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LETTER AND COMMENTS ON BEHALF OF SEACOAST ANTI POLLUTION LEAGUE  
REGARDING WORK PLAN FOR GEOPHYSICAL MAPPING NSY PORTSMOUTH ME  
9/8/1998  
LEPAGE ENVIRONMENTAL SERVICES

# Lepage Environmental Services, Inc.

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September 8, 1998

Peter Vandermark  
Seacoast Anti-Pollution League  
P. O. Box 1136  
Portsmouth, New Hampshire 03802

Subject: *Review of Workplan for MTADS Geophysical Mapping at the Portsmouth Naval Shipyard*

Dear Mr. Vandermark:

We are transmitting comments to the Seacoast Anti-Pollution League (SAPL) concerning the August 1998 *Workplan for MTADS Geophysical Mapping at the Portsmouth Naval Shipyard*. The work plan was prepared by the U.S. Naval Research Laboratory to describe the upcoming investigation of the Jamaica Island Landfill and the Topeka Pier Site using the Multi-sensor Towed Array Detection System, or MTADS. This system utilizes magnetometer and pulsed induction electromagnetic (EM) instruments to search for and locate buried metallic materials, such as drums or mercury burial vaults. Comments are as follows:

**1. Page 1, Section 1.1 Objectives of the MTADS Survey.** It is not at all clear in this section what the objectives of the MTADS survey are, leaving the reader to search elsewhere for what is to be accomplished. The "main objective", to locate ferrous or steel reinforced concrete containers used to dispose of materials in landfill burials, is not clearly stated until page 4. Section 4.1 on page 22 also mentions that the extent and limits of the landfill areas can likely be characterized as well. The objectives of the MTADS survey need to be clearly stated in this part of the Introduction. Why is the Navy performing this geophysical survey? What does the Navy hope to learn? How will the information collected during the MTADS survey be used in future investigations and remediation at the sites?

**2. Pages 1 & 2, Section 1.2 Tasks Included in the MTADS Survey.** The tasks outlined include establishment of first order survey points and utilization of a Global Positioning System (GPS) to accurately locate the geophysical survey. How will any subsequent investigations be able to locate specific anomalies identified by MTADS? Will there be sufficient ground control so that the location of an anomaly can be measured from a nearby survey point or will a GPS be required?

**3. Page 3, Section 1.4 Applying UXO Technologies.** The final sentence on the first paragraph states that measurements at very closely spaced intervals "can precisely locate individual targets



as small as a coffee can". However, based on the information contained elsewhere in the work plan and presented at the June 25, 1998, Restoration Advisory Board (RAB) meeting, the ability to detect objects depends in part upon site conditions and interferences. The Navy should clarify if that statement applies to surveys conducted at any site, regardless of conditions, or if it applies to surveys conducted under ideal conditions.

**4. Page 3, Section 1.4 Applying UXO Technologies.** It appears that total field magnetic data will be collected. Gradient readings might provide better target resolution. Was a gradient magnetic survey, collecting both total field and gradient measurements, considered?

**5. Page 4, Section 1.4 Applying UXO Technologies.** The areas where the MTADS will be used are described in several places in the work plan, including the paragraph in the middle of page 4. At the June 25<sup>th</sup> RAB presentation, all accessible areas in the Jamaica Island Landfill and accessible areas of the Topeka Pier site were identified as targets of the MTADS survey. It is not clear what "accessible" means. How close can the MTADS apparatus get to buildings, fences, and other objects? Are there places within the areas to be surveyed that the vehicle cannot go? If there are, will data be collected by other means (on foot, perhaps) to fill the gap?

**6. Page 4, Section 1.4 Applying UXO Technologies.** The work plan states that no excavations will be performed as part of the MTADS survey. Does the Navy intend to perform some kind of "calibration" where the sensor array will be tested against known buried materials?

**7. Page 9, Section 3.1.4 Geology and Stratigraphy.** Complete citations for references 14 and 15, as well as the Hussey and Bothner, 1995, reference mentioned in the text, should be included in Section 5.0 References.

**8. Page 16, Section 3.2.2 Site 9 - The Mercury Burial Sites I and II (MBI and MBII).** The first sentence in the final paragraph should be corrected to indicate that environmental samples have only been collected at MBI. The exact location of MBII has yet to be determined.

**9. Page 22, Section 4.1 Performance Objectives and Site Specific Work Plan.** The last paragraph indicates that selected physical points of interest at both sites will be "landmarked" and displayed on anomaly maps. The Navy should clarify what "landmarked" means and the criteria for selecting a point for landmarking.

**10. Page 23, Section 4.1 Performance Objectives and Site Specific Work Plan.** How will the quality of the data be judged? What happens if the data are found to be unacceptable?

**11. Page 24, Section 4.2.5 Geophysical Investigations and Mapping.** The materials handed out at the June 25<sup>th</sup> RAB meeting indicate that the EM survey will be conducted over parts of the Jamaica Island Landfill to "determine the value of the alternative sensor suite". Is this still the case? Does the Navy intend to collect EM data over only a portion of the landfill? With the

MTADS providing a rapid means of data collection and because EM data is often more useful at landfill sites than magnetic data, EM data should be collected over the entire area.

**12. Page 25, Section 4.3 Deliverables.** With regard to anomaly maps, will the areas where data are not collected be identified or will the data be interpolated and contoured? If the latter, the maps will give the impression that an entire area was surveyed when it, in fact, was not. Will the anomaly maps show areas of uncertainty caused by surface or known buried materials, such as fences or foundations? What values will be represented on the anomaly maps?

**13. General Comment.** The MTADS method, while subject to interferences and uncertainties, is appropriate for locating buried metal objects in landfill areas. We look forward to reviewing the results of the survey.

If you have any questions regarding the comments above, please give me a call at 207-777-1049.

Sincerely,



Carolyn A. Lepage, C.G.  
President



Enc.

cc: Iver McLeod, Department of Environmental Protection  
Meghan Cassidy, Environmental Protection Agency  
✓ Marty Raymond, Portsmouth Naval Shipyard