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Secretary for
Environmental Protection



Department of Toxic Substances Control

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ALAMEDA POINT
SSIC NO. 5090.3



Arnold Schwarzenegger
Governor

October 4, 2006

Mr. Thomas L. Macchiarella, Code BPMOW.TLM
Department of the Navy
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Management Office West
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REVIEW OF TECHNICAL MEMORANDUM, SUBSLAB SOIL GAS INVESTIGATION OF BUILDINGS 14, 113, 162, 163A, AND 398, ALAMEDA POINT, ALAMEDA COUNTY

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has reviewed the Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163A and 398, Alameda Point, Alameda, California, submitted by the Navy on July 23, 2006 (Technical Memorandum). Comments from DTSC Human and Ecological Risk Division (HERD) and Geological Services Unit (GSU) were previously submitted to the Navy by electronic mail (e-mail). Subsequent discussion between the Navy and DTSC resulted in revision of HERD comments. Specific revisions include 1) removal of comments meant for internal communication from DTSC HERD to the DTSC project manager, and 2) incorporating HERD comments into the body of this letter. GSU comments have not changed since the submittal by e-mail, and are included as an attachment to this letter.

A Remedial Investigation was conducted at Operable Unit 2B (OU-2B) (SuTech, 2005) at Naval Air Station Alameda, now known as Alameda Point. The Comprehensive Environmental Response Compensation, and Liability Act sites that make up OU-2B are Site 3 (Abandoned Fuel Storage Area), Site 4 (Building 360, Aircraft Engine Facility), Site 11 (Building 14, Engine Test Cell), and Site 21 (Building 162, Ship Fitting and Engine Repair). The buildings being investigated for the subslab soil gas investigation include Buildings 14, 113 (located within Site 21), 162, 163A (located within Site 4), and 398 (located within Site 21).

GENERAL COMMENTS

- Naphthalene should be added to the list of analytes for the next round of subslab soil gas sampling. According to a report from Air Toxics (see reference below) naphthalene can be accurately measured by United States Environmental Protection Agency (U.S. EPA) method TO-15 as long as correct naphthalene standards with appropriate moisture content are used.
- The process for identifying soil gas compounds to carry forward in the determination of risk and/or hazard should be amended to include several more compounds.

SPECIFIC COMMENTS

1. Given the extensive area of Alameda Point with low level soil concentrations of Polycyclic Aromatic Hydrocarbons previously studied (Section 1.5.1, page 4), naphthalene should be added to the list of analytes for the next round of subslab soil gas sampling. Naphthalene can apparently be accurately measured by U.S. EPA method TO-15 being used in this investigation as long as correct naphthalene standards with appropriate moisture content are used (<http://www.airtoxics.com/literature/AirToxics8260vTO15.pdf>).
2. The Technical Memorandum states that the Sampling and Analysis Plan indicated that the soil gas probes would consist of a 0.25-inch diameter brass or stainless steel pipe with a permeable probe tip. Instead, all 42 tubes installed for the investigation were constructed with polyethylene tubing with a permeable probe tip. Please provide a detailed explanation of why this substitution was made (Section 2.5, page 9).
3. Please indicate whether the chlorinated solvent plume boundary (Figure 3) refers to concentrations of chlorinated solvents in groundwater or in soil gas. Figure 3 presents the extent of volatile organic compound (VOC) contamination in soil, groundwater and Non-Aqueous Phase Liquid (Section 1.5.1, page 6) as bounded areas encompassing all or a portion of the buildings evaluated in the Technical Memorandum. However, no soil gas sample points are indicated outside the demarcated area of the chlorinated solvent plume. Thus, the basis by which the Navy defined the boundaries is unclear, or if the boundaries are defined by soil gas or by groundwater.

4. A single concentration inhalation screening criterion (Table 10) should not be used to select a significantly reduced set of contaminants of concern (COCs) (Tables 11 through 15). Certainly, VOCs that are detected at concentrations orders of magnitude less than a protective inhalation screening criterion may be eliminated from this site investigation to concentrate on the VOCs that contribute the majority of risk and/or hazard. However, VOCs detected at significant fractions of the inhalation screening criterion (e.g., one twentieth [0.05] the inhalation screening criterion) must be carried through any evaluation of inhalation risk and/or hazard or a complete multi-pathway Human Health Risk Assessment (HHRA). Using one twentieth the inhalation screening criterion would add the following COCs to the risk and/or hazard drivers:

Additional VOCs Based on one-twentieth the inhalation screening criterion	
Building 14	Benzene, trichloroethene
Building 113	1,2,4-trimethylbenzene, trichloroethene
Building 162	1,2,4-trimethylbenzene, tetrachloroethene
Building 163A	1,2,4-trimethylbenzene, cis-1,2-dichloroethene
Building 398	1,2-dichloropropane, benzene, tetrachloroethene, trichloroethene

5. HERD was able to approximate the attenuation factors listed (Section 4.3.4, page 16) for several of the buildings evaluated using the Johnson and Ettinger model parameters provided (Table 16). Please provide a copy of the Johnson and Ettinger DATAENTER, INTERCALCS and RESULTS worksheets for HERD review prior to preparation of the Draft Final Technical Memorandum. These worksheets can be furnished informally via electronic mail to jpolisin@dtsc.ca.gov.
6. The cancer risk and non-cancer hazard values presented in the text are those presented in the detailed table (Table 17). Final review of the inhalation risk and/or hazard for VOCs detected in soil gas cannot be completed until the COCs are amended (Specific Comment number 4) and the Johnson and Ettinger worksheets requested (Specific Comment number 5) are provided.
7. The statistical methods applied (Helsel, 2005) to calculate the Exposure Point Concentration (EPC) using samples reported as 20 to 85 percent non-detect (Tables 11 through 15, footnote b) have not yet been validated by HERD. However, given the relative small difference between the maximum concentration and the calculated EPC using these methods, HERD accepts the application of these methods for this investigation.

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CONCLUSIONS

- The process for identification of soil gas compounds to carry forward in determination of inhalation risk and/or hazard should include compounds which were detected at significant fractions of the screening criteria.
- Several Johnson and Ettinger worksheets should be submitted to DTSC HERD for verification of the attenuation factors to complete this review. These worksheets can be forwarded informally to jpolisin@dtsc.ca.gov.
- This assessment of current inhalation risk in an industrial scenario provides a focused evaluation of the inhalation exposure pathway under current conditions. The HHRA of the area of OU-2B influenced by the VOC contamination should include a residential (unrestricted use) scenario to evaluate whether land use restrictions are necessary as part of any final remedial action.

If you have any questions, please contact me at (916) 255-6449 or by e-mail at dlofstro@dtsc.ca.gov.

Sincerely,



Dot Lofstrom, P.G.
Project Manager
Northern California Operations
Office of Military Facilities

Attachment

cc: See next page

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cc: Dr. Peter Russell
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Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Dot Lofstrom, PG
Senior Engineering Geologist
Office of Military Facilities

FROM: Michelle Dalrymple, PG
Engineering Geologist
Geologic Services Unit

REVIEWED

BY: Stewart W. Black, PG *Stewart W. Black*
Senior Engineering Geologist
Geologic Services Unit

DATE: August 16, 2006

SUBJECT: REVIEW OF THE DRAFT TECHNICAL MEMORANDUM SUBSLAB
SOIL GAS INVESTIGATION OF BUILDINGS 14, 113, 162, 163, AND
398, ALAMEDA POINT, ALAMEDA, CALIFORNIA DATED JULY 25,
2006

ACTIVITY REQUESTED

Per your request the Northern California Geological Services Unit (GSU) has reviewed the *Draft Technical Memorandum, Subslab Soil Gas Investigation of Buildings 14, 113, 162, 163, and 398, Alameda Point, Alameda, California* dated July 25, 2006. The draft Technical Memorandum was prepared by Sullivan Consulting Group and Tetra Tech EM Inc. (SulTech) for the U.S. Department of the Navy (Navy), Naval Facilities Engineering Command, Southwest Division. GSU has reviewed the document with respect to the geologic aspects and data interpretations presented.

PROJECT SUMMARY

The subslab soil gas sampling investigation was performed to evaluate the potential for vapor intrusion into buildings that are currently leased and occupied by tenants in areas of Operable Unit (OU)-2B at Alameda Point that overlie groundwater plumes containing

volatile organic compounds (VOCs). OU-2B is comprised of Installation Restoration (IR) Sites 3, 4, 11, and 21. The buildings that are being investigated for potential vapor intrusion are Buildings 14, 113, 162, 163A, and 398. A Remedial Investigation (RI) was previously performed for OU-2B in which the Johnson & Ettinger (1991) model was to evaluate the indoor air pathway using groundwater data obtained from OU-2B. The results of the model indicated that VOC concentrations in groundwater may be high enough for potential intrusion into some buildings at OU-2B.

The principal objective of the subslab soil gas investigation was to obtain soil gas data directly beneath the building foundations to further evaluate whether VOCs are present at concentrations that may migrate into building structures and cause an unacceptable risk to building occupants. The investigation involved installing soil gas probes beneath the slab-on-grade floors of the buildings and collecting soil gas samples for chemical analysis. Two sampling events are proposed. The results of the first sampling event are presented in this Technical Memorandum. Results of the second sampling event will be presented in a subsequent document.

GENERAL COMMENTS

- A. The Technical Memorandum should provide supporting field documentation such as daily field logs, audit reports, daily quality control reports, and field instrumentation calibration logs. Please provide copies of the raw analytical data from the laboratory including information regarding the condition of samples upon receipt and chain-of-custody records. Please also provide the output data files from the vapor intrusion modeling. This information may be provided separately in hard copy or on a compact disk to DTSC only, if the other agencies do not wish to review the supporting documentation.

SPECIFIC COMMENTS

1. Section 1.0 – Introduction. Please provide the dates/duration of the sampling event discussed in this document and the proposed dates for the second sampling event.
2. Section 2.1 – Investigation Objectives. The SAP specified that additional soil gas probes would be installed in fill material where utility lines enter the buildings, if present. The draft Technical Memorandum states that soil gas samples were collected from fill near utility lines beneath the buildings. However, the probes that were installed to evaluate utility lines are not identified on figures or in the text. Please clarify which buildings contained utility lines that were targeted for sampling, and identify which sample probes were installed to investigate these utility lines.

3. Section 2.3.1 – Probe Installation. The following comments pertain to this section:
 - Please provide the dates of probe installation.
 - There are differences in the information provided on the diagrams in Figures 4 (Conceptual Diagram) and 8 (Schematic Diagram). For example, Figure 8 indicates metal tubing while Figure 4 indicates polyethylene tubing. Also, the thickness information for the concrete slab and subslab fill differ. Schematic and conceptual diagrams are useful in the planning stages of a project, but not after the field work has been completed. Please use consistent information on these diagrams and use the illustration that most correctly depicts the subslab soil gas probes that were installed for this investigation.
4. Section 2.3.2 – Soil Gas Sampling. Please provide the dates of soil gas sample collection.
5. Section 2.4 – Analytical Methods. Please clarify why the laboratory used to analyze the soil gas samples was not included on the list of approved laboratories provided in Appendix D of the SAP, and verify that the selected laboratory meets the qualifications specified in the SAP.
6. Section 2.5 – Deviations from Sampling and Analysis Plan. The following comments pertain to this section:
 - It appears that, in addition to the omission of sample 14SG07, some of the probe locations in Building 14 were changed from the original locations specified in the final SAP. Please clarify the reasons that sample locations in Building 14 were moved from the proposed locations specified in the SAP.
 - The soil gas probes were purged using a syringe rather than a vacuum pump as specified in the SAP. Please discuss this and any other deviations from the purging and sampling methodologies specified in the SAP.
7. Section 3.2 – Data Quality. Please clarify that none of the soil gas data from this investigation were rejected during data validation.
8. Section 4.1 – Selection of Chemicals of Potential Concern. Chemicals that were detected at concentrations below their respective screening criteria were not considered chemicals of potential concern (COPCs) for this investigation. It appears that chemicals that were not selected as COPCs were not carried through the human health risk assessment. This methodology may be questionable because the risks contributed by individual chemicals are cumulative. GSU defers to the Human and Ecological Risk Division as to

Dot Lofstrom
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whether or not this methodology is appropriate for the risk evaluation presented in this document.

If you have any questions, please feel free to contact me at (510) 540-3926 or at mdalrymp@dtsc.ca.gov.