

FOSTER WHEELER ENVIRONMENTAL CORPORATION  
U.S. NAVY NORTHERN DIVISION REMEDIAL ACTION CONTRACT (RAC)  
CONTRACT NO. N62472-94-D-0398  
NAVAL SUBMARINE BASE - NEW LONDON - GROTON, CT

ANNOTATED RESPONSES TO EPA REVIEW COMMENTS

Reviewer: Kymberlee Keckler (EPA - Region I)

Date: May 21, 1998

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The following are responses to EPA review comments on the OBDA/Area A Downstream Sampling and Analysis Plan, dated June 1998. The EPA comments are provided in italic type followed by Foster Wheeler's responses in bold type.

GENERAL COMMENTS:

*Comment 1: Based on the analytical results from the Remedial Investigation and Feasibility Study and the additional results proposed in this SAP, what will the excavation approach be if all sediments samples in a particular surface water body exceed the remedial goal? Will the entire area be excavated?*

**Response: The remediation approach will be to excavate all sediments and soils that exceed the remedial goals (RG) set forth in the Record of Decision (ROD).**

*Comment 2: Throughout the document there is discussion of field screening with respect to using immunoassay techniques and the confirmation of these results by off-site analysis. Instead of referring to off-site analysis, field screening confirmation should be referred to as to analytical methods performed in a fixed laboratory.*

**Response: Text has been modified to refer to analysis in a fixed laboratory rather than off-site analysis.**

*Comment 3: Please follow the EPA Region I New England Immunoassay Guidelines published in October 1996 (see references at the end of this memorandum). If you would like a copy of these Guidelines, please let me know.*

**Response: On-site screening for DDTR will be conducted using EPA Method 4042, Soil Screening for DDT by Immunoassay, January 1995. The reference has been included in the text and a copy of the Method is included in Appendix B.**

*Comment 4: In the Feasibility Study, the approach for developing Preliminary Remedial Goals (PRGs) is discussed and there are different PRGs for pond and surface water sediments versus streambank soils so this SAP should clearly define soils and sediments.*

**Response: The following definitions for soil and sediment from Connecticut State Regulations, Title 22a, Environmental Protection will be used; Sediment is the "unconsolidated**

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material occurring in a stream channel, estuarine water, or marine water” and soil is the “unconsolidated material overlying bedrock, but not including sediment”. Sampling media will be classified as either soil or sediment based on the elevation of the sampling location with respect to the pond or stream surface elevation in that area. All samples collected from locations below the water surface elevation will be classified as sediment while samples collected from locations above the water surface elevation will be classified as soil. Because the sampling program is likely to take place during a period of relatively low surface water levels (late summer or early fall) surface water elevations will be determined from indicators of high water level rather than from the actual water surface elevations at the time of sampling.

*Comment 5: The method for the on-site immunoassay analysis for DDT allows a visual comparison of color change, but recommends the use of a colorimeter or a spectrophotometer for more accurate color comparison. EPA prefers that a colorimeter or a spectrophotometer be used for the field analysis.*

**Response: A Millipore Differential Photometer will be used to determine optical density (OD) as discussed in the test kit guidance (Appendix B).**

*Comment 6: Throughout section 2 of this Sampling and Analysis Plan the site is referred to as “OBDA” instead of Area A Downstream/OBDA or Site 3. This SAP encompasses more than the OBDA. The introduction and some of the other sections of the SAP appropriately identify the site. Please correct Section 2 and other sections as needed so that the text consistently identifies the site as Area A Downstream/OBDA (Site 3).*

**Response: The text will be changed so that the area of investigation is consistently identified as Area A Downstream/OBDA, rather than simply OBDA.**

*Comment 7: Although limited data exist, this SAP states that the data in the FS indicate that the vertical extent of contamination is no greater than 4 feet. However, the FS acknowledges uncertainty in the vertical and horizontal extent of contamination. The FS presents the contaminant volume estimates in Appendix B. The depth of contamination is assumed to be the following: Upper Pond is 3 feet, Lower Pond is 3 feet, stream 1 is 1.5 feet, stream 2 is 1 foot, stream 3 is 0.5 foot, and OBDA is 1.5 feet. Since the vertical extent of contamination is assumed to be 3 feet in both Upper and Lower Ponds and this SAP does not propose to collect samples other than by hand augering at a maximum depth of 2-3 feet, there may still be data gaps for the vertical extent of contamination after the proposed Phase 1 samples are collected. EPA recommends that the RI be reexamined to evaluate the number of samples that were collected at depths greater than 3 feet. The Phase 1 and Phase 2 proposed sampling should be reevaluated to consider adding some deeper samples in areas where the deepest RI sample exceeds the remedial goal.*

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**Response:** The objective of this sampling program is to delineate (both horizontally and vertically) zones where the DDTR concentration exceeds the relevant RG. Therefore, if DDTR is detected above the RG at any of the currently proposed bottom sampling intervals, additional sampling, down to a maximum depth of four feet, will be performed. As stated in Section 2.2 of the SAP, Foster Wheeler does not expect to detect DDTR at concentrations above the RG at depths greater than 4 feet. This expectation is based on the existing field data and not the assumptions made by Brown & Root to estimate the contaminated soil volumes. Of the nine samples collected beneath 1 foot (soil; 2-4 ft. 3 samples, 0-3 ft. 1 sample, 3-5 ft. 1 sample and sediment; 1-3 ft. 4 samples) only one sample was reported with DDTR above the RG.

The proposed sampling methods (hand auger and weight-driven spoon sampler) were selected because of the low environmental impact they will have on this ecologically sensitive area. Should the initial sampling event suggest that contamination extends beyond four feet in depth, the need for further sampling beyond this depth would be evaluated and an alternative sampling approach would be developed, if necessary.

**SPECIFIC COMMENTS:**

*Comment 1: Page 7, Section 2.2, Paragraph 2 - The last sentence states that the distance between sampling location will be determined at the time of sampling based on field locations. The next paragraph states that sampling will be conducted at 1 foot intervals to total depths of 3 feet. Please clarify.*

*The reference to off-site analysis should be revised to read analysis performed in a fixed laboratory to avoid confusion.*

**Response:** The distance between sampling locations to be determined in the field refers to the horizontal distance between sampling locations while the sampling at 1-foot intervals to 3 ft. refers to the vertical distance. The text will be changed to reduce any confusion.

References have been changed to read analysis in a fixed laboratory.

*Comment 2: Page 7, Section 2.2, Paragraph 4 - The last sentence in the fourth paragraph in this section mentions "soil and sediment samples at greater than 4 ft. below ground surface (bgs) cannot be collected due to limitations of the hand sampling method that has been proposed." Limiting the analysis to 4 feet may not measure contamination levels at depth. It is important to try to remove all sediments and soils that pose a risk to either human health (e.g., construction worker scenario) or the environment. Complete removal of sediment and soil contamination will eliminate the need to assess contaminant migration.*

**Response:** See response to general comment 7.

*Comment 3: Page 7, Section 2.2, Paragraph 5 - The fifth paragraph states that 150 field screening samples will be collected and analyzed during a ten day period. This seems longer than necessary based upon the Region I-New England Immunoassay Guidelines that indicate that 35 to 200 samples can be screened per person per day.*

**Response:** The initial ten day field effort will also include accurately laying out the sampling locations in the field and collecting soil and sediment samples by hand at depths up to 4 feet below ground surface. Foster Wheeler anticipates that the actual collection of the soil samples will be the most time consuming task during the sampling efforts.

*Comment 4: Page 9, Section 2.3 - Modify the first sentence to read, " To assist with developing an approach and targeting areas, we have broken down the Area A Downstream....."*

**Response:** The sentence will be modified to incorporate the recommended change.

*Comment 5: Page 9, Section 2.3.1, Paragraph 2 - Six sediment samples will be collected in the pond. The red and green sample locations depicted on Figure 2-2 and Table 2-2 do not match the sample locations described in this paragraph. Samples collected adjacent to the pond should be collected at depths similar to those collected from the pond.*

**Response:** The sampling approach presented in the text accurately describes the OBDA Pond sampling locations. Figure 2-2 has been modified to agree with the text.

Four soil samples will be collected at locations adjacent to the OBDA Pond as shown in Figure 2-2. Initially, only soil samples from 0 - 1 ft. will be collected; however, if field screening results show DDTR at concentrations above the soil RG, then additional sampling will be performed, at up to 4 ft. below ground surface, if necessary.

*Comment 6: Page 12, Section 2.3.6 - Based on sampling results at SDS313 and exceedances of DDTR, please include an additional sediment sampling location here and two surface soil sampling locations adjacent to this location.*

**Response:** An additional sediment sampling location, with samples being collected from 0-1 ft. and 1-2 ft., and two additional surface soil sampling locations (0-1 ft.) adjacent to the sediment location will be added. Maps, tables, and text within the SAP have been modified to reflect this change.

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*Comment 7: Page 13, Section 2.3.8, Paragraph 2 - Two sediment samples will be collected from SD-7. Figure 2-3 only depicts one sediment sample at this location. Please correct.*

**Response:** Figure 2-3 shows only one sampling location because both samples will be collected at this location. [As stated in the text, "One surface sample will be collected from the sediment deposited in the stream channel at Stream 3..." and "A second sediment sample will be collected from the first foot of the native material underlying the sediment deposited from Stream 3." If sediment deposited from Stream 3 cannot be differentiated from the underlying native material then samples will simply be collected from 0-1 ft. and 1-2 ft. depths at this location, as measured from the initial ground surface.]

*Comment 8: Page 15, Section 3.0 - Sample preparation during field screening using immunoassay techniques should record the kit lot numbers, the expiration dates, and the ambient temperatures of the tests (U.S. EPA, 1996).*

*Owing to the high organic carbon content of these soils, the moisture content should be adjusted so that it will not affect the extraction efficiency during the immunoassay technique.*

**Response:** Screening kit lot numbers, expiration dates, and the ambient temperatures of the tests will be recorded in the field logbook and/or on relevant sample reporting forms. The text in Section 4.4 has been modified to reflect this requirement.

Prior to extraction for the immunoassay screening, sediments will be dried by spreading in a disposable aluminum weigh boat and placed on a low temperature hot plate (coffee warmer). Samples will be allowed to cool thoroughly prior to extraction. See Section 6.1.

*Comment 9: Figure 2-1 - This figure presents the sample locations that exceed remediation goals. The key explains that sample locations where concentrations were detected below "PRGs" have a gold box around the sample icon. The gold box actually corresponds to sample locations where concentrations of DDTR are below the remedial goal. For example, the concentration of lead at 3SD2 exceeds the lead remedial goal, but 3SD2 has a golden box around it with a pink dot next to it. The pink dot represents that only the metals exceed the remedial goal. Please correct.*

**Response:** Figure 2-1 has been corrected.

*Comment 10: Figure 2-2 - This figure is entitled "Proposed Soil and Sediment Sampling Locations." It is not clear how the locations depicted on Figure 2-2 correspond to the samples listed in Table 2-2. For example, thirteen sample locations are presented on Figure 2-2 in or adjacent to OBDA Pond, yet Table 2-2 lists 10 sample locations. Six locations are*

*described on Table 2-2 as being locations in the OBDA Pond while 8 locations are depicted on Figure 2-2 as being in OBDA Pond. Please correct.*

**Response:** Table 2-2 and Figure 2-2 have been corrected to eliminate the discrepancies.

*Comment 11: Table 2-2 - This table summarizes the proposed Phase I soil and sediment samples. One of the columns in the table is entitled "Off-site No. of Samples." It is not clear what is meant by off-site. Are these split-samples that will be sent to a fixed laboratory for analysis? Please explain and clarify in the SAP.*

**Response:** The samples referred to are split samples of those screened on-site for DDTR to be analyzed in a fixed laboratory. The same (split) samples will also be analyzed at the fixed laboratory for selected metals. The text and table have been modified to clarify this point.

*Comment 12: Page 19, Section 4.1.1, Paragraph 1 - The second sentence lists the types of QA/QC samples that will be analyzed. However, this list does not match the descriptions of the types of QA/QC samples described in the other paragraphs of Section 4.1.1. The second sentence should be modified to include split samples, matrix spike/matrix duplicates and temperature blanks. The descriptions should be expanded to include field blanks.*

**Response:** The text has been modified to clarify the QA/QC sample descriptions. For this project, equipment blanks will be used to evaluate the possibility of contamination from sampling equipment or handling procedures. Additional field blanks will not be necessary.

*Comment 13: Page 19, Section 4.1.1, Paragraph 3 - The text indicates that split samples will be taken at a minimum frequency of 10% (or 1 per every 10 samples). However, Table 2-2 appears to indicate that split samples will be collected at a frequency of 1 per every 5 samples, or 20%. Please correct.*

**Response:** Split samples will be collected at a minimum frequency of 10 percent. For budgeting and scoping purposes, an additional 10 percent (total 20 percent) were included to allow flexibility in choosing samples with a range of concentrations (from non-detect to elevated levels) for fixed laboratory analysis. The text has been modified to clarify this.

*Comment 14: Page 20, Section 4.1.1 - The text on this page indicates that equipment/rinsate blanks will be collected at a frequency of 1 per every 20 samples. EPA recommends that equipment/rinsate blanks be collected either at this frequency or 1 per day, whichever is more frequent.*

**Response:** Approximately 15 samples will be collected for on-site field screening each day. Of these, only 10 to 20 percent (1 to 3) will be split for fixed laboratory analysis each day. Because equipment rinsate blanks can only be analyzed at the fixed laboratory and do not apply to field screening analyses, to collect an equipment rinsate blank for each day appears excessive. Furthermore, EPA Region I data validation guidance clearly states that soil sample results should not be corrected based on aqueous field (equipment) blank results. Equipment blanks collected at the frequency stated in the SAP will determine whether contamination is occurring from decontamination or sample handling procedures and will be sufficient to determine whether the quality of data is affected by cross contamination.

*Comment 15: Appendix B - This appendix provides the methodology for the EnviroGard DDT in Soil Immunoassay on-site analysis. However, only the odd-numbered pages (3,5,7) were provided in the appendix. Since an incomplete copy of the methodology is provided, a complete review was not possible.*

**Response:** A complete copy of the procedure is included in the final version of the SAP. EPA Method 4042 is also included in Appendix B.

*Comment 16: The EnviroGard DDT in Soil Immunoassay on-site analysis is a qualitative or semi-quantitative field test. The procedure results in a color change and the color intensity of the samples are compared to those of known concentration. The method allows for a visual comparison of the color change, but recommends the use of a colorimeter or spectrophotometer for more accurate color comparison. Therefore, EPA recommends the use of a colorimeter or spectrophotometer for use in this project.*

**Response:** A Millipore Differential Photometer will be used to determine optical density (OD) as discussed in the test kit guidance (Appendix B).