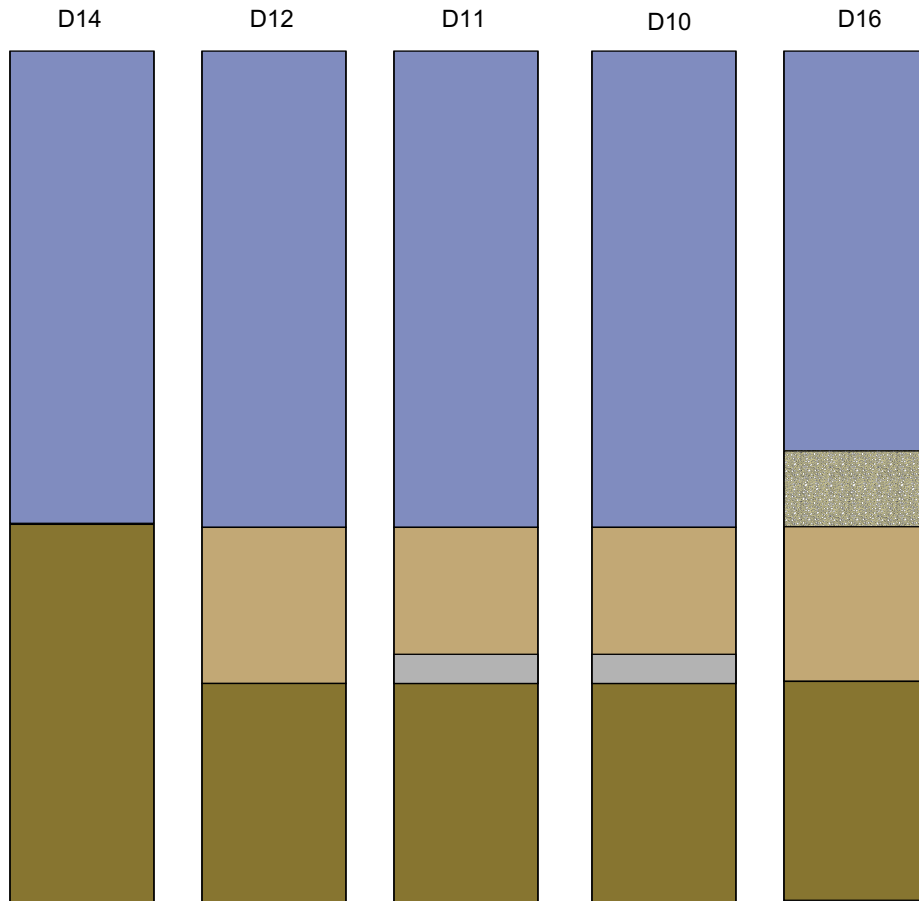
GENERAL ELECTRIC COMPANY
 PITTSFIELD, MASSACHUSETTS
BENCH-SCALE STUDY
SILVER LAKE SEDIMENTS

STAGE 3
COLUMN TEST SET UP



FIGURE
11

Stage 3 Column Schematic



KEY:

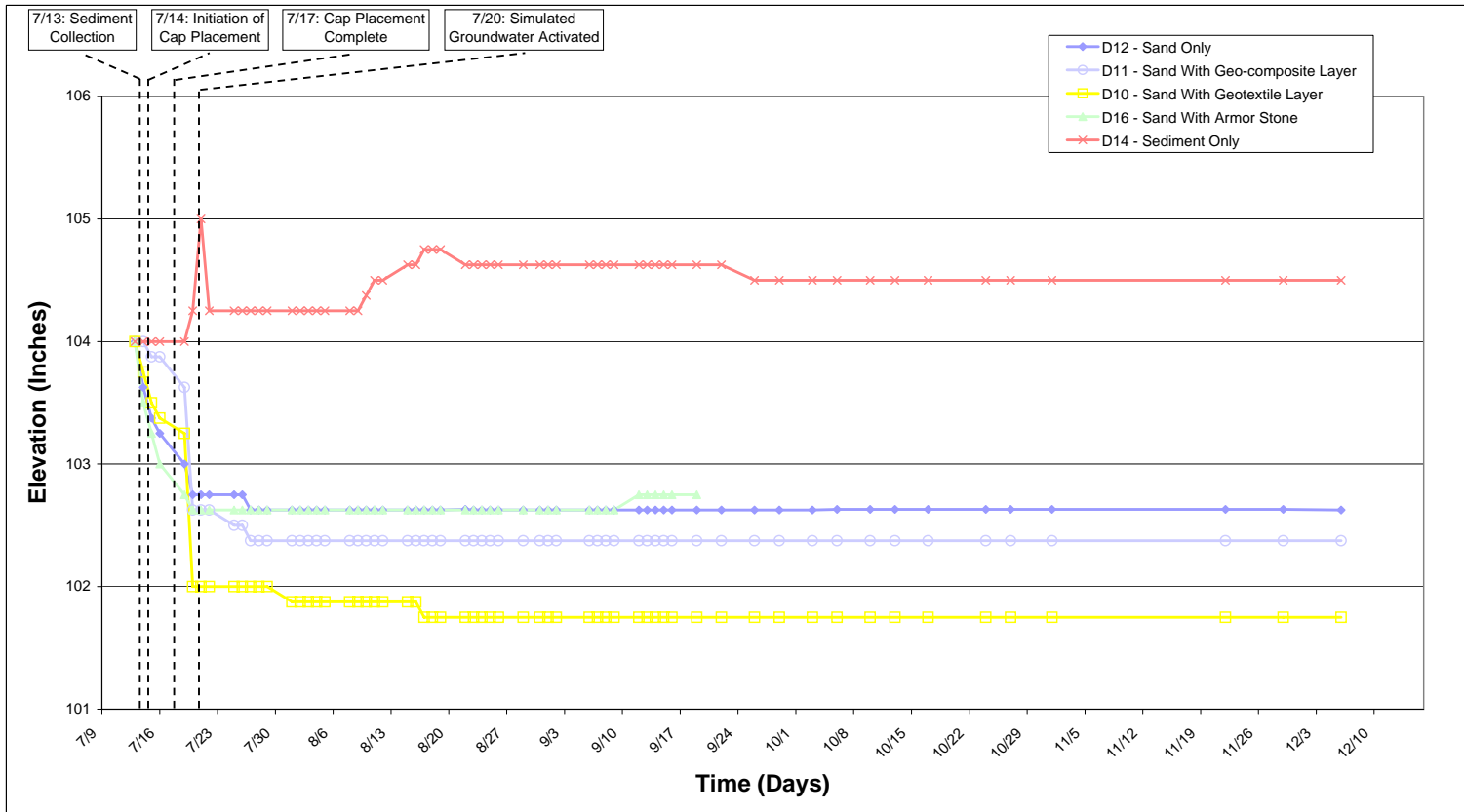
- Silver Lake Water
- Isolation Layer
- Silver Lake Sediments
- Geotextile/Geocomposite
- Cap Armoring Layer

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
**BENCH-SCALE STUDY
FOR SILVER LAKE SEDIMENTS**

STAGE 3 CONSOLIDATION COLUMN SCHEMATIC

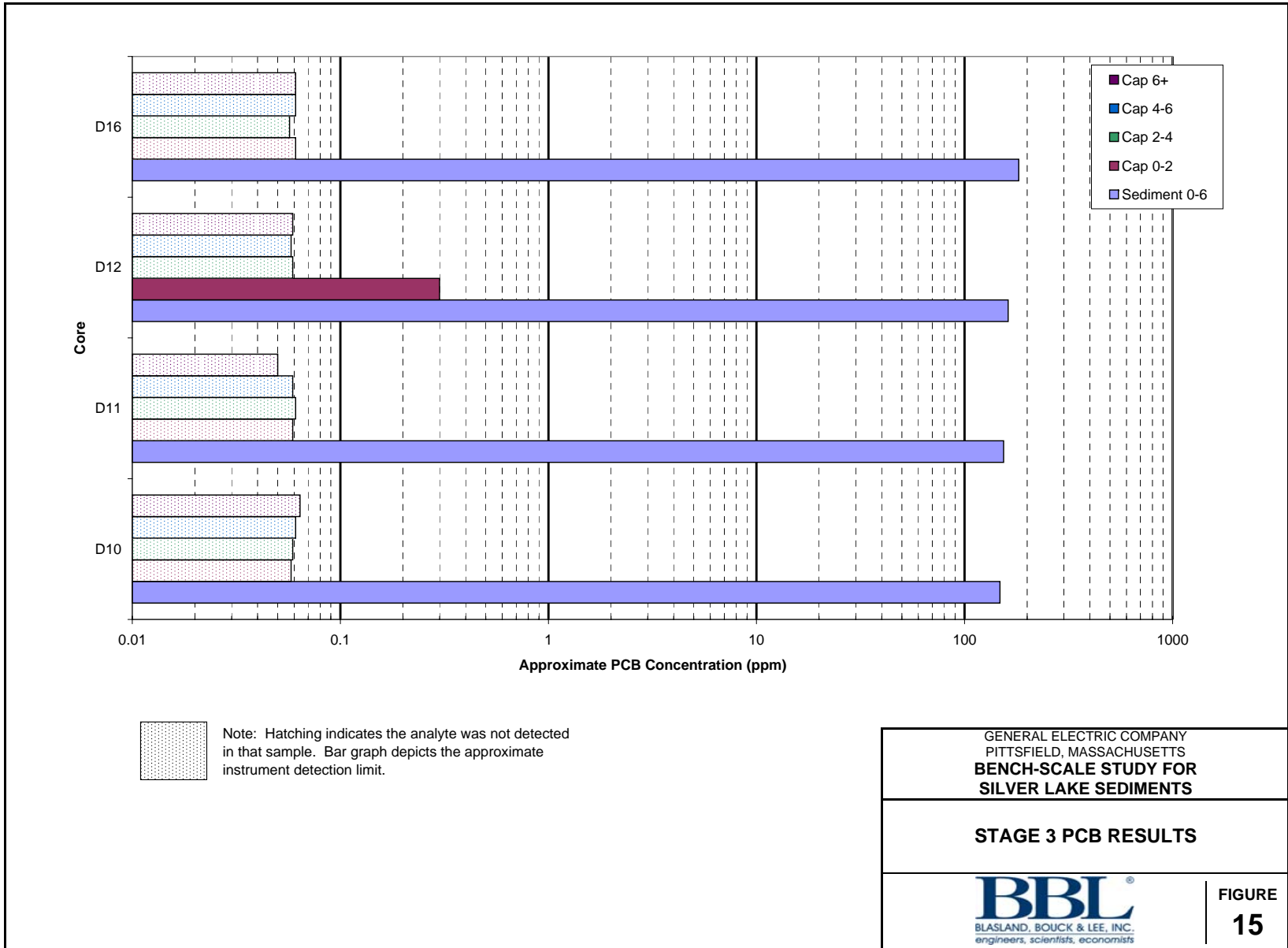
BBL[®]
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

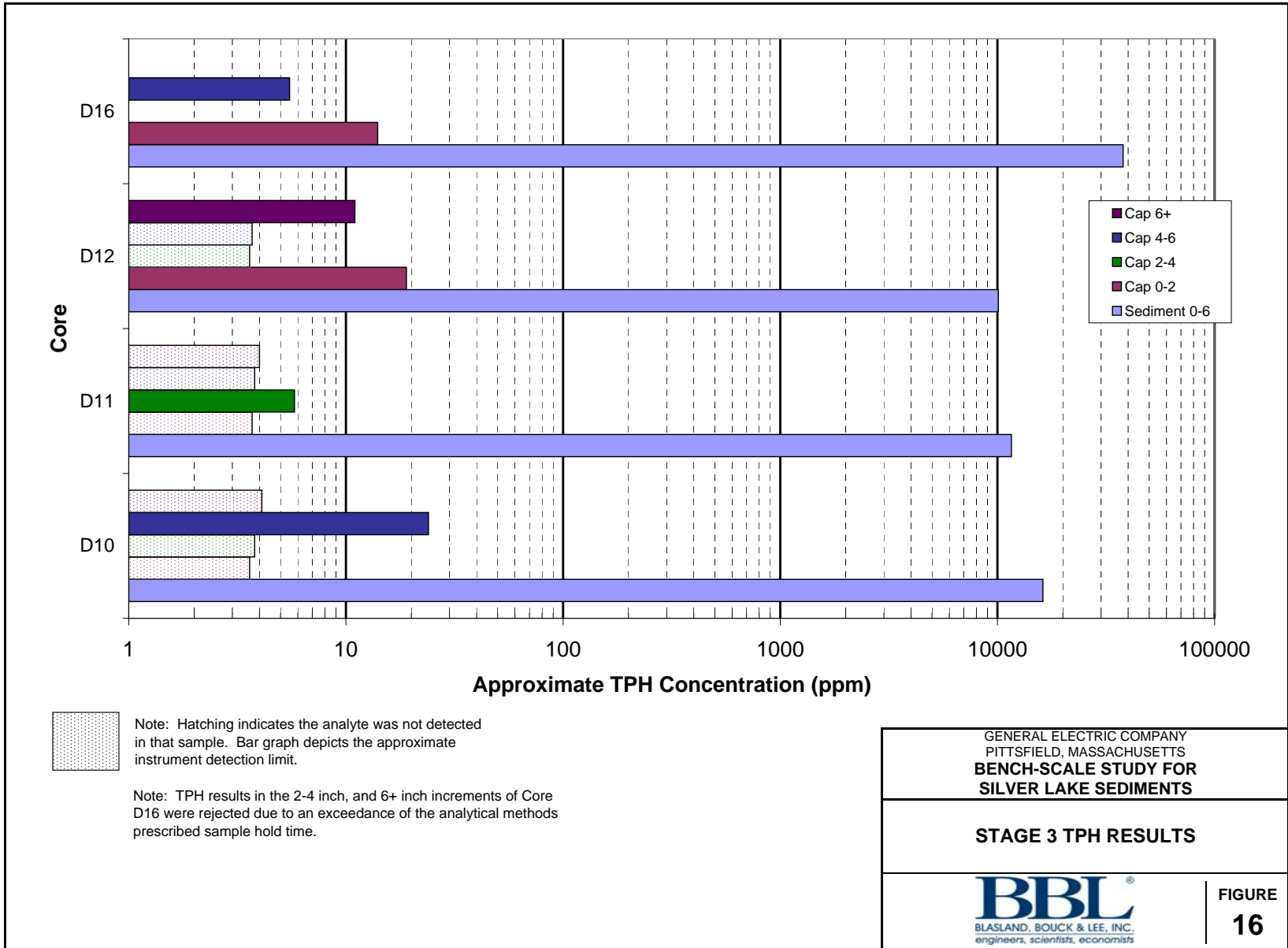
FIGURE
12



Note: Core D16 was inadvertently separated from the fitting at the bottom of the core on September 22, 2005. This core was removed from the remainder of the study following this date.

GENERAL ELECTRIC COMPANY PITTSFIELD, MASSACHUSETTS BENCH-SCALE STUDY FOR SILVER LAKE SEDIMENTS	
STAGE 3 SEDIMENT CONSOLIDATION RESULTS	
	FIGURE 14





Appendices

Appendix A

Sediment Core Penetration and Recovery Depths

**APPENDIX A
SEDIMENT CORE PENETRATION AND RECOVERY DEPTHS**

**BENCH-SCALE REPORT FOR SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

Core ID	Date Collected	Bench-Scale Activity	Penetration (ft)	Recovery (ft)
BS-SE-A1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	4.0	3.4
BS-SE-B1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	3.6	2.8
BS-SE-C1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	4.0	4.0
BS-SE-D1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	4.0	3.5
BS-SE-E1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	4.0	3.9
BS-SE-F1	3/8/2005	Pre-Stage 1 Geotechnical Characterization	4.0	3.3
BS-SE-C2	3/8/2005	Pre-Stage 1 Set-Up Tests	4.8	4.5
BS-SE-C3	3/8/2005	Pre-Stage 1 Set-Up Tests	5.0	4.6
BS-SE-C4	3/8/2005	Pre-Stage 1 Set-Up Tests	5.0	4.4
BS-SE-C6	3/8/2005	Pre-Stage 1 Set-Up Tests	5.0	4.8
BS-SE-C5	3/8/2005	Pre-Stage 1 Set-Up Tests	5.0	4.9
BS-SE-A2	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.5
BS-SE-B2	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.0
BS-SE-C7	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.4
BS-SE-D2	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.0
BS-SE-E2	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.0
BS-SE-F2	3/9/2005	Pre-Stage 1 PCB Characterization	4.0	3.1
BS-SE-A3	3/21/2005	Stage 1 Consolidation Tests	4.6	2.6
BS-SE-B3	3/21/2005	Stage 1 Consolidation Tests	3.7	3.4
BS-SE-C8	3/21/2005	Stage 1 Consolidation Tests	3.5	2.8
BS-SE-D3	3/21/2005	Stage 1 Consolidation Tests	3.8	2.9
BS-SE-E3	3/21/2005	Stage 1 Consolidation Tests	3.8	3.1
BS-SE-F3	3/21/2005	Stage 1 Consolidation Tests	3.6	3.0
BS-SE-D10	7/13/2006	Stage 3 Consolidation Tests	3.9	3.3
BS-SE-D11	7/13/2006	Stage 3 Consolidation Tests	4.0	3.4
BS-SE-D12	7/13/2006	Stage 3 Consolidation Tests	3.8	3.2
BS-SE-D13	7/13/2006	Stage 3 Consolidation Tests	3.9	3.3
BS-SE-D14	7/13/2006	Stage 3 Consolidation Tests	4.0	3.3
BS-SE-D15	7/13/2006	Stage 3 Consolidation Tests	4.1	3.4
BS-SE-D16	7/13/2006	Stage 3 Consolidation Tests	3.8	3.2
BS-SE-D17	7/13/2006	Stage 3 Consolidation Tests	3.9	3.2