UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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18 September 2001

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Re: U.S. EPA Comments on Draft Northern Channel
Data Gaps Investigation Field Work Plan
Moffett Federal Airfield

Dear Ms. Muckerman and Ms. Patterson:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Northern Channel Data Gaps Investigation Field Work Plan, Moffett Federal Airfield, dated August 21, 2001. Our general and specific comments are attached.

Please call me at (415) 744-2387 if clarification or further discussion of any of these comments is needed.

Sincerely,

/s/Carmen White

Carmen White
former Remedial Project Manager, MFA

cc: Dennis Mishek, RWQCB
Lynn Suer, RWQCB
Jacques Graber, CIWMB
Sandy Olliges, NASA
James McClure, RAB Representative
Kevin Woodhouse, City of Mt. View
James Boarer, MEW Co. Representative
Michelle Schutz, EPA
Hilary Waites, TechLaw, Inc.

Review of the Draft Northern Channel Data Gaps Investigation Field Work Plan Moffett Federal Airfield Dated August 21, 2001

GENERAL COMMENTS

1. The proposed approach for estimating ecological risk has a very high level of uncertainty. It is an indirect approach requiring the use of estimated input data rather than a direct approach using site specific data. EPA suggests that the Navy provide further explanation for statistical analyses for data collections and that the Navy reconsider the strategy for emphasizing the higher trophic level receptors for estimating ecological risk at this site. See specific comment No. 2.

2. Infauna invertebrates should be included in the pathway for exposure and sampling of this group of organisms should be part of the food chain evaluation for higher trophic level receptors.

3. The Work Plan should include the results from previous investigations. It is not possible to evaluate the appropriateness of the sample location coverage proposed for the Northern Channel and associated ditches without the assessment of previous investigation results. If the Navy and/or their contractor has already completed an evaluation of the previous data, other than that completed for the SWEA, please provide the details at a minimum in tabular format and on a figure.

4. The Work Plan states that water quality parameters will be collected during surface water sampling activities. However, it is unclear how these data will be evaluated. Since water quality parameters have previously been collected as part of the Northern Channel Physical Characterization activities, but were not presented or interpreted with respect to an evaluation of the aquatic habitat, please explain how the proposed surface water quality parameters will be used (e.g., to assess aquatic habitat quality).

5. The following field forms should be included in Appendix A:

   - a form on which field parameters will be recorded for the surface water samples;
   - a form on which boring log information will be recorded; and
   - a form on which geomorphology and topography information will be recorded.

6. The Work Plan does not provide sufficient detail regarding sampling procedures. For example, 1) no Standard Operating Procedure (SOP) is provided for the biological tissue sampling or for the determination of sediment thickness and other physical features of the Northern Channel; 2) the Work Plan does not specify which of the methods listed in Appendix A, Appendix 3, SOP No. 3, will be used for surface water sampling; and 3) sampling methodologies for sediment and surface water sampling in the center of channel

and ditches that are several feet wide are not explained. To make the Work Plan useful for the field staff performing the work, please include more detailed sampling methodologies in the Work Plan.

SPECIFIC COMMENTS

7. Section 1.1, Purpose of Investigation, Page 3 and Section 5.1.4, Biological Sampling Page 36: The Work Plan states (Page 3) that "In order to develop a food-chain model for higher trophic-level avian receptors, data for fish, epibenthic invertebrates (for example crabs), and plants tissue will be collected..." This data will be used to develop a food-chain model for the higher trophic-level avian receptors. However, in order to develop a comprehensive food-chain model, tissue data from benthic infauna should also be collected 1) to provide an additional estimate of bioaccumulation, and 2) since benthic infauna represents a potentially significant prey item. Please revise the Work Plan to include the collection of benthic infauna for tissue analysis.

8. Section 1.1, Establish Site-specific Allowable Exposure Levels, Page 3: While EPA believes the determination of site specific allowable exposure levels is the correct approach to identify the site specific responses to contaminants, EPA questions the justification and approach as presented in this document. Specific AELs are best defined by exposure-response relationships using direct testing methods i.e., direct measurements of site specific responses using biological receptors. The process as generally stated in this document will only attempt to collect the food items of higher trophic level receptors (i.e., birds) from which the tissue concentration will be measured. This approach is flawed because of the larger amount of uncertainty (compared to direct measurements, i.e., bioassays) so that the eventual estimated dose may have a range of values so great as to make these estimates indefensible. EPA recommends that the workplan include development of site-specific AELs for benthic receptors.

   The suggestion by the Navy that toxicity testing has "inherent uncertainties associated" with it is contradictory to the Navy's effort at Hunters Point where suggested confounding problems are being addressed by toxicity testing, among other procedures. Also, the suggestion by the Navy that the Northern Channel is "poor quality" habitat is misleading given that in the next sentence, the Navy states that they are trying to protect the same "benthic fauna" that inhabit the poor quality habitat.

9. Section 1.1,Purpose of Investigation, Page 4: The Work Plan states that other potential sources of contamination to the Moffett Channel will be identified as part of this investigation. However, it is unclear how this objective is addressed in the current sampling design. Please explain how other potential sources of contamination to the Moffett Channel will be identified based on the current sampling design.

10. Section 2.1.3, History and Description of the Marriage Road Ditch, Pages 8 and 9: On Page 8, the Work Plan states that Marriage Road Ditch is an intermittent stream, but on Page 9, the Work Plan states that Marriage Road Ditch is perennially inundated. Please resolve this discrepancy.

11. Section 2.6.1, Northern Channel, Page 17: The text states that water velocity was measured using a flow meter 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 the minimum measurement capability of the flow meter.

12. Section 3.1, Step 1: State the Problem, Page 25: The second to last bullet states that data are needed to evaluate possible sources of contamination in Marriage Road Ditch, Patrol Road Ditch, and North Patrol Road Ditch. However, it is unclear what data will be collected to evaluate these sources. It appears that a source investigation is beyond the scope of this data gap investigation. For clarity, please indicate what data will be collected to evaluate the possible sources of contamination in Marriage Road Ditch, Patrol Road Ditch, and North Patrol Road Ditch.

13. Section 3.1, Step 1: State the Problem, Page 25: The last bullet states that epibenthic invertebrates are present in the Northern Channel. However, it is unclear whether benthic infauna is also present in the channel. For clarity, please indicate whether and what kind of benthic infauna has been observed in the Northern Channel.

14. Section 3.2, Step 2: Identify the Decisions to be Made, Page 25, Section 3.3, Step 3: Identify Inputs to the Decision, Page 27, and Appendix A, Table 3: The Work Plan states that one Data Quality Objective (DQO) decision criterion entails comparing sediment concentrations detected in the Northern Channel to background concentrations for inorganic Contaminants of Potential Ecological Concern (COPECs) and unqualified detections for organic COPECs (Page 25).

    Background concentrations will be determined from samples of native clay (Page 27). Since during the Northern Channel Physical Characterization investigation it was determined that the highest PCB concentrations were detected in the clay layer underlying the Northern Channel sediments, it is unclear how background concentrations will be determined from native clay samples. In Table 3, the Step 5 decision rule discusses when the native clay may be used for background concentration determination, but does not indicate what concentrations will be considered background if sediment contamination extends into the native clay layer. It is unclear how it will be determined that elevated concentrations are detected in the clay layer and when the clay layer will be considered representative of background conditions. It appears that COPEC screening levels other than native clay concentrations have to be established to define what sediment concentrations constitute "elevated" concentrations. Please explain how it will be determined what native clay concentrations are considered elevated and what background

concentrations will be used if native clay concentrations are elevated, or introduce the use of a different screening level (e.g., Site-Wide Ecological Assessment (SWEA)-determined Allowable exposure levels (AELs) or Effects Range Medium (ERM) values and Effects Range Low values (ERLs) into the discussion of elevated concentrations for inorganic COPECs.

15. Section 3.2, Step 2: Identify the Decisions to be Made, Page 25: In Step 2 of the DQO process, the Work Plan identifies the decisions to be made to resolve the problems listed in Step 1. However, the Work Plan does not list protection of the San Francisco Bay as one of the questions that need to be addressed as part of this investigation. Since the surface water in the Northern Channel will eventually reach the San Francisco Bay, it is necessary to address the potential for contaminant migration from the Northern Channel to the Bay. Please revise the Work Plan to include 1) protection of the San Francisco Bay as a goal/question that needs to be addressed and 2) surface water sample locations in the Moffett Channel to evaluate the potential of contaminant migration via surface water. At a minimum these data collected for this effort should be compared to the ambient data for the San Francisco Bay environment.

    In addition, please clarify item (4) on Page 26 with respect to what are considered "elevated concentrations of COPECs" for the berm samples.

    Lastly, please add to item (7) on Page 26, the question: "Do sediments in Marriage Road Ditch, Patrol Road Ditch, and North Patrol Road Ditch need to be remediated?"

16. Section 3.6, Step 6: Specify Limits on Decision Errors, Page 27: The Work Plan states that measurement quality objectives (MQO) will be established to verify that data quality and quantity requirements are met. However, it is unclear where and how these MQOs will be established. For clarity, please explain the process of MQO determination and in what format the MQOs will be presented. It is recommended that this process be set in place before field work begins.

    In addition, step 6 of the DQO process does not include limits on decision errors regarding surface water analyses and biological sampling. Please include limits for decision errors regarding surface water analyses and biological sampling.

17. Section 3.7, Step 7: Optimize the Design for Obtaining Data, Page 29: The Work Plan states that the sediment distribution and biological abundance and activity within the channel will be evaluated as prerequisites to sampling the channel sediments, however, no additional information regarding how and when sediment distribution and biological abundance and activity within the channel will be investigated is provided in the Work Plan. For clarity, please indicate when and how this information will be obtained and how the results of this investigation will influence the sampling design in the Northern Channel.

In addition, it is unclear what criteria will be used to select sampling locations from Marriage Road Ditch, Patrol Road Ditch, North Patrol Road Ditch, the Lockheed Channel, and the Moffett Channel as the Work Plan states that sediment and/or surface water sample locations will be selected using best professional judgement and ditch characteristics. For clarity and to make the Work Plan easier to use by the field personnel performing the work, please provide the criteria for selecting the sample locations.

18. Section 3.7, Step 7: Optimize the Design for Obtaining Data, Page 29: The Work Plan states that the design for obtaining data at the site includes composite sampling for the berm soils along the Northern Channel. However, composite sampling can be viewed as potential dilution of contamination if some of the composite locations are uncontaminated. Composite sampling should only be done if the range of contamination and the heterogeneity of soils are known. How will the sampling be completed so that hot spots are not missed?

19. Section 4.3 Conceptual Site Model, Potential Receptors: Infaunal (benthic) invertebrates should be sampled because of the likelihood of these being food items for the higher trophic level receptors at the site. The specific receptors selected to develop potential exposure scenarios must not eliminate those receptors that also use the site and whose feeding habits may differ. Completeness is the issue here.

20. Section 5.1.2, Sediment Sampling, Page 33: The Work Plan states that if field observations or the results of the chemical sampling indicate that the assumption of vertical and lateral homogeneity are wrong and the sediments are more diverse than expected, the field sampling program will need to be modified and more sampling will be required and further sampling strategies will be discussed with the TtEMI project manager. However, the Work Plan does not list the criteria that will be used to decide that sediment samples are not homogeneously distributed within the channel, (e.g., what criteria will define the heterogeneity that will trigger the collection of adjacent sediment samples?) Please indicate what the criteria are for "field observations" that will be used to decide that sediment samples are not homogeneously distributed within the channel and further sampling is necessary.

21. Section 5.1.2, Sediment Sampling, Page 33: Please provide the contingencies in this work plan for potential changes in the field sampling program.

22. Section 5.1.2, Sediment Sampling, Page 34: The Work Plan lists the 17 locations proposed for sediment sampling in the Lockheed and Moffett Channels, but does not indicate what the sample Identification Numbers (IDs) are for each of the bulleted sampling locations. To better identify the proposed sampling location in Figure 6, please list the sample IDs in the text and in Figure 6.

23. Section 5.1.2, Sediment Sampling, Page 34 and Figure 4: According to Section 3.7, Page 29, ditch sampling locations will be selected using professional judgement and ditch characteristics. Please provide criteria for selecting sampling locations. Also, please

clarify from where within the ditch bottoms the sediment samples will be collected, i.e., from the center or the edges of the ditches.

24. Section 5.1.3, Berm Sampling, Page 35: The Work Plan states that six samples will be collected in each berm section at depths of 0 to 0.5 foot, 0.5 to 1 foot, and 2 feet. However, it is unclear whether the deepest sample will be collected from 1.5 to 2 feet or from 2 to 2.5 feet. For clarity, please specify whether the deepest samples will be collected from 1.5 to 2 feet or from 2 to 2.5 feet.

25. Section 5.1.5, Surface Water Sampling, Page 36: The Work Plan states that surface water samples will be collected to provide additional information for assessing bioavailability of the COPECs and their potential effects on ecological receptors. However, total and dissolved metal concentrations will also be determined to assess the migration potential of COPECs via surface water. Please add this objective for collecting surface water samples to the Work Plan.

26. Section 5.1.5, Surface Water Sampling Page 37: The Work Plan states that NASA storm water data will be used to evaluate COPEC detections in surface water. However, it is unclear whether all COPECs are included in NASA's storm water sampling program. For clarity, please indicate whether all COPECs are included in NASA's storm water sampling program and how these data will be evaluated with respect to the current investigation objectives.

27. Section 5.1.6, Surveying, Page 37: The Work Plan states that the horizontal and vertical locations of the 25 transects will be surveyed by a California-certified land surveyor. Since the sample locations selected in the Northern Channel Physical Characterization investigation were surveyed using Geographic Information System (GIS) technology, please verify that cross matching of both techniques will be done.

28. Section 10.0, Deliverables, Page 45: Please include the report that will be prepared to present the results of this investigation (e.g., an investigation summary report or the results will be presented as part of the Feasibility Study report) in the list of deliverables.

29. Figure 2: Please indicate in the legend of this figure what the stippling, dashed lines and arrows signify. In addition, please show where the Moffett Channel Pump Station is (e.g., by using an arrow) and where the water from the Publically Owned Treatment Works (POTW) is introduced into the slough-like feature shown in the figure. Lastly, please indicate that the southeastern creek is an unnamed creek.

30. Figure 3: It is unclear 1) why most proposed transect sediment sample locations are located in the eastern portion of the Northern Channel, and 2) what transect data are available for the western portion of the Northern Channel. According to the Physical Characterization Report, sediment samples were analyzed for PCBs in the western portion of the Northern Channel, but samples were only collected from one location in the channel bottom and only analyzed for PCBs. For clarity, please explain why very few transect sediment samples are proposed for the western portion of the Northern Channel.

It is unclear from the figure where North Patrol Road Ditch begins. For clarity, please provide a figure where the full extent and width of North Patrol Road Ditch are clearly shown.

31. Tables 5-1 and 5-2, Project required reporting limits, Page 5-1 and 5-2. To suggest that the reporting limits are adequate because they are below the SWEA is misleading for some analytes. For instance, EPA has on many occasions raised concern with the measurement of Aroclors rather than congener specific analysis because of the problems with reporting limits in sediment samples. Table 5-2 shows the level in sediments to be 100 ppb which is generally too high for adequate assessments of ecological risk based on past experiences that Aroclor analytical techniques are often affected by "matrix interferences" raising the detection limit significantly above the target level of 100 ppb. EPA feels that an adequate detection level to be 50 ppb for Aroclors, otherwise congener specific analysis should be done.

32. Tables 1 through 6: Please add the existing or applicable screening/cleanup levels to the tables to facilitate data review.

33. Appendix A, Section 1.1.1, Purpose of the Investigation, Page 3: The text does not list protection of the San Francisco Bay as one of the purposes of this investigation. Please add protection of San Francisco Bay as one of the goals/purposes of this investigation.

34. Appendix A, Section 1.2.2, Project Measurements, Page 4: The text implies that all sediment samples will be analyzed using the toxicity characteristic leaching procedure and waste extraction test (TCLP/WET) preparation methods and for particle size, total organic carbon (TOC) and acid volatile sulfide/simultaneously extracted metals (AVS/SEM). However, only selected samples will be analyzed using the above methods. For clarity, please indicate that only *selected* sediment samples will be analyzed using the above-mentioned methods.

35. Appendix A, Table 3: The table does not include the following numbered items. For completeness, please add the items to the table and explain how these items are being addressed for this effort.

In Step 1:
1) protection of San Francisco Bay;
2) determination of background concentrations.

In Step 2:
1) will surface water concentrations meet Ambient Water Quality Criteria (AWQCs);
2) will sediment and/or surface water concentrations pose unacceptable risks to ecological receptors and/or human health;
3) will sediment concentrations be above background levels.

In Step 5, elevated concentrations for organic COPECs are defined as unqualified detections which are based on laboratory quantitation limit (LQL). Since laboratory method quantitation limits may exceed ecological receptor based screening levels such as Effects Range Medium (ERM) values or Effects Range Low (ERL) values, please explain why LQLs are proposed as screening levels. It is recommended that methods/techniques be used to insure the project will meet the screening levels.

36. Appendix A, Table 3: Details are lacking for some of the more important decisions. For instance, how will the data sets for determining background be summarized? How will the comparisons be made between the observations and the background data sets? What will be done when the sampling effort for tissue does not produce sufficient tissue for chemical analysis at each sampling point?

Step 2 states the decision to be made as questions; however, the answer to some of these questions may not be a decision but a yes or no statement. Please include a continuing phrase, then...propose an action. Step 5 includes appropriate decision rules, and the decision rules are numerically keyed to the decision statements in Section 2; however, Step 3 does not indicate which of the 10 listed inputs are related to the 9 statements or rules in Steps 2 and 5, respectively. Please include some numerical listing in Step 3 that relates these elements to those in Steps 2 and 5.

In addition, the Step 5 does not specify how background concentrations will be determined if contamination extends into the clay layer and what criteria will be used to identify elevated concentrations in that case. Please indicate how background concentrations will be determined if contamination extends into the clay layer and what criteria will be used to identify elevated concentrations in that case.

Lastly, it is unclear in Step 5 item (6a) what "other off-site areas" will be addressed in this Field Sampling Plan. The text does not state what actions will be performed if it is determined that the Northern Channel contributed to the contamination of off-site areas (e.g., the Lockheed and Moffett Channels). For clarity, please indicate 1) what "other off-site areas" will be addressed, and 2) what actions will be performed if it is determined that the Northern Channel contributed to the contamination of off-site areas.

37. Appendix A, Section 1.3.2.6, Detection & Quantitation Limits, Table 5-1, Page 15: The text states that Appendix 5, Table 5-1 shows that the Project Required Reporting Limits (PRRLs) are at or below applicable screening levels. However, no screening levels are listed in this table. Please list applicable screening levels in Table 5-1 to show that PRRLs are below applicable screening levels.

38. Appendix A, Table 5, Figure 1, Pages 19 and 20: Table 5 and Figure 1 indicate that the analytical laboratory and the subcontractor are still to be determined. Please specify the selected laboratory and subcontractors in the draft final version of the Work Plan.

39. Appendix A, Section 2.1.1, Sampling Along the Northern Channel, Page 30: The text states that sediment thickness and other physical features of the channel will be measured along each transect. However, there is no indication of how sediment thickness will be measured and what physical features will be investigated (i.e., only *examples* of what kind of physical features *could* be measured are listed). For clarity and to make the document useful for the field personnel performing the work, please indicate how sediment thickness will be determined, what physical features will be investigated and how they will be investigated, and provide example copies of applicable forms for recording the results of these measurements.

40. Appendix A, Section 2.1.3, Sampling Along the Northern Channel, Page 30: The text states that twenty percent of the samples that have been determined to contain the highest concentrations of zinc and lead will be analyzed for "TCLP/WET; PCBs, pesticides, and metals." It is unclear why lead and zinc concentrations will be used to determine which samples will be selected for TCLP/WET analysis. Please provide the rationale for using zinc and lead concentrations as indicators for further analyses.

In addition, for clarity, please revise this sentence to state "... will be analyzed using TCLP/WET methods for PCBs, pesticides and metals" to avoid confusion.

41. **Appendix A, Section 2.2.2, Soil and Sediment Sampling, Page 36 and Section 2.2.6, Decontamination, Page 40:** The text (Page 36) states that soil samples along the slopes of the berms will be collected using a hand-operated core sampler or a direct push method. In addition, on Page 40, the text indicates that drilling equipment, including drill rods, bits and a drill rig will be used. However, the text does not specify what kind of direct push methods and/or drill rigs may be used for collecting berm samples. For clarity and to make the Work Plan useful for the field staff performing the work, please indicate

the circumstances under which each kind of sampling methodology will be employed and provide instructions on how to use all equipment that may be required during this investigation.

42. Appendix A, Section 2.2.2, Soil and Sediment Sampling, Page 36: Appendix A does not provide sufficient detail on how sediment samples will be collected. The appendix just states that sediment samples may be collected from a sample core augered into the bottom of the channel. However, sediment collection using a hand corer, which is assumed to be the method proposed for collecting sediment samples as part of this investigation, may not be appropriate since sediments may be lost from the bottom of the corer during corer retrieval through the water column. Additional measures should be employed to ensure that sediment is not lost from the bottom of the corer. Please address the issue of sediment loss from the hand corer or propose a different sampling methodology.

    In addition, it is unclear how the corer will be inserted into the channel bottom at the center of the channel since the channel width ranges between 15 and 40 feet. Additional measures to be taken to collect sediment, surface water and biological samples should be clearly explained in the Work Plan to instruct field personnel performing the work.

37. Appendix A, Section 2.2.3, Geotechnical Sampling, Page 37: The Work Plan should clarify that the two sediment cores for geotechnical analysis will be collected at one-quarter width of the channel from *each edge of the channel* instead of "at one-quarter width of the channel from the edge."

38. Appendix A, Table 10, Page 54: The table does not list the frequency of analysis and matrix for method blanks, laboratory control samples or blank spikes, and surrogate standards. Since this table lists laboratory and field quality control samples, please add the above-listed quality control samples to the table.

39. Appendix A, Appendix 2, Figure 2-1: This figure showing significant differences in COPECs in the different ditches was not included in the Work Plan. Please include this Figure in the draft final version of the Work Plan.

40. Appendix A, Appendix 2, Section 3.0, Sediment in Lockheed and Moffett Channels, Page 2-2: The Work Plan states that off-site areas will be sampled to assess potential contaminant sources related to the Northern Channel. It is unclear what upgradient off-site areas will be assessed as the only off-site areas proposed for sampling in the Work Plan are the Lockheed and Moffett Channels which are located downstream of the Northern Channel. For clarity, please indicate what off-site sites will be sampled to assess contaminant sources to the Northern Channel.

41. Appendix A, Appendix 2, Table 2-1, Page 2-4: The notes on the table include a formula for calculating a one-sided two-sample t test. However, the abbreviations used in the formula are not explained. Please explain the components of the formula and the reference.

42. Appendix A, Appendix 5, Tables 5-1 through 5-3: The project-required reporting limits proposed for some of the metals and organics analyses exceed the National Oceanic and Atmospheric Administration Screening Quick Reference Table (NOAA SQRT) Effects Range Medium (ERM) values and/or the Effects Range Low (ERL) values for sediment/soil and the Ambient Water Quality Criteria (AWQCs) for surface water. For clarity, please add the ERM, ERL and AWQCs to the table, list the SWEA screening levels, and explain why some the proposed reporting limits exceed the screening values.

In addition, explain what the SWEA reference values are, what units they are in, and to what medium they apply.

Lastly, please explain how the reporting limits for organic compounds were selected since they are part of the decision criteria in Table 3 in Appendix A (i.e., footnote 2: "elevated concentrations are defined as unqualified detections for organic COPECs" and "unqualified detections are reported for concentrations above the contract-required quantitation limit").