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## Memorandum

**To:** Scott Alfonse and Cheryl Henlin, City of New Bedford  
**From:** David M. Sullivan, LSP, TRC Environmental Corporation  
**CC:** D. Silverman, D. Peterson, J. Saunders, TRC Environmental Corporation  
**Subject:** Proposed HB-22 Dioxin Delineation Sampling - Technical Approach  
**Date:** October 12, 2011

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TRC Environmental Corporation proposes the following technical approach for an environmental investigation for polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), collectively referred to as dioxin compounds, in soil in the vicinity of sample location HB-22. The proposed approach is designed to delineate the lateral extent of dioxin impacts in the vicinity of HB-22.

### Background

The initial investigation of dioxin in soil at the New Bedford High School (NBHS) campus was conducted by TRC in April 2010 as an initial step in an iterative approach to the evaluation of dioxin in this portion of the Parker Street Waste Site (PSWS). The results of TRC's April 2010 dioxin compound sampling were provided in the July 6, 2010 memorandum explaining the Toxic Equivalent or TEQ approach unique to expressing environmental data for dioxins, furans, and polychlorinated biphenyl (PCB) compounds that exhibit dioxin-like toxicity.

In a January 13, 2011 letter to the City, the Massachusetts Department of Environmental Protection (MassDEP) acknowledged that the technical approach utilized for the April 2010 soil sampling for dioxin compounds was designed to capture the worst-case conditions. MassDEP suggested further sampling at locations where dioxin precursors may be present, as well as where exposure potential is likely to support additional quantification of risk. MassDEP also suggested that no additional soil sampling for dioxin compounds should take place in locations that are expected to be consolidated/capped and excavated, as well as in locations where future exposure potential will be controlled by the application of an activity and use limitation (AUL).

In response to the MassDEP letter, TRC developed a supplemental soil sampling program for dioxin compounds at NBHS that was conducted on June 7-10, 2011, for PCDDs and PCDFs, as well as PCB Congeners. A total of eighteen samples were collected from nine sample locations and analyzed for chlorinated dioxins by SW-846 Method 8290A, and PCB Congeners by SW-846 Method 1668A. The sampling locations included previous sample locations estimated as worst case scenarios based on a review of all soil data collected, and locations that provided data that are representative of potential exposures across the NBHS Campus. At each sample location, a sample was taken of the top one foot soil interval, and the one to three foot soil interval.

The results were summarized by TRC in a memorandum entitled *Summary of June 2011 New Bedford High School Dioxin and PCB Congener Soil Sampling Results and Explanation of Dioxin Toxic Equivalents (TEQs)* dated September 22, 2011.

The sum of dioxin-like PCB Congeners Toxicity Equivalents (TEQs) and dioxin TEQs (collectively, the “TEQ Summation”) were higher than the MCP Method 1 standard in several samples collected during both the April 2010 and June 2011 investigations. TEQ Summations for samples collected at the NBHS campus generally ranged from 20.7 picograms per gram (pg/g) (SB-362) to 300.88 pg/g (HG-2). The TEQ Summation for the 1 to 3 foot depth interval at soil boring HB-22 was 1,575 pg/g. Due to the calculated TEQ Summation for HB-22 (1-3), under a site-specific Method 3 risk characterization approach, the sum of dioxin-like PCB Congeners TEQs and dioxin TEQs are not associated with No Significant Risk for the 1 to 3 foot depth interval. Further remedial action (i.e., soil removal) is required to achieve a condition of No Significant Risk for the NBHS Campus.

### **New Bedford High School Technical Approach (Proposed) – HB-22 Dioxin Investigation**

TRC will plan, implement and oversee follow-up dioxin compounds investigative work at the NBHS Campus in the vicinity of HB-22 (see Figure 1).

This proposed soil sampling program for dioxin compounds utilizes the same approach employed during prior subsurface investigations at the NBHS Campus in support of impacted soil delineation and remedial planning. Soil sampling will be conducted along concentric rings (i.e., step-out sampling) around sampling location HB-22. Initial (i.e., inner ring) delineation samples will be submitted for laboratory analysis. Outer ring samples will be retained for analysis contingent upon the analytical results of the inner ring samples in an attempt to delineate the horizontal extent of impacts, if present, while reducing or eliminating the need to remobilize sampling teams.

TRC will employ direct push soil borings using a track- or truck-mounted drill rig to sample soil and observe subsurface soil conditions. Drilling services and equipment will be provided by New England Geotech, LLC (New England Geotech) of Jamestown, Rhode Island.

Prior to conducting investigation activities, soil boring HB-22 will be located and marked by Land Planning, Incorporated (Land Planning) of Hanson, Massachusetts. The location of inner and outer ring step-out sample locations will be measured in the field and subsequently surveyed by Land Planning, Incorporated (see Figure 1).

The locations of utilities will be marked by the utility location services that respond to the Dig-Safe® requests. The City of New Bedford’s Department of Public Infrastructure (DPI) will also be notified of the proposed activities to mark the location of underground water, storm drain and sanitary sewer lines in the vicinity of HB-22.

At each location, TRC proposes to conduct sampling in the 1 to 3 foot depth zone. For each sample, TRC proposes analyzing for chlorinated dioxin/dibenzofuran congeners by SW-846 Method 8290 to evaluate the presence/absence of these compounds in support of risk assessment and remedial planning. Soil samples will be submitted to Cape Fear Analytical, LLC of Wilmington, North Carolina.

The existing database is deemed sufficient to support characterization of risk from exposure to PCB Congeners, PCBs (Aroclors/homologs), polyaromatic hydrocarbons (PAHs) and metals; therefore, no further sampling is proposed for these compounds.

TRC will conduct field screening of soil samples based on visual and olfactory observations, jar headspace readings using a calibrated photoionization detector (PID), and professional judgment. Screening will be conducted consistent with TRC Standard Operating Procedures (SOPs) and general industry practice. TRC field investigators may collect soil samples for analysis to supplement the findings of the soil boring program. Sample decisions will be based on professional judgment in consultation with the Licensed Site Professional (LSP).

As a contingency, TRC is prepared to submit soil samples for VOC analysis contingent upon the results of field screening and professional judgment. The following analytical method will be specified in such an event:

- VOCs by Method SW-846 Method 8260B.

The drilling scope of work can be scheduled and implemented as soon as feasible pending your approval.

We look forward to discussing this memorandum with you at your earliest convenience.

