



## Department of Toxic Substances Control

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Environmental  
Protection

August 10, 1998

Commanding Officer  
Engineering Field Activity, West  
Naval Facilities Engineering Command  
Attn: Mr. Ernesto Galang  
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San Bruno, California 94066-2402

REMEDIAL INVESTIGATION OFFSHORE SEDIMENTS OPERABLE UNIT  
INVERTEBRATE AND FISH TISSUE COLLECTION RATIONALE AND METHODOLOGY  
TECHNICAL MEMORANDUM, NAVAL STATION TREASURE ISLAND (JULY 20, 1998)

Dear Mr. Galang:

The Department of Toxic Substance Control (DTSC) has reviewed the Remedial Investigation Offshore Sediments Operable Unit Invertebrate and Fish Tissue Collection Rationale and Methodology Technical Memorandum for Naval Station Treasure Island, dated July 20, 1998. My review did not generate any comments. However, Mr. James M. Polisini, Ph.D., Staff Toxicologist of the Human and Ecological Risk Division of DTSC, also reviewed the technical memorandum and has generated comments that are enclosed with this letter.

If you should have any questions regarding this letter, please contact me at (510) 540-3763.

Sincerely,

A handwritten signature in black ink that reads "David Rist".

David Rist  
Hazardous Substances Scientist  
Office of Military Facilities

Enclosure  
cc: See next page.

Mr. Ernesto Galang  
August 10, 1998  
Page 2

cc: Mr. James Ricks Jr. (SFD-8-2)  
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## MEMORANDUM

**TO:** David Rist, Project Manager  
Site Mitigation Branch, Region 2  
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**FROM:** James M. Polisini, Ph.D.  
Human and Ecological Risk Division (HERD)

**DATE:** August 10, 1998

**SUBJECT:** TREASURE ISLAND FISH AND INVERTEBRATE  
COLLECTION SAMPLING PLAN  
[PCA-14740, SITE 200231-47 H:16]

Pete Wilson  
Governor

James M. Strock  
Secretary for  
Environmental  
Protection

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### Background

We have reviewed the document titled *Technical Memorandum, Remedial Investigation Offshore Sediments Operable Unit Invertebrate and Fish Tissue Collection Rationale and Methodology, Naval Station Treasure Island, San Francisco, California*, dated July 20, 1998 and prepared by Tetra Tech, Inc. of San Francisco, California. This review is in response to your written work request.

### General Comments

This technical memorandum provides an overview of the general approach proposed for investigation of the transfer of chemicals from sediment to vertebrate receptors and the potential adverse effects associated with those exposures. We have general, long standing, disagreements with several of the proposed calculations.

### Specific Comments

1. With the exception of rare, threatened or endangered (RTE) species, protection of avian terrestrial populations is proposed as the assessment endpoint (Section 2.3, page 3). The extrapolation from individual effects related to intake of chemicals to population effects of terrestrial vertebrates has been a point of disagreement for other Yerba Buena Island (YBI) sites. Please describe how potential adverse effects on individuals will be extrapolated to population-level effects.



2. Sediment concentrations contained in a San Francisco Regional Water Quality Board (SFRWQCB) order for the Shearwater site are used to evaluate Treasure Island sediments (Section 3.0, page 4). The SFRWQCB recently released the listing of sediment concentrations considered 'ambient' in San Francisco Bay (Gandesbery and Hetzel, 1998). These 'ambient' concentrations should be included in the assessment of Treasure Island sediments and reference stations.
3. An EPA Region X report on tributyl tin in sediment is cited as the basis for the tributyl tin sediment concentration used to evaluate Treasure Island sediments in the draft Offshore Remedial Investigation (RI) Report (Section 3.0, page 4). The approach used in that study was equilibrium partitioning (EqP) theory normalized to organic carbon in sediments. In addition the summary of the Region X report contained in the Contaminated Sediments News number 18 states: "Results of Region 10's study suggest that bulk sediment, and organic carbon-normalized sediment TBT concentrations may be poor predictors of the bioavailable fraction of TBT. Thus, Region 10 strongly recommends that sediment cleanup decisions at Superfund sites in Puget Sound be based on TBT concentrations in interstitial water, and on any associated biological effects testing." We contacted Karen Keeley, the EPA Region X contact for the TBT report, and were told that the TBT report contained no sediment value for TBT in bulk sediment and that EPA Region X screens sediment TBT based on a TBT in pore water concentration of 0.05  $\mu\text{g/l}$  (as TBT ion) to 0.15  $\mu\text{g/l}$  as TBT ion. We made the same comment on the draft Offshore RI, but have yet to receive the responses to comments.
4. The final selenium ambient sediment concentration released by the San Francisco Regional Water Quality Control Board (SFRWQCB) is 0.64 mg/kg. Given the potential toxicity of selenium to waterfowl, we would not agree that sediment concentrations of 1.0 to 1.7 mg/kg are only 'slightly higher' (Section 3.1.1, page 6) in Area C.
5. We do not agree that contaminants in pore water exceeding Ambient Water Quality Criteria (AWQC) pose minimal potential ecological risk. For example, copper in Area C pore water exceeds the AWQC (Section 3.1.2, page 6). The potential hazard is categorized as 'minimal' because the AWQC used for comparison is the acute rather than a chronic AWQC and the maximum Area C concentration is 53.4  $\mu\text{g/l}$  compared with the reference area maximum pore water concentration of 46.1  $\mu\text{g/l}$ . First, exceedance of the acute AWQC is of more concern than exceedance of the chronic AWQC. Second, the toxic effects of copper are threshold effects. A relatively minor exceedance of a toxic concentration can produce toxic effects. Therefore, the fact that the Area C copper pore water concentration is 7.3  $\mu\text{g/l}$  above a reference area does not mean there is no potential ecological risk, only that the potential ecological risk is greater than that at the reference area. Please amend this phrase and others, which conclude that concentrations above AWQC pose minimal potential hazard.
6. The contaminants contained in the soft tissue beneath the shell or exoskeleton must be retained in the soft tissue sample for large-bodied invertebrates (Section 4.1, page 12). Either chemical extraction or complete mechanical removal methods are acceptable.
7. Resident fish will be collected rather than migratory fish (Section 4.1, page 12). Fish, which compose the diet of the representative species, will be given preference in the fish sample. Most models of avian predation indicate that predatory birds select prey

items by size class rather than species. Please specify the species which are 'preferred' by the double crested cormorant

8. Percent lipid will be determined for the tissue samples (Section 4.2, page 12). Percent lipid or percent carbon is usually used to normalize the concentration of lipophilic contaminants in order to construct a linear correlation. Intake via ingestion does not depend on lipid normalization. Please describe how percent lipid will enter into the analysis.
9. Please contact HERD and the appropriate regulatory agencies for approval prior to chemical analysis in the event the tissue samples are insufficient to analyze for all COEC categories (Section 4.3.1, page 12).
10. We do not agree with the proposal for calculating the high dose and the low dose (Section 5.2.1, page 17). The range of doses produced by this method has no biological basis. It is biologically impossible for the lowest body weight to be associated with the highest food and sediment ingestion rate (high dose) or the highest body weight to be associated with the lowest food and sediment ingestion rates. To put it plainly, there are no emaciated cormorants with insatiable appetites. All intakes should be correlated with body weight. If a low body weight and high body weight are desired to provide some range of exposure, the low body weight should represent a juvenile organism and the high body weight an adult. The ingestion rate of a juvenile will be higher per unit body weight than the ingestion rate of a non-breeding adult. Change the proposed method of calculating intake.
11. HERD has never agreed that there are sufficient 'differences in degree of conservatism' in setting the BTAG/NAVY Toxicity Reference Values (TRVs) for vertebrate representative species to preclude development of a Hazard Index (HI) as the sum of the individual hazard quotients (HQs) (Section 5.2.2, page 18). HERD will evaluate both the chemical specific HQs as well as the HI for this investigation.
12. Individual Polychlorinated biphenyls (PCBs) congeners should be analyzed using the NOAA methods used at other Navy sites in the San Francisco Bay area. The total PCB concentration can then be estimated using the NOAA regression.
13. Polycyclic aromatic hydrocarbons (PAHs) in tissues and sediments should be analyzed using the agreed-upon PAH methodology utilized for sediments.

### Conclusions

We disagree with some of the criteria used to categorize the potential ecological hazard posed by offshore sediments in the draft Remedial Investigation Report. We do, however, agree that the areas proposed for sampling fish and invertebrate tissue are the areas at Treasure Island and Yerba Buena Island most likely to be utilized by the vertebrate receptors proposed for the food web analysis.

Once the comments listed above are adequately addressed the planned sampling and analysis should provide information sufficient to evaluate the potential ecological hazard associated with food web transfers from Treasure Island sediments to avian receptors.

References

Gandesbery, Tom and Fred Hetzel. 1998. Ambient Concentrations of Toxic Chemicals in Sediment. Staff Report. Regional Water Quality Control Board San Francisco Region. May, 1998.

Reviewed by: Brian K. Davis, Ph.D.  
Staff Toxicologist, HERD

cc: Michael J. Wade, Ph.D., DABT  
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