N30519_000175
NFD POINT MOLATE
SSIC NO. 5090.3.A

Tetra Tech EM Inc.

1099 18th Street, Suite 1960 ◆ Denver, CO 80202 ◆ (303) 295-1101 ◆ FAX (303) 295-2818

June 29, 1998

Mr. David Song
Department of the Navy
Western Division
Naval Facilities Engineering Command
900 Commodore Way, Building 206
San Bruno, California 94066-5006

Subject: **CLEAN Contract Number N62474-94-D-7609**
Contract Task Order (CTO) 112
NFD Point Molate -Response to Agency Comments on the Draft Ecological Risk Assessment Addendum to the Phase II Remedial Investigation Draft Field Work Plan

Dear Mr. Song:

Enclosed is a copy of the Response to Agency Comments on the Draft Ecological Risk Assessment Addendum to the Phase II Remedial Investigation Field Work Plan. Additional copies have been sent to the Base Closure Team and Natural Resource Trustees.

If you have any questions, please call me at (303) 312-8853.

Sincerely,

Jim Knight

JWK/jed

Enclosures

cc: James Nusrala, Regional Water Quality Control Board
Susan Gladstone, Regional Water Quality Control Board
Phillip Ramsey, U.S. Environmental Protection Agency
Ned Black, U.S. Environmental Protection Agency
Susan Ellis, California Fish and Game
Jim Haas, U.S. Fish and Wildlife
Larry Douchand, Department of the Navy
Teresa Bernhard, Department of the Navy
Jennifer Holder, Entrix
Brian Werle, TtEMI

contains recycled fiber and is recyclable

RESPONSE TO AGENCY COMMENTS ON THE DRAFT ECOLOGICAL RISK ASSESSMENT ADDENDUM TO THE PHASE II REMEDIAL INVESTIGATION FIELD WORK PLAN NAVAL FUEL DEPOT POINT MOLATE

1.0 INTRODUCTION

This document presents the Navy's responses to Agency comments on the Draft Ecological Risk Assessment Addendum to the Phase II Remedial Investigation Field Work Plan, Naval Fuel Depot Point Molate, dated April 10, 1998. The comments addressed below were received from the U.S. Environmental Protection Agency (EPA) on May 14, 1998, San Francisco Regional Water Quality Control Board (RWQCB) on May 27, 1998, and the California Department of Fish and Game (DFG) on May 27, 1998.

The response to comments below reflects changes in the remedial investigation (RI) approach as discussed during Navy meetings on June 2 and 3, 1998, and presented to the agencies on June 8 and 9, 1998. Strategy changes result from expediting a presumptive remedy approach at Installation Restoration (IR) Site 1, treatment pond closure and free product removal at Site 3, and pipeline removal at Site 4. The ecological risk assessment addendum will be revised to incorporate the response to agency comments as discussed below and the changes in the RI approach as outlined in the following bullets:

- Supplementing terrestrial surveys already being conducted by the Navy with more comprehensive natural history surveys emphasizing IR Site 4
- Eliminating proposed sampling at IR Site 2
- Eliminating sampling and risk assessment at IR Site 1
- Delaying the terrestrial risk assessment at Site 3 until the treatment ponds have been closed, pipelines removed and free product removed as these actions would invalidate the utility of data collected due to the soil disturbances occurring during these actions
- Delaying the terrestrial risk assessment at IR Site 4 until pipelines have been removed along the shoreline as this action would invalidate the utility of data collected due to the soil disturbances occurring during these actions. Natural history surveys will then be used to identify the presence of receptors and habitats, to select receptors and assessment and measurement endpoints, and to identify receptors for tissue collection at sample locations.

Additionally, the responses presented below and the changes in the RI approach will be discussed in detail with the agencies at a meeting scheduled for July 9, 1998. Thus, the following responses may be further modified as a result of these discussions.

RESPONSES TO EPA COMMENTS

SPECIFIC COMMENTS

1. **Comment:** **Executive Summary and Introduction: Please clarify the third objective of the Ecological Risk Assessment: "...evaluate and characterize risk characterization to aquatic and terrestrial risk characterization for NFD Point Molate."**

Response: The third objective in paragraph two will be revised to clarify its meaning as follows: "...(3) evaluate and characterize risk to aquatic and terrestrial receptors at NFD Point Molate."

2. **Comment:** **Section 1.0: There is now a Superfund specific guidance for ecological risk assessment (U.S. EPA 1997). If EPA (hereinafter the Agency) is the lead regulatory agency for a site, all ecological risk assessments should conform to the structure of this guidance. For sites where the Agency is not lead regulator, ecological risk assessment documents will be reviewed to insure they are consistent with the Agency's guidance.**

Response: Comment acknowledged. The Navy believes that the proposed ecological risk assessment approach for NFD Point Molate is consistent with the general ecological risk assessment guideline procedures outlined in the U.S. EPA 1997 guidance. All references to the previous Superfund guidance (EPA 1989) will be updated to the EPA (1997) document. Further discussion of assessment endpoints, measurement endpoints and scientific/management decision points (SMDPs) will occur at the July 9,1998 meeting.

3. **Comment:** **Section 3.1, Existing Analytical Data: Text indicates that existing data is presented in Appendix A of the draft final phase II field work plan, summary statistics for soil, sediments, and groundwater data are currently being compiled and summary statistics data packages will be distributed as soon as they are available to facilitate review of this document. At this time, EPA has not received a copy of the draft final phase II RI work plan, and has not received any summary statistics data packages. Until EPA has had the opportunity to review and evaluate data, we reserve the right to provide additional comments on the Ecological Risk Assessment Work Plan. Please indicate when the Navy anticipates providing summary statistics data package to the BCT.**

Response: Comment regarding additional comments acknowledged. Currently, the data are being internally reviewed, validated, and have undergone quality assurance/ quality control (QA/QC) review. These data will be included in draft Phase II RI Work Plan due to BCT on 7/20/98.

4. **Comment:** **Section 3.2, Offshore Sampling Approach: On page 8, text indicates that Paradise Cove was selected as a reference site based on similarities in grain size, total organic carbon and sedimentation regime. Please provide information used to support Paradise Cove as a reference site.**

Response: A table will be provided in the draft final ecological risk assessment addendum to substantiate the choice of Paradise Cove as the reference site and will be referenced appropriately in the text. The last sentence of paragraph 2, page 8, will be revised to read: "This site is recommended based on similarities in grain size, total organic carbon, and sedimentation regime to offshore areas at NFD Point Molate (see Table 3-2)." The last sentence of paragraph 3, page 8, will be revised accordingly: "The rationale for the individual sample locations and the analyses to be conducted at each location are presented in Table 3-3."

5. **Comment:** **Table 3-2, Rationale for Sediment Sampling Locations and Analyses: EPA recommends adding Total Petroleum Hydrocarbon (TPH) analysis to all sampling locations. Since TPH may be the most prevalent contaminant, interpretation of bioassay results may not be conclusive without TPH measurements.**

Response: TPH analyses will be added to all analyses on Table 3-2. The fourth sentence in paragraph 3, page 8, will be modified as follows: "At bioassay locations, sediments will be analyzed for a full suite of chemicals, including TPH, metals, semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCB)/pesticides."

6. **Comment:** **Section 3.3, Onshore Sampling Approach: Text on page 9 indicates that proposed terrestrial soil sampling locations were discussed and agreed upon by the BCT during a January 22, 1998 meeting; however, no other rationale for the sampling locations are provided. EPA recommends that text be expanded to include Installation Restoration (IR)-specific sampling rationale. For example, EPA is unclear why soil samples are proposed up-slope from IR Site 02 (Sandblast Grit areas 2A and 2B).**

Response: In response to the change in the IR strategy (as presented to the agencies at the June 8 and 9, 1998, meetings), the number of terrestrial soil sampling locations in support of the ecological risk assessment will be reduced. No terrestrial ecological sampling or risk assessments are proposed at IR Sites 1 and 2. Terrestrial soil samples will be collected to support assessment of potential risk to ecological receptors at IR Site 3 after treatment ponds have been closed, pipelines removed, and free product removed, and at IR Site 4 after pipelines have been removed. The terrestrial soil sampling rationale will be presented in the draft final ecological risk assessment addendum and will be discussed in the July 9, 1998 meeting.

7. **Comment:** **Sections 5.2.3 and 5.2.4, Terrestrial Assessment and Measurement Endpoints: Once contaminants of concern are discovered on a site, it is not appropriate to base an ecological risk assessment solely on exposure modeling from measurements of contaminated media (U.S. EPA 1997). The approach presented here does at least include measurements of sampled tissue. However, this risk assessment would be greatly improved if the terrestrial assessment included bioassays. Considering the emphasis placed on frogs as an endpoint, EPA recommends the FETAX bioassay.**

Response: The conduct of a terrestrial ecological risk assessment will be assessed after the treatment ponds have been closed, pipelines removed, and free product removed at IR Site 3, and after pipelines have been removed at IR Site 4. Site-specific natural history data will be used to select the receptors and assessment and measurement endpoints associated with IR Site 4. Section 5.2 will be modified as necessary to reflect this change. If amphibians are a relevant receptor and assessment endpoint for IR Site 4, FETAX bioassays will be considered for their relevancy as a potential measurement endpoint. In general, however, the Navy believes that a weight of evidence approach using (1) bioaccumulation data based on tissue body burdens, (2) a comparison of site tissue data to reference literature

values, and (3) a comparison of site-specific doses to toxicity reference values is sufficient to evaluate potential ecological risk at this time.

8. **Comment:** **Section 6.1.1, Determination of COPECs and COECs: With regard to the comparison to ambient concentrations, it is undeniable that ambient compounds in the Bay must have some source. It is possible for a facility to be a source of a compound and so contribute to the ambient Bay levels. For highly toxic or bioaccumulative compounds such as dioxins, EPA would not accept elimination of a compound from the COPEC list solely because the released concentration of that chemical was at or close to the ambient level. If a facility is known to be a source of a toxic compound, it is not acceptable to eliminate that contaminant from a risk assessment simply because the levels released by the facility are at or less than the ambient Bay concentration. EPA makes no judgment here about cleanup levels, which are a risk management decision. We are only addressing the total risk evaluation of a facility, which should include assessment of the total cumulative risk posed by releases from the facility.**

Response: The Navy concurs with EPA that compounds which are highly bioaccumulative or that biomagnify will not be prematurely screened out of the risk assessment process. However, not withstanding the bioaccumulative effects of some COPECs, a comparison of site concentrations to ambient concentrations is a reasonable approach for identifying COPECS at NFD Point Molate. Ambient concentrations of both inorganic and organic compounds have been defined for San Francisco Bay sediments and represent the concentrations of naturally occurring and anthropogenic pollutants expected in bay sediment (Cal/EPA 1998). Cal/EPA (1998) has defined an ambient threshold (the threshold is based on sediment sampling locations throughout the bay and is not influenced by any one point source) above which a sediment would be considered contaminated. An evaluation of site history and a comparison to ambient thresholds will focus the ecological risk assessment on compounds that are likely to be related to NFD Point Molate.

9. **Comment:** **Section 6.1.1.1, Determination of COPECs: The San Francisco Bay Regional Water Quality Control Board (RWQCB) has published a report (Cal/EPA 1998) which supersedes the Shearwater site report (RWQCB 1997). The more recent report should be used when comparisons to ambient levels of contaminants in Bay sediments are made.**

Response: The new document will be used for data on ambient levels of contamination in the bay. All references to the RWQCB (1997) document will be changed to California EPA (Cal/EPA) (1998).

10. **Comment:** **Section 6.1.2, Toxicity Tests: The statement in the third complete paragraph on page 25 that *Leptocheirus plumulosus* bioassays will serve as an indicator for the effects of grain size is unsupported. In the immediately preceding paragraphs, specific references and available data on the relative use and sensitivity of various amphipods are discussed extensively. However, *Leptocheirus plumulosus* is almost entirely absent from this discussion.**

Response: *Leptocheirus plumulosus* is not as sensitive to fine-grained sediments as is *Eohaustorius estuarius*. *L. plumulosus* will tolerate a full range in sediment grain-size except sandy sediments with less than 5 percent silt/clay (Niewolny and others 1997). Since *L. plumulosus* is not sensitive to fine-grained sediments, any exhibited toxicity has a greater probability of being the result of contaminant concentration rather than sediment grain size. Therefore, on page 25 of Section 6.1.2, the third and fourth sentences of the third paragraph will be modified as follows: "Since *Leptocheirus plumulosus* is not sensitive to fine-grained sediments, any apparent toxicity is expected to be the result of contaminants and not a reaction to the presence of fine-grained sediments as is sometimes exhibited by *Eohaustorius estuarius*."

Information on *Leptocheirus plumulosus* has been obtained and will be included in the draft final work plan in Section 6.1.2 as follows:

Paragraph 2, page 24. An additional sentence will be added "*Leptocheirus plumulosus* lives in burrows, can tolerate salinities ranging from 1 to 35 parts per trillion (ppt) and is not sensitive to grain size (Niewolny and others 1997)."

Paragraph 3, page 24. The third sentence from the end of the paragraph will be revised as follows: "*Rhepoxynius abronius* is more sensitive to chemicals than are *Eohaustorius estuarius* and *Leptocheirus plumulosus*, which are more sensitive than *Ampelisca abdita* (Pastorok and Becker 1989; Flegal and others 1994; API 1994). *Grandidierella japonica* is less sensitive than *Rhepoxinius abronius* (PRC 1994a). Based on a variety of studies, the relative level of sensitivity to various chemicals can be expressed as follows: *Rhepoxynius abronius* appears to be the most sensitive, followed by *Eohaustorius estuarius* and *Leptocheirus plumulosus*, then *Ampelisca abdita*. *Ampelisca abdita* is very similar in sensitivity to *Grandidierella japonica*."

Paragraph 1, page 25. A sentence will be inserted before the last sentence and the last sentence modified as follows: "*Leptocheirus plumulosus* is a tube dweller and may not be in direct contact with sediments, but the toxicity test with *Leptocheirus plumulosus* is considered highly reliable and of high ecological significance (API 1994). Therefore, *Eohaustorius estuarius* and *Leptocheirus plumulosus* will be used to test the whole sediment toxicity at NFD Point Molate."

11. Comment: **Section 6.1.4, Food Chain Models: Considering the importance of food chain modeling to the weight of evidence in determining ecological risk at this site, water ingestion and dermal contact should also be included in the dose calculation. Furthermore, for avians with multiple food sources, exposure through each food source should be summed in the dose.**

Response: The Navy agrees that dermal contact and water ingestion may be relevant for some chemicals and some receptors; however, ingestion of prey and soil/sediment are assumed to be the predominant exposure routes for most chemicals and most receptors at NFD Point Molate. Dermal contact and water ingestion are considered relatively insignificant contributors to exposure in comparison to prey and soil/sediment ingestion for the following reasons:

(1) there are a limited number of groundwater seeps onshore where receptors could ingest potentially contaminated groundwater, and (2) the available bare surface area of most mammalian and avian species is small enough that exposure via dermal absorption is minimal when compared to ingestion. Additionally, little information is available in the literature to quantitatively evaluate the dermal exposure route. Potential exposure via dermal contact and water ingestion will be addressed as a source of uncertainty.

Multiple food sources will be included in the prey term of the dose equation (presented in Section 6.1.4) for avians and other representative receptors as appropriate, and as further described in Section 6.1.4.2.

12. **Comment:** **Section 6.1.4.4, High and Low Dose Estimates: From a broad perspective, EPA does not feel that the Toxicity Reference Values (TRVs) are being interpreted by the Navy in the way that the Region IX Biological Technical assistance Group (BTAG) has suggested.**

Specifically, these values were meant to be compared to dose estimates which differ only in the estimate of exposure concentration. Although hazard quotients are commonly used in ecological risk assessments, the estimation of a range of HQ values, i.e., HQ1 and HQ2, through the process of altering the doses as presented here by the Navy is faulty logic. For instance, the calculation of low dose by altering the ingestion rate is illogical because animals over their life span do not eat less food than needed by choice; in fact, they optimize their intake. Secondly, the use of different site use factors is artificial and not reasonable over the long term. A receptor species at a particular site will most likely not restrict its use of the site in a significant way over its life time. Therefore, to artificially limit the area of feeding (in the case of ecological risk assessments) at a particular site is neither logical nor reasonable. Altering body weights in dose estimation is also not acceptable. Body weights differ mainly due to age. Low and high values only relate to small or immature animals versus large and mature animals. If the Navy intends to calculate doses for different life stages of the receptors, this must be clearly stated. The only logical input term to calculating dose as the Navy is presenting this information is the exposure concentration in the prey items. This term, if estimated by environmental samples, should be used to provide a range of calculated doses that are then compared to the low and high TRVs, thereby providing a true range of comparisons between the estimated site specific dose and the TRVs.

Response: The Navy recognizes the various viable approaches to dose calculations, TRV use and HQ interpretation. In light of this variability, and the progress at this site, the Navy will investigate and discuss alternative calculation methods with agency stakeholders in future meetings. However, for the purposes of a screening risk assessment, the method of dose calculation and HQ interpretation will be applied in a manner consistent with the process outlined in the draft TRV document.

13. **Comment:** **Section 7.1.1, Determination of [Terrestrial] COPECs: EPA intended the TRVs to be used primarily as soil screening values. EPA guidance for Superfund ecological risk assessments (U.S. EPA 1997) states that toxicity benchmarks are primarily for use as screening values. Subsequent use of**

benchmarks in a hazard quotient approach should only be a part, and never the sole component, of an ecological risk assessment.

Response: The Navy agrees that TRV benchmarks and their use in the calculation of HQs should be only a part of the weight of evidence approach. HQs defined in this work plan are not the sole component of the ecological risk assessment. Tissue collections will be used in dose modeling in the HQ approach and to evaluate bioaccumulation for calculation of risk in the weight of evidence. Soil concentrations will also be compared to background levels (if available) for an initial screen.

14. **Comment:** **Section 7.1.3, Food Chain Model: Again, considering the emphasis given to this modeling in the weight of evidence to evaluate ecological risk, water intake and dermal contact should be included in the model.**

Response: Please see response to EPA specific comment 11.

15. **Comment:** **Section 7.2.3, Conclusions: Again, the terrestrial risk assessment would be greatly strengthened if the effort was broadened further from a modeling approach.**

Response: Please see responses to EPA specific comments 7 and 13. The Navy believes that at this time sufficient data are being collected for the terrestrial risk assessment.

RESPONSE TO RWQCB COMMENTS

GENERAL COMMENTS

1. **Comment:** **The bulk chemistry portion of the triad approach for ecological risk assessment at Point Molate needs to include the full suite of chemicals of potential concern at the site. At a fuel storage terminal facility such as Point Molate this list of chemicals of potential concern should include all petroleum based constituents for both the onshore and offshore risk assessments. We request that the Navy add total petroleum hydrocarbons (TPH) to the chemical analyses for both the onshore and offshore sampling programs. Specifically, we request that the Navy analyze for TPH in both the sediment matrix, and the overlying water matrix in the sediment water interface bioassay in the offshore analysis.**

There are several reasons for this request. First and most important, fuels are the major constituent of concern identified historically at Point Molate. If one desires to view the full snapshot of the bulk chemistry portion of the sediment or soil triad approach for an ecological assessment, we need to analyze for all chemicals that would contribute to a contaminant load at the site. Furthermore, this office has information from various sites in the Bay Area, including the San Francisco International Airport, Hunters Point, the Presidio, and even Point Molate illustrating the chronic toxicity of fuel impacted sites to certain aquatic species. It is especially important to sample for all potential chemicals of concern now, in the aquatic risk assessment sampling, while we will be gathering so much important and costly toxicity data at the same time.

The second reason to analyze for TPH in both the onshore and offshore ecological sampling programs is to begin to develop ecologically protective cleanup levels for TPH, in addition to Semi-Volatile Organic Compounds (SVOCs) and metals, for use in the subsequent closure of underground tanks, fuel pipelines, and valve boxes. We see the analysis of all fuel constituents in this field effort as a way to link the ecological risk assessment process, and the Fuel Product Action Level Development Report (FPALDR) and the investigation and closure of the petroleum system at Point Molate. TPHs are a major constituent of concern identified in previous investigations of the fuel distribution system at Point Molate. Without analyzing for TPH in the sediments in conjunction with performing the bioassays, the Navy will not be able to derive an ecologically protective number for TPH in the sediments.

Response: TPH analysis will be added to all onshore and offshore sampling locations. The text and Table 3-2 will reflect these changes. These changes will be addressed in the specific comments as appropriate (please also see EPA specific comment 5 and 6).

It is agreed that fuel components are the major constituents of concern at NFD Point Molate. However, TPH is a complex mixture composed of volatile and semivolatile constituents that historically have been identified as the significant contributors to petroleum toxicity. In order to adequately review the chronic toxicity petroleum studies discussed in the comment, the Navy requests a copy of these studies at the board's earliest convenience since such data may be relevant for work conducted at NFD Point Molate and other naval installations.

Development of TPH action levels has historically been difficult and the issue is currently being discussed at both the federal and state levels. The Navy is also addressing the issues associated with TPH with the development of a TPH Working Group. It is anticipated that the recommendations of this working group will be presented to the appropriate agencies and may have an impact on the approach proposed for NFD Point Molate.

With regards to the FPALDR, the Risk-Based Corrective Action (RBCA) guidance used as a basis for this document (ASTM 1995) does not recommend the use of TPH in risk assessments. It states: "...TPH should not be used for risk assessment because the general measure of TPH provides insufficient information about the amounts of individual chemical(s) of concern present." As discussed above, the RBCA guidance also recognizes that TPH is the source of the constituents responsible for toxicity; thus, these constituents will be quantitatively evaluated in the ecological risk assessment and FPALDR. TPH will be evaluated qualitatively for both programs until adequate evidence is available supporting another approach.

2. **Comment:** **The Navy needs to define the vertical bounds of any potential sediment contamination offshore of Point Molate through sediment coring techniques. The vertical extent of sediment contamination is an existing data gap that must be filled in order to finalize the feasibility for the aquatic risk assessment at the site. Additionally, issues of bathymetry and sediment**

transport need to be analyzed to explain whether the sediment environment offshore of Point Molate is either erosional or depositional. These existing offshore data needs can be filled now during this existing ecological risk assessment under the Remedial Investigation (RI), or later during the subsequent Feasibility Study for the offshore area. Board staff's recommendation, is that the more efficient way is to define vertical sediment contamination extent now during the RI, if this can be integrated into the workplan without delaying fieldwork beyond this summer.

Response: The 1994 shoreline investigation study (PRC 1994b) provided information on metals, SVOCs, VOCs, and TPH to 4.0 feet depth in the offshore sediments. These data indicated a reduction of detected contaminants and concentrations with depth at almost all transects (Transect 5 near shore excluded). Thus, in general, shallow sediments contained higher chemical concentrations than those at depth. Additionally, the top 5 centimeters of sediments are of greatest interest from an ecological perspective. Therefore, the Navy believes that, for the purposes of this risk assessment, supplemental subsurface sediment sampling is unnecessary. Text changes to address this issue are provided in RWQCB specific comment 2. Current water depths are discussed in Section 4.1.2 in the description of the offshore environment. Text changes to describe bathymetry and sediment transport at NFD Point Molate are addressed in RWQCB specific comment 1.

SPECIFIC COMMENTS

1. **Comment:** **Section 2.3, Sedimentation in the Bay: In the second paragraph, first sentence is the time frame from 1955 to 1956 correct? Also, the Navy needs to elaborate on why they feel the offshore environment at Point Molate is neither erosional or depositional. What specific reports or documentation are being used to make this assumption?**

   Response: The date listed is correct. Bathymetry and sedimentation information has been obtained for NFD Point Molate. The last two sentences of Section 2.3 will be modified as follows: "The offshore areas surrounding NFD Point Molate are both erosional and depositional based on data collected from 1955 to 1990. The area north of the fuel pier at Molate Point can be described as accretional proceeding to erosional near the northern offshore facility boundary. An erosional regime exists around the fuel pier itself offshore of Drum Lot 1. Directly south of this area is a depositional environment that extends into the subtidal regions to Castro Point, surrounding a near-shore erosional environment along the south shoreline. Bathymetry changes during this time period indicate an increase in water depth of 0.93 feet (COE 1992)."

2. **Comment:** **Section 3.1, Existing Analytical Data: The summary of the existing data set and conceptual model of the sediment environment at Point Molate would be greatly strengthened by including the four plates showing the results from the sediment chemistry transects from the 1994 report, <u>Shoreline Investigation, Soil and Phase I Sediment Data Summary</u>.**

Response: Section 3.1 summarizes analytical data collected not only from 1994, but from all previous NFD Point Molate sampling efforts, with an emphasis on the 1994 *and* the 1995 studies that are of primary significance to the ecological risk assessment. Providing plates from 1994 would not completely summarize the data discussed in the text. In addition, only two of the four plates in the 1994 study (PRC 1994b) provide information on offshore sediment at NFD Point Molate, Plates 5-3 and 5-4. These plates provide concentrations of TPH, SVOCs, and VOCs for samples collected offshore and down to depths of 4.0 feet. Since these plates present only part of the existing sediment data (they do not include 1995 data), and all the data are discussed in the text, the Navy believes that including Plates 5-3 and 5-4 does not significantly strengthen this section. However, the Navy will include these plates in the draft Phase II RI field work plan.

The data discussion in this section will also be reviewed for clarity and accuracy and revised as appropriate.

3. **Comment:** **Section 3.1, Existing Analytical Data: The Navy needs to reference the monitoring results from the mussel tissue study performed by Ms. Noreen Roster of the Navy and the National Biological Survey in 1996. The enhancement of an existing wetland downgradient from the extraction trench was conducted by the Navy as mitigation for modifying the shoreline near the sand bag wall in 1995.**

Response: Comment acknowledged. The remainder of paragraph 3, Section 3.1 will be revised as follows: "In January 1995, sediment chemistry and whole sediment bioassays using the test organism *Eohaustorius estuarius* were conducted as part of an investigation of a fuel seep that was occurring within IR Site 3 (PRC 1995a). Results of the bioassays are presented in Table 3-1. In 1996, blue mussels and shore crabs were collected at NFD Point Molate and reference locations to evaluate accumulation of polynuclear aromatic hydrocarbons (PAHs) in lower trophic organisms at the site during and after the rainy season. Data indicated that only during the rainy season were total PAHs in NFD Point Molate mussels significantly higher than other locations (Miles and Roster in press). Existing data were used to select additional sediment sample and bioassay locations needed to characterize the risk at the offshore areas of the facility."

4. **Comment:** **Section 3.2, Offshore Sampling Approach, Locations and Analyses for Offshore Sampling, page 8: This section of the report could reference specific grain size, total organic carbon, and sedimentation data of the Paradise Cove site that makes it the best choice to use a reference station for Point Molate sediments. Staff recall suggesting three RWQCB reference sites in the San Pablo general area that would serve as potential comparison for the Navy.**

Response: Please see response to EPA specific comment 4. The three RWQCB reference sites suggested included Paradise Cove, Tubbs Island and Island 1. The Navy eliminated Tubbs Island and Island 1 after a cursory review of the data presented in RWQCB (1996) based on the following: (1) an influx of fresh water from nearby streams and (2) fluctuations in total organic carbon (TOC) and grain size

across seasons. In addition, the current and circulation systems in these areas are not characteristic of the central bay near NFD Point Molate (see Section 2.1 of the work plan). A south San Francisco Bay site was eliminated for similar reasons.

5. **Comment:** **Section 3.2, Offshore Sampling Approach, Locations and Analyses for Offshore Sampling, page 8: Staff request that the Navy include TPH to the list of the suite of chemicals to be analyzed for in the sediments. Please see General Comments.**

Response: Please see response to EPA specific comment 5. TPH analysis will be added to the offshore analyses described in Table 3-2.

6. **Comment:** **Section 3.3, Onshore Sampling Approach, Locations and Analyses for Onshore Sampling, page 9: In the second paragraph of this section, the report mentions that the chemical analyses in the soils will be limited to those constituents associated with Point Molate activities. Staff require that TPH, in addition to SVOCs and metals, be included in this list of proposed constituents of concern for the onshore sampling. Petroleum constituents are a major contributor to contaminant load at Point Molate. Staff request the full spectrum of chemicals that could potentially impact terrestrial receptors be analyzed for. Please see General Comments.**

Rationale for terrestrial sampling location

Response: Please see response to EPA specific comment 6 and RWQCB general comment 1.

Samples collected from all locations will be analyzed for TPH, SVOCs, and VOCs. Metals will be excluded from the analyses as they have not been identified as a chemical of concern in previous studies (see the revised RI work plan for further details).

7. **Comment:** **Section 6.1.1, Determination of Chemicals of Potential Ecological Concern, last paragraph: The Navy should elaborate here on how they plan to determine whether chemicals of ecological concern (COECs) originate from Point Molate. How will both the onsite reference and RWQCB reference locations be used to ascertain Point Molate's contribution to the offshore ecological risk.**

Response: A chemical originating from NFD Point Molate is a chemical known to have been used there based on facility records, or that has been detected in soil samples at NFD Point Molate. Only chemicals from known NFD Point Molate sources will be evaluated for toxicity. Those not known to originate from NFD Point Molate will not be considered in the evaluation.

The offshore contaminants at NFD Point Molate will be compared to existing site history information and to the ambient threshold concentrations defined in Cal/EPA (1998). Compounds detected in sediments but not known to have originated from NFD Point Molate will not be identified as COPECs. Additionally, those compounds known to be associated with NFD Point Molate sources will be compared to ambient concentrations in bay sediments. If they are elevated above ambient levels, they will be evaluated further in the ecological

risk assessment. Further clarification of the COPEC selection process will be discussed at the July 9, 1998 meeting and presented in the revised addendum.

8. **Comment:** **Section 6.1.1.1, Determination of Chemicals of Potential Ecological Concern, page 22: this office recommends that the Navy compare Point Molate sediment data to the more recent Cal/EPA publication, Ambient Concentrations of Toxic Chemicals in Sediments, Staff Report, RWQCB, San Francisco Bay Region, May 1998, prepared by Tom Gandesbery and Fred Hetzel, Ph.D. This submittal contains an updated compilation of existing ambient sediment data sets for use as comparison.**

Response: Please see response to EPA specific comment 9.

9. **Comment:** **Section 6.1.1.1, Determination of Chemicals of Potential Ecological Concern, second and third bullet items, page 23, and figure 6-1, Determination of COPECs and COECs in the Offshore Risk Evaluation: the Navy makes it clear throughout the report their intent to use Effects Range Lows and Medians (ERLs and ERMs) as bulk sediment screening criteria to determine if, chemically, a sample poses a potential aquatic threat. How will the Navy screen potential constituents for which there are no ERLs or ERMs? The bulk chemistry analysis is a very important part of the sediment triad approach (bulk chemistry, toxicity, and bioaccumulation). How will the Navy be as comprehensive as possible in accounting for the entire chemical load of an area in the hazard quotient calculations?**

Response: If a chemical constituent has not been assigned a corresponding ER-L or ER-M, that chemical constituent will be retained and evaluated against the reference site maximum or the bioaccumulation potential as described in Section 6.1.1.1. A chemical will be identified as a COPEC if it meets any *one* of the criteria listed.

Risks possibly resulting from multiple chemical stressors will be characterized for chemicals in sediment using the hazard index (HI) approach for assessment endpoints evaluated through exposure and effects modeling. Chemicals with similar chemistry and toxicological modes of action will be grouped, and their HQs will be summed to calculate an HI for each chemical group. An HI is the sum of HQs for chemicals acting by a similar mechanism on the same target organ or tissue. Those chemicals without a corresponding ER-L or ER-M will need to be evaluated further through literature searches. Please see Section 6.2.1 of the work plan for further discussion.

10. **Comment:** **Section 7.2, Characterization of Risk to Terrestrial Receptors: This section of the report mentions that the soil data will be compared to toxicity reference values and that hazard indices and hazard quotients will be calculated similar to those for the aquatic risk assessment. Does the Navy have any ideas as to what numeric or qualitative reference values they can use for the terrestrial receptors at Point Molate, similar to ERMs or ERLs for the aquatic receptors? Also, what reference will be used for constituents, such as TPH, which do not have numeric TRVs?**

Response: No such ecological reference values are available for soil and therefore soil cannot be screened like sediment using values similar to ERLs and ERMs. While no TRVs are available for TPH (or are being proposed), TRVs do exist for some

of the constituents of TPH (for example, PAHs). Therefore, only the constituents of TPH, such as PAHS, will be quantitatively modeled in the dose equations and compared to TRVs.

11. **Comment:** **Figure 5-2, Conceptual Site Model: The Navy should evaluate the potential respiration and dermal contact effects on terrestrial fauna from their contact with surface water and sediments in the near shore areas, or explain to the satisfaction of the regulatory community, including the natural resource trustees, why such an evaluation does not need to be conducted. Shoreline wading birds at Point Molate are of particular concern as there are large intertidal mud flats where birds are often feeding offshore. Is there any documentation to show that wading birds are not at risk to physically contacting or breathing potential petroleum-related contaminants in the surface water and sediments?**

Response: Please see in part response to EPA specific comment 11. Exposure through inhalation and dermal contact are considered relatively insignificant routes of exposure in comparison to ingestion of contaminated soil/sediment and prey. In addition, data are very limited on the effects of exposure via inhalation and dermal contact, and models and TRVs are not available for these exposure routes; thus, it is difficult to quantitatively evaluate these exposure routes. Inhalation exposure is likely to be an issue only for the very light petroleum products such as gasoline, which contain significant fractions of volatile organics. However, in open areas, diffusion in air quickly minimizes exposure. As VOCs are not a major concern in surface soils, surface water, and sediment at NFD Point Molate, volatilization and therefore inhalation of these compounds should be insignificant. Potential exposure via dermal contact and inhalation will be addressed in an evaluation of uncertainty.

12. **Comment:** **Plate 2, Proposed Terrestrial Ecological Assessment Sample Locations: We request that the Navy prepare a spreadsheet outlining the rationale for the placement of the proposed terrestrial ecological assessment sample location which would be similar to table 3-2, the spreadsheet for the sediments at Point Molate. We are most interested in the types of analyses considered or proposed at each point, and general reasons for placement (near an impacted area of ecological significance). We recall having scoping meetings with the Navy, U.S. EPA, California Fish and Game, and the National Oceanic and Atmospheric Administration (NOAA) and discussing reasons for selecting certain sampling points. The group suggested some initial modifications to the Navy's points which are reflected in this plate. Specifically, we question why some of the sampling points in the Drum Lot Number 1 area, just north of the fuel pier, a re located inland rather than closer to the shoreline where we have known contaminated soil and groundwater.**

Response: Please see response to EPA specific comment 6.

RESPONSE TO DEPARTMENT OF FISH AND GAME COMMENTS

GENERAL COMMENTS

1. **Comment:** **This is a well written work plan, which with few exceptions provides a rational basis for the work being planned.**

   Response: Comment acknowledged.

2. **Comment:** **As described in the Specific Comments below, DFG does not approve of the methods used in calculating the low and high dose for receptors, or the use of multiple hazard quotients in the risk characterization. Both of these issues must be resolved before this document becomes final.**

   Response: Please see response to EPA specific comment 12.

SPECIFIC COMMENTS

1. **Comment:** **Section 2.1, page 3: To aid in understanding the description of the facility in relation to the San Francisco Bay, a map of the bay showing the location of the facility and the major subdivisions discussed in this section should be included in the document.**

   Response: A figure illustrating the location of NFD Point Molate and the reference site in relation to other locations in San Francisco Bay will be incorporated into the draft final version of the work plan and referenced appropriately. A sentence will be included after sentence 2, Section 2.1, to read: "NFD Point Molate is located in north San Francisco Bay, just south of San Pablo Bay. Figure 2-1 shows the facility location in relation to San Francisco Bay."

2. **Comment:** **Section 3.2, page 8, paragraph 2: Information on the Paradise Cove reference location is contained in a Regional Water Quality Control Board (RWQCB) draft document from 1996 which DFG has not had the opportunity to review. To assure that this is an appropriate reference location for Point Molate, a summary table showing the results of the RWQCB study should be presented along with comparisons of parameters collected at both the reference and site locations, for instance depth of water at the sampling location, grain size, etc. In addition, the location of Paradise Cove should be shown in the regional map discussed in Specific Comment 1 above.**

   Response: The RWQCB draft document on the reference location within San Francisco Bay has been provided to DFG. The proposed reference location in Paradise Cove will be included in the regional map, as stated in response to DFG specific comment 1. Please also see response to EPA specific comment 4. The first sentence of paragraph 2, Section 3.2, page 8 will be modified as follows: "Reference location samples will be collected from the San Francisco Bay Regional Water Quality Control Board (RWQCB) reference location at Paradise Cove (Figure 2-1)."

3. **Comment:** **Section 3.3, page 9: Table 3-2 presenting the rationale for selection of the offshore samples is very helpful. An equivalent table should be presented to help summarize the selection and chemical analysis planned for onshore samples.**

Response: Please see response to EPA specific comment 6.

4. **Comment:** **Section 4.1.1, page 11: The last sentence states that the plants occurring at NFD Point Molate are listed in Table 4-1. That table includes all plants potentially known from the area, not just those occurring at Point Molate.**

Response: The plants listed in Table 4-1 are species known to occur at NFD Point Molate as based on a survey conducted by Tetra Tech Inc. in 1997. The headings on all pages of Table 4-1 should read as follows: "Plant Species Observed at Naval Fuel Depot Point Molate" and will be corrected.

5. **Comment:** **Section 4.1.1, page 12: Paragraph one mentions the possibility of a Rana sp. occurring at this site. No mention of a true frog is found on Table 4-2.**

Response: Terrestrial surveys are currently being conducted by the Navy and there are plans for the conduct of supplemental natural history surveys. Species tables will be modified in the draft final version of this work plan if required. The *Rana* species will be added to the species list in Table 4-2 and Figure 5-1, if appropriate.

6. **Comment:** **Section 4.3, pages 13-14: We concur with the approach being suggested for completing the species composition information for the site. Please correct the listing of Governmental sources to indicate that the California Natural Diversity database is a California Department of Fish and Game program and not a separate governmental organization.**

Response: The Navy will revise the text to indicate that the California Natural Diversity Database is a DFG program. Terrestrial surveys are currently being conducted by the Navy and there are plans for the conduct of supplemental natural history surveys. Species tables will be modified in the draft final version of this work plan if required. In addition, the Natural Diversity Database will be searched to supplement these surveys and identify records of species known to occur at NFD Point Molate if necessary. Section 4.0, especially 4.3, will be modified to reflect the surveys being conducted and address this search.

7. **Comment:** **Section 5.1, page 15, paragraph 2: In identifying important guilds at the facility, neither benthic or pelagic fish are mentioned. If this is an oversight it should be corrected. If it is not an oversight, then an explanation must be provided, especially in light of the discussion on page 16 and Figure 5.1.**

Response: Both the benthic fish and pelagic fish will be included as guilds in the list in Section 5.1, page 15, paragraph 2. Therefore, the first sentence of paragraph 2 will be modified as follows:

"The following guilds were identified as important at NFD Point Molate: (1) passerine birds (such as the American robin and house finch), (2) shorebirds (such as the western sandpiper); (3) raptors (such as the red-tailed hawk and great horned owl), (5) herbivorous mammals (such as rodents and the mule deer), (6) carnivorous mammals (such as the gray fox), (7) amphibians (such as frogs), (8) benthic invertebrates (such as clams, worms, and other invertebrates), (9) benthic fish (such as chameleon goby and yellowfin goby), and (10) pelagic fish (such as Pacific herring and northern anchovy)."

The relevancy of including benthic or pelagic fish as assessment endpoints will be reviewed further. However, based on a preliminary review, benthic fish species have been found to be difficult to evaluate as assessment endpoints because most species that are available in sufficient biomass for tissue analysis are far ranging; thus, their body burdens cannot be attributed solely to NFD Point Molate. The only local benthic species are gobies, which are not likely to be available in sufficient quantities to meet the biomass requirements for analysis. Pelagic fish species are also difficult to evaluate because they are far ranging and their potential exposure to contaminated seawater originating from NFD Point Molate cannot be adequately assessed.

8. **Comment:** **Section 5.2.1, page 17: Since the Brown Pelican, a California special species, is identified on page 16 and in Table 4-4 as potentially occurring at the facility, protection of individuals should be listed as an aquatic assessment endpoint. To assess potential risk to this species, it may be necessary to evaluate fish tissue sample for the ingestion pathway of exposure.**

Response: As stated in Section 4.2 of the work plan, the brown pelican is not known to be a frequent visitor to the offshore areas of NFD Point Molate nor does it depend on habitat at NFD Point Molate in any significant way; therefore, it should not be an assessment endpoint. However, natural history surveys and database searches will confirm this information.

Fish tissue will not be proposed for evaluation for the reasons described in DFG specific comment 7 above.

9. **Comment:** **Section 5.2.4, page 19: It is unclear from the discussion if tissue samples will be collected from receptors at the reference locations for comparison with site tissue samples and literature values, or if the only comparison will be between site and literature values. DFG would prefer that tissue samples collected at sample locations be used as the basis of comparison with site tissue samples.**

Response: Site tissue samples will be compared to literature tissue values only. There are no plans to collect tissue reference samples. Text will be clarified in the ecological risk assessment addendum as necessary.

10. **Comment:** **Section 6.1.1.1, page 22: An acceptable rationale must be provided on the reason for comparing site sediment levels to the Shearwater site as opposed to the reference location at Paradise Cove. DFG has no information on the Shearwater site, and if appropriate justification for its use is provided, information similar to that discussed in Specific Comment 2 above must be provided.**

Response: The Navy is proposing to compare site sediment concentrations to ambient thresholds defined for San Francisco Bay sediments as a way of focusing the risk assessment on compounds that may be associated with releases from NFD Point Molate. The Shearwater notice of site cleanup was the first document in which the RWQCB presented ambient cleanup values for San Francisco Bay sediments. Since then, it has been replaced by the RWQCB staff report, "Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments" issued May 1998. The NFD Point Molate ecological risk assessment will use the more recent 1998 document. See also response to EPA specific comment 9, and Cal/EPA specific Comment 7.

11. **Comment:** **Section 6.1.1.1, page 23: In the first bullet on this page, it is implied that only those samples with contamination exceeding the ambient values obtained from the Shearwater site will be compared to the Paradise Cove reference site as a means of establishing chemicals of potential ecological concern (COPEC). Excluding contaminants as COPEC based on comparison to ambient concentrations is generally not approved by DFG during the ERA process, especially when the definition of ambient is lacking. However, ambient levels may be considered in the risk management process. In the second bullet, the statement is made that, "...approximately 10 percent of tests showed toxicity when one ER-L value was exceeded". Based on this, a contaminant will be considered a COPEC only when it exceeds the ER-L value in 10 percent of the samples. Before this approach can be approved, the statement regarding 10% must be fully explained and justified with literature citations, and the connection between the statement and the 10% criteria must be explained in an understandable manner. In the fourth bullet, the octanol-water partition coefficient of 3.5 should be reduced to 2.0 as discussed in the California Department of Toxic Substances Control 1996 Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Parts A and B (1996 DTSC 1998 ERA Guidance). In addition, further details are needed on how biota-sediment accumulation factors and bioaccumulation factors will be used in identifying COPEC.**

Response: It is the Navy's approach to compare sediment concentrations to ambient as the initial screen. The ambient values that will be used are found in Cal/EPA (1998) which replaces the Shearwater Site document and are referred to in EPA specific comment 8 and 9, and DFG specific comment 10 above.

The use of the ER-L exceeded in 10 percent of the samples is based on professional judgment that follows the recommended procedure used to develop the ER-L described in the text. Similar procedures were conducted at other naval installations with satisfactory results.

The Navy will review the California Department of Toxic Substances Control (DTSC) guidance recommending the use of an octanol-water partition coefficient of 2.0 as suggested in DTSC (1996). Further discussion of this K_{ow} will occur at the July 9, 1998 meeting so that the Navy can better understand the rationale and supporting data for this proposed change.

All references to DTSC (1994) will be changed to DTSC (1996). In addition, all references to EPA (1992) will be updated to the EPA (1998) document. Chemicals that exhibit biomagnification potential will be retained as COECs.

12. **Comment:** **Section 6.1.2.1, page 27: Please provide DFG with a copy of the paper by Johnston and other (1994). We have been unable to obtain a copy of this paper which appears to have been presented at a conference in Munich, Germany.**

Response: A copy of the publication by Johnston and others (1994) has been provided to the DFG.

13. **Comment:** **Section 6.1.4, page 28, paragraph 3: In the fourth line of this paragraph it is noted that exposure models will be used to estimate the amount of contaminant ingested by an assessment endpoint. This is an unusual use of the term "assessment endpoint". Strictly speaking, the food is not ingested by an assessment endpoint, but rather by a representative species receptor in which an assessment endpoint is measured. To be consistent with usual terminology in ecological risk assessments, it is recommended that "assessment endpoint" be replaced with "representative species' or "representative receptor" in this section, and in all other sections where this term is currently being used in an inappropriate manner.**

Response: Comment acknowledged. "Representative receptor" will replace "assessment endpoint" where it is appropriate. In Section 6.1.4, page 28, the third sentence of the third paragraph will be modified as follows: "The exposure models will estimate the amount of a chemical ingested daily from food and sediment by a representative receptor per kilogram of body weight (daily chemical dosage)." In the same section, the last two sentences of the fourth paragraph will be modified as follows: "For each COPEC for which there is sufficient information and avian representative receptor, estimated high and low daily doses will be compared to the TRV using HQ methodology (EPA 1997) to evaluate the potential adverse biological effects to the receptor. Based on the HQs, the risk to each representative receptor will be qualitatively evaluated." The first sentence on page 29 will be modified as follows: "The daily dose from ingestion of contaminated food and sediment for each avian receptor of concern will be calculated using the following generic exposure model, which will be customized for each representative receptor:" The note on Figure 5.1 will be modified as follows: "Species shown in bold are potential representative receptors for the assessment endpoints."

14. **Comment:** **Section 6.1.4.4, page 32: DFG has no objection to the use of range of doses when there is a logical justification for the range of inputs entered into the algorithm. However, as discussed in the U.S. EPA Region 9 comments on this work plan by Dr. Ned Black, there is reason to doubt the underlying assumptions used in calculating a low and high dose. In addition, DFG has concerns that restricting calculations to the low and high dose only allows evaluation of the extremes, does not allow for evaluation of the underlying distribution, and does not consider the central tendency or reasonable maximum exposures (RME). Consequently, DFG does not approve of the use of the high and low dose model proposed in the work plan, and**

recommends the use of the RME or its equivalent as described in the DTSC 1998 ERA Guidance.

Response: See response to EPA specific comment 12.

The high dose calculation evaluates the upper end of potential exposure by assuming that an individual is exposed solely to the maximum detected concentration. The low dose calculation evaluates an exposure scenario similar to an RME by assuming that an individual integrates exposure over an area; thus, the input parameter for this dose estimate is an estimate of the central tendency of the concentration data (that is, the 95 percent upper confidence limit (UCL) of the mean). Because these are deterministic methods of evaluating the range of inputs, by definition this approach brackets the extremes. This deterministic approach can, however, provide important information to the risk assessor and risk manager. If an understanding of the underlying distribution is important, a probabilistic risk assessment approach can be used to further identify levels of risk as a second step in the assessment.

15. **Comment:** **Section 6.2.1, page 38: The equation for calculation the Hazard Quotient (HQ) is incorrect. The divisor should be the reference dose (RfD) or reference concentration (RfC), not the TRV (toxicity reference value). While it is true in some cases that the TRV may be the same as the RfD or RfC, this is not a general case and the usual terminology for defining an HQ should be used.**

Response: The Navy uses the TRV as the divisor in the HQ equation when evaluating risk due to ingestion. In this sense it is equivalent to the RfD.

16. **Comment:** **Section 6.2.1, page 39: The equation for calculating benthic invertebrates is also incorrect. The ER-L is a screening value based upon the contaminant concentration at the 10th percentile for studies showing an adverse effect. It does not represent a reference value such as an RfD or RfC. If HQ's are to be calculated for benthic invertebrates, the RfC should be obtained from literature, and used as the divisor in calculation the HQ.**

Response: The ER-L will be used during the COPEC determination. Any additional roles the ER-L might play in evaluating risk to benthic invertebrates in the risk characterization phase of the risk assessment are currently being reevaluated and will be discussed at the July 9, 1998 meeting.

17. **Comment:** **Section 6.2.3, pages 45-46: DFG considers the use of multiple HQs as described in this Section inappropriate. As described in earlier specific comments, the derivation of the high and low doses used in the HQ estimates is flawed, and the general use of TRV's as RfDs and RfCs is not justified. Consequently, the matrix of HQ's resulting from the method described in the work plan are surrounded by sufficient uncertainty to make them of little value in the decision making process. Consequently, HQs must be calculated using the standard methodology where the RME dose is divided by the RfD or RfC for the specific chemical and receptor. If a reference dose is not available for the specific receptor, then uncertainty factors described in the 1996 DTSC ERA Guidance must be used where appropriate.**

Response: Please see response to EPA specific comment 12 for a discussion on HQs and TRVs.

Please see response to DFG specific comment 14 and 15 regarding RMEs and RfDs/RfCs.

18. **Comment:** **Section 6.2.3, pages 46-47: The method described for determining risk to bethnic invertebrates is not acceptable to DFG. Rather than conduct a weight-of-evidence approach using HQs DFG prefers that the results of the bioassay be the main indicator of risk, with the ER-Ls being used as supporting evidence.**

Response: The weight of evidence approach is being reassessed and will be discussed at the July 9, 1998 meeting. Generally, the Navy uses the ER-L primarily as a screening tool and not as a decision factor. Because bioassays present information concerning toxicity in the laboratory, the Navy does not believe that bioassay results should be overemphasized in the weight of evidence approach. Other lines of evidence that can further illuminate the potential for adverse effects in the field will also be evaluated.

19. **Comment:** **Section 7.1.1, page 48: It is my understanding that one of the reasons for developing U.S. EPA-Region 9 TRVs was for the purpose of quickly screening sites for chemical contamination and subsequent prioritization. In this scheme, contaminants below the low TRV indicate no further ecological investigation for the specific receptor and chemical pair; a level above the high TRV indicates the need for remedial alternatives, and a level between the low and high TRV indicates the need for further ecological investigation. In this sense, the TRVs are a type of soil screening tool. With regards to background, it should be noted that background only applies to inorganic metals, not organic contaminants. Finally, in the last sentence on this page a method is described for eliminating COPEC when a contaminant is not detected in tissues of receptors that serve as prey items. This may be appropriate if they prey items are found in expected quantities, the practical quantification limits are less than the lower of background or reference area concentrations, and the PQLs are low enough to protect higher order feeders from food chain effects.**

Response: The reviewer's understanding of the derivation of the low and high TRVs is correct. Please see response to EPA specific comment 12. Once again, however, TRVs are doses expressed as mg/kg-day. Soil screening values are generally concentrations in soils expressed as mg/kg.

With regards to background or reference area comparisons, it is the Navy's policy to compare both organic and inorganic compounds to ambient concentrations. Please see the response to EPA specific comment 8.

The Navy will collect only terrestrial samples at IR Site 4. Since there may be little suitable habitat, prey items may be reduced in number. However, the Navy will try to collect a sufficient quantity of tissue to provide adequately sensitive detection limits. Detection limits are as low as practical for analysis at this time and are below contract laboratory procedure values.

The following sentence will be included as the last sentence of Section 7.1.1, page 48: "If a sufficient prey cannot be collected based on professional judgment, then the COPEC will be evaluated in the exposure and effects assessment."

20. **Comment:** **Table 3-1, page 3-1-1: Samples TOA-200 and TOB-300 could not be located on the maps provided with the document. Please add these locations to the maps, or alternatively, provide a footnote explaining why these sample locations are not included on the map.**

Response: Comment acknowledged. These stations, located off Castro Point, are referenced on Plate 1. However, Plate 1 will not be updated to include the exact location as these data locations will not be used further in the ecological risk assessment.

21. **Comment:** **Table 3-2, page 3-2-1: For sample locations P(1-3), please define the meaning of "All" under the Analytes column. For sample T9(2), please provide a justification for not including metals, VOCs, and PCB/Pesticides in the Analytes column.**

Response: "All" analytes include TPH, metals, SVOCs, VOCs and PCB/Pesticides. "SVOCs - all locations" will be modified to "TPH, SVOCs only - P(2,3). Table 3-2 will be modified to include a complete listing of the analyses that will be conducted at all sampling stations. Please see response to EPA specific comment 5. The analyses proposed for T9 will be reevaluated and justification will be provided in the Draft Final Ecological Risk Assessment Addendum.

22. **Comment:** **Table 4-1: Please clarify the meaning of the asterisk in the footnotes. Indicates whether these nonnative species have been observed on site or are potentially occurring at the site.**

Response: Table 4-1 provides a list of plant species that have been observed at NFD Point Molate. The table title will be modified appropriately. See response to DFG specific comment 4.

23. **Comment:** **Table 4-2: The following changes to the scientific and common names should be made to make the table more accurate:**

Batrachoseps attenuatus	**California slender salamander**
Ensantina eschscholtzi	**Ensantina salamander**
Gerrhonotus multicarninatus	**Southern alligator lizard**
Pituophis melanoleucus catenifer	**Pacific gopher snake**
Thamnophis couchi	**Western aquatic garter snake**
Thamnophis elegans	**Western terrestrial garter snake**

In addition, the table should be reorganized to place all lizards together and all snakes together.

Response: Comment acknowledged. The suggested changes and reorganization will be made to Table 4-2. Information from terrestrial surveys currently being conducted by the Navy and future supplemental natural history surveys, will be added to Tables 4-1 through 4-5. Any changes will be incorporated into the draft final version of the work plan.

24. **Comment:** **Table 4-3: The following changes to the scientific and common names should be made to make the table more accurate:**

Sylvilagus bachmani	**Brush rabbit**
Myotis spp.	**Bats**

Response: Comment acknowledged. The suggested changes will be made to Table 4-3. Please see response to previous comment.

25. **Comment:** **Tables 4-1, 4-4 and 4-5: These tables were not reviewed for spelling or naming errors. In light of the fact that numerous errors were found in other tables, additional proofreading is recommended before using this table in other documents.**

Response: Tables 4-1, 4-4, and 4-5 will be reviewed and changes made as appropriate in the draft final version of the work plan.

References:

American Petroleum Institute (API). 1994. "Users Guide and Technical Resource Document: Evaluation of Sediment Toxicity Tests for Biomonitoring Programs." API Publication No. 4607. Washington, DC. October.

American Society for Testing and Materials (ASTM). 1995. "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites." Annual Book of ASTM Standards. E-1739-95. November.

California Environmental Protection Agency (Cal/EPA). 1998. "Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments, Staff Report." RWQCB, San Francisco Bay Region. Prepared by Tom Gandesbery and Fred Hetzel, Ph.D. May.

California Department of Toxic Substances Control (DTSC). 1996. "Guidance for Ecological Assessment at Hazardous Waste Sites and Permitted Facilities." Part A: Overview and Part B: Scoping Assessment. State of California, Environmental Protection Agency, Department of Toxic Substances Control. July 4.

Flegal, A.R., R.W. Risebrough, B. Anderson, J. Hunt, S. Anderson, J. Oliver, M. Stephenson, and R. Packard. 1994. "San Francisco Estuary Pilot Regional Monitoring Program: Sediment Studies." Prepared for the California Regional Water Quality Control Board, San Francisco Region (RWQCB), Oakland, CA.

Johnston, R.K., W.R. Munns, Jr., F.T. Short, and S. Hahn. 1994. "The Use of Ecological Risk Assessment Data to Establish Surface Water and Sediment Media Protection Assessment Data to Establish Surface Water and Sediment Media Protection Standards for the Portsmouth Naval Shipyard, Kittery, Maine USA." Paper Presentation at the Second Environmental Restoration Opportunities Conference, October 25 through 27, 1994, Munich, Germany.

Miles, A.K. and N. Roster. In press. "Enhancement of PAHs in Estuarine Invertebrates by Surface Runoff at a Decommissioned Military Fuel Depot. Marine Environmental Research.

Niewolny, L.A., B.D. Gruendell, and T.H. DeWitt. No date. "Effects of Non-contaminant Factors on the Performance of the *Leptocheirus plumulosus* Chronic Sediment Toxicity Test." Pacific Northwest National Laboratory. SA-28854.

Pastorok, R.A., and D.S. Becker. 1989. "Comparison of Bioassays for Assessing Sediment Toxicity in Puget Sound." EPA, Puget Sound Estuary Program. EPA 910/9-89-004. Seattle, WA.

PRC Environmental Management, Inc. (PRC). 1994a. Record of Telephone Conversation Regarding Sediment Toxicity Testing. Between James Baker, PRC, Environmental Scientist, and Karen Taberski, Environmental Scientist, Regional Water Quality Control Board. September 14.

PRC. 1994b. "Naval Fuel Depot Point Molate, Richmond, California, Shoreline Investigations Soil and Sediment Data Summary." August 15.

San Francisco Bay Regional Water Quality Control Board (RWQCB). 1996. "Evaluation of Sediment Toxicity Tests and Reference Sites in San Francisco Bay." Internal Draft Report. May.

U.S. Army Corps of Engineers (COE). 1992. "Sediment Budget Study for San Francisco Bay, Final Report." February 29.

U.S. Environmental Protection Agency (EPA). 1989. "Ecological Assessment of Superfund Sites: A Field and Laboratory Reference." EPA/600/3-89/013. Washington, D.C. March.

EPA. 1992. "Framework for Ecological Risk Assessment." EPA/630/R-92/001. February.

EPA. 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final." Office of Solid Waste and Emergency Response. EPA 540/R/97/006. June 5.

EPA. 1998. "Guidelines for Ecological Risk Assessment." EPA/630/R-95/002F. April.