

MEMORANDUM

To: Ernesto Galang, EFA-WEST Date: January 17, 1997
Jim Sullivan, NSTIBRAC Subject: Comments on the Naval
Fr: Patricia Nelson, NSTIRAB Station Treasure Island
Technical Subcommittee (NSTI) Remedial
Investigation (RI)
Report

This memo transmits the comments on the technical adequacy of the NSTI RI Report as prepared by Pat Nelson, Co-Chair of the Community NSTIRAB. A portion of the comments summarized below were described to you at the Interim NSTIRAB meeting on January 7, 1997. The comments are summarized in two parts: general comments and specific comments.

I. General Comments

A. Overview

It is understood, from the RI report, that the objectives of the RI were to characterize the Treasure Island (TI) and Yerba Buena (YB) Islands':

- o nature and extent of contamination,
- o geology, hydrology and physical features,
- o potential contaminant pathways and receptors, and
- o fate and transport of contaminants.

In addition, the RI activities were to include:

- o gathering data to support a baseline human health risk assessment (HHRA) and ecological risk assessment and
- o gathering data to support feasibility study (FS) activities.

B. Community Restoration Advisory Board Member Expectations

The Navy needs to understand that the Community Restoration Advisory Board (RAB) had expectations of the RI report to not only achieve the objectives identified above, in a clear fashion, but also to address those comments on the technical work that were developed in 1995 upon our review of the Phase IIB Work Plan (work plan). For instance, in 1995 I had prepared comments on the work plan (see excerpts of those comments following this subsection) which, in my practice of managing hazardous waste sites for industry, identified inadequacies in:

- o technical content,
- o summarizing the intent and result of the PA/SI, Phase I and Phase IIA work and how the Phase IIB work would supplement that previously performed,
- o soil and groundwater screening technologies proposed (immunoassay kits), and
- o addressing and evaluating the characteristics of neighboring CERCLA sites and CERCLA and UST sites systemically rather than individually.

Hence, my expectation of the RI report was to address those and other RAB member comments in a meaningful fashion, such as:

- o providing meaningful technical analyses of data collected in the Phase IIB work rather than describing procedural efforts to conduct the Phase IIB work;
- o describing and summarizing the PA/SI, Phase I and Phase IIA data with the Phase IIB data;
- o summarizing, by site in tabular and cross-section/site plan map formats, the horizontal and vertical extent of contamination using data from the immunoassay kits and traditional laboratory methods based; all locations of soil and groundwater sampling using the geoprobe and traditional sampling methods should be illustrated on one drawing; and
- o summarizing the evaluation of soil and groundwater chemical data from neighboring CERCLA sites and CERCLA and UST sites to use as a basis of developing hypotheses of contaminant migration to evaluate in a fate and transport model.

1. February 1995 RAB Comment Excerpts on the Phase IIB Work Plan

On February 17, 1995 I had prepared comments on the Phase IIB Work Plan in which a lack of technical bases for the Phase IIB remedial investigation work was identified:

"The responses to the RAB subcommittee comments for the most part addressed procedural issues rather than technical content issues. My particular interest is in the technical content issues and found the responses inadequate. The response to the "Basis for Sampling Rationale" is an example of this inadequacy: the response identified meetings and documents that were developed in the preparation of the Phase IIB Work Plan Addendum. Although this information provides an overview of the process the Navy and its consultant undertook with regulatory agencies, it does not describe the technical bases for the Phase IIB remedial investigation work on a site by site basis."

In addition, on February 26, 1995, as a follow-up to the February 17, 1995 comments the following were provided:

"1) The RAB had not been provided necessary documentation to understand the nature of previous site studies or analyses that have and have not been prepared to date. Those previous studies have not been addressed within the Phase IIB work plan and appear not to have been evaluated comprehensively which, in the view of the subcommittee, compromises the efficacy of the Phase IIB work plan,

2) It appears that effective alternatives to the field screening and field investigation techniques proposed identified in the Phase IIB work plan were not considered by PRC. Hence, there are many unresolved issues associated with the technical bases of the planned Phase IIB work, and

3) Although the principal contaminants on TI are petroleum hydrocarbon related, the Navy has elected to separate the Underground Storage Tank (UST) investigations and the Installation Restoration (IR) site investigations. Of particular concern to the subcommittee is there are no apparent means of ensuring effective coordination of the two site investigation programs in place because they are being performed by separate contractors for the Navy. Also, the relationship between studying and remediating UST and other petroleum-contaminated IR sites is unclear and should be addressed in a systemic fashion."

C. Comments on the NSTI RI Report

This subsection summarizes inadequacies in the RI report for which examples or explanations are provided in Section II. The following RI report objectives identified above were not achieved:

1. The vertical and horizontal extent of soil and groundwater contamination has not been adequately characterized for the TI and YB IR sites.

2. The potential contaminant pathways and receptors were not adequately identified for the interim and ultimate land uses identified by the City of San Francisco for the TI and YB Islands.

3. The fate and transport of contaminants has not been adequately characterized for the TI and YB IR sites.

D. Recommendation

It is recommended that the Navy, at the direction of the regulatory agencies:

- o perform supplemental field work by July 1997 to ensure that the IR sites, including those that were transferred into the UST program, have been adequately characterized utilizing traditional field and laboratory methods,
- o prior to undertaking the FS work and developing a Draft Record of Decision (ROD), revise the RI report to reflect, not only the supplemental field work, but also the PA/SI, Phase I, Phase IIA and Phase IIB work in a manner that provides meaningful technical and data analyses rather than describe administrative procedures associated with performing such work. The revised RI report should also clearly describe the individual site characteristics and the NSTI characteristics as a whole.
- o revise the project budget and schedule to allow for completion of the tasks above prior to undertaking the FS and Draft ROD work.

Members of the NSTI Community RAB Technical Subcommittee are willing to meet with the Navy, its consultant PRC, and regulatory agencies to assist them in developing an RI report that achieves the objectives cited above.

II. Specific Comments

A. Vertical and Horizontal Extent of Contaminants

Prerequisites for adequate characterization of the vertical and horizontal extent of contaminants include: full knowledge of historical land uses and site operations, full knowledge of chemicals associated with the historical land uses and site operations, utilization of soil and groundwater sampling methods that produce undisturbed samples from these media for characterization and evaluation of valid and reproducible chemical analyses. It appears that none of these prerequisites were developed nor were described in the IR report, examples of which are summarized below:

1. Historical Land Uses and Site Operations

The historical operations of the Naval Station Treasure Island (NSTI), which includes YB Island, summarized in Chapter 1 focus on World War II era operations. Additional operations supporting the Korean, Viet Nam and Gulf Wars are neither described in text nor depicted in Figure 1-2. The historical land uses illustrated in Figure 1-2 are not footnoted to indicate the year those land uses were current. Hence, it appears that historical operations for which hazardous substances may have been used and stored have been overlooked and therefore the islands have not been adequately characterized.

2. Chemicals Associated with the Historical Land Uses

On both islands there were underground fuel tanks that were in operation during the 1980s when Methyl Tertiary Butyl Ethylene (MTBE) was an additive to fuels. The MTBE is considered to be a hazardous substance in the regulatory community. The NSTI appears to have been an operational base during the 1980s and analysis of the soil and groundwater samples during the Phase IIB work was neither proposed or performed by the Navy and its consultants nor the local, state and federal regulatory agencies overseeing the RI field work. The RAB suggested that analyses for MTBE be performed in 1996, and this subject is not addressed in Section 1.4.4. In addition, the Navy indicated that data important to the RI for sites 12 and 17 was missing from the RI report and is not addressed in Section 1.4.4. Hence, it appears that chemicals associated with historical land uses have not been adequately investigated nor characterized. In addition, there appears to be incomplete data sets for two of the IR sites from which to complete an analysis. Please explain these omissions.

3. Use of Reliable Soil and Groundwater Sampling Methods

In the summer of 1995 the RAB observed the use of the geoprobe and immunoassay kit technologies in the field to take and analyze soil and groundwater samples, respectively, the latter is discussed in item no. 4 below. During that field event, the geoprobe technology failed: the acetate liner containing the soil column sample crimped and distorted the soil strata for borehole logging. In addition, the additional handling of the soil boring core may have unnecessarily provided opportunities for fuel constituents to volatilize producing a disturbed sample, perhaps uncharacteristic of that IR site. In our February 1995 comments on the Phase IIB work plan, the RAB had recommended that soil and water samples be taken using traditional field methods so the islands' lithology could be accurately characterized, a

minimization of soil and groundwater sample disturbance would occur.

The use of the geoprobe sampling technology as a field screening technology was not fully described, nor were the problems associated with using same and their impact on characterization of the vertical extent of contamination on a site by site basis. Hence, there is some question regarding the adequacy of vertical characterization of contaminants at NSTI.

4. Evaluation of Valid and Reproducible Chemical Analyses

It was the RAB's understanding that the results of the geoprobe work would be used, in combination with the immunoassay kit chemical analyses, to select the locations of the new ground water monitoring wells. In addition, it was the RAB's understanding that decisions regarding the extent of contamination at a site might be based on the chemical analyses produced using the immunoassay kits; twenty percent of such analyses would be verified by traditional laboratory analyses. The RAB observed the failure of immunoassay kits during the field demonstration identified in item no. 3 above. In the a fall 1995 RAB meeting, the Navy reported the immunoassay field kit failure rate and announced that a substitute kit would be used to perform site screening chemical analyses. Needless to say, the RAB has since been extremely concerned about the usefulness of the chemical analyses to characterize the NSTI CERCLA and UST sites.

Because of the RAB's concern about the use of the immunoassay kits before and particularly after the field demonstration, a review of that data and data generated by use of traditional laboratory analyses has been made. This subsection addresses a review of IR Site No. 12 data. There were 254 soil and groundwater samples listed in Table 12-3, 149 for soil and 105 for groundwater. Approximately 28 percent of the TPH soil samples and 30 percent of the groundwater samples analyzed by immunoassay kits for Total Petroleum Hydrocarbons (TPH) were also analyzed using traditional laboratory methods. The traditional laboratory analyses of those soil samples verified only 55 percent of the TPH immunoassay analyses and verified only 75 percent of the TPH immunoassay results performed on groundwater samples. Hence, the failure rate of the immunoassay analyses was 45 and 25 percent, respectively. Applying these rates to the total number of samples taken, 67 soil sample analyses and 26 groundwater samples were not characterized with any level of accuracy, therefore, the contaminants' vertical and horizontal extent has not been establish at Site No. 12. Therefore, it is likely that other NSTI sites are inadequately characterized.

Although the immunoassay kits were not used at all IR sites, there is no table in the RI report that summarizes the sites where this method of analysis was used, the total percent of soil and groundwater sample analyses that were confirmed by traditional laboratory methods and how the data from each were used to characterize the IR sites. It is recommended that this information be developed and included in the RI report.

The data generated from the traditional laboratory analytical methods is also suspect for Site No. 12. An example of this is the semivolatile analyses for soil sample no. 199WW124 in Table 12-4 where footnote no. 7, "other problems, refer to data validation narrative" appears with results for a carcinogenic compound, benzo(a)pyrene, among other polycyclic aromatic hydrocarbons (PAH); the validation narrative is not provided in the IR report. Footnote no. 6, "calibration problems" is noted for soil sample no. 12MW018 analyzed for TPH-diesel. Similar data validation issues occur with the inorganic soil analyses, many footnote nos. 5 (duplicate precision problems), 4 (surrogate and matrix spike problems). For groundwater analyses, Sample No. 199Q0022 had a positive value for analyte 3-nitrotoluene, an explosive, which was qualified with footnote no. 4, "surrogate and matrix spike problems".

Although disclosure of such data validation problems is appropriate in the data summary tables it should also be fully described in the IR text where it is notably absent. The high percentage (45 percent) of false negative results in the immunoassay soil analyses leaves the reader to conclude that the horizontal and vertical extent of contamination at all IR sites evaluated, including those that were dropped from the CERCLA program (e.g., Site No. 6), were inadequately characterized and that the basis for those that were dropped from the CERCLA program is fundamentally invalid.

B. Potential Contaminant Pathways and Receptors

There is a notable lack of discussion in the IR report about the interim and ultimate reuses of NSTI lands and exposure pathways related to same as a basis for either a human health or ecological risk assessment (HHRA or Eco-Risk Assessment). Hence, the potential contaminant pathway and receptor analyses for an HHRA and Eco-Risk Assessment have not been adequately addressed.

C. Fate and Transport of Contaminants

There is no discussion in either the RI report introductory chapters or individual site chapters that describe groundwater

movement in a manner from which a contaminant migration or fate and transport model could be applied. In fact, the data described from which gradient contours or tidal fluctuations were established for individual site areas is incomplete at best: respectively, the groundwater monitoring wells are clustered around the NSTI island perimeter in certain areas and only 11 of those wells were used in the tidal influence study. An analysis notably absent from the RI report is the migration of contaminants in adjoining IR sites such as Site Nos. 5, 17, 24, 4 and 19. Such an analysis would monitor the contaminants in upgradient Site No. 5 to determine whether they migrate to downgradient Site Nos. 4 and 19 and how far, if at all contaminants from Site No. 5 travel. Information derived from such an analysis would be useful in developing a groundwater and fate and transport model, evaluating the NSTI in a systemic fashion and developing a HHRA.

D. Other

1. Figure 1-3 appears to have omitted locations of a few IR sites (nos. 2, 18, 23 and 26). This figure should clearly identify all IR sites considered in the PA/SI, Phase I, Phase IIA and Phase IIB work, including those that were removed from the CERCLA program.
2. Explain what happened to the IR sites not listed or identified in Section 1.4.2: 2, 13, 18, 23, 26, and 27.
3. Section 1.4.2. summarized that a decision was made about Site No. 2: "the FFSRA did not consider the site a potential risk..." The FFSRA is a document, not a decision maker. Apparently a decision has been made about the site without benefit of public review and no data were described in the text. Please explain.
4. Section 2.5.1.3 on page 2-9 indicates that 11 monitoring wells were used in the tidal influence study, contrary to the information provided in the May 1996 Groundwater Status Report which states in Section 2.2.3 that 13 monitoring wells on Treasure Island and one Bay monitoring station was used in the tidal influence study. Please identify the monitoring wells used and whether such work extended to Yerba Buena Island as well. Please explain why there are inconsistencies between the RI report and the May 1996 Groundwater Status Report.
5. In Figure 2-7 the groundwater elevation of monitoring well no. 17-MW01 is 17.11 feet above mean sea level, approximately 10 feet above all other wells depicted in Figure 2-7. Please provide evidence that this data is accurate.

6. In Chapter No. 2 the text indicates that evaluation of tidal mixing was based on data for total dissolved solids (TDS), conductivity and salinity. The text does not describe the technical bases for such an analysis or how the field measurements were used. Please explain why the referenced data were used, reference material that verify that use of such data is valid in assessing tidal mixing, and how field measurements were used.

7. Figure No. 2-8 and 2-9 depict groundwater contours in tow areas of TI. The bases for these contours is not defined; there are few interior wells on TI from which to derive and confirm that the illustrated information is valid.

8. Groundwater contours have not been developed for YB Island where at Site Nos. 8 and 11, why? In fact the depths of the monitoring wells on YB Island are not identified in Section 2.5.2, why?

9. Figure 2-11 depicts characteristics of the east side of TI, why is there not a figure that depicts the same characteristics of the west side of the TI?

10. Why were no TDS analyses performed in the few monitoring wells on the west and south sides of TI?

11. Chapter 3 largely describes the procedures and boiler-plate descriptions of technologies used for the Phase IIB field work. Chapter 3 should summarize the results and major technical findings and data derived from the Phase IIB work in addition to the PA/SI, Phase I and Phase IIA work.

12. Throughout Chapter 3 there is reference to various Standard Operating Procedures (SOP) and there is not listing or description of same. In addition descriptions of the Quality Assurance Plan and Quality Assurance/Quality Control information is lacking in this chapter. There should be at least a reference to an appendix where this information is contained so the reader has information enough to find same to enable him/her to understand the context of the reference in text.

13. In 1995, when the use of the geoprobe and immunoassay kit technologies were proposed they were proposed as screening tools so that locations of traditional soil boreholes and monitoring wells could be located and sampled. The results of the screening technologies and how that data was used to located the soil boreholes and monitoring wells should be described in Chapter 3.

14. In Chapter 3, please identify those sites where the screening technologies were not used and why they were not used at those sites.
15. In Section 3.4.1, please explain why new monitoring wells were not installed in Site Nos. 3, 4, 5, 7, 8, 9, 15, 22 and 25.
16. In Section 3.4.1.2 Why weren't the upper and lower reaches of the site aquifer distinguished by site?
17. In Section 3.4.5, please specify which monitoring wells were used for the slug tests and why.
18. In Section 3.5, a table should be provided which summarizes the IR sites (including those moved out of the CERCLA program) and a figure provided which depicts the locations of the geoprobe sampling occurred. Also, a figure should be provided which shows the immunoassay analytical results and results of traditional laboratory analyses so the reader can see which of the data are valid in relationship to the location of the "final" soil boreholes and monitoring wells.
19. Section 3.5.3.1, please explain why the immunoassay results were considered "semi-quantitative". Also summarize herein the selection bases for the original kit types and substitute test kits that were used after the original kits failed during the RAB demonstration in summer 1995. Also, please explain whether the QAP was modified to reflect use of the substitute immunoassay kits.
20. Section 3.5.3.2, explain the statement that chromatograms are not useful analytical tools. It has been my experience in the hazardous substances profession that they are very useful analytical tools.
21. In Section 3.7 reference was made to information contained in Section 3.7.3.1, summarize that information in Section 3.7 rather than have the reader interrupt his/her thought process.
22. Section 3.7.3.1 summarizes approach to establishing the chemicals of concern. This section should identify instead the chemicals of concern and the analyses from which they were identified.
23. The data quality evaluation section in Paragraph no.4 on page 3-27 specifies that 10 percent of the data were fully validated and a cursory review of the Phase I and Phase II data were made, why?

24. Where is the baseline human health risk assessment (HHRA)? The risk assessment should have been part of this report and not the FS work as has been relayed to the RAB in would at our monthly meetings.

25. Chapter 4 should define the ARARs based on the HHRA, where are they?

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