

Meeting Minutes

**Moffett Federal Airfield
Restoration Advisory Board Meeting
May 11, 1995 7:00 p.m.
Mountain View Police/Fire Auditorium**

Mr. Paul Lesti, community co-chair, opened the Moffett Federal Airfield (Moffett Field) restoration advisory board (RAB) meeting by reviewing the agenda and soliciting comments on the minutes of the previous meeting. The agenda for this meeting included approval of previous minutes, subcommittee reports, remedial project managers' (RPM) meeting report, focus topic (operable unit [OU] 5), educational presentation (subsurface characterization techniques), agenda for next meeting, and conclusions.

The only comment on the previous minutes was offered by Mr. Lesti, who wanted to amend the minutes to include Mr. Stephen Chao with Mr. Tim Mower as participating in the review of whether leaching was evaluated during the OU2-East investigations (page 12, third paragraph, last sentence, of the April 6, 1995 RAB meeting minutes). No other comments were offered and the minutes were accepted with Mr. Lesti's amendment.

Mr. Hubert Chan, U.S. Navy, asked RAB members for their opinions of the last meeting minutes and inquired about who would prepare the minutes in the future. Mr. Lesti stated that he preferred that the Navy continue to prepare the minutes for the next 2 to 3 months until the organizational committee can address issues related to the meeting minutes. One option is for the RAB to elect a secretary to take meeting minutes. Ms. Christina Scott, Lockheed Martin, noted that Department of Defense (DOD) RAB guidance states that the DOD facility involved should provide meeting notes if requested by the RAB. Mr. Chan stated that the Navy was willing to continue to prepare the minutes, but would prefer to go back to a 2- to 3-page meeting summary, rather than 14 pages as in April's minutes. The Navy was very concerned about providing detailed minutes without review and approval by individual RAB members so all individuals can verify that their comments and concerns were adequately noted. Mr. Lesti

indicated that the organizational committee was creating procedures for review, correction, and approval of meeting minutes. Several RAB members indicated that the level of detail in the 2- to 3-page summary was insufficient to follow the details of the meeting. Mr. Bob Moss suggested a compromise: prepare minutes using a level of detail intermediate between the short summary and the 14-page detailed summary that includes detailed descriptions only of controversial topics. Ms. Leslie Byster, Silicon Valley Toxics Coalition (SVTC), asked whether the purpose of the minutes was to document discussion topics or for legal purposes. Mr. Lesti indicated that these details needed to be addressed by the organizational committee. Mr. Chan summarized that the Navy will continue preparing detailed meeting minutes for the next 2 or 3 months while the organizational committee addresses these issues.

Mr. Lesti introduced reports on the organizational; technical, historical, and educational (THE); cost; and communications and media committee activities. Mr. David Glick, community vice co-chair, reported that the organizational committee was currently drafting the RAB bylaws and charter. When the bylaws are completed, which should be in the near future, they will be submitted to all RAB members for a 30-day review. After the organizational committee addresses comments, the bylaws will be ratified by the RAB. Mr. Glick announced that the next organizational committee meeting will be held May 31, 1995, at a time and location to be announced.

Mr. Lesti mentioned that the THE committee held a meeting to elect the THE chair, but was unable to do so. The next THE committee meeting will be held May 17, 1995 at 7:00 p.m. at the Mountain View Senior Center. At this meeting, the THE chair will be elected and reports will be given on the THE subcommittees. Subcommittees include OU1 standards, OU5 characterization, OU5 technical, and risk assessment.

Mr. Lesti noted that the San Francisco Bay Area Community RAB Caucus was being held May 17, 1995 at 7:00 p.m. in San Francisco. The purpose of the caucus was to exchange concerns and learn about other RABs. Mr. Robert Davis noted that the RAB caucus conflicts with the next THE committee meeting and asked if the THE committee meeting might be rescheduled. Mr. Lesti indicated that the upcoming THE committee meeting would not be rescheduled but that future meetings would be planned to avoid similar conflicts. Mr. Lesti also noted that the RAB committee and events schedule distributed at the meeting should state that the next full RAB meeting is June 8, 1995, not June 1, 1995.

Ms. Scott provided an update on cost committee activities. The committee held its first meeting, with seven people attending. The committee discussed bylaws and future agenda topics. The next cost committee meeting is scheduled for May 24, 1995 at 7:00 p.m. at the Mountain View public library, in the second floor conference room.

Mr. Lesti noted that little interest has been expressed in the communications and media committee. If no one shows any interest, Mr. Lesti suggested placing the communications and media responsibilities into one of the other committees.

Mr. Joseph Chou of the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) provided a summary of the Moffett Field RPM meeting held on May 3, 1995. Mr. Chou summarized the following recent field activities and documents discussed during the RPM meeting:

- The Site 5 bioventing pilot test is still on hold because of high groundwater in the Site 5 area, and because the power supply requires rerouting. It is anticipated that the test will begin in 4 to 6 weeks, depending on the groundwater table receding.
- Construction of the Site 14 recirculating in situ treatment (RIST) system is anticipated to begin in June 1995. The Navy and National Aeronautics and Space

Administration (NASA) staff are working to coordinate the RIST implementation with two other construction projects that will be occurring in the same area of the facility.

The draft additional sites investigation phase II (ASI) report was completed in April 1995. Information contained in the ASI report was also provided in Appendix E of the Moffett Field station-wide remedial investigation (RI) report (completed May 1, 1995). The ASI included the Zook Road fuel spill, Patrol Road ditch, and Golf Course Landfill 2.

Field work for phase II of the site-wide ecological assessment (SWEA) was mostly completed in April 1995. Excess moisture in the area delayed sampling of pickleweed plants and rescheduling was necessary. The delay in sampling will also enhance sampling of insects which are more numerous during warmer weather.

The final OU1 feasibility study (FS) report will be completed on May 15, 1995. The OU1 proposed plan will be completed after Navy and agency concurrence on the final FS. The OU1 public meeting is scheduled for June 15, 1995.

The Navy and agencies came to agreement on many OU5 issues, although DTSC is still reviewing the Navy's responses to comments. The final OU5 FS report should be completed by May 29, 1995.

The Navy provided DTSC with revised tables for the final OU6 RI report. Both parties concurred with the changes, and PRC Environmental Management, Inc. (PRC) is preparing a revised final report.

A question was asked about the schedule for the OU5 public meeting. Mr. Chou stated that although the date has not been finalized yet, it will most likely be held sometime after the original proposed date (June 22, 1995).

Mr. Lesti discussed some miscellaneous items. A RAB training workshop for community oversight groups at federal facilities has been organized by San Francisco State University on June 2 through 4, 1995. Mr. Lenny Siegel, Pacific Studies Center, added that he encourages RAB members to take part in the training activities. Speakers will include staff from the Cal-

EPA, U.S. EPA, DOD, local groups, and the university. The workshop is designed to provide practical information through breakout sessions and is free and open to everyone. Mr. Siegel noted that applications were available along with the other meeting handouts and that subsidies were available for out-of-state participants. Mr. Lesti distributed a signup sheet for a site visit to Moffett Field. The site visit is scheduled for May 18, 1995 at 6:30 p.m.

Mr. Tim Mower, PRC, continued with the Moffett Field OU5 presentation from the April 6, 1995 RAB meeting. Revised handouts were provided for the presentation. Mr. Mower began by summarizing the topics covered at the last RAB meeting and outlining the new topics, which included groundwater modeling and a summary of the OU5 FS. Mr. Mower restated the definition of OU5: all groundwater not included in the regional volatile organic compound (VOC) groundwater plume or beneath the OU1 landfills.

Mr. Mower stated that the objective of groundwater modeling was to simulate groundwater flow and contaminant transport to evaluate impacts to receptors and assess remedial alternatives. Mr. Mower stressed that models were only tools to help understand the hydrogeology and contaminant transport at OU5 and were not intended to provide specific, detailed predictions of future conditions. The groundwater model used for OU5 consisted of two components: a groundwater flow component and a chemical fate and transport component. The groundwater flow component uses a computer program called MODFLOW, and the chemical fate and transport model uses a computer program termed MT3D. Mr. Mower explained that these components estimated groundwater flow and chemical movement in 3 dimensions using approximately 5,000 50-foot by 50-foot grid cells across the site distributed in four separate layers (three layers in the A1-aquifer zone and one in the upper A2-aquifer zone). Each grid block has its own set of site-specific parameters (such as hydraulic conductivity). Mr. Mower displayed figures depicting the grid cell layout as it applied to each layer. A figure depicting the distribution of trichloroethene (TCE) concentrations above maximum contaminant levels in the

northern and southern A1-aquifer groundwater plumes was also shown. Mr. Mower pointed out the areas of high total dissolved solids (TDS) and low TDS groundwater within OU5. He noted that the TDS concentration of 3,000 milligrams per liter (mg/L) separating the high and low areas corresponded to the state definition of drinking water quality.

Mr. Mower explained that the contaminants move primarily in areas of higher hydraulic conductivity (such as sand and gravel channels). He presented figures of model layers that depicted variations in hydraulic conductivity as changes in a color code. Mr. Mower pointed out the similarity in the location of model cells with high hydraulic conductivities to the location of sand channels in the OU5 geological interpretation. A RAB member asked for further definition of hydraulic conductivity and whether hydraulic conductivity was affected by chemicals dissolved in the water. Mr. Mower explained that hydraulic conductivity was related specifically to the properties of water and the aquifer material. He indicated that hydraulic conductivity is not affected by dissolved chemical concentrations within groundwater but would change if flow of another fluid (for example, gasoline) through the aquifer were considered. Mr. Mower noted that coarse-grained materials such as sand and gravel have higher hydraulic conductivities than fine-grained materials such as silt and clay. He explained that, although hydraulic conductivity does not change due to chemical concentrations, processes such as retardation affect the rate at which chemicals move relative to groundwater. Chemical properties as well as aquifer characteristics (such as organic material content) act to slow the migration of chemicals through the aquifer. Contaminants such as TCE tend to attach to aquifer organic material and clays and so move more slowly than the groundwater. Other compounds (including chloride ions) are not retarded and move at the same velocity as groundwater.

Another RAB member asked a question regarding the depths of the layers and if permeability is affected by depth. Mr. Mower responded that the thickness of layer 1 was approximately 15 feet, layer 2 was 10 feet, layer 3 was 12 feet, and layer 4 was 14 feet. He noted that layer 1 was

wedge-shaped and was thicker in the southern portion of OU5. The other layers were of uniform thickness. Mr. Mower stated that hydraulic conductivity is not influenced by depth, but rather that it is related to specific characteristics of the particular layer. Each layer was deposited in a different manner over varying time periods; portions of layers represent old stream channels (which would have higher hydraulic conductivities) while others represent splay, floodplain, or other fine sediment depositional formations (which would have lower hydraulic conductivities). Furthermore, sediment distribution is not uniform, so hydraulic conductivity varies both laterally and vertically.

Dr. James McClure, Harding Lawson Associates (HLA), asked Mr. Mower to further explain the ranges of hydraulic conductivity. Mr. Mower stated that additional detail was provided in Appendix E of the FS report. Ms. Elizabeth Adams, U.S. EPA, noted that in the FS report, hydraulic conductivities for channel deposits were listed as 121 feet per day (ft/day), splay deposits were 13 ft/day, and floodplain deposits were 0.7 ft/day. (These values are listed in Section 2.3 of Appendix E and represent the initial estimates of hydraulic conductivity used in developing the OU5 groundwater flow model.)

As an example of how the model works, Mr. Mower showed a series of figures depicting the movement of TCE over time. The depictions showed chemical movement after 10, 35, and 85 years. The depiction at 35 years was approximately similar to the current position and concentration of the OU5 plume. The depiction at 85 years showed the plume stretching out along the channel deposits, but at decreasing concentrations. Mr. Mower summarized use of the model and invited RAB members, if interested, to request a more detailed presentation of this model, or modeling in general, at a subcommittee focus group meeting.

After reviewing the groundwater model, Mr. Mower discussed aspects of the OU5 FS. He noted that the purpose of the OU5 FS is to evaluate various remedial technologies to select the most

appropriate cleanup method or option. The technology screening process involves identifying remedial action objectives (or goals), general response actions, and technologies and process options. General response actions include institutional controls to restrict access to contaminants, containment, in situ treatment, and extraction and surface treatment. The most appropriate technologies identified are grouped into remedial alternatives. The remedial alternatives are then screened against nine evaluation criteria developed by EPA.

Mr. Mower continued by summarizing the remedial action objectives for OU5. They included (1) protecting human health and the environment and (2) maintaining present and potential future beneficial aquifer uses. Mr. Mower explained that current beneficial uses of the OU5 groundwater included (1) minimizing salt water intrusion from the nearby salt water evaporation ponds and San Francisco Bay; (2) preventing land subsidence (which occurred in the 1960s and 1970s when groundwater in the region was extensively pumped); and (3) recharging surface water in northern areas of Moffett Field. Mr. Mower stated that the potential future beneficial use of the southern portion of the OU5 groundwater is as a drinking water source. Drinking water is defined by the state as groundwater with a TDS content of less than 3,000 mg/L that can be produced at more than 200 gallons per day. A figure depicting areas of low and high TDS concentrations in OU5 groundwater was shown.

Mr. Mower noted another consideration for the OU5 remedial alternatives. Although much of OU5 groundwater is a potential drinking water source, concentrations of naturally occurring metals are high enough that the water must be treated for metals before it could be used for drinking water. Therefore, whichever remedial alternative is chosen, the water still must be treated for metals if it is used for drinking water in the future.

Mr. Mower explained the evaluation criteria for remedial alternatives. Evaluation criteria include threshold criteria, balancing criteria, and modifying criteria. Threshold criteria include

protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). ARARs are state and federal regulations and standards that the remedial alternative must meet. Balancing criteria include (1) long-term effectiveness (how well the alternative will work over time); (2) reduction of toxicity, mobility, and volume of contaminants (the ability to break down contaminants into less toxic chemicals, reduce chemical movement, or reduce chemical concentration or extent); (3) short-term effectiveness (how the alternative may affect workers or the community during the construction and operation); (4) implementability (how easy is the alternative to put in place or whether it requires specialized equipment or personnel); and (5) cost. Modifying criteria include state and community acceptance (how well the state and community approve of the alternative). Community acceptance is documented throughout the public comment period, including the public meeting discussing the proposed alternative.

Mr. Mower summarized the eight remedial alternatives for OU5. They included (1) no action; (2) institutional controls; (3) institutional controls and future treatment when the groundwater is needed; in situ treatment by (4a) permeable reaction cell or (4b) air sparging and soil vapor extraction; and groundwater extraction and surface treatment using (5a) air stripping, (5b) ultraviolet/oxidation, or (5c) electron injection.

A RAB member asked if institutional controls were required for all alternatives. Mr. Mower confirmed that some form of institutional controls would be required for all alternatives. The specific controls (such as deed restrictions, aquifer restrictions, or site fencing) would vary depending on the alternative. However, the length of time required for the controls would not change since the remedial time frame for all alternatives is essentially the same.

Another question was asked by a RAB member about who would pay for future treatment if alternative 3 (institutional controls and future treatment) is chosen. Mr. Mower responded that

this particular issue has not been resolved yet. He indicated that the Moffett base realignment and closure (BRAC) cleanup team (BCT) was discussing the alternative and that several options exist, but Navy, regulatory agency, and community input are being sought before the options are explored further. There are also financial constraints that the Navy must follow since federal funds would be involved.

Mr. Mower then reviewed the tentative OU5 schedule. Mr. Chou indicated that the schedule in the handout had been revised; the final FS report is now due May 29, 1995. The remaining activities (proposed plan, public meeting, and record of decision [ROD]) will follow with a similar delayed time frame. The final dates will be announced when they are available. The final ROD is scheduled for November 1995.

Ms. Adams asked when the BCT would know which OU5 remedial alternative will be proposed. Mr. Chou responded that the team needed to complete the FS and proposed plan first; he indicated that the FS report will not contain a final recommendation. He added that the state will give RAB members more time to review the FS report if they need it.

Mr. Lesti asked if additional copies of the final FS report could be made available to RAB members. Mr. Chan said that he would bring additional copies to the next RAB meeting. Mr. Lesti continued, asking RAB members if they wanted a straw vote to give the Navy and regulatory agencies a feel for which alternative they prefer. Mr. Mower added that RAB members may want to review the FS report in its entirety before considering an alternative.

Ms. Heather Clark, SVTC, asked if the OU5 contamination is limited to the A1-aquifer zone. Mr. Mower confirmed that contamination was limited to the A1-aquifer zone. The Navy continues to monitor the A2 and deeper aquifers for the presence of contaminants and none have been detected.

Mr. Siegel added that there are several points to consider: (1) are RAB members convinced that contaminants will not reach human and ecological receptors; (2) which alternative is the most cost effective; and (3) influence of political judgements (is it worth spending millions of dollars cleaning up OU5 now or potentially having to spend more money cleaning it up in the future after the plume spreads out). Mr. Bob Moss noted that a fourth point to consider includes the reduction of current beneficial uses. Mr. Mower added that these factors and others, including high concentrations of naturally occurring metals and natural reductions in VOC concentrations over time, also should be considered when deciding on the most appropriate alternative.

Ms. Clark asked what would happen if the institutional control alternative was chosen and additional contamination was identified at a later date. Ms. Adams responded that if sufficient new information exists, a ROD can be reopened and additional cleanup requirements specified if the ROD did not address the new information. Reopening a ROD, however, is a significant activity, requiring the same level of public participation as the original ROD. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that CERCLA sites undergo reviews every 5 years to evaluate if standards and goals are being met. This provides another opportunity to address new information.

Dr. McClure gave an educational presentation to RAB members regarding site characterization techniques. Dr. McClure discussed sampling objectives and methods to achieve those objectives. Objectives included defining the problem (what chemicals are we looking for and where should we look for them) and how the information is to be used. Information typically needed includes geological and environmental characteristics (such as locations and properties of soils and rocks, and location and movement of groundwater) and chemical contaminant characteristics (such as locations, amounts, and concentrations). Methods to look below the ground surface include nonintrusive (without digging) and intrusive (with digging). Geological interpretation, surface

geophysical testing, and surface gas emission sampling were the nonintrusive methods discussed. Trenching, drilling, and direct push testing for sampling and inspection were the intrusive methods discussed. Dr. McClure summarized the advantages and disadvantages of each of these methods. Figures depicting typical drilling equipment were also shown. Dr. McClure brought several items (such as sampling equipment and well construction components) for RAB members to view.

Mr. Lesti then concluded the RAB meeting by summarizing the meeting and soliciting comments on the agenda for the next meeting. The organizational committee will discuss preparation and review of the meeting minutes. Mr. Lesti mentioned that the RAB was considering starting a buddy/mentoring system to pair technical with nontechnical people to help facilitate learning and the review process. Mr. Russ Frazer, City of Mountain View Fire Department, was acknowledged for providing the meeting room. Agenda items for the next meeting include the routine overview, minutes approval, committee reports, and RPM meeting report. Special topics have not been selected for the next agenda, but could include an OU5 question and answer session, the conclusion of Dr. McClure's presentation (general information on chemicals and analytical methods), RAB bylaws, and updates on upcoming public meetings. The next full RAB meeting will be held June 8, 1995 at 7:00 p.m. at the same location (City of Mountain View police and fire administration auditorium). Mr. Lesti then adjourned the meeting.