Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
700 Heinz Avenue
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*Jared Blumenfeld*
Secretary for
Environmental Protection

*Gavin Newsom*
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October 27, 2020

Greg Haet, P.E.
EH&S Associate Director, Environmental Protection
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University of California, Berkeley
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Dear Mr. Haet:

The Department of Toxic Substances Control (DTSC) received the July 16, 2020 *Corporation Yard, Triplicate Sampling Approach* letter (Sampling Approach) for the Richmond Field Station site, located at 1301 South 46th Street in Richmond, California. The Sampling Approach prepared by Tetra Tech, Inc. on behalf of the University of California, Berkeley clarifies information previously provided in a November 2019 letter and during discussions at a meeting held on May 8, 2020 and responds to DTSC's June 17, 2020 comment letter. The Sampling Approach proposes to conduct additional data gap sampling at the Corporation Yard using the incremental sampling method. DTSC program, Human and Ecological Risk Office (HERO) and Geologic Services Unit staff have reviewed the proposal and have the following comments. Also enclosed is a memorandum with comments prepared by Dr. Karen DiBiasio of HERO.

1. Page 7 of 7: The surrogate sample result for DU11-T3A should be 92 µg/kg, not 0.092 µg/kg. Please correct this value.

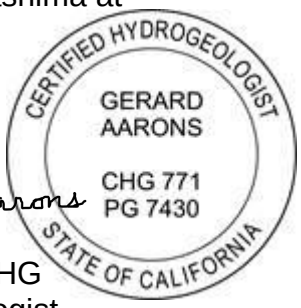
The Sampling Approach needs to be revised to address the above comment and those found in the enclosed memorandum. Please submit a revised document within 30 days of the date of this letter.

If you have any questions regarding this letter, please contact Lynn Nakashima at lynn.nakashima@dtsc.ca.gov.

Sincerely,

Lynn Nakashima

Gerard F Aarons

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Enclosure

cc: (via email)

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|---|---|
| **From:** | DiBiasio, Karen@DTSC |
| **To:** | Nakashima, Lynn@DTSC |
| **Cc:** | Mathrani, Vivek@DTSC; Endlich, Brian@DTSC; Sorrentino, Claudio@DTSC |
| **Subject:** | HERO comments on UC Berkeley Richmond Field Station, Corp Yard - PCBs ISM sampling plan Project Code: 201605-00 Activity Code: 11018 MPC: TECHMEMO |
| **Date:** | Tuesday, August 11, 2020 4:20:59 PM |

**TO**: Lynn Nakashima
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**FROM:** Karen W. DiBiasio, Ph.D.
Staff Toxicologist
Human and Ecological Risk Office (HERO)
Site Mitigation and Restoration Program

**DATE:** August 11, 2020

**SUBJECT:** UC BERKELEY – RICHMOND FIELD STATION, CORPORATION YARD, RICHMOND, CALIFORNIA

INCREMENTAL SAMPLING METHOD (ISM) SAMPLING PLAN

Project Code: 201605-00 Activity Code: 11018 MPC: TECHMEMO

## DOCUMENT REVIEWED

HERO reviewed the July 16, 2020 memorandum with the subject "Corporation Yard, Triplicates Sampling Approach, Richmond Field Station, University of California, Berkeley" (Tech Memo) prepared by Tetra Tech in Oakland, California.

## BACKGROUND

The Richmond Field Station (RFS) Corporation Yard (Corp Yard or Site) had surface releases of PCBs in transformer oil and is currently used primarily for parking of PG&E trucks. Additional sampling for PCBs is proposed using the incremental sampling method (ISM) as a follow-up to the removal action conducted at the Corporation Yard in 2017-2018 and data gap sampling presented in the Corporation Yard Data Gaps Sampling Results letter dated November 22, 2019. Previously, in a June 16, 2020 email HERO provided comments on the June 3, 2020 tech memo with the subject "Corporation Yard, Triplicates Sampling Approach, Richmond Field Station, University of California, Berkeley" (Tech Memo) prepared by Tetra Tech in Oakland, California. The Tech Memo reviewed herein also provides clarifications regarding the ISM results presented in the November 22, 2019 letter and recent teleconferences on the relative standard deviation (RSD) of laboratory and field replicates and the calculation of the weighted 95 percent upper confidence limit of the arithmetic mean (95%UCL). The Tech Memo reviewed herein has been updated to incorporate DTSCs June 17, 2020 comments (which contain HERO's June 16, 2020 comments) and includes response-to-comments in Attachment A.

## SCOPE OF REVIEW

The review comments herein focus solely on the ISM sampling for PCBs from 0-2 inches below ground surface and use of the ISM results to calculate a 95%UCL. The intent of HERO's comments

is to yield a transparent and scientifically defensible work plan.

**COMMENTS**

1. Work Plan Insufficient: The Tech Memo incompletely presents the proposed activities. In addition, the Tech Memo contains some internal inconsistencies and ambiguities. Some aspects of the proposal within the Tech Memo are insufficient and lack transparency, as detailed in the below comments. HERO does not fully concur with some of the technical aspects of the proposed sampling, as described below. HERO recommends revising the proposed ISM sampling plan per the below comments.

2. Increment Locations – Within each Decision Unit (DU) 75 increments are proposed for collection. The Tech Memo states on page 2 that the spacing of increments will be determined in the field, whereas both further down on page 2 as well as on page 2 of Attachment A containing response to comments state *"The locations of increments comprising the first triplicate will be placed at 75 locations based on equally spaced grid nodes. The second and third triplicate increments will be collected 3 ft away from the each of the first triplicate increment locations."* ISM guidance (ITRC, 2012) recommends systematic planning and random locations. To reduce potential error in the estimate of the mean, to guard against bias in increment sampling locations and to provide even spatial coverage in each DU, HERO recommends use of a systematic random sampling approach using a random number generator to determine placement of replicates 1, 2 and 3 within the first grid and applying those relative locations to the remaining 74 grids. For singlet DUs, it is only replicate 1 that will be randomly assigned a location in the first grid, then apply the same relative location to the remaining 74 grids. For transparency, HERO recommends providing a figure to demonstrate the proposed locations of the increments within each DU.

3. Field Triplicates – The Tech memo is insufficient in its presentation on aspects of the field triplicates. HERO recommends the following:
   - Include in the Sampling Approach section that one of the purposes of collecting field triplicates is to enable calculation of 95%UCLs from singlet DUs.
   - Include in the Field Triplicate Evaluation section the RSD criteria for acceptability for data usability.

4. Laboratory Subsampling – The Tech Memo is unclear whether the laboratory subsampling is one 30 gram aliquot or multiple aliquots from the full depth of a Japanese slab cake or some other method. HERO recommends transparently presenting the proposed laboratory subsampling procedure.

5. Laboratory Triplicate Processing – The Tech Memo is ambiguous on whether the field sample that will be processed and analyzed as a lab triplicate is homogenized/ground before or after separating the field sample into lab triplicates. HERO recommends transparently describing when grinding is proposed, and preferably grinding before segregating the soil from the field sample into lab triplicates to reduce variability in lab triplicate results.

6. Laboratory Triplicate RSD Evaluation – While HERO does not fully concur with the use of the lab RSD goals in the Tech Memo, HERO concurs with deferring discussion on the subject to after the analytical data are produced. HERO notes that of the scenarios evaluated in the lab RSD simulations presented in the Tech Memo only those with total PCB concentrations in the 0.2 – 0.7 and 0.7 – 2 mg/kg ranges (scenarios 2 and 3) are potentially subject to decision errors.

7. Inconsistency in Field Triplicates for Pooled Variance – It is unclear whether DU11 field triplicates will be used in calculating the pooled variance that will be applied to singlet DUs to derive their 95%UCLs. HERO recommends clarifying whether triplicate results from DU11 are proposed for inclusion in calculating the pooled variance because page 4 (Field Triplicates

Evaluation and Weighted 95UCL Calculations section) only specifies DUs 9, 10 and 17, whereas Attachment A response to comments page 4 states DU11 will also be included. If DU11 is used for calculating the pooled variability, provide justification for its use with non-detected concentrations of PCBs.

8. 95%UCL – Since the exposure area for risk-based decision making (exposure unit) is the entire Corp Yard, a weighted 95%UCL is proposed from the ISM data collected from DUs 9 through 17. The Tech Memo proposes using pooled variances from the DUs with triplicates to obtain an average RSD and subsequently calculating a weighted 95%UCL. Applying pooled variance from triplicates to calculate 95%UCLs for the singlet DUs is appropriate for CSM-equivalent DUs where a statistical test that compares variances demonstrates that the differences in variances are not statistically significant (e.g., at the 95% level of confidence). While the concept of a weighted 95%UCL is appropriate for the Corp Yard, the proposed methods and equations are not presented. The Tech Memo is unclear on whether the proposal is to use the pooled variance to calculate 95%UCLs for the singlet DUs or to derive surrogate replicate values for replicates 2 and 3 of singlet DUs so each DU will have 'data' for triplicates to then calculate the weighted 95%UCL. HERO recommends using the pooled variance to calculate 95%UCLs for the singlet DUs, then applying the spatial area weighting factors to generate the overall 95%UCL for Corp Yard consisting of DUs 9 through 17. HERO recommends transparently providing the proposed weighted 95%UCL methodology with all equations.

9. RSD Calculations – The Tech Memo on pages 6 - 7 provides clarification on RSD calculations in the November 2019 letter and notes those RSDs were not intended for use in calculating 95%UCLs for risk-based decisions. However, it is unclear what procedure is intended for the application to the proposed field triplicate ISM results. HERO recommends setting RSD limits in the Data Quality Objectives for data usability determination. HERO recommends transparently presenting (a) the proposal for field triplicate RSD calculations and all associated equations, and (b) the pooled variance calculations and all associated equations.

**CONCLUSIONS**

HERO reviewed the July 16, 2020 Tech Memo for additional ISM sampling and analysis at the Corp Yard. HERO does not concur with the proposed sampling, primarily due to insufficient presentation of the proposal and internal inconsistency. HERO recommends addressing the comments above to improve transparency and scientific defensibility in a revised ISM sampling plan submission.

Please contact me at (916) 255-6633 or Karen.DiBiasio@dtsc.ca.gov if you have any questions.

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