



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 24, 2000

Marianna K. Potacka, IH, RN
BRAC Environmental Coordinator
SWESTNAVFACENGCOM
1230 Columbia St., Suite 1100
San Diego, CA 92101

Dear Ms. Potacka:

The U.S. Environmental Protection Agency has reviewed the Draft Northern Channel Physical Characterization Report, dated February 2000, for Moffett Field Federal Airfield. Our comments are enclosed.

We understand that the information collected as part of this study will be used to aid the Navy in establishing cleanup levels and identifying remedial alternatives for PCB-contaminated sediments in the Northern Channel. According to the Report, remedial alternatives may include, but are not limited to, removal of sediment to a specific depth and installation of an engineered cap for the sediment. However, based on the laboratory results of the PCB analysis, the vertical extent of PCB contamination has not been determined. The attached questions and comments need to be addressed prior to taking the next steps toward site characterization.

We appreciate the opportunity to review this Report. Please call me at (415) 744-1685 if you have any questions regarding our comments.

Sincerely,

A handwritten signature in cursive script that reads "Roberta Blank".

Roberta Blank
Remedial Project Manager

cc: Joseph Chou, RWQCB
Ed Dias, Southwest Division
Tim Mower, TetraTech
Heike Mueller, TechLaw

Enclosure (7 pages)

**Review of the Moffett Federal Airfield
Draft Northern Channel Physical Characterization Report
Dated February 2000**

GENERAL COMMENTS

1. The objective of the Northern Channel Physical Characterization Report (Report), as stated, is to collect field information necessary for evaluating remedial alternatives for polychlorinated biphenyl (PCB)-contaminated sediments; however, the Report does not include a discussion of the source of the PCBs in Northern Channel sediments. In order to better evaluate the completeness of the characterization, an indication of the likely source of the PCBs, if known, should be included in the Report.
2. Appendix A contains 52 photos taken during the Northern Channel investigation and a photo log. Appendix A is referenced in several places in the Report to illustrate features described in the text; however, the references to Appendix A do not reference specific photos. In some cases it is difficult to determine which photo in Appendix A illustrates the feature described. For clarity, please include a reference to a specific photo or photos in the text of the Report.
3. Sediment samples were collected at five transects and analyzed for PCBs. All samples contained Aroclor 1260. However, no samples were collected from the "native" clay underlying the sediment layer at any of the transects. It is not clear why the clay was not sampled and analyzed for the presence of PCBs to determine the vertical extent of PCB contamination. In addition, since a layer of clay underlain by a second layer of organic sediment was encountered beneath the first sediment layer at transect C-C', one sample was collected from the clay. The highest concentration of Aroclor 1260 was detected in this clay sample. The Report states that the lower clay layer may have been deposited during levee maintenance. However, the boring log for transect C-C' (Appendix D) indicates that the upper and lower clay layer have the same color, softness, and plasticity indicating that both clay layers should be considered the same material. If the encountered contaminated clay is native clay, this result implies that the clay channel bottom may be contaminated with PCBs. Please explain why the "native" clay at the bottom of the channel was not sampled during this study or explain how this clay will be addressed in a future study. Also, please provide a discussion regarding the two clay layers encountered at transect C-C'.
4. Since Aroclor 1260 has been detected at elevated concentrations in the deepest samples collected, the vertical extent of PCB-contamination has not been determined. Please indicate whether additional sampling below 2.5 feet is planned to aid in the evaluation of remedial alternatives.

5. Channel Transect Characterization Forms in Appendix B indicate that the study was performed in August of 1999, at the end of the summer, when the lowest flow rates are expected in the channel. Maximum flow rates in the channel, however, are expected to occur after rain storm events. A more comprehensive assessment of depositional versus erosional areas in the channel would include flow velocity measurements during and after storm events.
6. It appears that the Report only addresses the erosional and depositional characteristics of the channel bottom. Therefore, the Report should state that only the channel bottom was targeted in this study. For example, the 100% slope at transect I-I' indicates that bank erosion is occurring. However, the Report does not discuss bank erosion, presumably because PCB-contamination is only detected in the sediments at the channel bottom. For clarity, the Report should be revised to indicate that only the channel bottom was targeted in this study.
7. The Report states on Page 4 that braided channels cut through the sediment at the Fuel Pier Bridge at an estimated velocity of 0.7 feet per second. It is unclear how the flow velocity was estimated. If the flow velocity at this location could be estimated, it may be possible to estimate flow velocities along the rest of the channel using a different measuring tool or measuring the time it takes for a floating device to be carried along a pre-determined length of the channel. Please indicate why flow velocities in the rest of the channel weren't also estimated. In addition, it appears likely that during the rainy season, more and wider channels would cut through and erode the deposited sediments along the channel or, at a minimum, re-suspend finer particles to which PCBs could be sorbed and re-mobilize the PCBs. Please discuss the mechanism of re-suspending PCB-contaminated, fine-grained sediments in the context of PCB mobility along the Northern Channel.
8. The fact that PCBs adhere to suspended solids and are present along the Northern Channel even at the furthest downgradient transect I-I' (and maybe further downgradient) indicates that PCBs move along the channel although the channel bottom appears to be a depositional environment. Therefore, the suspended solids load in addition to a sediment transport study should be further investigated to determine the migration potential of PCBs in the Northern Channel.
9. It is recommended that the data collected between 0 and 1 foot below grade (as presented in the Final Phase I Site-Wide Ecological Assessment (PRC, 1995)) be included in the Report in order to correlate previous sampling locations and results to the current findings and to assess whether PCB deposition is occurring along a gradient from upgradient to downgradient channel locations.
10. The Report concludes that the Northern Channel is a depositional environment. However, if the channel had always been a depositional environment, it would have filled in many years ago. Therefore, the Report should be modified to indicate that during most of the year, the channel is expected to be a depositional environment, but that erosion is likely to occur following rain storm events.

SPECIFIC COMMENTS

1. **Section 2.0, Page 2:** The second paragraph states that the Northern Channel is not currently in direct communication with San Francisco Bay, but terminates approximately one mile east of the eastern boundary of Moffett Federal Air Field (MFA). The eastern boundary of MFA is not shown on Figure 1. To better evaluate the impact of the Northern Channel on the surrounding area and vice versa, if any, please show the eastern boundary of MFA on Figure 1. In addition, for clarity, please add the flow direction of the Northern Channel to Figure 1 and indicate in the Report whether the Northern Channel is (or used to be) a natural or man-made channel. Furthermore, please indicate where the water in the channel discharges to (i.e., is it assumed that all the water evaporates or does the channel connect to another surface water body and eventually discharges to the San Francisco Bay?).
2. **Section 3.0, Page 3:** The first paragraph states that the Northern Channel Sediment Investigation was conducted along approximately 7,000 feet of the channel, to 2,700 feet east of the boundary of MFA; however, on the previous page it is stated that the Northern Channel terminates approximately one mile (or 5,280 feet) east of the eastern boundary of MFA. Based on this information, the Northern Channel extends approximately 2,580 feet further east than the limit of this investigation. However, the Report does not explain why the easternmost 2,580 feet of the Northern Channel were not investigated. Please explain why the investigation was limited to 7,000 feet of the channel, or provide a reference for this information.
3. **Section 3.2.1, Page 4:** The Report states that water velocity was measured using a Global Water flowmeter which has a rated velocity measurement range of 0 to 25 feet per second, but that all measured water velocities in the Northern Channel were less than the low velocity measurement capability of the instrument. Since these statements appear to be contradictory, please clarify what the minimum measurement capability of the Global Water flowmeter is, and what the measured flow rates were in the channel.
4. **Section 3.2.2, Page 5:** The first paragraph states that the sediment depths were measured by advancing the probe through the soft organic sediment until the stiffer native clays were encountered. It is not clear from the description of the Northern Channel in the Report how it is known that these are "native clays". At transect C-C' a 0.5-foot layer of clay was found underlain by a second layer of organic sediment (Page 6). The Report states that this clay may have been deposited during levee maintenance (Page 10). Although this layering was not encountered at other transects, it implies that clay material may have been deposited in the channel. Since the source of the materials in the bottom of the channel (native or deposited) has implications regarding potential PCB contamination, please explain how it is known that the clays at the bottom of the channel are native and, if different clays are present, how it is determined whether they are native or deposited (i.e., what are the criteria).
5. **Section 3.2.2, Page 5:** This section describes the collection of sediment cores and states that

core recovery rates were in the 70 to 80 percent range. The last sentence refers to Appendix C for coring notes. The core recovery rate is apparently determined by comparing the actual core length recovered to an ideal core length. In Appendix C an ideal or total core length is determined for each sediment core; however, it is not clear how the "total ideal core" or "total core" is determined at each location. For clarity, please explain how the ideal core length is determined at each location.

6. **Section 3.2.2, Page 5:** Sediment depths measured with a wooden probe were compared with depths measure using a core sampler. The Report states that there was "generally a good correlation" between sediment depths measured with the probe and the core; however, the Report does not explain what constitutes good correlation for this study. In Section 4.1, the Report states that for transects A-A', C-C', D-D', H-H' and I-I' the probe thicknesses were generally similar to the coring thicknesses, but that for B-B', E-E' G-G' and J-J' probed depths were generally greater than the cored depths implying that the correlation between probed depths and cored depths at these four transects was not good. For clarity, please explain how "good correlation" is defined for this study (i.e., what level of precision constitutes good correlation).
7. **Section 3.2.3, Page 5:** The Report sates that core samples were collected for laboratory analysis at five of the ten transects. It is not clear how these five transects were selected for laboratory analysis of core samples or why samples were not analyzed from all ten transects. For completeness, please explain how transects were selected for laboratory analysis of core samples.
8. **Section 3.2.3, Page 5:** The Report states that a core sample from transect I-I' was analyzed for organic constituents, and Section 4.4.2 states that all samples were submitted for TOC and percent solids analysis; however, Table 2 indicates that the sample from I-I' was not analyzed for PCBs, TOC, or percent solids. Please revise the Report to provide the results of analysis of the sample from I-I' or explain why the sample from I-I' was not analyzed for PCBs, TOC, and percent solids.
9. **Table 2:** The reporting limits used for the PCB analyses exceed the National Oceanic and Atmospheric Administration Screening Quick Reference Table (NOAA SQRT) Effects Range Low (ERL) values by an order of magnitude and also exceed the Effects Range Medium (ERM) values. The NOAA values pertain to total PCB concentrations and are not congener-specific. The reporting limits were high because of the elevated concentrations of Aroclor 1260 detected in all but one of the samples analyzed. Many of the reporting limits, however, also exceed the proposed site-specific cleanup level for total PCBs of 470 ug/kg. Therefore, it is uncertain whether most of the samples analyzed contain additional congeners (besides Aroclor 1260) which would increase the concentration for total PCBs. In addition, it appears that the vertical extent of PCB-contamination has not been determined since PCBs were detected in all the samples analyzed.

10. **Section 3.2.4, Page 7:** This section states that sediment was collected for visual analysis of benthic infauna to a depth of 3 to 6 inches. It is not clear why the analysis for benthic infauna was limited to this depth. In Section 4.3.2 the Report states that (with the exception of bivalve shells) no evidence of benthos or bioturbation was observed more than a few inches below the sediment surface, and refers to Appendix B for detailed observations. Observations of benthic organisms are recorded on the forms in Appendix B; however, it is not clear from these forms at what depth the organisms were observed. Since the depth of occurrence of benthic organisms is not recorded on the forms in Appendix B, and sediment samples were collected from only the top 3 to 6 inches, it is not clear how it is known that benthic organisms do not occur at greater depths. Please revise the Report to explain why sediment samples were collected from only the top 3 to 6 inches for analysis for benthic infauna or clarify the evidence that benthic infauna or bioturbation do not occur at greater depths.
11. **Section 3.4, Page 7:** The Report states that sediment samples were submitted to Severn Trent Laboratories for analysis for PCBs, TOC, and percent solids, and to AP Engineering and Testing, Inc. for grain size analysis. The laboratory analytical reports for the results of these analyses are not included in the Report. For completeness, please include all analytical reports for PCBs, TOC, percent solids, and grain analysis as an Appendix to this Report. In addition, please indicate which EPA Method was used for the PCB analyses.
12. **Section 3.5, Page 8:** Surface water elevations measured in the fall of 1999 were used to determine the elevations of the transect ends and the sediment sample locations. The Report states that the water surface elevation in the Northern Channel is believed to be consistent due to the continuous use of the pump station at the downstream end of the channel and the absence of tidal influence; however, if the rate of discharge to the Northern Channel was to exceed the capacity of the downstream pump station, the water level in the Northern Channel would rise. Alternatively, if there were no discharges to the Northern Channel, it is conceivable that the water level could drop due to evaporation. In order to better evaluate the appropriateness of using the water surface elevation as a reference elevation in this study, please clarify how it is known that the water surface did not change between the time the study was conducted and the time the water surface elevations were measured in fall 1999. Additionally, on Page 2, the Report states that plans of the MFA sewer and water system layout from 1932 identify the Northern Channel as a "Tidewater Channel", which drained to the Bay by gravity. Since a tidewater channel is expected to be tidally influenced, please support the statement that the Northern Channel is not tidally influenced and indicate when tidal influence ceased (e.g., date of levee construction, if appropriate).

The Report states that the average water surface value from the Northern Channel Corridor Investigation (-2.8 feet msl) was used as a reference elevation, but the Report does not indicate the accuracy of this value. Since this value was used in order to achieve greater accuracy than could be obtained using GPS (two meters or better vertically), please revise the Report to discuss the accuracy of the average water surface value as a reference elevation (i.e., provide the range of water surface elevations obtained during the previous investigation).

The Report does not indicate what equipment was used to survey the elevations of the transect ends and sample locations. For completeness, please include a description of the survey equipment used.

13. **Section 4.2, Page 10:** The Report concludes that the Northern Channel is a depositional environment due to the presence of sediment and the lack of water velocity measured during the study. However, the Report does not address the effect of water velocities during peak flows or how long the sediment may have been accumulating (i.e., one season or many years). The Report does not clearly state whether the Northern Channel is always a depositional environment or if it may be erosional at other times during the year. Please address the possible effects of peak water velocities on the Northern Channel or explain how peak water velocities will be addressed in a subsequent study.
14. **Section 5.0, Page 16:** This section states that the investigation focused on evaluating channel geometry, assessing the channel bottom for evidence of erosion and deposition, and collecting samples of channel sediment; however, in Section 3.1 the Report also states that “water quality parameters were measured to assess the habitat for aquatic organisms”. The Report conclusions do not include a discussion of water quality parameters or an assessment of the habitat for aquatic organisms. Please discuss the water quality parameters measured in this study and what these results imply regarding the quality of the aquatic habitat.
15. **Section 5.0, Page 16:** The Report states that “Bank steepening immediately above the water line was observed at several transects, but is probably not the result of scouring by water movement through the channel.” However, the Report does not provide the rationale for this assumption and offer an explanation for what mechanism caused the steepening of the banks as it appears likely that during the rainy season, bank erosion would occur and create the steep banks.

MINOR COMMENTS

1. **Section 2.0, Page 2:** The second paragraph describes the ultimate discharge of the Northern Channel to the San Francisco Bay via the Lockheed Channel, the Moffett Channel, and Guadalupe Slough. It is difficult to visualize the configuration of these channels and slough from the description. For clarity please provide a figure illustrating this information.
2. **Section 3.2.1, Page 4:** The last sentence on this page states that no records are kept of the Building 191 Lift Station pumping rates, volumes or cycles. The Report does not provide information regarding pump specifications or discharge pipe size. Since this information could be used combined with pump cycle observations to estimate pumping rates and volumes, please include lift station pump specifications and discharge pipe size, if available.
3. **Section 3.5, Page 8:** There is a typographical error on page 8. The last word in line 19, “form”, should be “from”.

4. **Section 3.5, Page 8:** Bank slopes are expressed in percentage in the Report; however, bank slopes are usually expressed as a ratio of width to height such as 4:1, 2:1, etc. For clarity, bank slopes expressed as a ratio of width-to-height would be helpful.
5. **Appendix A:** Roll 2, Photo #25 showing the Patrol Road Ditch Emergency Pump Station is missing. Please include Photo #25 of roll 2 in the Report or delete this photo number from the list of available photos on Page A-3 of Appendix A.
6. **Appendix B, Channel Characterization Log for Transect F-F':** It appears that an entry was made in the "Water Velocity" rubric, but the characterization log is illegible. Since the only entry for "Water Velocity" was made on this log, please include a more legible channel characterization log for transect F-F'.