



SFB/
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**San Francisco Bay
Regional Water
Quality Control
Board**

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

N60028_000823
TREASURE ISLAND
SSIC NO. 5090.3.A



*Pete Wilson
Governor*

January 28, 1998
File: 2169.6013

Commanding Officer
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402
Attention: Mr. Ernesto Galang

**Re: Draft Corrective Action Plan, Sites 04/19, 06, 14/22, 15, 16, 20, and 25
Naval Station Treasure Island**

Dear Mr. Galang:

The Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) has reviewed the above-referenced document and has the following comments:

GENERAL COMMENTS

1. The investigations at several sites do not appear to adequately delineate the lateral or vertical extent of contamination. Areas of particular concern include the vertical extent of contamination in soil at Site 16, and the lateral extent of elevated TPH concentrations in groundwater at Sites 20 and 25.
2. In Section 3, the Navy presents data on metals concentrations detected in soil and groundwater samples collected at the various sites. A cursory review of the metals results indicates that at any given site from 8 to 16 metals occur in soil at concentrations exceeding ambient concentrations. Groundwater results show concentrations consistently exceeding Ambient Water Quality Criteria for arsenic, copper, lead, mercury, nickel, and zinc. There is however no interpretation or discussion of the significance of the data, of possible sources of elevated metals concentrations, or of the potential implications of elevated metals concentrations on the corrective action analysis.
3. The text of Section 4.1.8 notes that organics unrelated to petroleum mixtures were detected at the sites discussed in this CAP sites and that the detections are being evaluated by the Navy. Please provide a summary of these detections and describe the process the Navy is using to address this issue.



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4. The Tier 2 risk-based screening applied to those sites passing the Tier 1 screening differs in important ways from the Tier 2 screening process proposed in Section 4.1.1. Although the differences are acknowledged, no explanation or justification for using a different approach is presented. It is not clear what effect this has had on the conclusions derived from the analysis. It is requested that the Tier 2 analysis be redone using the approach outlined in Section 4.1.1.
5. In the Draft Final Onshore Remedial Investigation Report, Appendix N, the Navy presented results of ecotoxicological testing leading to proposed soil and groundwater cleanup levels for petroleum hydrocarbon mixtures at Naval Station Treasure Island. The tests, analyses, and conclusions developed by the Navy have been reviewed by RWQCB staff, whose comments are being submitted simultaneously with comments on the CAP. Once agreement is reached on use of these test results in screening petroleum hydrocarbon occurrences in soil and groundwater and in establishing cleanup levels, areas proposed for corrective action can be delineated.
6. There are numerous inconsistencies between the remedial technology screening presented in Appendix F and the summary of the results of that screening presented in Section 6. This in turn has led to development of remedial alternatives that are not consistent with the technology screening.
7. The conclusions presented in this document are dependent on agreement regarding application of the bioassay results to soil and groundwater contamination at NAVSTA TI, and on the resolution of inconsistencies between the initial screening analysis and the summary tables in Section 6.

SPECIFIC COMMENTS

1. Figure 2.1-11. The notes on this figure indicate measurements were made in December, while the title of the figure references November.
2. Section 3.1.1. The mean gradient value cited here is not in agreement with mean gradient values presented on Figures 2.1-10 through 2.1-13, which range from 0.0022 to 0.0025. Please provide an explanation for this. Also, why is a mean gradient for TI used in this calculation when site-specific gradients are available? Why are the local gradient values of 0.0045 noted in

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the text or the local mean gradient value of 0.002 (Figure 2.1-16) not appropriate for use in this calculation?

3. Section 3.1.2. The maximum oil and grease concentration of 77,300 mg/kg is not shown on Figure 3.1-3.
4. Section 3.1.4. The discussion of contaminant distribution in soils is misleading, in that many of the elevated concentrations occur in an area of the center of the site near the previous PA/SI locations. The RI effort has provided useful data adjacent to these locations in several directions, although some uncertainty remains regarding the lateral extent of hydrocarbons northeast and south of the original locations. How will this uncertainty be addressed?
5. Section 3.1.4. Please provide a map showing the locations of elevated concentrations of chemicals measured in groundwater.
6. Figure 3.2-2. The figure shows one monitoring well, at a location not consistent with Figure 3.2-1.
7. Section 3.2.4, p. 3-28, second paragraph. Please clarify the references to separate phase occurrence at 06-W3.
8. Figures 3.2-8 through 3.2-10. The contours of total TPH are not consistent with the contours for the TPH-E and TPH-P fractions. Areas of discrepancy include near former USTs 240A and 240B, and in the vicinity of 06-C05. Also, some of the location totals presented on Figure 3.2-10 appear to be less than the values shown on the preceding two figures. See for example 06-C05, 06-MW17.
9. Section 3.2.4, last sentence. The statement that no TPH constituents have been detected at 06-MW20 is not supported by the data presented in Figures 3.2-9 and 3.2-10.
10. Table 3.2-7. The text states that the table presents EPA PRGs and CARB ambient air concentrations, although these values are not included in the table. Please revise the table to show these values.
11. Section 3.3.3. Please check the figure references in this section for accuracy.

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12. Section 3.3.3.2, p. 3-40. The statement that gasoline concentrations are declining with time is difficult to draw from the data presented. While comparing the earliest measurements (9/92 or 7/93) to the most recent would support the conclusion regarding declines, at most wells concentrations of TPH-gasoline and TPH-other (considered as one record) in recent years (1994-1996) have shown a pattern of variability or increase. Only at well 14-CW03 could it be argued that concentrations are declining, and then only by looking at the three most recent measurements. Also, the text states that the most recent rounds at several wells were in February and June 1996, while Figure 3.3-4 shows an additional round in September 1996.
13. Table 3.3-6. Please revise the table to show the units for the values presented.
14. Table 3.3-8. The text states that the table presents EPA PRGs and CARB ambient air concentrations, although these values are not included in the table. Please revise the table to show these values.
15. Figure 3.3-5. Results from location 14-HP025 are not presented.
16. Section 3.3.3.2, p. 3-43. On p. 3-40, concentration patterns similar to those described for TPH-E as increasing are described as decreasing. What criteria are used to reach conclusions regarding the concentrations trends at these wells?
17. Section 3.3.4, pp. 3-46 through 3-48. Please check this section for accuracy. There appear to be numerous editorial mistakes. See, for example, the last paragraph on p. 3-46.
18. Figure 3.3-5. The maximum TPH-E concentration reported, in a hydropunch sample from location 14/22-HP0025, is not shown.
19. Section 3.3.4, p. 3-47, last paragraph. The discussion would be improved by focusing on the source areas indicated by the contaminant distribution presented in Figure 3.3-8. From this plot, former AST 5 and former UST 330C are evidently sources of TPH-E to groundwater, in addition to those noted in the text.
20. Section 3.3.4, p. 3-48. Please provide additional explanation for the elevated concentrations measured at HP010. This location appears to be outside or at the inland edge of the tidal influence zone (based on the minimal estimated

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tidal mixing at 22-MW03), so "upgradient" movement associated with USTs 330- A, B, E, and F does not adequately explain this hit. In addition, the lateral extent of hydrocarbons to the west of this location is poorly constrained.

21. Section 3.4.4, p. 3-54. Please provide additional discussion on the suspected source of the elevated TPH-E concentrations at 15-MW03.
22. Section 3.5.3. The text should be revised to reflect the fact that no groundwater samples were collected or analyzed.
23. Section 3.5.3.1. A number of the shallow soil borings show elevated TPH-E concentrations in the deepest sample. Examples include 16-A, 16-F, 16-H, and 16-I. The absence of definition of vertical extent at these locations, coupled with the analytical results at 16-P showing elevated concentrations at depths in excess of 25 feet, raise serious concerns about the adequacy of the characterization at this site. Board staff feel that the lack of characterization of the extent of contamination constitutes a data gap at this site.
24. Section 3.5.4, first paragraph. The wording of the third sentence is not clear.
25. Section 3.5.4, second paragraph. The conclusion that none of the elevated TPH-E concentrations occurred within the former AST areas is not in agreement with Figure 3.5-2, which indicates TPH-E hits at 4 of the 5 locations within the footprint of the former AST area.
26. Section 3.5.4, fifth paragraph. While Board staff are in general agreement with the conclusions reached regarding the sources and distribution of TPH-E in soil, the generally shallow nature of the investigation and the absence of vertical definition of contaminant distribution leaves the investigation and the conclusions reached from the investigation incomplete. In addition, no basis for considering petroleum hydrocarbon concentrations below 1,000 mg/kg as not elevated is provided in the text. The data indicate that releases within the footprint of the former AST locations likely occurred, although the RI sampling was not adequate to define the extent of these releases in soil. This is considered a data gap in the investigation at this site.
27. Table 3.5-4. For this site (and all of the other sites reported in this CAP) the maximum concentrations of a number of metals exceed ambient concentrations. Silver in particular exceeds its ambient soil concentration by a

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factor of more than 50. Please provide a discussion of the metals results with respect to possible site-related sources and contaminant distribution.

28. Section 3.6.3.2, TPH-Purgeable. The statement that gasoline was not detected in samples collected from 20-MW01 is misleading in that no samples from this well were analyzed for gasoline, per Figure 3.6-4. Please revise the text accordingly.
29. Section 3.6.4. Board staff do not agree that frequency of detections of less than 50% warrant concluding that no consistent pattern of contamination exists at the site. On the contrary, the measured TPH concentrations at the contiguous locations 20-HP017, 20-HP020, 20-HP023, 20-HP024, and 20-MW05 suggest a plume, with concentrations generally lower in a downgradient direction. What is the suspected source of these elevated concentrations in groundwater? The extent of these elevated concentrations appears constrained to the east and south, but is not defined to the north and west, and would appear to constitute a data gap in the investigation at this site.
30. Section 3.7.2.2. Were there USTs designated 2B and 180A?
31. Section 3.7.3.3, p. 3-84, discussion of BTEX detections. Check the units on BTEX concentrations in this section of text.
32. Section 3.7.4. 1) The presentation of the results of the investigation in the vicinity of the magnetic anomalies would be enhanced by considering the immunoassay results in the overall data interpretation. There was good agreement between the immunoassay and laboratory results at this site. Furthermore, Appendix B indicates that 8 immunoassay samples showed elevated TPH concentrations in water. Use of these data to sketch an area of suspected TPH contamination in groundwater would add to the discussion in this section, and would show an area extending as much as 200 feet west of the anomalies. The text mentions that sources in this area are residual petroleum products in soil. 2) What site activities or installations are suspected to have resulted in releases? The anomalies are generally cross-gradient of the elevated TPH concentrations. 3) The lateral extent of TPH contamination of groundwater is not constrained near and to the east of the magnetic anomalies. This constitutes a data gap in the investigation at this site.

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33. Section 3.8. 1) The discussion of soil contamination is extremely general and does not comprise a summary of the results of the investigation reported in this document. Please provide a more focused summary of the results. 2) The text on p. 3-89 notes an average gradient of 0.0024, while elsewhere in the text a value of 0.001 is regularly used in average velocity calculations. Please revise as appropriate. 3) This section reads more like a fate and transport discussion than a summary of contaminant distribution.
34. Section 4.1.5.1. The text does not make it clear that the application of TPH RBSLs occurs only if no VOCs or SVOCs considered characteristic of the petroleum mixture of interest were found in the depth interval under consideration. A more thorough explanation of the methodology would be helpful. Also, there appear to be discrepancies between the maximum concentrations summarized in Section 3 and the maximum concentrations noted in the Section 4.1 tables. See for example diesel and/or gasoline values in soil at Sites 14/22 and 16. It might also be helpful to note explicitly that the PA/SI data are included in the dataset used to develop the Section 4.1 tables.
35. Section 4.1.6. The tier 2 screening described in this section differs substantially from the tier 2 screening methodology described in Section 4.1.1. While the use of tier 1 RBSLs in place of SSTLs may be conservative, the calculation of mean and 95 UCL concentrations is not conservative, in that it tends to produce low comparison concentrations, particularly for sites where many samples were collected. The tier 2 analysis should be redone to be consistent with the approach described in Section 4.1.1.
36. Section 4.1.7, last paragraph. The tier 2 evaluations in effect calculate concentrations that might result if all the soil at the sites evaluated were mixed. This will tend to underestimate likely exposure concentrations to workers in areas where hydrocarbon contamination is concentrated.
37. Section 4.1.8. Please provide a reference for the RWQCB standards regarding acceptable risks and hazard indices.
38. Section 4.1.8, p. 4-24, last paragraph. Please provide a summary of those sites where additional organic chemicals unrelated to petroleum mixtures were detected in soils and details of the Navy's process for evaluating the detections.

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39. Section 4.2.2.2, Ecotoxicity-based TPH Clean-up Levels. The TPH levels are proposed and subject to review and modification in consultation with RWQCB staff. Once agreement on TPH values for use in this analysis are reached, the TPH results will need to be reanalyzed.
40. Table 4.2-1. 1) The text states that EPA AWQC are used as screening values while the notes to this table reference the Central Valley RWQCB compilation. The RWQCB compilation includes water quality limits drawn from a variety of sources. It would be useful to clarify the specific limits drawn from the compilation in the notes to the table. 2) Please explain why the chronic value for benzene was used instead of the lower acute value for ethylbenzene in calculating a value for TPH-gasoline. 3) Subsequent tables cite a value for phenanthrene. Please include this chemical in this table.
41. Tables 4.2-2 through 4.2-8. Detections of phenanthrene should be added to these tables as appropriate.
42. Tables 4.2-9 through 4.2-22. Numerous inconsistencies between these tables and the summary tables in Section 3 were noted. Specific examples include: 1) maximum diesel detection in soil at Site 4/19, 2) maximum diesel detection in groundwater at Site 6, 3) presentation of results for a groundwater sample at Site 16 (where no groundwater sample was collected per Section 3), and 4) missing results for TPH in soil at Site 16. Also, total TPH results appear to be in error for soil at Site 14/22, groundwater at Site 20, and groundwater at Site 25. It appears that total TPH values include other components when detected. If so, this should be noted, perhaps in a footnote to the tables. Finally, as noted elsewhere, any revisions to the TPH screening values will require revision of the hazard quotients presented in these tables, and in the conclusions developed from these values.
43. Section 4.2.3.2. Please check the maximum diesel and gasoline groundwater concentrations.
44. Section 4.2.3.5, Total TPH in Soil. It doesn't seem possible for concentrations in the 0-10' interval to be less than those in the 0-2' interval, since the former would include all the samples in the latter. Please check this.
45. Section 4.2.3.6. the text and Table 4.2-20 are not in agreement.

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46. Section 4.3.2.1, Total TPH in Soil. The text notes a maximum TPH-motor oil concentration of 53,000 mg/kg. This is not in agreement with the text of Section 3.1.2, which notes a maximum concentration of 1500 mg/kg.
47. Sections 6 and 7. There are numerous inconsistencies between Appendix F and this Section 6, regarding the options retained for further analysis and the rationale for retaining or eliminating options. This in turn is reflected in Section 7, since only the options shown as retained in Tables 6-1 and 6-2 are assembled into alternatives. These sections must be revised to agree with the analysis and conclusions developed in Appendix F.
48. Table 6-1. Collection and disposal technologies are combined in this table into remedial alternatives. Collection and disposal technologies should be considered separately in this initial screening. Also, one of the disposal options considered is actually offsite treatment, and perhaps would be better considered as an ex situ treatment option.
49. Section 8. The conclusions presented in this section are dependent on agreement regarding application of the bioassay results to soil and groundwater contamination at NAVSTA TI, and on the resolution of inconsistencies between the initial screening analysis (Appendix F) and the summary tables in Section 6.
50. Appendix F. In general, this appendix does a good job of identifying and screening candidate technologies. It is suggested that some of the limitations of various technologies be discussed relative to specific site conditions of Treasure Island. For example, on p. F-4, the nonselective nature of oxidizing agents is noted, but no analysis of the significance of this with respect to TI is provided, either qualitatively or quantitatively, in spite of the extensive dataset available. Also, costs are generally described as low, moderate, or high. What is meant by these terms? It would be more useful to present ranges of costs per unit of material treated, based on industry experience at least, or on Navy experience at HPS or in the Bay area when possible.
51. P. F-3. The only ex situ biological treatment scheme considered is landfarming. However, on p. F-5, soil piles are considered in evaluating ex situ SVE, but are rejected in favor of biological treatment options. Please include an assessment of soil piles in evaluating ex situ biological treatment options in Section 1.1.2.1.

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52. Section 1.1.3, p. F-7. This section is titled disposal, but includes an evaluation of soil treatment by thermal desorption, at an offsite location. Thermal desorption is retained for further consideration. However, treatment by thermal desorption is rejected in Section 1.1.2. Please clarify.
53. Section 1.1.4.2. The wording of the first sentence should be changed to clarify that SVE is the only in situ treatment process considered.
54. Section 1.1.6. The text notes that biodegradation may already be occurring at NSTI. Please provide any available data and data analysis that show whether or not these processes are occurring. It is not possible to evaluate any recommendations for selection or rejection of natural attenuation in the absence of site-specific data that document soil and groundwater conditions as they relate to biodegradation potential and activity.
55. Section 1.2.1.2. The conclusions regarding the elimination of interceptor trenches are not well supported. Please provide additional justification for this conclusion.
56. Section 1.2.3.3, Steam stripping. Please provide a reference for the statement that steam stripping is ineffective on petroleum hydrocarbon compounds.
57. Section 1.2.4. The preference for disposal of any extracted groundwater to the bay, over WWTP disposal or reuse for landscaping is not well supported. The RWQCB considers discharge to a WWTP or reuse as preferable to direct discharge of treated groundwater to surface water.

If you have any questions regarding this letter, please call David Leland at 510-286-4267.

Sincerely,



David F. Leland, P.E.
Groundwater Protection and Waste
Containment Division

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Mr. Ernesto Galang
January 28, 1998

cc: Mr. John Pfister
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Mr. James A. Ricks, Jr. (SFD-8-2)
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Mr. David Rist
Department of Toxic Substances Control
Northern California Region
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Mr. James B. Sullivan
Caretaker Site Office
Treasure Island
410 Palm Avenue, Room 161
San Francisco, CA 94130-0410

Ms. Martha Walters
San Francisco Redevelopment Agency
770 Golden Gate Avenue
San Francisco, CA 94102

Pat Nelson
Paul Hehn
ARC Ecology
John Allman
Usha Vedagiri
Dale Smith

} RAB

Richard Knapp (TEMI)
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