November 5, 2010

Shakoora Azimi-Gaylon

TMDL Program, Division of Water Quality

State Water Resources Control Board

1001 I Street

Sacramento, CA 95814

Subject: Response to Agency Requests

Monterey Harbor—Request for Missing Information

Monterey, California

Dear Ms. Azimi-Gaylon:

On behalf of the Union Pacific Railroad Company (UPRR), CH2M HILL has prepared this letterto address the State Water Resources Control Board’s (State Board’s) request for compilation of the monitoring procedures and data quality control elements used in the *Determination of the Concentration of Lead in Sediments in Monterey Harbor* report submitted by ENTRIX, Inc. on March 11, 1993, to the Regional Water Quality Control Board (Water Board) (ENTRIX, 1993). This letter was prepared in response to the electronic mail requests received from the State Board on October 6 and 29, 2010.

It is CH2M HILL’s understanding that Monterey Harbor is listed on the 2006 and 2010 State Board Integrated Report as an impaired water body. Metals and sediment toxicity are the listed pollutant categories for Monterey Harbor. The source of the metal pollutants in Monterey Harbor is listed as “Railroad Slag Pile” while the source of sediment toxicity is listed as “Unknown.” This letter will focus on only the metals pollutant category.

According to the 2006 and 2010 Integrated Report, none of the six historic samples used by the State Board to assess Monterey Harbor exceeded the evaluation guidelines for cadmium, chromium, lead, nickel, or zinc. One of the six samples did exceed the evaluation guideline for copper and mercury.

### Site Background

CH2M HILL resubmitted the 1993 ENTRIX report to the State Board and the Water Board in February 2010 for consideration in the development of the 2012 Integrated Report (Clean Water Act Section 305[b] and 303[d]) listing to remove the identification of the source of the metal pollutants in Monterey Harbor as “Railroad Slag Pile.” In addition to documenting the removal of the slag pile, the ENTRIX report provides additional lead sampling data from samples collected from near the shoreline of Monterey Harbor following the removal of lead impacted sediments (ENTRIX, 1993). To supplement its review of the 1993 ENTRIX report, the State Board requested a copy of the Quality Assurance Project Plan (QAPP) and any data used in the water quality assessment process that was prepared in conjunction with the removal action and sampling described in the 1993 ENTRIX report. A QAPP for the work could not be located, and the State Board asked CH2M HILL to compile the monitoring procedures and data quality control elements used in the 1993 ENTRIX report. In response to this request, CH2M HILL has first addressed the Data Quality Objectives (DQOs) of the 1993 sampling per United States Environmental Protection Agency (EPA) guidance (EPA, 2000, 2006). CH2M HILL has also validated the historic ENTRIX sampling data using EPA functional guidelines as applicable. The DQOs provide the framework and context to evaluate the intended end use of this data. The data validation report provides the data quality control elements requested by the State Board. The DQOs and the validation report are included as Attachments A and B, respectively.

To fulfill the State Board request for a description of the monitoring procedures, the 1993 ENTRIX report was reviewed. The monitoring procedures described in the 1993 ENTRIX report included sediment sample collection on or near the location of the original 1988 sediment samples that were collected prior to the removal of the railroad slag pile. Samples were collected by SCUBA divers at surface and at 1 foot below surface using a two-inch-diameter polyvinyl chloride coring tube (ENTRIX, 1993). Once the sample was collected, both ends of the coring tube were capped and brought to the surface in an upright position (ENTRIX, 1993). The samples were stored on ice and were later transferred to a laboratory-provided sample container. The sample containers were marked with the sample location, sample number, date, collector, time of collection, and analysis to be performed and were entered onto a chain of custody (ENTRIX, 1993). The samples were kept under chain-of-custody control and were delivered to the contracted analytical laboratory. Laboratory analytical reports are provided in the 1993 ENTRIX report.

### Conclusions

The 1993 ENTRIX report concluded the following (ENTRIX, 1993):

* Concentrations of lead in surface sediment in Monterey Harbor have decreased from a maximum concentration of 5,800 milligrams per kilogram (mg/kg) in 1988 to 190 mg/kg in 1993.
* Concentrations of lead in subsurface sediment at a depth of 1 foot have decreased from a maximum concentration of 1,400 mg/kg in 1988 to 170 mg/kg in 1993.
* Further reduction of the levels of lead in the sediment can be expected over time.

Based on the review and compilation of the DQOs, the data validation report, and the monitoring procedures from the 1993 ENTRIX report, the laboratory data is usable and appropriate for consideration by the State Board. The data contained in the 1993 ENTRIX report should be considered for integration into the 2012 Integrated Report for the purposes of evaluating lead concentrations in the surface and subsurface sediments of Monterey Bay. As provided in the attached DQOs and validation report, this data is of appropriate quality to be included in the 2012 Integrated Report. In addition, since the source and associated impacted sediments have been removed, we request that the State Board consider removing the “Railroad Slag Pile” as the source of metal contamination in the Monterey Harbor.

### References

ENTRIX, Inc. 1993. *Determination of the Concentration of Lead in Sediments in Monterey Harbor, California.* March 11.

EPA. 2000, 2006. *Guidance for the Data Quality Objectives Process (QA/G-4).*(EPA/600/ R‑96/066). Washington, D.C.

Wilder M. and P. Jagger. 1988. *Monterey Harbor Lead Study, September 1988, A Cleanup and Abatement Study Analyzing Cleanup Boundaries, Feasibility, and Costs, California Regional Water Quality Control Board, Central Coast Region.* September.

If you have any questions regarding this report, please contact me at 916.286.0344 or at [jim.curtis@ch2m.com](mailto:jim.curtis@ch2m.com).

Sincerely,

CH2M HILL



Jim Curtis, P.E.

Senior Engineer

Attachments: A—Data Quality Objectives

B—Data Validation Report

cc: J. Diel, UPRR

M. Adams, Region 3, Water Quality Control Board

**Attachment A  
Data Quality Objectives**

### Data Quality Objectives

Using the 1993 ENTRIX report, CH2M HILL developed DQOs associated with lead sampling in surface and subsurface sediments as follows:

* STEP 1.0: Problem Statement
* Following removal of the railroad slag pile and lead-impacted sediments, there was a need to delineate the vertical and horizontal extents of lead contamination in the sediments of Monterey Harbor offshore from the former railroad slag pile.
* STEP 2.1: Identify the Question/Decision
* What is the horizontal and vertical distribution of lead in sediments from the same sample locations collected in 1988?
* STEP 2.2: Alternative Outcomes
* There are no alternative outcomes; data was used to understand the trend of lead concentrations in Monterey Harbor and to meet the conditions of the Water Board Order.
* STEP 3.1: Inputs to the Decision
* Lead concentrations were found at historic 1988 sample locations following railroad slag pile and sediment removed action.
* STEP 3.2: Action Levels
* The regulatory action level from the 1993 ENTRIX report was 75 mg/kg (Section 3.0, ENTRIX, 1993). The reported laboratory detection limits are significantly below the 75 mg/kg action level (ENTRIX, 1993).
* STEP 4.1a: Spatial Boundary for the Study/Data Collection
* Six study areas were identified by lead-impacted sediment samples collected during the 1988 study (Wilder and Jagger, 1988). The six areas are located along the Monterey Harbor shoreline, south of the Coast Guard Jetty and west of the Municipal Wharf (Figure 4, ENTRIX, 1993).
* STEP 4.1b: Spatial Boundary for the Decision
* The same six study areas were identified as lead impacted during the 1988 study. The six areas are located along the Monterey Harbor shoreline, south of the Coast Guard Jetty and west of the Municipal Wharf (Figure 4, ENTRIX, 1993).
* STEP 4.2: Temporal Boundary
* This data holds, as no new data have been collected.
* STEP 5.0: Decision Rule
* Lead concentrations collected at or near the same data point locations from 1988 will be used to establish a trend for lead concentrations in surface and immediate subsurface sediments. These trends are presented in Table 4 in the 1993 ENTRIX report (ENTRIX, 1993). This data is appropriate for use to show a decreasing trend in lead concentrations within the lateral and vertical extents of sediments within Monterey Harbor following removal of the Railroad Slag Pile and associated sediments. In 1988, eight surface sample locations and five subsurface sample locations exceeded the 75 mg/kg cleanup goal. In 1993, three surface sample locations and four subsurface sample locations exceeded the 75 mg/kg cleanup goal.
* STEP 6.0: Evaluate Decision Errors
* As this step is for statistical sampling design, this step is not applicable for this task.
* STEP 7.0: Sample Design
* The sediment sampling was designed to collect surface and subsurface sediment samples from the same locations that were collected in 1988. Utilizing the same sample locations was essential for allowing an accurate comparison of trends for lead concentrations in sediment. A few sample locations were shifted (Figure 6) because of physical sampling constraints; however, this should have little impact when comparing trends in lead concentrations in sediment over time.

**Attachment B  
Data Validation Report**

**Data Validation Report**

**Project/Site Name:** Monterey Harbor

**Sample Delivery Group (SDG)**

**/Project Number:** 364400 0000

**Parameters:** Metals (Lead)

**Method:** EPA Method 7421 (GFAA)

**Laboratory:** National Environmental Testing, Inc., Santa Rosa, CA

**Samples:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample ID** | | | **Sample Type** | **Collection Date** | | **Matrix** | |
| 148739 | Field Sample | | | 01/08/1993 | | Sediment |
| 148740 | Field Sample | | | 01/08/1993 | | Sediment |
| 148741 | Field Sample | | | 01/08/1993 | | Sediment |
| 148742 | Field Sample | | | 01/08/1993 | | Sediment |
| 148743 | Field Sample | | | 01/08/1993 | | Sediment |
| 148744 | Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample  Field Sample | | | 01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993  01/08/1993 | | Sediment |
| 148745 | Sediment |
| 148746 | Sediment |
| 148747 | Sediment |
| 148748 | Sediment |
| 148749  148750 | Sediment  Sediment |
| 148751 | Sediment |
| 148752 | Sediment |
| 148753 | Sediment |
| 148754 | Sediment |
| 148755  148756  148757  148758  148759  148760  148761  148762  148763  148764 | Sediment  Sediment  Sediment  Sediment  Sediment  Sediment  Sediment  Sediment  Sediment  Sediment |

**Introduction/Summary**

This data review report covers the sample delivery group and associated samples listed on the cover sheet. The analyses were per USEPA Method 7421 GFAA. The quality assurance and quality control procedures (QA/QC) were per method.

This review is based on the method QA/QC procedures and EPA validation guidelines. The following subsections correlate to these guidelines. The sections detail noted deviations if any from the guidelines. Tables summarizing all data qualification flags are provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols (P) or is of a technical advisory nature due to sample matrix (A).

Data qualifiers, if any, are summarized at the end of this report.

**I. Holding Times and sample preservation**

Lead analysis was carried out within 6 months of collection; collection date 01/08/1993 and analysis date 01/26/1993, thus within the technical holding times. No anomalies were noted by the lab on sample receipt. Chain of custody reports were provided by the lab.

**II. Calibration**

The laboratory has reported initial calibration verification results within ±10% of the expected values consistent with graphite furnace method requirements.

**III. Blanks**

Method blank analysis was performed at the frequency of once for every analytical batch.

The blank result was non-detect.

**IV. Laboratory Control Sample (LCS)**

LCS analysis results was not reported, however as can be seen below the sample matrix spike/ matrix spike duplicate ( MS/MSD )results were within the acceptable range of 75-125%. The batch specific MS/MSD results are sufficient to establish accuracy.

**V. Dilution Test**

Dilution tests are run to establish matrix effects if any, the MS/MSD results below show that no significant sample matrix effects are noted.

**VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analysis**

One MS/MSD pair per analytical batch was analyzed with this batch of samples. The MS/MSD recoveries were 98%/ and 95% with a relative percent deviation (RPD) of 1.6%. These results are within method criteria. MS/MSD recovery criteria is 75-125% and RPD criteria is less than 20%.

**VII. Compound Quantitation and Reporting Limits**

The reporting limit provided by the lab was 0.2 mg/kg significantly below the 75mg/kg project criteria.

**VIII. Overall Assessment**

All data were found to be acceptable per specifications noted above under introduction/summary section. A summary of data qualifications, if any, is summarized below.

**Monterey Harbor** **Lead - Data Qualification Summary - SDG 364400 0000**

No data have been qualified with this sample delivery group (SDG).

**Monterey Harbor** **Lead - Blanks Data Qualification Summary - SDG 364400 0000**

No data have been qualified with this SDG due to blanks.