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MOFFETT FIELD
SSIC NO. 5090.3.A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 20, 2001

Ms. Andrea Muckerman
BRAC Environmental Coordinator
Southwest Division, Naval Facilities Engineering Command
BRAC Operations Office
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

Re: Site 25, Moffett Federal Airfield

Dear Ms. Muckerman:

The U.S. Environmental Protection Agency has reviewed the Navy's *Responses to Comments on the Draft Final Responses to Comments on the Revised Final Stationwide Feasibility Study Report, Moffett Federal Airfield*, dated February 5, 2001 (RTC). Your responses to most of the comments raised in our letter of January 29, 2001, were acceptable and were discussed during our meetings of February 7th and 8th.

In the RTC, the Navy agreed to provide further clarification or information in the Final Response to Comments (e.g., on EPA Cover Letter Comment 2; General Comments 3, 5, 6, and 8; and, Specific Comments 1, 3, 5, 7, 10, and 11). In our meeting on February 7th, the Navy agreed to provide additional clarification on EPA General Comment 7, and Specific Comments 2, 4, and 8.

In addition, in our meetings of February 7th, 8th and 15th, we discussed issues raised in our Cover Letter Comments 1 and 3, and General Comment 2, related to ecological risk assessment assumptions. We were not able to reach agreement over bioavailability assumptions used to derive the Navy's "acceptable exposure limits." Our position is explained in Attachment 1 to this letter. However, using EPA assumptions, and risk management considerations, we were able to reach agreement with you on proposed cleanup numbers we believe to be protective of the ecological receptors selected for this site, as follows:

PCBs:	0.47 ppm
Lead:	148 ppm
Zinc:	454 ppm (unless modified by leachability test)*
Total DDT:	0.166 ppm

As indicated in our Cover Letter Comment 3, on February 7th we presented clarification of EPA's five year review, ecological monitoring requirements for this site, for protection of biological receptors. Attachment 2 outlines these general requirements.

Finally, we believe that Surface-Water Ambient Water Quality Criteria (AWQC) are potentially Applicable or Relevant and Appropriate Requirements (ARARs) for Site 25. The Navy intends to address this ARAR by taking post-remediation surface water quality sampling, to ensure that exceedences of AWQC have not occurred as a result of Site 25-related releases. In addition, EPA, the Navy and the RWQCB have agreed that leachability testing will be performed prior to remediation for zinc, to ensure that 454 ppm is protective of AWQC. *(In the case that this number is not protective, the BCT has agreed that the Navy will use the ambient number of 164 ppm ((Dust Marsh average)) at the low end, or another number based on the testing, not to exceed 454 ppm.)

We appreciate your response to our comments and pending our concurrence on the Final RTC, we anticipate moving forward with the the Proposed Plan and Record of Decision. Please call me at (415) 744-1685, if you have any questions regarding these comments.

Sincerely,

Roberta Blank

Roberta Blank
Remedial Project Manager

Attachment 1: EPA Comments on Navy Ecological Risk Assumptions
Attachment 2: EPA General Requirements for Five Year Review Ecological Monitoring, Site 25

cc: Lynn Suer, RWQCB
Don Chuck, NASA
James McClure, RAB
Kevin Woodhouse, City of Mountain View
James Boarer, MEW

ATTACHMENT 1
EPA Comments on Navy Ecological Risk Assumptions
Used to Derive AELs
for Moffett Federal Airfield Site 25

Exposure is defined in the Wildlife Exposure Factors Handbook (EPA, 1993) as the co-occurrence of or contact between a stressor and an ecological component. The term used to describe this metric is *potential dose,* which is defined as the amount of chemical present in food or water ingested, air inhaled, or material applied to the skin.

The potential dose to a receptor can be estimated by the process described in the Handbook on pp 4-1 through 4-26. A general equation for estimating this dose is shown on page 4-1 (see below). The potential dose is estimated as the product of the concentration in the contacted medium (C) as it varies over time multiplied by the intake rate or the mass ingested or inhaled by an animal per unit time (IR). The intake rate for the mallard as the Site 25 target receptor was obtained from published literature sources. These data will often vary depending upon the source of data and the criteria used to select the values chosen as input to the above calculation. Of course, with different data, the estimated intake rate will vary which affects the estimate for the potential dose.

If the variation in time is unknown, as is the case at Moffett Field, it is assumed that C and IR are constant and the potential dose (Dpot) is estimated as

$$Dpot = C \times IR \times ED \qquad \text{[4-2, Ibid]}$$

where ED is the exposure duration.

The exposure estimated by using the above equation is intended to be conservative enough to protect a broad range of species on the site given that, typically, the only site-specific data available from the site are the concentrations of contaminant in the matrix. This is the case at Moffett Field. The estimated dose may be refined at any time by performing site-specific studies to provide data on how contaminant concentrations vary over time, the site-specific chemical form of each of contaminants, the actual receptors and the time they spend on site, what they eat, how much they eat, and the life stage when they eat it. Feeding studies could also be performed to elucidate the effects of different levels of contaminants on the receptor, either positive or negative

In addition, the practice is to assume that all of the contaminant is available or that the estimated dose is an administered dose, not an absorbed dose. The absorbed dose is the actual amount of the contaminant entering the blood stream of the receptor. Determining the absorbed dose requires knowing the exact chemical state of the contaminant in each of the foods ingested by the receptor. This is information that is unavailable for the site and cannot be estimated. However, in the Navy Response to Comments, Attachment B, December 27, 2000, the Navy has assumed to estimate the actual absorbed dose of lead and zinc to the mallard from contaminants in the stormwater retention pond (Site 25). Under their assumption, the exposure is reduced by a

significant amount. The Navy assumes that a bioavailability factor of 10% is appropriate for abiotic exposure pathways and 30% for consumption of dietary items for the mallard duck and has incorporated these assumptions into the exposure model. The Navy is basing these estimates on their bioavailability guidance (NFESC, 2000) and a literature review which may not have been comprehensive. EPA bases this observation on the existence of studies of metals uptake from sediments collected in the near vicinity of Moffett Field demonstrating that acid volatile sulfides in excess of simultaneously extracted metals do not necessarily render some metals unavailable to biota (Lee, et al, 2000). This is contrary to statements in Attachment B.

EPA believes this adjustment for bioavailability is in error for two reasons. First, the estimated toxicity represented by the toxicity reference value, as is standard practice, is based on an administered dose, not an absorbed dose, so no adjustment for bioavailability or absorption efficiency should be made for the contaminant in food or sediment *without site-specific data.* This conservative approach is necessitated by the large measure of uncertainty involved in the development of Moffett cleanup levels. Second, the Navy does not provide any site-specific information to support their assumption that the absorbed dose is much less than the potential dose as calculated by the EPA. EPA and the other regulatory trustee agencies do not consider this approach to be an acceptable practice in ecological risk assessment, as it results in a potential dose estimate which may underestimate the overall risk for site receptors.

References Cited:

Naval Facilities Engineering Service Center (NFESC). 2000. Guide for Incorporating Bioavailability Adjustments into Human Health and Ecological Risk Assessments at U.S. Navy and Marine Corp Facilities. NFESC User's Guide UG-2041-ENV. July 2000

Lee, Byeong-Gweon, Sarah B. Griscom, Jung-Suk Lee, Heesun J. Choi, Chul-Hwan Koh, Samuel N. Luoma, Nicholas S. Fisher. 2000. Influences of Dietary Uptake and Reactive Sulfides on Metal Bioavailability from Aquatic Sediments. Science. Vol 287, pp.282-284.

Parsons Engineering Science, Inc. 2000. Draft Remedial Action Plan for the Former Small Arms Range SAR1, Travis Air Force Base, California. Prepared for the Air Force Center for Environmental Excellence Technology Transfer Division (AFCEE/ERT), Brooks AFB, Texas. January.

USEPA, 1993. Wildlife Exposure Factors Handbook. Office of Health and Environmental Assessment Office of Research and Development U.S. Environmental Protection Agency Washington, DC 20460. EPA/600/R-93/187a

ATTACHMENT 2
EPA General Requirements for
Five Year Review Ecological Monitoring for Moffett Site 25

The Five year review is intended to answer three questions: A) is the remedy functioning as intended by the decision document, B) are the assumptions used at the time of the remedy still valid, and C) has any other information some to light that could call into question the protectiveness of the remedy?

A. To address the remedial action performance verify that the RA continues to be operating and functioning as designed and is performing as expected in achieving cleanup levels:

1. Measure the chemical concentrations of COCs (PCBs, Total DDT, Lead and Zinc) randomly, to get adequate sample coverage in the Storm Water Retention Pond and Eastern Diked Marsh (Site 25), and compare these to the cleanup levels in the ROD. This would be to check for adequate source control, remobilization of COCs from sediments, and to verify the cap is effective. This is expected to be a one time data collection event. As part of the sampling strategy, it is recommended that the Navy explore innovative and cost effective sampling techniques.

2. If cleanup levels are exceeded, then use the existing dose equations to derive the hazard quotients and back calculated cleanup numbers and compare these to the HQs used to select the cleanup levels. If there is no significant difference, then the objectives are considered to be achieved. If there is a significant difference, perform tissue samples (bioassay) and perform additional risk assessment steps.

3. Address other post-cleanup monitoring activities, such as preventing input of contaminants into the stormwater retention pond by maintaining the settling basin, confirming that best management practices are used to control storm water influent and that surface water exceedences of AWQC are not occurring, evaluating integrity of soil cap, ensuring the pond dries out seasonally, re-vegetation/restoration effectiveness evaluation, maintenance of institutional controls, etc.

B. To assess if assumptions used at the time of remedy are still valid, evaluate any changes in promulgated standards that were ARARS, newly promulgated standards, and other information affecting protectiveness (e.g., new toxological information, new site use situation/site conditions changes, new contaminants, sources, pathways, a change in receptors, or changes in standardized risk assessment methodologies), which would bear on the question of protectiveness.

C. In addition, a five year review involves assessing whether any new information has come to light that would call into question the protectiveness of the remedy. This is mostly answered by A & B above, but may also involve any other information that comes to light that could call into question the protectiveness of the remedy.