Harding ESE
A MACTEC COMPANY

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September 27, 2001

Mr. Kenneth Feathers
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, CT 06106

SUBJECT: STATISTICAL ASSESSMENT
PCB SOIL CONCENTRATIONS
CAUSEWAY CONSTRUCTION
STRATFORD ARMY ENGINE PLANT

Dear Mr. Feathers,

Based on telephone conversations with you on September 24 and 26, 2001, Harding ESE has performed a statistical assessment of PCBs detected in Causeway soils at the Stratford Army Engine Plant (SAEP). The objective of the assessment is to determine the need to excavate soil excavation areas EA-7 through EA-10 identified in the Causeway 100% Design (Harding ESE, August 2001).

There are 23 Causeway soil samples that were previously analyzed for PCBs. The individual PCB aroclor results for each sample were summed to arrive at a total PCB concentration for each sample; detection limit values were used for non-detect results. The following table contains the calculated total PCB concentrations in soil for the 23 samples:

EXPLORATION ID	SAMPLE DEPTH (FEET, BGS)	CALCULATED TOTAL PCB CONCENTRATION (mg/kg)
CB-99-01	0-2	0.238
CB-99-02	0-2	4.38
CB-99-03	2-4	0.234
CB-99-04	0-2	0.316
CB-99-05	0-2	0.264
CB-99-07	0-2	1.99
CB-99-08	1-3	0.273
CB-99-09	0-2	0.259
CB-99-11	0-2	0.266
CB-99-12	0-2	0.306
CB-99-13	1-3	0.456
CB-99-14	1-3	0.362
CB-99-15	1-3	0.245
CB-99-16	1-3	0.259
CB-99-17	1-3	0.245

EXPLORATION ID	SAMPLE DEPTH (FEET, BGS)	CALCULATED TOTAL PCB CONCENTRATION (mg/kg)
TP-99-06	6-8	20
TP-99-10	3-5	4.2
TP-99-22	3-5	2.9
TP-99-23	1-3	2.2
TP-99-24	8-10	0.43
TP-DEP-11	0-1	4.12
TP-DEP-12	1-3	0.532
TP-DEP-17	1-3	0.302

Under the CTDEP Remediation Standard Regulations (RSRs), page 8 of 66, Section 22a-133k-2 (b)(3):

"The direct exposure criteria for substances other than PCB do not apply to inaccessible soil at a release area provided that if such inaccessible soil is less than 15 feet below the ground surface an environmental land use restriction is in effect with respect to the subject parcel or to the portion of such parcel containing such release area, which environmental land use restriction ensures that such soils will not be exposed as a result of excavation, demolition or other activities and that any pavement which is necessary to render such soil inaccessible is maintained in good condition unless and until such restriction is released in accordance with said section 22a-133q-1. Unless an alternative criterion has been approved in accordance with subsection 22a-133k-2(d)(7), **inaccessible soil polluted with PCB may be remediated to a concentration of 10 ppm PCB by weight** provided that (A) if such inaccessible soil is located on a parcel which is an other restricted access location as defined in said section 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or (B) if such inaccessible soil is located on a parcel which is an outdoor electrical substation as defined in 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or if a label or notice is visibly placed in the area in accordance with 40 CFR Part 761, to a concentration of 50 ppm PCB by weight."

Under the CTDEP Remediation Standard Regulations, page 16 of 66, Section 22a-133k-2 (e)(1):

"Unless an alternative method for determining compliance with a direct exposure criterion has been approved by the Commissioner in writing, compliance with a direct exposure criterion is achieved when (A) **the ninety-five percent upper confidence level of the arithmetic mean of all sample results of laboratory analyses of soil from the subject release area is equal to or less than such criterion, provided that the results of no single sample exceeds two times the applicable direct exposure criterion** or (B) the results of all laboratory analyses of samples from the subject release area are equal to or less than the applicable direct exposure criterion."

Calculating the 95 % UCL of arithmetic mean of PCB concentrations from the 23 samples:

Arithmetic Mean:	1.947 ppm
t-value for 22 samples:	1.717
Standard Deviation of sample set:	4.186
Number of Samples:	23
95% UCL of Arithmetic Mean =	3.445 ppm

The 95% UCL of the arithmetic mean (3.445 ppm) is less than the 10 ppm criterion specified in RSRs Section 22a-133k-2 (b)(3) and no sample result exceeds two times the criterion. Our interpretation of these data under the CTDEP RSRs is that the DEC is met for PCBs in soils. We are still evaluating compliance with the PMC by analyzing areas EA-8 through EA-10 by SPLP PCBs where PCBs were detected. We will inform you of those results when they become available.

If you have any questions regarding this issue, please feel free to contact myself, or Rod Pendleton, at (207) 775-5401.

Sincerely,

HARDING ESE, INC.
A MACTEC Company

Nelson Walter

Nelson Walter, P.E.
Project Manager

NW/kaf

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