

Comments submitted with  
Report # 921209.02

N00296.001540  
MOFFETT FIELD  
SSIC NO. 5090.3

Comments by RWOCB (Elizabeth Adams)

Date of Comments: 10/22/92

**GENERAL COMMENTS**

**Comment No. 1:** The State action level for TPH of 100 ppm referenced from the LUFT Field Manual, 1989, refers to the total TPH of all hydrocarbon chains within a sample or borehole. It is not appropriate to select out specific species of TPH to determine if the concentrations exceed the State's action levels.

**Comment No. 2:** The San Francisco Bay Regional Water Quality Control Board's action limit for BTEX in soils is 1 ppm total BTEX. Therefore, the highest concentrations of BTEX found in the Golf Course Landfill, boring SBGC-4, would be of concern at this site.

**Comment No. 3:** Acetone was detected at all sites, and though this may be a laboratory contaminant, it seems as though there are concentrations which exceed the normal range expected from laboratory methods and conditions; for example, the 2,100 ppb acetone found in the Golf Course Landfill. There is no mention of any method blank contamination to support dismissing the higher levels of acetone found. In each group of samples there seems to be at least one acetone hit which is higher than the range of lower concentrations of 10-75 ppb.

**JMM Response:** Each of the general comments is addressed in response to a specific comment below.

**SPECIFIC COMMENTS**

**Comment No. 1:** Page 22, Section 4.1: TPH concentrations should be evaluated as the total TPH within a borehole or sample; therefore, it is inaccurate to state that only the TPH-kerosene is a concern at the site.

**JMM Response:** Page 22, Section 4.1, paragraph 1 has been changed to read:  
  
"Low levels (less than 50 mg/kg) of TPH-diesel and TPH-motor oil were detected in soil samples ranging from 1 to 6 feet bgs. TPH-kerosene was detected at levels as high as 100,000 mg/kg at depths ranging from 3 to 5 feet bgs. The state action level is 100 mg/kg for TPH in soil; therefore TPH is a compound of concern at this site." This paragraph has been moved from

Section 4.1 to Section 3.1.3 in the Final Draft of the Additional Sites Investigation Report.

**Comment No. 2:**

**Page 23, Section 4.2: The fact that TPH was found in Patrol Road ditch at only 130 ppm does not necessarily mean that it is not a contaminant of concern. More information concerning the method blank is needed to make that statement. What were the concentrations of TPH in the method blank? What is meant by "corresponding" blank? Was only one performed on a daily basis?**

**JMM Response:**

Page 23, Section 4.2, paragraph 1 has been changed to read:

"Low levels (less than 130 mg/kg) of TPH-motor oil were detected in soil samples collected from the Patrol Road Ditch Site. This compound was also detected in the method blank (4.3 mg/kg) that was extracted and analyzed the sample day as these samples."

The second sentence in this paragraph has been deleted, which read:

"Because the detected concentrations of TPH were all near or below the state action levels, these compounds do not appear to be of potential concern at this site."

This entire paragraph has been moved from Section 4.2 to Section 3.2.4 in the Final Draft Additional Sites Investigation Report.

We recommend that these locations be resampled to confirm these levels of TPH before corrective action is proposed. This recommendation is documented on page 31, Section 6.0, paragraph 4.

**Comment No. 3:**

**Page 24, Section 4.3: Detected concentrations of ethyl benzene, toluene, and xylene do exceed the RWQCB's action limits of 1 ppm total BTEX in soils.**

**JMM Response:**

Page 24, Section 4.3, paragraph 1, sentence 4 has been changed to read:

"Detected concentrations of ethylbenzene, toluene, and xylene soils (maximum concentrations of 200, 7, and 900  $\mu\text{g}/\text{kg}$ , respectively) would not result in concentrations in groundwater

above MCLs. However xylene and ethyl benzene combined exceed the RWQCB action level of one part per million total BTEX in soils at SBGC-4 (5 to 6 feet bgs)."

This paragraph has been moved from Section 4.3 to Section 3.3.5 in the Final Draft Additional Sites Investigation Report.

The recommendations have been modified to account for the BTEX in the SBGC-4 sample. On page 32, Section 6.0, paragraph 5, a sentence has been added behind sentence 6:

"During the construction of the monitoring well at SBGC-4, we recommend that a soil sample be collected to confirm the presence of BTEX in excess of 1 ppm in the interval 5 to 6 feet bgs."

Because the value for xylene reported in this document is qualified with a "J", we recommend resampling this location before corrective action is proposed.

**Comment No. 4:**

**Page 27, Section 5.2.1: The explanation for acetone and 2-butanone in the listed samples needs to be clarified. What are the implications of these data being "estimated"? How does it affect the way the data is being evaluated?**

**JMM Response:**

Acetone and 2-butanone are qualified on these data reports because they failed to meet the QC criteria mentioned in this paragraph. The implications are that these values are uncertain and that corrective action should neither be executed or proposed before these levels are confirmed by resampling. Because these compounds do not have promulgated MCLs for soil or water and because they are common laboratory contaminants, we do not recommend resampling for these compounds.

**Comment No. 5:**

**Page 28, Section 5.2.4: What was the concentration of TPH-motor oil in the method blank contamination? When was the method blank run?**

**JMM Response:**

On page 28, Section 5.2.4, paragraph 2, the following sentences have been added:

"The concentration of TPH-motor oil in the method blank associated with these samples was 16 mg/kg. The method blank

was extracted and analyzed the same day as the samples, May 6, 1992."

**Comment No. 6:** **Page 31, Section 6.0: Future soil samples at Zook Road should be analyzed as close to the saturated zone as possible, as well as areas which are screened to indicate the highest contamination. This will give a better indication of the impact to the groundwater at the site.**

**JMM Response:** This recommendation has been added to the end of paragraph 2 on page 31, Section 6.

**Comment No. 7:** **Page 32, Section 6.0: The ecological risk of the PCBs migrating through the groundwater and seeping into adjacent channels or ditches should also be evaluated in a future document.**

**JMM Response:** Page 32, paragraph 1, sentence 3 has been changed, it now reads:

"The human health and ecological risk should be evaluated and, if these compounds pose a risk, they will be addressed in the basewide Remedial Investigation."

**Comments By EPA (Lida Tan)**

Date of Comments: 10/27/92

**Comment No. 1:**                    **Page 2, Section 1.1, Second Complete Paragraph: The report stated that the objectives of this investigation were to determine if historical waste handling and disposal practices at these sites have resulted in soil and/or groundwater contamination. However, groundwater samples were not taken during this investigation and groundwater data was not provided from the previous investigations, if there were any. Please explain the reasons for omitting the groundwater investigation.**

JMM Response:                    This sentence has been changed to read:

"The objective of this investigation was to determine if historical waste handling and disposal practices at these three sites have resulted in soil contamination."

Because groundwater monitoring wells do not exist at these sites, groundwater data could not be provided for this investigation. However, based on the findings of this study, we recommend that wells be installed at the Zook Road Fuel Spill Site and the Golf Course Landfill Site as described in Section 6.0 of this document. On page 7, paragraph 3, we explain that monitoring wells adjacent to the Zook Road Fuel Spill site at Site 12 have never had detections for petroleum hydrocarbons.

**Comment No. 2:**                    **Page 5, Section 1.4.1, First Paragraph: The report included a letter dated September 28, 1988 in Appendix A. According to the letter, the spilled fuel was left to infiltrate into the ground. The last sentence of this paragraph stated that the fuel had either infiltrated or been otherwise removed. Please delete the highlighted part of the sentence since the letter did not make such an indication.**

JMM Response:                    This sentence has been changed as requested; it now reads:

"The fuel accumulations were reported to be large enough to force the temporary closure of Zook Road. Since this was unusable fuel, it was often not cleaned up and was allowed to drain off into the surrounding soil, where it would 'disappear' in time."

Comment No. 3:

**Page 6, Section 1.4.1, First Paragraph: The report stated that the petroleum-contaminated subsurface soil associated with the aboveground tank storage tank is being handled as an interim action under a source control measure. State what type of an interim action it was, when the action took place and if the regulatory agencies were involved in the process.**

**The paragraph also stated that low levels (less than 21 ppm) of petroleum hydrocarbons are associated with the former burn pit. The report should reference the source of the data.**

JMM Response:

The Site 12 interim action and source control measure are described in the following documents:

PRC and James M. Montgomery, Inc. (JMM), 1990. Site 12 Fire Fighting Training Area Action Memorandum, Naval Air Station, Moffett Field, Mountain View, California, September 1990.

PRC and JMM, 1991. Naval Air Station Moffett Field, Mountain View, California, Site 12 Draft Field Workplan, San Francisco, California, July 1991.

These documents have been reviewed by the EPA, RWQCB, DTSC, and Navy.

The paragraph has been modified to include this information. Sentence 8 now reads:

"This contamination is being handled as an interim action under a source control measure, under EPA, RWQCB, DTSC, and Navy guidance. The selected source control is excavation of TPH contaminated soils, transportation of soils to the Navy's bioremediation pad and treatment on the pad. The pad is currently under construction; excavation of Site 12 soils will commence when construction is complete."

Concerning TPH in the former burn pit area at values less than 21 ppm. This sentence has been changed to read:

"Low levels (less than 21 mg/kg) of petroleum hydrocarbons are associated with the burn pit (Figure 3)."

**Comment No. 4:** **Page 7, Section 1.4.1, First Paragraph:** The report stated that at Site 12, elevated TPH was common in samples collected near the aboveground fuel storage area. The report should state the highest concentration found.

**JMM Response:** Figure 5 shows that the highest value of TPH occurs at SB12-16, where 870 mg/kg was detected. This information has been added to the text in this paragraph.

**Comment No. 5:** **Page 7, Section 1.4.1, Second Paragraph:** The report stated that except for the eleven SVOCs detected at Site 12 boring SB12-12, other borings showed non-detect or low levels of phthalate. Figure 6 indicated that three other SVOCs showed up in four soil samples at Site 12 including bis(2-Ethylhexyl)phthalate ranging from 400 ppb to 680 ppb, Di-n-butylphthalate at 590 ppb, and Butylbenzylphthalate at 1700 ppb. The report should mention these levels in the discussion.

**JMM Response:** The following sentences have been added to paragraph 2:

"Bis(2-Ethylhexyl)phthalate was detected at MW12-3, SB12-5, SB12-11, and SB12-13 between 400 and 680  $\mu\text{g}/\text{kg}$ . Butylbenzylphthalate was detected in the 5-foot sample at SB12-11 at 1700  $\mu\text{g}/\text{kg}$  and Di-n-butylphthalate was detected in the 3-foot sample at MW12-2 at 590  $\mu\text{g}/\text{kg}$ ."

**Comment No. 6:** **Page 7, Section 1.4.1, Third Paragraph:** The report stated that no petroleum hydrocarbons were found in the six Site 12 monitoring wells. The discussion should also indicate if contaminants other than petroleum hydrocarbons were found in these groundwater samples. If so, provide the sample results.

**JMM Response:** No contamination has been detected in the Site 12 monitoring wells. Our data source is the Nature and Extent of Contamination Technical Memorandum published by JMM/PRC, March 23, 1992.

**Comment No. 7:** **Page 8, Section 1.4.3:** Figure 7 indicated the boring locations of the past Marriage Road Ditch investigation. It should also include the contaminant concentrations associated with each boring locations as well.

JMM Response:

Contaminant concentrations have not been added because they do not support the investigation. Had the borings been in the vicinity of either the Golf Course Landfill or Patrol Road ditch, concentrations would have been included. If the reviewer would like more information on soil contamination along Marriage Road Ditch, we refer them to the Phase I Characterization Report.

Comment No. 8:

**Page 13, Section 2.3.1 and Section 2.3.3: These two sections stated that SVOC analysis was not performed on subsurface soil samples because of the low potential for SVOC migration in subsurface soils. SVOCs can migrate into the subsurface due to the presence of VOCs, natural precipitation and/or disturbance of the native soil. The section should discuss these possibilities.**

**According to Figure 6, a total of fourteen SVOCs were detected at the burn pit area. Especially at SB12-12, eleven SVOCs were detected at relatively high levels. Figure 6 only presented data at boring SB12-12 up to one foot. Were deeper soil samples taken and analyzed for SVOCs at that location?**

JMM Response:

One sentence has been added to the end of Section 2.3.1:

"Factors that favor the downward migration of SVOCs into the subsurface are the presence of VOCs (co-solvent effects), high natural precipitation, and disturbed native soil. These factors are not known to be present at this site."

A note will be added to Figures 4, 5 and 6 indicating that samples were collected for analysis at 1, 3, and 5 feet below ground surface at Site 12, but only detections are shown on these figures.

Comment No. 9:

**Page 14, Section 3.1, Third Paragraph: According to this section, an Organic Vapor Analyzer (OVA) was used. It seemed that the OVA was used as a screening method for soil samples at SBZR-2A through SBZR-2H. If so, why didn't the report include the analytical data from SBZR-2E either in Figure 10 or Table 2 since the OVM reading at SBZR-2E was 261 ppm (greater than SBZR-2D's OVM reading at >200 ppm)?**

**If Figure 10 only displayed compounds above the detection limits, Table 2 should have included the rest of soil boring data from SBZR-2E, SBZR-2F, SBZR-2G, SBZR-2H.**

JMM Response:

The reviewer is referred to page 15, paragraph 3, sentences 3 and following:

"Soil samples for chemical analysis were not collected from all addition borings because this would have been beyond the scope of this investigation. Table 1 lists the samples that were collected from the borings for laboratory submittal. Samples for laboratory submittal were collected from the two borings which appeared to have the highest levels of TPH based on OVA readings."

SBZR-2E, SBZR-2F, SBZR-2G, and SBZR-2H, are not included in this table because no samples were collected for laboratory analysis from these locations.

**Comment No. 10:**

**Page 17, Section 3.1, First Paragraph of the page: The report should include the groundwater data from the CLEAN wells at Site 12.**

JMM Response:

See response to Comment 6. Because groundwater samples collected from the CLEAN wells at Site 12 have no detections, this data has not been included in the Draft Final Additional Sites Investigation Report.

**Comment No. 11:**

**Page 20, Section 4.0: Unless agreed upon otherwise, the report should identify the chemicals of concern by using the Risk Assessment Guidance for Superfund Volume I and II.**

JMM Response:

Because this is a preliminary site investigation and not a remedial investigation, a formal analysis of contaminants of concern according to risk assessment guidance is not appropriate. The purpose for our discussing contaminants of concern was to assess the need for more investigation (i.e., additional soil sampling, water sampling etc.). A formal discussion of risk assessment at these sites would be more appropriate when the sites have been more fully characterized.

**Comment No. 12:**

**Page 31, Section 6.0: All additional soil and groundwater samples should be analyzed for base/neutral/acid extractables at all sample depths.**

JMM Response:

This comment will be considered during preparation of future work plans. The reviewer is reminded that CLEAN work plans are subject to regulatory review before commencing field work and this issue might better have been raised at that time.

**Comments by SAIC:**

Date of Comments: 10/23/92

**GENERAL COMMENTS**

In Section 6.0 "Conclusions and Recommendations," James M. Montgomery, Inc. (JMM) recommends that additional soil samples be collected at the Zook Road Fuel Spill Site. In addition, resampling of the soil in the Patrol Road Ditch is recommended. We agree with this course of action.

**SPECIFIC COMMENTS**

**Comment No. 1:** Page 30, Section 5.3: The reviewer does not agree with JMM's conclusion in the Data Quality Summary that all quality control parameters, other than those discussed, have been met. Based on the 10% rule for field duplication samples, additional samples should have been taken. Table 1 identified twenty-six field samples. Two additional samples were duplicate field samples. A minimum of one additional field duplicate sample should have been taken.

**JMM Response:** In the original work plan the number of samples proposed was much less than the actual number of samples collected due to the nature of contamination found on the sites. The proper number of field duplicates was not collected. We did require one more additional duplicate sample and due to this we did not meet the QC requirement for the duplicate samples for volatile organic compounds analysis.

**Comment No. 2:** Appendix C: A full validation was performed on ten soil samples per a letter addressed to Mr. Applegate dated September 3, 1993 (Appendix C). The Calibration section of this letter states "The %RSD of and %D<sub>x</sub> for acetone exceeded criteria in the calibrations. In addition, the %D<sub>x</sub> for 2-butanone exceeded 25% in the continuing calibrations." This section of the validation letter further states that no action is necessary. Please discuss this occurrence in the Data Quality Summary of the report and explain why the samples were not reanalyzed as a result of a known calibration problem. Please address the calibration problems observed for sample IDs #C01120, A01113, A02113, A03106, A03113, A02106, A04113, A05106, A05113, A06106, A06113, A08113, and C05096. In the Data Quality Summary of the report, explain why these calibration occurrences are acceptable and why the samples were not reanalyzed.

- JMM Response: Laboratory Data Validation Functional guidelines for evaluating the Organic Analyses (Feb. 1, 1988) specify that if the % RSD for target compound list (TCL) compounds is greater than 25% for continuing and initial calibrations than the results for the TCL compounds can be reported as estimated value (J).
- Comment No. 3:** **Appendix C: Sample ID #A1012ORE shows a detection limit of 58 µg/kg. Sample ID #A09120, with similar percentage moisture and similar dilution factor, shows a detection limit of 11 µg/kg. Specifically, address why Sample ID #A1012ORE was unable to obtain the lower detection limit.**
- JMM Response: Sample ID #A1012ORE and sample ID #A09120 were analyzed at different levels. Sample #A1012ORE was analyzed at medium level (5 grams of sample was collected) and sample #A09120 was analyzed at low level (1 gram of sample was collected). This variance contributed to the different levels of detection limits provided for these samples. The difference in amounts of samples used was due to the sample matrix.
- Comment No. 4:** **Page 30, Section 5.3: The performance by the analytical lab (Mid-Pacific Environmental Laboratories) is poor in regards to meeting quantitation limits specified by the Contract Laboratory Program. Due to the failure to meet the required quantitation limits, continual use of a "J" qualifier was employed. In the majority of occurrences, elevated detection limits were not due to increasing the dilution factor. A discussion should be provided to clarify JMM's statement on page 30 of the report that "all results, other than those listed above were considered valid and usable for all purposes" in light of poor performance by the analytical laboratory to meet required quantitation limits.**
- JMM Response: For samples with the J qualifier, low levels of soil were used due to the organic clay matrix of the samples. Due to the heterogeneous matrix of the samples, the detection limits were elevated. The header on the volatile organic compound analyses report forms does not reflect the proper dilution factor, but it does provide the amount of soil sample used per weight. The field and laboratory QC data were validated using EPA Level 4 guidance. The validity conclusion is that the data is usable for all purposes.
- Comment No. 5:** **Page 25, Section 5.1: The QC Sampling and Analysis Activities section on page 25 introduces field quality control**

**sampling; however, this section does not discuss the results of this program. Include a section which discusses quality control results of field equipment rinsate blank samples, trip blank samples, and field duplicate samples. The reviewer is not familiar with the use of trip blanks for soil sampling programs; however, page 25 states that trip blank samples were included.**

JMM Response:

These samples are discussed throughout Section 5.0. In the Draft report, the discussion was confusing because Lab IDs were described in the text. The text is changed to reflect the correct IDs for the field samples and QC samples. Equipment rinsates are 100 series samples (i.e., SBGC-2-102), field duplicates are 99 series samples (i.e., SBPR-99-01). There were no anomalies found in the trip blank sample analyses. NEESA 20.2-047B document for sampling and chemical analysis quality assurance requirements for the Navy specifies one trip blank per cooler.

Comment No. 6:

**Appendix C: Please provide photocopies of the field-sample chain-of-custody forms in an appendix to the report. Review of the chain-of-custody forms is necessary as a quality control check. Inclusion of these forms is necessary for report completeness.**

JMM Response:

Copies of the chain-of-custody forms are included in Appendix C of the Final Draft Additional Sites Investigation Report.

Comment No. 7:

**Page 22, Section 4.0: The final sentence of Section 4.0 states "the  $K_d$  values and the corresponding aqueous-phase concentrations are presented in Table 10." Present an example in the written text of the calculations required to arrive at a  $C_w$  value for one of the organic compounds listed in Table 10. Clarify why the range of values of methylene chloride that could partition into groundwater (105-680  $\mu\text{g/L}$ ) is greater than the maximum value detected in soil at the site (6.0  $\mu\text{g/kg}$ ).**

**It is recommended that additional organic compounds detected in the soil during the investigation be included in Table 10. Please add diesel, motor oil, and kerosene. Why are values for acetone missing from Table 10? Include the values used for  $f_{cc}$  as an addendum to Table 10.**

JMM Response:

The requested example calculation has been provided in Section 3.1.3 of the draft final. The calculation is for the ethyl benzene detected in the 4- to 5-foot sample at SBZR-2D. The detected concentration of 510  $\mu\text{g}/\text{kg}$  in soil would yield 71 to 464  $\mu\text{g}/\text{L}$  in water making the assumptions listed in Section 3.1.3.

These calculations were performed for each compound listed in Table 4 that have published values for  $K_{oc}$ . Because  $K_{oc}$  is compound specific and motor oil and fuels such as diesel and kerosene are a mixture of hundreds of compounds, this type of analysis is not appropriate.

The range of  $F_{oc}$  are listed as a footnote to Table 4, with reference to Roberts et al., 1989. The end members of this range were used for the calculation of  $C_w$  in Table 4.

Comment No. 8:

**Page 22, Section 4.0: To further summarize compounds of concern by location, please prepare a table for each site that lists each compound detected in the soil at that site. Include a column that quantifies the potential to leach into groundwater at that site for each listed compound. Compare this value with water quality standards by including columns listing EPA maximum contaminant levels (MCLs) and state of California primary and secondary MCLs. Utilize these new tables by referencing the values in the site specific discussions for Sections 4.1, 4.2, and 4.3. The purpose for adding these tables to the report is to qualify whether detected soil concentrations will partition into groundwater for each compound and at which locations.**

JMM Response:

The objective of adding the three additional tables is already met by comparing calculated  $C_w$  from Table 4 with MCLs in Table 2. Specific concentrations and locations are discussed in the text of Section 3.0. We believe that the added cost associated with taking time to perform these calculations and summarize the results in table format for all detections cannot be justified for the purpose of this investigation. Again the primary purpose is to determine if past waste handling and disposal practices at these sites have resulted in contamination. This would be justified if this document were at the RI/FS level.

Comment No. 9:

**Metals contamination in soil is not adequately addressed in the Compounds of Concern section of the report. A discussion of potential impact by metals on groundwater quality and a health-based risk assessment of metals in soil**

**must be included in the report. Table 6 presents a summary of inorganic constituents detected at the Patrol Road Ditch and Golf Course Landfill Sites. Arsenic, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, and zinc were detected at elevated or above background concentrations.**

JMM Response:

To date, a background concentration for metals in soils at NAS Moffett Field has not been excepted by the regulatory agencies. The compounds mentioned above may be higher than the most conservative background level listed on Table 7, but most are within one of the other three background concentrations currently being used for comparison at NAS Moffett Field. The only location that we feel has significantly elevated metals concentrations is SBGC-4. We believe that these elevated values have resulted from metal landfill debris collected with the soil sample.

A detailed discussion of metals at the Golf Course Landfill will be included in the sitewide Feasibility Study to be prepared after all site characterization is complete.

Comment No. 10:

**Page 21, Section 4.0: To support JMM's conclusions a table will be required. Include metals of concern per site and expected partitioning into groundwater. Qualify why a metal is or is not a chemical of concern (low frequency of detection, essential nutrient, low potential to partition into groundwater). Then include columns for total threshold limit concentration (TTL) and MCL values. A comparison of the results of this table should be discussed in the Section 6.0 "Conclusions and Recommendations" for the Patrol Road Ditch Site and the Golf Course Landfill Site.**

JMM Response:

This type of analysis will be appropriate for risk assessment purposes after the Golf Course Landfill Site is better characterized. Our conclusion is that metals are not an issue at either the Zook Road Fuel Spill Site or Patrol Road Ditch Site.

Comment No. 11:

**Page 17, Section 3.1: Correct the statement "no organic compounds, including TPH, were detected in samples collected during the most recent round of groundwater analytical data for Site 12 wells." This is a misleading statement. Historic sampling events have detected gasoline, diesel, JP5, and oil and grease in the Site 12 monitoring wells. This information should also be included under the**

**Zook Road Conclusions and Recommendations Section to support the need for the installation of one monitoring well downgradient of SBZR-Z.**

JMM Response:

Our review of analytical data presented by IT Corp. in the Phase I Characterization Report and Clean data collected between August 1991 and August 1992 indicates that none of the abovementioned compounds have been detected in groundwater collected from Site 12 monitoring wells. Please contact JMM if your records indicate otherwise.

**Comment No. 12:**

**Page 16, Section 3.1: Two typographical errors require correction for clarification in the Zook Rod Fuel Spill Site sections. Page 16, 2nd paragraph, states that "Toluene and xylene were also detected in SBZR-20...." This should read SBZR-2D. Figure 10 is missing a heading for the chart of soil sample SBZR-3.**

JMM Response:

These changes have been made.

**Comment No. 13:**

**Page 31, Section 6.0: Relatively high concentrations of TPH-kerosene were detected in soil samples at the Zook Road Fuel Spill Site. Lower levels of TPH-diesel and TPH-motor oil were also detected. These results indicate that the area sampled is impacted by petroleum hydrocarbons.**

**Additional soil sample collection is recommended for the Zook Road Fuel Spill Site by JMM (refer to page 31). Qualify this recommendation by stating that one purpose for additional soil sampling is to define the boundary of soil contamination. A correlation between Zook Road soil sample results and previous soil sample results from Site 12 and the NASA Fuel Farm must be discussed in the Conclusions and Recommendations section for the Zook Road Fuel Spill Site. This discussion will support the statement (page 31, paragraph 2) ("Additional tests may be required to assess the applicability of these soils for Site 12 treatability.")**

JMM Response:

On page 31, Section 6.0, paragraph 2, the first two sentences have been modified to read as follows:

"It is recommended that additional soil samples be collected and analyzed to determine the boundary of soil contamination and volume of contaminated soil at SBZR-2. Additional tests to

determine the biological properties of the soil may be required to assess the applicability of these soils for Site 12 treatability."

**Comment No. 14:**

**Page 31, Section 6.0: A limited discussion of fate and transport of TPH is presented in the Conclusions and Recommendations section. Please expand on these concepts. A presentation of physical and chemical properties of the petroleum hydrocarbons detected will enable a more complete discussion of the persistence of these compounds at this site.**

**JMM Response:**

An in depth discussion of the fate and transport of total petroleum hydrocarbons will be included in the next phase investigation report at the Zook Road Fuel Spill Site.

**Comment No. 15:**

**Please justify your recommendation that one groundwater monitoring well be installed upgradient of contaminated soils encountered at SBZR-2 (page 31, paragraph 2). What purpose would this well serve if groundwater is found not to be impacted, upon analysis of samples drawn from a monitoring well installed downgradient from the known soil contamination?**

**JMM Response:**

The upgradient well would serve to provide water quality data for groundwater flowing onto the site from upgradient NASA fuel farm property. We believe that it is more cost effective to install both the upgradient and downgradient wells simultaneously rather than remobilizing a drilling crew after getting the results on the sample collected from the downgradient well, so our recommendation to the Navy stands as stated.

**Comment No. 16:**

**Appendix C: It appears that sample No. B001095, which corresponds to SBPR-2-0.0-1.0-101 (per a COC number referenced on an analytical data sheet in Appendix C), gives a result of 50 µg/L TPH-gasoline. Chain-of-custody documentation is not included in the report, which makes it difficult to verify a particular sample result with the analysis data sheet. This water sample is qualified with a J qualifier. Please address this gasoline detection in the text under Section 4.2, Compounds of Concern, Patrol Road Ditch Site. A table showing both the sample's field identification numbers and the sample's laboratory designated numbers should be provided to facilitate review and cross reference.**

JMM Response: Sample No. B01095 is an equipment rinsate sample collected for quality control purposes during the investigation. This is not a soil sample collected at the additional sites. Please see Section 5.2.5 for a discussion of this sample.

**Comment No. 17:** **Page 31, Section 6.0: As stated in the Conclusions and Recommendations section for the Patrol Road Ditch Site, resampling of the soil will be necessary due to TPH-motor oil being detected in the method blank. No conclusions can be stated other than the fact that organics have been detected at this site. It is advised that VOCs, BNAs, and TPH be recommended for analysis during the resampling of this site. In addition, an analysis for chromium VI should be recommended for all three soil samples due to a relatively high detected concentration of chromium in sample SBPR-2-0.0'-1.0'.**

JMM Response: The following sentence has been added to paragraph 4, page 31:  
  
"Analyses performed on the additional samples should include VOCs, BNAs, TPH, and chromium VI (due to the relatively high detected concentration of chromium in sample SBPR-2-0.0'-1.0'."

**Comment No. 18:** **Table 4: Iron was detected at a maximum concentration of 34,600 mg/Kg at the site. Please discuss the high levels of iron detected in the five samples at the Patrol Road Ditch Site relative to background levels. Discuss the mobility and health and environmental risk aspects of this element.**

JMM Response: The values of iron appear high if compared against the Whaler range of 19 to 110 mg/kg. However, we do not feel that the values detected in Patrol Road Ditch are significantly above the USGS background value of 30,000 mg/kg. Based on metals analyses performed at other sites on base, the USGS background value appears to be more appropriate.

**Comment No. 19:** **Tables 6 and 8: Table 8 presents arsenic concentrations from 15 soil samples at the Golf Course Landfill Site ranging from 1.3 to 6.8 mg/Kg. Table 6 states that the range for arsenic is 1.3 to 3.6. Please correct this inconsistency. In the text under Section 3.3.3, "Inorganic Constituents in Soil Samples," arsenic is not discussed. Arsenic is a Class A carcinogen. Please add arsenic under the category**

**"concentration that slightly exceeded the background values...."**

JMM Response:

The requested changes have been made to Table 6 and text in Section 3.3.3. In the Draft Final Additional Site Investigation Report, Table 6 has been changed to Table 8. Table 8 has become Table 10, and Section 3.3.3 has become Section 3.3.4.

Comment No. 20:

**Page 24, Section 4.3: Section 4.3, Compounds of Concern, Golf Course Landfill Site, states in paragraph three "a number of pesticides and PCBs were detected in soils at this site...most of these compounds are relatively immobile in the soil water matrix...." This statement may be accurate; however, Table 14 clearly shows that PCBs and pesticides are detected at the three-to-four foot and five-to-six foot depths. This may be due to disposal or mixing patterns. Please address these concentrations of PCBs and pesticides detected at deeper intervals and their potential impact on groundwater quality.**

JMM Response:

This paragraph has been moved to Section 3.3.5. Sentences 3 and following state:

"Some of the PCBs and pesticides, which have promulgated MCLs, may result in groundwater concentrations above these levels based on their maximum detected concentrations in soils (Table 4). These compounds include Aroclor-1232, Aroclor-1248, Aroclor-1254, endrin aldehyde, and heptachlor. These compounds may be of potential concern for the Golf Course Landfill Site."

This issue has also been addressed in Section 6.0, where it is recommended that monitoring wells be installed at this site to determine if these and other compounds have leached into groundwater.

Comment No. 21:

**Page 32, Section 6.0: Please include a recommendation to further identify the boundaries of soil contamination at the Golf Course Landfill Site. If JMM is concluding that all soil at the Golf Course Landfill Site is contaminated by heptachlor, alpha- and gamma-chlordane, and PCBs, discuss and justify this conclusion. A map is required to show the limits of contamination. The purpose of this requirement is to assist the feasibility study for this site.**

JMM Response:

We are not suggesting that all soil at the Golf Course Landfill Site is contaminated by heptachlor, alpha- and gamma-chlordane, and PCBs. Therefore, we cannot recommend further study to identify the boundaries of soil contamination nor can we prepare maps showing the extent of contamination. Landfills by nature are heterogeneous in the distribution of soil contaminants. The purpose of this study is to determine if landfill waste materials exist at this location and determine if compounds are present which could be a threat to groundwater quality. This having been established, we believe the next priority for the Navy is to characterize the quality of groundwater within the landfill (leachate), as well as upgradient and downgradient of the landfill. If a feasibility study is prepared for this site in the future, it will most likely address remediation of groundwater contamination, rather than landfill soil.

**Comment No. 22:**

**Page 32, Section 6.0: Five monitoring wells are recommended to be installed at the Golf Course Landfill Site. Please recommend in the report that at the time of monitoring well installation, soil samples be taken and analyzed for volatile organic compounds, semivolatile organic compounds (SVOCs), TPHs, priority pollutant metals (total and dissolved), organochlorine pesticides, and PCBs. This will assist in further defining the concentration contours of soil contaminants at the Golf Course Landfill Site. In the text, please justify each monitoring well location. Include the screening interval and proposed well depth. Clarify within which water-bearing zone you intent to place each monitoring well and why, or why not, a well will be installed in deeper zones. A map showing the proposed monitoring well locations is required.**

JMM Response:

One sentence has been added to the end of paragraph 1.

"Soils samples should be collected and analyzed for VOCs, BNAs, SVOCs, pesticides/PCBs, and metals as the monitoring wells are being installed."

Further justification of monitoring well locations and proposed screening intervals will be detailed in a work plan which describes all additional work proposed for these three additional sites.

**Comment No. 23:**

**Page 32, Section 6.0: Please clarify the purpose for installing an upgradient well. As presented, to monitor for upgradient sources is not a justifiable reason for installing an upgradient well at this time. Recommending that an upgradient well be used to determine background water quality would be important. Please evaluate the possibility of recommending the use of MW3-11 as an upgradient background well.**

**JMM Response:**

The purpose for installing an upgradient well is to monitor the background water quality. This purpose has been clarified in this paragraph. This monitoring well should be installed within 50 feet of the landfill material and be centrally located directly upgradient. Well MW3-11 does not meet this criteria; rather groundwater flowing downgradient from MW3-11 would flow to the west of the landfill based on water level data collected on August 27, 1992.

**Comments by DTSC (Cyrus Shabahari)**

Date of Comment: 10/21/92

**GENERAL COMMENTS**

**Comment No. 1:**                    **The Department of Toxic Substances Control (Department) concurs with the recommended investigation in the above report. However, the Department requests expanding the Patrol Ditch investigation scope. Additionally, due to the uncertainties and unknowns in the landfill, the Golf Course Landfill samples must be analyzed for radioactivity.**

**Navy Response:**                    **Future soil borings at the Golf Course Landfill site will include sampling for radioactivity analyses. This recommendation has been added to Section 6.0 of the Draft Final Additional Sites Investigation Report.**