Arc Ecology

Environment, Economy, Society, & Peace

September 5, 2003

Keith Forman
Department of the Navy
Naval Facilities and Engineering Command, Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5190

Re: DRAFT Parcel E Nonstandard Data Gaps Investigation Landfill Liquefaction Potential, Hunters Point Shipyard, San Francisco, California, dated August 1, 2003

Dear Mr. Forman:

I have reviewed the Draft Parcel E Nonstandard Data Gaps Investigation Landfill Liquefaction Potential, Hunters Point Shipyard, San Francisco, California, dated August 1, 2003. I have the following comments about the document:

1) General: The introduction of the report states that "liquefaction evaluation was initiated because of concerns that liquefaction could cause instability or movement in the landfill or cover." However, the potential impact of soil liquefaction on contaminant migration from the landfill to other areas of Parcel E or beyond Parcel E is not addressed in the liquefaction investigation. An area of particular concern is the barrier wall installed below ground surface to prevent migration of methane from the landfill to University of California, San Francisco (UCSF) property. The liquefaction investigation does not address the potential effects of liquefaction-induced lateral ground displacement, soil settlement, and groundwater level fluctuations on the structural integrity, position, and continued effectiveness of this barrier system. What is the potential impact of liquefaction on overall contaminant migration at the landfill and on the methane barrier wall in particular? If these analyses have not been conducted, when will they be conducted and where will the information be documented?

2) Section 3.1 Cone Penetrometer Testing, page 6: Section 3.1 references Appendix A, the Cone Penetrometer Testing (CPT) logs and specific parameters recorded in the CPT logs. The actual logs contain abbreviations not referenced in the text, and the relationship between the measured and calculated values is not always explained. Please define all abbreviations used in the logs, and explain how the calculated values are determined from the measured values.

3) Section 4.2.2: Probabilistic Evaluation, page 10: Probabilities of seismic hazards are written incorrectly. There is a 21 percent probability (0.21 probability) of M≥6.7 on the San Andreas Fault before 2032, not "a probability 0.21 percent." Similarly, there is a 17 percent probability (0.17 probability) of M≥7.0 and a 9 percent probability (0.09 probability) of an M≥7.5, not "probabilities of 0.17 and 0.09 percent." Please correct the earthquake probability statistics in the report.

4) Section 4.3 Ground Acceleration: The California Geological Survey (CGS) 2000 seismic hazard evaluation of San Francisco indicates a peak horizontal bedrock acceleration (PHBA) of 0.44 to 0.53 gravity (g) for firm rock, a PHBA on the order of 0.49 to 0.59 g for soft bedrock, and a peak ground acceleration (PGA) of about 0.53 to 0.60 g in the Hunters Point Shipyard vicinity. Therefore, it is not clear why a PHBA of 0.45 to 0.53 g, a PGA from 0.45 to 0.50 g, and an upper bound acceleration of 0.50 g were chosen as the values for analysis in this investigation: those values do not represent the PHBA upper limit for the site, and the PGA range is

833 Market Street, Suite 1107
San Francisco, California 94103, United States of America
PHONE: 415.495.1786 | *FAX:* 415.495.1787 | *EMAIL:* arc@igc.org

below the CGS estimated values for this site. Why were these values chosen? If these lower values are used in the calculations and modeling of liquefaction potential, will the result be to underestimate the effects relative to what is indicated in the CGS evaluation?

5) Section 4.3 Ground Acceleration, page 11: The descriptions of Soil Profiles A and B in the narrative do not match the description of the profiles indicated in Table 5. Please correct either the narrative description or the Table, as needed.

6) Section 5.2.1 Soil Borings: The report recommends further analysis to verify the overall stability of waste and landfill cover slope stability and states that slope stability analyses will be presented in the feasibility study for the landfill. It does not state when analyses of overall waste stability will be presented. Have analyses of overall waste stability been conducted at this time? If not, when will they be conducted? When will this information be presented and where will it be documented?

7) Section 6.0 Conclusions: The report concludes that "distress to the landfill system because of soil liquefaction could be readily repaired." However, earlier Section 5.2.1 Soil Borings, page 13 states, "Settlement of about 10 inches would not affect the performance of the landfill cover and closure system." In the same section, page 14 states, "If lateral movement were to occur it should not affect the overall stability of the waste and soil portions of the landfill cover." These two statements in Section 5.2.1 imply that no damage to the landfill cover would occur as a result of the modeled liquefaction. What specific "distress" is being referred to in the conclusions, and how would it be repaired? What would be the short- and long-term effects of this distress on landfill contaminant migration?

In addition, I have some minor comments:

8) Section 4.2.2: Probabilistic Evaluation, page 9: Listed earthquake probabilities are from the most recent report by Working Groups on California Earthquake Probabilities (WG02), not from WG99, as stated. Please verify and correct the references, as needed.

9) Figure 1: Facility Location Map: Similar coloration of parcel boundary and roads makes it difficult to easily identify parcel boundaries. Please consider revising to make it easier to read.

10) Figure 2: SPT and CPT Location Map: Notation in legend for SPT differs from notation on actual figure (legend references "SPT" but map uses "S"). Please consider revising the figure so that legend and actual notation correspond.

11) Figure 4: Major Faults of the San Andreas Fault System Within 50 km of Hunters Point Shipyard: Figure referenced appears to be from http://quake.wr.usgs.gov/research/seismology/wg02/summary/ not from http://quake.wr.usgs.gov/research/seismology/wg02/. Please verify the source and correct the reference, as needed.

12) Appendix B: Water levels are not indicated on logs of Boring S-01 and Boring S-04. Please indicate the water levels on the logs.

Arc Ecology appreciates having the opportunity to review this document. If you have any questions about my comments, I can be reached at (415) 495-1786 or Cian_Dawson@mindspring.com.

Sincerely,

Cian B. Dawson
Staff Scientist