

**RESPONSE TO COMMENTS BY
USEPA FOR THE
NORTH BASE AREA HYDROGEOLOGIC INVESTIGATION - DRAFT REPORT
NAS, MOFFETT FIELD**

Comments by Mary Wesling, SAIC

Dated: 7/31/92

GENERAL COMMENTS

General Comment No. 1:

Documentation for analytical data is not presented for review in this report. The verification documentation should include laboratory analytical data sheets with detection limits listed for each analyte, and laboratory quality assurance/quality control documentation sheets. A summary of these documents prepared by the author of the report is inadequate to resolve discrepancies between summary tables, data cited in the text, and data on the figures. Future reports should include appendices containing these documents.

Navy Response:

Laboratory analytical data sheets have been added as Appendix E. All future reports will contain laboratory analytical data sheets.

General Comment No. 2:

According to the work plan (PRC and JMM, 1992), one prime objective of the North Base Area (NBA) field investigation was to develop new cone penetrometer (CPT) data as an aid in further characterizing paleo-stream channels. Due to "adverse weather," collection of only a limited amount of new CPT data was accomplished. Based on Figure 3, (Proposed and Actual CPT Locations), a sufficient amount of existing well logs and CPT data was available at completion of this report and should have been used to develop additional cross-sections and to better define the locations of possible paleo-stream channels.

Navy Response:

The CPT and lithologic data collected during this investigation have been plotted on the sand isopach maps included in Appendix B of the North Base Area Field Investigation Report (PRC and JMM, 1991). These maps have been included as additional figures to Appendix B in the final draft of this report. A discussion of the maps will be included as Section 3.1.4 in the final version of this report.

SPECIFIC COMMENTS

Specific Comment No. 1:

Section 2.2, Page 12, Paragraph 2. During the investigation, seven of 27 proposed CPT locations were completed. CPT locations 1 through 9 were not paired with monitoring well locations. Since no analytical data from the seven completed CPT locations is presented in the report, it is assumed that Hydropunch sampling was not performed in conjunction with the CPT phase of this investigation. According to the work plan, the purpose of CPT testing at locations 1 through 9 was to determine

the areal extent of paleo-stream channels, which could transmit contaminants to the NBA at an accelerated rate. Hydropunch groundwater samples retrieved during these CPT operations would have provided analytical data helpful in resolving this question. If another attempt is made to complete the remaining proposed CPT test locations, inclusion of the Hydropunch sampling should be considered.

Navy Response:

Hydropunch groundwater sampling will be considered if the remaining proposed CPT locations are tested in the North Base Area (NBA).

Specific Comment No. 2:

Section 2.2, Page 12, Paragraph 1. In the text in Figure 3, CPT locations for the current study are identified by numbers with no preceding letters, while in Appendix A, (Cone Penetrometer Data), the locations are identified with "CPT-NB-" preceding the number. CPT locations from previous studies are identified with either "CPT-" or "CPT-8-" and a number in both text, table, and figures. For consistency and to diminish the possibility of misinterpretation, the "CPT-NB-" should be added to the CPT locations in this study.

Navy Response:

For consistency, "CPT-NB-" will be added to the CPT locations mentioned in the text and in Figure 3 of this report.

Specific Comment No. 3:

Section 2.6, Page 16, Paragraph 2. According to the text in this section the survey of the existing storm drain system included all drains, ditches, diversion boxes, collection basins, and drain line inverts. The survey of the storm drain system appears from this description to be complete; however, based on subsequent statements in the text, this is not the case. In Section 3.2 - Horizontal Conduits (Page 24), it is stated that the definition of the pipelines connecting the catchment basins was not completed because Navy maps/plans were either not available or were inconsistent with field observations. It is further stated that "inferred" locations of the horizontal conduits connecting storm drain system inverts are represented on Figure 10 as dotted lines. The text in this section should be revised to show that a survey of the existing storm drain system is incomplete.

Navy Response:

The text has been modified to read as follows, beginning with sentence 2:

"Because of the potential for groundwater discharge to the storm drain system, the survey included all surface drainage features including drains, ditches, diversion boxes, collection basins, and drain line inverts within the NBA and south to the NASA taxiway. The subsurface drains connecting catchment basins were not surveyed during this investigation, but their locations were inferred based on the orientations of the drop-inlets within the catchment basins. The inferred locations do not agree with Navy maps/plans."

The last paragraph of Section 5.0 states that pipeline identification and location will be performed under CTO 208. The locations and orientations of drain lines connecting the catchment basins will be determined as part of this task.

Specific Comment No. 4:

Section 2.7, Page 17, Paragraph 1. The analyzed "selected inorganic parameters" and the laboratory detection limits for these parameters should be listed.

Navy Response:

These data are provided on the laboratory analytical data sheets which has been added as Appendix E to this report.

Specific Comment No. 5:

Section 3.1.1, Page 19, Paragraph 3. A stormwater "diversion box" at the junction of Lindberg Avenue and Zook Road is referenced. In the last sentence of this paragraph, a "distribution box" is referenced which is assumed to be the same "box." The use of consistent terminology should be employed.

Navy Response:

The last sentence of this paragraph has been changed to read ...

"When the *diversion* box is inundated by excessive storm flows, flow is diverted to the main pumping station located on the northeast side of the runways at Building 191 (Figure 6)."

Specific Comment No. 6:

Section 3.1.3.2, Page 23, Paragraph 2. The piezometric contours shown in Figure 7 are said to show the effect of pumping at Building 191. This is a reasonable conclusion based on the limited data presented; however, additional data is needed to substantiate the conclusion. No information is given on the pumping rate (time and volume) at Building 191 or whether pumping is continuous or intermittent. The piezometric contours are presented only for one groundwater level measurement period and no data from previous measurements are presented for comparison. To substantiate the conclusion, an additional piezometric surface map should be developed from groundwater depth measurements taken prior to pumping.

Navy Response:

The department of public works (DWP) at NAS Moffett Field reports that the pumping at Building 191 has been in effect since 1952 (DWP drawing number 32720, date 10-17-52). An additional piezometric map cannot be generated showing groundwater conditions before pumping began because of the lack of A-aquifer zone monitoring wells in the NBA at that time.

Specific Comment No. 7:

Elevations of the manhole inverts and drop inlets at the north end of the runways were surveyed during field activities. It is not clear whether these structures were also surveyed for location using California Coordinate Zone measurements, as were the monitoring wells. In order to accurately locate the components of the stormwater drainage system for use in characterizing the groundwater movement in the NBA, a survey for location should be completed.

It is stated that the horizontal conduits connecting the inverts are represented in Figure 10 as dotted lines indicating inferred locations; however, Figure 10 does not display this representation.

Navy Response:

These structures were surveyed for location using the California Coordinate System measurements.

Section 2.6, Page 16, Paragraph 2, Sentence 1 has been changed to read:

"In addition to the newly constructed monitoring wells and piezometers, the location and elevation of surface features of the storm drain system have been surveyed by Ron Archer Civil Engineering."

Figure 10 will be modified to represent lines connecting catchment basins as dotted lines. In addition, the line will be described in the legend as the inferred location of storm drains. The line will be represented as solid where the location has been confirmed by comparing Navy maps with field observations.

Specific Comment No. 8:

Section 3.2, Page 25, Paragraph 4. The results of analysis of discharge water from the wet well into the Navy Channel is reported to have shown a level of 7 $\mu\text{g/L}$ of trichloroethene (TCE). Since this is above the EPA and state MCL of 5 $\mu\text{g/L}$ and the RWQCB's freshwater objectives for human health (3.0 $\mu\text{g/L}$), a statement should be made as to whether discharge is ongoing.

Navy Response:

This issue is addressed in Section 5.0, Page 38, paragraph 4.

"Treatment alternatives are being reviewed by PRC and JMM for water being discharged from Building 191 to the Navy Channel.

Specific Comment No. 9:

Section 3.2, Page 26, Paragraph 7. The term "ND" is used to describe a level of TCE below contract laboratory detection limits. The actual detection limit should be stated.

Navy Response:

The sentence has been modified to read:

"TCE concentration in the east line increased from ND (first round detection limit of 5 $\mu\text{g/L}$) to 7.9 $\mu\text{g/L}$ (second round)."

Specific Comment No. 10:

Section 4.3, Page 36, Paragraph 1. Contract required detection limits (CRDLs) are said to be provided in the last column of Tables 7, 8, and 9. Detection limits are not provided in these tables or anywhere else in the report. Laboratory data sheets showing detection limits for each analyte should be provided.

Navy Response:

Detection limits are provided in the last column of Tables 8, 9, and 10. Laboratory data sheets are provided in Appendix E of the final draft of this report.

Specific Comment No. 11:

Section 4.3, Page 37, Paragraph 2. Since the laboratory analytical data sheets are not included in the report, the analytical precision and accuracy of the analytical procedures cannot be verified by the reviewer.

Navy Response:

Laboratory data sheets will be provided as a separate appendix in the final version of this report.

Specific Comment No. 12:

Section 5.0, Page 37, Paragraph 2. Monitoring wells WNB-4 and WNB-6 may provide lithologic and water quality data within a common paleo-channel. Monitoring well WNB-8, however, does not provide lithologic data. According to the drilling log (Appendix B), problems with the 5-foot sampler caused poor recoveries from 9 to 10 feet below ground level (bgl), no recovery from 10 to 19 feet bgl, and only 50 percent recovery from 19 feet to the total boring depth of 24 feet. In an environment of anastomosing distributory channels, two wells lying approximately 1,000 feet apart are not sufficient to define a paleo-channel.

Navy Response:

The paleo-channel mentioned in this paragraph has been defined by CPT data collected in May 1991 (PRC and JMM, 1991). The data collected at WNB-4 and WNB-6 confirm the interpretations established from the earlier CPT data. Sentence 4 of this paragraph has been modified to read:

"These wells confirm that suspected paleo-channels in the A1-aquifer zone may be acting as preferential flow conduits based on the contaminant distribution patterns for TCE, 1,2-DCE, 1,1,1-TCA, and 1,1-DCE."

The sand isopach maps, mentioned in response to General Comment No. 2, will clarify for the reader, the location and orientation of this suspected paleo-stream channel.

Specific Comment No. 13:

Figure 3, Page 44, NBA Proposed and Actual CPT Locations. It is stated in Section 2.2, (Page 12, Paragraph 1), that of CPT locations 23 through 27, only CPT-NB-27 was completed. In Figure 3, the symbol used for CPT-NB-23 is defined as a "tested CPT location." This discrepancy should be corrected.

Navy Response:

Section 2.2, Page 12, Paragraph 1, Last sentence. This sentence has been modified to read:

"Of these five points, data could only be collected at locations CPT-NB-23 and CPT-NB-27 (in a NASA alley)."

Specific Comment No. 14:

Figure 6, Page 47, North Base Area Storm Drain Locations. In this figure, storm drains are illustrated by lines and arrows, which in several instances cross each other. It is unclear whether storm drains actually join and combine their flows where these crossings are indicated, or whether the storm drains remain as

individual lines after crossing. This should be clarified and a source for the information cited.

Navy Response:

Figure 6 represents the storm drain network as shown on Navy Maps/Plans. As mentioned in Section 3.2, Page 24, these documents are often inconsistent with field observations. The location and orientation of these lines will be determined in future investigations under CTO 208. This future study will determine if the lines join and combine flows.

Specific Comment No. 15:

Figure 7, Page 48, North Base Area Piezometric Surface A1-Aquifer. The representation for the piezometric surface for the A1 aquifer appears to have been computer-generated from monitoring well and/or piezometer data points. Please provide these data points, including monitoring well numbers, either overlain or on the same map.

Navy Response:

Monitoring well numbers and associated water level values have been added to Figure 7.

Specific Comment No. 16:

Figures 16 through 21, Pages 57 through 62. The meaning of the contour representing the "observed/inferred extent of contamination" is not clear. If the contour represents the isoconcentration contour for the lowest detection limit in the investigation, then the contour should be labeled with the detection limit and a "less-than" symbol.

Navy Response:

Figures 16 through 21 have been modified. The contour line is now labeled with the detection limit 0.4 $\mu\text{g/L}$.

Specific Comment No. 17:

Table 1, Page 66. Under "parameters measured during development," only two parameters, electrical conductivity and maximum pumping rate, are listed. In the Field Sampling Plan (PRC and JMM, November 1991), it was stated that water temperature and pH were also to be recorded to determine when the wells had been adequately developed. These two parameters should be included in Table 1.

Navy Response:

Temperature and pH measurements have been added to Table 1.

Specific Comment No. 18:

The footnote to this table reads "through July 1991." It is unclear whether the listed concentrations are the maximum concentrations detected in the history of the investigation of the site, or within the most recent sampling round. Two columns should be added to this table: one showing the monitoring well number where the maximum concentrations were detected, and the second giving the dates the maximum concentrations were detected.

Navy Response:

Two columns have been added to Table 2: one showing the monitoring well number where the maximum concentrations were detected, and the other giving the dates the maximum concentrations were detected.

Specific Comment No. 19:

Table 5, Page 71. Since there are no laboratory analysis data sheets included in the report, it is not possible to verify whether the analysis results listed in Table 5, preceded by a less-than symbol, are the detection limits for that round of sampling. If these data figures do represent the laboratory detection limits for the analyses, then the limits for the April 1992 sampling rounds are all higher than the EPA MCL and/or the state MCL for analytes 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, tetrachloroethene (PCE), and TCE. The results of the analyses for cis-1,2-DCE and trans-1,2-DCE should be listed separately, not totaled, since there are separate MCLs listed for each. When samples are analyzed by a method having a detection limit higher than the required MCL, the usefulness of the data in evaluating the extent of contamination is questionable.

Navy Response:

Numbers preceded by the "less-than" symbol do represent detection limits for that round of sampling. Both analytical laboratories used during this investigation report 1,2-DCE as the total of both isomers. For future investigations, we will request that the laboratory report the value for each isomer. Future CRQLs will be equal to or less than 5 µg/L.

REFERENCES:

- PRC and JMM, 1991. Naval Air Station, Moffett Field, Mountain View, California, North Base Area Field Investigation Report, July 18, 1991.
- PRC and JMM, 1991. Naval Air Station, Moffett Field, Mountain View, California, Remedial Investigation/Feasibility Study, Draft Field Sampling Plan, November 1, 1991.
- PRC and JMM, 1992. Naval Air Station, Moffett Field, Mountain View, California, North Base Area Final Work Plan, San Francisco, California, February 1992.