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TECHNICAL REPORT

Report on Supplemental Characterization Activities - Building 68 Area

General Electric Company
Pittsfield, Massachusetts

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BBL
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1. Introduction

1.1 General

This "Report on Supplemental Characterization Activities - Building 68 Area" (Supplemental Characterization Report) summarizes the activities recently performed by the General Electric Company (GE) to further address unanticipated oils and oil sheens that were observed during the performance of sediment removal actions at GE's Building 68 Area in Pittsfield, Massachusetts. As described in this report, over the last several weeks GE has performed a number of activities to better assess the nature of the observed oils and sheens, and to determine the presence, extent, and potential source(s) of these materials. In addition to summarizing the scope and results of the supplemental characterization activities, this report presents a proposal and schedule for several future activities related to this topic.

1.2 Background

Activities associated with the Building 68 Area removal action began in June 1997 in accordance with the *Draft Building 68 Area Removal Action Work Plan* (Blasland, Bouck & Lee, May 1997). The Work Plan was approved by the U.S. Environmental Protection Agency (USEPA) in a letter dated June 12, 1997. In addition to identifying the anticipated soil and sediment removal limits, the Work Plan described the various implementation procedures and schedule associated with the removal actions. As indicated in the Work Plan, once initial site preparation activities were completed (involving, among other things, the clearing of trees and vegetation and the installation of sheetpiling around the perimeter of the removal limits), the remediation contractor (Maxymillian Technologies, Inc., Pittsfield, Massachusetts) would initially remove river sediments, followed by removal of the affected riverbank soils. During the course of sediment removal activities within the river, oil and sheens were observed within certain areas of the excavation limits on three separate occasions. First, sheens were observed in portions of the excavation subgrade, as well as some of the excavated sediments removed from these areas. These sheens were attributed to oils that had previously been entrained within the sediments and were observed during the removal actions. Second, sheens were observed on the surface water impounded between the sheetpile wall and the base of the riverbank adjacent to Building 68; these sheens appeared to originate from oils contained within sediments or low-lying bank soils present behind the sheetpile or within the riverbank. Third, oils were observed in sediments present at the western end of the removal area. All sheens and oils (henceforth referred to as nonaqueous phase liquid (NAPL)) that were observed were located within areas that were adequately controlled to prevent migration or release to the Housatonic River, and were properly contained and removed by GE. Although no releases to the Housatonic River occurred, GE promptly reported these occurrences to the USEPA On-Scene Coordinator (OSC) and the National Response Center (NRC). Further information regarding the observed NAPL and sheens, and the response actions and notifications performed by GE, were provided in Section II (Description of the Current Situation) of a report entitled *Building 68 Area Removal Action - Assessment of Observed Oil and Proposed Activities* (Blasland, Bouck & Lee, Inc., October 1997).

In that report, GE proposed supplemental characterization activities to further address the presence of NAPL and sheens in the vicinity of Building 68. The proposed activities were conditionally approved in a letter from the USEPA dated October 22, 1997. The field program was completed between November 4 and November 12, 1997. The results of the supplemental characterization activities, and other information requested by the Agencies in their conditional approval letter are presented in this report.

2. Scope of Supplemental Characterization Activities

2.1 General

In accordance with the ***Building 68 Area Removal Action - Assessment of Observed Oil and Proposed Activities*** and comments from USEPA dated October 22, 1997, investigations related to the observed sheens and NAPL included a soil boring and monitoring well installation program, a riverbank surficial soil sampling program, and a NAPL monitoring/sampling program. Specific activities included in these investigations are described below.

2.2 Soil Borings

Between November 4 and November 7, 1997, six soil borings (3-6C-EB-22 through 3-6C-EB-27) were advanced along the top of the riverbank at approximately 60-foot intervals (see Figure 1). The borings were advanced using truck-mounted, direct-push equipment. As each soil boring was advanced, soil samples were collected at two-foot intervals from the ground surface to the first confining layer below the base of the river. The total depth of each boring was, at a minimum, extended to an elevation representing the pre-excavation elevation of the sediment/water interface (i.e., at approximate elevation 968 feet). Soil samples from all two-foot intervals above the water table, the interval at the top of the confining layer in each boring, and all samples exhibiting visual evidence of sheens or oil-staining were submitted for laboratory analysis of polychlorinated biphenyls (PCBs). In addition, each sample was screened in the field with a photoionization detector (PID), and the sample with the highest headspace PID reading from each boring, and any samples exhibiting sheens or NAPL, were submitted for analysis of Appendix IX+3 volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). All sample collection procedures were completed in accordance with the Agency-approved ***Sampling and Analysis Plan/Data Collection and Analysis Quality Assurance Plan*** (SAP/DCAQAP) dated May 1994, with subsequent revisions. Soil boring logs are included in Appendix A.

2.3 Monitoring Well Installation

Following the completion of the soil boring program, monitoring wells were installed at each of the six boring locations. The monitoring wells were constructed with two-inch diameter schedule 40 PVC casing, 0.010-inch machine-slotted screen, and a 0.5-foot sump. The base of each well was set approximately one foot into the confining layer, and the screened interval of each well extended from the confining layer to above the water table. The wells were finished with locking, six-inch diameter steel casings. The six new monitoring wells were developed on November 13 and 14, 1997 and were surveyed on December 3, 1997. Monitoring well installation and development procedures were consistent with the SAP/DCAQAP. Well construction details are included on the boring logs in Appendix A.

2.4 Riverbank Soil Sampling and NAPL Sampling

The supplemental characterization activities also included surficial soil sampling, sheen and NAPL sampling, and NAPL monitoring. In accordance with the Agencies' October 22, 1997 letter, a surface soil sample (0- to 0.5- feet below grade) was collected at the base of the riverbank directly south of each soil boring/monitoring well location (see Figure 1). The six samples (3-6C-South-22 through 3-6C-South-27) were submitted for laboratory analysis of PCBs. In addition, one composite sample of the surface water behind the sheetpile wall of Cell 5 (which contained an oil sheen) and one NAPL sample from within the Cell 5 excavation area, were collected (see Figure 1). These samples were collected to supplement the results of a NAPL sample previously collected on September 25, 1997 from within the Cell 6 excavation area. The surface water and NAPL samples were submitted for laboratory analysis of PCBs, Appendix IX+3 VOCs and SVOCs, density, and viscosity. Lastly, the NAPL monitoring program for the six new wells was implemented November 12, 1997, immediately following well installation. The new wells were monitored for the presence of NAPL three times per week for one week, whereupon the frequency was reduced to once per week. These sampling and monitoring activities were conducted in accordance with the SAP/DCAQAP.

3. Results of Supplemental Characterization Activities

3.1 General

As described in Section 2, various activities were conducted to further address the presence of oil and oil sheens within the sheetpiled removal area. The results of these activities are presented below.

3.2 Stratigraphy

As previously discussed, six soil borings were advanced to the first confining unit located beneath the riverbank (see Figure 1). Soil boring logs and well construction diagrams are presented in Appendix A. Two geologic cross sections, extending from west to east generally parallel to the river, are provided on Figure 2 and Figure 3. The cross section locations are illustrated on Figure 1.

In general, the subsurface profile consists of approximately 10 to 14 feet of fill material overlying native geologic deposits. The fill typically is comprised of brown to black, fine- to coarse-grained poorly sorted sand with variable percentages of silt, gravel, and debris material. Debris observed in the fill material included cinders, concrete, brick, glass, and porcelain fragments.

The native soil between the fill material and the underlying silt aquitard consists of gray or brown fine-grained sand with variable percentages of silt, medium-to coarse-grained sand, or gravel. Traces of natural organic material (e.g. roots, leaves) were observed in borings 3-6C-EB-24 and 3-6C-EB-26. A discrete brown peat layer was present in borings 3-6C-EB-26 and 3-6C-EB-27; brown peat was also described in borings 3-6C-EB-23 and 3-6C-EB-24, although the material was not present in a coherent layer. A dense brown silt with fine sand and traces of medium- and coarse-grained sand and gravel was encountered in each boring below the fill and coarser native deposits. The surface of this unit, which occurs at approximately 16 to 22 feet below grade, slopes generally from east to west in the area investigated during the Building 68 supplemental characterization activities (see Figure 2). Based on the results of the supplemental characterizations, the silt layer appears to be continuous in this vicinity.

Subsurface logs from several borings advanced during previous investigations in the vicinity of Building 68 (ES-2-3, ES-2-4, RF-l, 95-1, 95-27, 3-6C-EB-13, and 3-6C-EB-14) were examined to further evaluate the continuity of the silt layer parallel to the river. The soil boring logs for these locations are included in Appendix A. Stratigraphic relationships are illustrated on Figure 3. A gray silty sand with some to little gravel was present in boring 95-1 at 18 feet below grade. Similarly, a thin (0.5- to 1- foot thick) gray to brown silt layer was described in borings 3-6C-EB-13 and 3-6C-EB-14 at approximately 20 feet below grade. The textural differences between the silt unit encountered in the recent investigation and the silt layer previously described in borings 95-1, 3-6C-EB-13, and 3-6C-EB-14 are minor, and indicate the silt aquitard is continuous as far east as Building 68.

A unit corresponding to the silt layer described above was not observed in borings ES2-3, ES2-4, 95-27, or RF-1. Stratigraphic observations made during the supplemental characterization activities indicate the silt layer is continuous west of Building 68, and suggest that borings ES2-4 (total depth 22 feet below grade) and RF-l (total depth 20 feet below grade) were not advanced deep enough to reach the silt unit. In contrast, the absence of the silt layer in borings ES2-3 (total depth 30 feet below grade) and 95-27 (total depth 58 feet below grade) indicates the unit is absent in the referenced borings east of Building 68. The soil boring log for well 19, located between Building 68 and ES2-3, could not be located (well 19 is an older boring).

Subsurface logs from borings completed on the Newell Street parking lot site south of the Housatonic River were examined to evaluate the continuity of the silt layer in that vicinity. In general, soil boring logs generated during the Supplemental Phase II/RFI activities were consistent with subsurface descriptions from the Building 68 investigation and of sufficient detail to permit correlation across the Housatonic River. Subsurface logs for borings completed prior to 1995 typically were not of sufficient depth (14 feet or less below grade). As a consequence, only Supplemental Phase II/RFI boring logs were employed to evaluate the stratigraphy south of the river. Representative soil boring logs are included in Appendix A.

A silt layer is present south of the area investigated during the Building 68 supplemental characterization activities in borings NS-16, NS-18, NS-21, NS-36, and NS-37 at an elevation of approximately 967 feet. This unit probably correlates with the silt layer observed in borings 3-6C-EB-22 through 3-6C-EB-27 north of the river, which occurs at an elevation ranging from 962 to 969 feet. Further to the west on the Newell Street parking lot site, a dense brown silt layer occurs at elevations ranging from 947 feet to 952 feet in borings NS-15, NS-30, NS-3 1, NS-32, NS-34 and NS-35. This deeper silt unit probably correlates with the silt encountered at an elevation of 950 feet in boring 3-6C-EB-13 in Building 68, and may represent a regionally continuous till unit that acts as an aquitard. There is no evidence of the shallow silt unit on the western portion of the Newell Street parking lot site.

Based on these observations, the silt layer present in the Building 68 vicinity [including the area shown to have NAPL (i.e., 3-6C-EB25)] is continuous immediately south of the river. However, the silt layer apparently is absent east of Building 68 north of the river, and on the western portion of the Newell Street parking lot site south of the river. There is evidence on both sides of the river of a deeper, dense silt layer that may be continuous on a more regional scale.

3.3 Subsurface Soil/Fill Characterization

During the soil boring program, soil samples collected at two foot intervals were screened in the field with a PID. These results are included on the soil boring logs in Attachment 1. PID readings in excess of 10 parts per million (ppm) were observed in borings 3-6C-EB-22 (64.5 ppm, 12- to 14- foot interval; 43.7 ppm, 14- to 16- foot interval), 3-6C-EB-23 (44.3 ppm, 12- to 14- foot interval), and 3-6C-EB-25 (46.4 ppm, 16 to 18- foot interval; 18.5 ppm, 20- to 22- foot interval). The remaining PID concentrations were less than 2.0 ppm, with the exception of the 18- to 20- foot interval from boring 3-6C-EB-25 (7.3 ppm). Sheens were noted in each of the sample intervals characterized by elevated PID concentrations. With the exception of boring 3-6C-EB-25, in which elevated PID levels and a sheen were noted in native soil, these occurrences were restricted to the overlying fill material.

Soil samples from each two-foot interval above the water table, the interval at the top of the confining silt layer, and all intervals exhibiting sheens, were submitted for laboratory analysis of PCBs. The laboratory results are compiled in Table 1. PCB concentrations for each sample interval are included on Figure 2.

PCBs, quantified principally as Aroclor 1254 and Aroclor 1260 in approximately equal proportions, generally were detected only within the till material overlying the native soils. For most of the borings, total PCB concentrations were highest in surface (0- to 0.5- feet below grade) and near-surface (0.5- to 2.0- feet below grade) soil intervals. PCB concentrations in excess of 100 ppm in surface and near-surface samples occurred in borings 3-6C-EB-22 (up to 622 ppm), 3-6C-EB-23 (up to 405 ppm), 3-6C-EB-25 (up to 308 ppm), and 3-6C-EB-27 (up to 400 ppm). PCB concentrations at depths greater than 2 feet below grade generally were on the order of 30 ppm or less with the exception of boring 3-6C-EB-25. PCBs were not present above detection limits at or near the base of borings 3-6C-EB-22, 3-6C-EB-24, 3-6C-EB-26, and 3-6C-EB-27. However, total PCB concentrations of 3,850 and 3,530 ppm were detected in boring 3-6C-EB-25 in sample intervals 16- to 18- feet and 18- to 20- feet below grade, respectively. PCBs were not present above detection limits in the overlying soils (i.e. 10- to 16- foot interval) in this boring.

The soil sample with the highest PID concentration from each boring, and all samples with sheens, were submitted for laboratory analysis of Appendix IX+3 VOCs and SVOCs. The laboratory results are compiled in Table 2. With the exception of the presence of ethylbenzene (0.001 ppm) in the 12- to 14- foot interval of boring 3-6C-EB-22, detected VOCS were associated with the method blanks. Total SVOC concentrations ranged from below detection to 31.8 ppm (boring 3-6C-EB-22, 12- to 14- foot interval), with the exception of the 16- to 18- foot interval from boring 3-6C-EB-25 which exhibited a total SVOC concentration of 528 ppm (3-6C-EB-25, 16- to 18- foot interval). The SVOC distribution in samples collected from boring 3-6C-EB-25 primarily included several chlorobenzenes (1,2,4-trichlorobenzene; 1,2,4,5-tetrachlorobenzene; pentachlorobenzene; hexachlorobenzene). Samples from borings 3-6C-EB-22 and 3-6C-EB-23, in contrast, contained several polycyclic aromatic hydrocarbons (e.g., acencephthene, chrysene, fluoranthene), but no chlorobenzene constituents.

3.4 Riverbank Soil Characterization

In accordance with the USEPA's October 22, 1997 letter, six surficial soil samples were collected from the base of the riverbank immediately south of the borings discussed above. Sample locations are illustrated on Figure 1. These samples were submitted for laboratory analysis of PCBs. The analytical results are compiled in Table 3. Total PCB concentrations ranged from 3.8 ppm (3-6C-South-25) to 28.3 ppm (3-6C-South-23), and typically were less than 10 ppm. Aroclor 1260 was the only PCB Aroclor detected.

3.5 NAPL/Surface Water Characterization

One NAPL sample and one surface water sample were collected during the supplemental characterization activities for laboratory analysis of PCBs, Appendix IX+3 VOCs and SVOCs, density, and viscosity. Following the completion of the supplemental investigation, a DNAPL sample from well 3-6C-EB-25 was submitted for laboratory analysis of PCBs, Appendix IX+3 VOCs, SVOCs, metals, and density. These samples were collected in addition to the NAPL sample collected September 25, 1997 from within the excavation area in Cell 6. The analytical data are compiled in Table 4.

Surface water sample 68-NOSP-Water 1, a composite sample collected on October 15, 1997 from several locations behind the sheetpile wall near Cell 5, exhibited a total PCB concentration of 0.86 ppm (quantified as Aroclor 1242 and Aroclor 1260). Chlorobenzene (0.021 ppm) was the sole VOC detected. A number of SVOCs, including the polycyclic aromatic hydrocarbons (PAHs) acenaphthene, benzo(a)anthracene, chrysene, fluoranthene, and pyrene, and four chlorobenzenes, also were present above detection limits. The specific gravity of the sample was 1.001, and the viscosity values at 100°F and 2 10°F were reported to be 50.7 and 40.1 Saybolt Universal Seconds (SUS), respectively.

NAPL sample 68-Cell 5-1 was collected from several locations approximately three to four feet below original grade (i.e., the top of the pre-removal sediment layer) in Cell 5 on October 7, 1997. The oil contained PCB quantified as Aroclor 1260 (930 ppm), chlorobenzene (100 ppm), tetrachloroethene (16 ppm - estimated value), pentachlorobenzene (31,000 ppm - estimated value), 1,2,4,5-tetrachlorobenzene (21,000 ppm - estimated value), and 1,2,4-trichlorobenzene (250,000 ppm). The specific gravity of the oil was reported to be 1.5295. The viscosity values at 100°F and 210°F were 45.77 and 33.13 SUS, respectively.

The DNAPL sample from well 3-6C-EB-25 (sample 3-6C-EB-25-l) was collected December 3, 1997. The NAPL exhibited Aroclor 1242 and Aroclor 1260 concentrations of 10,700 ppm and 613,000 ppm, respectively, and a specific gravity of 1.550. The compound 1,2,4-trichlorobenzene was detected at a concentration of 190,000 ppm. No other SVOCs or VOCs were present above quantitation limits.

NAPL sample 68 Cell-6-Oil-l, collected September 25, 1997 from the Cell 6 excavation area, contained 251,000 ppm of PCB Aroclor 1260 as reported previously in *Building 68 Area Removal Action - Assessment of Observed Oil and Proposed Activities.*

3.6 NAPL Monitoring Results

The NAPL monitoring program began November 12, 1997 immediately following the installation of the monitoring wells. The new wells were monitored for the presence of NAPL using procedures described in the SAP/DCAQAP. The results through February 9, 1998 are presented in Table 5. NAPL was not observed in any of the wells on November 12 or November 17. However, dense NAPL (DNAPL) was measured in well 3-6C-EB-25 on November 19, 1997, and has been observed in this well during all subsequent monitoring events. DNAPL was bailed from well 3-6C-EB-25 on December 3, 1997 and January 5, 1998 and properly disposed of.

4. Preliminary Findings and Proposed **Activities**

4.1 General

The results of the supplemental characterization activities described in this report have allowed a further understanding of subsurface conditions in the area west of Building 68 and have provided information related to the sheens and NAPL observed during the sediment removal actions. Although a much greater database has been obtained regarding this topic, the recent results also indicate that further investigations are warranted. This section provides a summary of preliminary findings based on the completed activities, and presents GE's proposal for the performance of additional NAPL-related investigations and remediation.

In addition, this section describes additional activities to be performed as part of the Building 68 Area removal action to address several issues that arose during removal activities. This includes proposed activities related to additional bank soil/sediment removal near the river's edge (upstream and downstream of the primary riverbank soil removal area), as well as proposed erosion/scour control measures.

4.2 Preliminary Findings of Supplemental Characterization Activities

With respect to the sheens and NAPL observed during the sediment removal actions, the supplemental characterization activities addressed issues concerning the nature, presence, extent and potential source of the sheens/NAPL. The most significant findings included the detection of DNAPL in the saturated subsurface soils present at well 3-6C-EB-25. Although sheens were observed in saturated soil samples from borings 3-6C-EB-22 and 3-6C-EB-23, no NAPL has been observed in these, or the three remaining, wells during subsequent monitoring events. In addition, total PCB and SVOC concentrations in soil samples from the latter five borings were not indicative of the presence of NAPL, and total PCB concentrations for the six river/riverbank interface soil samples typically were less than 10 ppm. These results suggest the occurrence of free phase NAPL is restricted to the immediate vicinity of well 3-6C-EB-25.

Stratigraphic relationships discussed in Section 3.2 suggest it is unlikely that the DNAPL observed in well 3-6C-EB-25 and the Housatonic River excavation cells west of Building 68 originated south of the river on the Newell Street parking lot site. On the Newell Street site, DNAPL occurs at an elevation of approximately 950 feet above sea level in monitoring wells NS- 15, NS-30, and NS-32; the DNAPL appears to be impeded from vertical migration by a dense silt layer that appears to be continuous both north and south of the river. In contrast, the DNAPL observed in monitoring well 3-6C-EB-25 and in the river excavation cells occurred at an elevation of approximately 962 feet.

As previously indicated, the elevation of the DNAPL observed in well 3-6C-EB-25 is approximately 962 feet, while the elevation of the Newell Street parking lot DNAPL is approximately 950 feet. This elevation difference, as well as the physical and chemical characteristics of DNAPL samples collected from well 3-6C-EB-25, Cell 5 and Cell 6 of the Building 68 Removal Action, and the Newell Street parking lot site (well NS-15), indicate the presence of more than one DNAPL. DNAPL from the Newell Street site contained 388,500 ppm Aroclor 1254, no detectable Aroclor 1260, and had a specific gravity of 1.18. The Newell Street DNAPL sample also contained toluene (3,300 ppm), trichloroethene (87,000 ppm), xylenes (9,200 ppm) and four dichlorobenzene and trichlorobenzene isomers ranging in concentration from 7,900 to 430,000 ppm. DNAPL samples from Cell 5 and Cell 6 of the Building 68 Removal Action (see Table 4) contained 930 ppm and 251,000 ppm of Aroclor 1260, respectively, with no detectable Arocior 1254. As discussed in Section 3.5, the Cell 5 DNAPL sample contained tetrachloroethene (16 ppm), chlorobenzene (100 ppm), pentachlorobenzene (3 1,000 ppm), 1,2,4,5-tetrachlorobenzene (21,000 ppm), and 1,2,4-trichlorobenzene (250,000 ppm). The Cell 6 DNAPL sample was not analyzed for Appendix IX+3 constituents. The specific gravity of the Cell 5 sample was 1.53. Similarly, DNAPL from well 3-6C-EB-25 contained 10,700 ppm of Aroclor 1242, 613,000 ppm of Aroclor 1260, 190,000 ppm of 1,2,4-trichlorobenzene, and had a specific gravity of 1.55. The specific gravity and Aroclor distribution of well 3-6C-EB-25, Cell 5, and Cell 6 DNAPL samples are similar, although the Aroclor concentration is variable. In contrast, the Newell Street parking lot DNAPL is characterized by a much lower density and different Aroclor, VOC, and SVOC distributions. These results suggest that the DNAPL in the Newell Street parking lot site south of the river is not related to the DNAPL observed in well 3-6C-EB-25 or within the river excavation cells.

The presence of DNAPL in well 3-6C-EB-25 indicates that a previously uncharacterized NAPL zone is present west of Building 68. Although additional investigations are necessary to determine the lateral extent of the DNAPL, this area may represent the source of the NAPL observed in the excavation cells. As discussed in Section 4.3 below, additional soil borings/monitoring wells are proposed in the vicinity of well 3-6C-EB-25 to address this possibility.

4.3 Future Activities and Schedule

Based on the results of activities completed to date (regarding both the Building 68 removal actions and the recent NAPL characterization activities), several follow-up activities are proposed. These activities are further discussed below.

4.3.1 Additional Monitoring Activities

GE will continue, on a weekly basis, to monitor existing wells 3-6C-EB-22 through 3-6C-EB-27 for the presence of NAPL. As needed, NAPL present in a thickness greater than 1 foot will be removed and containerized for appropriate off-site disposal. GE will maintain records of all NAPL monitoring recovery activities.

In addition to the weekly monitoring of the existing and proposed wells, GE will also inspect the riverbank area on a weekly basis for the presence of oil sheens. If a significant and persistent oil sheen is observed, GE will install and maintain oil adsorbent booms (similar to those used elsewhere along the riverbank) to contain and collect the sheens.

4.3.2 Additional Characterization Activities

As shown on Figure 1, GE initially proposes the installation of three additional soil borings and monitoring wells to further assess the presence and extent of PCBs and other Appendix IX+3 constituents in soil, and the presence of NAPL. The proposed boring/well locations have been selected to further understand subsurface conditions in the vicinity of well 3-6C-EB-25, and particularly the three-dimensional orientation of the silt layer. All soil boring, soil sampling and analysis, and monitoring well installation procedures will be consistent with the approach used for borings/wells 3-6C-EB-22 through 3-6C-EB-27, as well as the SAP/DCAQAP. Once the new wells are installed, they will be included in the weekly monitoring activities discussed above.

Following the installation of the three wells proposed above, GE will install one deeper boring/monitoring well in the vicinity of the riverbank as requested by USEPA in their February 3, 1998 letter. This boring will be drilled through the silt aquitard present at an elevation of approximately 965 feet in 3-6C-EB-25, and will extend to the surface of the lower silt aquitard, if present, or to bedrock if a lower aquitard is not present. A sample of the shallow silt unit will be collected for grain size analysis. Following the completion of the deep soil boring, a monitoring well will be installed with a five-to-ten-foot screened interval; the well screen will be located just above the top of the lower silt aquitard, if present, or at the bedrock surface if a lower aquitard is not present. The precise location of the deep well cannot be specified until the orientation of the silt layer is known, and the limits of the DNAPL associated with well 3-6C-EB-25 have been delineated. The results of previous well installation activities indicate it may be necessary to permit the new wells to equilibrate a minimum of two weeks before it can be concluded with certainty that DNAPL is not present. The deep monitoring well will be sited in an area that does not have DNAPL and is structurally updip along the silt layer from the DNAPL occurrence in accordance with the procedures outlined in the SAP/DCAQAP. All new wells will be monitored weekly for water levels and NAPL.

Following the completion of these activities, the continuity of the two silt aquitards, the potential for downward DNAPL migration through the upper aquitard, and possible mitigation measures will be evaluated. The stratigraphic information developed during the boring program will be employed to confirm the presence of the upper and lower silt units in the vicinity of the DNAPL occurrence. In addition, structure contour maps for the upper and lower silt layers will be developed from the new and previously existing borings from the north and south sides of the river. The DNAPL density information available will be used in conjunction with the silt layer grain size results to evaluate the capillary pressure within the silt unit and the probable entry pressure threshold for downward DNAPL migration through the unit. Additionally, vertical hydraulic gradients across the upper silt aquitard will be measured to assess potential influences on DNAPL migration. Potential mitigation measures to prevent possible DNAPL migration will then be evaluated using the more detailed conceptual model of stratigraphy and DNAPL migration.

In addition to the detailed evaluation of the stratigraphy and the potential for DNAPL migration, GE proposes to more closely examine the chemical composition of the DNAPL from the Building 68 vicinity and the Newell Street parking lot site. The PCB chromatograms for 3-6C-EB-25, Cell 5 and Cell 6 DNAPL samples will be compared to the chromatogram available for the Newell Street DNAPL sample to confirm the Aroclor distributions. The results of these comparisons will be included in the report addendum prepared at the conclusion of the Building 68 removal action.

4.3.3 Additional Excavation Activities

The PCB concentrations for the surficial soil samples collected from the base of the river bank are low (up to 28.3 ppm with 4 of 6 samples less than 6 ppm). However, GE proposes to remove the river sediments (and adjacent low-lying bank soils as required to access the sediments) located between the existing sheetpiling and the base of the riverbank that can be excavated using conventional equipment. The two discrete areas of additional sediment removal are located immediately upstream and downstream of the main bank soil removal area and extend to the upstream and downstream extent of sediment removal, as shown on Figure 4: The approximate extent of removal is shown on Figure 4 and may be modified based on actual topographic conditions and sheetpile locations encountered in the field (e.g., in locations where the sheetpile is located very close to the bank, relative to other areas, sediment may not be present).

Following setup of the necessary remediation support areas (i.e., equipment staging areas and soil/sediment stockpile and dewatering area), it is anticipated that the sediment would be excavated using primarily mechanical equipment to the approximate horizontal limits shown on Figure 4 (modified, as appropriate, based on field conditions). To illustrate the proposed additional removal activities and approach, a typical cross-section is also presented on Figure 4. As depicted on this cross-section, the adjacent bank soils will be removed, as required to facilitate excavation of the sediment. Following the removal of the sediment and adjacent soils, the excavated area (below the water table) will be backfilled with 10-inch stone and the excavated bank soil above the water table will be backfilled with sand and compacted as necessary to provide a suitable substrate for topsoil and the erosion control measures to be installed at the river's edge.

These activities will be performed consistent with the bank soil and sediment removal activities performed as part of the original removal action. Any PCB-containing materials will be handled in accordance with the requirements of the Removal Action Work Plan. Water collected as part of excavation dewatering activities will be placed into a tank truck and transported or pumped directly to the GE Building 64G water treatment facility for treatment. The excavated soil and sediment will be placed in a stockpile area to allow gravity dewatering. The dewatered materials will be disposed as TSCA-regulated materials.

Following the excavation and backfill of the sediment and adjacent low-lying bank soils, the bank removal area (as well as the remainder of the bank area not subject to excavation) will be stabilized according to a restoration plan prepared by New England Environmental, Inc. provided as Appendix B.

Once the removal actions described above are completed and vegetation has re-established on the bank, GE will remove certain sections of the sheetpiling located along the base of the riverbank with USEPA concurrence. With the exception of approximately 120 feet of sheetpiling (located south of monitoring wells 3-6B-EB-24 through 3-6C-EB-26, as shown on Figure 1), all remaining sheetpiling will be removed. The 120-foot section will remain in place until the DNAPL characterization and monitoring activities proposed herein have been completed and concurrence is received from the USEPA to remove the sheetpiling.

4.3.4 **Runoff Control**

An evaluation of possible runoff control methods was conducted to determine an appropriate method of limiting the erosion potential caused by two mechanisms: 1) runoff sheetflow over the bank; and 2) scour caused by discharge from the storm relief overflows. The results of this evaluation and proposed activities to achieve these objectives are discussed below.

Control of Sheetflow over Bank

Runoff sheetflow over the bank will be controlled using the existing stormwater drainline system located along the river near Building 68. In the area upstream (east) of Building 68, runoff control over the bank is currently being controlled by an existing catch basin and concrete curb. Therefore, no modifications in this area are required. However, in the area downstream (west) of Building 68, several stormwater drainline system modifications and pavement additions will be necessary to create a hydraulic barrier to direct surface runoff into the existing stormwater system. To accomplish this, GE proposes to convert three existing manholes (MH- 1 through MH-3) into catch basins, as depicted on Figure 4. In addition, because the existing manholes to be converted to catch basins are located south of the existing edge of concrete pavement, a bituminous asphalt pavement extension and curb are proposed to extend the pavement south of the proposed catch basins in the area surrounding each catch basin. This will allow surface runoff to be directed to the proposed catch basins and into the existing stormwater drainlines. Figure 4 presents the extent of proposed asphalt pavement and curb installation, as well as manholes to be converted into catch basins. For each manhole the existing manhole frame and covers as well as the top two courses of block will be removed and replaced with a catch basin frame and concrete cover. The area surrounding the manholes will also be regraded to provide a smooth slope towards each catch basin. The block and any soil excavated will be handled in accordance with the requirements of the Removal Action Work Plan and will be disposed as TSCA-regulated materials. Note that compensatory flood storage is not required by these activities since the loss in flood storage due to the installation of the curb (approximately 3 cy) is offset by the gain in flood storage due to the excavation of soil and block around each manhole (approximately 20 cy).

Scour Protection

Storm relief ovefflow outfalls are located at three manholes located near the Building 68 removal area. These manholes (MH-1, MH-2, and MH-4), which discharge to the Housatonic River, were plugged at the beginning of the Building 68 Removal Action. Due to the capacity of the interceptor pipe in this area, it is necessary to remove the plugs and continue to use these overflow outfalls following removal activities. However, to address USEPA comments regarding scour protection at these outfalls, GE proposes to install geotextile and rip rap stabilization. The stabilization would extend from the pipe outlet to the edge of the river and would consist of non-woven geotextile and a 12-inch layer of 10-inch rip rap. The storm relief overflow areas and a typical cross section of the stabilization are presented on Figure 4. Note that compensatory flood storage (e.g., excavation of 1 foot of soil in the area to receive scour protection) is not considered necessary for installation of the scour protection, since based on visual observation, greater than 1 foot of erosion has already occurred in these areas.

4.3.5 Schedule

Upon receipt of Agency approval, GE will implement the proposed activities and provide a summary/status report within 90 days (dependent on weather conditions). That report will summarize the results of the proposed characterization and monitoring activities, and include recommendations for any future activities.