STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

REGION 2
700 HEINZ AVE., SUITE 200
BERKELEY, CA 94710-2737

November 18, 1992

Commanding Officer
Western Division
Attn: Mr. Ernesto Galang, Code 1813
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-0720

Dear Mr. Galang:

COMMENTS ON THE DRAFT ECOLOGICAL ASSESSMENT WORK PLAN, DATED SEPTEMBER 10, 1992, FOR NAVAL STATION TREASURE ISLAND

The Department of Toxic Substances Control (Department) has reviewed the Draft Ecological Assessment Work Plan, for Naval Station Treasure Island. Enclosed are the comments of the Department's Human and Ecological Risk Section and the San Francisco Bay Regional Water Quality Control Board.

If you have any questions regarding the comments, please call me at (510) 540-3809.

Sincerely,

Thomas P Lanphar

Thomas P. Lanphar
Associate Hazardous Materials Specialist
Site Mitigation Branch

Enclosure

cc: Ms. Barbara Smith
S.F. Bay Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

Dr. Jim M. Polisini
Office of the Science Advisor
Human and Ecological Risk Section
P.O. Box 806
Sacramento, California 95812-0806

Denise Klimas
National Oceanic and Atmospheric Administration
Costal Resources Coordinator
c/o U.S. Environmental Protection Agency
Technical Support Section (H-1-2)
75 Hawthorne Street
San Francisco, California 94105

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ADMIN RECORD (3 COPIES)

State of California Department of Substances Control

Memorandum

To : Tom Lanphar
Site Mitigation Branch
Region 2
Toxic Substances Control Program
700 Heinz Street, Building F,
Second Floor
Berkeley, CA 94710

Date: October 30, 1992

From : Office of the Science Advisor
Human and Ecological Risk Section
P.O. Box 806
Sacramento, CA 95812-0806

Subject: Draft Ecological Assessment Work Plan, Naval Station Treasure Island, September 10, 1992 [PCA 14650, SITE 200231-43]

Background

I have reviewed the document titled Naval Station Treasure Island, California, Ecological Assessment Work Plan Draft, dated September 10, 1992 as requested in your written request received in this office on September 15, 1992.

This is the first document received for review by the Human and Ecological Risk Section (HERS) dealing with the ecological risk assessment of Naval Station Treasure Island (NAVSTA TI).

General Comments

Insufficient detail is contained in this document to evaluate it as a work plan. This document is more accurately a scoping document which describes in general outline the approach that will taken in evaluating the potential risk posed by contaminants associated with Naval Station Treasure Island to non-human receptors.

When the full work plan is prepared for the ecological assessment it should include information regarding the nature and extent of contamination at NAVSTA TI, the outline of the tasks proposed for a preliminary qualitative assessment of risk, the decision criteria which would cause a secondary, more intensive set of investigations to be performed, evaluation points at which regulatory agency input would be solicited and the outline of the content of the completed risk assessment.

Specific Comments

Details regarding the types of "...bioassays, bioaccumulation studies, and field studies..." (Section 1.2, page 2) necessary to evaluate the risk to non-human receptors

must be included in the work plan for review and comment. All these studies are appropriate in assessing the risk associated with NAVSTA TI. The decision criteria which cause these studies to be performed must be described.

The references which will be consulted in developing the list of potentially exposed communities (Section 2.1.2, page 4) must be completely listed in the appropriate section rather than "...included among the references in Section 9.0.".

Calculation of risk based on the level of contamination above a "background" is an incomplete evaluation of risk (Section 2.1.4.1, page 5). The ecological risk assessment must address total risk as that risk posed by total media contamination. An additional calculation may be included, if desired, to attempt to identify the incremental risk posed by anthropogenic activities as a component of the total risk estimate.

The proposal for a strict quantitative approach to the selection of chemicals of concern (Section 2.1.4, page 4) cannot be approved given the current lack of standardization and experience in ecological risk assessment. The general guidance provided by HERS is to include all contaminants as chemicals of concern unless the number is so large as to make comparison with reference criteria an onerous task. Any selection process for chemicals of concern must remain a site-specific process, which requires consideration of the number of contaminants, the type and extent of media contamination and potentially complete exposure pathways. The frequency of detection criterion for selection of chemicals of concern cannot be set as a single quantitative criterion despite the fact that a five percent frequency of detection "..has previously been used in ecological risk assessment." (Section 2.1.4.1, page 5).

Draft documents such as the Draft Ecological Risk Assessment Work Plan for Hunters Point Annex (HLA, 1992) are inappropriate reference documents (Section 2.1.4.2, page 6).

Literature supporting the designation of fate and transport decision criteria as low, medium or high must be included in the text of the appropriate section and not just "...included in the reference list." (Section 2.1.4.2, page 7).

The decision of whether or not groundwater is considered should be based on whether there is sufficient groundwater contamination with volatile contaminants which could pose a threat to burrowing animals (Section 2.1.4.3, page 7).

While it may prove necessary to select terrestrial

indicator species, selection of aquatic indicator species is not necessary as the aquatic indicator species will be determined by the selection of the appropriate aquatic bioassays. A list of proposed aquatic bioassays, referenced by protocol, must be included in the ecological risk assessment work plan (Section 2.1.5, page 8).

The EPA Ambient Water Quality Criteria (AWQC) do not provide all the reference concentration data required to assess the risk to aquatic receptors (Section 2.1.6, page 8). The methodology used to derive the AWQC allows protection of 95 percent of the potential receptors. The five percent of the receptors which are most sensitive are not protected unless they are considered essential to the biological community or are economically important. HERS would require that studies published in the aquatic toxicity literature which show an effect at concentrations less than the AWQC be evaluated. Additionally, the State Water Resources Control Board has adopted criteria for enclosed bays and estuaries which are appropriate for this site. The San Francisco Regional Water Quality Control Board is in the process of approving criteria for determining maximum allowable levels of sediment contamination based on projected use.

We disagree with the statement that "Currently, there is no literature available upon which toxicity of most metals in sediments can be evaluated." (Section 2.1.6.1, page 9). The same author cited for the nonpolar organic chemical approach (DiToro) has published studies relating the bioavailability of divalent metals in sediment to the molar ratio with acid volatile sulfides.

The method proposed to evaluate exposure and potential impact to biota associated with sediments is unclear (Section 2.1.7.2, page 11). It appears that interstitial water concentrations will be compared with sediment quality criteria, which is incorrect.

The types of bioconcentration data used to evaluate "food chain effects" (Section 2.1.7.2, page 11) must be carefully evaluated and specified. Some types of aquatic bioaccumulation studies specifically exclude food chain effects by limiting exposure to contaminated physical media. The phenomenon of bioconcentration is usually considered restricted to accumulation above media concentrations while food chain effects are considered biomagnification. When no distinction is made of the route of exposure the more correct term is bioaccumulation.

Exposure pathways for terrestrial receptors should not be dropped from the analysis without more detailed evaluation than

"... it is expected that the pathways listed above account for the majority of exposures to terrestrial species.". All potentially complete exposure pathways should be evaluated as fully as possible. Those exposure pathways which cannot be fully evaluated because of a lack of data should then be noted as not fully evaluated.

Analysis of plant tissue from contaminated areas of NAVSTA TI would seem a more certain and relatively inexpensive method of developing plant concentration data than the modeling effort outlined (Section (2.1.7.3, page 14).

The benefit of this work plan to the ecological assessment effort seems problematic when the work plan was submitted on September 10, 1992 and "All field activities are on a firm schedule to be completed by September 23, 1992." (Section 4.0, page 20).

Conclusions

This document is not an adequate work plan for the ecological risk assessment at Naval Station Treasure Island. A full work plan for and ecological risk assessment should include information regarding the nature and extent of contamination at NAVSTA TI, the outline of the tasks proposed for a preliminary qualitative assessment of risk, the decision criteria which would cause a secondary, more intensive set of investigations to be performed, evaluation points at which regulatory agency input would be solicited and the outline of the content of the completed risk assessment.

James M. Polisini, Ph.D.
Associate Toxicologist
Human and Ecological
Risk Section

Reviewed by: James C. Carlisle, DVM, M.Sc.
Staff Toxicologist
Human and Ecological Risk Section

cc: See next page.

cc: Michael Wade, Ph.D., DABT
Human and Ecological Risk Section

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STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
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November 16, 1992
File No. 2169.6013(BMS)

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Avenue, Building F, Suite 200
Berkeley, CA 94710

Subject: Naval Station, Treasure Island, California, Draft Ecological Assessment Work Plan

Dear Mr. Lanphar:

The staff of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has completed its review of the above document received in our office on September 15, 1992. Presented below are comments that should be addressed.

GENERAL

1. This document does not constitute a workplan, but rather a scoping document. The proposed approach is acceptable, but the document is too general to be considered a workplan. A site-specific workplan should be developed for Treasure Island.

2. The SFRWQCB staff supports the phased approach proposed in this scoping document. However, the outlined approach does not provide a decision tree for initiation of the second phase of the risk assessment. Please indicate what criteria will be used to make that decision and subsequent investigations. For what purposes will the data be used? What are the data quality objectives?

3. The question of what constitutes "background" concentrations of chemicals has not yet been determined for this site. The fact that the Naval Base consists of two distinct parts, one portion built on a naturally occurring rock formation (Yerba Buena Island), and the other portion constructed on engineered fill, suggests that a carefully designed background sampling plan must be implemented in order to establish "background" for this site. Under what workplan will this "background sampling plan" be described?

4. It may be appropriate to divide the site into two functional units, Yerba Buena Island and Treasure Island, due to the differences in topography, land use, and available habitat.

5. The relationship between the "preliminary evaluation summary" (p. 3) and the "Environmental Assessment" (which is a secondary document due September 23, 1993, in accordance with the schedule in the Federal Facilities Site Remediation Agreement) should be clearly defined. This document does not, as presently proposed, constitute the functional equivalent of the "Environmental Assessment" document and should, therefore, have its own schedule.

SPECIFIC

1. p. 4, Section 2.1.4, Selection of Contaminants of Ecological Concern: The approach described is intended to select "contaminants of ecological concern (COC)...from the full list of chemicals detected." This approach is not appropriate for the preliminary ecological risk assessment. Less-than-toxic concentrations of metals and essential nutrients may be of significant ecological concern to non-human receptors, especially in aquatic environments. Further, this method does not take into account the potential for synergistic interactions of chemicals which, when considered independently, do not appear to pose an environmental threat, but, when taken together, can be demonstrated to have adverse biological effects. The initial qualitative environmental risk assessment should be based on the ambient concentrations of contaminants, organic and inorganic, determined from the soil, sediment, groundwater and surface water collected in the remedial investigation, whether or not these concentrations are greater than "three times the background value".

2. p. 7, Section 2.1.4.3, Toxicity: In addition to comparison of soil contaminant data to Quebec Ministry of Environment values, data should also be compared, as appropriate, to values reported in the database PHYTOTOX and recent publications.

3. p. 9, Section 2.1.6, Characterization of Ecological Effects: The use of hazard quotients to screen out contaminants of concern is inappropriate at the qualitative ecological risk assessment level.

4. p. 9, Section 2.1.6.1, Aquatic Ecological Effects Assessment: The SFRWQCB has draft sediment quality criteria and Basin Plan limits that should be used to compare to ambient concentrations of contaminants.

5. p. 9, Section 2.1.6.2, Terrestrial Ecological Effects Assessment: The use of TRVs, like the use of hazard quotients, should not be used in the qualitative phase of risk assessment to screen out contaminants of concern.

6. p. 14, Section 2.1.7.3, Exposure Dosages Assessment: The use of estimated dosages to receptors, such as endangered species and flyway birds, while an interesting academic exercise, should not be used to screen out contaminants of concern

because the assumptions that underlay the calculations of such dosages are poorly tested.

7. p. 14, Section 2.1.8, Task 8- Risk Characterization: The risk characterization should include potential adverse effects to ecological receptors of total (ambient) concentrations of all contaminants (so-called "total risk", in addition to so-called "incremental risk"), not just the "site-related chemicals, represented by chemicals of concern."

8. p. 15, Section 2.1.8: The hazard quotient method is inappropriate for decision making at the qualitative risk assessment level.

9. p. 19, Section 3.6, Task 6: Characterization of Ecological Effects: Toxicity databases should include PHYTOTOX.

Please direct your questions to me at (510) 286-4222.

Sincerely,

Barbara M. Smith, Ph.D.
Remedial Project Manager