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ALAMEDA POINT
SSIC NO. 5090.3

April 11, 2003

Mr. Andrew Dick
Department of Navy
Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
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DRAFT REMEDIAL INVESTIGATION REPORT, SKEET RANGE, OPERABLE UNIT 4B, SITE 29, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Dick:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document dated January 28, 2003. We disagree that the sediment at the subject site is unlikely to pose threats to human health and the environment and no further action is necessary. Attached are our detailed comments. Should you have any questions, please call me at (510) 540-3767.

Sincerely,

Marcia G. Liao

Marcia Liao, Ph.D., CHMM
Hazardous Substances Engineer
Office of Military Facilities

enclosure

cc: (see next page)

OSP 99 25436

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TO: Marcia Liao, DTSC Project Manager
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FROM: James M. Polisini, Ph.D.
Staff Toxicologist, HERD
1011 North Grandview Avenue
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DATE:March 28, 2003

SUBJECT: DRAFT REMEDIAL INVESTIGATION REPORT, FORMER SKEET RANGE, ALAMEDA POINT, CALIFORNIA [SITE 201209-00 PCA 18040]

BACKGROUND

HERD has reviewed the document titled *Draft Remedial Investigation Report, Skeet Range, Alameda Point, California*, dated January 28, 2003. This document was prepared by Battelle offices in Duxbury, Massachusetts, Entrix Inc. offices in Walnut Creek, California and Neptune & Company offices in Los Alamos, New Mexico.

The skeet range is located on the northwestern boundary of Naval Air Station (NAS) Alameda and was developed offshore as two active shooting ranges (northern and southern) and operated for approximately 30 to 40 years. The skeet range was closed in 1993. The Contaminants of Concern (COCs) are lead and lead shot in addition to polycyclic aromatic hydrocarbons (PAHs) associated with clay targets and clay target fragments.

GENERAL COMMENTS

HERD does not agree with some of the assumptions used to develop the Ecological Hazard Quotients (HQs), specifically the adverse effect dose and the estimate of the gastric retention time for diving ducks exposed to a specific number of shot. The Human Health Risk Assessment (HHRA) should include other exposure pathways and scenarios than those provided.

SPECIFIC COMMENTS ON ECOLOGICAL RISK ASSESSMENT

1. Please present the range of lead concentrations in sediment in the initial discussion of potential hazard to benthic ecological receptors (Section 1.1.3.1, page 6). Most benthic receptors have limited capability to travel across the sediment and the average concentration across and area with dimensions of approximately 1300 feet by 800 feet (Section 1.1.1, page 1) are not necessarily applicable.

2. HERD suggests that the presence of the maximum shot density in the 4 cm to 20 cm depth range (Section 1.1.3.2, page 8) is indicative of continued resuspension of the shot deposited prior to the close of the skeet range in 1993. If correct, this would indicate that a large amount of the skeet shot deposited in the intertidal and sub-tidal sediments remains available to ecological receptors. In addition, only three 100 cm cores were collected (Section 2.2, page 13) indicating that there may be data gaps regarding the potential distribution of skeet range shot at depths greater than 20 cm.

3. The '...numerous polychaetes up to 12 cm in length...' observed in the sediment grab samples (Section 2.4, page 32) may be better indicators of the potential hazard to omnivorous upper trophic level receptors should additional investigation be required for the skeet range. Soft-bodied invertebrate tissue concentrations assessed in the Hunters Point Validation Study for Parcel F indicated that some metals were elevated in relation to hard-bodied invertebrates (e.g., bivalves).

4. How can samples from station SK-39 and SK-56 be 'lost' during processing (Section 2.4, page 34)? Please be more specific regarding whether these samples were lost during collection, transit to the laboratory, or the results were unavailable after analysis.

5. Setting the concentration of individual Contaminants of Concern (COCs) for summed contaminants (e. g., PAHs or PCBs) which

are not detected to zero for the summed concentration (Section 3.1.1, page 37) is not standard risk assessment practice. Please an assessment of the ecological hazard with the summed Low-Weight PAHs (LPHAs) and High-Weight PAHs (HPAHs) concentrations evaluated with one half the detection limit for those PAHs not detected.

6. The text indicates that PAH concentrations for sample location SK-66 are above Exposure Range Median (ER-M) values (Section 3.1.1, page 37) while the referenced figure (Figure 3-1, page 38) indicates that sample SK-06 has an elevated concentration of HPAHs. Please correct the text or the figure so that they are accurate and agree.

7. The highest density of lead shot ranges from 51 to 155 shot per liter (Section 3.1.2, page 40). Please explain how this variation in shot is entered into the binomial model to estimate ecological hazard (Section 4.1.2.2, page 77). Variation in shot/per volume would seem to be critical to determining the probability of shot ingestion per feeding event.

8. Please provide a description of the characteristics of 'pyrogenic' versus 'petrogenic' features of PAHs earlier in the text (Section 3.2, page 48) rather than reference the distinction later in the text (Section 3.2.1, page 51 and Section 7.1.1.1, page 114) in support of the GC/FID chromatographs (Figure 3-9, page 49).

9. Please describe whether the sediment concentrations were standardized and/or normalized in the Principal Component Analysis (PCA) (Figure 3-10, page 50). Also please provide the percent of variation accounted for by each Principal Components axis the eigen values and eigen vectors for each PAH on each PCA axis for review.

10. We appreciate the effort the Navy has made in investigating the potential rate of sediment deposition (Section 3.3, page 53) regarding lead shot. However, the results of these studies lead to the conclusion that the exposure pathway is currently complete, and may remain complete in the future, given the minimal number of sediment cores taken for this study (i.e., three) and the fact that skeet range shot still appears in the surface sediments there. The exposure pathway for shot in surface sediments is therefore complete and likely to remain complete in the future barring remedial action.

11. The fact that colonies of *Ampelisca adibata* become unstable and washout (Section 3.3.2, page 57), exposing sediments with shot, is reinforcement for the continued potential exposure pathway for lead shot in surface sediments.

12. HERD accepts the concentration of the lead hazard evaluation on lead shot based on the fact that sieved sediments were within the sediment 'ambient' lead concentrations established by the San Francisco Regional Water Quality Control Board (SFRWQCB) (Section 4.1.1.2, page 64), not based on the discussion of the relative bioavailability of sediment-sorbed lead.

13. Please identify the investigations of 'other skeet ranges' which are the basis for concluding that lead and PAHs concentrations in pore water and sediment are not of concern (Section 4.1.1.3, page 66).

14. If, as the text states, 'lead shot is mechanically ground down by the gizzard and dissolved by acid secreted by the preventriculus' (Section 4.1.2.1, page 71, referenced to Pain, 1996), the amount of lead ingested is the critical factor, not the size of the shot (Section 4.1.2.1, page 71). No adjustment for shot size appears required.

15. Given the range of No Observable Adverse Effect Levels (NOAELs) (Table 4-3, page 75) and the fact that lead shot is ground down and dissolved in the preventriculus, as outlined above, HERD considers a dose of approximately 2 shot per bird a level of concern for waterfowl, not 9 or 10 shot per bird.

16. The description of the grinding and dissolution of shot in the proventriculus (Section 4.1.2.1, page 71) seems to remove the necessity of determining a grit/retention time period (Section 4.1.2.2, page 82) as part of the binomial modeling. Unless this contradiction can be resolved, the retention period portion of the binomial modeling should be removed and the probabilities recalculated.

17. HERD defers to the U.S. Fish and Wildlife Service (USFWS) regarding the stated probability of the hazard quotient exceeding 1 of $1x10^{-3}$ as a reasonable level of health-protectiveness for waterfowl (Section 4.1.2.3, page 83).

SPECIFIC COMMENTS ON HUMAN HEALTH RISK ASSESSMENT

18. A typographic error identifies the firearm used as a 'shoot gun' (Section 5.2, page 103, second paragraph). Please correct this typographic error.

19. HERD agrees that current use poses minimal potential human exposure due to the locked gate which limits direct access to the sediments (Section 5.3, pages 104 and 105). The relatively low Bioaccumulation Factor (BAF) for lead from sediment to fish or shellfish also indicates that the current human exposure to site-specific lead is most likely minimal related to intake from other sources.

20. The Human Health Risk Assessment does not sufficiently consider all the potential future exposure pathways (Section 5.3, page 105). In the event this area is developed as a recreational park, containing a golf course, baseball diamonds and soccer fields, as outlined (Section 1.1.1, page 3 and Section 5.3, page 104), there is no reason to presume that recreational users and children would not enter the intertidal area, especially during low tides. The presence of a sandy beach beyond the rip-rap makes this a reasonable supposition. The potential future health risk posed by the presence of lead, lead shot, polycyclic aromatic hydrocarbons (PAHS) and remnants of radium dials should be evaluated for this potential future use scenario to complete the HHRA for this area.

CONCLUSIONS

HERD concludes that approximately 2 shot per waterfowl is an adverse dose. The document states that ingested lead shot are ground and dissolved in the digestive system of waterfowl. This makes a shot retention factor unnecessary in the binomial assessment of hazard. Both these points significantly increase the hazard posed by lead shot at the skeet range.

REFERENCE

Pain, D. 1996. Lead in Waterfowl In:Beyer, W.N., G.H. Heinz, and A. W. Redmon (Eds.), Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations. CRC Press, Inc., Boca Raton, FL.

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