



California Regional Water Quality Control Board

San Francisco Bay Region



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Arnold Schwarzenegger
Governor

Letter sent via email

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Department of the Navy
BRAC Program Management Office
Attn: Mr. Michael Bloom
1455 Frazee Road, Suite 900
San Diego, CA 92108-4301
michael.s.bloom@navy.mil

SUBJECT: Comments on the *Draft Field Investigation Summary Report and Vapor Intrusion Risk Evaluation for Installation Restoration Site 17 and Building 503 Area*, dated January 6, 2009, Former Mare Island Naval Shipyard, Vallejo, California

Dear Mr. Bloom:

Thank you for providing the Water Board with the Draft Field Investigation Summary Report and Vapor Intrusion Risk Evaluation for Installation Restoration Site 17 and Building 503 Area, dated January 6, 2009. Water Board staff has reviewed the above-reference document and have the following comments.

GENERAL COMMENTS

A review of the figures provided during the January 19, 2009 BCT meeting indicates inconsistent correlation between the results of the passive soil vapor survey and the active soil vapor investigation. Additional discussion of the possible reasons for this, such as the heterogeneous nature of subsurface conditions, limitations associated with either sampling methodology, and/or the presence of preferential migration pathways, is warranted with regard to interpretation of the risk evaluations. In addition, the apparent presence of TPH contamination along the eastern border of Building 759, in conjunction with a preferential migration pathway warrant further discussion/evaluation.

Given the shallow depth to groundwater at IR-17 and the presence of groundwater contamination, the risk assessment should prepare an alternate vapor intrusion evaluation using groundwater as the source term, consistent with DTSC vapor intrusion guidance (2005). Since the calculated attenuation factors appear consistent with those for groundwater vapor obtained from the EPA Vapor Intrusion Database, a simple evaluation may be performed by converting the groundwater concentrations to soil vapor concentrations using Henry's Law constants adjusted for temperature. This assessment should also discuss the relative placement of the

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screened interval of the monitoring wells in the saturated zone in terms of predicting vapor concentrations at the capillary fringe.

The presence of free-phase contaminants in groundwater either observed in previous investigations or those now present should be fully discussed. In particular, the fact that the Johnson and Ettinger model does not account for the presence of free-phase contamination, the indoor air concentrations for such conditions may be underestimated. As such, this needs to be considered in the subject report.

Data Evaluation and Selection of Chemicals of Potential Concern, page E-5 – It does not appear that the leak detection protocol was adequate to determine whether atmospheric breakthrough occurred at any specific sampling location. According to the description provided on page E-5, sample tubing and associated fittings were exposed to 2-propanol. While this is appropriate to determine whether ambient air was drawn in through connections in the sample train, leak check compounds should have also been placed near the surface seals. Although the sample size was limited (1 L Summa® canisters), and approximately half of the samples were collected beneath a hardscape surface, there is always a concern that such shallow samples can be subject to ambient air intrusion and other atmospheric influences. At a minimum, the potential for underestimation of soil vapor concentrations should be considered when interpreting the results of the risk assessment in the report.

Toxicity Criteria, page E-10 – Consistent with EPA's Inhalation Dosimetry Methodology (EPA, 1994), reference concentrations (RfCs) and inhalation unit risk (IUR) should not be converted to inhalation reference doses and cancer slope factors. The amount of the chemical that reaches the target site through the inhalation pathway is not a simple function of the inhalation rate and body weight. For those chemicals where RfCs and IUR factors are available, the dose should be estimated simply by adjusting for less than continuous exposure.

Toxicity Criteria, page E-10 – n-Hexane should be used as a surrogate for 2-hexanone, as the adverse effects associated with exposure to n-hexane is associated with the 2,5-hexanedione metabolite.

Interpretation of Hazard and Risk Levels, page E-13 – The text refers to the EPA memorandum regarding the role of the baseline risk assessment in Superfund remedy selections, as well as the target risk range as outlined in the NCP. While consideration of the NCP risk range is an integral part of the remedial decision process, the discussion of the risk management range within the risk assessment itself is inappropriate. The agency has clarified its position on the role of the risk assessor and risk manager on many occasions, most recently in its 1995 memorandum "Policy for Risk Characterization (EPA, 1995). In summary, risk assessors "are charged with (1) generating a credible, objective, realistic, and balanced analysis; (2) presenting information on hazard, dose-response, exposure and risks; and (3) explaining confidence in each assessment by clearly delineating uncertainties and assumptions along with the impacts of these factors...on the overall assessment. They do not make decisions on the acceptability of any risk level for protecting public health or selecting procedures for reducing risks." Hence,

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discussions of “acceptable risk levels” should be addressed separately and be confined to the appropriate decision documents in conjunction with an evaluation of the nine criteria.

References:

DTSC, 2005. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. Department of Toxic Substances Control. February.

EPA, 1995. *Policy for Risk Characterization*. From Carol Browner, Administrator, US EPA, Washington, DC. March.

US EPA, 1994. *Methods of Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry*. Office of Research and Development, Research Triangle Park, NC. EPA/600/8-90/066F

SPECIFIC COMMENTS

1. Page 16, Section 4.2.2, Hypothetical Future Commercial/Industrial Scenario – The last sentence states “*These risks are within the EPA risk management range of 10^{-6}* ”. 10^{-6} is not a range. In addition, a period is missing from the last bulleted item.
2. Figure 5, Groundwater Sample Locations – Groundwater monitoring well 17W20 is not labeled.
3. Appendix B, Groundwater Sampling Forms – Groundwater samples collected for VOC analysis from wells 17W04, 17W05, 17W12, 17W13, 17W14, 17W16, 17W19, 17W20, 17TW01, 17TW02, 17TW03, and 17TW04 were submitted to the laboratory without a preservative. This is a deviation from the Sampling and Analysis Plan (SAP) that was not discussed in Section 2.2.9. Please provide a discussion of the rationale for submitting unpreserved VOC samples to the laboratory. In addition, please provide documentation that the laboratory was notified that the samples were not preserved.
4. Table F-1, Analytical Results for Soil Samples – Analytical results for total petroleum hydrocarbons as motor oil (TPHmo) are listed as “NA” for the following samples: IR17SB006, IR17SB007, IR17SB010, IR17SB011, IR17SB012, IR17SB013, IR17SB015, IR17SB016, IR17SB017, IR17SB019, IR17SB020, IR17SB022, IR17SB027, IR17SB029, IR17SB030. Please include an explanation in the “Notes” section of the table as to why the analytical results for TPHmo are “Not applicable”.

“Other components” are listed as constituents under Diesel/Motor Oil Range and Gasoline Range Petroleum Hydrocarbons. Please provide an explanation of “other components”.

It appears that samples IR17SB031 through IR17SB037 were not analyzed for TPHmo. If this is a typographical error, please correct; otherwise, include in Section 2.2.9 an explanation of this deviation from the SAP.
5. Table F-2, Analytical Results for Groundwater Samples – Analytical results for TPHmo are listed as “NA” for the following samples: 02817W10 and 02817W12. Please include an

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explanation in the “Notes” section of the table as to why the analytical results for TPHmo are “Not applicable”.

Similar to Comment #4, please provide an explanation of “other components”.

Please contact me at (510) 622-2756 or pjorgensen@waterboards.ca.gov if you have any questions.

Sincerely,



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Engineering Geologist

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