TETRA TECH, INC.

November 12, 2014

Lynn Nakashima
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Subject: **LBNL Fiber Optic Distributed Acoustic Sensor Survey Sampling Approach**
University of California, Berkeley, Berkeley Global Campus at Richmond Bay, Richmond, California
Sampling Strategy Memorandum

Dear Ms. Nakashima:

On behalf of the University of California (UC) Berkeley, Tetra Tech, Inc. proposes to collect soil samples at the Richmond Field Station Site at the Berkeley Global Campus at Richmond Bay in Richmond, California. The objective of the sampling effort is to characterize near-surface soil in the area where workers will excavate two trenches to install fiber optic cables for a Lawrence Berkeley National Laboratory (LBNL) research project. Each trench will be approximately 300 feet long, located west of Building 400. The trenches will be approximately 2 feet deep and 1 foot wide. An array of geophones will be placed on the surface as well as a small mobile trailer. Three temporary power poles will be installed: two in imported fill at Building 400 and one within undisturbed soil. Samples will be collected at two depths at five locations for a total of 10 samples.

Sampling is tentatively proposed for the week of November 17, 2014, pending subsurface utility clearance; the schedule for trench installation has not been determined. This letter provides the rationale for the selected sampling locations and a summary of field sampling protocols. The attached figure presents the project features and proposed sampling locations.

Sample Locations

Five locations have been identified to collect samples in the location of the proposed trenches; sample locations are approximately 125 feet apart, consistent with the low sampling density approach proposed in the Final Removal Action Workplan (Tetra Tech 2014). Soil samples will be collected from depths of 0-0.5 and 1.5-2 feet below ground surface (bgs). Samples are not proposed to be collected deeper than the trench dimensions, since the placement of the fiber optic cables is temporary and will not constitute the final cover for the area affected.

Field Sampling Protocols

Soils from the top sample depth will be collected using a hand auger if possible. Soils in the immediate area are extremely hard, therefore a bobcat with an auger attachment will be used to loosen the soil if necessary for the top sample, and will be used to arrive at the bottom sample depth for the deeper sample.

Once the sample depth interval is reached, either a disposable plastic scoop, a stainless steel metal scoop, or a hand auger will be used to collect the soil sample. The sampling protocol will follow these steps:

1. The field sampler will use a disposable scoop, stainless steel metal scoop, or hand auger to collect the soil sample.

2. One 16-ounce jar of soil will be collected for each sample.

3. The stainless metal scoop or hand auger will be decontaminated between each sampling location using Alconox and de-ionized water.

4. The jars will be labeled and packed into an insulated cooler. The sample will be transported under chain-of custody procedures directly to Curtis and Tompkins Laboratory in Berkeley, California.

5. Samples will be analyzed on a 5-day turnaround.

All sample collection protocols will be consistent with the Final Sampling and Analysis Plan for the Soil Management Plan, Removal Action Workplan, Exhibit C2, dated July 18, 2014. Any deviations from Exhibit C2 will be identified in the summary report.

Analyses Summary and Screening Criteria

Soil samples will be analyzed for arsenic, lead, mercury, polychlorinated biphenyls (PCB), and polycyclic aromatic hydrocarbns (PAH) using the methods listed below.

- Arsenic, lead, and mercury analysis by EPA 6020A/7471A
- PCB analysis by EPA 8082A
- PAH analysis by EPA 8270 SIM

The laboratory will be instructed to homogenize the arsenic, lead, mercury, and PCB samples before analyses.

Following the receipt of analytical results, sample results will be presented in a sampling letter report along with screening levels identified in the Final Soil Management Plan, Removal Action Workplan, Attachment C, dated June 18, 2014.

If you have any questions or comments regarding this submittal, please call me at (510) 302-6283.

Sincerely,

Jason Brodersen, PG
Program Manager

Enclosure: Figure

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