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April 11, 2005

Mr. James M. DiLorenzo
U.S. Environmental Protection Agency
EPA New England
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Re: GE-Pittsfield/Housatonic River Site
Silver Lake Area (GECD600)
Supplemental Pre-Design Investigation for Silver Lake Sediments: Results and Discussion

Dear Mr. DiLorenzo:

A pre-design investigation (PDI) was performed in and around Silver Lake by the General Electric Company (GE) between April and November 2003. The PDI was performed to support the detailed design of a sediment removal action and sediment cap and 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 results of these activities were presented in the *Pre-Design Investigations Report for Silver Lake Sediments* (Sediments PDI Report; BBL, 2004a). The Sediments PDI Report provided confirmation of initial design considerations for a cap for Silver Lake sediments.

In its conditional approval of the Sediments PDI Report, EPA requested that supplemental pre-design investigations be performed to evaluate the presence and potential influence, if any, of total petroleum hydrocarbons (TPH) and non-aqueous phase liquids (NAPL) on the rate of polychlorinated biphenyl (PCB) migration through the cap. Additionally, EPA raised concerns regarding the potential for metals present in the sediments to migrate through the cap and recommended additional investigation and analysis of metals in sediments and pore water. Although GE believes that the investigations for metals were not required by the CD or the SOW, GE agreed to perform additional TPH/NAPL and metals investigations, as documented in two letters: the *Proposal for Supplemental Pre-Design Investigations and Objective of Bench-Scale Activities* dated September 15, 2004 and the *Proposal for Supplemental Pre-Design Investigations Regarding Metals in Sediments and Pore Water* dated December 14, 2004. The investigative activities proposed in these letters were subsequently conditionally approved by EPA, and are collectively referred to in this letter as Supplemental PDI activities.

This letter presents the results of the Supplemental PDI activities as proposed in the above referenced letters, discusses the presence of TPH and NAPL, and analyzes whether they have any effect on the rate of PCB transport through the cap. Additionally, this document discusses the presence and potential mobility of metals in Silver Lake sediments and, based on the data, analyzes whether metals should have any bearing on the cap design.

Overview of Supplemental PDI Activities

On February 14 and 15, 2005, sediment cores were collected from eight locations within Silver Lake. The Supplemental PDI sample locations are depicted on Figure 1. As noted in the September 15, 2004 proposal, sample locations were chosen to provide broad coverage of the lake sediments and target areas which, based on prior sample analysis, contained elevated TPHs and PCBs. In summary, two samples (PW1 and PW2) were located near PDI sample location SL-09 (see Figure 1), where the initial pore water

PCB concentration was higher than anticipated based on partitioning equilibrium theory (Sediments PDI Report; BBL, 2004a). These two locations were chosen to help determine whether the PCB concentration in pore water for sample SL-09 might be associated with the presence of high TPH levels. Three additional locations were selected to provide broader coverage of the lake bottom and suspected high PCB concentrations based on existing data: PW3, located in the vicinity of the anticipated capping pilot study area; PW4, located in the deepest area of the lake; and PW5, located in a portion of the lake containing a relatively higher percentage of sand in the surficial sediments. The final three samples (PW6, PW7, and PW8) were located in the eastern portion of the lake in the vicinity of an EPA sediment sample with the highest recorded TPH concentration.

From each location, four cores were collected to provide sufficient material volumes for the various scheduled analyses. Upon retrieval of each core, the core was photographed and visually characterized, and the collection tube cut near the sediment/water interface and sealed. Collected, sealed cores were put on ice, and transported to Woods Hole Group (WHG) in Raynham, Massachusetts in an upright position to minimize the potential for disturbance of the collected sediment. In addition to sediment core collection field measurements were taken at each location of water temperature and dissolved oxygen (DO) at two-foot depth increments.

Upon receipt of the collected and sealed cores at WHG, the cores were placed in a "glove box" such that initial core processing could be completed in an oxygen-free environment to maintain the anoxic conditions expected in Silver Lake sediments. While in the "glove-box", the upper 0 to 5 cm of sediment in each core (the anticipated limit of any oxic sediment) was removed, and the remaining sediment in the four cores from each location was composited and homogenized. A sediment sub-sample was obtained from each composite for analysis of sequentially extracted metals and acid volatile sulfides (SEM/AVS).

The remaining homogenized sediments were removed from the "glove-box," and sediment sub-samples were then obtained for: 1) provision of split samples to EPA; 2) analysis for PCBs and total organic carbon (TOC) by Northeast Analytical Laboratories (NEA) in Schenectady, New York; and 3) analysis for TPH, total metals concentrations, and grain-size distribution by WHG. Following collection of the sub-samples, the sediment was centrifuged for separation of sediment and pore water and subsequent analysis of pore water samples for PCBs and dissolved organic carbon (DOC) by NEA, and TPH, dissolved metals and turbidity by WHG. PCB analysis was performed in accordance with the congener-specific method (NEA-608 CAP). TOC analysis was performed in accordance with the "Determination of Total Organic Carbon in Sediments" (Lloyd Kahn) method and DOC analysis was performed in accordance with EPA method 415.1. Grain-size analysis was performed in accordance with American Society for Testing and Materials methods (ASTM D-422). Analysis for TPH was performed in accordance with MDEP "Method for the Determination of Extractable Petroleum Hydrocarbons" (MDEP-EPH-98-1). Analysis of pore water for dissolved metals and sediment samples for total metals was performed in accordance with EPA's SW-846 Method 6010B/7000A. SEM/AVS analysis, and associated sediment core collection methods specific to SEM/AVS, were performed in accordance with EPA's "Draft Determination of Acid Volatile Sulfide and Selected Simultaneously Extractable Metals in Sediment" (Allen et al, 1991).

Supplemental PDI TPH and NAPL Results

As described previously, sediment cores were collected from each of the eight sample locations and, upon collection, visual observations of the collected sediments were made. At the time of collection, although sheens were noted on the exterior surface of the Lexan tubes at each location no visual observations of NAPL were recorded. Moreover, no NAPL was observed during the core processing for the pore water analyses. Since NAPL was not observed, there are no potential NAPL-related effects that can be evaluated as part of this investigation.

The results of the sediment samples for PCBs, TPH, and TOC are presented in Table 1. In summary, sediment PCB concentrations ranged from 60.6 to 2,170 mg/kg, averaging 511 mg/kg, sediment TPH concentrations ranged from 7,900 to 23,700 mg/kg, averaging 13,800mg/kg, and sediment TOC ranged from 9.9 to 17%, averaging 12.7%. A further discussion and evaluation of theses results is provided below.

The results of the pore water samples for PCBs, DOC, and TPH are presented in Table 2. In summary, PCB concentrations in pore water ranged from 3.5×10^{-4} mg/L to 6.4×10^{-2}, averaging 1.2×10^{-2} mg/L, and pore water DOC ranged from 17.2 to 31.2 mg/L, averaging 24.4 mg/L. Petroleum hydrocarbons were only detected in one of the eight pore water samples (location PW5), with extractable C9-C18 aliphatics reported at a concentration of 0.16 mg/L, and volatile C5-C8 aliphatics reported at a concentration of 0.21 mg/L. Xylenes were also detected in only one location (PW7) at a concentration of 0.02 mg/L (total). A further discussion and evaluation of the TPH results is provided below.

The results of the grain size analyses are presented in Attachment A. A review of the grain size distribution data indicates that the collected cores represent a variety of sediment types ranging from a sand with silt and clay (PW2 and PW5) to a silty clay (PW4 and PW7). Additionally, field measurements of water temperature and DO concentrations with depth, taken at each core location, are included as Attachment B. The water temperature and DO data are generally consistent with what would be expected for these parameters during the winter months (i.e., no discernable thermocline and decreasing DO with depth).

Discussion and Evaluation of Results Related to TPH

Sediment and Pore Water TPH Results

Figure 1 illustrates the locations of the eight Supplemental PDI sediment core sample locations. Review of the TPH data with respect to the core locations indicates no apparent spatial pattern related to the presence of TPH in sediment. The sediment TPH results were also compared to the co-located sediment PCB results to determine if there was a correlation between TPH and PCBs. As illustrated in Figure 2, there is no relationship observed between increasing TPH and increasing PCB (as evidenced by a correlation coefficient (r) value for this plot of 0.46). As shown in Figure 3, there was also no relationship between TPH and either sediment TOC (r=0.04) or pore water DOC (r=-0.13).

Petroleum hydrocarbons were largely undetected in the pore water samples (i.e., only detected at one location). These results indicate that, despite the elevated concentrations of TPH observed in the sediment, the TPH appears to be tightly bound to the sediments, with very little partitioning to the pore water.

Potential Impacts of TPH on PCB Migration

To evaluate whether elevated concentrations of TPH in sediment could contribute to an increase in PCB concentrations in pore water, the Supplemental PDI results were evaluated using three PCB partition-related variables, as provided in the Supplemental PDI proposal (conditionally approved September 15, 2004):

> 1) *The predicted versus observed PCB pore water concentrations* --Prior to the Sediments PDI, Silver Lake pore water had not been collected for chemical analysis. Consequently, the pore water PCB concentration used in the conceptual design (Attachment K to the SOW) was an estimated value. Pore water PCB concentrations were measured during the Sediments PDI to confirm that appropriate values were applied in the conceptual design. As noted in the Sediments PDI Report, the measured pore water PCB concentrations generally confirmed that the methods used in the prediction of pore water PCB concentrations in the conceptual design were appropriate.

The Supplemental PDI permits a more specific determination as to whether the pore water PCB concentration assumptions were appropriate for sediments containing elevated TPH. To make this determination, the results of the pore water PCB analyses were compared to the predicted pore water PCB concentrations using the partitioning coefficients in the conceptual design (as refined in the Sediments PDI Report).

Figure 4 illustrates the observed versus the predicted pore water PCB concentrations. The pattern between observed and predicted pore water PCB concentrations for the Supplemental PDI (which specifically targeted areas of elevated TPH) are similar to those observed for the earlier pore water study (which was a more general lake-wide assessment). For both of these efforts, the observed pore water PCB concentrations are generally lower than the concentrations predicted by the partitioning model. These results indicate that the presence of elevated TPH in the Supplemental PDI cores, did not result in an increase in PCB pore water concentrations.

Figure 5 illustrates the relationship between the ratio of observed and predicted pore water PCB concentrations and sediment TPH. If TPH were to have an effect on increasing PCB pore water concentrations, higher sediment TPH concentrations would be correlated with increased ratios of observed-to-predicted pore water PCB concentrations. As can be seen in Figure 5, there is no such correlation (as evidenced by an r value for this plot of -0.30), providing a further indication that TPH concentrations do not significantly influence pore water PCB concentrations.

2) *The ratio of the sediment PCB concentration to the pore water PCB concentration [K_A - apparent PCB partitioning coefficient]* -- The apparent partitioning coefficient is an observed measure of the relative proportion of PCBs that are sorbed to the sediments as compared to PCBs present in pore water. The apparent partitioning coefficient not only describes the observed PCB distribution between sediment and pore water within the lake bed, but also helps confirm the degree of partitioning that is anticipated between the cap and pore water once the cap is placed. As the partitioning coefficient increases, so too will the effectiveness of the cap in limiting transport of PCBs.

Based upon the observed PCB concentration in sediments and pore water, an apparent partitioning coefficient was computed for each core location. The apparent partitioning coefficient is represented as the ratio of the sediment PCB concentration to the pore water PCB concentration as follows:

$$K_A = \frac{C_{sed}}{C_{pw}}$$

where: K_A = apparent partitioning coefficient
C_{sed} = sediment PCB concentration
C_{pw} = total pore water PCB concentration

To simplify presentation, the log of calculated K_A values for each of the eight Supplemental PDI samples are presented in the table below.

Location	PW1	PW2	PW3	PW4	PW5	PW6	PW7	PW8
Log_{10} K_A	4.52	4.26	5.29	5.33	4.53	5.12	4.33	4.94

Because the apparent partitioning coefficient calculations are based on actual measurements, any potential increase in pore water PCB concentrations due to the effects of DOC and/or TPH on the

multiphase partitioning are inherently included in the calculation. The calculated values of log K_A are plotted against the sediment TPH concentration in Figure 6 to determine if a relationship exists. If TPH demonstrated a significant influence on pore water PCB concentrations, plotted values of log K_A would show a decreasing trend with increased sediment TPH concentrations. Figure 6 illustrates that there is no decrease in calculated log K_A values as TPH concentrations increase and as a result, no relationship is present (as evidenced by an r value of 0.34 for this graph).

3) *The ratio of the organic carbon and DOC partitioning coefficients [Z]* – The ratio between the DOC partitioning coefficient (K_{doc}) and the organic carbon partitioning coefficient (K_{oc}) for the PCBs present in Silver Lake is expressed as the Z value. As discussed in the Sediments PDI Report, previous studies have indicated that a ratio of K_{doc} to K_{oc} (Z) of 0.1 is a reasonable estimate for the conditions in Silver Lake. Therefore, the assumption made in the initial cap evaluation was that K_{doc} was equal to 0.1 times K_{oc}. However, based on the previous PDI pore water samples, this ratio was increased to 0.16 to provide a conservative estimate of observed conditions in Silver Lake. Z_{max} represents the highest possible ratio between K_{doc} and K_{oc} based on the observed data for each core. The maximum asymptotic value of Z_{max} (the ratio of K_{doc} to K_{oc}) is computed as:

$$Z_{\max} = \frac{K_{doc}}{K_{oc}} = \frac{f_{oc}}{K_A M_{doc}}$$

where:
f_{oc} = fraction of TOC in sediment
K_{oc} = partitioning coefficient to organic carbon
K_{doc} = partitioning coefficient to dissolved organic carbon
M_{doc} = mass of DOC in pore water

The calculated Z_{max} value for each Supplemental PDI pore water sample location is presented in the table below.

Location	PW1	PW2	PW3	PW4	PW5	PW6	PW7	PW8
Z_{max}	0.112	0.177	0.029	0.19	0.130	0.063	0.381	0.077

Figure 7 illustrates a plot of calculated values of Z_{max} versus the sediment TPH. If elevated levels of TPH were contributing to greater PCB concentrations in pore water, Z_{max} would tend to increase with increasing TPH concentrations. As can be seen in Figure 7, there is no relationship between increasing Z_{max} and increasing TPH (as evidenced by an r value of -0.30 for this plot).

Based on the above discussions, there does not appear to be a relationship between TPH and any of the three PCB partition-related variables, therefore, it can be concluded that TPH is not contributing to an increase in observed pore water PCB concentrations in Silver Lake sediments.

Supplemental PDI Results Related to Total Metals

As discussed above, a composite sediment sample was obtained from each of the eight sample locations, and analyzed to determine metals concentrations in both pore water and sediment. The results reported for 16 different metals in sediment and pore water are presented in Tables 1 and 2, respectively. In summary, each of the 16 metals was detected at varying concentrations in all of the sediment samples and 14 of the 16 metals were detected in at least one of the eight pore water samples. The range of metals concentrations in the sediment is generally comparable to the ranges observed in previous sediment samples obtained from Silver Lake.

At the request of EPA, turbidity measurements were taken of the pore water following centrifugation to determine whether residual particulates were present. Pore water turbidity analysis results are included in Table 2. The turbidity ranged from 8 to 73 Nephelometric Turbidity Units (NTU), with the highest turbidity reported in PW4, obtained from the center of the lake. Despite the presence of residual particulates, there does not appear to be any readily-identifiable relationship when comparing turbidity and dissolved metals concentrations.

Results of SEM/AVS Analysis and Overall Evaluation of Results Related to Metals

The Supplemental PDI Proposal, described activities that would be undertaken to better understand the potential solubility of the metals present in the sediment, and whether metals might be able to migrate through the cap following placement. An analysis of SEM/AVS was performed to assess the extent to which metals concentrations in the sediments are bound within the sediment bed as relatively insoluble metal sulfides. SEM/AVS ratios are calculated as the molar ratio of the sum of divalent metals (cadmium, copper, lead, nickel and zinc) in sediment to sulfides present in sediment, and provide insight into the relative availability of metals. If the SEM/AVS ratio is less than one, the metals in sediment consist largely of insoluble sulfides in the sediment bed and are therefore generally not available for dissolution in the pore water. For the eight cores analyzed, the SEM/AVS ratio ranged from 0.10 to 0.28 and averaged 0.19. SEM/AVS results by core location are displayed on Figure 8. As can be seen on Figure 8, all locations have SEM/AVS ratios well below 1, providing a clear indication that the metals present in Silver Lake sediments are bound in the sediment matrix and are not expected to exhibit any significant mobility.

The presence of somewhat elevated total metals concentrations in sediments, combined with the comparatively low levels of dissolved metals in pore water, provides an additional indication that the metals present are strongly bound and do not readily dissolve into the pore water. This lack of mobility of metals between the sediments and pore water is further illustrated in Figure 9, which shows the distribution coefficients for select metals constituents. Distribution coefficients for metals in sediments and pore water are analogous to partitioning coefficients discussed earlier for PCBs, and can be approximated as the ratio of the concentration of a metals constituent in sediments to the concentration of the same constituent in the corresponding pore water. As can be seen in Figure 9, the distribution coefficients are significantly high, and the magnitude of the distribution coefficients indicate that for the metals present in Silver Lake, the overwhelming majority of the metals are found in sediments, as opposed to dissolved in pore water, thereby providing further indication that metals are bound in the sediment in various chemical phases, and are not prone to migrate through the cap following placement.

Conclusions

GE has performed the Supplemental PDI activities as described in the various proposals. Results of these activities, as discussed in this letter, confirm that the containment and isolation of PCBs is and should remain the primary focus of the capping remedy for Silver Lake sediments. Results of both the previous PDI pore water study and the Supplemental PDI activities confirm that the presence of elevated TPH in the sediments of Silver Lake has no observable influence on the solubility or potential transport of PCBs. Supplemental PDI results also confirm that metals concentrations in sediments are securely bound in the sediment, and are not mobile.

Given the results of the Supplemental PDI as discussed above, GE believes that the PDI for Silver Lake sediments is complete and proposes that TPH and metals be eliminated from further consideration in the conceptual RD/RA cap design process.

Please feel free to contact me with questions or comments regarding these results.

Sincerely,

Andrew T. Silfer/dmn

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

ATS/tlc

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Public Information Repositories
GE Internal Repositories

Tables

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

TABLE 1
SEDIMENT SAMPLE ANALYSIS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Parameter / Sample ID: / Date Collected:	PW1 Comp 02/18/05	PW2 Comp 02/18/05	PW3 Comp 02/18/05	PW4 Comp 02/18/05	PW5 Comp 02/18/05
Congener Total PCBs (mg/Kg)					
Congener Total PCBs	60.6	70.3	68.1	225	2170
Total Organic Carbon (mg/Kg)					
TOC - Replicate 1	97000	110000	110000	110000	100000
TOC - Replicate 2	98000	110000	110000	110000	140000
TOC - Replicate 3	100000	99000	120000	110000	150000
TOC - Average	99000	100000	120000	110000	130000
TOC - % RSD	3.4	4.3	6.4	0.89	20
Extractable Petroleum Hydrocarbons (mg/Kg)					
C11-C22 Aromatic Hydrocarbons	1800	2000	5600	2000	5000
C19-C36 Aliphatic Hydrocarbons	6800	5100	15000	7200	11000
C9-C18 Aliphatic Hydrocarbons	1800	800	3100	1800	6400
Unadjusted C11-C22 Aromatic Hydrocarbons	2000	2200	5800	2200	5300
2-Methylnaphthalene	ND(4.4)	ND(4.6)	ND(7.8)	ND(5.6)	ND(5.9)
Acenaphthene	ND(4.4)	ND(4.6)	ND(7.8)	ND(5.6)	ND(5.9)
Acenaphthylene	ND(4.4)	ND(4.6)	ND(7.8)	ND(5.6)	ND(5.9)
Anthracene	5.1	ND(4.6)	ND(7.8)	6.9	53
Benzo(a)anthracene	14	11	12	13	8.0
Benzo(a)pyrene	16	13	12	14	9.1
Benzo(b)fluoranthene	24	18	18	19	13
Benzo(g,h,i)perylene	11	8.6	9.0	9.6	ND(5.9)
Benzo(k)fluoranthene	8.6	7.0	ND(7.8)	7.9	ND(5.9)
Chrysene	17	13	16	16	12
Dibenzo(a,h)anthracene	15	13	12	13	7.9
Fluoranthene	35	27	31	37	21
Fluorene	ND(4.4)	ND(4.6)	ND(7.8)	ND(5.6)	7.4
Indeno(1,2,3-cd)pyrene	15	13	12	13	7.9
Naphthalene	ND(4.4)	ND(4.6)	ND(7.8)	ND(5.6)	ND(5.9)
Phenanthrene	20	13	17	23	84
Pyrene	36	27	32	37	27
Volatile Petroleum Hydrocarbons (mg/Kg)					
C5-C8 Aliphatic Hydrocarbons	ND(53)	ND(67)	ND(89)	ND(58)	ND(65)
C9-C10 Aromatic Hydrocarbons	ND(27)	ND(34)	ND(45)	ND(29)	34
C9-C12 Aliphatic Hydrocarbons	ND(27)	ND(34)	ND(45)	ND(29)	ND(32)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(53)	ND(67)	ND(89)	ND(58)	ND(65)
Unadjusted C9-C12 Aliphatic Hydrocarbons	ND(27)	ND(34)	ND(45)	ND(29)	53
Benzene	ND(1.3)	ND(1.7)	ND(2.2)	ND(1.5)	ND(1.6)
Ethylbenzene	ND(1.3)	ND(1.7)	ND(2.2)	ND(1.5)	ND(1.6)
m&p-Xylene	ND(2.7)	ND(3.4)	ND(4.5)	ND(2.9)	ND(3.2)
Methyl tert-butyl ether	ND(1.3)	ND(1.7)	ND(2.2)	ND(1.5)	ND(1.6)
Naphthalene	ND(2.7)	ND(3.4)	ND(4.5)	ND(2.9)	ND(3.2)
o-Xylene	ND(1.3)	ND(1.7)	ND(2.2)	ND(1.5)	ND(1.6)
Toluene	ND(1.3)	ND(1.7)	ND(2.2)	ND(1.5)	ND(1.6)
Total Petroleum Hydrocarbons (mg/Kg)	10400	7900	23700	11000	22400
SEM/AVS					
SEM/AVS (unitless)	0.11	0.17	0.10	0.12	0.26
Cadmium (umol/g)	0.170	0.510	0.390	0.360	0.850
Copper (umol/g)	0.140 J	R	0.210 J	R	0.290 J
Lead (umol/g)	4.30	4.40	4.30	4.40	5.40
Nickel (umol/g)	1.10	1.80	2.40	1.60	2.60
Sulfide (umol/g)	210	240	440	280	210
Zinc (umol/g)	18.0 J	34.0 J	38.0 J	28.0 J	46.0 J
Inorganics (mg/Kg)					
Antimony	6.00 J	8.10 J	13.0 J	10.0 J	7.10 J
Arsenic	15.0	21.0	16.0	16.0	32.0
Barium	130	140	130	140	140
Beryllium	0.630	0.900	0.740	0.620	1.10
Cadmium	26.0	61.0	60.0	56.0	120
Chromium	130	280	280	230	680
Cobalt	20.0	25.0	24.0	20.0	19.0
Copper	1400	2400	4000	3800	5400
Lead	1200	1000	1200	1200	1600
Mercury	3.30	8.00	12.0	11.0	24.0
Nickel	120	180	260	190	280
Selenium	1.60	2.70	2.30	1.40	3.20
Silver	38.0 J	76.0 J	130 J	110 J	160 J
Tin	170	270	550	440	830
Vanadium	210	300	570	510	250
Zinc	1500	2500	3000	2400	4000

TABLE 1
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SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Parameter / Sample ID: / Date Collected:	PW6 Comp 02/18/05	PW7 Comp 02/18/05	PW8 Comp 02/18/05
Congener Total PCBs (mg/Kg)			
Congener Total PCBs	459 [416]	151	881
Total Organic Carbon (mg/Kg)			
TOC - Replicate 1	150000 [160000]	140000	180000
TOC - Replicate 2	150000 [160000]	140000	160000
TOC - Replicate 3	160000 [160000]	140000	170000
TOC - Average	150000 [160000]	140000	170000
TOC - % RSD	3.4 [2.5]	1.4	5.9
Extractable Petroleum Hydrocarbons (mg/Kg)			
C11-C22 Aromatic Hydrocarbons	2600 [2800]	2000	2000 J
C19-C36 Aliphatic Hydrocarbons	9200 [8100]	6900	6200 J
C9-C18 Aliphatic Hydrocarbons	3100 [3200]	1800	970 J
Unadjusted C11-C22 Aromatic Hydrocarbons	2800 [3000]	2100	2000 J
2-Methylnaphthalene	ND(4.0) [ND(2.9)]	ND(5.7)	ND(1.9) J
Acenaphthene	ND(4.0) [ND(2.9)]	ND(5.7)	ND(1.9) J
Acenaphthylene	ND(4.0) [ND(2.9)]	ND(5.7)	ND(1.9) J
Anthracene	5.8 [6.6]	ND(5.7)	14 J
Benzo(a)anthracene	10 [9.6]	6.6	5.6 J
Benzo(a)pyrene	8.8 [8.6]	7.3	5.9 J
Benzo(b)fluoranthene	14 [12]	10	3.0 J
Benzo(g,h,i)perylene	5.7 [5.3]	ND(5.7)	3.2 J
Benzo(k)fluoranthene	4.6 [5.1]	ND(5.7)	3.0 J
Chrysene	12 [11]	8.6	5.8 J
Dibenzo(a,h)anthracene	8.0 [7.5]	6.6	4.4 J
Fluoranthene	26 [24]	19	12 J
Fluorene	ND(4.0) [5.1]	ND(5.7)	ND(1.9) J
Indeno(1,2,3-cd)pyrene	8.0 [7.5]	6.6	4.4 J
Naphthalene	ND(4.0) [ND(2.9)]	ND(5.7)	ND(1.9) J
Phenanthrene	13 [12]	8.7	3.87 J
Pyrene	25 [24]	17	15 J
Volatile Petroleum Hydrocarbons (mg/Kg)			
C5-C8 Aliphatic Hydrocarbons	ND(43) [ND(40)]	ND(69)	ND(67)
C9-C10 Aromatic Hydrocarbons	ND(21) [ND(20)]	ND(34)	ND(33)
C9-C12 Aliphatic Hydrocarbons	ND(21) [ND(20)]	ND(34)	ND(33)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(43) [ND(40)]	ND(69)	ND(67)
Unadjusted C9-C12 Aliphatic Hydrocarbons	26 [ND(20)]	35	ND(33)
Benzene	ND(1.1) [ND(1.0)]	ND(1.7)	ND(1.7)
Ethylbenzene	ND(1.1) [ND(1.0)]	ND(1.7)	ND(1.7)
m&p-Xylene	ND(2.1) [ND(2.0)]	ND(3.4)	ND(3.3)
Methyl tert-butyl ether	ND(1.1) [ND(1.0)]	ND(1.7)	ND(1.7)
Naphthalene	ND(2.1) [ND(2.0)]	ND(3.4)	ND(3.3)
o-Xylene	ND(1.1) [ND(1.0)]	1.7	ND(1.7)
Toluene	ND(1.1) [ND(1.0)]	ND(1.7)	ND(1.7)
Total Petroleum Hydrocarbons (mg/Kg)	14500	10700	9170
SEM/AVS			
SEM/AVS (unitless)	0.27 [0.27]	0.19	0.28
Cadmium (umol/g)	0.450 [0.410]	0.450	0.180
Copper (umol/g)	R	R	R
Lead (umol/g)	4.40 [4.80]	5.40	4.60
Nickel (umol/g)	1.50 [1.10]	2.00	1.30
Sulfide (umol/g)	160 [150]	240	140
Zinc (umol/g)	36.0 J [33.0 J]	37.0 J	34.0 J
Inorganics (mg/Kg)			
Antimony	8.80 J	18.0 J	18.0 J
Arsenic	22.0 [29.0]	18.0	11.0
Barium	160 [160]	130	120
Beryllium	0.910 [1.10]	0.770	0.630
Cadmium	66.0 [60.0]	71.0	27.0
Chromium	400 [500]	370	200
Cobalt	17.0 [16.0]	22.0	20.0
Copper	4700 [5200]	4600	1900
Lead	1400 [1700]	1600	1200
Mercury	63.0 [90.0]	24.0	5.40
Nickel	190 [170]	240	140
Selenium	2.20 [2.40]	2.50	1.80
Silver	92.0 J	120 J	31.0 J
Tin	360 [460]	540	220
Vanadium	330 [280]	520	360
Zinc	3100 [3100]	3200	2500

TABLE 1
SEDIMENT SAMPLE ANALYSIS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical, Inc. for analysis of congener NEA-608 CAP PCBs and total organic carbon (TOC) and to Woods Hole Group Environmental Laboratories for analysis of EPH/VPH, SEM/AVS and Metals. Field duplicate sample results are presented in brackets.
2. % RSD - Percent relative standard deviation.
3. Results reported on a dry weight basis.
4. As there were no detectable Volatile Petroleum Hydrocarbons, Total Petroelum Hydrocarbons are reported as the sum of Extractable C11-C22
5. Aromatic Hydrocarbons, C19-C36 Aliphatic Hydrocarbons, and C9-C18 Aliphatic Hydrocarbons.

Data Qualifiers:

Inorganics (SEM/AVS, metals)

J - Indicates analyte was positively identified but the associated numerical value is an estimated quantity only.
R- Indicates analyte result was rejected.

TABLE 2
PORE WATER SAMPLE ANALYSIS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Parameter / Sample ID: / Date Collected:	PW1 Comp 02/18/05	PW2 Comp 02/21/05	PW3 Comp 02/21/05	PW4 Comp 02/21/05	PW5 Comp 02/21/05
Congener Total PCBs (mg/L)					
Congener Total PCBs	0.00181	0.00388	0.000351	0.00105	0.0641
Dissolved Organic Carbon (mg/L)					
Dissolved Organic Carbon	26.5	31.2	21.1	26.3	29.6
Extractable Petroleum Hydrocarbons (mg/L)					
C11-C22 Aromatic Hydrocarbons	ND(0.34)	ND(0.34)	ND(0.34)	ND(0.33)	ND(0.34)
C19-C36 Aliphatic Hydrocarbons	ND(0.16)	ND(0.16)	ND(0.16)	ND(0.15)	ND(0.16)
C9-C18 Aliphatic Hydrocarbons	ND(0.12)	ND(0.12)	ND(0.12)	ND(0.12)	0.16
Unadjusted C11-C22 Aromatic Hydrocarbons	ND(0.34)	ND(0.34)	ND(0.34)	ND(0.33)	ND(0.34)
2-Methylnaphthalene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Acenaphthene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Acenaphthylene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Anthracene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Benzo(a)anthracene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Benzo(a)pyrene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Benzo(b)fluoranthene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Benzo(g,h,i)perylene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Benzo(k)fluoranthene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Chrysene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Dibenzo(a,h)anthracene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Fluoranthene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Fluorene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Indeno(1,2,3-cd)pyrene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Naphthalene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Phenanthrene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Pyrene	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.019)	ND(0.020)
Volatile Petroleum Hydrocarbons (mg/L)					
C5-C8 Aliphatic Hydrocarbons	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	0.21
C9-C10 Aromatic Hydrocarbons	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
C9-C12 Aliphatic Hydrocarbons	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	0.21
Unadjusted C9-C10 Aromatic Hydrocarbons	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Benzene	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Ethylbenzene	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
m&p-Xylene	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Methyl tert-butyl ether	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Naphthalene	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
o-Xylene	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Toluene	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Inorganics-Filtered (mg/L)					
Antimony	0.00320	0.00270	0.00900	0.00690	0.00280
Arsenic	0.00130	0.000930	0.00140	0.00170	0.00130
Barium	0.0670	0.0640	0.0400	0.0400	0.100
Beryllium	ND(0.0000500)	ND(0.0000500)	ND(0.0000500)	ND(0.0000500)	ND(0.0000500)
Cadmium	0.0000480 B	0.0000950 B	0.000170 B	0.000160 B	0.000470 B
Chromium	0.00570	0.00870	0.00620	0.0130	0.00760
Cobalt	0.00370	0.00360	0.00570	0.00510	0.00290
Copper	ND(0.00160)	ND(0.00160)	0.00450	0.00390	0.00350
Lead	0.0000970 B	0.000800	0.00260	0.00320	0.00570
Mercury	ND(0.0000200)	ND(0.0000200)	ND(0.0000200)	ND(0.0000200)	ND(0.0000200)
Nickel	0.0130	0.0330	0.0310	0.0300	0.0740
Selenium	0.00160 B	0.00130 B	0.00130 B	0.00170 B	ND(0.000750)
Silver	0.000110 B	0.0000640 B	0.000660	0.000280 B	0.000150 B
Tin	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)
Vanadium	0.000840 B	ND(0.000200)	0.00520	0.00650	ND(0.000200)
Zinc	0.00400 B	0.0220	0.0150	0.0160	0.0790
Conventional Parameters					
Turbidity (NTU)	45	55	55	73	50

TABLE 2
PORE WATER SAMPLE ANALYSIS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Parameter / Sample ID: / Date Collected:	PW6 Comp 02/21/05	PW7 Comp 02/21/05	PW8 Comp 02/21/05
Congener Total PCBs (mg/L)			
Congener Total PCBs	0.00346 [0.00397]	0.00707	0.00996
Dissolved Organic Carbon (mg/L)			
Dissolved Organic Carbon	18.0	17.2	25.1
Extractable Petroleum Hydrocarbons (mg/L)			
C11-C22 Aromatic Hydrocarbons	ND(0.34) [ND(0.34)]	ND(0.33)	ND(0.35)
C19-C36 Aliphatic Hydrocarbons	ND(0.16) [ND(0.16)]	ND(0.15)	ND(0.17)
C9-C18 Aliphatic Hydrocarbons	ND(0.12) [ND(0.12)]	ND(0.12)	ND(0.12)
Unadjusted C11-C22 Aromatic Hydrocarbons	ND(0.34) [ND(0.34)]	ND(0.33)	ND(0.35)
2-Methylnaphthalene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Acenaphthene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Acenaphthylene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Anthracene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Benzo(a)anthracene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Benzo(a)pyrene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Benzo(b)fluoranthene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Benzo(g,h,i)perylene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Benzo(k)fluoranthene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Chrysene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Dibenzo(a,h)anthracene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Fluoranthene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Fluorene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Indeno(1,2,3-cd)pyrene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Naphthalene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Phenanthrene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Pyrene	ND(0.020) [ND(0.020)]	ND(0.019)	ND(0.021)
Volatile Petroleum Hydrocarbons (mg/L)			
C5-C8 Aliphatic Hydrocarbons	ND(0.20) [ND(0.20)]	ND(0.20)	ND(0.20)
C9-C10 Aromatic Hydrocarbons	ND(0.10) [ND(0.10)]	ND(0.10)	ND(0.10)
C9-C12 Aliphatic Hydrocarbons	ND(0.10) [ND(0.10)]	ND(0.10)	ND(0.10)
Unadjusted C5-C8 Aliphatic Hydrocarbons	ND(0.20) [ND(0.20)]	ND(0.20)	ND(0.20)
Unadjusted C9-C10 Aromatic Hydrocarbons	ND(0.10) [ND(0.10)]	ND(0.10)	ND(0.10)
Benzene	ND(0.0050) [ND(0.0050)]	ND(0.0050)	ND(0.0050)
Ethylbenzene	ND(0.0050) [ND(0.0050)]	ND(0.0050)	ND(0.0050)
m&p-Xylene	ND(0.010) [ND(0.010)]	0.011	ND(0.010)
Methyl tert-butyl ether	ND(0.0050) [ND(0.0050)]	ND(0.0050)	ND(0.0050)
Naphthalene	ND(0.010) [ND(0.010)]	ND(0.010)	ND(0.010)
o-Xylene	ND(0.0050) [ND(0.0050)]	0.0090	ND(0.0050)
Toluene	ND(0.0050) [ND(0.0050)]	ND(0.0050)	ND(0.0050)
Inorganics-Filtered (mg/L)			
Antimony	0.00290 [0.00300]	0.00830	0.00940
Arsenic	0.00140 [0.00180]	0.00190	0.000830
Barium	0.110 [0.110]	0.0260	0.0530
Beryllium	ND(0.0000500) [ND(0.0000500)]	ND(0.0000500)	ND(0.0000500)
Cadmium	0.000250 B [0.0000940 B]	0.000310 B	0.0000590 B
Chromium	0.00500 [0.00630]	0.00840	0.00700
Cobalt	0.00170 [0.00220]	0.00280	0.00160
Copper	0.00210 B [ND(0.00160)]	0.00820	0.00190 B
Lead	0.00450 [0.00160]	0.00910	0.00190
Mercury	ND(0.0000200) [ND(0.0000200)]	0.0000290 B	ND(0.0000200)
Nickel	0.0270 [0.0390]	0.0260	0.0200
Selenium	0.00110 B [ND(0.000750)]	ND(0.000750)	0.00130 B
Silver	0.000100 B [0.0000950 B]	0.000340 B	0.0000520 B
Tin	ND(0.00250) [ND(0.00250)]	ND(0.00250)	ND(0.00250)
Vanadium	0.00270 [0.000260 B]	0.0120	0.00330
Zinc	0.0380 [0.0500]	0.0150	0.00910
Conventional Parameters			
Turbidity (NTU)	50 [62]	8.0	60

TABLE 2
PORE WATER SAMPLE ANALYSIS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc., and submitted to Northeast Analytical, Inc. for analysis of congener PCBs and dissolved organic carbon (DOC), and to Woods Hole Group Environmental Laboratories for analysis of EPH/VPH, Turbidity and Filtered Metals.
2. Field duplicate sample results are presented in brackets.

Data Qualifiers:

Inorganics (metals)

B - Indicates an estimated value between the instrument detection limit and practical quantitation limit (PQL).

Figures

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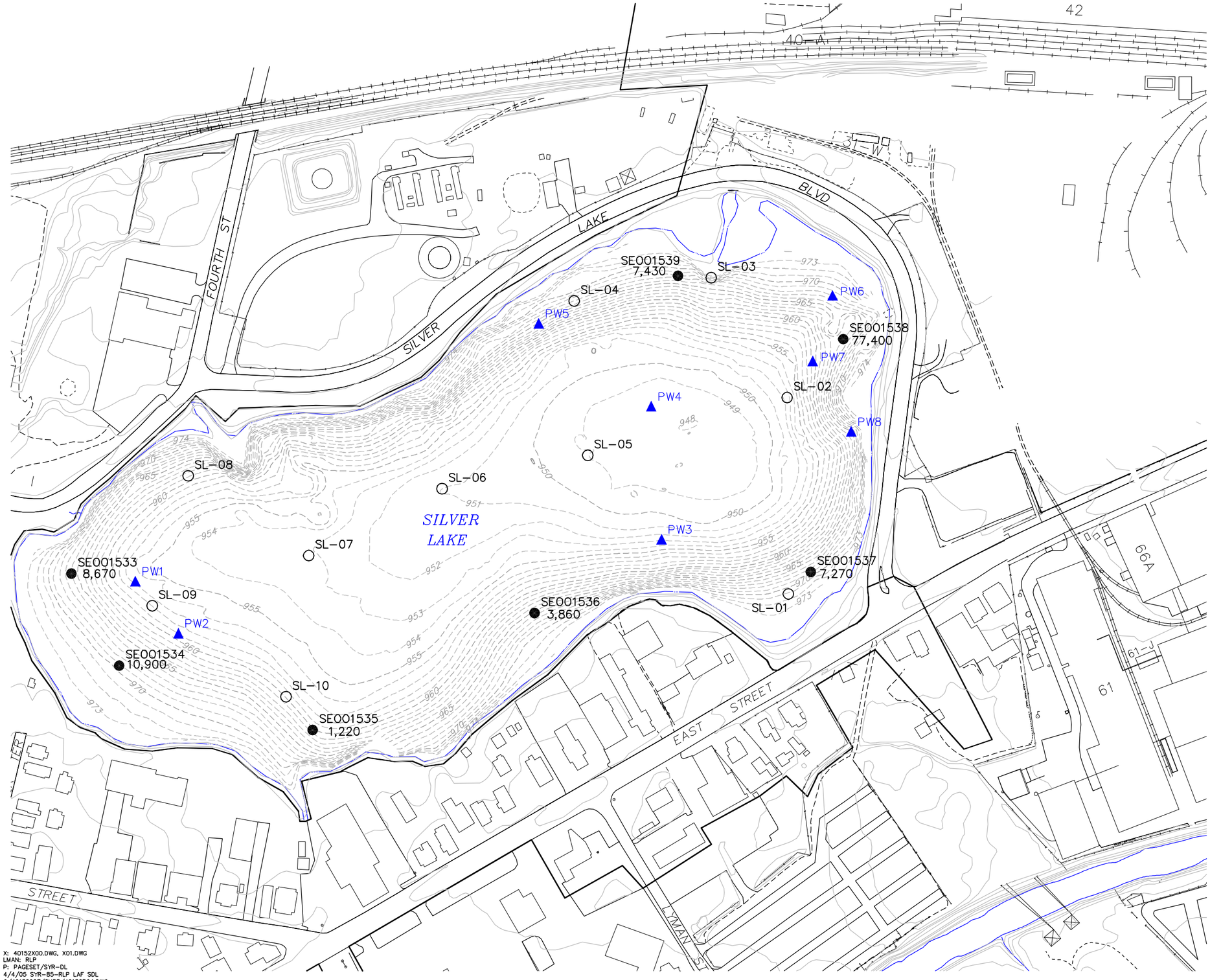
engineers, scientists, economists



X: 40152X00.DWG, X01.DWG
LMAN: RLP
P: PAGESET/SYR-DL
4/4/05 SYR-85-RLP LAF SDL
C/40152027/SUPP/40152B04.DWG

LEGEND:

- ELEVATION CONTOUR
- PW6 ▲ SUPPLEMENTAL PDI – SEDIMENT CORE LOCATION
- SL-01 ○ PRE-DESIGN PORE WATER SAMPLE LOCATION
- SE001538 77,400 ● EPA SAMPLE ID TPH CONCENTRATIONS, mg/kg
- 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.

0 100' 200'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS

SEDIMENT CORE LOCATIONS

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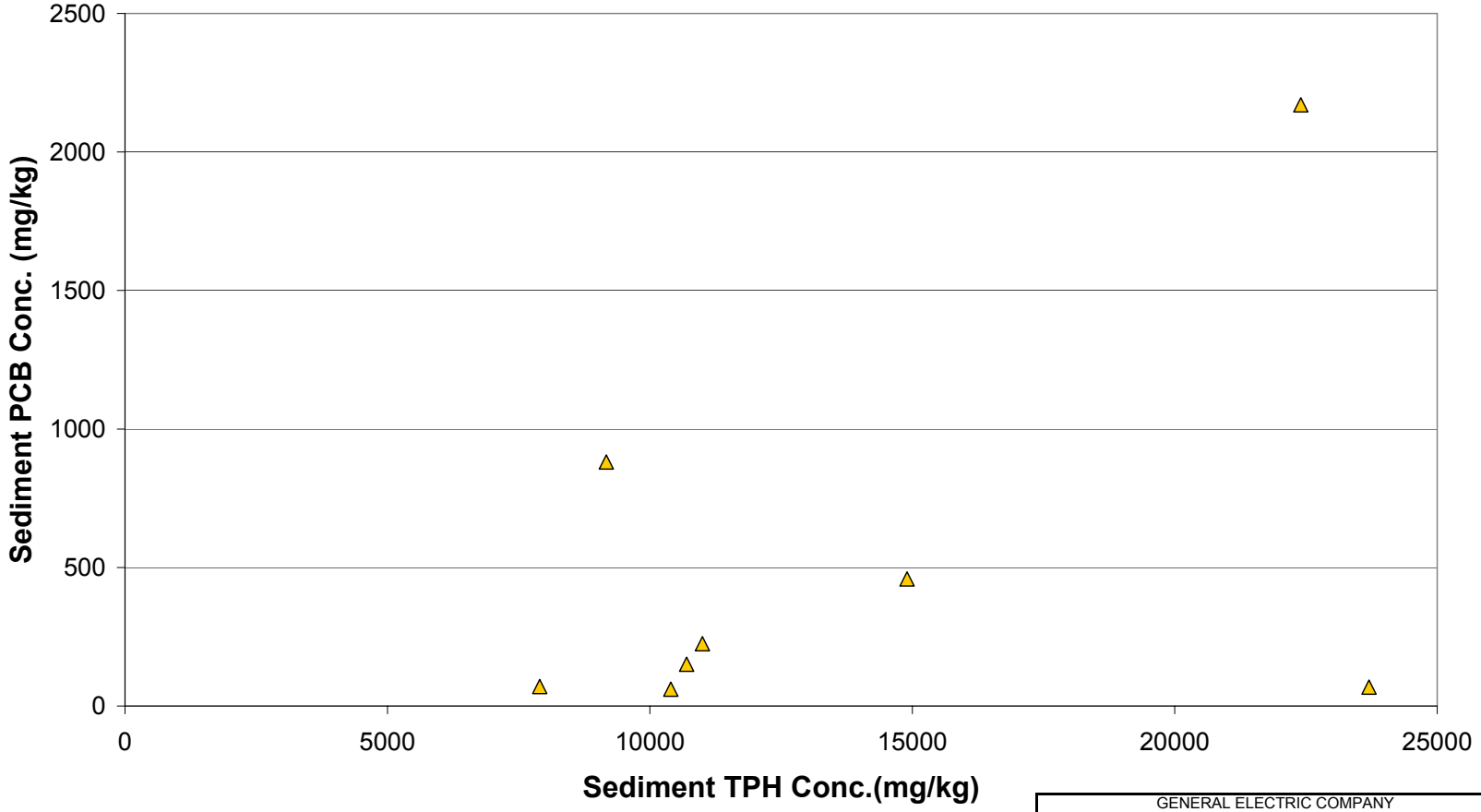
FIGURE
1



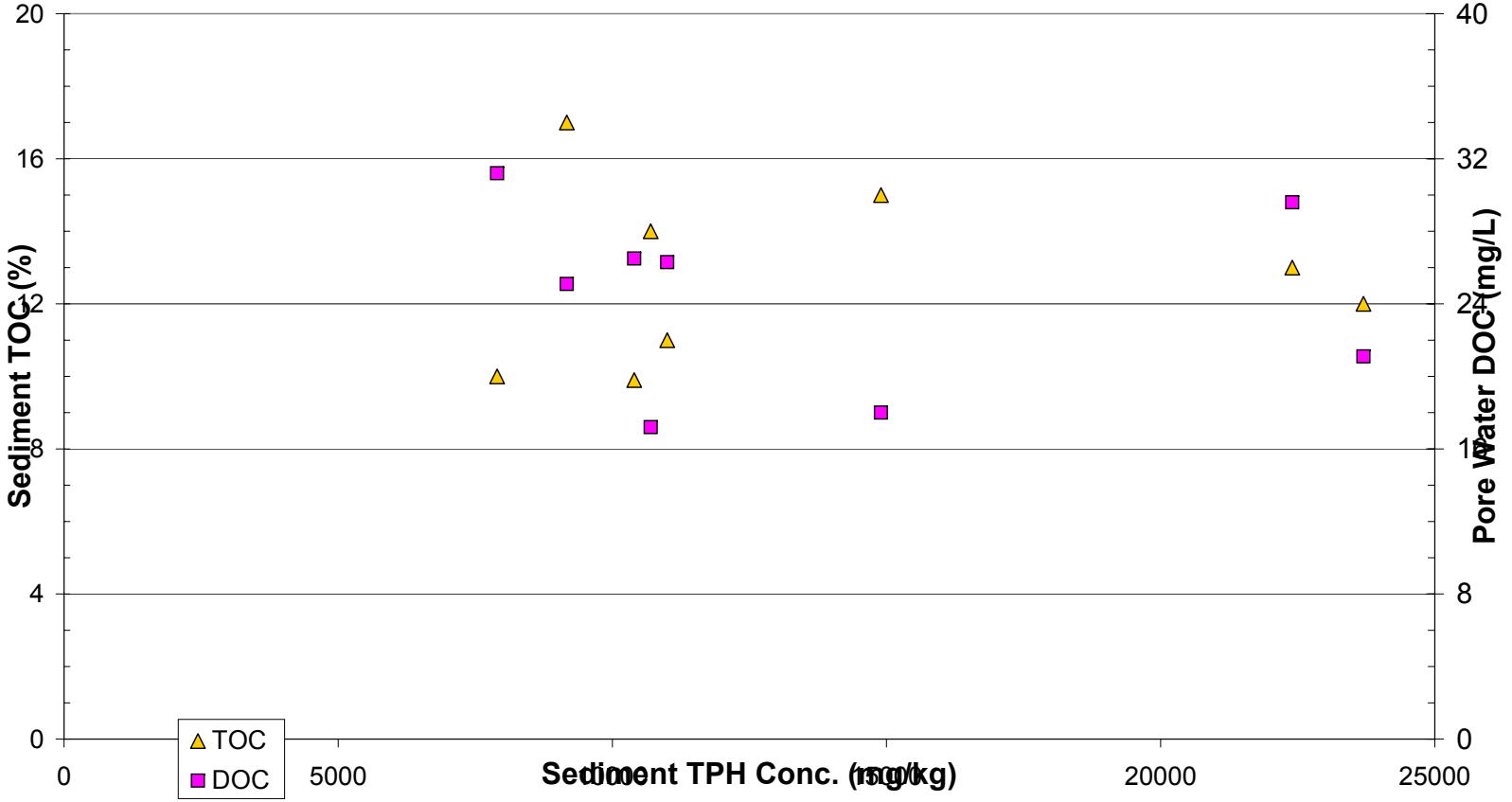
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATIONS - SILVER LAKE SEDIMENTS

Sediment TPH vs. Sediment PCB

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

FIGURE 2



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
SUPPLEMENTAL
PRE-DESIGN INVESTIGATIONS -
SILVER LAKE SEDIMENTS

Sediment TPH vs. Sediment TOC and Pore Water DOC

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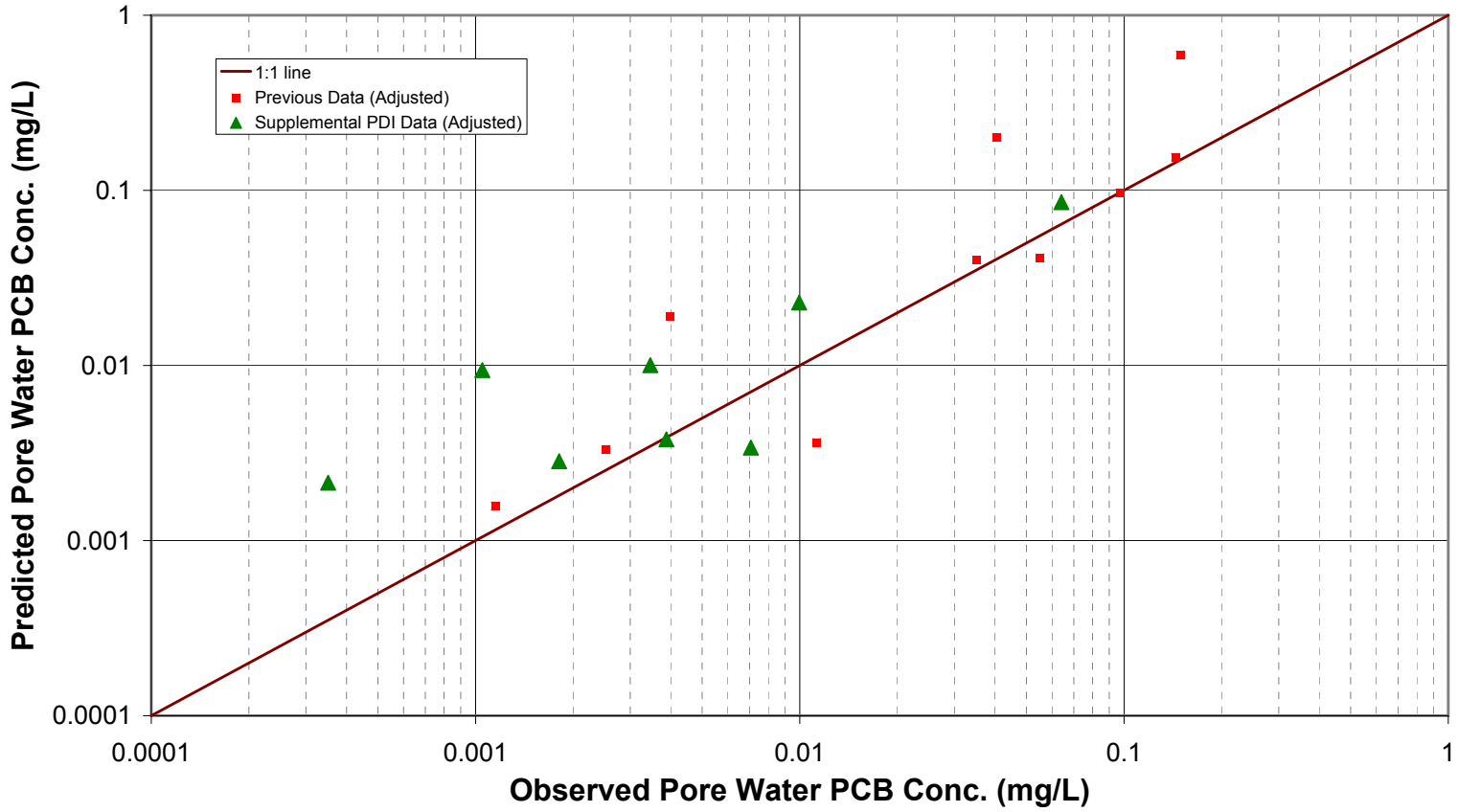
FIGURE
3



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
SUPPLEMENTAL
PRE-DESIGN INVESTIGATIONS -
SILVER LAKE SEDIMENTS

Observed vs. Predicted Pore Water PCB Concentration

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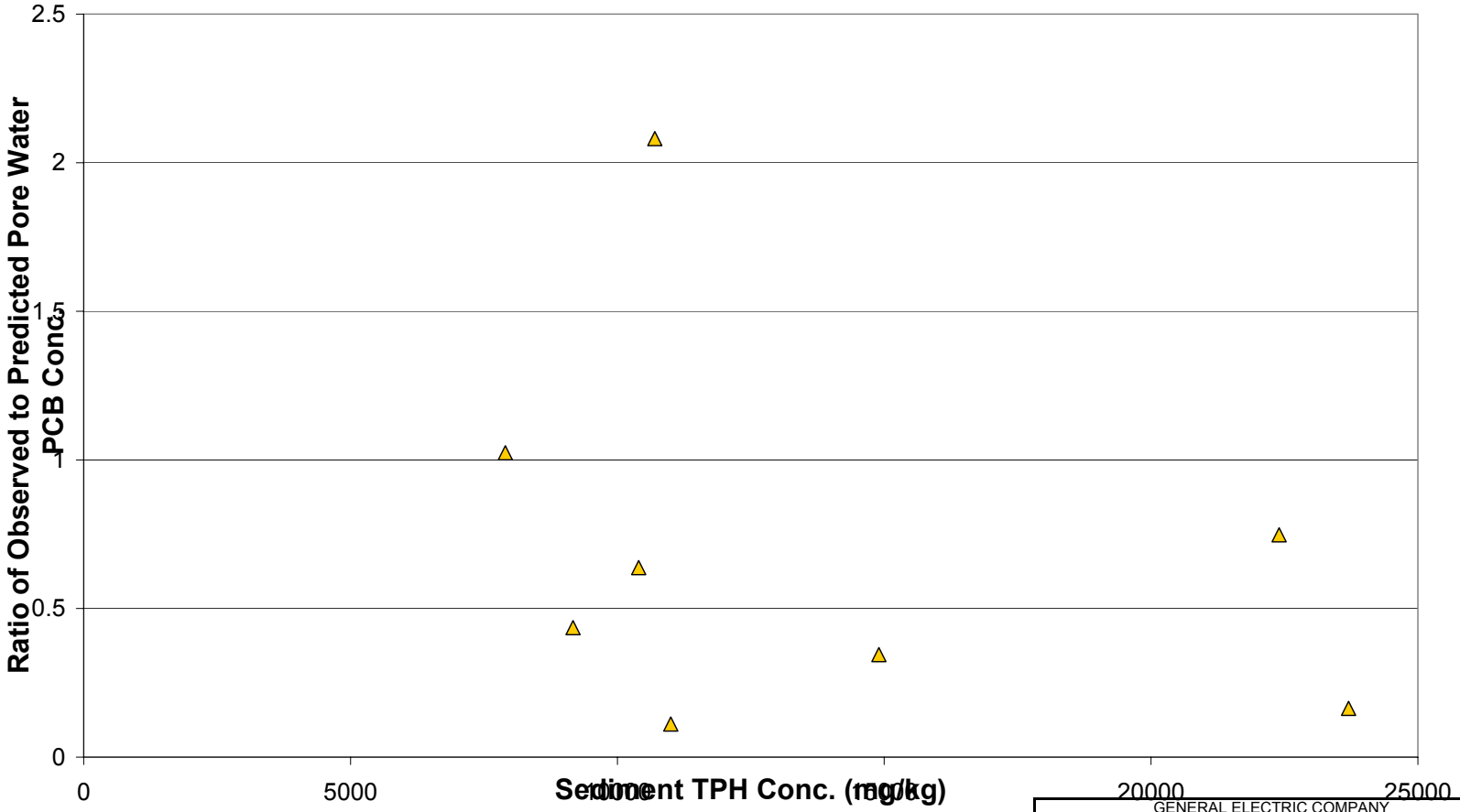
FIGURE
4



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SUPPLEMENTAL PRE-DESIGN INVESTIGATIONS - SILVER LAKE SEDIMENTS

Sediment TPH vs. Ratio of Observed to Predicted Pore Water PCB Conc.

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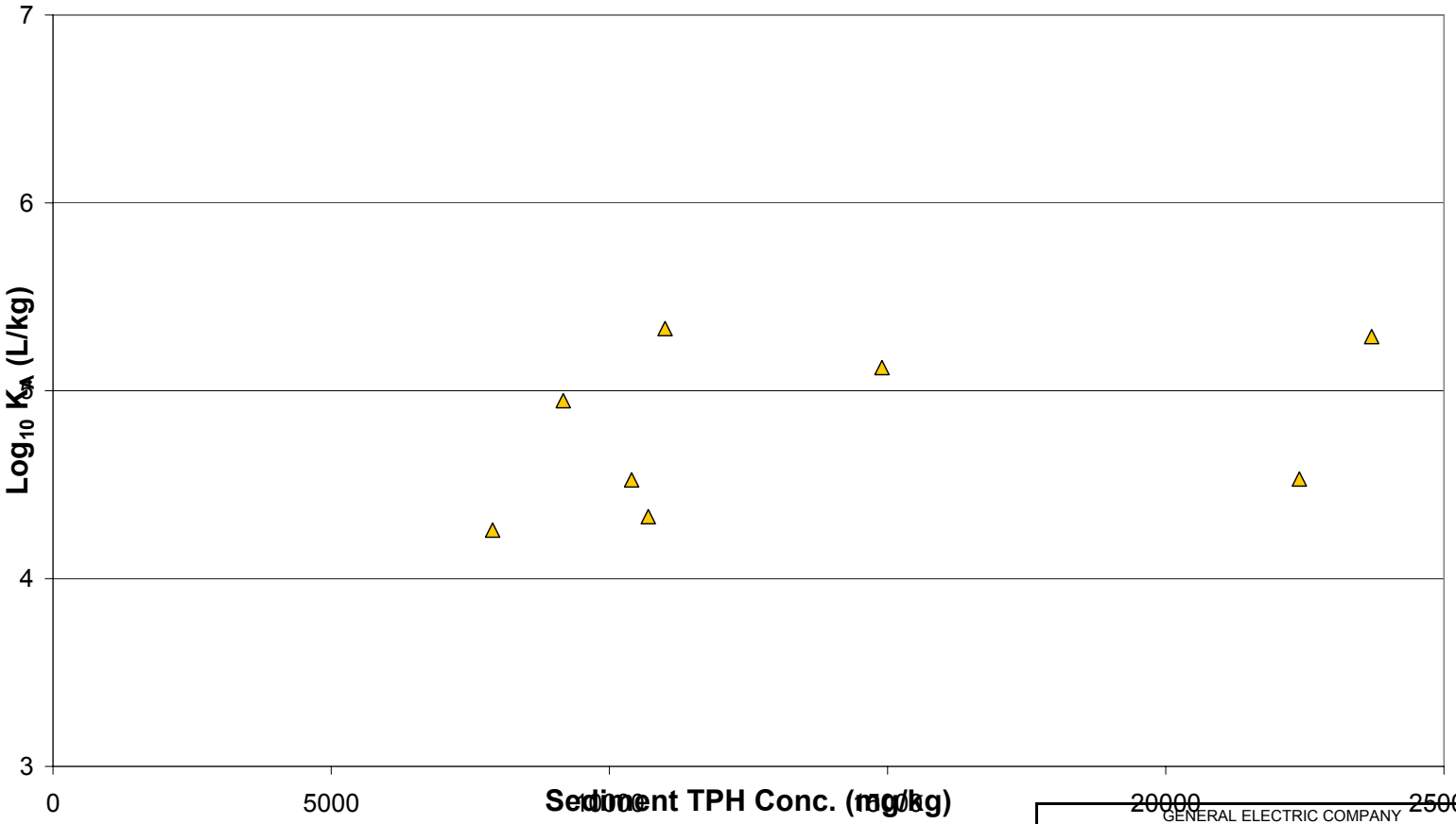
FIGURE 5



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SUPPLEMENTAL PRE-DESIGN INVESTIGATIONS - SILVER LAKE SEDIMENTS

Sediment TPH vs. Log_{10} K_A (Apparent Partitioning Coefficient)

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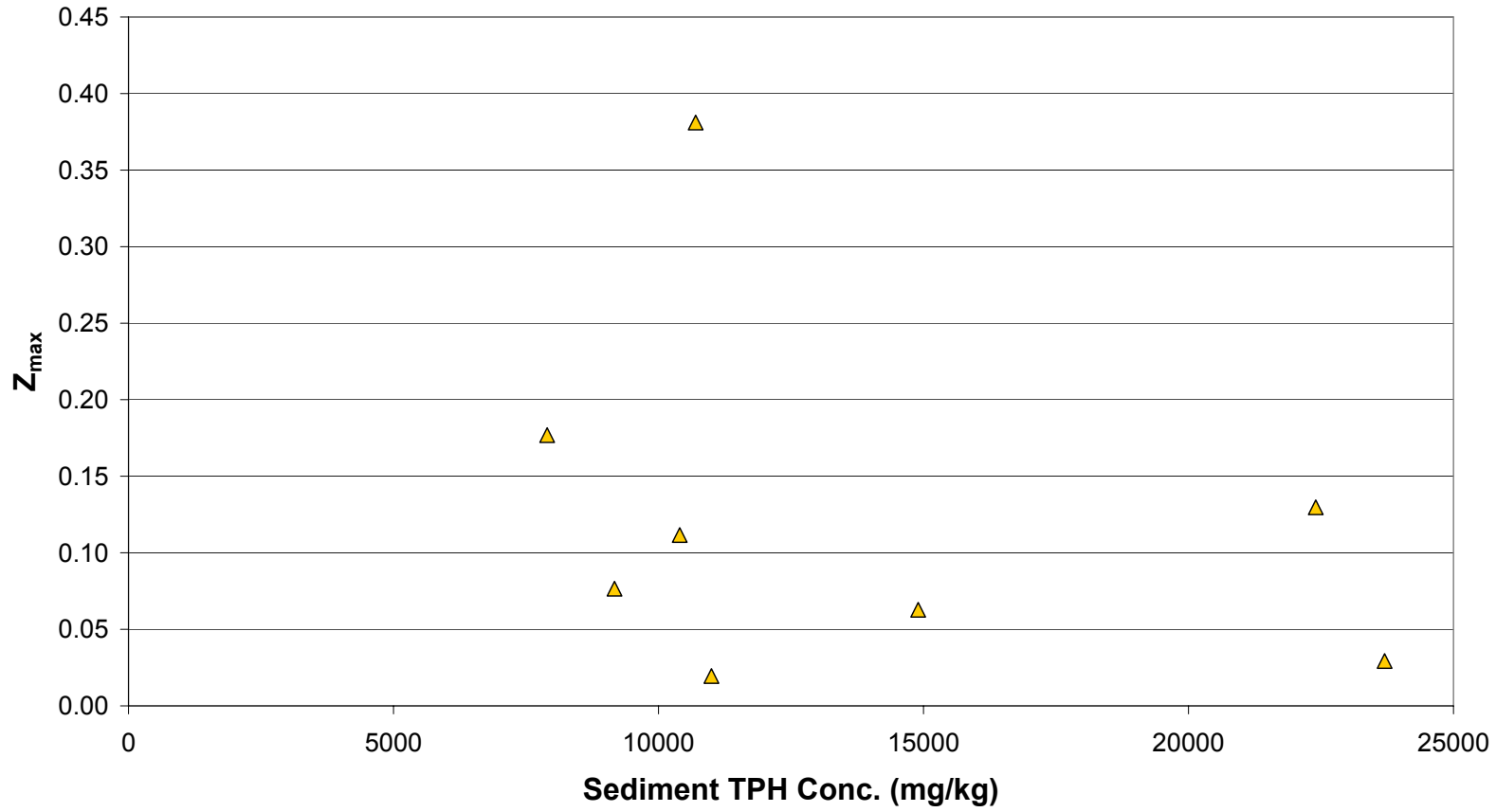
FIGURE 6



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PITTSFIELD, MASSACHUSETTS
SUPPLEMENTAL
PRE-DESIGN INVESTIGATIONS -
SILVER LAKE SEDIMENTS

Sediment TPH vs. Z_{max}

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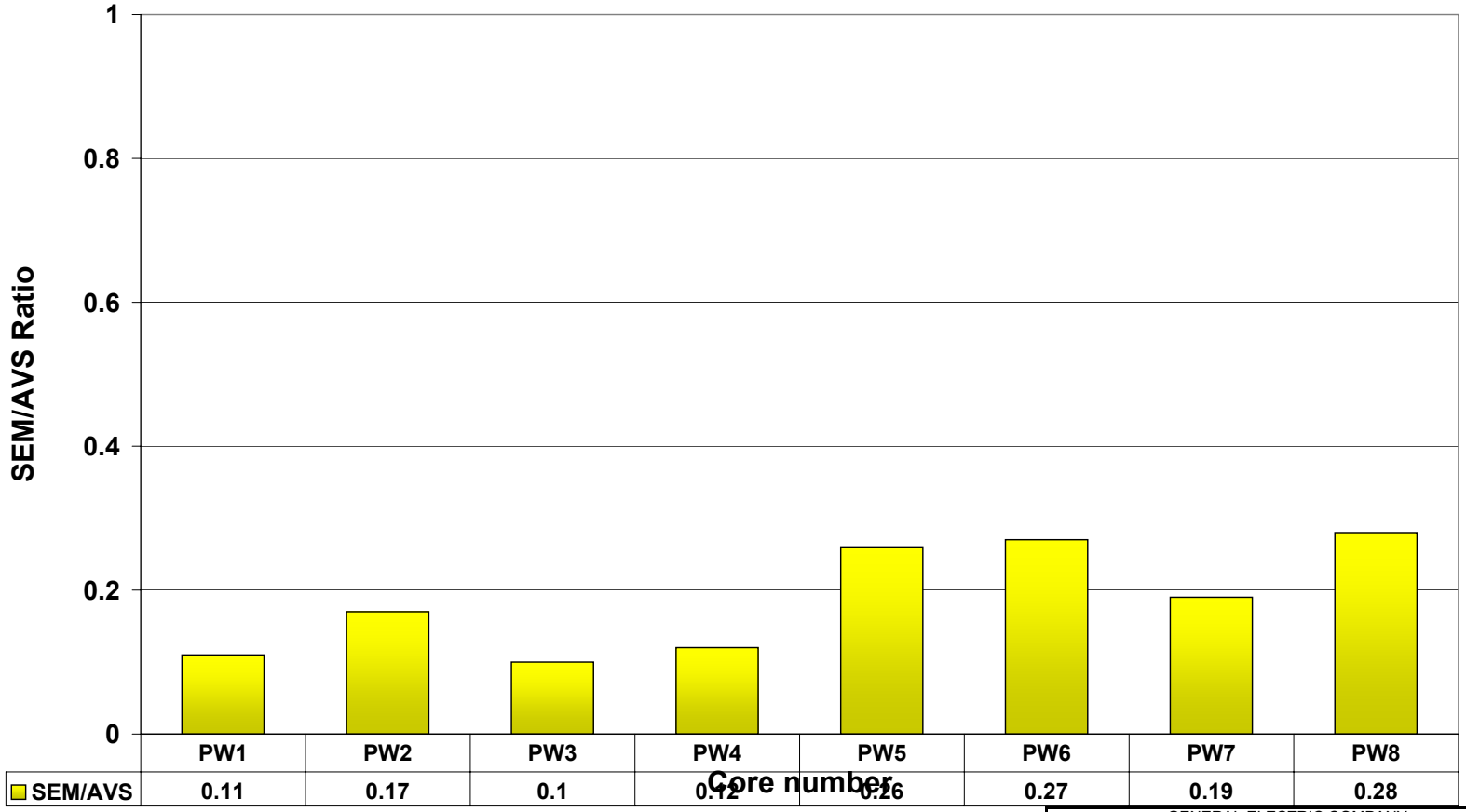
FIGURE
7



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
SUPPLEMENTAL
PRE-DESIGN INVESTIGATIONS - SILVER LAKE SEDIMENTS

SEM/AVS Results by Location

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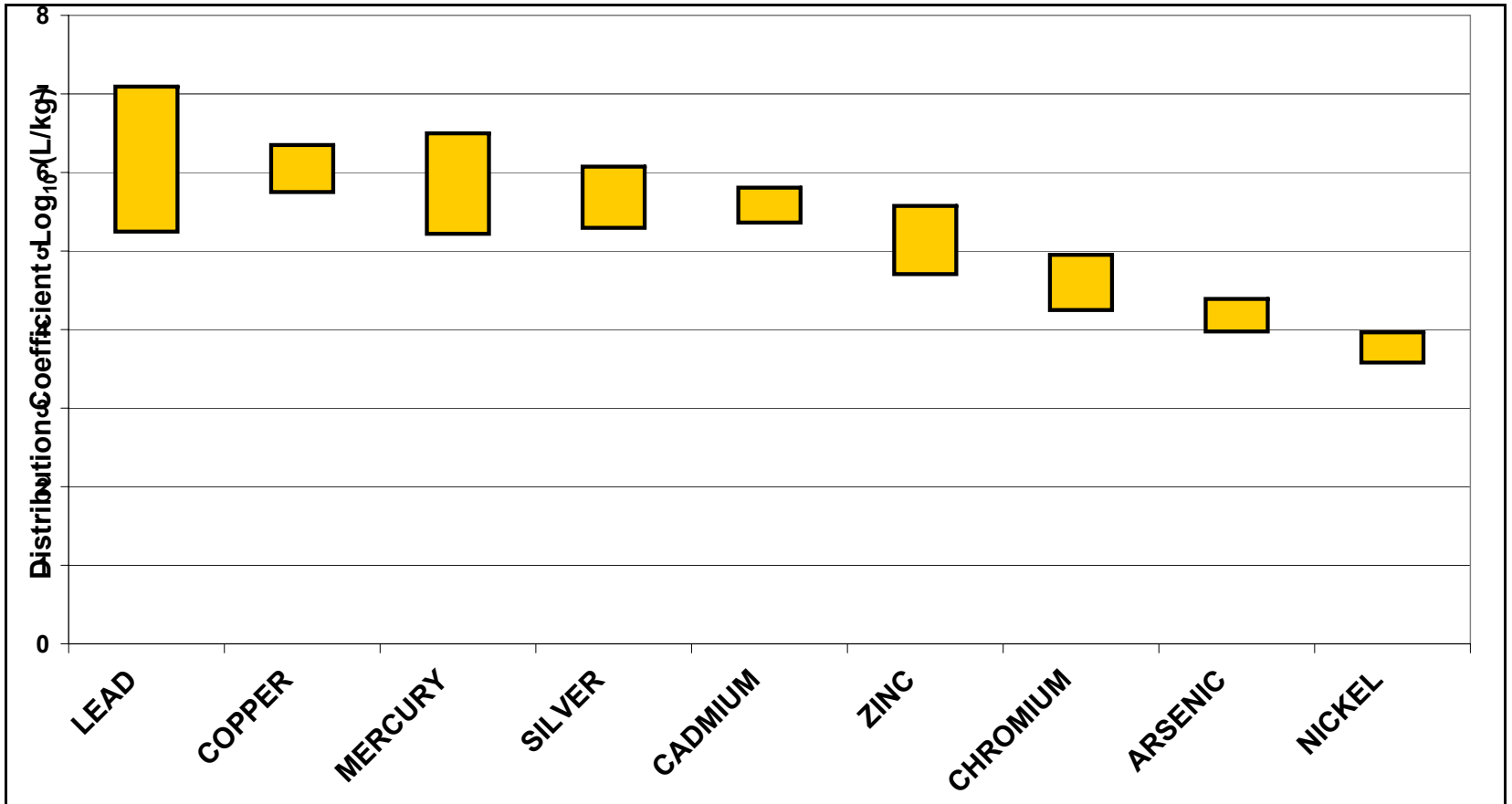
FIGURE 8



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
SUPPLEMENTAL
PRE-DESIGN INVESTIGATIONS -
SILVER LAKE SEDIMENTS

Apparent Sediment / Pore Water Distribution Coefficients for Select Metals at Silver Lake

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FIGURE 9

Attachment A

Grain Size Distribution

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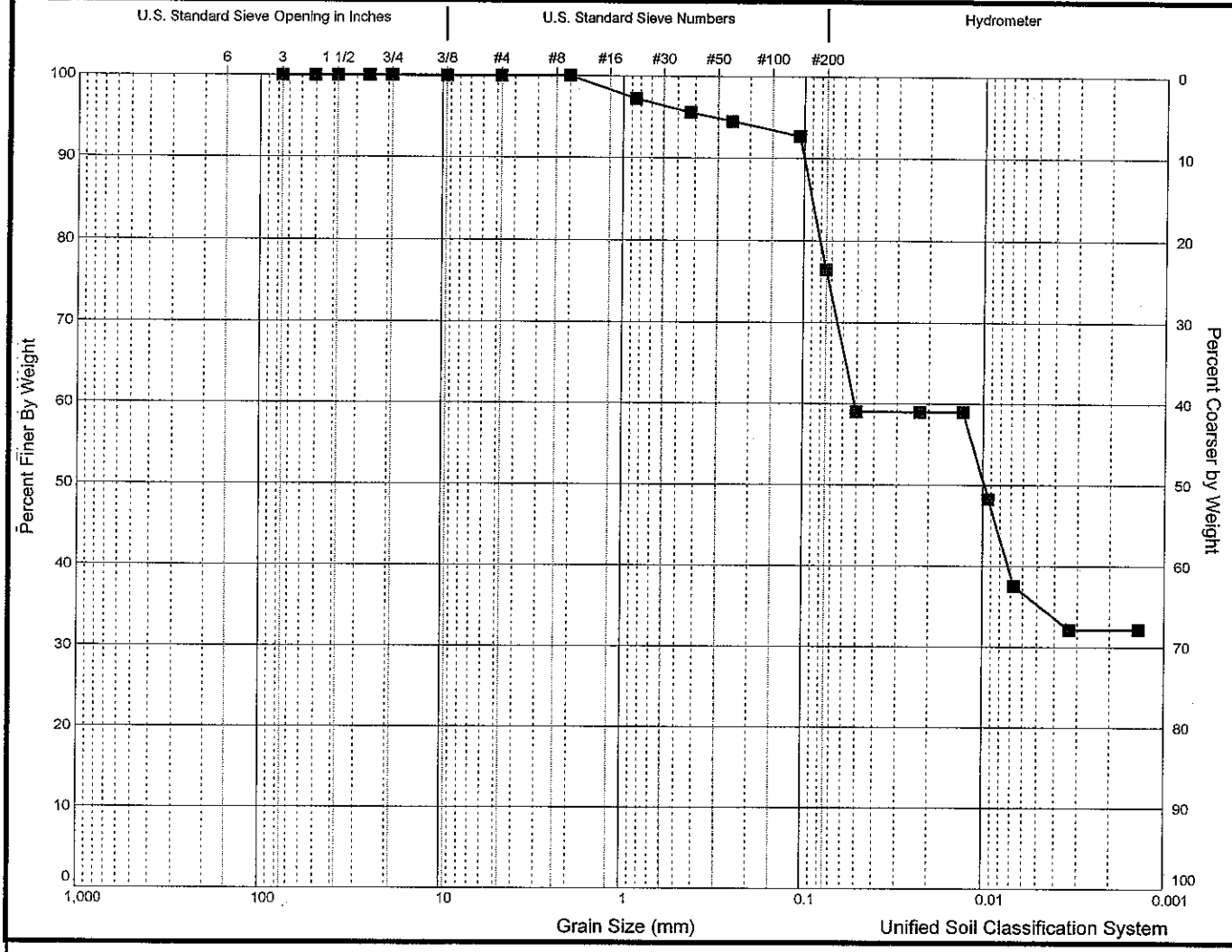
GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.0%	23.7%	40.6%	35.6%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.0	0.0	0.0	0.0	0.0	1.7	3075.6

Soil Description	USCS	USDA

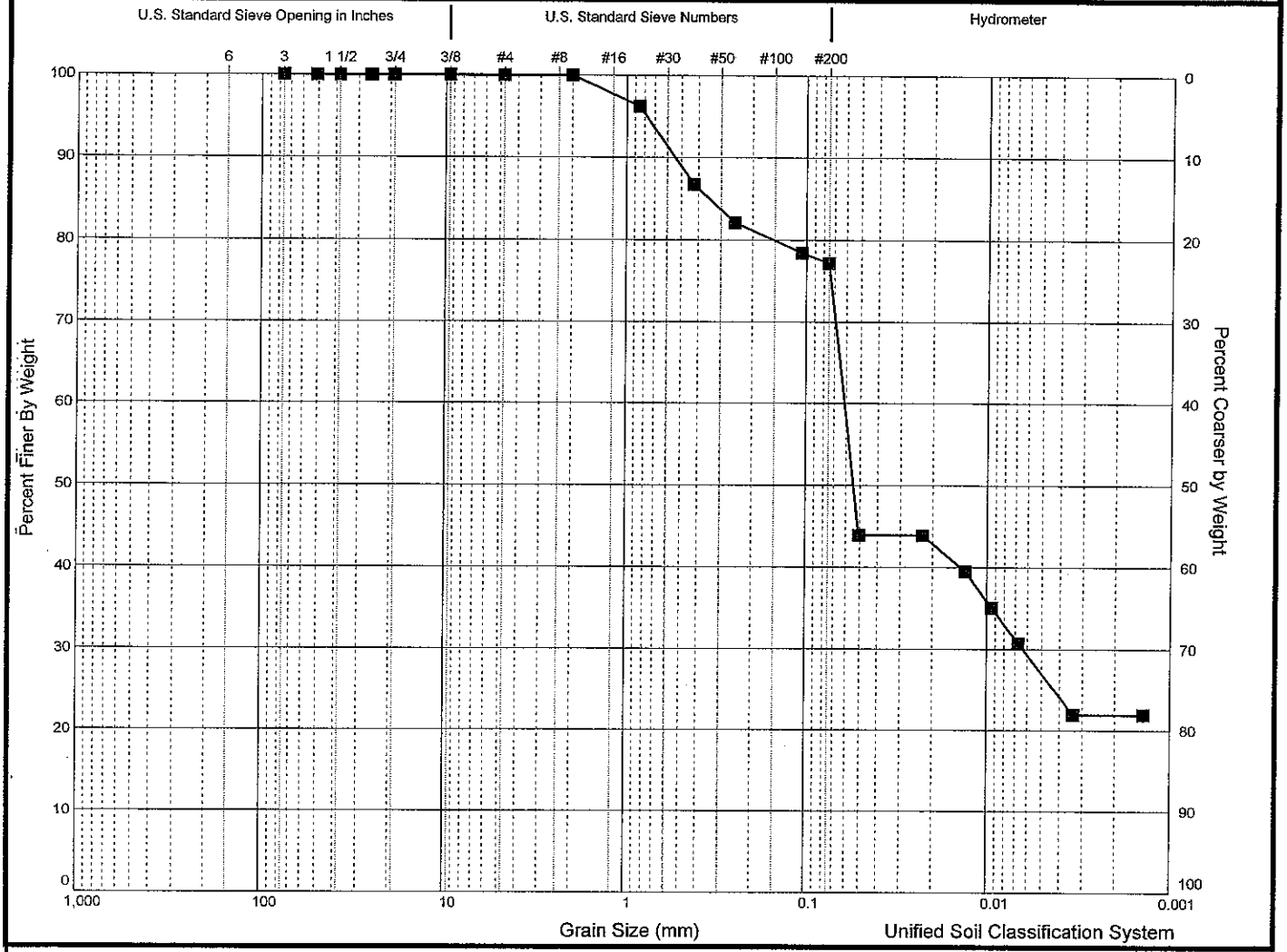
NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-01D
Project Name: Silver Lake
Location: PW 1 Comp Sediment
Soil Counter: 192294332 **Sample ID:** 0502061-01D
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.7%	33.3%	38.3%	27.7%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.0	0.0	0.0	0.0	22.9	1578.7

Soil Description	USCS	USDA

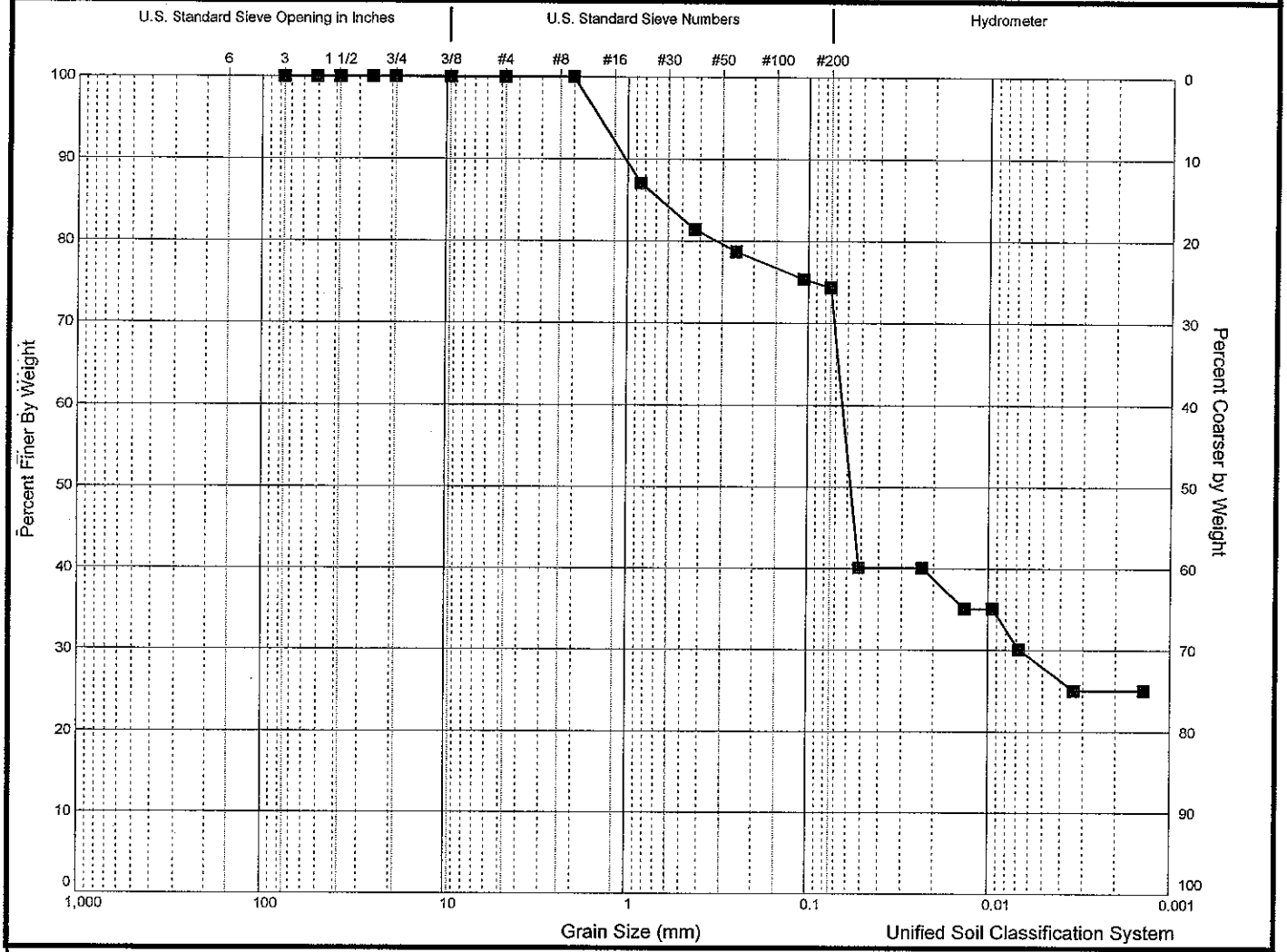
NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-02
Project Name: Silver Lake
Location: PW 2 Comp Sediment
Soil Counter: 885394043 **Sample ID:** 0502061-02
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.0%	26.3%	44.2%	29.6%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	30.0	3979.0

Soil Description	USCS	USDA

NP=No plastic limit

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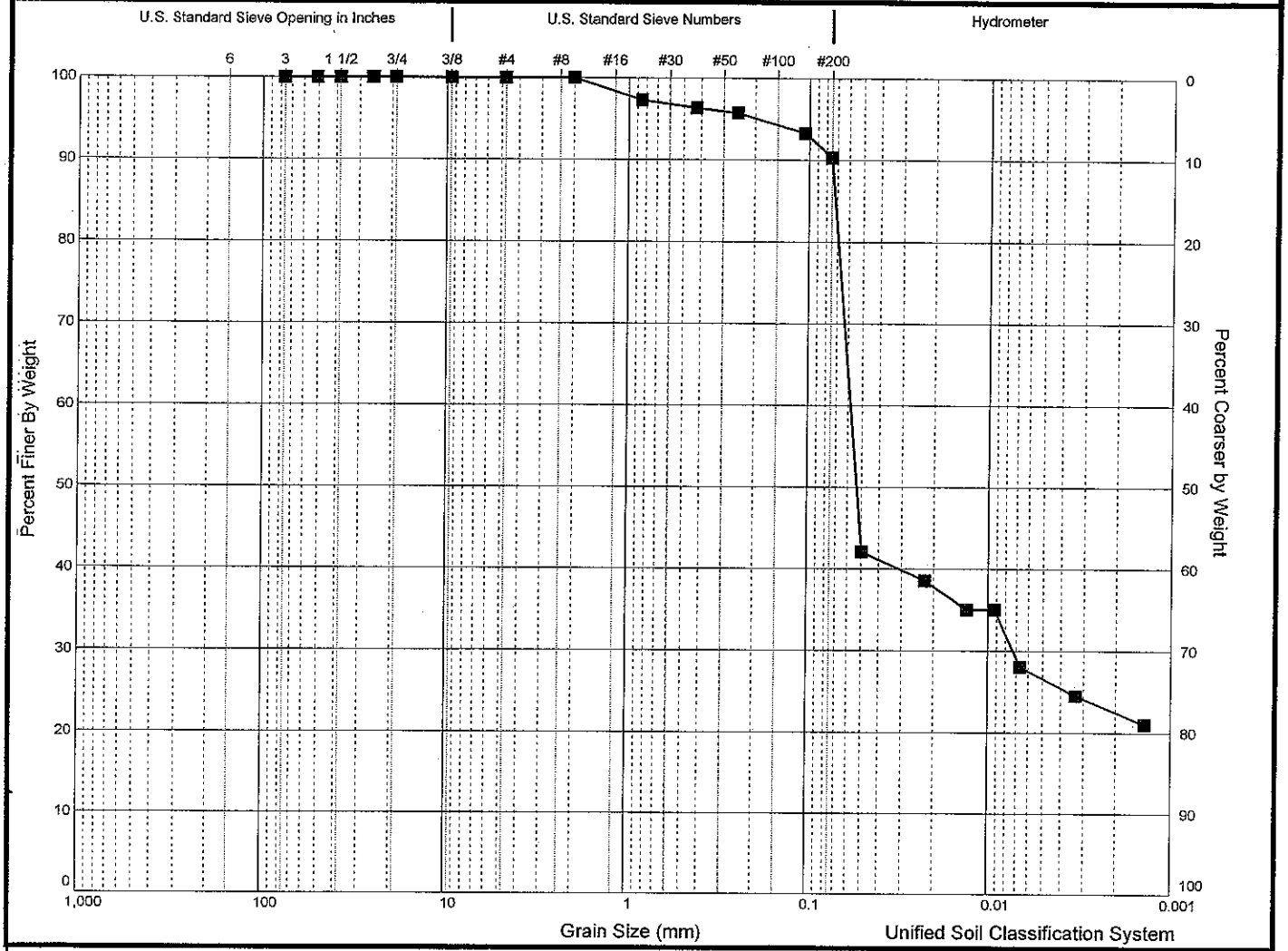
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-03
Project Name: Silver Lake
Location: PW 3 Comp Sediment
Soil Counter: 639265484 **Sample ID:** 0502061-03
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.0%	9.8%	64.0%	26.3%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	37.6	3152.8

Soil Description	USCS	USDA

NP=No plastic limit

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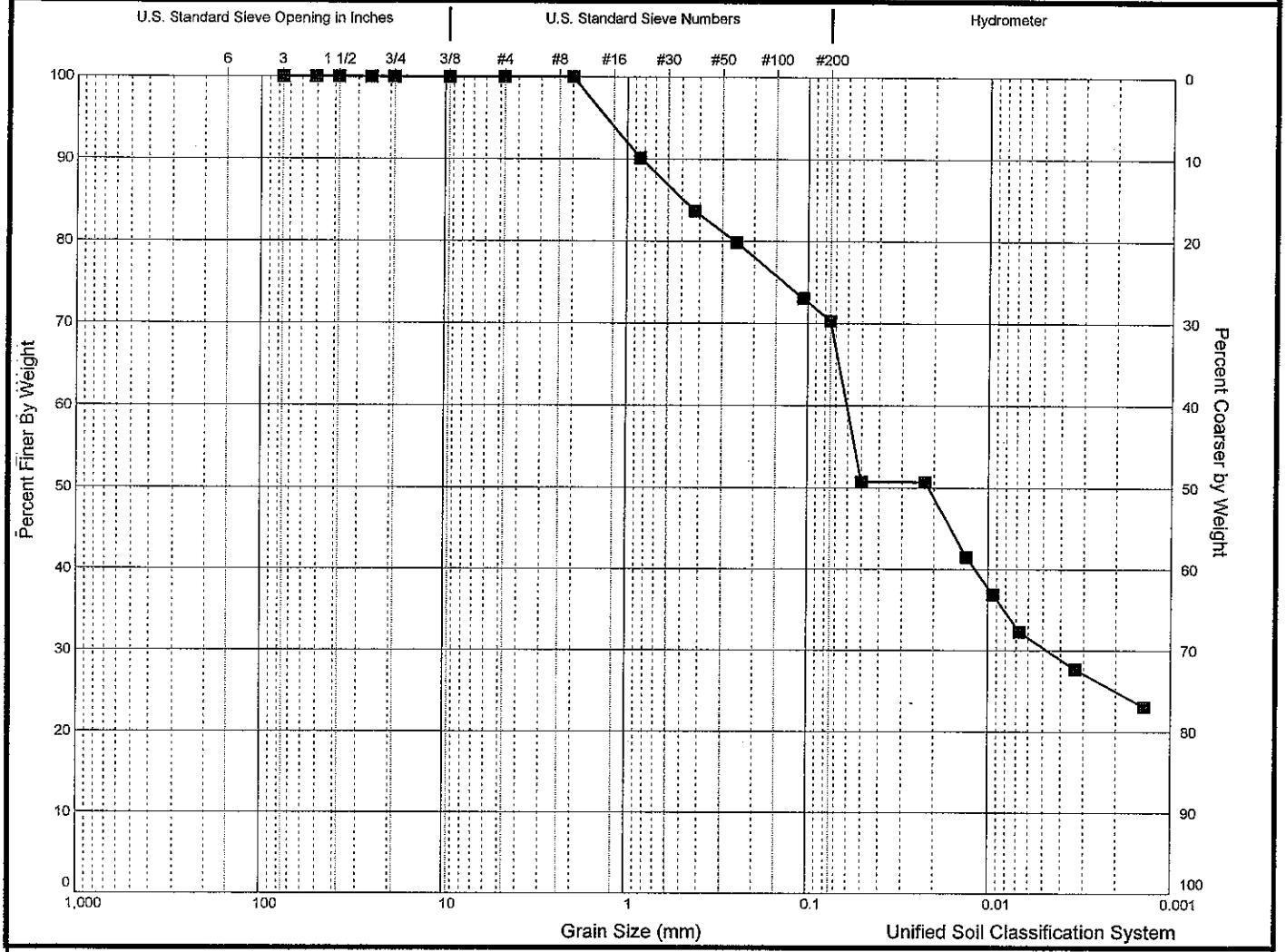
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-04
Project Name: Silver Lake
Location: PW 4 Comp Sediment
Soil Counter: 474263032 **Sample ID:** 0502061-04
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.1%	33.5%	35.5%	30.9%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.0	0.0	0.0	0.0	14.1	1896.5

Soil Description	USCS	USDA

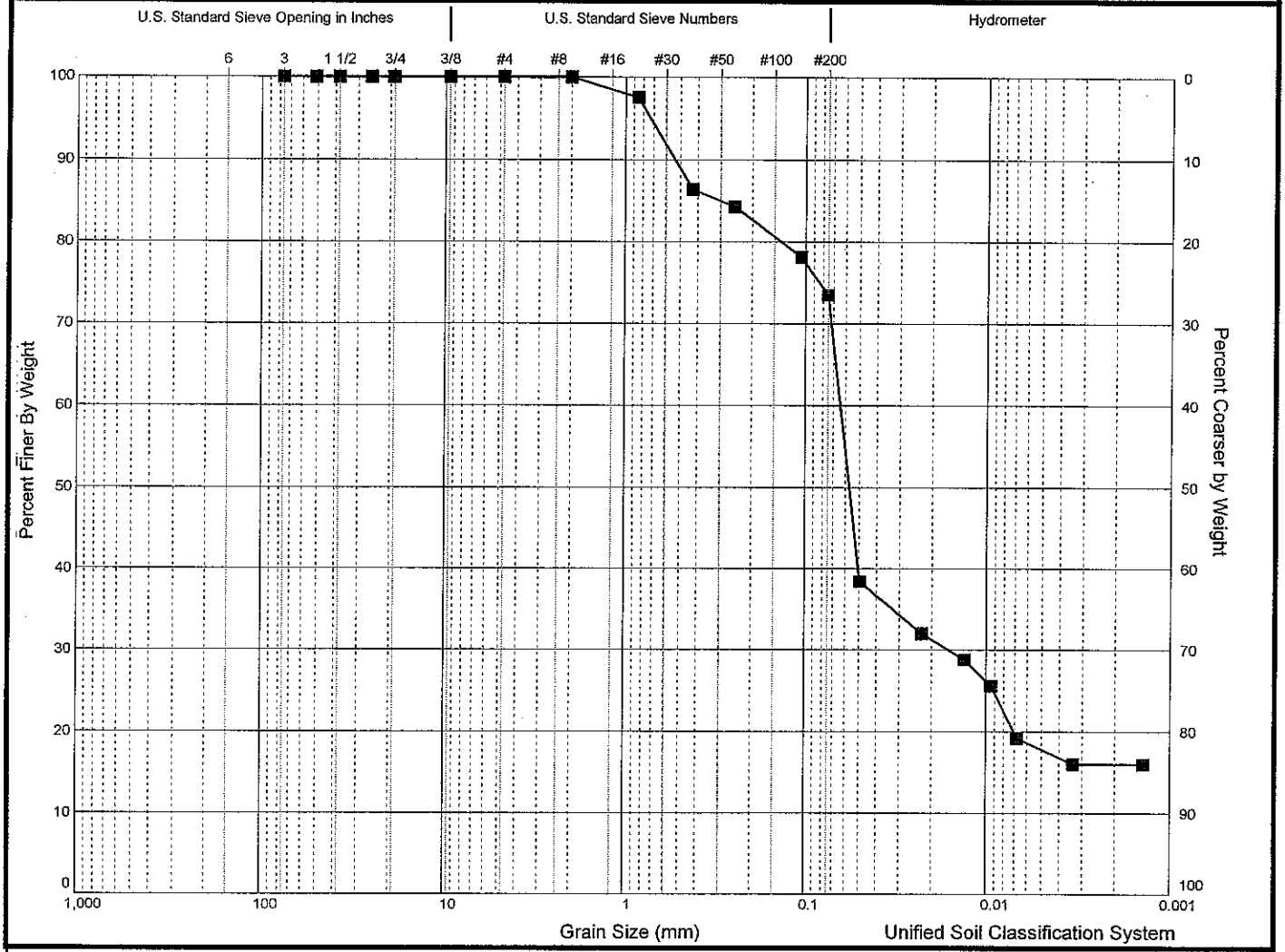
NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-05
Project Name: Silver Lake
Location: PW 5 Comp Sediment
Soil Counter: 316451920 **Sample ID:** 0502061-05
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.0%	27.1%	52.0%	20.9%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	365.4	2182.3

Soil Description	USCS	USDA

NP=No plastic limit

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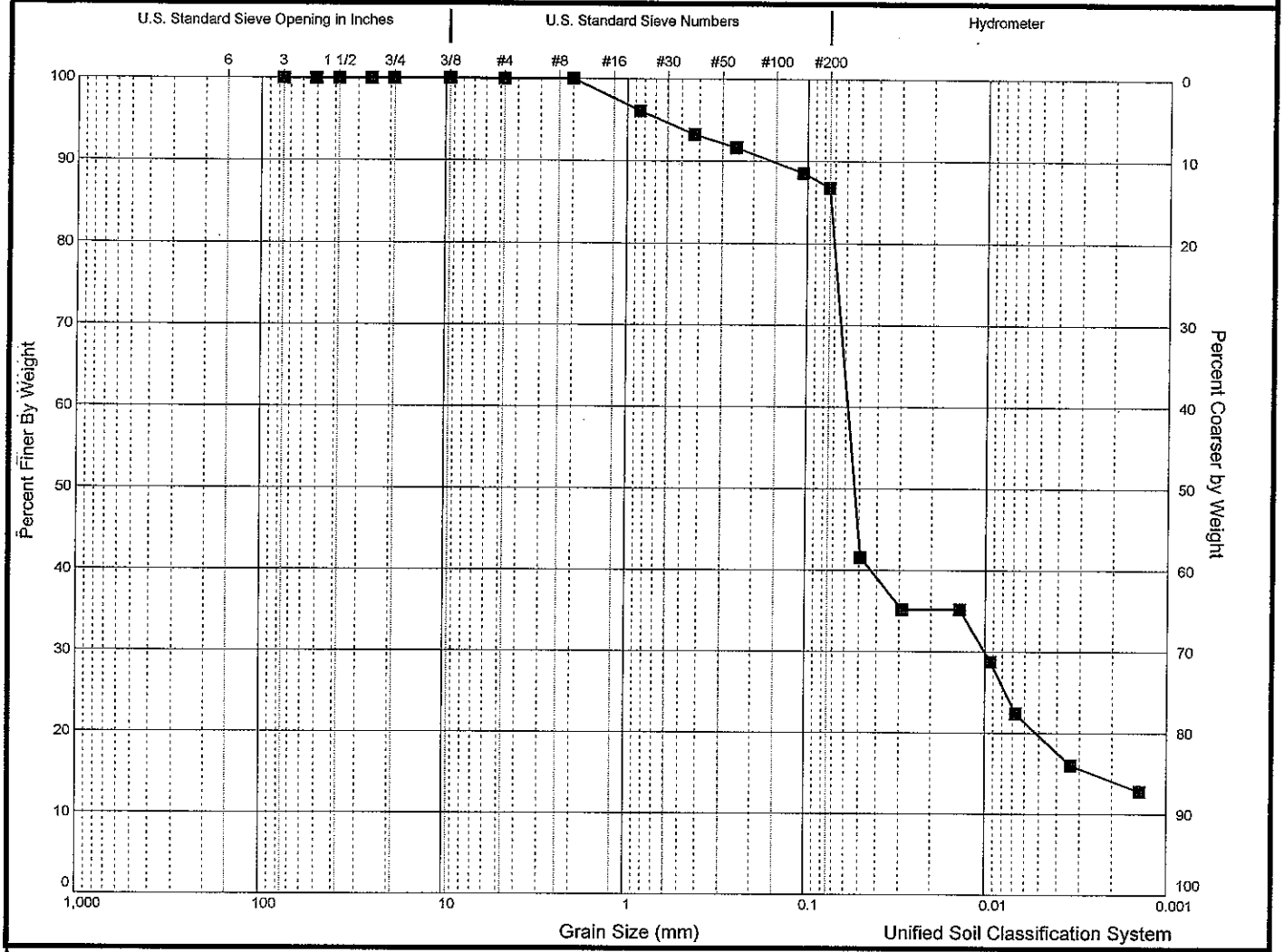
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-06
Project Name: Silver Lake
Location: PW 6 Comp Sediment
Soil Counter: 553814834 **Sample ID:** 0502061-06
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.0%	13.9%	63.9%	22.1%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	359.0	2955.5

Soil Description	USCS	USDA

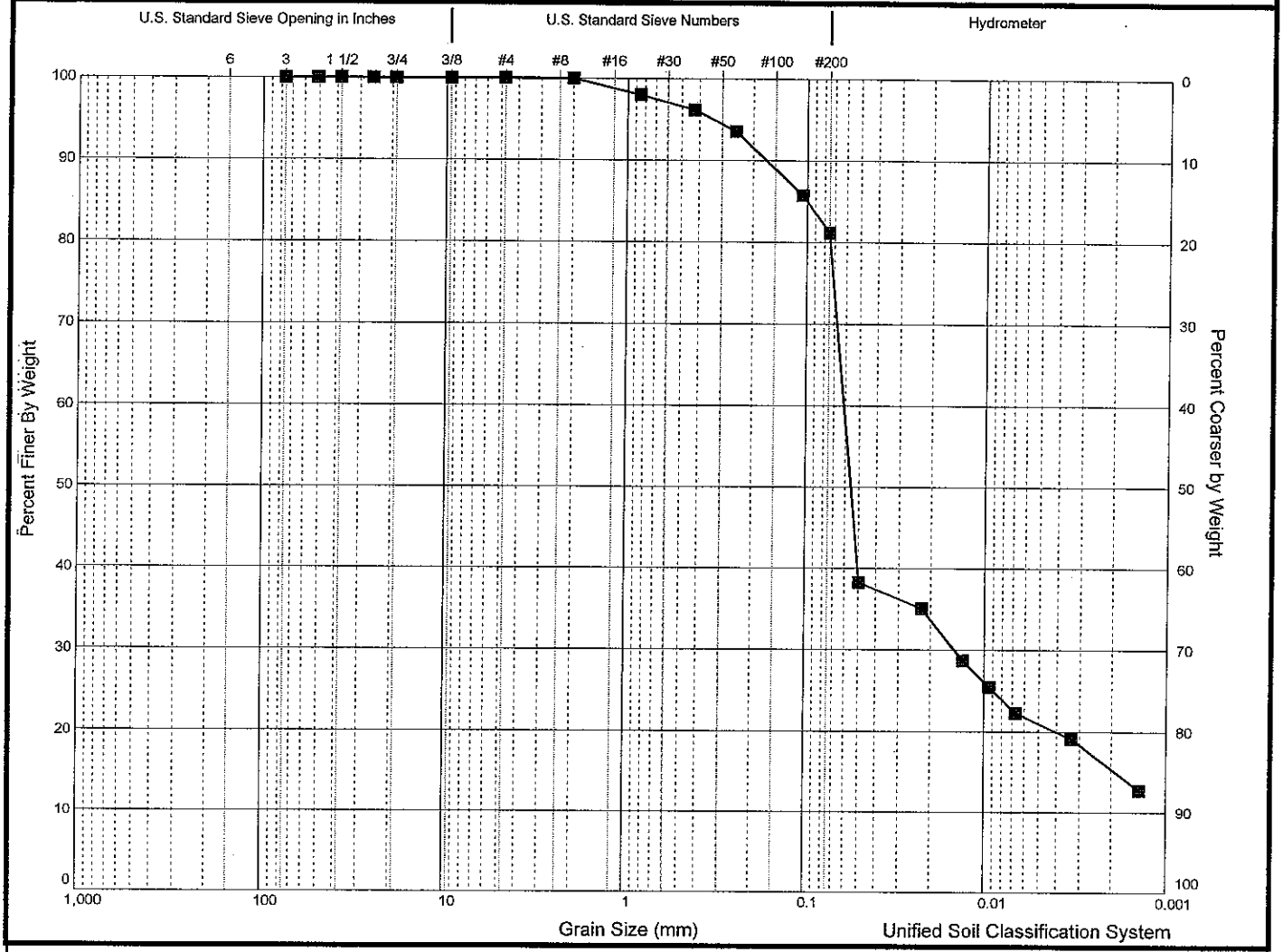
NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-07
Project Name: Silver Lake
Location: PW 7 Comp Sediment
Soil Counter: 730614980 **Sample ID:** 0502061-07
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.1%	26.1%	51.9%	21.9%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	363.8	2455.6

Soil Description	USCS	USDA

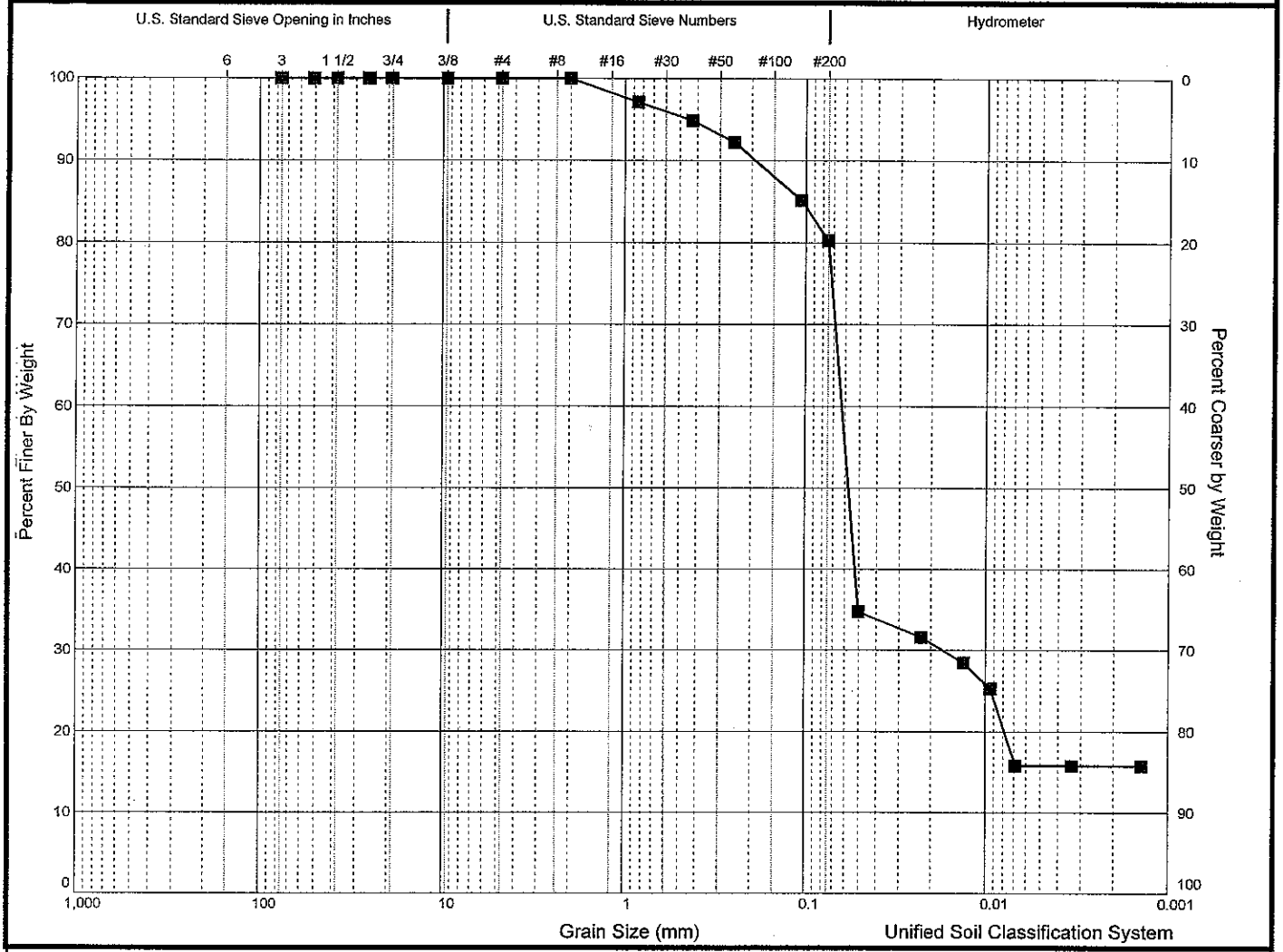
NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-08
Project Name: Silver Lake
Location: PW 8 Comp Sediment
Soil Counter: 672355386 **Sample ID:** 0502061-08
Depth: ft

GRAINSIZE DISTRIBUTION



% Coarse	% Sand	% Silt	% Clay
0.1%	19.6%	59.9%	20.4%

LL	PL	PI	D60 (mm)	D50 (mm)	D30 (mm)	D20 (mm)	D10 (mm)	Cc	Cu
			0.1	0.1	0.0	0.0	0.0	577.6	2350.8

Soil Description	USCS	USDA

NP=No plastic limit

Company: Woods Hole Group Environmental Labs
Address: 375 Paramount Drive, Suite 2
Raynham Massachusetts 02767
Country: United States
Telephone: 508.822.9300 **Fax:** 508.822.3288

USCS GRAIN-SIZE DISTRIBUTION

Project No.: 0502061 **Borehole:** 0502061-09
Project Name: Silver Lake
Location: PW DUP Comp Sediment
Soil Counter: 666456540 **Sample ID:** 0502061-09
Depth: ft

Attachment B

Water Temperature and Dissolved Oxygen Profiles

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

TABLE 1
TEMPERATURE AND DISSOLVED OXYGEN MEASUREMENTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

PW1

Water (ft.)	18.8	
Ice (in.)	7	
Date	2/15/2004	
Time	845	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.13	11.76
4	3.77	12.17
6	3.62	12.64
8	3.61	12.78
10	3.77	10.76
12	3.75	10.61
14	3.68	10.39
16	3.62	10.68
18	3.67	9.64

PW2

Water (ft.)	17.7	
Ice (in.)	7	
Date	2/15/2005	
Time	1015	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	1.08	11.40
4	3.10	8.42
6	3.47	7.48
8	3.85	6.74
10	3.71	6.44
12	3.67	6.42
14	3.68	5.99
16	3.73	5.62

TABLE 1
TEMPERATURE AND DISSOLVED OXYGEN MEASUREMENTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

PW3

Water (ft.)	23.5	
Ice (in.)	9.5	
Date	2/15/2005	
Time	1215	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.28	13.15
4	3.92	1.84
6	4.04	10.52
8	4.04	10.10
10	4.00	9.27
12	3.99	8.64
14	4.02	7.98
16	3.98	7.44
18	3.96	7.23
20	4.02	4.42
22	4.34	1.21

PW4

Water (ft.)	28.3	
Ice (in.)	9.5	
Date	2/15/2005	
Time	1345	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	2.98	12.97
4	3.94	11.95
6	3.89	11.56
8	3.88	11.67
10	3.93	9.99
12	3.94	9.05
14	3.95	7.61
16	3.95	7.48
18	3.95	7.39
20	4.01	6.18
22	4.06	3.58
24	4.08	4.05
26	4.18	2.47

TABLE 1
TEMPERATURE AND DISSOLVED OXYGEN MEASUREMENTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

PW5

Water (ft.)	12.1	
Ice (in.)	9	
Date	2/15/2005	
Time	1530	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.48	11.99
4	3.95	11.27
6	4.08	10.33
8	4.13	8.76
10	4.06	8.7

PW6

Water (ft.)	9.0	
Ice (in.)	7	
Date	2/16/2005	
Time	800	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.42	11.34
4	3.72	11.23
6	3.86	11.09
8	4.01	9.7

TABLE 1
TEMPERATURE AND DISSOLVED OXYGEN MEASUREMENTS

SUPPLEMENTAL PRE-DESIGN INVESTIGATION
SILVER LAKE SEDIMENTS
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS

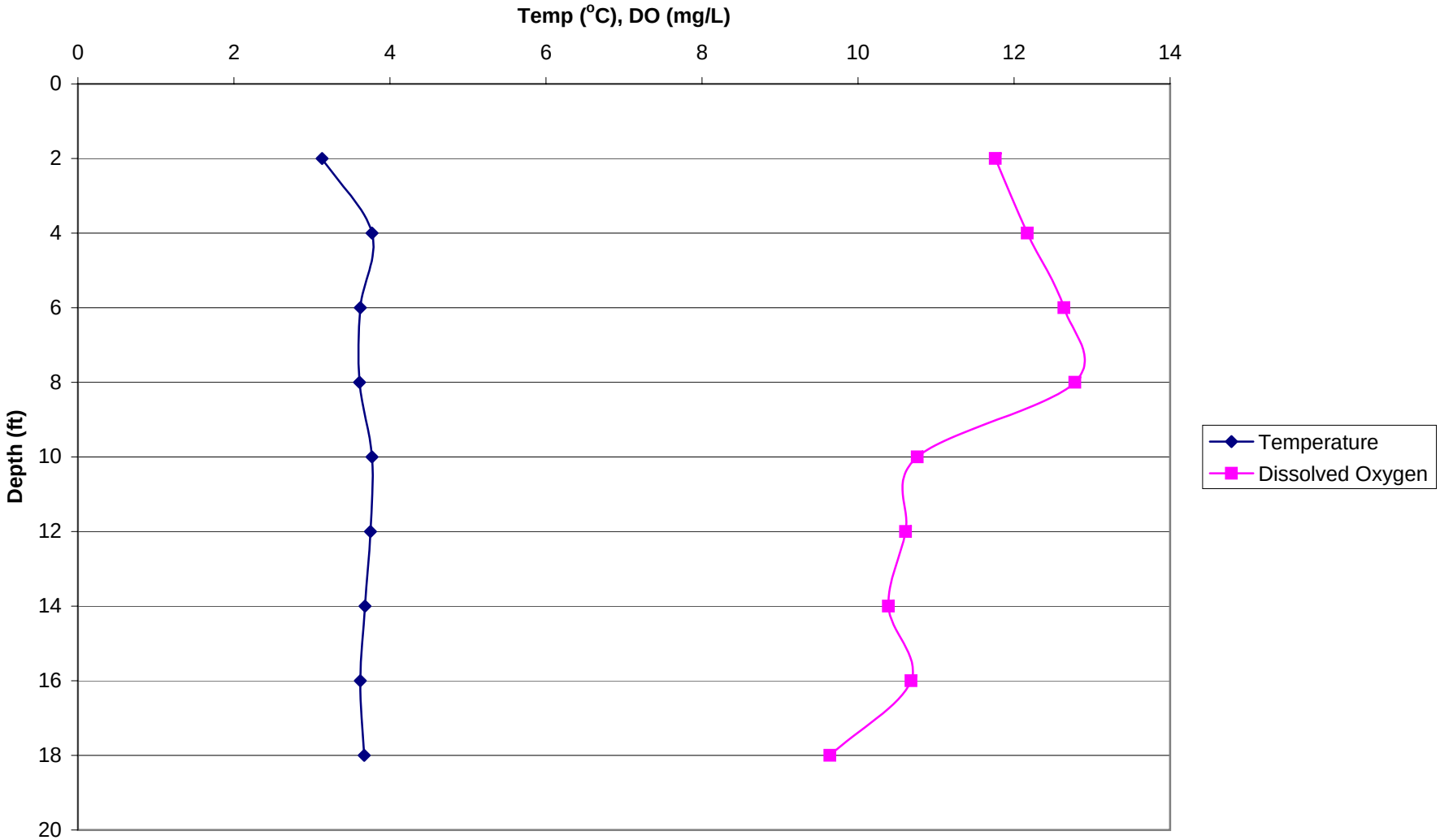
PW7

Water (ft.)	16.9	
Ice (in.)	8	
Date	2/16/2005	
Time	1045	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.75	13.63
4	3.99	12.73
6	4.07	11.93
8	4.11	10.25
10	4.06	10.16
12	4.03	9.50
14	4.00	9.30
16	3.97	8.17

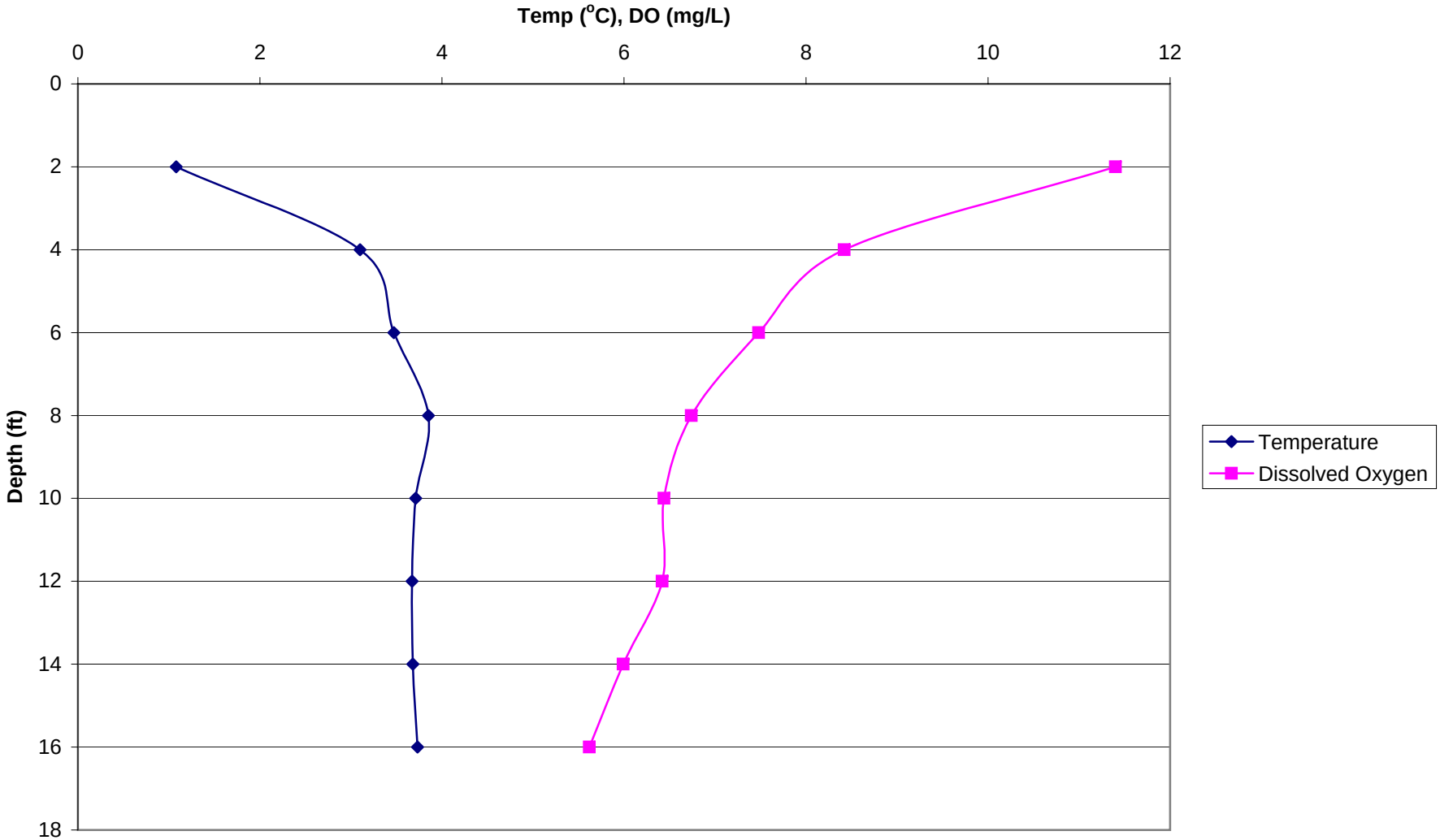
PW8

Water (ft.)	11.7	
Ice (in.)	8	
Date	2/16/2005	
Time	1145	
Depth (ft)	**Temp (^{o}C)**	**DO (mg/L)**
2	3.80	10.11
4	4.25	9.54
6	4.29	8.84
8	4.69	7.48
10	4.88	5.88

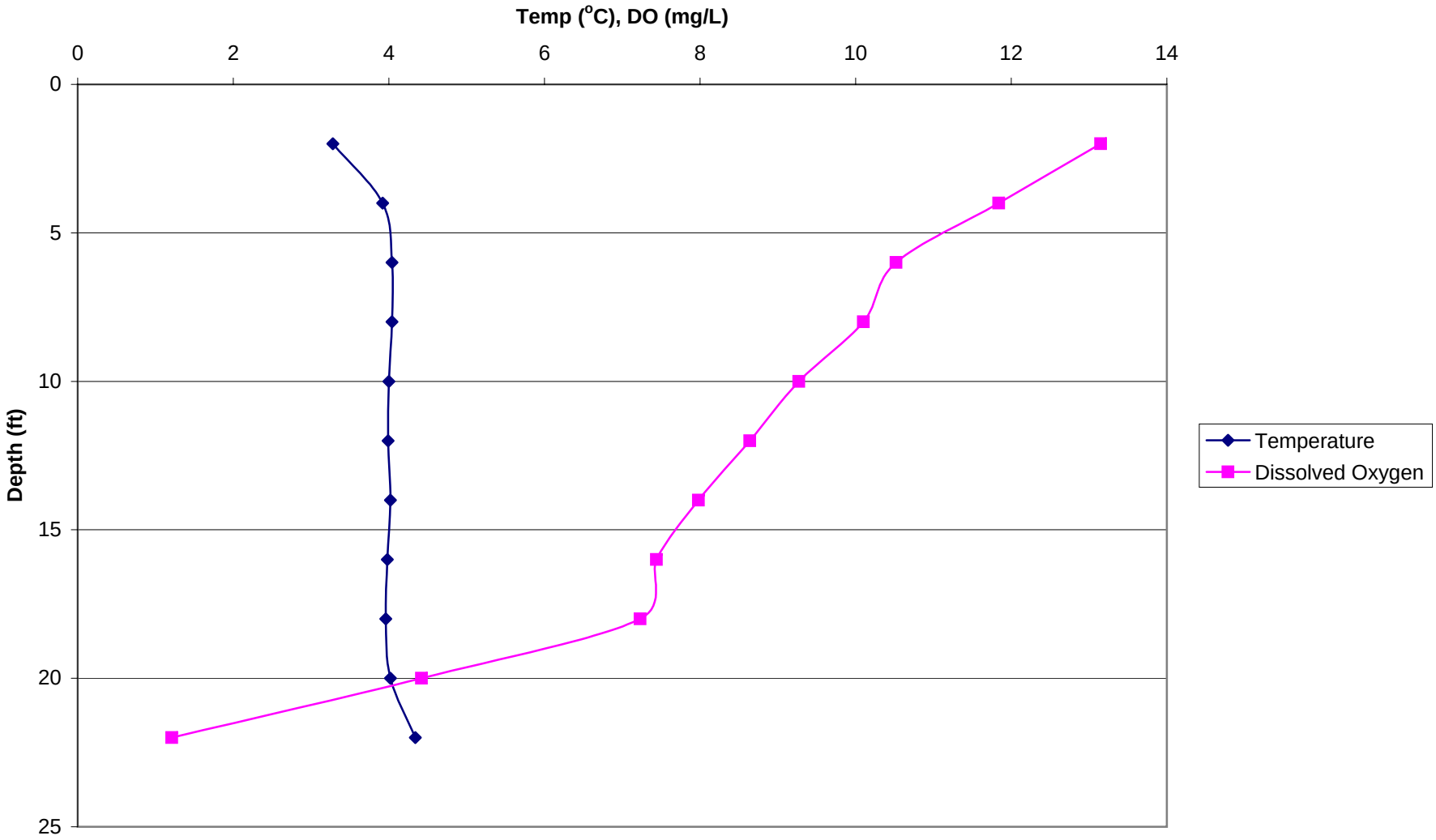
Temperature and Dissolved Oxygen Profile for PW1



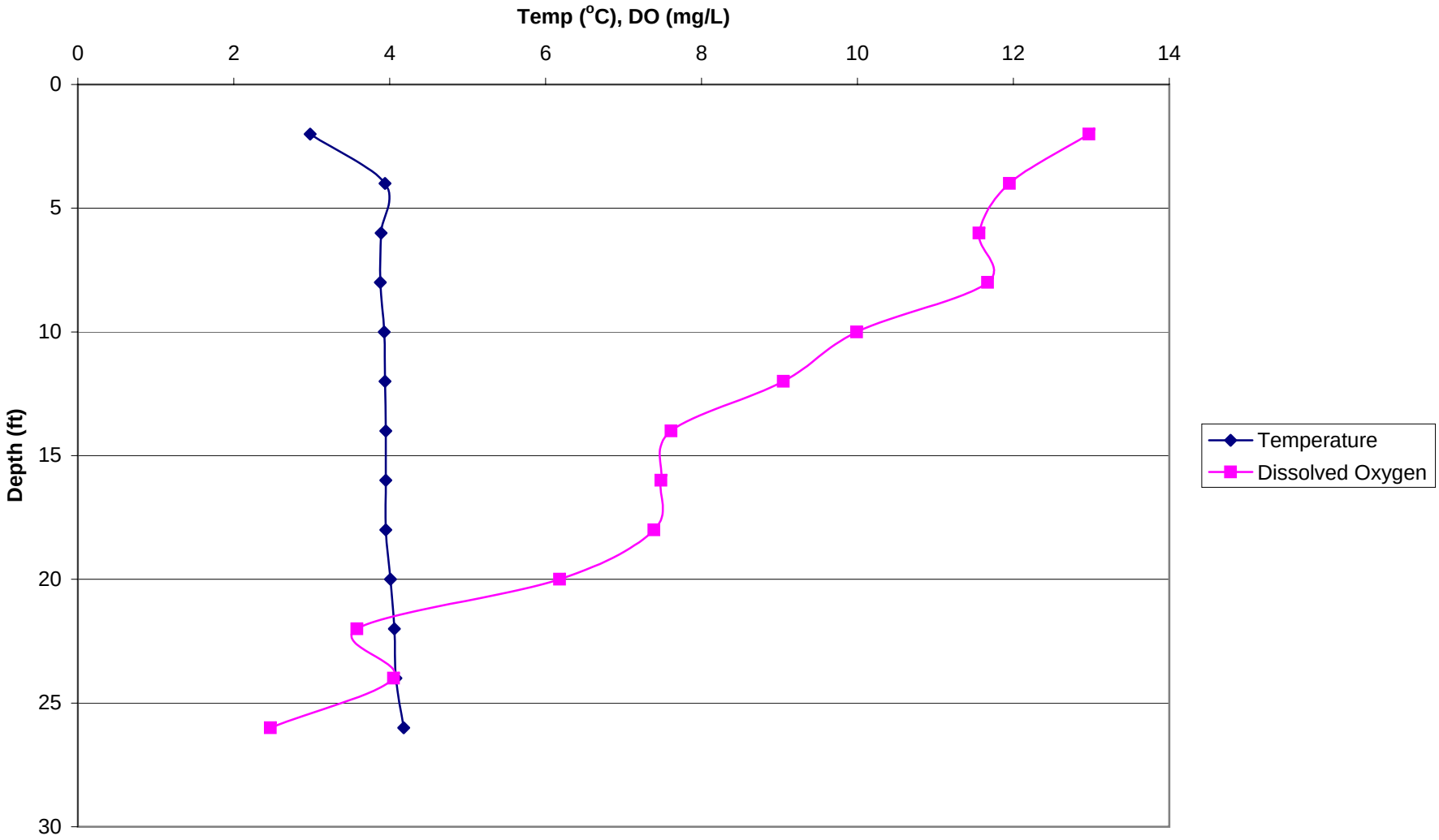
Temperature and Dissolved Oxygen Profile for PW2



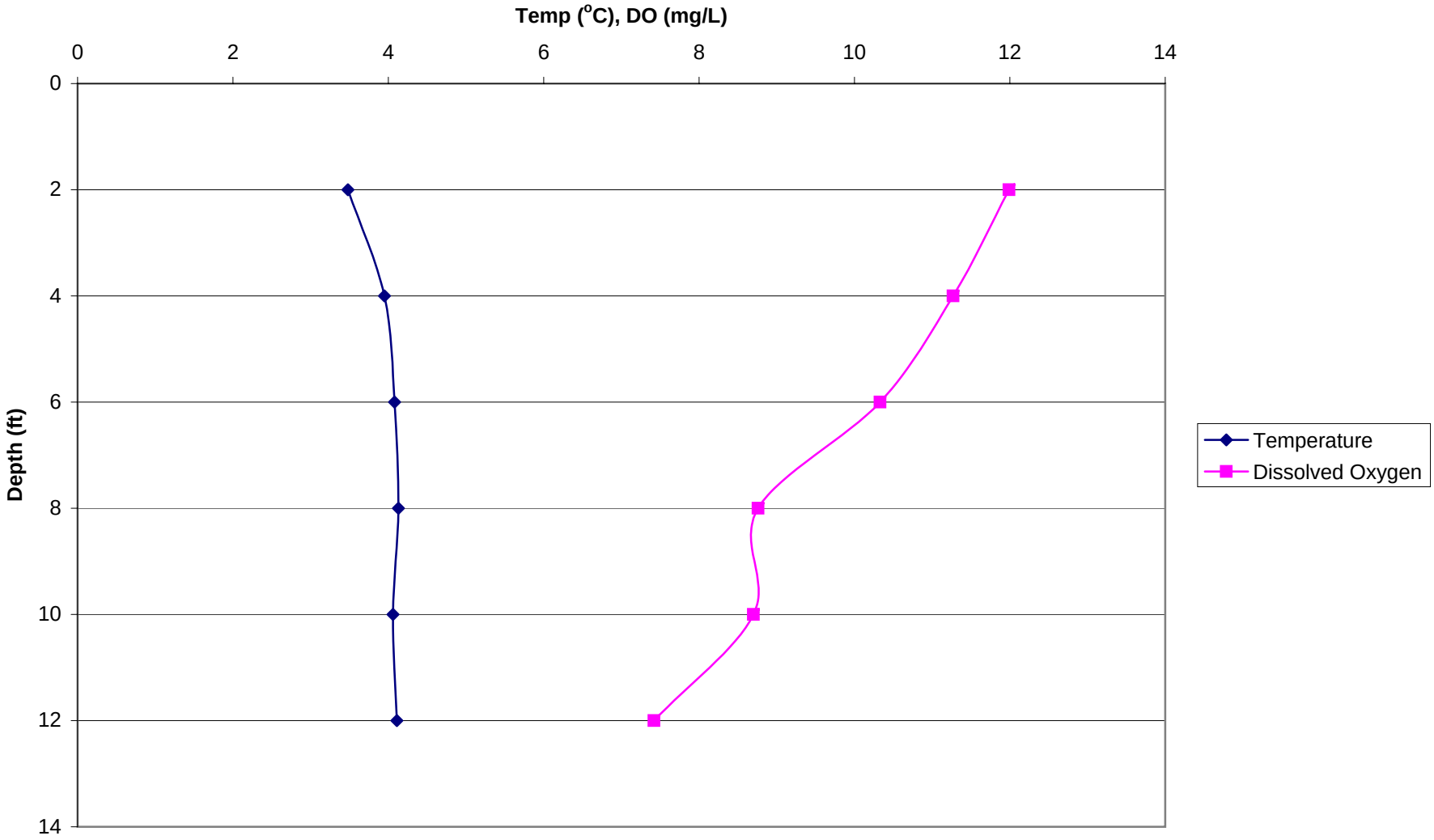
Temperature and Dissolved Oxygen Profile for PW3



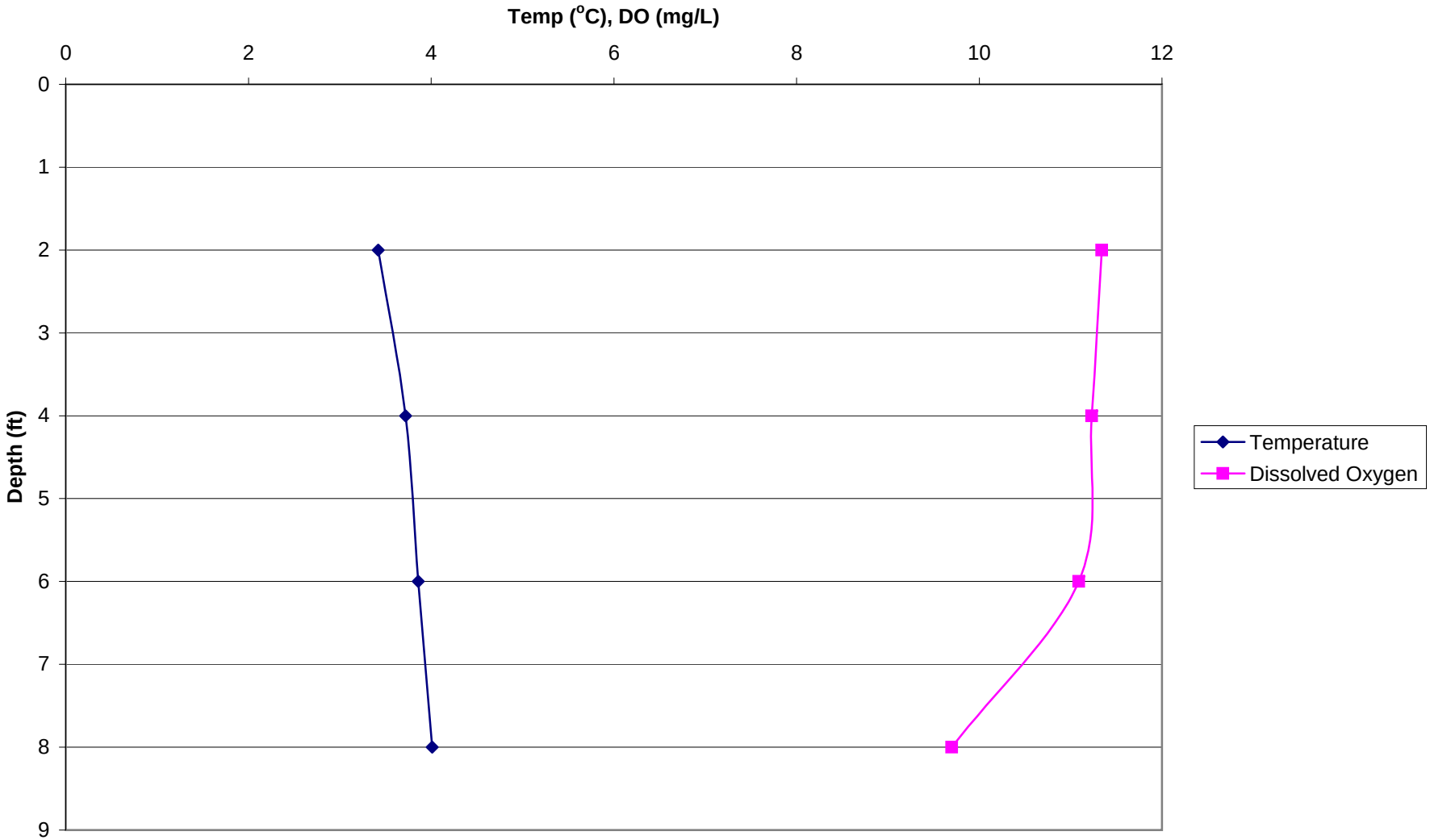
Temperature and Dissolved Oxygen Profile for PW4



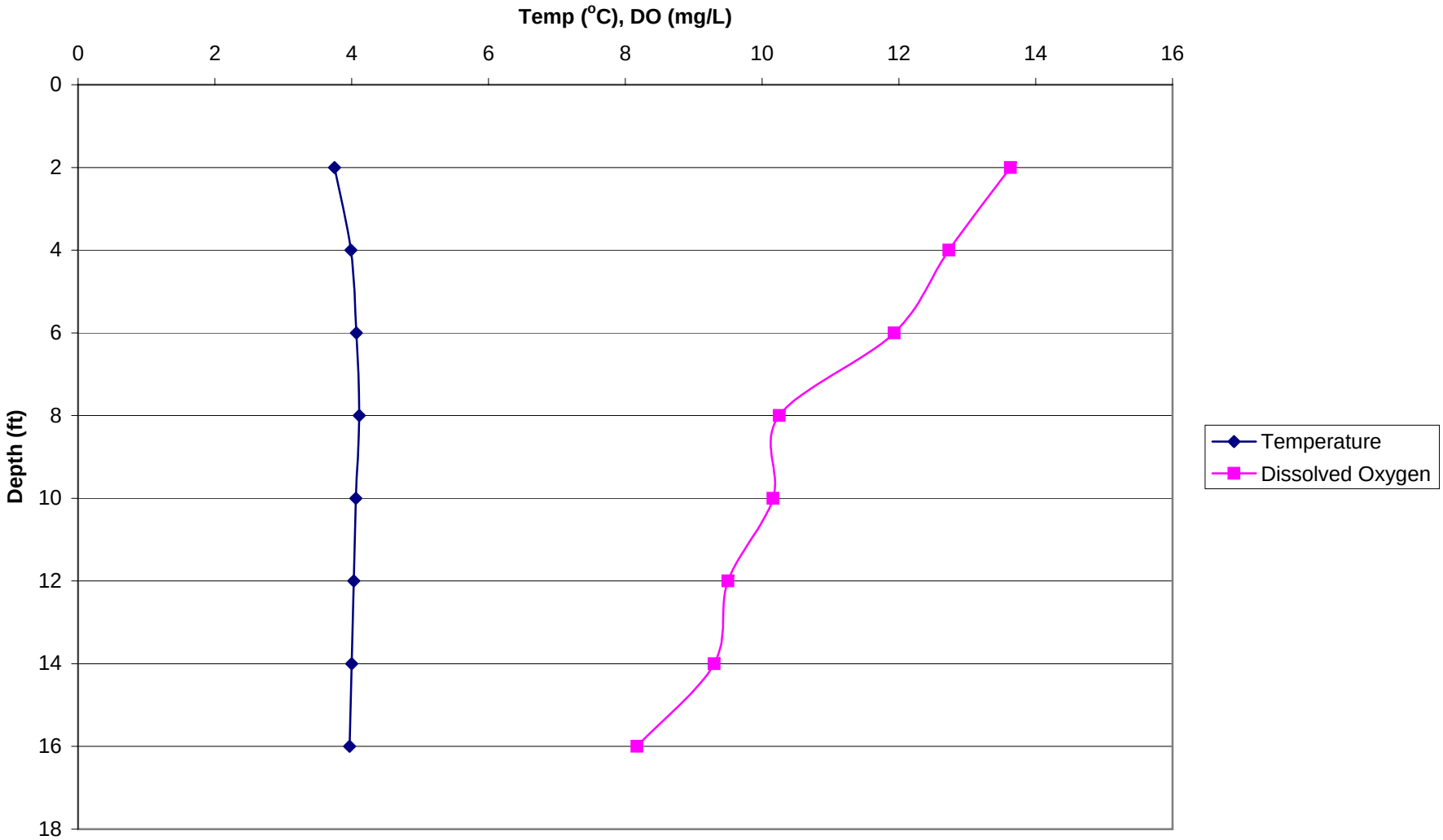
Temperature and Dissolved Oxygen Profile for PW5



Temperature and Dissolved Oxygen Profile for PW6



Temperature and Dissolved Oxygen Profile for PW7



Temperature and Dissolved Oxygen Profile for PW8