

Site: Centredale  
3-7

**Final Work Plan  
Sediment Sample Collection and Analysis at the Oxbow Area  
Centredale Manor Restoration Project Superfund Site**

**Prepared for:**

**U.S. Army Corps of Engineers, New England District**

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## INTRODUCTION

This work plan is based on the scope of work provided by the U.S. Army Corps of Engineers (COE) dated April 27, 2004. This work will be performed under Task Order No. 01 for Contract No. DACW33-01-D-0004, *Centredale Manor Restoration Project Superfund Site*. Sediment samples will be collected from the Oxbow Area located southwest of Allendale Dam, North Providence, Rhode Island (Figure 1). Samples will be analyzed for a variety of parameters in support of the Remedial Investigation/Feasibility Study (RI/FS). The Oxbow Area sediment sample collection and analysis will be conducted in accordance with the following documents:

*Final Field Sampling Plan, Interim Data Collection, Centredale Manor Restoration Project Site (FSP; September, 2002)*

*Final Quality Assurance Project Plan Addendum, Interim Data Collection, Centredale Manor Restoration Project Site (QAPP Addendum; September, 2002), as modified in the Errata Sheet (November, 2002).*

*Final Health and Safety Plan, Interim Data Collection, Centredale Manor Restoration Project Site (HASP; September, 2002)*

Sediment sample collection and sample analysis details are provided below.

## SEDIMENT SAMPLE COLLECTION

Eight surface (0-0.5 ft) sediment samples will be collected from locations shown in Figure 2. Sample locations will be adjusted in the field to exclude areas of artificial fill or gravel, and ensure that samples are collected from topographically low areas. Three of the samples will be collected within the abandoned channel (LPX-SD-4401, LPX-SD-4402, and LPX-SD-4403), two from north of the channel (LPX-SD-4404 and LPX-SD-4405), two from south of the channel (LPX-SD-4406 and LPX-SD-4407), and one field duplicate. A six numeric character group describing the date of sample collection and a letter in sequence will be used to identify the field duplicate. For example, LPX-DU-062104A would represent the first duplicate sample collected on June 21, 2004. The field duplicate will be collocated with the center sampling location (LPX-SD-4401).

Field methods and procedures will follow the FSP, including logging the sediment characteristics of each sample. All samples will be obtained using manual sampling techniques such as stainless steel trowels or spoons. Sample station coordinates will be acquired with a handheld Global Positioning System (GPS) at the time of sampling. If GPS does not work (e.g., due to dense vegetation), then sampling locations may be staked and the distance/direction measured to a known location. Sample container, volume requirements, storage conditions, holding times and receiving laboratories are defined in Table 1.

Solid Investigation-Derived Waste (IDW) will include excess sample material and personal protective equipment (i.e., nitrile gloves, booties). IDW will be minimized by using separate pre-cleaned sampling tools for each surface sample. Decontamination in the field will not be necessary, as dedicated sampling equipment will be used. No field rinsate blank will be collected. Battelle's sub-contractor, ONYX Environmental, will be responsible for the transportation and disposal of the solid IDW (dioxin bearing, non-F027 listed waste).

**Table 1. Sample Container, Sample Size, Preservation Requirements, Holding Times and Analytical Laboratories.**

Analytical Parameter	Sample Number	Minimum Sample Volume	Containers	Preservation Requirements (a)	Maximum Holding Time (preparation/analysis)	Laboratory for Shipping
Dioxin/Furan	8 (including 1 field duplicate)	½ full	125 mL pre-cleaned jar	Cold (4±2°C)	1-year	<i>waiting on contact information from USEPA</i>
PCB Aroclor/Pesticide	4 (including field duplicate)	½ full	125 m pre-cleaned jar	Cold (4±2°C)	14-d [1-year if frozen (b)]	Deirdre Dahlen Battelle Duxbury 397 Washington Street Duxbury, MA 02332 (781-934-0571)
Metals	4 (including field duplicate)	¾ full	125 mL spex jar	Cold (4±2°C)	Metals: 6-mo	Linda Bingler Battelle MSL 1529 Sequim Bay Rd. Sequim, WA 98382 (360) 681-3604
TOC	4 (including field duplicate)	½ full	125 m pre-cleaned jar	Cold (4±2°C)	28-d	Ken Davis Applied Marine Sciences 502 North Highway 3 League City, TX 77573 (281) 554-7272
Archive	8 (including 1 field duplicate)	½ full	250 m pre-cleaned jar	Cold (4±2°C)	1-year	Deirdre Dahlen Battelle Duxbury 397 Washington Street Duxbury, MA 02332 (781-934-0571)

### SAMPLE ANALYSIS

Each of the samples will be analyzed for dioxins/furans. An archive sample will be obtained from each of the eight sample locations. A subset of the samples (one in channel, one north of channel, one south of channel, and the field duplicate), will be analyzed for polychlorinated biphenyl (PCB) Aroclor/pesticides, total organic carbon (TOC) and metals (excluding mercury, methylmercury, iron and aluminum). Sample analyses will be conducted in accordance with the *Final Quality Assurance Project Plan Addendum, Interim Data Collection, Centredale Manor Restoration Project Site* (QAPP Addendum; September, 2002), as modified in the Errata Sheet (November, 2002), with the following exceptions:

- a. Dioxin/furan analyses will be performed by the U.S. Environmental Protection Agency (EPA).
- b. Analysis of semivolatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs), is not required.
- c. No field rinsate blank will be collected because dedicated field equipment will be used.
- d. Mercury, methylmercury, aluminum and iron will not be analyzed because these metals were not found to be primary contributors to human health or ecological risk at the site.
- e. Laboratory quality control (QC) for PCB, pesticide and metals testing will include one procedural/method blank, one laboratory control sample (LCS), one matrix spike/matrix spike duplicate (MS/MSD) and one standard reference material (SRM). Laboratory QC for TOC testing will include one method blank, one SRM and one sample duplicate.
- f. TOC data will not receive Tier II validation.

Wastes from the project will be treated as routine laboratory waste, unless notified otherwise in writing. The F-020 waste classification was removed by EPA effective December 19, 2002. Samples will be stored at Battelle for a period of up to 6 months, after which samples will either be disposed or returned to the COE.

Laboratory data (PCB, pesticides and metals) will be submitted for third party validation as specified in the QAPP Addendum. USEPA Region 1 will be responsible for third party validation of the dioxin/furan data.

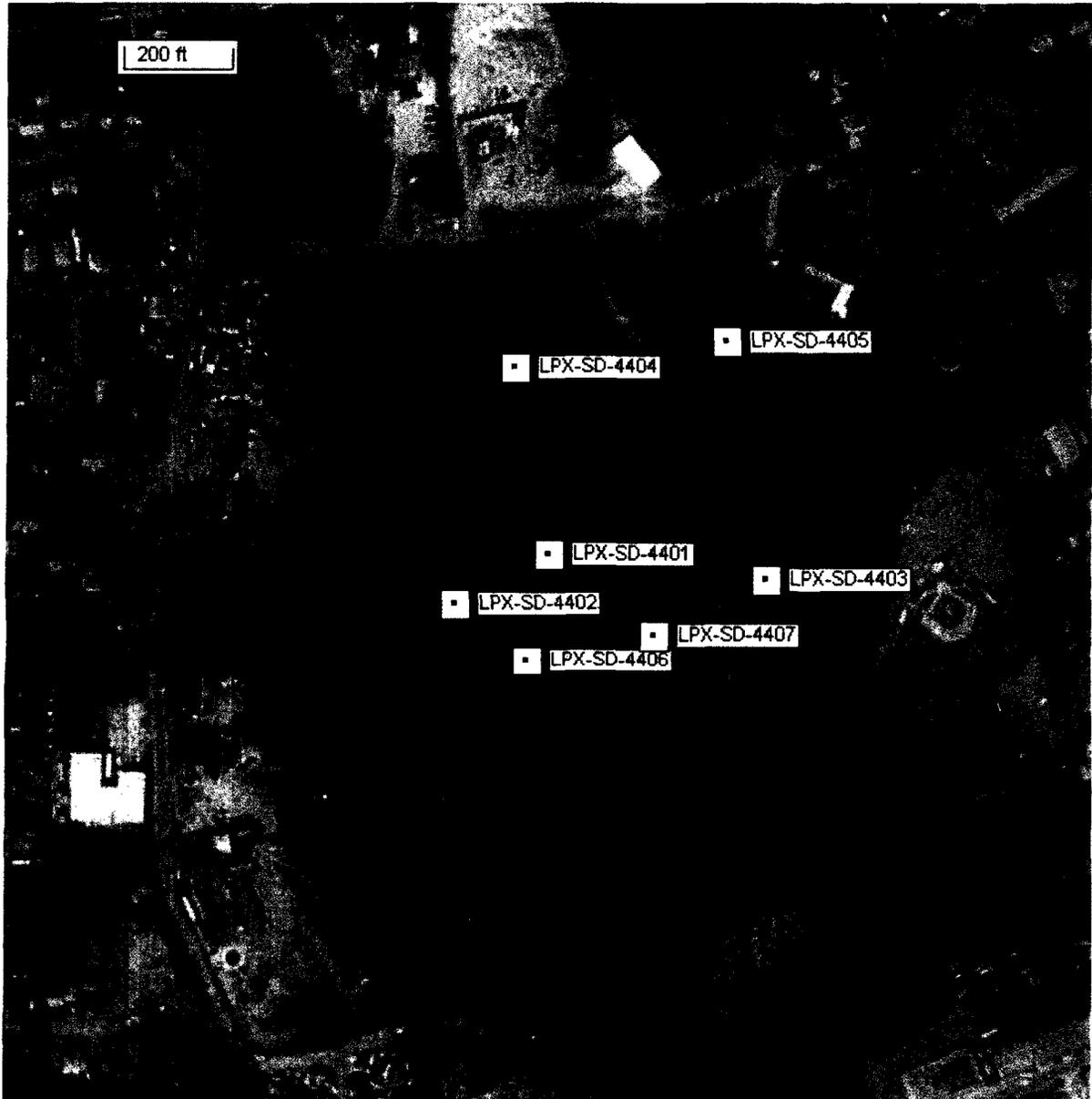
#### DATA MANAGEMENT AND REPORTING

Field and final, validated analytical data will be loaded into the project database in accordance with the *Final Data Management Plan Update, Interim Data Collection, Centredale Manor Restoration Project Site* (DMP Update; September, 2002). EPA will be responsible for providing final, validated dioxin/furan data in electronic format as specified in the DMP Update. A letter data report will be prepared summarizing the final, validated analytical results.

Sediment sample collection and analysis results will be provided in a letter report that will briefly describe the methods and results of the sediment sampling effort. The letter report will include tables of the final, validated data and a map showing the sample locations.



Figure 1. Oxbow Area (circled in yellow) at Centredale Manor Site



**Figure 2. Proposed Oxbow Area Sediment Sample Locations**