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February 13, 1998

Dear RAB Member:

The Moffett Federal Airfield (MFA) Base Closure Team and the Community Co-Chair wish to invite you to attend our next Restoration Advisory Board (RAB) meeting.

Our last RAB meeting was held on January 15, 1998 at the Mountain View Senior Center in Mountain View, California. The meeting summary is provided as enclosure (1). Although there will be no meeting in February, our next RAB meeting will be held on **March 12, 1998** at the **Mountain View Senior Center**. The meeting will begin at **7:00 p.m.** The agenda for the meeting is as follows:

7:00-7:05 PM Meeting Overview
7:05-7:10 PM January Minutes Approval
7:10-7:40 PM Remedial Project Managers Meeting Report
7:40-7:50 PM Subcommittee Reports
7:50-8:10 PM NASA Cleanup and Investigation Presentation
8:10-8:45 PM NASA Cleanup and Investigation Discussion
8:45-9:00 PM Agenda/Schedule for the Next RAB Meeting

If you have any questions or comments, please contact me at (650) 244-2563, Mr. Hubert Chan of this office at (650) 244-2562, or Ms. Cathrene Glick, Moffett's Community Co-Chair, at (408) 987-0210.

Sincerely,

ORIGINAL SIGNED BY:
STEPHEN CHAO
BRAC Environmental Coordinator
Moffett Federal Airfield

Distribution:

Moffett Federal Airfield RAB Members
Karen Huggins, ARC Ecology/ARMS Control Research Center
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Moffett RAB Members:

Ann	Coombs	Alternate Member
Russ	Frazer	Alternate Member
Stewart	McGee	Alternate Member
Maurice	Ancher	Community Member
John	Beck	Community Member
Robert	Davis	Community Member
Cathrene	Glick	Community Member
John	Gurley	Community Member
Paul	Lesti	Community Member
Bob	Moss	Community Member
Edwin	Pabst	Community Member
Richard	Schuster	Community Member
Lenny	Siegel	Community Member, Pacific Studies Center
Ted	Smith	Community Member, Silicon Valley Toxics Coalition
Steve	Sprugasci	Community Member
Robert	Strena	Community Member
Mary	Vrabel	Community Member
Alex	Terrazas	Community Member, Mountain View Representative (Interim)
Jack	Walker	Community Member, Sunnyvale Representative
James	McClure	MEW Representative
Sandra	Olliges	NASA Representative
Steve	Chin	Regulatory Member
Joseph	Chou	Regulatory Member
Scott	Flint	Regulatory Member
Michael	Gill	Regulatory Member
Jim	Haas	Regulatory Member
Loren	Henning	Regulatory Member
Bob	Holston	Regulatory Member
Thomas	Iwamura	Regulatory Member
Joyce	Whiten	Regulatory Member
Peter	Strauss	Silicon Valley Toxics Coalition TAG Consultant

**MOFFETT FEDERAL AIRFIELD
RESTORATION ADVISORY BOARD MEETING**

MINUTES

**CITY OF MOUNTAIN VIEW
POLICE AND FIRE ADMINISTRATION AUDITORIUM
1000 Villa Street
Mountain View, California 94041**

THURSDAY, JANUARY 15, 1998

I. INTRODUCTION AND MEETING OVERVIEW

Mr. Stephen Chao, Navy co-chair, opened the meeting of the Moffett Federal Airfield (MFA) restoration advisory board (RAB) at 7:10 p.m. Mr. Chao reviewed the following agenda items for this meeting:

- Minutes approval
- Remedial project managers (RPM) meeting report
- Committee reports
- Presentation: "Stationwide Feasibility Study Report"
- Discussion: "Stationwide Feasibility Study Report"
- Agenda and schedule for next RAB meeting

II. MINUTES APPROVAL

Mr. Chao solicited comments on the minutes of the October 9, 1997, RAB meeting. There were no comments and the minutes were approved without correction.

III. RPM MEETING REPORT

Mr. Joseph Chou, Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, provided a report of the RPM meetings held on December 10, 1997 and January 7, 1998. Mr. Chou reported on recent field activities. He said that the Site 9 source control measure treatment system was temporarily out of service, but scheduled to be fixed within 1 to 2 days. The Navy collected core samples from the iron matrix at the Iron Curtain pilot test. Battelle is analyzing the samples for evidence of precipitates and plugging and is scheduled to provide a report in late January or February. Mr. Chou reported that the Navy sampled 24 deep aquifer wells in November 1997 as part of the quarterly sampling program. He said that construction at Operable Unit 1 is approximately 95 percent complete. Tasks remaining at Site 1 include installation of rip rap along the perimeter road adjacent to the stormwater retention pond, placement of gravel on the perimeter road surface, and installation of one gas monitoring well and 15 gas vents. Remaining tasks at Site 2 include minor grading, installation of a storm drain inlet, and completion of permanent fencing to prevent unauthorized dumping. Grass is growing at both sites from the hydroseeding completed in November 1997.

Mr. Chou reported that the Navy had submitted the revised draft final stationwide feasibility study (FS) report and that comments were due on March 9, 1998. He added that the Navy also had submitted the draft Site 22 landfill FS report and that comments on this report were due on February 23, 1998. Mr.

Chou said that all groundwater extraction wells (six in the A1-aquifer zone and two in the A2-aquifer zone) were installed for the west-side aquifers treatment system (WATS). He noted that the treatment pad was completed and that startup testing was scheduled to begin in March 1998. Mr. Chou said that all five groundwater extraction wells and 16 groundwater monitoring wells were installed for the east-side aquifer treatment system (EATS). Construction of the EATS treatment pad is in progress and startup testing is scheduled for March 1998. Mr. Chou said that the final WATS long-term groundwater monitoring plan was scheduled to be submitted on January 19, 1998. He noted that the plan included 2 years of semiannual sampling followed by annual sampling.

Mr. Bob Moss, community member, asked which seasons were scheduled for sampling. Mr. Chou replied that one round of sampling would be conducted during the rainy season and the other during the dry season during a year of semiannual sampling. Mr. Peter Strauss, Strauss Associates and consultant to the Silicon Valley Toxics Coalition (SVTC), asked whether the groundwater sampling would include wells throughout the station. Mr. Chou responded that the sampling only applied to the WATS cleanup area.

Mr. Chou continued his report by discussing activities conducted by the National Aeronautics and Space Administration (NASA). Work is continuing on the leak detection system at the area of interest (AOI) 1 fuel farm. NASA submitted a removal action work plan (RAW) fact sheet for AOI 4; comments are due on January 19, 1998. A RAW is in progress for the underground storage tanks of AOI 5. NASA reported no polychlorinated biphenyls (PCBs) in groundwater samples from its most recent sampling of monitoring wells at AOI 6 - the former Lindbergh Avenue storm drain channel. Minor amounts of PCBs remain in the soil at AOI 6. NASA proposed a PCB cleanup level for industrial use of 10 parts per million (ppm). The California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) is still evaluating the proposal.

Mr. Strauss asked whether the public could comment on the PCB cleanup levels. Mr. Chou responded that DTSC did not seek public comments on this matter since NASA's cleanup program is voluntary and does not require public comment. Mr. Michael Gill, U.S. Environmental Protection Agency (EPA), added that a public comment period may be scheduled and that NASA was currently getting regulatory agency review. Mr. Moss asked whether a cleanup goal had already been set. Mr. Chou replied that the Toxic Substances Control Act (TSCA) level of 1 ppm is very protective for residential use and sensitive habitats. NASA provided a rationale for using an industrial scenario and proposed 10 ppm although the industrial cleanup level is normally set at 25 ppm.

Dr. Jim McClure, Harding Lawson Associates and consultant to the Middlefield-Ellis-Whisman (MEW) companies, said that a PCB cleanup level has not yet been set. He added that NASA had intended to clean up AOI 6 to nondetectable levels, but that this level of cleanup was not possible. Consequently, NASA was seeking to establish a cleanup goal. Mr. Strauss stated that the cleanup goal for PCBs used at Hamilton Air Force Base was 0.16 ppm and that EPA Region 9 preliminary remediation goals (PRGs) for PCBs were 0.34 ppm for industrial use and 0.066 ppm for residential use. Mr. Chao added that PRGs are conservative levels set for broad site screening and are not useful as cleanup goals. Mr. Strauss stated that PCB cleanups under the Resource Conservation and Recovery Act (RCRA) may use 0.09 ppm as a cleanup goal and that the TSCA cleanup goals were under revision and would likely be lower than 1 ppm.

Mr. Chou stated that wetland organisms were the receptors at AOI 6, not humans. Mr. Moss asked why the soil cleanup at AOI 6 was unsuccessful. Mr. Strauss asked how the PCBs were deposited at AOI 6. Dr. McClure replied that surface water runoff carrying sediments with adsorbed PCBs was the likely

source. Mr. Chao asked Ms. Tina Pelley, Science Applications International Corporation (SAIC) and consultant to NASA, to refer the questions on PCB cleanup to Ms. Sandy Olliges of NASA.

Mr. Strauss stated that the AOI 4 fact sheet indicated that the planned remedy included excavation, natural attenuation, and monitoring. He added that trichloroethene (TCE) was also present at AOI 4, but that the fact sheet presented no evidence that natural attenuation of TCE was occurring. Mr. Chou responded that the remediation plans were targeted toward petroleum-related contamination and were not intended to address TCE. He added that the presence of TCE at AOI 4 was a recent discovery not addressed by the fact sheet. Ms. Pelley said she would also refer this issue to Ms. Olliges. Mr. Strauss added that he did not believe that natural attenuation was applicable to the cleanup of volatile organic compounds (VOCs) such as TCE.

IV. COMMITTEE REPORTS

Dr. McClure reported that the technical, historical, and educational (THE) committee met on January 14, 1998. Dr. McClure said that the committee discussed two quarterly monitoring reports. The committee also discussed the status of the cleanup of the regional VOC plume. EPA approved the construction operation and maintenance plan (COMP) for the portion of the plume north of U.S. Highway 101 in November 1997 and that construction was scheduled to begin within 60 days of this approval. Dr. McClure reported that the MEW companies and NASA held a preconstruction meeting during the week of January 5, 1998, and that construction was to begin during the week of January 19, 1998.

V. STATIONWIDE FS REPORT PRESENTATION AND DISCUSSION

Mr. Chao introduced Dr. Ted Ball, Tetra Tech EM Inc. (TtEMI), who presented a summary of the revised draft final stationwide FS report. The remedial investigation (RI) phase involves site characterization to evaluate the nature and extent of contamination and the risks to human health and ecological receptors. The FS takes this information as a base to establish remedial action objectives for the cleanup. The central concept behind the FS involves surveying a wide range of potential cleanup technologies and narrowing this group to those most applicable to a specific site and combining the technologies into several remedial action alternatives. Remedial action objectives consider the types of chemicals and media (for example, soil, sediment, and water) present as well as routes by which organisms may be exposed. The objectives also take into account applicable regulations and evaluations of acceptable exposure levels. For the stationwide sites, the primary risk is to ecological receptors in wetland areas through direct exposure to contaminated sediments. In selecting remedial action objectives, the goal is to reduce risk to acceptable levels and comply with applicable laws.

Three areas of concern became evident during the stationwide FS: (1) the Northern Channel, (2) the northeastern corner of the Eastern Diked Marsh, and (3) the stormwater retention pond. The Northern Channel is a 6-foot-deep, flat-bottomed channel that carries stormwater runoff from the eastern side of MFA to Guadalupe Slough. Stormwater flow from the western side of the station flows through the Eastern Diked Marsh into the stormwater retention pond. The former Lindbergh Avenue storm channel ran into the northeastern corner of the Eastern Diked Marsh. PCBs and pesticides are the contaminants of concern at all three areas.

The FS process for these areas resulted in six remedial alternatives:

1. No action
2. Institutional controls

3. Restore Eastern Diked Marsh and Northern Channel and monitor
4. Restore Eastern Diked Marsh and Northern Channel, treat sediments with $HQ_3 > 100$, and monitor
5. Restore Eastern Diked Marsh and Northern Channel, treat sediments with $HQ > 10$, and monitor
6. Restore Eastern Diked Marsh and Northern Channel, treat sediments with $HQ > 10$, restore marsh in northwestern stormwater retention pond, and monitor

Under the no-action alternative, no action is taken to reduce potential risks to human health and the environment. The no-action alternative is required by EPA for comparison to the other alternatives. The institutional controls option includes land use restrictions, such as fencing, to prevent access by potential human receptors and long-term monitoring for ecological receptors. Under Alternative 3, the top 1 foot of sediment in the eastern half of the Eastern Diked Marsh and the Northern Channel would be removed using conventional excavation and dredging techniques. The sediment could be treated on site or directly disposed of off site. Alternative 4 includes the same activities as Alternative 3 with the addition of areas where the site-wide ecological assessment (SWEA) calculated risks to indicator species (birds) for the condition $HQ_3 > 100$. Alternative 5 includes the same activities as Alternative 3 with the addition of areas where the SWEA calculated risks to benthic invertebrates for bulk sediment for the condition $HQ > 10$. Under Alternative 6, the same activities as for Alternative 5 would be conducted plus a wetland would be created in the northwestern corner of the stormwater retention pond.

Mr. Paul Lesti, Mountain View resident, asked what was the difference between HQ and HQ_3 . Ms. Kim Walsh, Montgomery Watson and consultant to the Navy, responded that HQ represents the risk to benthic invertebrates from exposure to bulk sediments and is a comparison of site chemical concentrations to literature reference values. The range HQ_1 through HQ_4 characterizes risk to upper trophic level organisms through a model based on expected dose and toxicity reference values (TRVs). Mr. Chao added that there were two approaches to view ecological risk. One approach is to protect the higher level organisms (birds and mammals) through the HQ_1 through HQ_4 values. The other approach is to protect the lower level organisms that are the food for the higher level creatures by using the bulk sediment HQ values. Mr. Strauss asked what comparison could be made between HQ_1 and HQ_3 . Mr. Chao replied that the relationship was not linear and a direct comparison could not be made.

Mr. Strauss asked whether the concentration of PCBs remaining after cleanup for each of the alternatives could be prepared. Dr. Ball responded that a concentration could be back-calculated for each cleanup scenario. Mr. Moss asked whether synergistic effects were considered. Ms. Walsh replied that the SWEA evaluated the potential for synergistic effects and found that synergistic effects were unlikely and that only additive effects were expected. Dr. McClure said that explaining the differences in approach to ecological risks to the public would be difficult without some specific examples. He suggested that one or two specific examples could be useful to illustrate the more general concepts involved. Mr. Strauss asked why the level $HQ_3 > 100$ was chosen instead of $HQ_3 > 1$. In human health risk assessment, the comparison is to 1. Mr. Chao responded that the uncertainty in ecological risk assessment is much greater and the entire process of ecological risk assessment incorporates many conservative steps, all of which are done to be as protective as possible.

Dr. McClure said that remediating the site to $HQ_4 > 1$ required cleanup of virtually the entire facility. However, starting at $HQ_3 > 100$ instead of $HQ_4 > 1$ gives the undesirable appearance of applying a cost screening before developing the alternatives. Mr. Chao replied that an alternate view would be to consider whether it was likely that Navy activities had resulted in contamination of all areas on the station. Dr. McClure noted that this consideration was essentially the same as subtracting background

levels for pesticides and PCBs, which is reasonable in light of the widespread distribution of these compounds throughout soil and sediment in the South Bay area. He added that it would be most understandable to begin an evaluation of any HQ value in relation to 1 and not to 10 or 100. Mr. Chao responded that the use of HQ₃>100 was the result of a compromise with the regulatory agencies. The Navy's original position, stated in the SWEA, was that HQ₁ or HQ₂ was most representative of risks to ecological receptors, while the agencies believed that HQ₃ or HQ₄ was more reliable. Mr. Gill added that he did not believe that there was any value in presenting scenarios such as HQ₄>1 that require cleanup of virtually the entire facility.

Mr. Robert Strena, Stanford University, said that Dr. Bruce Ames at the University of California at Berkeley had developed a risk evaluation approach termed human risk potential (HRP) that might be applicable to the ecological assessment at MFA. He asked about the development of TRVs. Ms. Walsh replied that, in general, low TRVs represent no observed adverse effect levels (NOAELs) and high TRVs represent lowest observed effect levels (LOELs).

Dr. McClure suggested that a two-step approach to explaining the HQ values may be effective. The first step would be to start at HQ>1 and, then, realizing that plants and other organisms are not sick and dying throughout the facility, to raise the level to HQ>10 or HQ>100 to calibrate closer to reality. Dr. McClure emphasized the importance of beginning the analysis at HQ>1 and separating the two steps. Mr. Chou agreed with this rationale and with the use of specific examples to illustrate the process.

VI. AGENDA AND SCHEDULE FOR NEXT RAB MEETING

Mr. Chao proposed that the next RAB meeting be scheduled for March 12, 1998, at the Mountain View senior center. Dr. McClure announced that the THE committee would meet on February 11 and March 11, 1998 at the Mountain View senior center. Mr. Strauss requested that Ms. Olliges present information on NASA cleanups at the next meeting. Ms. Pelley agreed to refer this request to Ms. Olliges. Mr. Strauss also requested that the THE committee distribute its comments on the Site 22 FS report and the stationwide FS report before the next RAB meeting if these comments were available in advance of the meeting. Mr. Chao requested that members seek new individuals to attend the RAB meetings and become members. He closed the meeting at 9:40 p.m.