August 31, 2011

Ms. Barbara Cook, P.E.
Acting Assistant Deputy Director, Cleanup Program
Site Mitigation Branch
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California

Attention: Lynn Nakashima
Sent via: email

Subject: Soil Gas Investigation Work Plan Describing Sampling Along the Campus Bay and the University of California Richmond Field Station Property Border, Richmond California.

Dear Ms. Cook:

Terraphase Engineering Inc. (Terraphase) has prepared this letter work plan on behalf of Zeneca Inc. to describe soil gas sampling along the boundary between the Campus Bay property and the University of California (UC) Richmond Field Station (RFS) campus, located in Richmond California. The soil gas sampling locations are based on the results of the membrane interface probe/cone penetrometer test (MIP/CPT) investigation conducted by Terraphase at Campus Bay in June 2011 and the groundwater analytical data previously collected on behalf of UC at the RFS. The results of the MIP/CPT investigation were presented to the Department of Toxic Substances Control (DTSC) in the August 4, 2011 Terraphase document, "MIP/CPT Investigation Results Technical Memorandum" (the Technical Memorandum). The DTSC provided comments on the Technical Memorandum in an August 9, 2011 letter (the DTSC letter) and required additional soil gas samples be collected to assess if the volatile organic compounds (VOCs) detected in groundwater underlying the boundary between Campus Bay and the RFS are volatizing into soil gas. The DTSC letter required the following to be taken into account when identifying the locations where soil gas samples will be collected:

- Include soil gas sampling in areas where shallow ground water sampling results indicate elevated concentrations of VOCs
- Ensure that soil gas sampling is completed on the UC RFS boundary area near buildings that are presently occupied.
- Where buildings are present on the UC RFS property, assess the feasibility of installing soil gas sampling wells at two depths. In cases where the presence of shallow groundwater does not allow sufficient vertical separation between shallow and deep wells, screen the well deeper rather than shallower.
- For planning purposes, consider the depth to groundwater measured during groundwater sampling at the UC RFS.

- Include contingencies in the work plan to modify proposed well depths based on field conditions.

This letter work plan addresses each of DTSC's requirements.

Soil Gas Well Installation and Sampling Procedures

Soil gas sampling was previously conducted at Campus Bay in the vicinity of monitoring wells MW-19, MW-22, and PZ-7 where VOC concentrations in shallow groundwater exceed site specific goals. To identify where additional soil gas samples are warranted, the previous soil gas data was assessed in conjunction with groundwater data. This assessment is described below:

- MW-19: Based on previous soil gas data, a groundwater pilot study was implemented to assess if enhanced reductive dechlorination is a viable technology to reduce VOC concentrations detected in groundwater. This pilot study is currently on-going. Therefore, no additional soil gas samples will be collected in the vicinity of MW-19 at this time.
- West of MW-19/Slurry Wall: The CPT/MIP investigation did not indicate VOC concentrations in shallow groundwater adjacent to the slurry wall at concentrations greater than site specific goals. Therefore, no additional soil gas samples are proposed west of MW-19.
- PZ-7: Three rounds of soil gas samples have been collected at SG-28 (adjacent to PZ-7). The previous soil gas data does not exceed site specific goals. Therefore, no additional soil gas data will be collected from this area.
- RFS Site: Soil gas samples have not been previously collected on the RFS property, along the boundary with Campus Bay. Therefore, soil gas sampling wells are proposed adjacent to buildings located on the UC RFS property where elevated concentrations of TCE have been detected in shallow groundwater and no soil gas data exists. The proposed soil gas well locations are shown on Figure 1. An attempt will be made to re-sample SG-99, however, a soil gas sample could not be retrieved at this location during a previous sampling event in 2009 (This well did yield a soil gas sample during a previous soil gas sampling event completed in 2008). If it is still not possible to collect a soil gas sample from SG-99, then a soil gas well will be installed adjacent to previous grab groundwater sample location UCB-3.

Soil gas wells will be installed and sampled in general accordance with the field procedures described in the June 14, 2011 Terraphase document, "Revised Field Sampling Work Plan to Further Assess Volatile Organic Compound Concentrations Detected in Groundwater Collected from PZ-7, MW-22, and in the Vicinity of the UC Slurry Wall". Based upon information provided in the "Phase I Groundwater Sampling Results Technical Memorandum" prepared by Tetra Tech EM Inc. dated January 12, 2011 (the Tetra Tech Memorandum), groundwater was observed at a depth of approximately 8 to 9 feet (ft) below ground surface (bgs) along the Campus Bay/UC RFS boundary. Therefore, installing soil gas wells at two depths is not feasible in this area. Because of the shallow depth of groundwater, soil gas wells will be installed to a depth of approximately 6 ft bgs.

In addition to installing the proposed soil gas wells shown on Figure 1, Terraphase will collect a soil gas sample from the existing soil gas well SG-99. This well was installed to a depth of approximately 5 ft bgs.

A soil gas sample was last collected from this well in 2008. As discussed earlier, this well did not yield a soil gas sample during the soil gas sampling activities completed in 2009. In the soil gas sample collected in 2008, TCE was not detected in soil gas from SG-99 at concentrations above the laboratory reporting limit. Other VOCs were detected above the laboratory detection limit, but at concentrations below the site-specific goals for the commercial/industrial worker established for Campus Bay.

Reporting

The analytical results of the soil gas investigation will be presented to the DTSC in a technical memorandum. The technical memorandum will also include the soil gas installation procedures used and the soil gas well construction details.

If you have any questions with regard to the procedures described in this work plan, please do not hesitate to give me a call at (510) 326-1473.

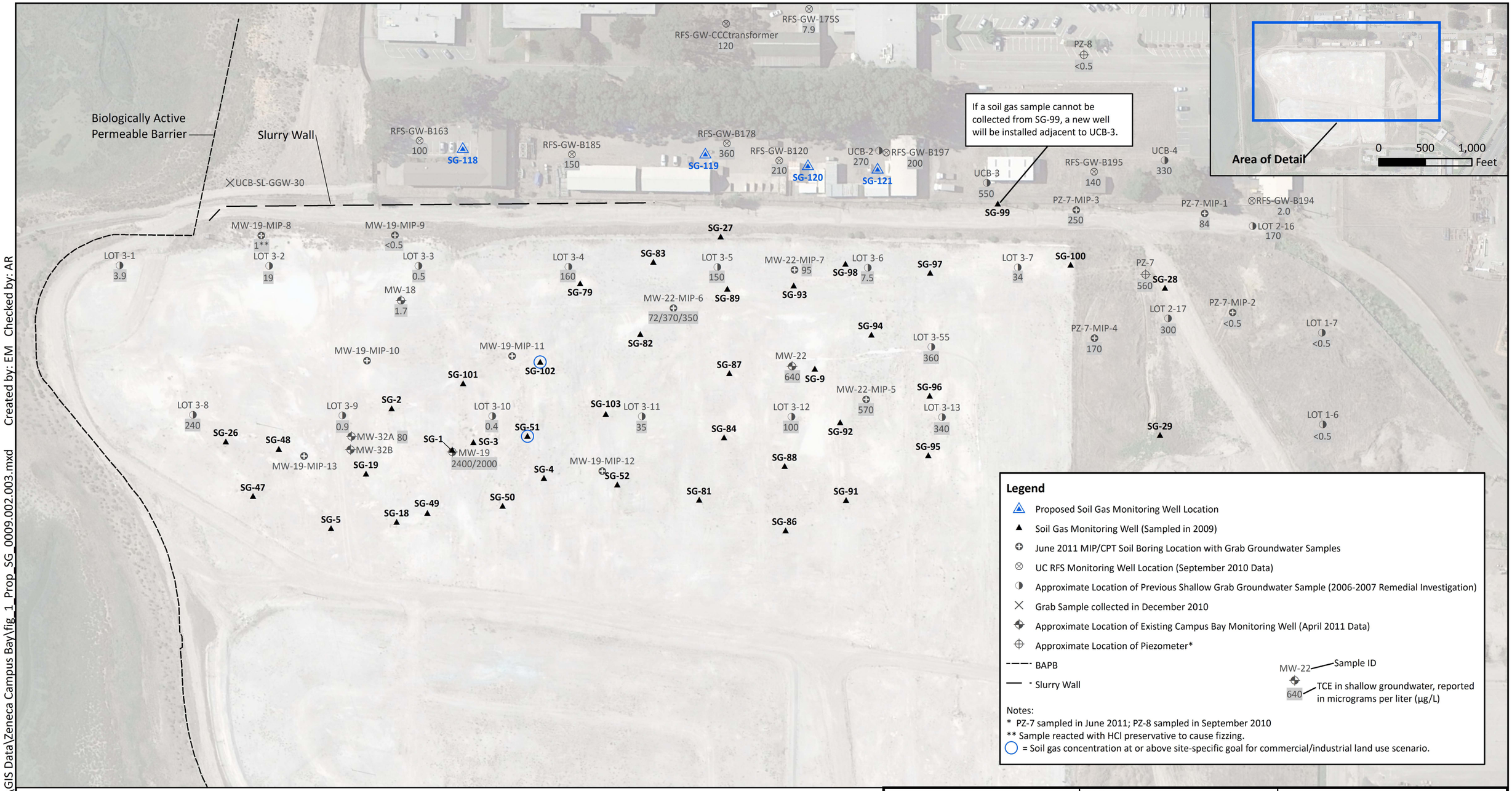
Sincerely,

For Terraphase Engineering Inc.

Andrew Romolo, P.G. (8110)
Vice President and Principal Geologist

Attachments:
Figure 1: Site Map With Proposed Soil Gas Sample Locations

cc:
Bill Marsh, Edgcomb Law Group
Doug Mosteller, for Cherokee Simeon Venture I, LLC
Lynn Nakashima, DTSC
Brian A. Spiller, Zeneca Inc.
Karl Hans, UC
Anthony O. Garvin, Esq., UC Counsel
Jenifer Beatty, Arcadis



Source:
Aerial imagery captured on 10/1/2009 (Google, 2010).

0 125 250 Feet
1 Inch = 125 Feet

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SAFETY FIRST

terraphase engineering

CLIENT:	Zeneca, Inc.
PROJECT:	Campus Bay Richmond, CA
PROJECT NUMBER:	0009.002.003

Proposed Soil Gas Monitoring Well Locations DRAFT

FIGURE 1

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