



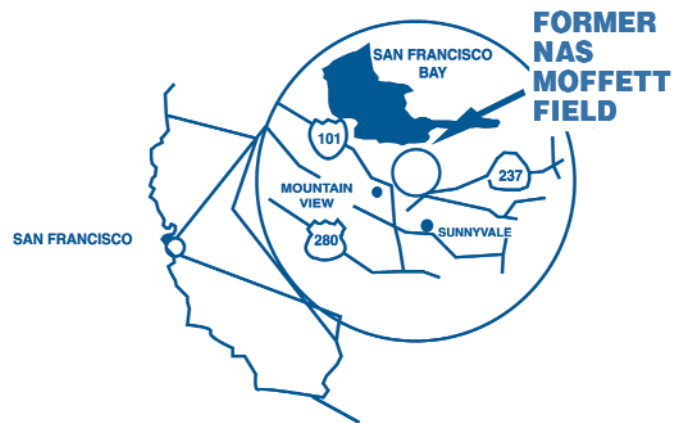
Former NAS Moffett Field Mountain View, California

Fiscal Year 2003 Environmental Security Award Environmental Restoration — Installation

Introduction

Former Naval Air Station (NAS) Moffett Field is a San Francisco Bay Area leader in environmental restoration. The project team exceeds expectations in identifying and implementing comprehensive, lasting cleanup solutions. In addition, the openness of the Navy staff has allowed significant participation from the public, resulting in the best cleanup solutions possible, to the benefit of all.

The former NAS Moffett Field provides facilities and services for aviation activities and research. It is located on the southwest edge of San Francisco Bay, 35 miles south of San Francisco and 10 miles north of San Jose. Covering approximately 2,200 acres, the former installation is bounded on the north by San Francisco Bay, on the east and southeast by the city of Sunnyvale, and on the west and southwest by the city of Mountain View.



Installation History – During the past 70 years, Moffett Field has been a center for innovation in aviation, as well as a significant contributor to the nation’s defense capabilities. Commissioned as NAS Moffett Field in 1933, the facility supported dirigibles (blimps) for long-range reconnaissance missions.

The property was closed as an active military base in July 1994; most of the land and facilities were transferred to NASA. NASA now operates the airfield; the Army owns and manages Moffett Community Housing (MCH); and the Air Force manages an 18-hole golf course on the former base.

Public interest in the base has been high since before its inception, when local communities rallied to persuade the Navy to build its new air base there. Community participation in the environmental process at Moffett Field has been extraordinary.

Moffett Field Today – Moffett Field remains a valuable resource to the community and the nation. While closed as a military base, Moffett Field is very active, with two runways, three blimp hangars, smaller aircraft hangars and support facilities. NASA is developing 213 acres into the NASA Research Park, an R&D and educational facility with partners San Jose State University, Carnegie Mellon University, and the University of California. Tenant commands include the California Air National Guard (129th Rescue Wing Unit), Defense Energy Supply Command, Navy Commissary and Exchange, Army Computer Museum, and the Moffett Field Historical Society Museum. Moffett Field is home to approximately 400 Army housing residents and hosts NASA’s work force of approximately 3,000 and the Air National Guard’s work force of 200 full-time workers and 500 reservists.



Local Communities – Moffett Field is located in "Silicon Valley." Santa Clara County's population of 1.7 million is 44 percent Caucasian, 25 percent Asian, 24 percent Hispanic, and 3 percent African American. Santa Clara County is the fifth largest populated county in California and is dominated by service and manufacturing industries. The region includes a dense concentration of electronics and computer companies. The cities of Mountain View and Sunnyvale border Moffett Field. Both are diverse, educated, upper-class communities.

Environmental Setting – Located one mile from San Francisco Bay, Moffett Field includes 220 acres of wetlands. The southern portion of the bay was originally covered by tidal salt marsh and mud flats – most of which have been eliminated or altered through land use changes. The northern portion of Moffett Field is within the historical margin of the bay and was once open to tidal flow. The area northeast of Moffett Field is bordered by evaporation ponds and dikes, which generally prevent the area from being affected by regular tidal flushing. The movement to purchase, clean up, and restore the South Bay continues to garner significant community support. Planned restoration of properties adjacent to Moffett Field wetlands affects long-term land uses for the former base.



The Site 22 Golf Course Landfill is covered with a biotic barrier and restored. Rodent-proof casings protect trees that are aesthetically pleasing to the public and enticing to local birds of prey. The new trees are monitored and cared for regularly.

Installation Restoration – In 1984, the Navy began identifying sites posing potential risks to human health and the environment, and in 1987, Moffett Field was placed on the National Priorities List. Southwest Division Naval Facilities Engineering Command took over management of the Installation Restoration Program (IRP) in 1999. To date, 29 IRP sites and 162 petroleum sites have been identified. The majority of the IRP sites have been addressed and approved for regulatory closure; currently, only 8 remain active. A total of 84 petroleum sites are in the final stages of closure.

BACKGROUND

Environmental Restoration Challenges – There are several major challenges to environmental restoration at Moffett Field. First and foremost is coordinating with the numerous parties either involved in or impacted by environmental restoration. The Navy partners with NASA to accommodate the agency's land-use plans and its own environmental program; NASA also has facilities classified as "top secret," and special arrangements must be made to conduct IRP activities in such locations. The team also works to minimize impacts on operations at NASA Ames Research Center, flight operations and the on-base golf course.

Endangered/Threatened Species include:

- **Black-necked Stilt**
- **harvest mouse**
- **burrowing owl**
- **western pond turtle**

The team works closely with businesses and residents to minimize inconvenience to those that work and live on Moffett Field. This includes close coordination of restoration activities with routine traffic plans, site events and other day-to-day activities on the property. This close coordination ensures that, through its efforts, the team is supporting the respective missions of the tenant commands.

Secondly, the team must manage multiple investigation and remediation activities at the same time. This is because environmental restoration at Moffett Field is complex, from the variety of contamination issues, to the many vested parties. To meet this challenge, the team has developed a program of regular meetings, protocols, updates, and specialized software to ensure the program stays on track and that quick decisions can be made.

A third challenge for the team is dealing with the many environmental issues in the surrounding area. The local high-tech industry contributed to soil and groundwater contamination over the years, and Moffett Field is neighbor to many Superfund sites. Two of these sites directly impact Moffett Field's groundwater and local air quality. To stay informed, the team communicates regularly with potentially responsible parties (PRPs) for these sites.

Moffett Field's proximity to San Francisco Bay presents another challenge. The team has to continually address stormwater and watershed issues because all runoff ultimately leads to the bay. Also, a local movement to purchase, restore, and protect baylands is supported by adjacent property owners and local and federal agencies. In addition, portions of Site 25 are within a National Wildlife Refuge and include property owned by a public trust agency. With the presence of endangered and threatened species, regulatory agency and public involvement is heightened.

Management Approach – The project team exceeds expectations in identifying and implementing comprehensive, lasting cleanup solutions. This requires frequent information exchange, innovative thinking, technical and regulatory expertise, sound financial management, sensitivity to stakeholder concerns, understanding of local issues, and sufficient staffing to ensure success.

To keep all parties fully informed, the management staff meets weekly with project managers and contractors and monthly with the BRAC (Base Realignment and Closure) cleanup team (BCT). The team also holds bimonthly RAB meetings and attends quarterly meetings where the Navy, NASA, regulatory agencies, and PRPs discuss technical issues and/or modifications to cleanup strategies. This

Moffett Field Project Team



Marie Avery
Base Closure Manager

Lawrence Lansdale
Environmental Business Line Team Leader



Andrea Espinoza
BRAC Environmental Coordinator and
Lead Remedial Project Manager

Art Tamayo
Remedial Project Manager (RPM),
Petroleum Sites, Hangar 1



Wilson Doctor
RPM, Site 22, and
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Mary Parker
RPM
Sites 1, 2, 26, 28



Scott Gromko
RPM, Sites 25, 27



Carl Bonura
Remedial Technical Manager



Gary Munekawa
David Smith
Navy ROICCs



Carmen A. Lebron
Innovative Technology
Research Projects



Pete Everds
Tetra Tech FW, Inc.
Jim Knight
Tetra Tech EMI



Patricia Tennyson
Katz & Associates, Inc.





“The cleanup of Site 22 is a great example of the community working with the Navy and other agencies to restore Moffett Field to uses that benefit the area. The dedication of community members like those on the RAB is what makes our cleanup process a success.”

*Andrea Espinoza,
Base Realignment
and Closure
Environmental
Coordinator,
U.S. Navy*

“[The Moffett Field RAB] really is the national model for public participation. The success of the RAB in giving residents a role in the cleanup is attributable to several factors, including open-mindedness from the Navy...”

*Lenny Siegel,
founding RAB
member and
Director for the
Center for Public
Environmental
Oversight*

level of interaction allows for timely decision making and quick turnaround, and ensures that the program goals continue to be met.

Community Involvement Programs – Numerous parties have a keen interest in restoration efforts at Moffett Field: city and county officials, state and federal regulatory agencies, activist groups, and on-site residents and employees. To address their concerns and benefit from their input, the team has conducted a lively community relations program since 1988. The RAB was formed in October 1994. The Navy regularly sends out mailers, issues media releases, holds public comment periods and public meetings as well as RAB meetings, disseminates fact sheets, and updates the project Web site, among other required CERCLA activities. A revised community relations plan was published in September 2002.

Community members have been highly involved, and as a result, cleanup decisions have been improved. An example is the solution to squirrel infestation of the Site 22 golf course. While it was determined safe to leave wastes in place and cap the golf course landfill, the large ground squirrel population was known to create the main pathway to contaminants by unearthing landfill contents. Comments received from the community provided the needed solution – raptors. Hawks were known to live in the area and could be enticed to Site 22 with large trees. The decision to restore the golf course with trees planted in permanent in-ground containers:

- provided the aesthetics requested by the public,
- provided acceptable habitat for raptors,
- eliminated the need for harsher pest control methods, and
- helped the Navy meet its goal of protecting human health and the environment while providing an earth-friendly remedy.

Restoration Advisory Board – Members of the Moffett Field community have specific concerns about environmental cleanup, restoration and historic preservation. The RAB has become a crucial forum for open dialogue on such issues.



Moffett Field BRAC Environmental Coordinator, Andrea Espinoza, presents RAB Co-chair Bob Moss with a certificate of recognition from the U.S. Navy.

For the last 9 years, RAB members have committed countless hours to the environmental restoration of Moffett Field. RAB members work with the Navy’s team, NASA, and regulators by attending RAB and subcommittee meetings, sharing information with the community, and reviewing and commenting on project documents. The community has reacted favorably to the RAB, which is reflected by the high degree of public involvement, the immense amount of public input received regarding cleanup decisions and the positive feedback provided at RAB and public meetings.



Based on interviews with community members, there has been an encouraging shift in the community's perception about the Navy's "approachability" and they are "pleased that the Navy is responsive to questions from the public." This was further verified in 2003, when the annual RAB recruitment drive resulted in a 45% increase in membership.

Environmental Restoration Plans, Schedules and Documents

The Moffett Field Project team finalized 75 environmental documents in FY02 and 28 in FY03. Because Moffett Field's environmental program is mature, most efforts pertain to decisions on cleanup alternatives, long-term monitoring, compliance, and postclosure documentation. Highlights are provided on the next page.



Records of Decision – The MFA Team has issued numerous signed RODs:

- 12/22/94 - Sites 3, 4, 6, 7, 10E, 11, and 13 (Operable Unit [OU] 2-E)
- 06/28/96 - Site 26 (OU5)
 - 08/19/97 - Sites 1 and 2 (OU1)
 - 06/25/02 - Site 22
 - 08/22/02 - Stationwide No Action Sites
 - 2003 - Two draft RODs under development

Environmental Restoration Agreements

FEDERAL FACILITY AGREEMENT

- Signed by Navy, U.S. Environmental Protection Agency (EPA), and state of California; enacted on 09/14/90; amended on 12/17/93.

MEMORANDUM OF AGREEMENT

- With NASA on 12/22/92, 08/11/93 and 11/15/99.

ACCESS AGREEMENTS

- With Cargill Salt Company in 2002.
- With Midpeninsula Regional Open Space District on 10/01/02.

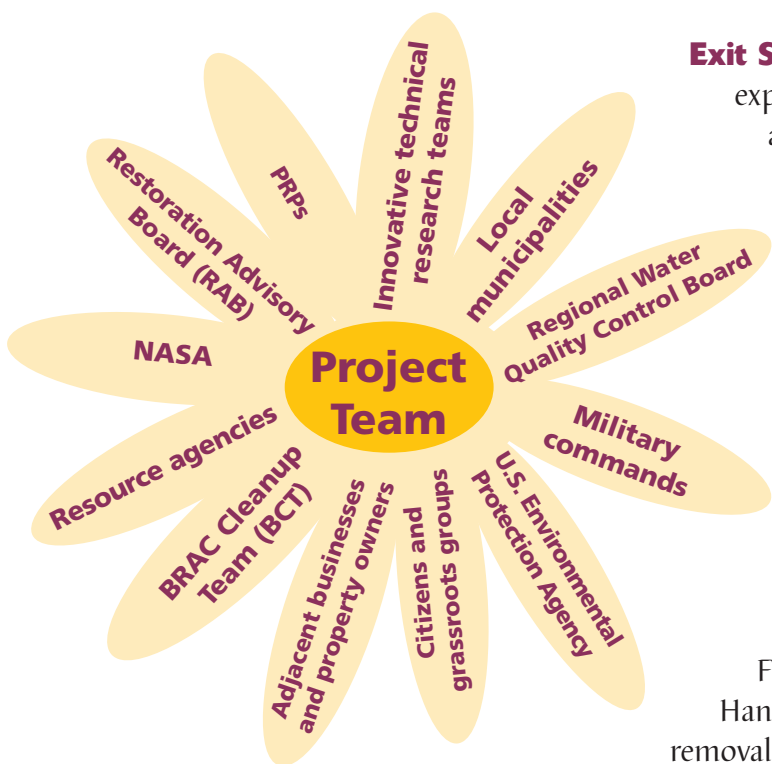
5-Year Reviews – In FY02–03, the first 5-Year Review Report (for OU1) was signed (09/11/02). Two more have been drafted (for the East-Side Aquifer Treatment System and the West-Side Aquifers Treatment System) and are expected to be approved by regulators in early 2004.

Installation Restoration Program Summary

Objectives and Degree of Success – The objective of the IRP is to identify, investigate, and control migration of hazardous contamination while protecting human health and the environment in a timely and cost-effective manner. The Moffett Field team has surpassed this goal by implementing cleanup solutions that address community concerns and set the standard for nearby Superfund sites.

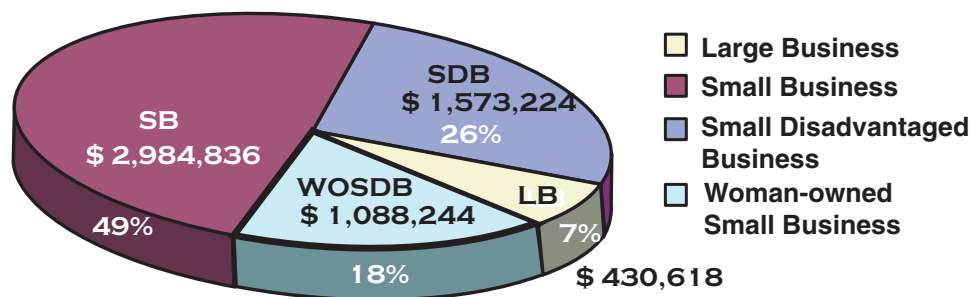
Exit Strategy – Through a combination of technical expertise, sound planning, and stakeholder involvement, as of FY02–03 the IRP at Moffett Field is 75% complete, with regulatory agencies approving closure for 21 of 28 sites. In addition, 100% of all inactive tanks have been removed. Of particular note in 2003 is the closure of Site 2, approved by EPA on January 31. A former landfill, refuse was removed from Site 2 and consolidated at the Site 1 landfill. Two years of monitoring demonstrated no groundwater contamination, leading to the site’s closure. The Site 2 property is now available for NASA’s use.

Sound Financial Management – The Moffett Field team constantly evaluates project finances and diligently implements cost-control measures. In FY03, an unexpected cleanup action was needed at Hangar 1. The team was able to perform a time-critical removal action (TCRA) at Hangar 1 without seeking additional



funds. Through coordination among the project managers and contract specialist, funds were reallocated from the Site 25 cleanup without impacting either site. This also significantly accelerated the Hangar 1 project schedule.

Subcontracted Work at Moffett Field



Total dollar amount: \$6,076,922

Simplified Data Management

Moffett Field IRP site data are managed through the use of a cost-effective data management system, capable of storing 60 million records. First developed to manage data from a large chlorinated solvent groundwater plume site, the system currently has multiple uses and contains more than 1.5 million records – a 50% increase over FY02. Complex scientific data and GPS survey data can be easily accessed. The Navy regularly exchanges data with other PRPs, regulatory agencies (EPA, RWQCB, Santa Clara Valley Water District), and government agencies (NASA, U.S. Army, U.S. Geological Society) to provide a regional data picture.

Opportunities for Small and Small Disadvantaged Businesses in Environmental Restoration

The Moffett Field team and its contractors are committed to exceeding their target goal of awarding 70% of subcontracts to small, disadvantaged or woman-owned businesses. The goal has been exceeded by 20%. The team is also meeting or exceeding its goals for specific categories such as small disadvantaged businesses and women-owned small businesses (WOSB). In fact, 18% of subcontracted work was awarded to WOSBs – 13% higher than the target goal of 5%!

To continually meet these goals, the contractors have implemented their own small business (SB) involvement programs and regularly seek new vendors. In FY03, the contractor's SB involvement program included collaborative Navy/contractor SB outreach and 15 new SB vendor educational or recruitment presentations. In addition, the contractors entered into a mentor-protégé agreement with TN&A, a woman-owned, small business. Contractors also participated in a Society of American Military Engineers National Small Business Conference, where they educated SBs on how to obtain contracts.

Outstanding Accomplishments

Innovative Technical Solutions – Site 1 Landfill

Rigorous efforts involving collaboration with EPA and the San Francisco Water Board, led to development of a unique and innovative model for groundwater monitoring of a landfill near a surface water body. The ROD for the Site 1 landfill requires compliance with California regulations, identifying contaminants, establishing groundwater concentration limits for these contaminants and developing a statistical approach for determining when contaminants exceed acceptable levels in groundwater. Site conditions made this a daunting task, the most significant being its location: this 12-acre, triangular site is bounded on two sides by



estuaries that could carry contaminants to San Francisco Bay.

The team developed a model that uses a targeted approach to monitoring, conducting laboratory analyses, and working with data. The monitoring system allows for natural reduction of contaminants in groundwater, rather than simply using surface water criteria, as is typically done. The process limits the number of contaminants to be analyzed and raises their “action levels” (levels that require cleanup), thereby reducing unnecessary cleanup actions and costs without jeopardizing environmental quality.

The Technical Memorandum, Site 1 Groundwater Evaluation Process was accepted by the regulators in its draft form without the need for revisions, significantly minimizing schedule and costs. Such initial regulatory acceptance of a technical document is extremely rare, validating the model’s technical excellence and reducing overall restoration costs by eliminating revision cycles.

“The work plan [for Hangar 1] was very well written, one of the best I have seen.

I really appreciate the authors for working so hard to produce a great document in such a short time.”

Lida Tan, Remedial Project Manager, Federal Facilities Branch, Superfund, U.S. EPA, Region 9

“It is really admirable that the Navy was able to complete plans and mobilize within 90 days at Hangar 1.”

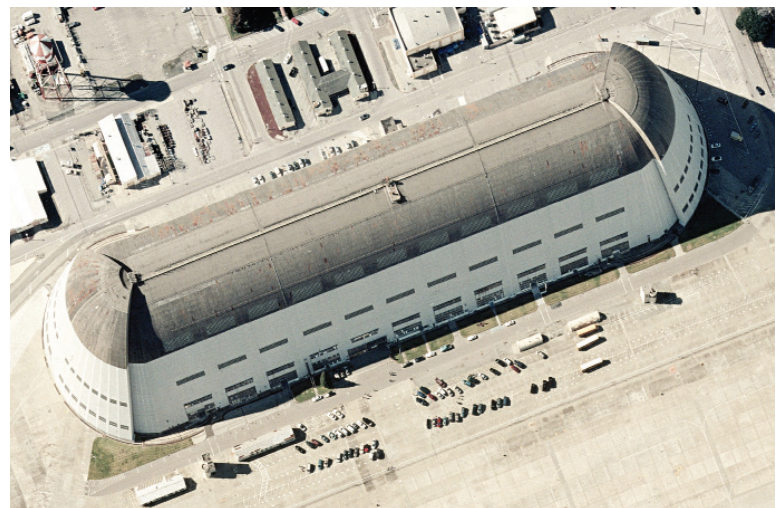
Bob Moss, Moffett Field Restoration Advisory Board Community Co-chair

Transferring Lessons Learned To Others

The groundwater monitoring model developed for the Site 1 landfill set a precedent. This model now serves as a valuable blueprint for other Navy facilities in California. The model is also applicable at other Department of Defense landfills and installations adjacent to surface water bodies, which is of course common at Navy facilities.

Fast-Track Cleanup – Hangar 1

To reduce risk to human health and the environment, the Moffett Field team adopts interim measures when possible. A prime example is the TCRA at Hangar 1. Hangar 1 is a Civil Engineering Landmark of Northern California, part of the Shenandoah Plaza National Historic District, and the largest hangar of its kind in the western United States at more than 1 million square feet. However, the historic structure was coated in old paints and made with materials containing PCBs, asbestos, lead, and zinc. As the hangar’s exterior continued to age, the materials peeled and chipped away, making their way into the environment.



In 2003, fast-tracked interim measures were taken to immediately reduce risk from old, contaminated paint at Hangar 1.



Contractors employed a number of innovative methods to seal Hangar 1's decaying surface quickly and safely.

While working on a cleanup remedy for Site 25 (Eastern Diked Marsh), NASA staff discovered a continuing release of PCBs from Hangar 1. Because potential ecological receptors at Site 25 had to be protected, Site 25 cleanup plans were halted to address the release from Hangar 1. The Navy held multiagency meetings to analyze alternatives ranging from limited access to tearing down the structure. To immediately reduce risk, an interim action was completed.

The TCRA involved an enormous task – painting the hangar's entire exterior with a specialized coating to prevent old paint and other materials from further chipping until a final remedy is implemented.

Because of its enormous size, subcontractors utilized a variety of innovative methods to apply the coating. Furthermore, to maintain the landmark's historic two-tone appearance, care was taken to replicate the historic colors. The TCRA was completed at this 100-surface-acre site within an expedited three months, from contract award in August 2003 to completion in November 2003.

The Navy and NASA worked closely to conduct another TCRA at Site 1, where NASA cleaned up ditches surrounding the hangar. The two agencies continue to discuss long-term clean-up solutions.

Involving the Local Community – Moffett Community Housing

Silicon Valley residents are well versed in environmental issues. This was evident as the Navy moved forward with a site characterization and baseline human health risk assessment to determine whether chemicals in groundwater beneath MCH pose a health risk and whether the source(s) exist within the housing area.

Due largely to media sensationalism, fear escalated among base residents and the outlying community. The Moffett Field team worked aggressively, providing accurate information to reduce fear and initiate open communication. A multifaceted information program was developed that included paid “advertorials” in local newspapers, fact sheets, regular communication and coordination with Army housing management, and an open public information session. The team’s quick, thorough response allayed community fears. The information program continues today to provide timely information to locals and head off sensationalism from the media. As a result, the media has made an about-face in the way it covers cleanup activities at Moffett Field.

“This open house alleviated any concerns raised by the press, rumors and speculation. As a resident of the housing concerned, I feel perfectly safe living there with my family.”
Sergeant First Class Stephen Benson, Moffett Community Housing resident



“An open house and information session about environmental findings at Moffett Community Housing was held. Information was provided by representatives from NEHC, U.S. EPA, the local Water Board, NASA and the U.S. Army. Comments from regulatory and Army representatives about this open house indicate that this effort represents some of the best risk communication work they had seen.”

*Andrea Espinoza,
Base Realignment
and Closure
Environmental
Coordinator*

Facilitating Broader Solutions Through Partnering

The Moffett Field Project team has demonstrated a commitment to complementary cleanup efforts both inside and outside the former base. This is only possible through continued collaboration with the many entities associated with Moffett Field. The success of the Hangar 1 TCRAs involved partnering with NASA and regulators to improve not only the conditions at Hangar 1 but the overall watershed, including Site 25 wetland areas downstream.

A similar relationship with EPA has proven equally important at MCH, where source contaminants were found outside Moffett Field but impacts to air quality are within its borders. Navy investigations in 2003 identified regional air quality problems resulted from inadequate groundwater remediation systems at nearby sites. Based on the Navy’s findings and information shared through BCT meetings, EPA is now leading a coalition to find broad solutions that will improve environmental conditions, not only at MCH, but within the greater Mountain View area. EPA has organized a community advisory group (CAG) to address local environmental issues, including those at MCH. The Navy, as well as other PRPs, participate in the CAG process.

CONCLUSION

Moffett Field’s program is a model of environmental restoration in the San Francisco Bay Area. The Moffett Field team seeks innovative cleanup solutions that will not only provide obvious environmental improvements but solutions that are both cost-efficient and enduring. Through creative thinking and continued information sharing, the team has expedited site cleanup and closure, consistently exceeded regulatory requirements, implemented innovative technologies, and identified alternative funding sources while protecting human health and the environment. Further, the team has an unprecedented record of involving the local community in the decision-making process to improve site cleanup decisions and acceptability.

The products of the Moffett Field Team’s hard work add up to the following:

- 100% removal of all inactive tanks;
- 0 impacts to air operations;
- 5 RODs signed;
- 2 RODs drafted;
- One 5-year review report signed;
- Two 5-year review reports drafted; and
- 75% completion of the IRP.