Department of Toxic Substances Control

Edwin F. Lowry, Director
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, California 94710-2721

Winston H. Hickox
Secretary for
Environmental
Protection

Gray Davis
Governor

August 6, 2003

Southwest Division
Naval Facilities Engineering Command
Attn: Mr. Jerry Dunaway
1220 Pacific Highway
San Diego, California 92132-5190

Dear Mr. Dunaway:

NAVY MARE ISLAND DRAFT INVESTIGATION AREA F2 (IR04) REMEDIAL INVESTIGATION, DATED 4/2003

The Department of Toxic Substances Control has conducted a limited review of the subject document. The attached partial comments are forwarded to you for your consideration.

Should you have any questions regarding this letter, please call me at (510) 540-3773.

Sincerely,

Chip Gribble
Remedial Project Manager
Base Closure Unit
Office of Military Facilities

Attachment

cc: Mr. Henry Chui
Mr. Mr. Gary Riley
Ms. Emily Roth
Ms. Carolyn d'Almeida

Department of Toxic Substances Control

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

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Berkeley, California 94710-2721

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Governor

TO: Chip Gribble, DTSC Project Manager
Henry Chui, DTSC Project Manager
OMF Berkeley Office
700 Heinz Street, Second Floor
Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.
Staff Toxicologist, HERD
1011 North Grandview Avenue
Glendale, CA 91201

DATE: August 4, 2003

SUBJECT: MARE ISLAND NAVAL SHIPYARD DRAFT INVESTIGATION AREA (IA) F2 ECOLOGICAL RISK ASSESSMENT (ERA)
[SITE 201208-00 PCA 18040 H:72]

BACKGROUND

HERD reviewed the document titled *Draft Investigation Area F2 (IR04) Remedial Investigation, Mare Island, Vallejo California, DS.0136.13265*, dated April 2003. This Remedial Investigation (RI) Report was produced by Tetra Tech EM Inc. of San Diego, California. This review is in response to your forwarding of the CD-ROM requested by HERD.

Mare Island Naval Shipyard (MINSY) was the first naval station on the Pacific Coast, where shipbuilding began in 1854. The former MINSY is located on a peninsula approximately 30 miles northeast of San Francisco. The peninsula is bounded to the east, south, and west by the Napa River (Mare Island Strait), Carquinez Strait, and San Pablo Bay, respectively. Mare Island was originally an island of approximately 1,000 acres with surrounding wetlands of approximately 300 acres. Fill material was added to enlarge Mare Island and connect it to the mainland. MINSY has been in operation under Navy control from approximately 1853 until the recent transfer to the City of Vallejo through the State Lands Commission.

Investigation Area (IA) F2 occupies about 18.65 acres along the eastern side of Mare Island just south of the finger piers. IA F2 is bordered to the west by Railroad Avenue, to the north by Berth 24, to the east by Mare Island Strait, and to the south by Buildings A215, A222, and A223 in IA F1. IA F2 contains an Installation Restoration (IR) Site, IR04. The Navy used IA F2 for sandblasting and painting operations from early 1950s to 1992. IR04 is underlain by Spent Sandblast Material (SBM) or artificial fill.

GENERAL COMMENTS

HERD does not agree with the identification of only Upland Area 3A and Subarea 2 as the locations within IA F2 which should be considered for remedial action.

SPECIFIC COMMENTS

1. The stated purpose of this report is "..(1) to determine where releases to the environment have occurred" (Section 1.0, page 1-1). From the listed maximum sediment concentrations (Attachment A) determined for the wetland areas of IA F2, it is obvious that there have been releases to the wetland area of IA F2. The Navy's presentation of inorganic element concentrations (Figures J-2 through J-10) also indicate releases from Navy activities at IR04. HERD does not agree that offshore intertidal areas and some subtidal areas can be eliminated from further consideration.

2. Planned reuse for most of IA F2 is defined as 'residential/marina' reuse (Section 1.0, page 1-2) with a lesser portion planned as wetlands/open space. Please explain how this description coincides with the Data Quality Objectives (DQO) list for the definition of the study boundaries (Table 1-5) as open space.

3. Solid wastes, including hazardous wastes and petroleum wastes, were disposed of in unlined pits located within Investigation Areas (IAs) H2, B and H1 (Section 1.2.2.3, page 1-7). HERD is able to supply digital pictures indicating floating petroleum product in trenching investigations in this area, should the Navy require. These pictures seem to be clear indications of releases by the Navy in IA H.

4. Monterey sand was the original sand blast material (SBM), followed by nickel slag material, named Green Diamond®, which was replaced by copper slag material, named Kleen Blast ® (Section 1.2.2.5, page 1-8). This comment is meant as a historical note and no response is required from the Navy or Navy contractors.

5. HERD objects to the statement that 'In response to concerns of the regulatory agencies regarding the completeness of the investigation, the RI for the subareas in IA F2 was delayed for reporting in this current document.' (Section 1.2.3.7, page 1-14). HERD has repeatedly requested the Navy complete the assessment of past releases from IR04 ever since the release of the Operable Unit (OU) 3 Remedial Investigation (RI) Report in 1996. We suggest that the language be amended to indicate that the investigation of IR04 took a longer period of time than first planned.

6. HERD specifically stated in meetings with the Navy and Navy consultants that visual estimation of the amount of SBM would not be acceptable. Please provide the methodology for 'visually estimating' the percentage of spent SBM (Section 1.2.3.10, page 1-15 and Table 1-3) and the criteria for estimating the percent. It is difficult to believe the a 5 percent differential could be detected visually.

7. HERD defers to the DTSC Geological Services Unit (GSU) regarding the hydrological balance, water inflow and outflow component estimates (Section 1.2.4.6, page 1-29) and the potential transfer of groundwater contaminants to Mare Island Strait given that 400 yd^3 of spent SBM was generated at IR04 each year (Section 1.2.2.5, page 1-8).

8. Previous statements indicate that the planned reuse of IA F2 is mainly 'residential/marina' (Section 1.0, page 1-2). Industrial scenario Preliminary Remedial Goals (PRGs) (Section 1.4.4.1, page 1-37) are, therefore, not sufficient to evaluate potential human health risk under the proposed land use. A deed restriction, ensuring that IA F2 is not converted to residential use in the future, should be placed on IA F2 based on this human health evaluation. This HERD commenter defers to John P. Christopher, the HERD human health risk assessor, regarding this comment.

9. Please indicate why a landfill is indicated in the figure of Mare Island Geology for IA F2 (Figure 1-6). This is the first mention of a landfill near IR04 of which we are aware. If this notation is meant to indicate the 'Paint Can Pit' figured later (Figure 1-12), please make the text labeling consistent.

10. Given that past practices for disposal of SBM at IR04 included pushing accumulated SBM into Mare Island Strait, it is difficult to believe that the only areas of IA F2 impacted sufficiently to be evaluated in a Feasibility Study (FS) are Upland Area 3A and Subarea 2 as mapped (Figure 1-14). The maximum concentrations

in the wetland samples (Attachment A of this memorandum) easily exceed San Francisco Regional Water Quality Control Board (SFRWQCB) sediment 'ambient' concentrations. HERD recommendations for inclusion in a Feasibility Study (FS) or remedial action are indicated below.

11. Future use may enter in the risk management decision regarding IA F2 (Table 1-5) given there is a deed restriction to maintain that use in perpetuity. HERD never reviewed, nor agreed to, the Data Quality Objectives (DQOs) pertaining to risk assessment listed (Table 1-5). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

12. The U.S. EPA Region 9 (2002) human health industrial scenario PRG for total polychlorinated biphenyls (PCBs) is not 10 mg/kg at listed (Table 1-6), but 0.74 mg/kg. This reviewer defers to John P. Christopher, the HERD reviewer for the Human Health Risk Assessment (HHRA) at Mare Island.

13. National Oceanic and Atmospheric Administration (NOAA) Exposure Range-Media (ER-M) values are used to calculate the invertebrate Hazard Quotient (HQ) (Section 4.1.3, page J-44). There is a range of effect frequency between the Exposure Range-Low (ER-L) concentrations and the NOAA ER-M values (i.e., a dose response curve) which may be useful for evaluation of potential remedial actions. The HQ based on the NOAA ER-L should also be supplied for consideration by the risk managers.

14. A population-level effect is proposed as a 20 percent or 30 percent adverse effect level in the development of the Lowest Observable Adverse Effect Level (LOAEL) (e.g., Section 6.3, Page J-108). HERD finds this an interesting proposal but biologically unsupportable for the following reasons:

    A. Assuming that the 20 percent or 30 percent adverse effect level in the LOAEL exposure would produce population effects is completely dependent on the life history of the representative species being evaluated. A population of a species producing few offspring with a lengthy breeding/hatching or gestation/development period would suffer a much greater adverse effect than a population of a species which produces multiple offspring in multiple breeding seasons over the same period of time (e.g., r-selected versus k-selected species).

B. LOAEL values are usually established based on the adverse effect on the average cohort group response in an exposure (e.g., n>1), not the lowest intake value of an individual which demonstrates an adverse effect. Some of the toxicity experiments on small mammals or avian species may have generated a LOAEL based on a 10 percent, 20 percent or 30 percent adverse effect level in the average response of one of the cohorts. Otherwise, estimated LOAELs can be established by the use of uncertainty factors or modifying factors based on frank effects. Use of a mean body weight, to calculate intake rates based on a regression (e.g., Table J-14, footnote a) indicates that the intake rate is the estimated median intake for the species in mg/kg/day. Using a 30 percent reduction in the LOAEL value of mg/kg/day based on growth, for instance (Section 6.3, Page J-108) logically means that there is a 30 percent incremental adverse effect on those individuals with intake rates above the mean body weight intake rate. This level of adverse effect, depending on the toxic effect measured in the laboratory experiment, could have extremely adverse effects on a population of vertebrates. All of these comments are, of course, based on the lack of uncertainty factors or modifying factors in development of the LOAEL. Given this, HERD does not accept a 20 percent or 30 percent adverse effect level based on a LOAEL Toxicity Reference Value (TRV) as appropriate in an ERA in a general approach to ERAs for vertebrate species.

C. HERD considers the HQ developed using the No Observable Adverse Effect Level (NOAEL) and the HQ developed using the LOAEL to be the bounds within which population level ecological hazard may be inferred.

15. Please explain why the 95 percent Upper Confidence Limit (95UCL) on the mean is 'Not Applicable' for many polycyclic aromatic hydrocarbons (PAHs) (Table J-2).

16. Please place the footnote notation of 'c' indicating the specific compounds for which the Bioaccumulation Factor (BAF) of heptachlor was used with each individual compound rather than in the column heading (Table J-10).

17. Percent moisture value for mouse prey items was set at 68 percent based on published mouse tissue moisture concentrations (EPA, 1993) (Table J-21). Ecological investigations at Mare Island developed tissue moisture values for Mare Island-specific receptors. Please explain why generic tissue moisture concentrations were

used rather than Mare Island-specific values and use the Mare Island-specific values if more protective.

18. HERD does not believe that there are 'ambient' concentrations of monobutyltin, dibutyltin and tributlytin in upland habitats (Section 8.2, page J-60) as indicated in the text. Any of these compounds in upland areas, therefore, were most likely from Navy activities at Mare Island

19. The areas of IA F2 identified for investigation of remediation are Upland Area 3A and Subarea 2. This excludes the mudflat area identified as posing an adverse potential (Section 8.3 and Section 8.4, page J-152).

CONCLUSIONS

Given that past practices for disposal of SBM at IR04 included pushing accumulated SBM into Mare Island Strait, it is difficult to believe that the only areas of IA F2 impacted sufficiently to be evaluated in a Feasibility Study (FS) are Upland Area 3A and Subarea 2 as mapped (Figure 1-14). The maximum concentrations in the wetland samples (Attachment A of this memorandum) easily exceed San Francisco Regional Water Quality Control Board (SFRWQCB) sediment 'ambient' concentrations.

HERD recommends that the areas identified for accelerated remediation or consideration of remedial alternatives should include Area 3A, Subarea 2, (as identified by the Navy), as well as the mudflat and the wetland subareas of IA F2.

REFERENCES

U.S. Environmental Protection Agency. 1993. Wildlife Exposure Factors Handbook: Volumes I and II. EPA 600/R-93/187a and EPA 600/R-93/187b. December.

HERD Internal Reviewer: Michael Anderson, Ph.D.
Staff Toxicologist, HERD

cc: Sonce DeVries, Ph.D.
U.S. EPA Region IX Ecological Risk Assessor
Superfund Technical Assistance
75 Hawthorne (SFD-8-B)
San Francisco, CA 94105

Charlie Huang, BTAG Member
California Department of Fish and Game
1700 K Street, Suite 250
P.O. Box 944209
Sacramento, CA 94244-2090

James Haas, BTAG Member
U.S. Fish and Wildlife
Environmental Contaminants Section
2800 Cottage Way (W-2605)
Sacramento, CA 95825

Laurie Sullivan, BTAG Member
Coastal Resources Coordinator (H-1-2)
c/o U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Denise Klimas, BTAG Member
Human and Ecological Risk Division
8800 Cal Center Drive
Sacramento, California 95826

Ms. Julie Menack
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Attachment A: San Francisco Regional Water Quality Control Board (SFRWQCB) 'Ambient 'Inorganic Element Sediment Concentrations (Gandesbery and Hetzel, 1998) and maximum Investigation Area (IA) F2 sediment concentrations.

	SFRWQCB <40 % Fines (mg/kg)	SFRWQCB <100 % Fines (mg/kg)	IA F2 Maximum Wetland (mg/kg)	IA F2 Maximum Mudflat (mg/kg)	IA F2 Maximum Offshore (mg/kg)
Antimony			31.7	20.8	8.1
Arsenic	13.5	15.3			18
Cadmium	0.25	0.33	3.9		4.1
Chromium	91.4	112	4770	4410	196
Cobalt			38.9	56.3	56.3
Copper	31.7	68.1	439	421	101
Lead	20.3	43.2	1250	171	61.5
Mercury	0.25	0.43			
Molybdenum			3.6	3.0	4.9
Nickel	92.9	112	2590	2170	135
Selenium	0.59	0.64		2.7	
Silver	0.31	0.58			
Tin			16.3	19.2	17.1
Thallium			1.2		
Zinc	97.8	158	1130	550	203

California Environmental Protection Agency. Regional Water Quality Control Board, San Francisco Region. Staff Report, Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments. Prepared by Tom Gandesbery and Fred Hetzel,, Ph.D. May, 1998.