

Public Information Materials

5/28/03

Restoration Advisory Board Meeting 63rd Meeting Held at Irvine City Hall Irvine, CA

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 5/28/03 RAB meeting – 63rd meeting.
- *Meeting Minutes from the March 26, 2003 RAB Meeting – 62nd Meeting.
- *Public Notice – Explanation of Significant Differences to the Record of Decision for IRP Site 11.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (July 2003-July 2004).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- MCAS El Toro Installation Restoration Program Status Update – two-page handout.
- Internet Access – Environmental Web Sites.
- One-Page Glossary of Technical Terms.
- Environmental Compliance Program Documentation Update (28 May 2003).
- Irvine Ranch Water District Memorandum from Steve Malloy – Irvine Desalter Project Update.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Defense – Institutional Controls, Spring 1997.
- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
- Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
- Department of Defense – Management Guidance for the Defense Environmental Restoration Program, September 2001 & DoD Guidance on Improving Public Involvement in Environmental Cleanup at Closing Bases, December 1997.
- U.S. EPA Fact Sheet – A Citizen's Guide to Natural Attenuation, October 1996.
- Brochure – Commonly Asked questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
- U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
- U.S. EPA Fact Sheet – Perchlorate Update, March 2002.
- *Presentation* – MCAS El Toro RAB Meeting, May 28, 2003, Site 11 Transformer Storage Area – Explanation of Significant Differences, presented by Karnig Ohannessian, SWDIV Remedial Project Manager.
- *Presentation* – MCAS El Toro RAB Meeting, May 28, 2003, IRP Site 1 Perchlorate Investigation Update, presented by Gordon Brown, SWDIV Remedial Project Manager.
- *Presentation* – MCAS El Toro RAB Meeting, May 28, 2003, Update on Property Transfer Support Documents, presented by Andy Piszkin, MCAS El Toro BEC/RAB Co-Chair, SWDIV.

* Mailed to all RAB meeting mailer recipients on 5/19/03.

Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)

- U.S. EPA, Comments – Draft Technical Memorandum, Groundwater Modeling, Operable Units 1 and 2A, Former MCAS El Toro, dated January, 2003 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated February 25, 2003).
- U.S. EPA, Comments – Pilot Testing Documents, OU-1 and OU-2A Groundwater Remedy submitted by Irvine Ranch Water District, dated February, 2003 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated February 25, 2003).
- U.S. EPA, Comments – Draft Work Plan, Pre-Design Investigation for Shallow Groundwater Unit Remedy, IRP Site 24, MCAS El Toro, dated February 28, 2003 - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated April 3, 2003).
- U.S. EPA, Comments – Draft Environmental Baseline Survey (February 7, 2003), Technical Information package of Potential Release Locations Investigation Results (March 20, 2003), and Technical Sheets for Runways and Pesticide Mixing Area (April 3, 2003), Former MCAS El Toro - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated April 11, 2003).
- U.S. EPA, Concerns – IRP Site 2 Aquifer Test, MCAS El Toro - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated May 15, 2003).
- U.S. EPA, Comments – Draft Final Environmental Baseline Survey, dated April 2003, Former MCAS El Toro - To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Nicole Moutoux, Remedial Project Manager, U.S. EPA (letter dated May 20, 2003).

Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)

- No Items Submitted

California Regional Water Quality Control Board (RWQCB), Santa Ana Region

- No Items Submitted

RAB Subcommittee Handouts and Letters *(generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)*

- No Items Submitted

Additional Information Submitted – 5/28/03 RAB Meeting

- No Items Submitted

**MCAS El Toro
Restoration Advisory Board**

*Irvine City Hall
Conference and Training Center
One Civic Center Plaza, Irvine*

**May 28, 2003
6:30 - 9:00 p.m.
63rd RAB Meeting**

**RAB Subcommittee Meeting
5:00-6:00 p.m., Room L-104**

AGENDA

RAB members that are unable to attend please call either Andy Piszkin, Marine Corps/Navy RAB Co-Chair at (949) 726-5398 or (619) 532-0784 -or- Bob Woodings, RAB Community Co-Chair at (949) 461-3481.

Question and Answer (Q&A) Ground Rules

- Q&A follows individual presentations; time designated for presentations includes Q&A time.
- "Open Q&A" session (environmental topics) is at the end of the New Business segment.
- After adjournment, Marine Corps/Navy representatives are available to answer more questions.

Welcome/Introductions/Agenda Review (6:30-6:40)

Andy Piszkin
Marine Corps/Navy RAB Co-Chair

Old Business (6:40-7:05)

Approval of 3/26/03 Minutes (6:40-6:45)

Bob Woodings
RAB Community Co-Chair

Announcements/Review of Action Items (6:45-6:55)

Andy Piszkin & Bob Woodings

Subcommittee Meeting Report (6:55-7:05)

Marcia Rudolph
RAB Subcommittee Chair

New Business (7:05-8:55)

Regulatory Agency Comment Update (7:05-7:20)

Nicole Moutoux U.S. EPA	Rafat Abbasi Cal-EPA DTSC	John Broderick RWQCB
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- Site 11, Transformer Storage Yard - Explanation of Significant Differences (7:20-7:45)

Karnig Ohannessian
SWDIV

- Site 1, Explosives Ordnance Disposal Range – Interim Removal Action (7:45-8:10)

Gordon Brown
SWDIV

BREAK – 10 minutes

- Update on Property Transfer Support Documents (8:20-8:45)

Andy Piszkin SWDIV	Kyle Olewnik SWDIV
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Open Q&A (Environmental Topics) (8:45-8:55)

Andy Piszkin

Meeting Summary & Closing (8:55-9:00)

Andy Piszkin & Bob Woodings

Meeting Evaluation & Topic Suggestions for Future Meetings

- PUBLIC NOTICE -

**FORMER MARINE CORPS AIR STATION EL TORO
INSTALLATION RESTORATION PROGRAM (IRP)**

**Explanation of Significant Differences
to the Record of Decision for IRP Site 11**

The Department of the Navy has issued for public review an Explanation of Significant Differences (ESD) to the Record of Decision (ROD) for IRP Site 11, Transformer Storage Area. The ESD is a short document that describes minor changes to the Site 11 cleanup plan. The Site 11 ROD, which formally described the Navy's cleanup plan, was concurred on by the U.S. EPA and Cal/EPA's Department of Toxic Substances Control and the Regional Water Quality Control Board in September 1999. The ESD presents the results of post-ROD activities and a reevaluation of risk to human health that was conducted in August 2001.

Site 11 consists of three units: Unit 1, a concrete pad (30 by 30 feet) and an adjacent 3-foot wide strip of ground; Unit 2, an asphalt-lined drainage ditch; and Unit 3, the unpaved remainder of the storage yard. The soil reportedly became contaminated when six of the 50 to 75 electrical transformers stored there from approximately 1968 to 1983 leaked or spilled polychlorinated biphenyls (PCBs) onto a concrete pad and a dirt lot at the site. PCBs are a component of the oil used in transformers to control heat that is generated during the transmission of electricity. PCB contamination is primarily confined to the top 2 feet of the soil. PCB-contaminated soil poses an unacceptable risk to human health. Under the Navy's cleanup plan, PCB-contaminated soil would be excavated and disposed of off-station from Units 1 and 2. No further cleanup action is necessary at Unit 3.

As described in the ESD, the reevaluation of risk to human health was necessary to reflect the current and updated U.S. EPA exposure factors and toxicity indices for PCBs and results of additional soil sampling and analysis conducted after the Remedial Investigation. Results of the reevaluation showed that risks were lower but still required remediation. Changes presented in the ESD do not fundamentally alter the overall cleanup approach and do not appreciably change the scope, performance, or cost of cleanup at Site 11. The significant difference in the cleanup plan is that cleanup will be based on updated PCB exposure factors and toxicity criteria. The cleanup plan will continue to allow for residential reuse as it did in the ROD. The ESD includes a brief summary of the cleanup plan presented in the ROD, a description of the change, and an explanation of why the Navy is making this change.

The ESD will be a featured topic at the next MCAS El Toro Restoration Advisory Board Meeting (see below). The ESD is available for public review at the following location:

MCAS El Toro Information Repository
Heritage Park Regional Library
14361 Yale Avenue, Irvine, California
(949) 551-7151 (call for current hours).

Restoration Advisory Board Meeting

63rd Meeting
Wednesday, May 28, 2003
6:30 - 9:00 p.m.

Irvine City Hall
Conference and Training Center
One Civic Center Plaza, Irvine

The Restoration Advisory Board (RAB) is composed of concerned citizens and government representatives involved in the environmental cleanup program at MCAS El Toro since 1994. Community participation and input is important and appreciated. This meeting will feature the following activities and presentations specific to MCAS El Toro:

- Site 11, Transformer Storage Yard - Explanation of Significant Differences
- Site 1, Explosives Ordnance Disposal Range - Interim Removal Action
- Update on the Property Transfer Support Documents

For more information about this meeting and the Installation Restoration Program at MCAS El Toro, please contact:

Mr. Andy Piszkin
BRAC Environmental Coordinator
7040 Trabuco Road, Irvine, CA 92618
(949) 726-5398 or (619) 532-0784



MARINE CORPS AIR STATION EL TORO
RESTORATION ADVISORY BOARD MEETING

March 26, 2003 – 62nd Meeting

MEETING MINUTES

The 62nd Restoration Advisory Board (RAB) meeting for Marine Corps Air Station (MCAS) El Toro was held Wednesday, March 26, 2003 at the Irvine City Hall. The meeting began at 6:33 p.m. These minutes summarize the discussions and presentations from the RAB meeting.

WELCOME, INTRODUCTIONS, AGENDA REVIEW

Mr. Andy Piszkin, BRAC Environmental Coordinator (BEC) for MCAS El Toro and Marine Corps RAB Co-Chair, asked Ms. Marcia Rudolph, RAB Subcommittee Chair, to lead the Pledge of Allegiance. This was followed by self-introductions from all in attendance and Mr. Piszkin reviewed the meeting agenda.

OLD BUSINESS

Review and Approval of the January 29, 2003 RAB Meeting Minutes

Mr. Bob Woodings, RAB Community Co-Chair, asked for any changes or comments prior to the approval of the January 29, 2003 RAB meeting minutes. The RAB Meeting Minutes were approved without amendment.

Mr. Woodings stated that he received calls from two RAB members, Mr. Greg Hurley and Mr. Jerry Werner, informing him that they would be unable to attend tonight's meeting.

Announcements

- Mr. Piszkin stated that in response to RAB Subcommittee concerns, the Navy has provided handouts this evening covering the status of fuel lines and Tank Farm 555. He explained that most of the fuel lines have been tested, cleaned out using inert gas, and filled with slurry.
- Mr. Piszkin stated that there has been a recent change in RAB membership. Mr. Richard Bell left the Irvine Ranch Water District (IRWD) to work for the Municipal Water District of Orange County. Mr. Steve Malloy will take his place as a representative of IRWD.
- The next RAB meeting is scheduled for Wednesday, May 28, 2003, with the RAB Subcommittee meeting prior to the RAB meeting. Mr. Piszkin said that a handout is available on the information table with the dates of the RAB meetings through September 2003.
- Mr. Piszkin stated that there is a new mailing address for the MCAS El Toro BRAC program and all the relevant handouts now list the new address.

- The Navy has no new information on the RAB rule. Mr. Piszkin explained that this issue is still being discussed internally at the policy level.
- Mr. Piszkin explained that Mr. Don Zweifel, RAB member, had asked for a sample of landfill liner, and that he is still working on obtaining that sample.
- The RAB site visit is tentatively scheduled for May 3, 2003 at around 10:00 a.m. The Navy will provide more information as plans are finalized. Mr. Piszkin explained that the site visit will focus on the Site 2 aquifer test and the IRWD pilot test that will be taking place near the hangars.
- Mr. Piszkin stated that the Community Relations Fact Sheet, which contains a survey, would be issued a few weeks before the site visit. In addition, the first Finding of Suitability to Transfer (FOST) would be issued for public comment a few days before the site visit.
- Mr. Piszkin stated that the RAB Subcommittee had expressed concerns regarding Alton Parkway construction. After a meeting last week with the County of Orange, the Site 2 landfill cap construction is expected to be completed before roadway construction begins. Therefore, there should not be any impact to the Alton Parkway project. The technical design was part of the discussion and all parties appear to be comfortable with project coordination.

RAB Subcommittee Meeting Report, Ms. Marcia Rudolph, RAB Subcommittee Chair

Ms. Rudolph reviewed the key points discussed at the RAB Subcommittee meeting.

- Cal/EPA, Department of Toxic Substances Control (DTSC) budget – The subcommittee has concerns that DTSC funding for MCAS El Toro may be redirected to other projects. If that happens, what impact would that have on the Installation Restoration Program.
- Land Transfer Indemnification – Ms. Rudolph explained that the RAB Subcommittee has concerns with how the Navy will be handling indemnification for buyers of former Station property, as land transfers become imminent.
- Perchlorate issue – Ms. Rudolph stated that perchlorate has become both a state and national issue. She asked that the Navy have the same speaker (Kevin Mayer, U.S. EPA) back in the future with any updates on toxicity information as it becomes available. She added that the subcommittee would also like information on perchlorate migration from Site 1 to Site 2.
- Irvine Solvent Study – Ms. Rudolph said that the RAB Subcommittee assumes that the solvent study is covered in the Environmental Baseline Survey (EBS) presentation scheduled for tonight. She explained that she received a letter from the City of Irvine indicating satisfaction with how the Navy responded to the solvent study.
- EBS – Ms. Rudolph indicated that she received the EBS in the mail. She stated that there are excellent maps in the EBS and recommended that, at future RAB meetings, those maps be posted on the sidewalls of the room for reference.
- Fed-to-Fed Transfer – There is concern about how the Navy will be handling the federal agency-to-federal agency (fed-to-fed) transfer and where funding for any associated cleanup will come from. Ms. Rudolph explained that the RAB Subcommittee would like to know if

there is less pressure to complete that cleanup because it is a fed-to-fed transfer, rather than a transfer for sites that will be developed in the future.

- Petroleum Sites – Ms. Rudolph explained that the RAB Subcommittee is interested in how liability for the small petroleum-impacted sites would be handled after transfer.

Discussion

Mr. Piszkin stated that he provided a presentation on the Navy's "comeback policy," which covers indemnification, at the last RAB meeting. There are also handouts summarizing the Navy's comeback policy.

Mr. Piszkin explained that there is a Defense and State Memorandum of Agreement (DSMOA) that fully funds DTSC and Regional Water Quality Control Board (RWQCB) activities related to environmental oversight of MCAS El Toro, so there has not been a reduction in the level of oversight or effectiveness from the agencies. The U.S. EPA is funded directly through the Department of Defense (DoD).

NEW BUSINESS

◆ Regulatory Agency Comment Update

Nicole Moutoux, Project Manager, U.S. Environmental Protection Agency (U.S. EPA) Region IX

Ms. Moutoux said that the U.S. EPA does not have any letters available on the information table this evening. She explained copies of U.S. EPA correspondence are sent to Marcia Rudolph and Bob Woodings. Copies can also be provided at the RAB meeting. The RAB has indicated a preference for copies of U.S. EPA correspondence being available at the RAB meetings.

Ms. Moutoux indicated that she is working on the review of the EBS and the Potential Release Location (PRL) Specification Sheets. The specification sheets cover the results from sampling conducted at 20 sites that are being incorporated into the EBS. She stated that she is also reviewing a Groundwater Modeling Technical Memorandum for Sites 18 and 24. The technical memorandum was prepared in support of the remedial design (RD) for treatment of the Volatile Organic Compound (VOC) plumes in groundwater at Sites 18 and 24. It is a very thorough technical memorandum; U.S. EPA only needs clarification on a few issues. The pilot test document for Sites 18 and 24 for the Irvine Desalter Project (IDP) is also currently being reviewed. The only issue with that document is handling of discharge of treated groundwater from the pilot test.

Discussion

Mr. Zweifel asked if Ms. Moutoux is familiar with the letter that California Department of Health Services (DHS) sent in response to the MCAS Tustin RAB letter regarding an actionable release level for radiological surveys. He said that it is great accomplishment that the RAB can do something powerful. Ms. Moutoux responded that she is aware of the situation, but is not familiar with the letter. She added that it looks like the MCAS El Toro Radiological Release Report would not be delayed any longer. She stated that RABs are effective and that the regulators take RAB correspondence seriously.

Mr. Piszkin stated that the MCAS Tustin RAB letter had a positive impact on the process. MCAS El Toro is now on track to have the Radiological Release Report submitted by Spring 2004. He added that is a difficult issue for DHS due to legal issues currently being addressed at the state level. The Navy's Radiological Affairs Support Office representatives are in town and attended today's MCAS El Toro BCT meeting, but were unavailable for the RAB meeting.

◆ **Groundwater Monitoring – Latest Results, Marc Smits, Remedial Project Manager, Southwest Division (SWDIV) Naval Facilities Engineering Command**

Mr. Smits stated that in 2002, the Navy completed Rounds 15 and 16 of the MCAS El Toro routine groundwater monitoring program. In addition, the fieldwork for Round 17 was recently completed during March 2003.

Mr. Smits said that the groundwater monitoring program was established in 1992 as part of the Remedial Investigation/Feasibility Study (RI/FS) conducted for the entire Station. The program is intended to provide data to evaluate groundwater contamination trends and groundwater conditions over time at various locations throughout the Station. Groundwater conditions, including water level, flow direction, and impacts on the shallow and principal aquifers are documented. He explained that water level data that includes the effect agricultural wells have on water levels, is used to analyze trends in the groundwater flow direction. All of the data is used to develop a hydrogeological evaluation of the groundwater conditions at MCAS El Toro.

Mr. Smits stated that the current groundwater monitoring program involves collecting data at eight sites:

- Site 1 – former explosive ordnance range
- Site 16 – former firefighter training pit
- Sites 2,3,5, and 17 – former landfill sites
- Sites 18 and 24 – VOC sites

All of these sites are either landfill sights that require ongoing monitoring for potential contamination, or sites where groundwater contamination has been previously detected. He explained that the groundwater monitoring program is intended to supplement the site-specific investigations being conducted.

In Round 15, samples were collected from 94 monitoring wells and ports. Mr. Smits explained that these samples were tested for VOCs, which is the main contaminant of concern throughout MCAS El Toro. For Round 16, samples were collected from 97 monitoring wells and ports, and tested for VOCs, radionuclides, metals, perchlorate and for general groundwater chemistry. Groundwater levels were also measured at all wells and ports sampled during both rounds.

Mr. Smits provided a figure depicting field activities to collect groundwater samples. He explained that equipment is used to measure water levels, and to check water quality parameters like pH, temperature, and dissolved oxygen. This figure shows a conventional sampling technique, where a pump is lowered into the well, and three well casings of groundwater are initially pumped out before collecting samples. He stated that this removes any stagnant water that has collected in the well and ensures that the samples are representative of the aquifer near the well.

Mr. Smits explained that Westbay® Port Sampling (a proprietary sampling configuration) uses a 2 to 3-inch diameter probe. Westbay Ports are off-base wells that vary from depths of 500 to 1,000 feet and allow for multi-depth sampling. The probe is lowered into the port and samples are collected at various vertical depths down to 1,000 feet. This data provides a vertical profile of the conditions around that port, and provides data on conditions in the principal aquifer.

Mr. Smits stated that the data from Rounds 15 and 16 is generally consistent with data from previous monitoring rounds. The groundwater level data supports the historical trend of a northwest to west-northwesterly direction for groundwater flow. In the off-site wells and ports there tends to be more variation in the groundwater levels than from the on-site wells. The most obvious contributor to these variations is off-site agricultural wells.

Mr. Smits stated that groundwater contaminant concentrations at all of these sites had some minor changes in the range of 20 to 50 parts per billion or ppb. These changes are not significant and support that the concentrations are relatively consistent over time. Data for the Sites 18 and 24 plumes indicates that configuration of the dilute TCE plume has not significantly changed between Rounds 15 and 16. The data on the additional analytes in the Round 16 samples are consistent with past monitoring rounds, so concentrations are not increasing and there are no new sources. He explained that consistent groundwater monitoring data is preferred when making decisions on a permanent remedy.

Mr. Smits said that there were several recommendations made in the groundwater monitoring report. The first is to use bollards (metal or concrete posts) to prevent the gigantic mowers from damaging the flush mounted monitoring wells. A second recommendation was to integrate the sampling for the IR sites with sampling required for the remaining petroleum sites. He explained that a third recommendation is to evaluate sites on a site-specific basis, rather than Station-wide. There are two reasons to move to a site-specific evaluation. First, the program is at the stage where several sites have Records of Decision (RODs) and are now in the remedial design stage. Therefore, the sites need to be evaluated individually to determine if the remedy is effective. In addition, with the upcoming land transfer, there is no longer a need for a Station-wide monitoring program that covers property that has been determined to be environmentally available for transfer.

Discussion

Mr. Zweifel asked if recent precipitation had caused any plume migration. Mr. Smits stated that the Round 17 data, which was collected in March 2003, would need to be evaluated to determine the impact precipitation had on the water levels, concentrations, and contaminant migration. He added that the Navy collects samples at the same time as the Orange County Water District (OCWD), so there is some comparability between the data.

Ms. Rudolph asked where the three additional wells sampled for Round 16 are located. Mr. Smits responded that the Navy evaluates the need for additional wells before each monitoring round. For Round 16, three wells were added to Site 24 to provide more data on conditions at that site. He added that Round 16 was an annual monitoring round that included the larger suite of analytes. The additional analytes are not as significant as VOC contamination because that is the main contaminant of concern being monitored for groundwater cleanup remedies at MCAS El Toro.

Mr. Zweifel asked why there is no statistical data in the presentation. Mr. Smits replied that the statistical data is included in the appendices of the Groundwater Monitoring Report. At Mr. Zweifel's request, he offered to provide a copy of the report.

Mr. Zweifel stated that he has serious concerns about perchlorate. Mr. Smits responded that there is a table in the report that covers perchlorate, and that table will be provided to Mr. Zweifel after the meeting. He added that perchlorate sampling is focused on Sites 1 and 2. Mr. Piszkin explained that Site 1, due to past explosive ordnance disposal training operations, is a source of perchlorate contamination in groundwater. An aquifer test that involves extracting and treating perchlorate-contaminated groundwater is being conducted at Site 2. Mr. Roy Herndon, RAB member representing the OCWD, stated that the OCWD started testing for perchlorate in 1997 or 1998. Ms. Rudolph explained that the late Mr. Joe Farber, former RAB member, brought the perchlorate issue to the RAB's attention.

Mr. Piszkin explained that this presentation focuses on the fact that groundwater conditions have been generally stable through the 11 years of the monitoring program. The Navy is not trying to hide anything by not including statistical information in the presentation. All the data is available in the report which can be found at both El Toro and the Heritage Park regional library. In addition, the Navy and the water districts are working together on design issues for cleaning up VOCs in groundwater both on- and off-Station.

◆ **Groundwater Remediation: Modeling & Design Update, Irvine Desalter Project and VOC Source Area, Karnig Ohannessian, Remedial Project Manager, SWDIV Naval Facilities Engineering Command**

Mr. Ohannessian stated there are several activities taking place concurrently. The IRWD is working on the IDP, which has a CERCLA component to address the VOC plume. In support of the Remedial Design (RD) for the IDP, the Navy has completed modeling activities, and is preparing for a pre-design investigation in support of the 30% Design Submittal. He said that the IRWD is about to start a 90-day pilot test in the shallow groundwater unit (SGU) in the VOC source area. The data from the pilot test will be used to refine the design parameters for water sources at the SGU and principal aquifer. In addition, the test is also evaluating the performance of treatment equipment, specifically, reverse osmosis membranes for desalting and air strippers for removing VOCs. The pilot test also includes an off-Station area where the principal aquifer is impacted by VOCs. He explained that the soil in the source area became contaminated with VOCs that leached into the SGU, and then the contamination migrated vertically into the principal aquifer.

Mr. Ohannessian presented a map and pointed out the two areas where the pilot tests will take place. Mr. Fred Meier, RAB member, asked about the contour lines on the map. Mr. Ohannessian explained that those are water elevation contours. Ms. Rudolph asked if street names could be added to the map. Mr. Ohannessian responded that the street names are there, but the smaller size for the slide makes them difficult to read. He explained that a larger version of this map is included in the ROD for Sites 18 and 24.

Mr. Ohannessian stated that groundwater modeling has been performed to support the remedial design. The modeling attempted to simulate groundwater flow and dissolved TCE transport to

determine what extraction strategies would work best. Different well placements and pumping strategies were modeled to determine what strategy would best meet the remedial action objectives (RAOs), both in the SGU and the principal aquifer.

Mr. Ohannessian explained that the main focus of the RAOs is to reduce the TCE concentration in the plumes to the cleanup goals and prevent concentrations of VOCs above cleanup levels from migrating to the principal aquifer. The emphasis is on mass removal and achieving hydraulic control. He stated that data gathered over the last 10 years was used to determine if the model could accurately predict the groundwater flow that was actually measured. After some adjustments, the groundwater model was able to predict fairly closely what actually occurred.

Mr. Ohannessian stated that a number of simulations were attempted focusing on TCE transport in groundwater. One simulation looked at what would happen if pumping took place only at the Station boundary to prevent contamination from migrating. Another simulation at the other extreme looked at pumping only from the VOC source area, focusing on removing the highest levels of contamination. The other simulations looked at strategies between these two extremes. Most of the simulations allowed contamination either to migrate off-Station or downward into the principal aquifer. The model continued to be adjusted until a hybrid extraction strategy worked. He explained that this strategy requires a total of 39 wells, 30 placed in the source area and 9 along the Station boundary. This well placement keeps contamination flowing to the wells to be extracted and provides hydraulic containment of the plume.

Mr. Ohannessian said that with the modeling complete, the next step is to start pre-design investigation fieldwork to confirm the modeling predictions. Pump tests will be conducted in areas where this testing has not previously occurred and in areas where additional information is needed. He explained that the Navy would need to determine the vertical distribution of the TCE plume so that well screens in the pumps can be properly placed to extract the contaminated groundwater.

Mr. Ohannessian explained that the current plume flow shifts laterally in one area before continuing in its natural westerly direction. The cause of this lateral shift appears to be influenced or created by pumping from agricultural well 18-TIC55. This agricultural well is also responsible for pulling contamination into the deeper aquifer upgradient from the main body of the plume.

Mr. Ohannessian stated that the pre-design investigation objectives are to:

- Delineate the current TCE plume distribution in the SGU.
- Evaluate TCE plume distribution in the Intermediate Zone.
- Assess the effect of well 18_TIC55 on the VOC plume downward migration.
- Evaluate sustainable extraction rates of the proposed SGU wells.
- Assess TCE mass removal enhancement in the saturated zone using Soil Vapor Extraction (SVE).
- Design the siting of the underground conveyance piping network to avoid crossing utility lines.

Mr. Ohannessian explained that the Navy is focusing on gathering more data on conditions down the centerline of the plume and at the Station boundary. He presented a figure that depicted the known vertical extent of the TCE plume and on it were question marks that indicate where more information is needed. Data from the latest groundwater monitoring rounds shows that very low concentrations of TCE (below cleanup goals) are reaching the principal aquifer. That data was

analyzed and a preliminary determination is that agricultural well 18_TIC55 is the main contributor for TCE reaching the principal aquifer at that SGU location. Additional sampling is required to precisely determine and confirm exactly what factors are contributing to contamination reaching the principal aquifer. In addition, the Navy is working with The Irvine Company (TIC), who owns well 18-TIC 55, to determine options to address this vertical plume migration.

Mr. Ohannessian explained that pre-design investigation data collection would occur this summer in three phases.

- Phase I
 - Groundwater elevation monitoring.
 - Groundwater sampling of existing monitoring wells. Most of the existing wells are part of the groundwater monitoring program, but sampling will also be done from some existing wells that are not part of the program. This will provide more data for use in the RD.
- Phase II
 - Evaluate the data collected in Phase I, update the plume distribution, and revise placement of new monitoring and extraction wells.
 - Installation of new monitoring and extraction wells.
 - Step drawdown and constant rate extraction tests.
 - Mass removal enhancement via SVE.
- Phase III
 - Evaluate data collected during Phase II and update the placement of SGU extraction wells.
 - Update the conveyance piping network and begin siting activities.

Mr. Ohannessian explained that the Pre-Design Investigation then moves into the field investigation scope which involves:

- Aquifer tests to estimate extraction rates and aquifer characteristics.
 - Conduct step drawdown tests and 72-hour constant rate extraction test at each well.
 - Conduct step drawdown at existing wells to verify well efficiency.
- Use of Passive Diffusion Bag samplers for plume delineation. This is a foot long sampler bag that provides analysis of water samples from discreet locations within the same well.
 - Provides depth-specific VOC concentration distribution to aid in the design and screening of extraction and monitoring wells.
- Groundwater treatment enhancement using SVE in contaminant hot spots.
- Collect data with regard to utilities and below ground obstructions that would influence the design of conveyance and ancillary system.
 - Geophysics
 - Trenching to confirm utility depths
 - Collect geotechnical data from areas where extensive trenching will be performed.

Mr. Ohannessian stated that there are different fine-grained lenses in these areas and the pre-design investigation would help determine exactly where contamination is located so that the wells and well screens can be properly placed.

He added that trenching is being considered as part of the design to minimize crossing any of the utilities, which would minimize any impact to reuse and redevelopment of the property. There was a

meeting this week to discuss the location of power sources. He indicated that utilities are only one of a number of issues that are part of this pre-design investigation.

Mr. Ohannessian provided the implementation schedule for the SGU. The Remedial Design Work Plan (30% Design) is scheduled for submittal in April 2003. The Final Remedial Design Work Plan is scheduled for September 2004, with the 90% Design Submittal in April 2004. The Remedial Action Construction for the SGU is scheduled to take place from September 2004 to June 2005. The schedule is similar for the CERCLA component of the IDP. The Remedial Design Work Plan (30% Design) is scheduled for submittal in May 2003. The Final Remedial Design Work Plan is scheduled for October 2004 with the 90% Design Submittal in June 2004. Remedial Action and construction for the CERCLA component of the IDP is scheduled for September 2004 to June 2006.

Discussion

Mr. Zweifel stated that the Navy is only evaluating the situation with the 18_TIC55 well, and a legal ruling is needed to stop The Irvine Company from pumping immediately. Mr. Piszkin responded that well 18_TIC 55 was installed in the late 1920s before MCAS El Toro existed and there are real estate issues that make dealing with this issue an ongoing process. Mr. Zweifel said that a RAB letter or a letter specifically from him could be sent. Mr. Piszkin replied that a RAB letter is not necessary because the Navy is in the process of dealing with this issue.

Mr. Meier said that SVE has previously been performed at MCAS El Toro. He asked if the equipment is still available. Mr. Ohannessian responded that the equipment, which is designed to treat a large area, is still available. However, the present activities involve much smaller areas where contamination is trapped, so new equipment designed to treat smaller areas will be used. He added that the Navy feels comfortable with lowering the water table because this was done during pilot testing a few years ago. Therefore, data is available on how long it takes to depress the water table by a specific level to enhance SVE. He added that the water table can be lowered by 15 to 20 feet fairly quickly.

Mr. Zweifel stated that he has concerns with drawdown that causes depletion of the principal aquifer. Mr. Ohannessian responded that the SGU, which is not used as a water resource, is where the Navy will be lowering the water table. Mr. Zweifel added that the SGU eventually replenishes the principal aquifer. Mr. Ohannessian replied that under the ROD, the contaminated groundwater has to be cleaned up using a pump and treat system. This pump and treat technology was chosen as the best technology for cleanup for these sites after many years of evaluation and investigation. He added that pump and treat technology is coupled with source removal of the soil (which has already taken place) to eliminate a source of continued groundwater contamination.

Mr. Zweifel stated that according to the implementation schedule, in April 2003, there would be a Final Groundwater Modeling Technical Memorandum, a Remedial Design Work Plan (30% Design), a Draft Construction Quality Control/Assurance Plan and a Draft Contingency Plan. He asked for a presentation on all these report at the next RAB meeting.

Ms. Kim Foreman, DTSC Public Participation Specialist, stated that there may be meeting attendees that are unfamiliar with the many acronyms that are being used during presentations at tonight's meeting. She said at the first instance each acronym is stated or presented in the slides it needs to be spelled out in the presentations. Mr. Zweifel added that many of the handout figures are illegible.

Mr. Ohannessian responded that the figures were originally much larger plotted figures used in the reports, and are difficult to read after their size is reduced for use as a slide. Mr. Piszkin supported Ms. Rudolph's suggestion of posting the original larger figures to the sidewalls of the meeting room, and that will be done at future RAB meetings.

Mr. Lee Saunders, Navy SWDIV Public Affairs Officer, suggested that those interested in a more detailed technical presentation could have a thorough technical briefing at the RAB Subcommittee meeting, with a more general presentation at the RAB meeting.

◆ **Environmental Baseline Survey (EBS) Briefing and Update on Status of Property Transfer, Kyle Olewnik, Remedial Project Manager, SWDIV Naval Facilities Engineering Command**

Mr. Piszkin stated that Ms. Olewnik and Earth Tech, the Navy's contractor, have completed a lot of work on the EBS. The Draft EBS is currently under review by the regulatory agencies. The Draft EBS was also provided to Ms. Rudolph and Mr. Woodings. He added that maps from the document have been posted on the walls for reference. Ms. Olewnik explained that tonight's presentation is a status update of the progress since the Fall 2002 EBS presentation.

Ms. Olewnik explained that the Navy has been collecting data and documenting the current status of MCAS El Toro for the EBS. The EBS has documented all the existing environmental data to date for the IR sites and the numerous locations of concern (LOCs). This is very comprehensive effort such that the information obtained and evaluated can support a FOST where property is documented as clean and suitable for transfer.

Ms. Olewnik explained that for the EBS, the Navy has completed a review of all the existing environmental data, and conducted some additional interviews. Visual site inspections of all the buildings that were not inspected in 1995 due to ongoing Station operations were also completed. Over 700 buildings were inspected and 76 were identified as being potential release locations (PRLs). She explained that these buildings would not become LOCs unless contamination is found above the threshold limit that would require action. The Navy is doing further investigation of the 76 buildings and 23 were established as priority due to location in areas that are otherwise clean and ready for transfer in the FOST. A work plan was prepared and field sampling conducted for the priority PRLs. She explained that all the information on these 23 PRLs is included in Appendix F of the EBS.

Ms. Olewnik stated that for each building, a one-page (11" x 17") technical specification sheet was developed that includes background information, sampling locations, a summary of the data analysis, and a risk screening assessment. She explained that the specification sheets are not included in this presentation because they become illegible when shrunk down for slides.

Ms. Olewnik explained the way the Navy identified PRLs for further evaluation. PRLs were identified from past use where hazardous materials were used and stored, such as photo labs or dental clinics. A building was identified as a PRL if the Navy found documentation that a spill or release had occurred. PRLs were also identified if stains were observed during the visual site inspections. Specification sheets were developed and provided to the regulators who worked with

the Navy to develop a sampling strategy for each PRL. She stated that a few specification sheets have not yet received regulator concurrence. Of the 23 priority PRLs, 21 are buildings. The two remaining PRLs are the runways and an agricultural nursery area used for pesticide mixing.

Ms. Olewnik stated that she would present the summaries of a few of the building PRLs as an overview of the data. The handout contains the summaries of all 21 building PRLs. The data on the runways and the pesticide area are not yet available. Additional information on the 21 buildings is included in Appendix F of the EBS. She noted that the majority of the buildings had no samples above residential preliminary remediation goals (PRGs), which are the most stringent PRGs.

The first building the Navy investigated was PRL 46, which is located north of the VOC plume and west of the runways. This building was used as a photo lab, printing plant, and for reprographics. Seven samples were collected in drain and sink areas where contamination was most likely to be found. Samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), cyanide, metals, and pH. PRL 46 had only one elevated sample with a PAH detected at 72 µg/kg (micrograms per kilogram). This is only slightly above the PRG of 62 µg/kg, so the recommendation is for no further action (NFA).

PRL 130 is a building located in the northeast quadrant of the Station that was used for painting and vehicle maintenance. Ms. Olewnik stated that this building was identified as a PRL due to some staining on the ground surface identified during visual site inspections. Five soil samples were collected near sewer lines and in the storage areas. Samples were analyzed for VOCs, SVOCs, total petroleum hydrocarbons (TPH), and metals. None of the samples exceeded the PRGs, so the recommendation is for NFA.

Ms. Olewnik explained that PRL 439 was used as a hospital and dental clinic. Ten samples were collected from the soil and sink drains and were analyzed for VOCs, SVOCs, cyanide, metals, and pH. There were some slightly elevated metals in the soil based on background variance. However, levels did not exceed PRGs. For this PRL the recommendation is for NFA. She stated that there were a few buildings with one or two slightly elevated metal samples similar to PRL 439, but nothing exceeded residential PRGs. The elevated metals are likely due to natural variation, as there was no clear pattern indicating a large metals release.

Ms. Olewnik stated that these 76 PRLs are in addition to the 895 LOCs identified throughout MCAS El Toro. NFA has been recommended for 21 of the priority PRLs, and recommendations for NFA on the remaining 2 priority PRLs will be forwarded to the regulators. There are 53 PRLs remaining, most of them located in the southwest quadrant where property transfer is not scheduled to take place for a few years, so those are not considered a priority at this time.

Schedule

Ms. Olewnik stated that the Draft EBS was submitted for review on February 7, 2003. The Draft Final EBS is scheduled for submittal on April 28, 2003, at the same time as the Draft FOST. The Navy wanted to have the EBS fully reviewed before the Draft FOST was submitted because the FOST is dependent on the EBS. The EBS and FOST are both scheduled to be finalized by the end of June 2003. She added that the Navy is asking the regulators to expedite the review of these documents, and they have been very cooperative in keeping up with this schedule.

Discussion

Mr. Zweifel asked how deep were the soil samples collected from the PRLs. Ms. Olewnik explained that soil samples were collected at various depths down to 3 feet. Ms. Olewnik clarified that the Navy looked for the worst-case scenario; if contamination was not found at 3 feet, then it would not be present at deeper levels.

Mr. Chris Crompton, RAB member representing County of Orange, Environmental Management Agency, asked if work was done looking at absorption of chemicals by building materials such as wood. Ms. Olewnik responded that most of the buildings have concrete slabs and do not contain much wood. If a stain was observed, the slab was cored through into the soil for sampling to ensure that the soil was not impacted. However, any possible contamination absorbed into the concrete has not been considered a release into the environment. She added that they did sample some material within drains, so if there was some sediment present it was sampled. If the sediment had elevated concentrations, then it was treated and disposed of properly. Mr. Crompton asked if there is another part of the program that is assessing the buildings for asbestos and lead. Ms. Olewnik replied that there are other parts of the El Toro environmental program that handle those issues.

Mr. Peter Hersh, RAB member, asked when the data on the runways would be available. Ms. Olewnik stated that the data on the two remaining PRLs would be available by the next RAB meeting. She added that the data from the agricultural area (nursery) showed no samples above PRGs. For the runways, 1 out of 11 samples had slightly elevated PAHs, but there is no evidence of a release. Therefore, both of these PRLs are being recommended for NFA. Mr. Hersh asked if the runways would be transferred with the upcoming FOST. Ms. Olewnik replied that they would be included in the FOST as long as the regulators concur with the recommendation for NFA. Otherwise, the property would be "carved out".

Mr. Hersh asked if any of the PRLs were identified based on the Irvine Solvent Study. Ms. Olewnik responded that Building 307 was the focus of the solvent study. Building 307 was investigated 2 or 3 years ago and is fully addressed in the EBS. Therefore, there was no need for further investigation based on the solvent study.

Mr. Zweifel stated that there are 895 LOCs, and he is concerned that the Navy is recommending NFA on 753 LOCs. Ms. Olewnik replied that those 895 LOCs are all the LOCs for MCAS El Toro since restoration activities began. This includes Underground Storage Tanks (USTs), Aboveground Storage Tanks (ASTs), Temporary Accumulation Areas (TAAs), PCB transformers, everything that has ever been identified as a likely environmental concern. Additionally, even though those 753 LOCs are being recommended for NFA, it does not mean that no action was ever taken. Either the LOC was investigated sufficiently to determine that no release occurred, a release below levels that warrants action occurred, or remedial action has been completed. Concurrence from the regulators has been received on all 753 LOCs. She explained that there are 142 LOCs currently under review by the regulators where action has been completed and that have been recommended for NFA. The regulators are also reviewing data obtained that pertains to the remaining PRLs. The regulators will determine if they concur with the NFA recommendation. She stated that it would take until 2006 or 2007 to address the remaining 146 LOCs. Mr. Piszkin added that the BRAC Business Plan summarizes the entire cleanup program, including LOCs that are not part of the Installation Restoration Program.

Mr. Zweifel asked when the evaluation of the runways PRL took place. Ms. Olewnik replied that samples were collected in February and March 2003. Mr. Zweifel asked if those were core samples and how thick they were. Ms. Olewnik responded that core samples were collected from the runway extensions and those were 18-inches thick. A total of 11 samples were collected along the edges of the runways and beneath the extensions. This sampling is in addition to sampling conducted in 1996 for a PAH anthropogenic study. Mr. Zweifel asked if the runways are constructed with reinforced concrete. Mr. Crispin Wanyoike, EarthTech, Inc., replied that the runways are composed of asphalt and reinforced concrete.

Mr. Hersh asked if the runway sampling included core samples in areas other than the extensions. Ms. Olewnik replied that core samples were not collected from the other runway areas, because it was assumed that the original runway was installed on agricultural land prior to any military operations. Ms. Olewnik replied that oil was applied to the runways for dust suppression and weed abatement, so the samples from the edges of the runways were tested for PCB and TPH contamination. The Navy collected samples at evenly spaced intervals along the runways to determine if there was any accumulation of PCBs. Samples were also collected in the jet blasts areas where PAHs from jet blasts might have accumulated. Mr. Hersh stated that there is a lot of concrete in that area in addition to the runways, and asked if samples were collected underneath the RV parking area. Ms. Olewnik responded that samples were not collected underneath the RV parking area. The Navy used a strategy to keep the sampling to the runways and the extensions where contamination is most likely to be found. The jet blast areas in particular are the most likely areas to find contamination from aircraft activities, and there were no sample results above the PRGs. She added that any areas that had evidence such as staining that suggests a release may have occurred were sampled.

Mr. Zweifel stated that according to his recollection, back in 1991, a company was contracted to spray waste oil around the perimeter fence of the Station. He asked if there was any definitive evidence of this activity. Ms. Olewnik replied that based on visual site inspections, a thorough records and data review, and personnel interviews, the area around the perimeter fence was not considered likely for contamination.

Mr. Zweifel asked for an update on the EBS at the next RAB meeting. Ms. Olewnik responded that a full presentation on the EBS was provided in fall 2002, and this presentation covers all the activity that has been completed since then. There will not be any new activity to report at the next RAB meeting.

Mr. Zweifel asked if the EBS has any information on aerial photo anomalies (APHO). Mr. Piszkin stated that information on the APHOs is included in the EBS. He added that U.S. EPA performed the first APHO analysis for MCAS El Toro, and the Navy supplemented that with additional analysis a few years later. The APHO analysis was used extensively to determine sampling locations. In addition, the GeoSyntec report used the APHO analysis to recommend sampling under the runway extensions because the Marine Corps may have parked aircraft in those areas before the extensions were installed.

Mr. Piszkin explained that there were three major reasons to update the EBS. First, the Station had ceased active operations, so there are a lot of areas that are now accessible. Second, the GeoSyntec report suggested that the Navy had not found all possible contamination. Third, the Irvine Solvent

Study lead to further assessment of Building 307 and the EBS served as a basis for response to that Solvent Study. All of the issues identified in the GeoSyntec report and the Solvent Study are addressed in the updated EBS. The regulators have reviewed the EBS and have provided some initial comments on improvement to the EBS, and the Navy looks forward to submitting the Draft Final EBS in April 2003.

◆ **Open Q & A -- Environmental Topics**

Mr. Zweifel stated that after talking to Mr. Piszkin at the break, he would hold off on writing a letter to The Irvine Company regarding well 18_TIC55. The Navy will be discussing the issue with The Irvine Company on Friday, April 4, 2003.

Mr. Zweifel asked if reuse of a pipeline to carry untreated groundwater from the SGU to the central treatment plant is being considered. Mr. Piszkin responded that reuse of that pipeline is included in the IRWD and OCWD design and they are performing a hydrostatic test on the pipeline

MEETING EVALUATION AND FUTURE TOPICS

Meeting evaluation by RAB members:

RAB members liked the presentations, and indicated that Mr. Piszkin did a wonderful job handling questions.

Suggestions for future presentation topics include:

- Update on Radiological issues
- Update on program budget for regulators
- Explanation of the Fed-to-fed transfer and cleanup priority
- Update on issues with TPH and property transfers
- Update on Sites 1 and 2 Perchlorate conditions
- Update on the runways
- Summary of Round 17 of the Groundwater Monitoring Program

CLOSING ANNOUNCEMENTS/FUTURE MEETING DATES

Upcoming Public Meeting, RAB Meeting, and Subcommittee Meeting

The next RAB meeting will be held from 6:30 to 9 p.m., May 28, 2003 in the regular meeting location, Irvine City Hall, Conference and Training Center (CTC), One Civic Center Plaza, Irvine. A RAB Subcommittee meeting will be held from 5 to 6 p.m., the same evening in Room L-104 at Irvine City Hall.

Recent RAB Subcommittee Meetings

The most recent RAB Subcommittee meeting was held Wednesday, March 26, 2003, in Room L-104, Irvine City Hall, before tonight's RAB meeting.

RAB Meeting Adjournment – March 26, 2003 Meeting

The 62nd meeting of the MCAS El Toro Restoration Advisory Board was adjourned at 8:54 p.m.

See below for list of meeting handouts.

Materials/Handouts Include:

- *RAB Meeting Agenda/Public Notice – 3/26/03 RAB meeting – 62nd Meeting.
- *Meeting Minutes from the January 29, 2003 RAB Meeting – 61st Meeting.
- *MCAS El Toro RAB Subcommittee Meeting Minutes, December 4, 2002 meeting.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (Sept. 2002 – July 2003).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro Restoration Advisory Board – Membership Roster (revised December 2002).
- MCAS El Toro Marine Corps/Navy RAB Co-Chair (address, telephone, fax, e-mail).
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- Internet Access – Environmental Web Sites.
- One-Page Glossary of Technical Terms.
- Environmental Compliance Program Documentation Update (21 March 2003).
- Irvine Ranch Water District Memorandum from Steve Malloy – Update of Current MCAS El Toro Activities.
- MCAS El Toro Base Realignment and Closure Business Plan, Introduction Section, March 2002.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Defense – Institutional Controls, Spring 1997.
- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
- Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
- Department of Defense – Management Guidance for the Defense Environmental Restoration Program, September 2001 & DoD Guidance on Improving Public Involvement in Environmental Cleanup at Closing Bases, December 1997.
- U.S. EPA Fact Sheet – A Citizen's Guide to Natural Attenuation, October 1996.
- Brochure – Commonly Asked questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
- U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
- U.S. EPA Fact Sheet – Perchlorate Update, March 2002.
- Update on Former Tank Farm 555 and JP5 Pipelines at Former MCAS El Toro.
- *Presentation* – MCAS El Toro RAB Meeting, March 26, 2003, Groundwater Monitoring Program Update, presented by Marc Smits, SWDIV Remedial Project Manager.
- *Presentation* – MCAS El Toro RAB Meeting, March 26, 2003, Groundwater Remediation Update, IDP, Modeling, Design and Schedule, IRP Sites 18 and 24, presented by Karnig Ohannessian, SWDIV Remedial Project Manager.
- *Presentation* – MCAS El Toro RAB Meeting, March 26, 2003, Stationwide Environmental Baseline Survey (EBS) Update, presented by Kyle Olewnik, SWDIV Remedial Project Manager.

* Mailed to all RAB meeting mailer recipients on 3/18/03.

Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)

- No Items Submitted

Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)

- No Items Submitted

California Regional Water Quality Control Board (RWQCB), Santa Ana Region

- No Items Submitted

RAB Subcommittee Handouts and Letters (generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)

- Meeting Minutes from the 12/4/02 MCAS El Toro RAB Subcommittee Meeting and Attendees List.

Additional Information Submitted – 3/26/03 RAB Meeting

- No Items Submitted

Copies of all past RAB meeting minutes and handouts are available at the MCAS El Toro Information Repository, located at the Heritage Park Regional Library in Irvine. The address is 14361 Yale Avenue, Irvine; the telephone number is (949) 551-7151. Library hours are Monday through Thursday, 10 am to 9 p.m.; Friday and Saturday, 10 am to 5 p.m.; Sunday 12 p.m. to 5 p.m.

Internet Sites

Navy and Marine Corps Internet Access

Naval Facilities Engineering Command, Southwest Division, Environmental Web Sites (includes RAB meeting minutes):

www.efds.w.navy.mil/environmental/envhome.htm

www.efds.w.navy.mil/environmental/ElToro.htm

Department of Defense – Environmental Cleanup Home Page Web Site:

<http://www.dtic.mil/envirodod/>

U.S. EPA:

www.epa.gov (this is the homepage)

www.epa.gov/superfund (site for Superfund)

www.epa.gov/ncea (site for National Center for Environmental Assessment)

www.epa.gov/federalregister (site for Federal Register Environmental Documents)

Cal/EPA:

www.calepa.ca.gov (this is the homepage)

www.dtsc.ca.gov (site for Department of Toxic Substances Control)

www.swrcb.ca.gov/ (site for Santa Ana Regional Water Quality Control Board)

**MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
March 26, 2003**

RAB MEMBER SIGN-IN SHEET

Name	Signature	Name	Signature
Bell, Richard		Marquis, Suzanne	
Britton, George		Matheis, Mary Aileen	
Broderick, John	⊗	Mathews, Thomas	
Chesney, Triss	⊗	Meier, Fred J.	<i>Fred J. Meier</i>
Crompton, Chris	<i>[Signature]</i>	Olquin, Richard	
Herndon, Roy	<i>[Signature]</i>	Piszkin, Andy - Co-Chair	✓
Hersh, Peter	<i>[Signature]</i>	Reavis, Gail	⊗ <i>[Signature]</i>
Hurley, Greg	⊗	Rudolph, Marcia	<i>[Signature]</i>
Jung, Dan		Sharp, Steven	<i>[Signature]</i>
Malloy, Steve	<i>Steve Malloy</i>	Werner, Jerry	⊗ <i>[Signature]</i>
Moutoux, Nicole	<i>Nicole Moutoux</i>	Woodings, Bob - Co-Chair	<i>[Signature]</i>
Marquis, Roland		Zweifel, Donald E.	<i>[Signature]</i>

⊗ Excused Absence
 ✓ Present (Forgot to Sign-In)

New Attendees
will be added
to the MCAS
El Toro
Mailing List.

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
March 26, 2003

NON-RAB MEMBER SIGN-IN SHEET
Other Attendees, Guests

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Dhananjay Rawal	SHAW E&I	3347 Michelson drive #200 IRVINE, CA 92612	(949) -666-7576 (949)-474-8309	NO
Karnig Ohannessian	SWDIV	1230 Columbia St. #870 San Diego, CA 92101	619-532-0796	
LEN ALLEN	NINYO & MORE	953 N. CARISTRAND ORANGE, CA 92869-1218	(949) 753-7070	
Yvonne Pedersen		11370-3 Camino Playa Cancun San Diego, CA 92124	(858) 278-9899	
Lee H. Saunders	SWD NAVFAC	1220 Pacific Highway San Diego, CA 92132	619-532-3100	
CRISPIN WANTOIKE	EARTH TECH	100 W. BROADWAY, SUITE 240 LONG BEACH CA 90802	762-9512057	

New Attendees
will be added
to the MCAS
El Toro
Mailing List.

MCAS EL TORO
RESTORATION ADVISORY BOARD MEETING
March 26, 2003

NON-RAB MEMBER SIGN-IN SHEET
Other Attendees, Guests

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	<u>COMPLETE MAILING ADDRESS</u> [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Kim Foreman	DTSC	5796 Corporate Ave Cypress, CA 90630	(714) 484-5324	—
SCOTT KENG	US NAVY	CSO MCAS EL TORO	949 726-2506	
ALI KASHANI	PRT		949-588-9473	

MCAS El Toro -- Meeting Schedule
Restoration Advisory Board (RAB)
Full RAB and RAB Subcommittee Meetings

July 2003 – July 2004

RAB Meetings: The Conference and Training Center (CTC) at Irvine City Hall is being reserved for RAB meetings (full RAB) on the last Wednesday of the month, dates are listed below. **Time: 6:30 – 9:00 p.m.**

RAB Subcommittee Meetings: Subcommittee meetings will now be on the *SAME DAY* as the full RAB meeting from 5 to 6:00 p.m. in a smaller room. The preferred room is by the Council Chambers, Room L-104. **General Meeting Time: 5:00 – 6:00 p.m. (Room is available from 4:30 to 6:30 p.m.)**

RAB and Subcommittee Meeting Dates	RAB Meeting Room – Conference and Training Center (CTC) 6:30 – 9:00 p.m.	Subcommittee Meeting Room – Room L-104 5:00 – 6:00 p.m.
July 30, 2003	CTC	Room L-104
September 24, 2003	CTC	Room L-104
*Dec. 3, 2003	CTC	Room L-104
January 28, 2004	CTC	Room L-104
March 31, 2004	CTC	Room L-104
May 26, 2004	CTC	Room L-104
July 28, 2004	CTC	Room L-104

* Traditionally when Thanksgiving falls on the last week of November, the RAB meeting has been held the first week of December. (In Nov. 2003, the last Wednesday of the month is the day before Thanksgiving.)

MARINE CORPS AIR STATION EL TORO
Installation Restoration Program
Restoration Advisory Board Mission Statement and Operating Procedures

This "Marine Corps Air Station (MCAS) El Toro, Installation Restoration Program, Restoration Advisory Board (RAB), Mission Statement and Operating Procedures," replaces the Revised Version dated January 31, 1996. This revised document contains a new section on the RAB Subcommittee, which replaces the old section. The new section is based on modifications made and approved by a majority vote of the RAB members present at the April 21, 1999 RAB meeting with further refinements made at the May 26, 1999 RAB meeting. Modifications incorporated resulted in revising the subcommittee structure so there is now only one RAB subcommittee. (Note: the original Mission Statement document was dated and signed on February 28, 1995.)

The Restoration Advisory Board (RAB) mission statement and operating procedures, herein referred to as "the mission statement and operating procedures", is entered into by the following parties; U. S. Marine Corps (USMC); U. S. Environmental Protection Agency (USEPA), Region 9; California Department of Toxic Substances Control (DTSC), Region 4; and the RAB. Marine Corps Air Station (MCAS) El Toro has developed a Community Relations Plan (CRP) which outlines the community involvement program. The RAB supplements the community involvement effort. A copy of the CPP is available at the information repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714.

I. Mission Statement of the RAB

a. The mission of the RAB is to promote community awareness and obtain timely constructive community review and comment on proposed environmental restoration actions to accelerate the cleanup and property transfer of MCAS El Toro. The RAB serves as a forum for the presentation of comments and recommendations to USMC, Remedial Project Managers (RPMS) of USEPA, and DTSC.

II. Basis and Authority for this Mission Statement and Operating Procedures

a. This mission statement and these operating procedures are consistent with the Department of Defense (DoD), USEPA Restoration Advisory Board Implementation Guidelines of September 27, 1994, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986, particularly Sections 120 (a), 120 (f), 121 (f), and 10 U.S.C. 2705, enacted by Section 211 of SARA, and September 9, 1993, DoD policy letter entitled, "Fast Track Cleanup at Closing Installations".

III. Operating Procedures

A. Membership

1. All RAB members must reside in or serve communities within Orange County.
2. Members shall serve without compensation. All expenses incidental to travel and review inputs shall be borne by the respective members or their organization.
3. If a member fails to attend two consecutive meetings without contacting the RAB, or at least one of the RAB co-chairs, or fulfill member responsibilities including involvement in a subcommittee, the RAB co-chairs may ask the member to resign.
4. Members unable to continue to fully participate shall submit their resignation in writing to either of the RAB co-chairs.
5. Total membership in the RAB shall not exceed 50 members.
6. Applications for RAB membership vacancies shall take place as such vacancies occur. Applications will be reviewed and approved by the Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), USEPA, and DTSC along with consultation with the RAB community co-chair. Candidates will be notified of their selection in a timely manner.
7. Each RAB community member is considered equal whatever their position in the community, and has equal rights and responsibilities.

RAB Membership Responsibilities

- a. Actively participate in a subcommittee and review, evaluate, and comment on technical documents and other material related to installation cleanup, all assigned tasks are to be completed within the designated deadline date.
- b. Attend all RAB meetings.
- c. Report to organized groups to which they may belong or represent, and to serve as a mediator for information to and from the community.
- d. Serve in a voluntary capacity.

B. RAB Structure

1. The RAB shall be co-chaired by the MCAS El Toro BEC, and a community co-chair member. The BEC shall preside over the orderly administration of membership business.

2. A community co-chair will be selected by a majority vote of the RAB community members in attendance. Elected officials and government agency staff members of any legally constituted MCAS El Toro reuse groups are excluded from holding the community co-chair position. The community co-chair will be selected annually on the anniversary of the effective date of the agreement.

Community Co-Chair Responsibilities

- a. Assure those community issues and concerns related to the environmental restoration/cleanup program are brought to the table.
 - b. Assist the USMC in assuring that technical information is communicated in understandable terms.
 - c. Coordinate with the BEC to prepare and distribute an agenda prior to each RAB meeting, and for the review and distribution of meeting minutes.
 - d. Assist subcommittees in coordinating and establishing meeting times/locations.
 - e. The community co-chair may be replaced by a majority vote of the RAB community members present at the meeting in which a vote is undertaken.
3. The RAB shall meet quarterly. More frequent meetings may be held if deemed necessary by the RAB co-chairs. The BEC will facilitate in the arrangement of the meetings and notify members of the time and location.
4. Agenda items will be compiled by the RAB co-chairs. Suggested topics should be given to the BEC or community co-chair no later than two (2) weeks prior to the meeting. The BEC shall be responsible for providing written notification to all RAB members of the upcoming agenda and supporting documents, at least two (2) weeks prior to the date, time, and place of scheduled RAB meeting.
5. The BEC shall be responsible for recording and distribution of meeting minutes. Also, the BEC shall collect a written list of attendees at each meeting, which will be incorporated into the meeting minutes. For quarterly meetings, the minutes will be distributed 30 days prior to the following meeting. For more frequent meetings, the minutes will be distributed as soon as possible.
6. A copy of the RAB meeting minutes will be sent to all RAB members. Supporting documents will be available for public review in the information repository and other repositories as identified.

7. RAB members will be asked to review and comment on various environmental restoration documents. Written comments may be submitted individually by a member, or by the RAB as a whole. Written comments will be submitted to the community co-chair on the subject documents within the schedule as provided for regulatory agency comments. The community

co-chair will consolidate comments from RAB members and provide all comments received to the BEC. The BEC will ensure that a written response is provided to the RAB in a timely manner.

RAB Subcommittee

8. On April 21, 1999, the RAB concurred that only one subcommittee is necessary to provide a concentrated focus on environmental cleanup issues. Therefore, the existing relevant subcommittees envisioned in the original "Mission Statement and Operating Procedures" dated February 28, 1995, have been dissolved, and incorporated into one subcommittee.

a. Membership on the subcommittee will be comprised of volunteers from the RAB, or may be selected by the BEC and the community co-chair.

b. The regular bimonthly RAB subcommittee meeting will continue to be scheduled for the last Wednesday of the month alternating with the regular meeting of the full RAB held at Irvine City Hall, Conference and Training Center, Irvine, California.

c. The subcommittee will set their own agendas and meetings and will be open to the public. The subcommittee chair will notify the BEC and community co-chair of all meeting times and places including additional subcommittee meetings other than the regularly scheduled bimonthly subcommittee meeting.

d. The subcommittee will elect a chair. The subcommittee membership may dismiss a subcommittee chair by a majority vote. Subcommittee chair removal is determined at the meeting where removal is addressed by majority vote of the RAB members present.

e. Membership on the subcommittee will include the RAB community co-chair.

f. Subcommittee status will be reviewed annually, in May, to determine if changes are needed or the continued existence is required.

g. The RAB subcommittee may establish ad hoc subcommittees for specific issues and purposes that would focus efforts on a short-term basis.

h. The subcommittee may request the participation, involvement, and advice of regulatory agency members.

9. MCAS El Toro has established an information repository for public documents relating to restoration activities at MCAS El Toro. The repository is located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714. RAB members, as well as the general public, are authorized access to any documents, studies or information, which have been placed in the repository or distributed at RAB meetings. The community co-chair will be provided one (1) copy of all draft documents. The subcommittee will be provided up to seven (7) copies of draft documents.

IV. Effective Date and Amendments

a. The effective date of this mission statement and operating procedures shall be the date that the last signatory signs this mission statement and operating procedures.

b. This mission statement and operating procedures may be amended by a majority vote of the RAB members present. Amendments must be consistent with the MCAS El Toro Federal Facility Agreement (FFA), and the statues stated in Part 11 of the mission statement and operating procedures, (Basis and Authority for this Mission Statement and Operating Procedures).

V. Terms and Conditions

a. The terms and conditions of this RAB mission statement and operating procedures, and DONs endorsement thereof, shall not be construed to create any legally enforceable rights, claims or remedies against DON or commitments or obligations on the part of DON, and shall be construed in a manner that is consistent with CERCLA, 10 U.S.C. Section 2705, and 40 CFR Part 300.

VI. Termination

a. This mission statement and operating procedures will be terminated upon completion of requirements as stated in the FFA. However, after implementation of the final remedial design, it may be terminated earlier upon a majority vote of the RAB membership.

VII. Signatories to the Membership Mission Statement and Operating Procedures

IN WITNESS WHEREOF, we have set our hand this _____ day of _____ 1995.

MCAS El Toro BRAC Environmental Coordinator

RAB Community Co-Chair

U. S. Environmental Protection Agency RPM

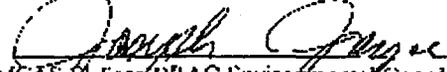
California Department of Toxic Substances Control RPM

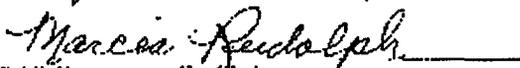
The original "Mission Statement and Operating Procedures", dated February 28, 1995, is on file at Marine Corps Air Station (MCAS) El Toro, Environment and Safety. It was signed by Mr. Joseph Joyce, Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), Ms. Marcia Rudolph, Restoration Advisory Board (RAB), Community Co-chair, Ms. Bonnie Arthur, Environmental Protection Agency (EPA), Remedial Project Manager, and Mr. Juan Jimenez, Department of Toxic Substances Control (DTSC), Remedial Project Manager.

Shown below is an excerpt from the original "Mission Statement and Operating Procedures", dated February 28, 1995 with signatures of the above-mentioned individuals.

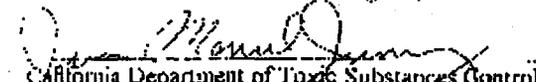
VII. Signatories to the Membership Mission Statement and Operating Procedures

IN WITNESS WHEREOF, we have set our hand this 28th day of FEBRUARY 1995


MCAS El Toro BRAC Environmental Coordinator


RAB Community Co-Chair


U.S. Environmental Protection Agency RPM


California Department of Toxic Substances Control
RPM

MEMBERSHIP APPLICATION

RESTORATION ADVISORY BOARD

MARINE CORPS AIR STATION EL TORO

Conditions for Membership:

Restoration Advisory Board (RAB) members are expected to serve a two-year term and attend all RAB meetings or designate an alternate. The alternate must be jointly approved by the Department of Defense and Community Co-Chairpersons. Members who miss three or more consecutive meetings may be asked to resign. Duties and responsibilities will include reviewing and commenting on technical documents and activities associated with the environmental restoration at the former Marine Corps Air Station El Toro. Members will be expected to be available to community members and groups to facilitate the exchange of information and/or concerns between the community and the RAB.

RAB membership priority will be given to local residents that are impacted/affected by the closure of the installation. The number of RAB members may be limited.

NAME: _____

ADDRESS: _____
Street Apt # City Zip

PHONE: () _____ () _____ Fax: () _____

GROUP AFFILIATION: _____

1. Briefly state why you would like to be considered for membership on the Restoration Advisory Board (RAB)

(Continued on back side)

2. What has been your experience working as a member of a diverse group with common goals?

3. Please indicate if you are interested in being considered for the Community Co-Chairperson position on the RAB by checking the box below:

Yes, I would like to be considered.

4. Are you willing to serve a 2-year term as a member of this RAB?

Yes, I am willing to serve a 2-year term as a member of this RAB.

5. By submitting this signed application, you are aware of the time commitment which this appointment will require for you.

6. By submitting this signed application, you willingly agree to work cooperatively with other members of the committee to ensure efficient use of time for addressing community issues related to environmental restoration of the facility.

PRIVACY ACT STATEMENT: The personal information requested on this form is being collected in order to determine interest in and qualification for membership on the Restoration Advisory Board. The information will be reviewed by a selection panel and will be retained in a file at BRAC Environmental Coordinator's Office at MCAS El Toro. The information will not be disseminated. Providing information on this form is voluntary.

Applicant Signature

Date

Please return your completed application to:

Andy Piszkin
BRAC Environmental Coordinator
Base Realignment & Closure, Environmental Division
MCAS El Toro
7040 Trabuco Road
Irvine, CA 92618

FAX – (949) 726-6586

MCAS El Toro

Installation Restoration Program

MAILING LIST REQUEST COUPON

If you would like to be on the mailing list to receive information about environmental restoration activities at MCAS El Toro, please complete the coupon below. You may mail or fax it, or use the e-mail option. If you chose to send you mailing list request via e-mail, please include the information requested in the coupon.

Base Realignment and Closure
Attn: Ms. Marge Flesch
7040 Trabuco Road
Irvine, CA 92618

FAX – (949) 726-6586

E-mail – fleschmm@efdswnavfac.navy.mil

- Add me to the MCAS El Toro Installation Restoration Program mailing list.
- Send me information on Restoration Advisory Board membership.

Name _____

Street _____

City _____ State _____ Zip Code _____

Affiliation (optional) _____

Telephone _____

MCAS El Toro Installation Restoration Program

BRAC Cleanup Team (BCT) Members* and Key Project Representatives

Lead Agency

Mr. Andy Piszkin*
BRAC Environmental Coordinator
Base Realignment and Closure
Environmental Division
MCAS El Toro
7040 Trabuco Road
Irvine, CA 92618
(949) 726-5398 or (619) 532-0784
piszkinfa@efdswnavfac.navy.mil



For More Information

Administrative Record (AR): the collection of reports and documents used in the selection of cleanup or environmental management alternatives. Anyone is welcome to review AR file documents at MCAS El Toro, BRAC Office, N. 7th Street, Building 83. **To schedule an appointment call Ms. Marge Flesch at (949) 726-5398, Monday-Thursday, 7:00 a.m. to 3:00 p.m.**

Information Repository (IR): copies of reports, documents and other environmental information are available for public review.

Heritage Park Regional Library
14361 Yale Avenue, Irvine, CA
(949) 551-7151

Monday-Thursday – 10 am-9 pm
Friday-Saturday – 10 am-5 pm
Sunday – 12 pm-5 pm

Federal Representatives

Ms. Nicole Moutoux*
Project Manager
U.S. EPA Region IX
75 Hawthorne Street (SFD-H-8)
San Francisco, CA 94105
(415) 972-3012
moutoux.nicole@epamail.epa.gov

Ms. Viola Cooper
Community Involvement Coordinator
Superfund Division
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
U.S. EPA, Region IX
(415) 972-3243 or (800) 231-3075
cooper.viola@epamail.epa.gov

Restoration Advisory Board Point-of-Contacts

Mr. Bob Woodings
RAB Community Co-Chair
(949) 461-3481

Ms. Marcia Rudolph
RAB Subcommittee Chair
(949) 830-9816

State Representatives

Mr. Rafat Abbasi*
Project Manager, Cal/EPA Dept. of Toxic
Substances Control (DTSC)
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5449
rabbasi@dtsc.ca.gov

Mr. John Broderick*
Project Manger, Cal/EPA Regional Water
Quality Control Board (RWQCB)
3737 Main Street, Suite 500
Riverside, CA 92501-3338
(909) 782-4494
jbroderic@rb8.swrcb.ca.gov

Mr. Tim Chauvel
Public Participation Specialist, Cal/EPA
Dept. of Toxic Substances Control (DTSC)
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5487
tchauvel@dtsc.ca.gov



Each of the key steps that comprise the step-by-step process of the Installation Restoration Program is presented in the chart to the right. The current status of each Operable Unit or OU at MCAS El Toro is also provided. Operable Units consist of groups of one or more IRP sites that share common characteristics or are geographically close together. A map on the backside shows the locations of the sites.

Marine Corps Air Station El Toro Installation Restoration Program

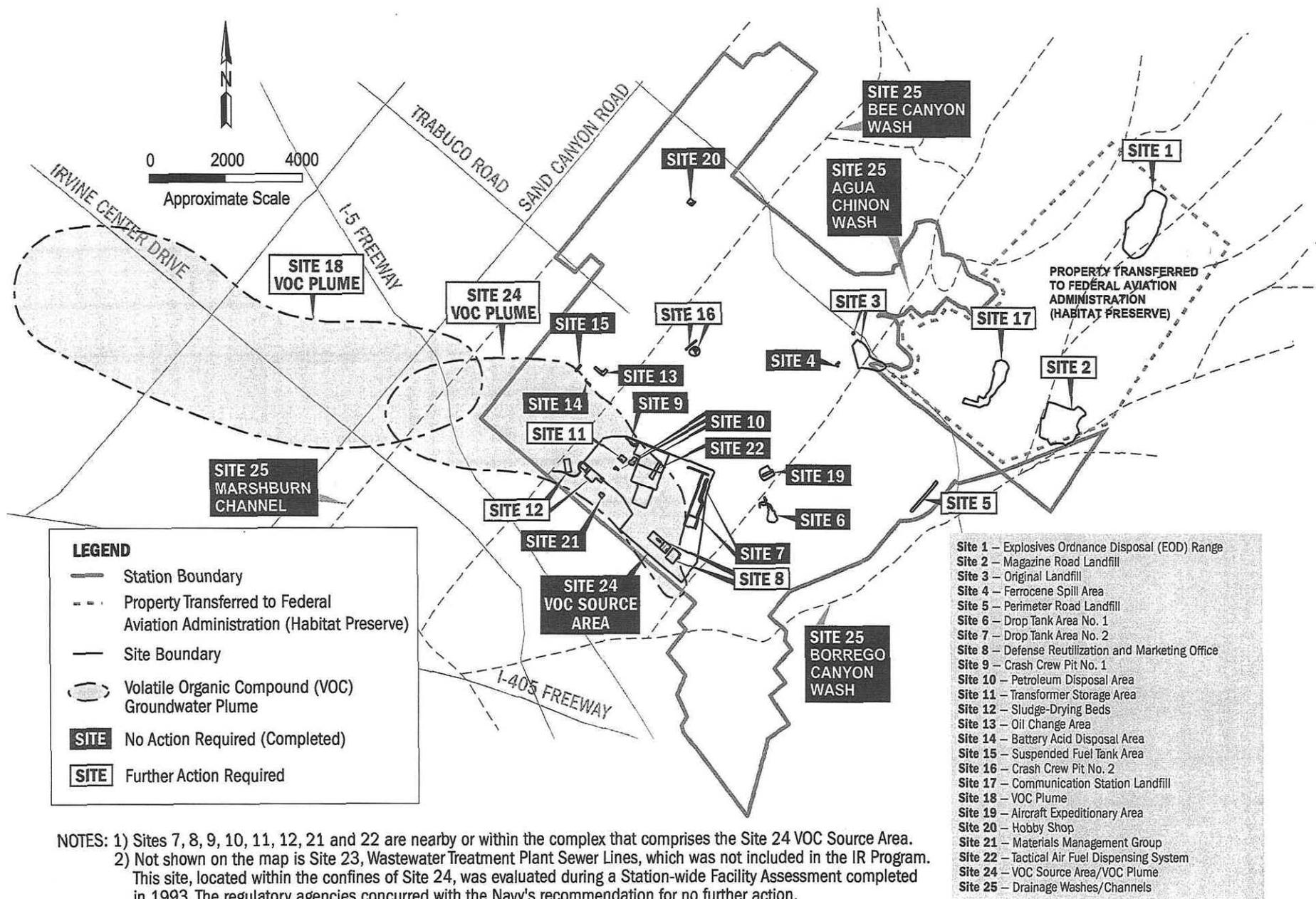
Since 1990, through the Navy's Installation Restoration Program (IRP), the Marine Corps has been identifying, investigating, and cleaning up contamination resulting from past operations at MCAS El Toro. Contaminants targeted for cleanup include solvents, paint strippers, battery acid, fuel, oil, and metals resulting from past waste management and disposal operations. All cleanup activities at former MCAS El Toro comply with the cleanup process of the U.S. Environmental Protection Agency (U.S. EPA) as defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The completion of environmental cleanup activities will facilitate transfer of former MCAS El Toro property.

The Marine Corps/Navy has identified 24 IRP sites at former MCAS El Toro. To effectively manage the overall cleanup effort for the IRP, the Marine Corps/Navy has grouped together the contaminated sites that share common characteristics into Operable Units or OUs. IRP sites undergo a detailed investigation and evaluation to determine if cleanup is required. The Marine Corps/Navy and the regulatory agencies concur that based on the results of environmental investigations conducted, no further action is necessary at 13 of the IRP sites, while 11 IRP sites require further investigation and/or assessment, or have a remedial (cleanup) action currently underway. The map provided on the backside shows the locations of all 24 IRP sites.

MCAS El Toro Installation Restoration Program Progress Status Update

NPL Listing/ Federal Facilities Agreement Signed	Remedial Investigation (RI)	Feasibility Study (FS)	Proposed Plan/ Public Comment Period	Record of Decision (ROD)/ Responsiveness Summary	Remedial Design	Remedial Action
	OU-1 (Site 18)/OU-2A (Site 24)—Groundwater, Remedial Design Underway					
	OU-2A (Site 24)—Soil Remedial Action Completed, Draft Final Closure Verification Report Issued					
	OU-2B (Sites 2 & 17)—Landfills, 90% Remedial Design Package Issued					
	OU-2C (Sites 3 & 5)—Landfills, Draft ROD Issued					
	OU-3 (Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, 22) & OU-2A (Site 25)—No Action Required Completed ✓					
	OU-3 (Site 11)—Soil Site, Risk Under Reevaluation, ROD Explanation of Significant Differences (ESD) Pending					
	OU-3 (Sites 8 & 12)—Soil Sites, Draft ROD Issued, Risk Under Reevaluation					
	OU-3 (Sites 7 & 14)—Soil Sites—No Action Required Completed ✓					
	OU-3 (Site 16)—Soil & Groundwater, Draft ROD Issued					
	OU-3 (Site 1)—EOD Range					
The Station was placed on U.S. EPA's National Priorities List in Feb. 1990.	The RI identified the nature and extent of soil and groundwater contamination.	The FS identified remedial alternatives for soil and groundwater cleanup.	The public has the opportunity to comment on the preferred remedy and other proposed alternatives.	The selected remedial alternative and responses to public comments will be documented in the ROD.	Detailed specifications for the selected remedy will be developed.	Marine Corps/Navy implements design for cleanup.

MCAS El Toro Installation Restoration Program Site Location Map



Internet Access Environmental Web Sites

Southwest Division Naval Facilities Engineering Command Web Site:

<http://www.efdswnavfac.navy.mil/environmental/envhome.htm>

Department of Defense - Environmental Web Page:

<http://www.dtic.mil/envirodod/>

U.S. EPA:

www.epa.gov (homepage)

www.epa.gov/superfund/ (Superfund)

www.epa.gov/ncea (National Center for Environmental Assessment)

www.epa.gov/federalregister (Federal Register Environmental Documents)

Cal/EPA:

www.calepa.ca.gov (homepage)

www.dtsc.ca.gov (Department of Toxic Substances Control)

www.swrcb.ca.gov/ (Santa Ana Regional Water Quality Control Board)

Glossary of Technical Terms

Air Stripping: A treatment technology that transforms VOCs in groundwater to gas for removal and treatment.

Aquifer: A particular zone or layer of rock or soil below the earth's surface through which groundwater moves in sufficient quantity to serve as a source of water.

Cleanup Goals: Chemical concentration levels that are the goals of the remedial action. Once the cleanup goals have been achieved, the remedy is considered protective of human health and the environment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Commonly known as the Superfund. This law authorizes EPA to respond to past hazardous waste problems that may endanger public health and the environment. CERCLA was authorized and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Domestic Use: Use of water for drinking, cooking, and bathing.

Downgradient: Groundwater that is downstream of an area of soil or groundwater contamination.

Extraction Wells: Wells used to pump groundwater to the surface for treatment or for use.

Feasibility Study (FS): An analysis of cleanup or remedial alternatives to evaluate their effectiveness and to enable selection of a preferred alternative.

Federal Facility Agreement: A voluntary agreement entered into by the Navy, U.S. EPA, and Cal-EPA (Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB)) establishing an overall framework for how the investigation and cleanup of MCAS El Toro is to be conducted.

Groundwater: Underground water that fills pores in soil or openings in rocks.

Infiltration: Process by which dissolved chemical constituents are carried by water through the soil.

Intermediate Zone: A generally low permeability layer that separates that shallow groundwater unit from the principal aquifer at MCAS El Toro.

Maximum Contaminant Levels (MCLs): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.

Maximum Contaminant Level Goal: A non-enforceable concentration of a drinking-water contaminant, set at a level at which no known adverse effects on human health occur.

Monitored Natural Attenuation: Refers to the routine sampling and testing of groundwater to assess the cleanup effectiveness of natural attenuation processes.

Monitoring Well: Wells drilled at specific locations either on or near a hazardous waste site, for the purpose of determining direction of groundwater flow, types and concentrations of contaminants present, or vertical or horizontal extent of contamination.

Natural Attenuation: The process by which a compound is reduced in concentration over time, through adsorption, degradation, dilution, and/or transformation.

Nitrates: Compounds containing nitrogen which dissolve in water and may have harmful effects on humans and animals. Nitrates are commonly used in fertilizers.

Operable Unit (OU): Term for each of a number of separate activities undertaken as part of a Superfund site cleanup.

Plume: A three-dimensional zone within the groundwater aquifer containing contaminants that generally move in the direction of, and with, groundwater flow.

Principal Aquifer: The main (regional) water-bearing aquifer in the vicinity of MCAS El Toro.

Rebound: The tendency of soil gas concentrations to increase after SVE is turned off.

Record of Decision (ROD): A public document that explains what cleanup alternative will be used at a specific NPL site. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Remedial Action (RA): The actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a Superfund site.

Remedial Design (RD): The design of the selected cleanup alternative for a Superfund site.

Remedial Investigation (RI): One of the two major studies that must be completed before a decision can be made about how to clean up a Superfund site. (The FS is the second major study.) The RI is designed to determine the nature and extent of contamination at the site.

Shallow Groundwater Unit: The shallowest water-bearing zone beneath MCAS El Toro.

Soil Gas: Gas found in soil pore space. In contaminated areas, soil gas may include VOCs.

Soil Vapor Extraction (SVE): A process whereby contaminated soil gas is brought to the surface for treatment.

Trichloroethene (TCE): A volatile organic compound that has been widely used as an industrial solvent. TCE is a colorless, odorless liquid that, when inhaled or ingested in large amounts, can cause irritation of the nose, throat, and eyes, nausea, blurry vision, or dermatitis. EPA has classified TCE as a "probable human carcinogen."

Total Dissolved Solids (TDS): Used to reflect salinity of groundwater.

Upgradient: Groundwater that is upstream of an area of soil or groundwater contamination.

Volatile Organic Compound (VOC): An organic (carbon containing) compound that evaporates readily at room temperature. VOCs are commonly used in dry cleaning, metal plating, and machinery degreasing operations.

Water Quality Standards: State-adopted and U.S. EPA-approved ambient standards for water bodies. The standards cover the use of the water body and the water quality criteria which must be met to protect the designated use or uses.



**Environmental Confirmation/Compliance Program Documentation Update
Former Marine Corps Air Station, El Toro
28 May 2003**

Solid Waste Management Units (SWMUs): Underground Storage Tank (UST) Sites, Resource Conservation and Recovery Act Facility Assessment (RFA) Sites, and other Locations of Concern

Recent Regulatory Submittals

Site Identification	Date of Submittal	Title of Submittal and Lead Regulatory Oversight Agency
TAA 673	23 May 2003	Closure Report - DTSC
UST 30	21 May 2003	Closure Report - Orange County Health Care Agency
TAA 606	15 May 2003	Closure Report - DTSC
TAA 289	2 April 2003	Response to comments - DTSC
TAA 441	28 March 2003	Response to comments - DTSC
Groundwater Data Summary	21 March 2003	Summary - RWQCB
TAA 800	21 March 2003	Addendum for Summary Report - DTSC
TAA 779	7 February 2003	Addendum for Summary Report - DTSC
AST 386A & AST 386B	31 January 2003	Documentation - DTSC
UST 800G	28 January 2003	Information Package - DTSC
Sump at Building 47	23 January 2003	Information Package - DTSC
Sump at Building 392	17 January 2003	Information Package - DTSC
TAA 900	10 January 2003	Summary Report - DTSC
TAA 651A	10 January 2003	Closure Report - DTSC
TAA 770	10 January 2003	Closure Report - DTSC
UST 392D	26 December 2002	Site Assessment Addendum - RWQCB
UST 761B/OWS 761A	26 December 2002	Site Assessment - RWQCB

DTSC – Department of Toxic Substances Control

RWQCB – Regional Water Quality Control Board

TAA – Temporary Accumulation Area

OWS – Oil/Water Separator

AST – Aboveground Storage Tank

UST – Underground Storage Tank

IRVINE RANCH WATER DISTRICT

MEMORANDUM

TO: MCAS El Toro, Base Closure Team DATE: May 28, 2003
FROM: Steve Malloy FILE NO.: BCT Update 5-28-03
SUBJECT: Irvine Desalter Project Update

Well Sites

- IRWD negotiating with Irvine Unified School District for Wells ET-2 & 77.
- Meeting with IUSD Board this week; site lease approval anticipated June 3, 2003.

Well Drilling

- Copies of ET-2 plans & spex sent to BCT as non-FFA deliverable on May 9, 2003.
- Beylik is the apparent low bidder for Wells ET-2 (\$827,000).
- GAC treatment of all well development water to capture TCE.
- Public meetings being planned.
- Well drilling to begin June 23, 2003; end Sept. 12, 2003.
- Screen placement decision – Who would like to be involved?

Pipelines

- Proposed alignments documented in 30% Design submittal.

Central Treatment Plant Site

- Proceeding with the site adjacent to the post office.
- Getting Irvine Company entry permit to do geotechnical investigations.

Regional Brine Line

- Preparing feasibility study to divert brine to OCSD's ocean outfall in Huntington Beach.
- Also studying using SOCWA's ocean outfall at Aliso Beach, south Laguna.
- Need 20' wide easement along southern boundary of base for brine line.

Pilot Testing

- ET-1 started on Apr. 3, 2003.
- 77.5% recovery worked well; goal is 80%.
- Low TCE rejection by membrane.
- SGU started on Apr. 23, 2003.
- 72.5% recovery worked OK (goal is 75%); some possible membrane fouling.
- Medium TCE rejection by membrane; complete TCE removal through air stripper.

Permits

- Starting NPDES permit application for Santa Ana RWQCB.
- Meeting June 4 with San Diego RWQCB for brine discharge to SOCWA outfall.

FFA Deliverables to BCT

- Response to DON/Earth Tech comments on the draft 30% design submittal being prepared.
- Draft 30% Design submittal from IRWD sent to BCT on May 16, 2003 (one week early):
 - Draft 30% Design
 - Draft 30% Attachments (Hydrology/Well Design, SGU Cost Analysis, Pilot Testing Protocol, Pilot Equipment Specifications, Site Health and Safety Plan, SGU Water Quality, & Raw Potable Water Pipeline Alignment Memo)
 - Draft Remedial Design/Remedial Action Work Plan.
 - Draft CQA/QC Plan.
 - Draft Contingency Plan.
- BCT comments due to IRWD by July 15, 2003

Deliverables from DON

- Draft SGU 30% Design submittal from DON to IRWD on May 5, 2003
- IRWD comments due to DON by June 3, 2003



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, D. C. 20350-2000

IN REPLY REFER TO

5090
Ser N453D/1U595697
NOV 29 2001

From: Chief of Naval Operations

To: Distribution

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL
RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)
STATUTORY FIVE-YEAR REVIEWS, NOVEMBER 2001

Ref: (a) Navy/Marine Corps Installation Restoration Manual
(Feb 97)

Encl: (1) Navy/Marine Corps Policy for Conducting Comprehensive
Environmental Response, Compensation, and Liability
Act (CERCLA) Statutory Five-year Reviews, November,
2001

1. Enclosure (1) establishes procedures for conducting five-year reviews, facilitates consistency of five-year reviews across the Navy/Marine Corps, clarifies current policy, and delineates roles and responsibilities of various entities in conducting or supporting five-year reviews.

2. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that remedial actions resulting in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to assure protection of human health and the environment, regardless of the National Priorities List (NPL) status of the site or installation.

3. This policy has been coordinated and concurred with by the Marine Corps.

4. This policy will be included in the next revision to reference (a). It will also be available on the N45 website (<http://web.dandp.com/n45/index.html>) under Environmental Restoration/Training, References.

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL
RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)
STATUTORY FIVE-YEAR REVIEWS

5. Questions or comments concerning this policy should be
directed to Mr. Geoffrey D. Cullison, CNO N453D, 2211 So. Clark
St., Arlington, VA 22202-3735, (703) 602-5329 (DSN 332-5329),
cullison.geoffrey@hq.navy.mil.



R. T. Nolan
By direction

Distribution:

CINCPACFLT (N465)
CINCLANTFLT (N465)
CMC (LFL)
COMNAVAIRSYSCOM (AIR-8.3)
COMSPAWARSYSCOM (07-1)
COMNAVFACENGCOS (ENV)
COMNAVSEASYSYSCOM (SEA 00T)
COMNAVREG NE (N8)
COMNAVREG MIDLANT (910)
COMNAVREG SE (N4)
NTC GREAT LAKES IL (N45)
CNET (OS441)
COMNAVRESFOR (N464)
COMNAVREG SW (N4)
COMNAVREG PEARL HARBOR HI (N465)
COMNAVMAR (N45)
COMNAVREG NW (N45)

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**Navy/Marine Corps Policy for
Conducting Comprehensive Environmental Response, Compensation,
and Liability Act (CERCLA) Statutory Five-year Reviews
November 2001**

Ref: EPA Comprehensive Five-Year Review Guidance, June 2001, EPA 540-R-01-007,
OSWER No. 9355.7-03B-P, §1.3.1

1. Statutory requirements:

a. The statutory requirement for five-year review was added to CERCLA as part of the Superfund Amendments and Reauthorization Act of 1986 (SARA). A five-year review is required when both of the following conditions are met, whether the site is on the National Priorities List (NPL) or not:

1) Upon completion of the remedial actions at a site, hazardous substances, pollutants, or contaminants will remain above levels that allow for unlimited use and unrestricted exposure. For example, if a site is restricted to industrial use because hazardous substances, pollutants, or contaminants remain above levels that allow for unlimited use and unrestricted exposure, five-year reviews must be conducted.

2) The Record of Decision (ROD) or Decision Document (DD) for the site was signed on or after October 17, 1986 (the effective date of SARA).

b. CERCLA §121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five-years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

c. The National Contingency Plan (NCP), 42 U.S.C. § 9621(c), implementing regulations, 40 C.F.R. Part 300.430(f)(4)(ii), provide:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

d. Consistent with Executive Order 12580, the Secretary of Defense is responsible for ensuring that five-year reviews are conducted at all qualifying Department of Defense (DoD) cleanup sites.

e ... EPA classifies five-year review as either "statutory" or "policy" depending on whether it is required by statute or conducted as a matter of EPA policy. In particular, EPA views five-year reviews conducted of RODS issued before October 17, 1986 as being conducted as a matter of policy because the five-year review requirement didn't become law until that date. Statutory five-year reviews are required by law and will be conducted by the Navy/Marine Corps at any site meeting the requirements of the law. We generally do not conduct policy five-year reviews.

2. Definitions:

a. For purpose of this policy, "site" means a location on an installation's property where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located where, upon completion of the remedial action, hazardous substances, pollutants, or contaminants will remain at the site above levels that allow for unlimited use and unrestricted exposure. This includes areas off the installation where contamination may have migrated. For purpose of this policy, "site" also means Operable Unit.

b. "Unlimited use" and "unrestricted exposure" mean that there are no restrictions on the potential use of land or other natural resources.

3. Purpose of a five-year review:

a. The purpose of a five-year review is not to reconsider decisions made during the selection of the remedy, as specified in the ROD, but to evaluate the implementation and performance of the selected remedy.

b. Where a site has a remedial action that is still in the Remedial Action-Construction (RA-C) phase or the Remedial Action-Operations (RA-O) phase, a five-year review should confirm that immediate threats have been addressed and that the remedy will be protective when complete.

c. Where a site is in the Long Term Management (LTMgt) phase, the five-year review should confirm whether the selected remedy remains protective.

d. When the five-year review indicates that the remedy is not performing as designed, the report should recommend actions to improve performance.

4. NPL status: The continuing presence of hazardous substances, pollutants, or contaminants above levels that allow for unlimited use and unrestricted exposure under CERCLA establishes the requirement for a five-year review, not the NPL status of the installation. Reference (a) states that EPA will delete an installation from the NPL when deletion criteria have been satisfied and that an installation will not be kept on the NPL solely because it is subject to five-year reviews. If the installation has been deleted or is in the process of being deleted, the five-year review report should address the status of any deletion action.

5. Resource Conservation and Recovery Act (RCRA) response: Five-year reviews are not required if cleanup of a site is addressed under RCRA corrective action. In cases where both RCRA and CERCLA authorities are used to address different sites on an installation, a five-year review is only required for those portions of the installation being addressed under CERCLA that meet the criteria for five-year reviews. When a RCRA action is included as a portion of a ROD or DD or other CERCLA decision document, the RCRA action should be included in the five-year review.

6. Interim remedial action: By itself, an interim remedial action at a site does not start the clock for a five year review of that site; it is treated like any other remedial action for the purpose of five-year reviews. An interim remedial action triggers the five-year review clock if it meets any of the criteria outlined in paragraph 1. above. For instance, if an alternate water supply is installed but hazardous substances, pollutants, or contaminants remain onsite above levels that allow for unlimited use and unrestricted exposure, a review is required by statute. A subsequent action may then reduce the hazardous substances, pollutants, or contaminants to levels allowing unlimited use and unrestricted exposure. Remedial actions are those actions consistent with a permanent remedy taken instead of, or in addition to, removal action.

7. Five-year review "trigger":

a. In keeping with the requirements of CERCLA §121(c) and the NCP, initiation of the selected remedial action that will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure after the remedial action is complete is the "trigger" that starts the five-year review clock. For most Navy/Marine Corps sites, this "trigger" is the onsite mobilization for commencement of the RA-C phase.

b. The first site on an installation that triggers the five-year review clock triggers the five year review clock for the entire installation, or that portion of the installation addressed under the ROD or DD.

c. Where the selected remedy will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure but will not require a RA-C phase, such as monitored natural attenuation using existing wells and/or institutional controls, the remedy start date is the ROD or DD signature date and therefore is also the trigger for the five-year review clock.

8. Five-year review due dates:

a. The five-year review report for a site is to be completed and signed within five years of the trigger date for that site. Subsequent five-year reviews should be signed no later than five-years after the signature date of the previous five-year review reports.

b. Because the regulators do not have a statutory role in the conduct of five-year reviews, it will be up to Navy/Marine Corps to enforce the five-year review dates. To assist the field in tracking five-year review dates, there is a field in NORM that allows management to track these dates.

9. Results of a five-year review: The results of the five-year review are presented in a five-year review report.

a. The five-year review report should;

- 1) clearly state whether the remedy is or is expected to be protective,
- 2) document any deficiencies identified during the review, and
- 3) recommend specific actions to ensure that a remedy will be or will continue to be protective.

b. Where necessary, five-year review reports should include descriptions of follow-up actions needed to achieve, or to continue to ensure, protectiveness. Along with these recommendations, the report should list a timetable for performing the actions and the parties responsible for implementation.

c. If it is determined that cleanup levels or remedial action objectives cannot be achieved through the remedial action, the recommendations may suggest the type of decision process (e.g., ROD or DD, ROD or DD Amendment, Explanation of Significant Differences (ESD)) needed to evaluate or make changes to the remedy, cleanup levels, or remedial action objectives.

d. For sites that are still in the RA-O phase (pre-Response complete) where evaluation and optimization of the remedial action operations are performed routinely, most information for the five-year review should be readily available.

10. Review and Signature: Pursuant to the delegations of authority in sections 2(d) and 11(g) of Executive Order 12580, and DoD Instruction 4715.7 of 22 April, 1996, Department of the Navy (DON) is the approval authority for CERCLA five-year reviews conducted at sites under its jurisdiction, custody or control.

a. Five-year reviews completed with ER,N or BRAC funds will be signed by the Commanding Officer of the supporting EFD/A.

b. Five-year reviews completed with installation funds will be signed by the installation Commanding Officer/Commanding General or a designee of the Regional Environmental Coordinator.

c. Regulatory agencies have no statutory review authority in five-year reviews conducted by DON in its Lead Agent authority except where some past DON Federal Facility Agreements (FFAs) have included five-year review reports as enforceable primary documents. Future FFAs and Federal Facility-State Remediation Agreements (FFSRAs) are not to include five-year review reports as either primary or secondary documents. However, five-year reviews may be submitted to the appropriate regulators for their review and comment as a matter of partnering.

11. Keeping the community informed:

a. Because the five-year review addresses the status and protectiveness of a remedy, it should be used to communicate this information to the community. If the Restoration Advisory Board (RAB) is still active at the installation, preparation for and conduct of the five-year review should be an agenda item at each RAB meeting conducted while the five-year review is underway. Where necessary, additional RAB meetings should be held to ensure the community is kept up to date on progress and results of the five-year review. If the RAB is inactive or has disbanded, the installation shall determine the most effective approach to informing the community based on the level of community interest. At a minimum, community involvement activities during the five-year review should include notifying the community that the five-year review will be conducted, notifying the community that the five-year review has been completed, and providing the results of the review to the local site repository.

b. The installation Public Affairs Officer can recommend appropriate methods of communication (e.g., public notices, fact sheets) for notifying the public.

c. Upon completion of the five-year review and Five-Year Review Report, a brief summary of the report should be made available to the stakeholders. The summary should include a short description of the remedial action, any deficiencies, recommendations and follow-up actions that are directly related to protectiveness of the remedy, and the determination(s) of whether the remedy is or is expected to be protective of human health and the environment. The summary should also provide the location of the site information repository and/or where a copy of the complete report can be obtained, and provide the date of the next five-year review or notify the community when five-year reviews will no longer be necessary.

e. Five year reviews are not Administrative Record material and are not to be included therein. However, the RPM should ensure that the signed five-year review report is placed in the site information repository.

12. Discontinuing five-year reviews:

a. There is no statutory provision for the discontinuation of statutory reviews. However, EPA acknowledges in reference (a) that five-year reviews may no longer be needed when no hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure, reference (a), paragraph 1.2.4. The basis for this finding should be documented in the final Five-Year Review report.

b. If a ROD or DD states that a five-year review will be performed, but prior to conducting the first review the EFD/EFA determines that no review is required, this finding should be recorded in a major document subject to public comment, such as a Proposed Plan or a Notice of Intent to Delete.



INSTITUTIONAL CONTROLS

What they are and how they are used

WHAT IS AN INSTITUTIONAL CONTROL?

The purpose of this fact sheet is to provide an overview of Institutional Controls (IC) and how they are used. A separate fact sheet is being developed on establishing and maintaining ICs as part of an environmental cleanup remedy decision. That fact sheet will also be available on the Department of Defense (DoD) BRAC Environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.

- ICs have a long history as a tool in property law and their use in a non-environmental context is quite common. An example of an IC in a non-environmental context is a prohibition against having a television reception satellite dish in a planned community.
- An IC is a legal or institutional mechanism that limits access to or use of property, or warns of a hazard. An IC can be imposed by the property owner, such as use restrictions contained in a deed or by a government, such as a zoning restriction.

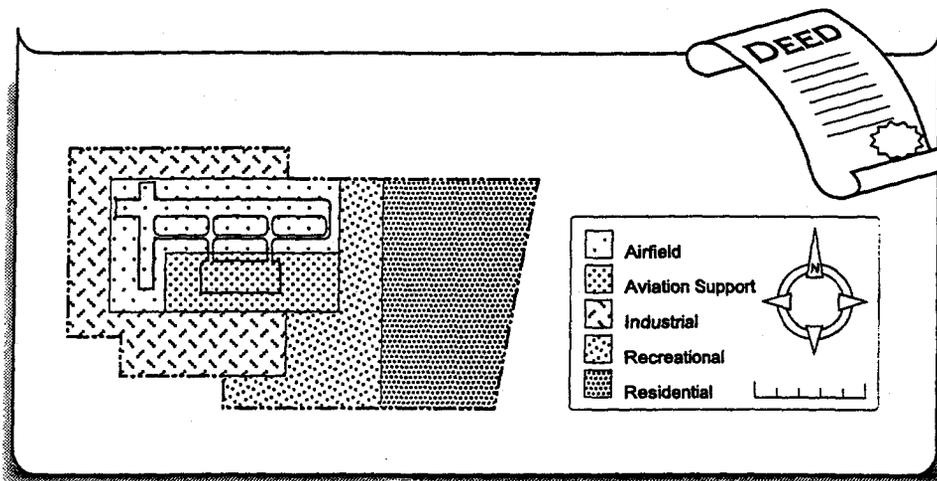
USES OF INSTITUTIONAL CONTROLS IN ENVIRONMENTAL CLEANUP

- ICs are used to ensure protection of human health and the environment.
- ICs are used to protect ongoing remedial activities and to ensure viability of the remedy.
- ICs are specifically provided for by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP).
- DoD has used and will use ICs in remedial activities during cleanup and as part of a final remedy.

TYPES OF INSTITUTIONAL CONTROLS

ICs fall into two categories:

- Proprietary controls
- Governmental controls



WHAT IS A PROPRIETARY CONTROL?

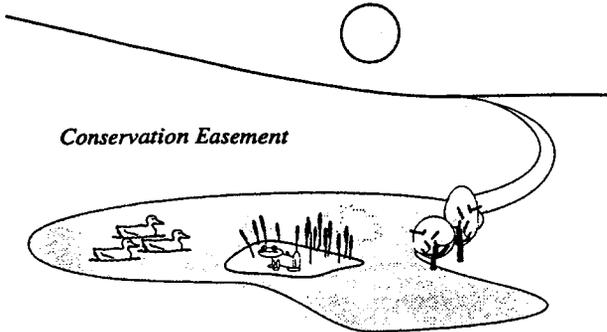
- A proprietary control is a private contractual mechanism contained in

the deed or other document transferring the property.

- Proprietary controls involve the placement of restrictions on land through the use of easements, covenants, and reversionary interests. Easements, covenants, and reversionary interests are nonpossessory interests. Nonpossessory interests give their holders the right to use or restrict the use of land, but not to possess it.
- State law varies on the application and enforcement of such restrictions.

What is an Easement?

- An easement allows the holder to use the land of another, or to restrict the uses of the land. For example, a conservation easement restricts the owner to uses that are compatible with conservation of the environment or scenery.



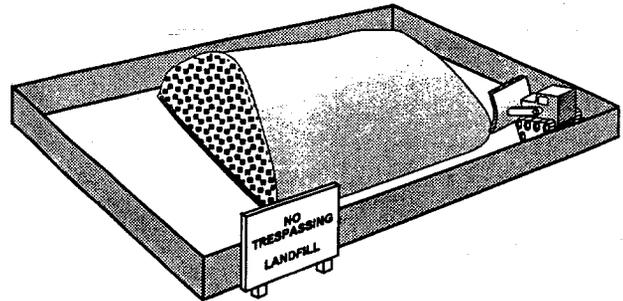
- If the owner violates the easement, the holder may bring suit to restrain the owner.
- An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, benefits by having beach access through your land.
- An easement "in gross" benefits an individual or company. For example, allowing the utility company to come on your land to lay a gas line. The utility company, the holder of the easement, benefits by having use of the land to lay the gas line.
- An affirmative easement allows the holder to use another's land in a way that, without the ease-

ment, would be unlawful-- for example, allowing a use that would otherwise be a trespass.

- A negative easement prohibits a lawful use of land — for example, creating a restriction on the type and amount of development on land.

What is a Covenant?

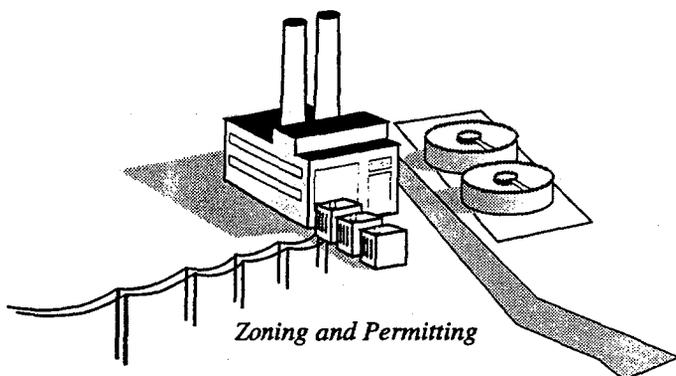
- A covenant is a promise that certain actions have been taken, will be taken, or may not be taken.
- Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners.
- An affirmative covenant is a promise that the owner will do something that the owner might not otherwise be obligated to do -- for example, maintaining a fence on the property that surrounds a landfill.



- A negative covenant is a promise that an owner will not do something that the owner is otherwise free to do -- for example, restricting the use of groundwater on the land.

What is a Reversionary Interest?

- A reversionary interest places a condition on the transferee's right to own and occupy the land. If the condition is violated, the property is returned to the original owner or the owner's successors.
- Each owner in the chain of title must comply with conditions placed on the property. If a condition is violated the property can revert to the original owner, even if there have been several transfers in the chain of title.



WHAT IS A GOVERNMENTAL CONTROL?

- Governmental controls are restrictions that are within the traditional police powers of state and local governments to impose and enforce.
- Permit programs and planning and zoning limits on land use are examples of governmental controls.

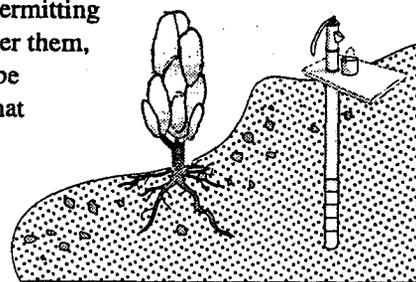
What are possible governmental controls?

- **Zoning**— Use restrictions imposed through the local zoning or land use planning authority. Such

restrictions can limit access and prohibit disturbance of the remedy. Zoning authority does not exist in every jurisdiction.

- **Siting restrictions** — Control land use in areas subject to natural hazards, such as earthquakes, fires, or floods. Such restrictions are created through statutory authority to require that states implement and enforce certain land use controls as well through local ordinances.

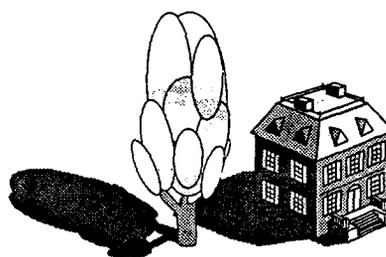
- **Groundwater restrictions**— Specific classification systems used to protect the quality of or use of ground water. These systems operate through a state well permitting system. Under them, criteria may be established that must be met before a use permit or construction is allowed.



Examples of the Application of Institutional Controls

Historic Preservation at U.S. Customs House, Boston

In 1987, the Custom House in Boston was deemed excess and the General Services Administration (GSA), through special legislation, sold it to the Boston Redevelopment Authority. At the time of the sale, the GSA placed an historic preservation covenant in the deed to protect the exterior architectural and structural integrity of the building. The Boston Redevelopment Authority wanted to resell the Custom House to a developer that planned to connect it by a skyway to a building half a block away. When GSA refused to remove the historic covenant, the deal fell through. Several years later, the Marriott Corporation proposed a plan to buy the Custom House and create an urban park between the Marriott at the Wharf and the Custom House. Under the plan, the building will retain its historic appearance and will be used as one of Marriott's time-share properties.



Examples of the Application of Institutional Controls

Limiting Subsurface Use at Former Minuteman Missile Silos

With the end of the Cold War, the Department of Defense announced the retirement of the Force Minuteman missile system in North and South Dakota and Missouri. As allowed by the Strategic Arms Reduction Treaty, the Air Force, after extensive technical analysis and public comment, determined that dismantlement of the missile facilities would be accomplished by imploding the structures, capturing the contamination within the concrete structures; capping each structure with a combination of three feet of soil and a thick plastic liner; and contouring the landscape at an additional depth of seven feet above the facility. The Air Force also determined that CERCLA 120(h) applied to the transfer of these facilities to non-federal entities. The Air Force and the U.S. Environmental Protection Agency (EPA) found a sensible approach to address environmental issues, which was formalized in an agreement between the two agencies. The agreement calls for the GSA in disposing the property to notify federal and state regulators when the property is transferred; provide prior notice to and obtain the approval of federal and state regulators for any construction or other activity that would affect the underground facility or groundwater monitoring wells; and place restrictions in the deed of conveyance to prohibit future property owners from installing water wells or otherwise physically penetrating beneath the surface of the site below two feet. The Air Force and regulators also were provided with rights of access. The ICs are in place for the disposal of these missile sites in North and South Dakota and Missouri.

Other Sources of Information

1. John Pendergrass, *Use of Institutional Controls as Part of a Superfund Remedy: Lessons from Other Programs*, 26 ELR 10219 (March 1996).
2. Report of the Future Land Use Working Group to the Defense Environmental Response Task Force, *Types of Institutional Controls*, (May 1996), available on DoD BRAC environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.
3. Report to the Future Land Use Working Group to the Defense Environmental Response Task Force, *Making Institutional Controls Effective*, (September 1996) available on DoD BRAC environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.

NOTICE

We welcome and invite your comments on this fact sheet, as we seek ways to improve the information provided. Please send comments to the following address:

OADUSD (Environmental Cleanup)
 Attn: Fast-track Cleanup
 3400 Defense Pentagon
 Washington, D.C. 20301-3400.



February 1998

A Guide to Establishing Institutional Controls at Closing Military Installations

About This Guide

This guide supplements the land use matrix developed under the February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" by helping to ensure the compatibility between the selected land use and the selected remedy. The land use matrix is intended as a tool to build consensus among Base Realignment and Closure (BRAC) cleanup teams (BCTs), local redevelopment authorities (LRAs), restoration advisory boards (RABs), and other community members, as well as to identify and resolve the complex restoration and reuse issues at closing installations. This guide further explains land use restrictions, namely institutional controls (ICs), that may be associated with a restoration and reuse alternative. This guide is intended to:

ICs are mechanisms that protect property users and the public from existing site contamination that continues to be present during the use of a site.

- facilitate, early in the process, discussions among stakeholders to enhance understanding of ICs, i.e., what they are and how they might be used as part of a proposed remedy alternative in the BRAC cleanup program;
- act as a planning tool and checklist to assist stakeholders in considering a selected remedy which does in fact include the use of ICs; and
- provide a framework for building cooperation among the stakeholders in the establishment and maintenance of ICs.

For a particular restoration and reuse alternative, the stakeholders may identify the need for ICs. This guide assumes that the LRA will take the environmental condition of property into account in development of its reuse plan, and that use restrictions will be included in the remedy decision arrived at through the remedy selection process. In this guide, ICs are taken to be mechanisms that protect property users and the public from existing contamination that continues to be present during the use of a site. A more detailed explanation of ICs is presented in the BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How They Are Used* (see "Where to Learn More," page 8). There may be other ICs associated with the property but not related directly to an environmental response action, such as historic and cultural preservation, access for utility maintenance, or ecological concerns, e.g., wetlands and wildlife protection.

Conflict can arise among stakeholders during the process of identifying and evaluating restoration and reuse alternatives. A detailed discussion of conflict resolution techniques can be found in the July 1996 document entitled *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (see "Where to Learn More," page 8). That guide provides techniques for forming and maintaining an effective problem-finding, problem-solving team. By applying the techniques described, the parties involved in establishing and maintaining ICs can identify common issues and maximize the effectiveness of the tools available to each.



What Is the Role of Institutional Controls in the Remedy Selection Process?

The potential need for ICs is identified when stakeholders develop the land use matrix recommended in the BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations*. When various restoration and reuse alternatives are being developed, the first question to be asked is:

Does this alternative require some sort of control or limit on use of the property?

If the answer to that question is "yes," then this guide should be used to evaluate how an IC would be established. Considering the pros and cons of establishing and maintaining ICs should be an integral part of the decision-making process in the selection of a restoration action. When ICs are used, they are a vital part of the remedy and must be maintained to protect human health and the environment. ICs are legal mechanisms, such as deed restrictions, and may be coupled with physical controls, such as signs posted at the site or fences. The control or notice mechanism will vary depending on the nature of the contamination, its location, the targeted land use, the structures located on the site, and the length of time for which the use is restricted.

During remedy selection, the nature and extent of specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property.

Once remedy alternatives, including ICs, have been identified, the remedy selection process is applied to evaluate the alternative as a whole, including any ICs involved. For example, using the process under the National Contingency Plan (NCP) for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the BCT will develop a proposal on which the public and regulatory agencies will be invited to comment — both in writing and at a public meeting. A response to those comments will be prepared, and a response action selected. Throughout the remedy selection process, the ICs will be evaluated in the same manner as all other components of a potential remedy, as required by statute and Executive Order 12580. Stakeholders need to seriously consider and discuss all aspects of establishing, maintaining, and funding ICs as part of a remedy.

Two situations commonly occur in which ICs play an important role: (1) to protect the integrity of an engineering control intended to contain contamination, reduce its mobility, and minimize exposure, such as a landfill cap, and (2) to limit the exposure of individuals to residual contamination by limiting the reuse activities associated with that portion of the installation.

The information collected during the Remedial Investigation is used to determine if contamination is present and to characterize the site. In some cases, removing all contamination to allow unrestricted use of property may be very costly, the technology may be unavailable, or the time required to remediate and transfer the property may be prohibitive considering the community's reuse requirements for planned reuse and timing of property transfer.

The preferred remedy, protective of human health and the environment, sometimes requires that contaminants not be disturbed, leaving them in place. For example, the excavation of landfills can actually increase the risk to human health and the environment, in the short term, by exposing toxic contamination. One approach to reducing the long-term risk associated with such contamination left in place is to limit the uses to which that property will be put. The limit may be broad — for example, no residential occupancy — or it may be specific — for example, any activity involving the disturbance of soil must be approved in advance and any excavated soil must be disposed of properly.

During the remedy selection, the nature and extent of the specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property. Although the final details, such as engineering plans, zoning plans, and certain longer-term ICs such as deed restrictions, will not be determined until the Remedial Design is developed, the Feasibility Study (FS) should provide as clear a description as possible of the nature of the anticipated restrictions. Another important element of the FS is the anticipated duration of the restriction. If the



restriction is limited to a relatively short period during the actual remediation, it will have a very different impact on reuse than a restriction that is anticipated to last for a longer period of time. Such a longer-term restriction, for example, might be a restriction on groundwater use until treatment or attenuation has reduced contaminant levels to below health-based standards or a restriction on surface use over a landfill cap.

The proposed plan outlines the preferred remedial alternative and summarizes the other alternatives considered in the FS. The proposed plan should be written in a manner that can be easily understood by the public. A clear statement of the restrictions associated with the proposed action should be included to allow the public to be fully informed about the proposed action and implications of using ICs if they are a part of that action. The remedy selection process under CERCLA and the Environmental Protection Agency's (EPA) position on the use of ICs are described in the National Contingency Plan (NCP) (40 CFR Part 300.430(a)(1)(iii)) and its preamble (55 FR 8706). Under the NCP, community acceptance is one of the nine criteria for selecting a CERCLA remedy. While community acceptance is an essential ingredient in making the final remedy selection, it is not always possible to accomplish all the community's goals. It is the Department of Defense's (DoD) responsibility to make the final remedy selection in accordance with applicable laws and requirements and to ensure that it will be protective of human health and the environment, as well as be compatible with, to the extent reasonably practicable, community reuse plans. This final remedy selection is formalized through the Record of Decision (ROD), which will be compatible with any ICs that may be implemented at the site.

When the Selected Response Includes Institutional Controls

Form a Team

When a selected response includes ICs, the team members (see box) involved in developing the future land use and evaluation response should work together to establish and maintain the selected ICs. Requirements for establishment and maintenance of ICs vary from site to site and are dependent on the real property and environmental cleanup laws and regulations of that jurisdiction. Cooperation, therefore, is essential to achieve success. That success depends on building a team that will be effective in using the tools available at that site and in that location.

Team members already should be a part of the process through their participation in groups such as those listed in the box below. Key members of these existing entities (although others may be consulted as necessary) should be part of the team developing a plan for the success of ICs at that site. It is important to build a team that works together to ensure the success of the response action and the effective reuse of the land.

The Team

Team Member

Potential Role in Establishing and Maintaining ICs

BRAC Cleanup Team

Identify the remaining contamination and associated risks at a site that requires ICs

Local Redevelopment Authority

Identify the intended use of the site consistent with the environmental condition of property that may require ICs; may assist in the establishment of ICs

Community Stakeholders (including the RAB)

Provide input and recommendations on establishing and maintaining ICs

Base Transition Coordinator

Facilitate the coordination of information for property reuse and transfer with cleanup activities, including establishment of ICs

Real Estate Attorney/Environmental Attorney

Develop deed language for restrictions; may assist in developing other ICs

All State and Local Government Officials

Establish, monitor, or enforce ICs

Identified Holders of Property Interest

Maintain a use of the site that is consistent with ICs



Establish Cooperation

Such success will be easier to achieve when the following commitments are made:

- The team makes a commitment to the success of ICs
- The team develops the skills needed to work together well
- Throughout the process, all team members make a commitment to open communication
- The team members maintain mutual trust, honor, and respect
- The team members accept responsibility, make decisions, take risks, and resolve issues
- The team makes decisions through consensus
- The team develops creative solutions and applies them to all problems
- The team maintains agreed-upon processes for resolving disagreements or disputes
- The team evaluates progress and recognizes successes

The Task of the Team

This guide identifies issues that may be relevant to any number of response actions. It does not suggest how to resolve specific issues, but offers tools that the team may find useful. It is up to the team establishing the ICs to develop and implement a plan that uses these and other tools and the resources available to them at that site to create an effective remedy.

Checklist of Issues and Tools To Be Considered When Establishing and Maintaining ICs

The following questions should be asked when DoD and stakeholders discuss how to establish and maintain ICs.

Q. What are the ICs meant to accomplish?

What types of reuse are possible, given the environmental condition of property and/or the planned remedial activities?
For example:

TYPE(S) OF REUSE ALLOWED

- Residential
 - Housing
 - Daycare
 - Hospitals
 - Schools
 - Other
- Commercial
- Industrial
- Recreation
- Agricultural
- Other



What are the activities that must be restricted? For example:

SPECIFIC RESTRICTIONS

- Uses of ground and surface water**
 - Prohibitions against drinking the water
 - Prohibitions against use of groundwater from existing wells
 - Prohibitions against any other use of the water (e.g., irrigation, watering livestock, or recreational uses, including fishing)
 - Restrictions to maintain the integrity of monitoring and reinjection wells
 - Other
- Use of soils**
 - Prohibitions against excavation, construction, drilling, or disturbance of the soil (e.g., well installation that may connect an uncontaminated aquifer with a contaminated aquifer, or maintaining landfill cap)
 - Restrictions governing depth of excavation
 - Other
- Other ICs not directly related to the environmental response**
 - Restrictions preserving historic or cultural areas
 - Restrictions protecting wildlife or wetlands
 - Restrictions governing access to the property (e.g., utility maintenance)

Q. What are the techniques and tools available to establish and maintain ICs?

TECHNIQUES: METHODS FOR ACCOMPLISHING THE GOALS OF THE ICs

- Layering:** Layering means the use of a strategy to combine mutually reinforcing controls, for example, a combination of deed restrictions, physical barriers, and notice can expand the number of parties involved and strengthen the network that maintains the remedy and protects human health and the environment. Many tools can be used at the same time and at various levels to accomplish that result. Different team members may have methods available to them that enhance maintenance of the remedy.
- Notice:** Providing notice that controls exist at a site is essential to maintain those controls and ensure that users of the property abide by them. The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.

The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.

TOOLS: SPECIFIC ACTIONS THAT CAN BE USED TO IMPLEMENT THESE TWO TECHNIQUES

- Deed Language:** Language in the deed is a good method of providing notice and generally will be an important part of any IC plan. The legal instrument and language used should be tailored to the requirements and processes that are best suited to the jurisdiction. The instrument, which may be separate from the deed, may be a covenant or easement or some other form of property right; however, before relying on any such right, the legality and enforceability of such a right in the jurisdiction must be determined. The legal instrument should provide a



A Guide to Establishing Institutional Controls At Closing Military Installations

stand-alone explanation of the restrictions and should cite the portions of the administrative record, regulations, and transfer documents that are relevant to establishing the restrictions. Language providing notice and describing the restrictions may also be included in the transfer documents.

Depending on state law, which may vary, and depending on the intentions of the parties to the original transaction and third parties who hold an interest in the land, deed language can be structured to give enforcement rights to the previous owner and to those third parties. Deed restrictions implementing ICs should be structured to run with the land — in other words, to remain in force despite changes in ownership; for example, by stating that the restrictions benefit the surrounding property and benefit the general public, or by stating that the parties intend the ICs to run with the land and bind future parties. State laws vary and the enforceability of deed restrictions should be considered carefully in structuring deed language. The more stakeholders that have authority to enforce a deed restriction, the more effective it will be as a method of control. In spite of any legal limits on the enforceability of deed language, a deed restriction is an important form of notice.

- Records and Community Involvement:** Other available methods of providing notice include the administrative record for the response action; local records like planning and zoning maps and subdivision plats; and similar state records and registries. Means of community education such as public meetings, recurring notices in— newspapers, and signs and fences also provide notice.
- Federal, state, and local laws and regulations:** Statutory authority under CERCLA and the Resource Conservation and Recovery Act (RCRA) may provide Federal and state regulators direct legal authority to protect human health and the environment, prevent releases, or control site activities. State and local governments may also play a role through already existing legal frameworks or regulatory programs such as permitting the use of land, monitoring public health through public health statutes, authorizing zoning and land use plans, passing ordinances, and acting under established statewide environmental programs. Such legal avenues can be integrated into an IC plan and provide notice that activities at the site in question are restricted.
- Inspections:** There may be inspections of the affected property associated with the selected remedy, generally as part of the remedy's operation and maintenance. Even though these inspections may not be intended for the purpose of monitoring an IC, they may provide an opportunity to assess activities at the site. For example, an inspection of monitoring wells may also provide an opportunity to establish compliance with an IC restricting excavation. Other existing inspection routines associated with regulatory programs not related to the remediation may also protect the site in question. While such inspections should not be confused with the ICs themselves, they can be used to assist in the maintenance of ICs. Such existing programs can be integrated into an IC plan in association with or in addition to the state and local laws and regulations listed above. The state and Federal members of the BCT may give the appropriate section or branch of the environmental regulatory agency or other pertinent agency notice of the IC or deed restriction by adding the organization's representative to the finding of suitability to transfer distribution list. In addition, the Federal government is required to review a remedy at least every five years, where contamination remains in place. Where ICs are part of the remedy, such reviews should include verification that the ICs are still in place and effective.
 - Remedy-specific environmental inspections (generally part of operation and maintenance of a remedy)
 - Inspections to ensure the integrity of the landfill cap
 - Inspections of the leachate treatment system
 - Inspections of the water treatment system
 - Other inspections required for operation and maintenance



- Other Federal, state, and local government inspections not directly related to the environmental response
 - Restrictions preserving historic or cultural areas
 - Restrictions protecting wildlife or wetlands
 - Restrictions governing access to the property (e.g., utility maintenance)
 - Restrictions concerning health
 - Restrictions concerning building standards
 - Other

Q. What are the responsibilities to maintain and ensure the effectiveness of ICs?

As a network for establishing an IC is created, it is also appropriate and necessary to discuss the associated responsibilities for maintaining its effectiveness. As previously noted, there are numerous existing statutory frameworks and regulatory programs at the Federal, state, and local levels that provide the authority to maintain the integrity of the remedy requirements. Stakeholders may need to discuss resources that are available or might be needed for certain ICs. They also need to discuss how long-term responsibilities for IC implementation at the site will be coordinated among team members.

- Statutory authority to enforce RCRA and CERCLA
- State and local, general or site-specific enforcement authorities that can be applied
 - Property laws
 - Zoning
 - Permitting programs
 - Other laws or ordinances
- Funding maintenance of the IC
- Long-term coordination responsibilities

Q. How is an IC modified or terminated?

ICs may also be modified or terminated over time. It is therefore useful to discuss what time frames, if known, and what procedures may be necessary for accomplishing these tasks. Due to the site-specific nature of IC plans, procedures for modifications to ICs may vary depending on that plan.

- Length of time ICs are needed
- Legal steps to remove or modify each IC
- Organizations that may be involved with modification or termination:
 - Federal government
 - State government
 - State court
 - Local government
 - Local court
 - Landowner
 - Adjacent landowner
 - Previous landowner



Where to Learn More

Further information on this and other BRAC issues can be found by reading:

- DoD's Future Land Use Policy: *Responsibility for Additional Environmental Cleanup after Transfer of Real Property* (July 1997)
- BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How Are They Used* (Spring 1997)
- BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations* (February 1996)
- *Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer* (Fall 1996)
- *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (July 1996)

Or by contacting:

Office of the Assistant Deputy Under Secretary of Defense
(Environmental Cleanup)
Attn: Fast-Track Cleanup
3400 Defense Pentagon
Washington, D.C. 20301-3400

Or by looking on the World Wide Web at:

<http://www.dtic.mil/envirodod/envbrac.html>

For additional information about selection of response actions, see the following EPA Office of Solid Waste and Emergency Response (OSWER) documents:

- Land Use in CERCLA Remedy Selection Process, OSWER Publication Number PB95-963234\NDZ (June 1995)
- Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER Publication Number 9355.0-30 (April 1991)
- A Guide to Selecting Superfund Remedial Actions, OSWER Publication Number 9355.0-27FS (April 1990)

These are available on the World Wide Web at:

<http://www.epa.gov/epa/oswer>

The *Guide to Establishing Institutional Controls at Closing Military Installations* was prepared with input from an inter-agency work group made up of representatives of the Office of the Secretary of Defense, the DoD Components, the U.S. EPA, the General Services Administration, the California EPA, the National Association of Attorneys General, the International City/County Management Association, the National Association of Installation Developers, and others. This guide is not a formal statement of DoD policy, but is meant to assist in the establishment and maintenance of ICs at BRAC properties.

Local reproduction of this fact sheet is authorized and encouraged.



ACQUISITION AND
TECHNOLOGY

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3010



JUL 25 1997

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY
(INSTALLATIONS, LOGISTICS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(MANPOWER, RESERVE AFFAIRS, INSTALLATIONS AND
ENVIRONMENT)
DEPUTY UNDER SECRETARY OF DEFENSE
(ENVIRONMENTAL SECURITY)
DEPUTY UNDER SECRETARY OF DEFENSE
(INDUSTRIAL AFFAIRS AND INSTALLATIONS)
DIRECTOR, DEFENSE LOGISTICS AGENCY (D)

SUBJECT: Responsibility for Additional Environmental Cleanup after Transfer of Real Property

The purpose of the attached policy is to describe the circumstances under which DoD would perform additional cleanup on DoD property that is transferred by deed to any person or entity outside the federal government. This policy is applicable to real property under DoD control that is to be transferred outside the federal government, and is effective immediately. For property that is transferred pursuant to section 120(h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9620(h)(3)(C)), this policy applies after the termination of the deferral period.

DoD continues to be committed to a remedy selection process that provides for full protection of human health and the environment, even after property has been transferred by DoD. The Deputy Under Secretary of Defense (Environmental Security) will issue separately any specific guidance needed to implement this policy. This policy should be read to be compatible with and does not supersede other related DoD policies, and is to be incorporated in the next revision of the appropriate DoD Instruction. I ask for your support in implementing this policy and working with communities so that they can make informed decisions in developing their redevelopment plans.

R. Noel Longuemare
Acting Under Secretary of Defense
(Acquisition and Technology)

Attachment



DoD Policy on Responsibility for Additional Environmental Cleanup
After Transfer of Real Property

Background. This policy is instituted within the framework established by land use planning practices and land use planning authorities possessed by communities, and the environmental restoration process established by statute and regulation. The land use planning and environmental restoration processes – two separate processes – are interdependent. Land use planners need to know the environmental condition of property in order to make plans for the future use of the land. Similarly, knowledge of land use plans is needed in order to ensure that environmental restoration efforts are focused on making the property available when needed by the community and that remedy selection is compatible with land use. This policy does not supplant either process, but seeks to integrate the two by emphasizing the need to integrate land use planning assumptions into the cleanup, and to notify the community of the finality of the cleanup decisions and limited circumstances under which DoD would be responsible for additional cleanup after transfer.

Cleanup Process. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9601 et seq.) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR 300) establish the requirements and procedures for the cleanup of sites that have been contaminated by releases of hazardous substances. CERCLA, furthermore, requires that a deed for federally owned property being transferred outside the government contain a covenant that all remedial action necessary to protect human health and the environment has been taken, and that the United States shall conduct any additional remedial action "found to be necessary" after transfer. Within the established restoration process, it is DoD's responsibility, in conjunction with regulatory agencies, to select cleanup levels and remedies that are protective of human health and the environment. The environmental restoration process also calls for public participation, so that the decisions made by DoD and the regulatory agencies have the benefit of community input.

Land Use Assumptions in Cleanup Process. Under the NCP, future land use assumptions are developed and considered when performing the baseline risk assessment, developing remedial action alternatives, and selecting a remedy. The NCP permits other-than-residential land use assumptions to be considered when selecting cleanup levels and remedies, so long as selected remedies are protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) further amplified the role of future land use assumptions in the remedy selection process in its May 25, 1995, "Land Use in the CERCLA Remedy Selection Process" directive (OSWER Directive No. 9355.7-04).

Development of Land Use Plans. By law, the local community has been given principal responsibility for reuse planning for surplus DoD property being made available at Base Realignment and Closure (BRAC) installations. That reuse planning and implementation authority is vested in the Local Redevelopment Authority (LRA) described in the DoD Base Reuse Implementation Manual (DoD 4165.66-M). The DoD Base Reuse Implementation Manual calls for the LRA to develop the community redevelopment plan to reflect the long term needs of the community. A part of the redevelopment plan is a "land use plan" that identifies the proposed land use for given portions of the surplus DoD property. The DoD is committed to working with local land use planning authorities, local government officials, and the public to develop realistic assumptions concerning the future use of property that will be transferred by DoD. The DoD will act on the expectation that the community land use plan developed by the LRA reflects the long-range regional needs of the community.

Use of Land Use Assumptions in the Cleanup Process. DoD environmental restoration efforts for properties that are to be transferred out of federal control will attempt, to the extent reasonably practicable, to facilitate the land use and redevelopment needs stated by the community in plans approved prior to the remedy selection decision. For BRAC properties, the LRA's redevelopment plan, specifically the land use plan, typically will be the basis for the land use assumptions DoD will consider during the remedy selection process. For non-BRAC property transfers, DoD environmental restoration efforts will be similarly guided by community input on land use, as provided by the local government land use planning agency. In the unlikely event that no community land use plan is available at the time a remedy selection decision requiring a land use assumption must be made, DoD will consider a range of reasonably likely future land uses in the remedy selection process. The existing land use, the current zoning classification (if zoned by a local government), unique property attributes, and the current land use of the surrounding area all may serve as useful indicators in determining likely future land uses. These likely future land uses then may be used for remedy selection decisions which will be made by DoD (in conjunction with regulatory agencies) in accordance with CERCLA and the NCP.

DoD's expectation is that the community at-large, and in particular the land use planning agency, will take the environmental condition of the property, planned remedial activities, and technology and resource constraints into consideration in developing their reuse plan. The February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" provides a useful tool for considering various possible land uses and remedy alternatives, so that cost and time implications for both processes can be examined and integrated. Obviously, early development of community consensus and publication of the land use plan by the LRA or the land planning agency will provide the stability and focus for DoD cleanup efforts.

Applicable guidelines in EPA's May 25, 1995, "Land Use in the CERCLA Remedy Selection Process" Directive should be used in developing cleanup decisions using land use assumptions. For a remedy that will require restrictions on future use of the land, the proposed plan and record of decision (ROD) or other decision documents must identify the future land use assumption that was used to develop the remedy, specific land use restrictions necessitated by the selected remedy, and possible mechanisms for implementing and enforcing those use restrictions. Examples of implementation and enforcement mechanisms include deed restrictions, easements, inspection or monitoring, and zoning. The community and local government should be involved throughout the development of those implementation and enforcement mechanisms. Those mechanisms must also be valid within the jurisdiction where the property is located.

Enforcement of Land Use Restrictions. The DoD Component disposal agent will ensure that transfer documents for real property being transferred out of federal control reflect the use restrictions and enforcement mechanisms specified in the remedy decision document. The transfer document should also include a description of the assumed land use used in developing the remedy and the remedy decision. This information required in the transfer documents should be provided in the environmental Finding Of Suitability to Transfer (FOST) prepared for the transfer. The DoD Component disposal agent will also ensure that appropriate institutional controls and other implementation and enforcement mechanisms, appropriate to the jurisdiction where the property is located, are either in-place prior to the transfer or will be put in place by the transferee as a condition of the transfer. If it becomes evident to the DoD Component that a deed restriction or other institutional control is not being followed, the DoD Component will attempt to ensure that appropriate actions are taken to enforce the deed restriction.

The DoD expects the transferee and subsequent owners to abide by restrictions stated in the transfer documents. The DoD will reserve the right to enforce deed restrictions and other institutional controls, and the disposal agent will ensure that such language is also included in the transfer documents. If DoD becomes aware of action or inaction by any future owner that will cause or threaten to cause a

Policy on Responsibility for Additional Environmental Cleanup

release or cause the remedy not to perform effectively, DoD also reserves the right to perform such additional cleanup necessary to protect human health and the environment and then to recover costs of such cleanup from that owner under the terms of the transfer document or other authority.

Circumstances Under Which DoD Would Return to do Additional Cleanup. A determination may be made in the future that the selected remedy is no longer protective of human health and the environment because the remedy failed to perform as expected, or because an institutional control has proven to be ineffective, or because there has been a subsequent discovery of additional contamination attributable to DoD activities. This determination may be made by DoD as a part of the remedy review process, or could be a regulatory determination that the remedy has failed to meet remediation objectives. In these situations, the responsible DoD Component disposing of the surplus property will, consistent with CERCLA Section 120(h), perform such additional cleanup as is both necessary to remedy the problem and consistent with the future land use assumptions used to determine the original remedy. Additionally, after the transfer of property from DoD, applicable regulatory requirements may be revised to reflect new scientific or health data and the remedy put in place by DoD may be determined to be no longer protective of human health and the environment. In that circumstance, DoD will likewise, consistent with CERCLA Section 120(h), return to perform such additional cleanup as would be generally required by regulatory agencies of any responsible party in a similar situation. Also note that DoD has the right to seek cost recovery or contribution from other parties for additional cleanup required for contamination determined not to have resulted from DoD operations.

Circumstance Under Which DoD Would Not Return to do Additional Cleanup. Where additional remedial action is required only to facilitate a use prohibited by deed restriction or other appropriate institutional control, DoD will neither perform nor pay for such additional remedial action. It is DoD's position that such additional remedial action is not "necessary" within the meaning of CERCLA Section 120(h)(3). Moreover, DoD's obligation to indemnify transferees of closing base property under Section 330 (of the Fiscal Year 1993 Defense Authorization Act) would not be applicable to any claim arising from any use of the property prohibited by an enforceable deed restriction or other appropriate institutional control.

Changes to Land Use Restrictions after Transfer. Deed restrictions or other institutional controls put in place to ensure the protectiveness of the remedy may need to be revised if a remedy has performed as expected and cleanup objectives have been met. For example, the specified groundwater cleanup levels have been reached after a period of time. In such a case, the DoD Component disposing of the surplus property will initiate action to revise the deed restrictions or other institutional controls, as appropriate.

DoD will also work cooperatively with any transferee of property that is interested in revising or removing deed restrictions in order to facilitate a broader range of land uses. Before DoD could support revision or removal, however, the transferee would need to demonstrate to DoD and the regulators, through additional study and/or remedial action undertaken and paid for by the transferee, that a broader range of land uses may be undertaken consistent with the continued protection of human health and the environment. The DoD Component, if appropriate, may require the transferee to provide a performance bond or other type of financial surety for ensuring the performance of the additional remedial action. The transferee will need to apply to the DoD Component disposal agent for revision or removal of deed restrictions or other institutional controls. Effective immediately, the process for requesting the removal of such restrictions by a transferee should be specified by the disposal agent in the documents transferring property from DoD.

Making those revisions or changes will be considered by DoD to be an amendment of the remedy decision document. Such an amendment will follow the NCP process and require the participation by DoD and regulatory agencies, as well as appropriate public input.

Disclosure by DoD on Using Future Land Use in Remedy Selection. A very important part of this policy is that the community be informed of DoD's intent to consider land use expectations in the remedy selection process. At a minimum, disclosure shall be made to the Restoration Advisory Board (or other similar community group), the LRA (if BRAC) or other local land use planning authority, and regulatory agencies. The disclosure to the community for a specific site shall clearly communicate the basis for the decision to consider land use, any institutional controls to be relied upon, and the finality of the remedy selection decision, including this policy. In addition, any public notification ordinarily made as part of the environmental restoration process shall include a full disclosure of the assumed land use used in developing the remedy selected.

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MANAGEMENT GUIDANCE
for the
DEFENSE ENVIRONMENTAL
RESTORATION PROGRAM



Office of the Deputy Under Secretary of Defense
(Installations and Environment)
ODUSD(I&E)
September 2001

9.8.3.2.3. The unsafe condition was present when the property was transferred from DoD control; and

9.8.3.2.4. No subsequent owner of the property has made beneficial use of the building or structure.

9.9. The following activities shall not be conducted with those funds requested for environmental restoration purposes that were appropriated to the ER-FUDS account:

9.9.1. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities at ineligible properties.

9.9.2. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities for ineligible projects.

9.9.3. Installation Restoration, Military Munitions Response, or Building Demolition/Debris Removal program category activities to address releases that are solely a result of an act of war.

9.9.4. The payment of environmental fines or other penalties without specific congressional approval to do so.

9.10. Property or project closeout at a FUDS occurs when all removal or remedial responses are complete and no subsequent removal or remedial responses are required, or the FUDS was classified as "No Defense Action Indicated." USACE shall consult with ODUSD(I&E), Headquarters Department of the Army, appropriate federal, state, or tribal regulators, and the local community on FUDS closeouts.

9.11. Restoration Advisory Boards (RABs) at FUDS.

9.11.1. In general, the criteria for determining community interest in establishing a RAB at an operating installation also apply to FUDS. It is, however, recognized that there may be circumstances when the establishment of a RAB at a FUDS is impractical, including when:

9.11.1.1. The FUDS property owner objects to the establishment of a RAB;

9.11.1.2. The project duration is so short so as to make RAB establishment infeasible;

9.11.1.3. The property is in a remote location where there is no community nearby; or

9.11.1.4. All major environmental decisions for all properties have already been made.

9.11.2. When a RAB is not established, a memorandum for the record signed by the USACE military district commander will document the rationale. This memorandum for the record shall be included in the Administrative Record.

9.12. At a FUDS property, the level of environmental restoration will be consistent with statutory and regulatory requirements. It is subject to restrictions placed on land use at the time of transfer from DoD control and may consider any land uses reasonably anticipated at the time of the remedy selection. DoD would not anticipate conducting further environmental restoration activities based solely on changes in land use initiated by current property owners that would be inconsistent with the previous remediation conducted by DoD or land use restrictions attached to the property.

10. COMMUNITY INVOLVEMENT

10.1. It is DoD policy to involve the local community in the environmental restoration process as early as possible and to seek continued community involvement throughout the environmental restoration process.

10.2. Each installation or FUDS will develop a Community Relations Plan defining the comprehensive stakeholder involvement program that will be implemented during the course of environmental restoration activities. A Community Relations Plan will also address the applicable requirements of EO 12898,

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). The installation shall ensure the scope of, and level of detail contained in, the Community Relations Plan is commensurate with the extent and duration of the environmental restoration activities. In this assessment, the installation shall ensure the CRP:

10.2.1. Meets the specific requirements for community involvement under the NCP;

10.2.2. Reflects input gained through interviews with a sufficient number of persons to represent the diversity of the community;

10.2.3. Provides analysis of the impacts of the environmental restoration activities on the community;

10.2.4. Evaluates the degree and nature of community concerns or interest in the restoration activities;

10.2.5. Identifies and considers environmental justice issues (i.e., issues associated with minority and economically disadvantaged populations) in the community surrounding the installation or FUDS;

10.2.6. Identifies appropriate and required mechanisms for disseminating information to the public (e.g., local media, public meetings, websites); and

10.2.7. Contains strategies for providing opportunities for community participation in the program.

10.3. Each installation or FUDS shall designate a point of contact (POC) for environmental restoration activities. The POC shall be identified to the local community through appropriate means (e.g., a newspaper notice) and will serve as the entry point for community inquiries or comments. Installations shall also provide the community the name of a POC at the installation's or FUDS' Headquarters organization.

10.4. As required by CERCLA and the NCP, each installation or FUDS shall establish an Information Repository. The Information Repository provides the public with a single reference source for information about environmental restoration activities at an installation or FUDS. Because it is intended for use by the public, the Information Repository shall be at a location near the site, a location that is easily accessible to the public, and that will make the information available for inspection at times convenient to the public. The Information Repository shall, at a minimum, include a copy of the Administrative Record (the documents that form the basis or the selection of a response action) for the installation or FUDS as required under the NCP.²³ The Information Repository may also contain other documents pertinent to the activities at the installation or FUDS.

10.5. Information on environmental restoration activities shall be made available to the public in a timely manner using appropriate mechanisms for disseminating information to the public (e.g., local media, public meetings, websites). Such mechanisms shall be identified in the Community Relations Plan and used in a consistent manner. Draft Final versions of documents that are considered the equivalent of primary documents as defined in Federal Facility Agreements (FFAs) or other regulatory instruments shall be placed in Information Repositories at the same time that these documents are provided to regulatory agencies for review. The availability of these documents shall be announced to the public.²⁴

²³ Some contents of the centrally maintained Administrative Record need not be included in the Information Repository. Sampling and testing data, quality control and quality assurance documentation, chain of custody forms, guidance documents not generated specifically for the site, and publicly available technical literature not generated for the site are examples of the types of documents that an installation or FUDS need not include in the Information Repository, provided that the index to the Administrative Record indicates the location and availability of this information. Documents included in the confidential portion of the administrative record also need not be included in the Information Repository.

²⁴ Where there is litigation addressing environmental restoration activities, Component legal staff shall be consulted on the appropriate or required means for providing documents to the other party.

10.6. Stakeholders shall be given opportunity for involvement in updating the installation or FUDS Management Action Plan (MAP) or equivalent, except for updates to elements that include government cost estimates for future procurement actions.

10.7. Each installation or FUDS shall establish a Restoration Advisory Board (RAB) where there is sufficient and sustained community interest. A RAB fulfills the requirements of 10 USC §2705(c), which directs DoD to establish Technical Review Committees (TRC). Where TRCs or similar advisory groups already exist, the TRC or similar advisory group shall be considered for conversion to a RAB, provided there is sufficient and sustained interest within the community. Only one RAB or TRC will be recognized per installation. Where RABs are not formed initially, installations shall reassess community interest at least every 24 months. Where the reassessment finds sufficient and sustained community interest, the installation or FUDS shall establish a RAB. Where the reassessment does not find sufficient and sustained community interest in a RAB, the installation or FUDS shall document, in a memorandum for the record, the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation or FUDS.

10.7.1. The purpose of the RAB is to:

10.7.1.1. Act as a forum for the discussion and exchange of restoration program information between agencies and the community.

10.7.1.2. Provide an opportunity for RAB members to review progress and participate in a dialogue with the installation's decision makers. Installations shall consider the recommendations provided by the RAB, including advice given that represents the minority view of members. Because DoD does not intend for Federal Advisory Committee Act (FACA) requirements to apply to RABs, consensus is not a prerequisite for RAB recommendations. Each individual provides advice as an individual, not as a group.

10.7.2. Each RAB shall develop and formally document its operating procedures. These procedures shall include, at a minimum:

10.7.2.1. Clearly defined goals and objectives for the RAB;

10.7.2.2. Attendance requirements;

10.7.2.3. Development and approval procedures for the minutes of RAB meetings;

10.7.2.4. The meeting frequency and location;

10.7.2.5. Rules of Order;

10.7.2.6. The frequency and procedures for conducting training;

10.7.2.7. Procedures for selecting or replacing co-chairs and selecting, replacing, or adding other members;

10.7.2.8. Specifics on the size of the RAB membership and the periods for membership and co-chair length of service;

10.7.2.9. Methods for resolving disputes;

10.7.2.10. The process for reviewing and responding to public comments on issues being addressed by the RAB; and

10.7.2.11. Procedures for public participation in RAB activities.

10.7.3. In developing these operating procedures, the RAB must consider and incorporate the following:

10.7.3.1. The RAB must be comprised of representatives of the Component, members of the local community, and representatives from EPA, state regulatory agencies, tribal, or local governments, as appropriate. DoD shall ensure that members reflect the diverse interests within the community.

10.7.3.2. The RAB must be chaired jointly by a representative of the Component and the local community. The community co-chair will be selected by the community members serving on the RAB.

10.7.3.3. A RAB is not subject to the requirements of the FACA; however, all RAB meetings, correspondence, discussions and proceedings shall be conducted in public, and no member of the public will be denied access (unless there is cause for concern for the safety of those involved with the RAB meetings). Documents related to RAB proceedings or communications will be included in the Information Repository and the Administrative Record.

10.7.3.4. A RAB may only address issues associated with environmental restoration activities under the DERP. Environmental groups or advisory boards that address issues other than environmental restoration activities are not RABs.

10.7.3.5. Subject to the availability of funds, funds requested for environmental restoration activities that were appropriated to Components' ER or BRAC accounts or the ER-FUDS account may be used to provide administrative support to RABs. Such funds shall not be used to support the activities of environmental groups or advisory boards in addressing issues other than environmental restoration activities. The activities of the RAB and expenditures of such funds for administrative expenses shall be reported to ODUSD(I&E), at a minimum, on an annual basis. Appendix 5 provides examples of eligible and ineligible RAB expenses.

10.7.3.6. Each installation is required to report regularly on the status and impact of the RAB to the installation's or FUDS' environmental restoration program. The RAB should consider means to assist the installation with this reporting requirement.

10.7.4. An installation commander may adjourn a RAB when there is no longer a need for a RAB or when community interest in the RAB declines. In making such a decision, if environmental restoration activities are not complete, the installation commander shall ensure that the community involvement program detailed in the Community Relations Plan provides for continued effective stakeholder input.

10.7.4.1. RAB adjournment shall not be an independent, unilateral evaluation on the part of DoD. The installation commander shall discuss adjournment with regulators and the community as a whole before making a final decision.

10.7.4.1.1. If a decision to adjourn the RAB is made, the rationale for adjournment shall be formally documented and the community as a whole notified of the decision.

10.7.4.1.2. An installation may reestablish an adjourned RAB if there is sufficient and sustained community interest in doing so and there are environmental restoration activities still ongoing at the installation.

10.7.4.2. Where a RAB is adjourned and environmental restoration activities continue, the installation or FUDS shall reassess community interest at least every 24 months. Where the reassessment finds sufficient and sustained community interest, the installation or FUDS shall reestablish a RAB. Where the reassessment does not find sufficient and sustained community interest in reestablishing the RAB, the installation or FUDS shall document (in a memorandum for the record) the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation or FUDS.

10.7.5. Although installation commanders are expected to make every reasonable effort to ensure that a RAB performs its role as efficiently as possible, circumstances may prevent a RAB from operating

efficiently or fulfilling its intended purpose. When this occurs, the installation commander will make a concerted attempt to resolve the issues that impact the RAB's effectiveness. If unsuccessful, the installation commander may elect to dissolve the RAB. Where an installation commander elects to dissolve a RAB, the installation commander shall:

10.7.5.1. Ensure that the comprehensive stakeholder involvement program is providing sufficient opportunities for the community to provide input on environmental restoration activities.

10.7.5.2. Notify, through the command chain, the Component's Environmental Deputy Assistant Secretary (or equivalent) and ODUSD(I&E) of the status of the RAB, the specifics of the irreconcilable issues, and the intent to dissolve the RAB.

10.7.5.3. In consultation with EPA, state, tribal, or local government representatives, as appropriate, notify the RAB community co-chair and members in writing of the intent to dissolve the RAB and the reasons for doing so, and provide RAB members 30 days to respond in writing.

10.7.5.4. Consider RAB member responses, and in consultation with EPA, state, tribal, or local government representatives, as appropriate, determine the appropriate action.

10.7.5.4.1. If a decision is made to proceed with dissolution, notify the public of the proposal to dissolve the RAB and provide a 30-day public comment period on the proposal.

10.7.5.4.2. If the dissolved RAB will be reconstituted, provide details to the public of the process by which that will happen and provide a 30-day public comment period on the proposal.

10.7.5.5. At the conclusion of the public comment period, review public comments, consult with EPA, state, tribal, or local government representatives, as appropriate, and render a recommendation.

10.7.5.6. Notify the public of the recommendation, and forward all documentation to the Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval.

10.7.5.7. The Component's Environmental Deputy Assistant Secretary (or equivalent) shall notify ODUSD(I&E) of the decision to approve or disapprove the request to dissolve the RAB, and the rationale for that decision.

10.7.5.8. The installation commander shall notify the public of the approval or disapproval of the dissolution of a RAB through written notice to the RAB members and through publication of a notice in a local newspaper of general circulation.

10.8. Information on the activities of a RAB including, but not limited to, documenting the installation's efforts to survey community interest in forming a RAB, steps taken to establish a RAB where there is sustained community interest, how the RAB relates to the overall community involvement program, and steps taken to adjourn the RAB, shall be included in the Information Repository. To the extent that RAB input is considered in a decision regarding response activities, information about the RAB shall be included in the Administrative Record.

10.9. Technical Assistance for Public Participation (TAPP).

10.9.1. Opportunities for technical assistance through DoD's TAPP program shall be made available to community members of RABs or TRCs in accordance with 10 USC §2705(e) and the TAPP regulations found at 32 CFR Part 203. Community members of a RAB may request from an installation's commanding officer, or appropriate DoD official, technical assistance from private-sector sources. (See Appendix 6 for a list of eligible and ineligible TAPP activities.)

10.9.2. Only community members (not government members) of RABs and TRCs may ask for TAPP support on behalf of the community members of the RAB. Any request for TAPP must represent the wishes of the majority of the community members of the RAB/TRC, and the RAB/TRC must certify this to be true on the TAPP application (see Appendix 7). The RAB/TRC requesting assistance must be recognized by the Component.

10.9.3. TAPP Funding.

10.9.3.1. A TAPP will be funded from the appropriate Component ER or BRAC accounts or the ER-FUDS account. TAPP is categorized as a program administration cost. There is no guaranteed or automatic TAPP funding allocation per installation and no separate account.

10.9.3.2. TAPP funding may not exceed \$100,000 over the life of the restoration program at the installation. The limit for a single fiscal year is \$25,000, or 1 percent of the installation's total projected environmental restoration cost-to-complete, whichever is less.

10.9.3.3. Waivers to the \$100,000 total and \$25,000 annual funding limits may be approved by the Component's Environmental Deputy Assistant Secretary (or equivalent). Requests for waivers are initiated by the RAB/TRC community members and forwarded by endorsement with recommendations by the installation commander through the chain-of-command to the Component's Environmental Deputy Assistant Secretary (or equivalent).

10.9.4. In the event that a dispute arises concerning the approval of a TAPP request, the RAB/TRC community members may appeal DoD's decision. Appeals will be considered within the chain-of-command, and in general, will be resolved at the lowest possible level. The highest level of appeal will be at the Component's Environmental Deputy Assistant Secretary (or equivalent).

10.9.5. The fact that a community has received Technical Assistance Grants (TAG) or Technical Outreach Services to Communities (TOSC) from EPA does not preclude them from getting a TAPP award. These other sources of funds are, however, relevant considerations during the decision process.

10.9.6. Each RAB/TRC that receives a TAPP award must submit an annual TAPP Results Report to the installation. The installation will forward this report to the installation's Headquarters. This report will indicate:

10.9.6.1. The amount of TAPP funds obligated by fiscal year.

10.9.6.2. An evaluation for each project concerning whether the TAPP assisted the community in participating in the restoration program.

11. RELATIONSHIPS WITH OTHER GOVERNMENT AGENCIES

11.1. DoD is fully committed to the substantive involvement of EPA, appropriate current and prospective federal land managers, other appropriate federal agencies, states, and tribes, and the public throughout the environmental restoration process. Components responsible for environmental restoration activities shall take proactive steps to identify and address issues of concern to all stakeholders. These efforts have the overall goal of ensuring that decisions regarding environmental restoration activities reflect a broad spectrum of stakeholder input.

11.2. Pursuant to the delegation of certain Presidential authorities under CERCLA to the Secretary of Defense (delegated via EO 12580, *Superfund Implementation* (January 23, 1986) and EO 13016 *Superfund Amendments* (August 28, 1996)), DoD is the lead agency for environmental restoration activities under the DERP. Per DoDI 4715.7, the Secretaries of the Military Services have been further delegated these authorities (subject to the concurrent authority of the Under Secretary of Defense, Acquisition, Technology, and Logistics (USD(AT&L)) and the DUSD(I&E)) to execute the DERP. In the exercise of this authority and responsibility, Components shall:

**DOD GUIDANCE ON IMPROVING PUBLIC
INVOLVEMENT IN ENVIRONMENTAL
CLEANUP AT CLOSING BASES**

I. PURPOSE

This guidance implements the President's plan to expedite the closure and reuse of closing military bases. This guidance directs the Components to involve the community near a closing base in the cleanup program by making information available, providing opportunities for comment, and establishing and seeking public participation on a Restoration Advisory Board (RAB).

II. APPLICABILITY AND SCOPE

This guidance applies to all Department of Defense (DoD) bases being closed or realigned pursuant to the Base Closure and Realignment Act of 1988 (P.L. 100-526) (BRAC 88) or the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510) (BRAC 91, 93 and 95) and where property will be available for transfer to the community. The policy explains DoD intent in establishment of RABs, fundamental responsibilities of the RAB, and procedures for the RAB.

III. POLICY

It is DoD policy to:

- A. Be open, cooperative and forthright with the public concerning environmental cleanup activities and to make information on program activities available in a timely manner.
- B. Provide opportunities for and encourage public comment on documents and proposed activities and to be responsive to comments.
- C. Establish a RAB at closing and realigning bases where property will be available for transfer to the community. The RAB will work in partnership with the Base Realignment and Closure (BRAC) Cleanup Team (BCT) on cleanup issues and related matters. Through the RAB, stakeholders may review progress and provide input to the decision making process. BRAC installations not transferring property to the community should follow the same guidelines for establishing RABs as operational bases.

IV. PROCEDURES AND RESPONSIBILITIES

A. PROCEDURES

- 1. A RAB will be established at each closing and realigning base where property will be available for transfer to the community. The RAB will:
 - a. be comprised of DoD Component, United States Environmental Protection Agency (EPA) and state representatives and members of the local community;
 - b. be jointly chaired by a DoD Component representative (the BRAC Environmental Coordinator [BEC]) and a member of the local community;
 - c. meet the requirements of 10 USC Section 2705 (c), Department of Defense Environmental Restoration Program, which directs DoD to establish Technical Review Committees (TRC). Where TRCs or other similar groups already exist, they shall be expanded or modified to become RABs, rather than creating a separate committee.

2. The DoD Components will seek to include on the RAB members who reflect diverse interests within the community (e.g. the Local Redevelopment Authority, representatives of citizen, environmental and public interest groups; local government and individual community members). The membership selection process will be conducted in a fair and open manner, ideally by a community selection panel. The DoD Components should accept the panels nominations unless it determines that the nominees would not reflect the full range of views within the community.
3. A point-of-contact for cleanup information shall be identified at the installation level (normally the BEC). A second point-of-contact (e.g., at higher headquarters) to resolve problems in obtaining information shall also be identified.
4. Information on cleanup activities, such as draft and final technical documents, proposed and final plans, status reports, etc., will be provided to the RAB and made available to the public in a timely manner. Public comments will be actively solicited and considered before documents are finalized.
5. Vehicles for disseminating information such as public meetings, bulletins, and central repositories shall be identified and used consistently.

B. RESPONSIBILITIES

1. The DoD Components shall:
 - a. Ensure that the policies stated in this memorandum are implemented by their respective organizations;
 - b. Ensure that administrative support is available to establish RABs and conduct public outreach;
 - c. Conduct oversight of public outreach activities.
 - d. Ensure that:
 - i. community relations plans are developed or revised to reflect these policies;
 - ii. RABs are established expeditiously and that their inputs are fully considered in decision making in the cleanup program; and
 - iii. installation public affairs staff are involved in public outreach activities of the cleanup program.
2. The RAB will:
 - a. act as a forum for discussion and exchange of cleanup information between Government agencies and the public;
 - b. conduct regular meetings, open to the public, at convenient times;
 - c. keep meeting minutes and make them available to the public;
 - d. develop and maintain a mailing list of names and addresses of stakeholders who wish to receive information on the cleanup program;
 - e. review and evaluate documents;

Guidance and Policies on Fast Track Cleanup at Closing Installations

- f. identify project requirements;
- g. recommend priorities among sites or projects;
- h. identify applicable standards and, consistent with Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), propose remedies consistent with planned land use.



A Citizen's Guide to Natural Attenuation

Technology Innovation Office

Technology Fact Sheet

What is natural attenuation?

Natural attenuation makes use of natural processes to contain the spread of contamination from chemical spills and reduce the concentration and amount of pollutants at contaminated sites. Natural attenuation—also referred to as *intrinsic remediation*, *bioattenuation*, or *intrinsic bioremediation*—is an *in situ* treatment method. This means that environmental contaminants are left in place while natural attenuation works on them. Natural attenuation is often used as one part of a site cleanup that also includes the control or removal of the source of the contamination.

How does natural attenuation work?

The processes contributing to natural attenuation are typically acting at many sites, but at varying rates and degrees of effectiveness, depending on the types of contaminants present, and the physical, chemical and biological characteristics of the soil and ground water. Natural attenuation processes are often categorized as *destructive* or *non-destructive*. Destructive processes destroy the contaminant. Non-destructive processes do not destroy the contaminant but cause a reduction in contaminant concentrations.

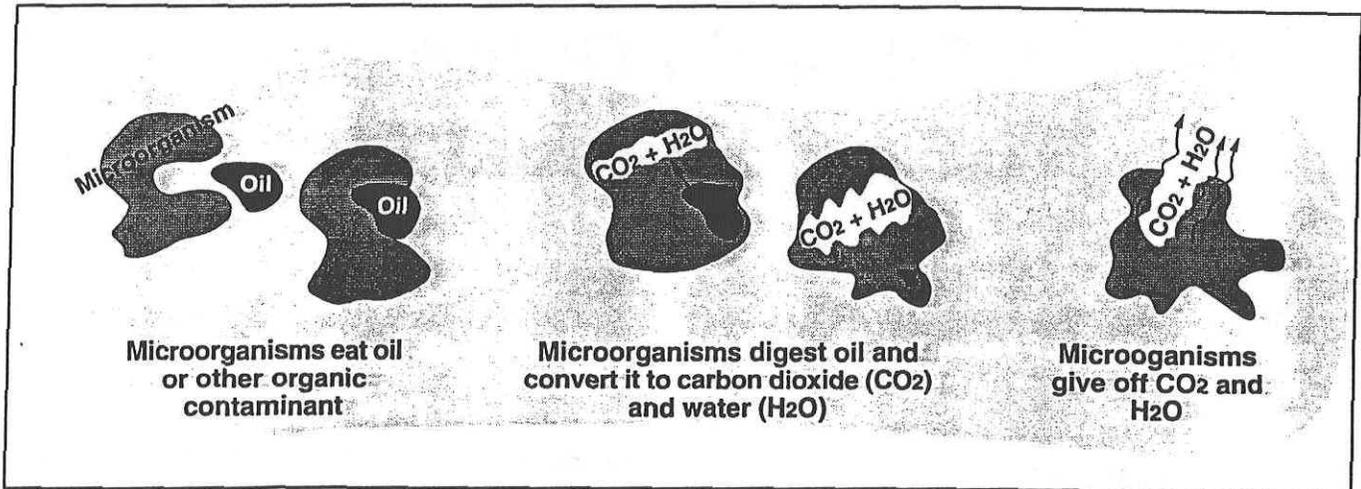
Natural attenuation processes may reduce contaminant mass (through destructive processes such as **biodegradation** and chemical transformations); reduce contaminant concentrations (through simple **dilution** or **dispersion**); or bind contaminants to soil particles so the contamination does not spread or migrate very far (**adsorption**).

Biodegradation, also called bioremediation, is a process in which naturally occurring microorganisms (yeast, fungi, or bacteria) break down, or *degrade*, hazardous substances into less toxic or nontoxic substances. Microorganisms, like humans, eat and digest organic substances for nutrition and energy. (In chemical terms, "organic" compounds are those that contain carbon and hydrogen atoms.) Certain microorganisms can digest organic substances such as fuels or solvents that are hazardous to humans. Biodegradation can occur in the presence of oxygen (aerobic conditions) or without oxygen (anaerobic conditions). In most subsurface environments, both aerobic and anaerobic biodegradation of contaminants occur. The microorganisms break down the organic contaminants into harmless products—mainly carbon dioxide and water in the case of aerobic biodegradation (Figure 1). Once the contaminants are degraded, the

A Quick Look at Natural Attenuation

- Uses naturally occurring environmental processes to clean up sites.
- Is non-invasive and allows the site to be put to productive use while being cleaned up.
- Requires careful study of site conditions and monitoring of contaminant levels.

Figure 1. Schematic Diagram of Aerobic Biodegradation in Soil



microorganism populations decline because they have used their food sources. Dead microorganisms or small populations in the absence of food pose no contamination risk. The fact sheet entitled *A Citizen's Guide to Bioremediation* describes the process in detail (see page 4).

Many organic contaminants, like petroleum, can be biodegraded by microorganisms in the underground environment. For example, biodegradation processes can effectively cleanse soil and ground water of hydrocarbon fuels such as gasoline and the BTEX compounds—benzene, toluene, ethylbenzene, and xylenes. Biodegradation also can break down chlorinated solvents, like trichloroethylene (TCE), in ground water but the processes involved are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Chlorinated solvents, widely used for degreasing aircraft engines, automobile parts, and electronic components, are among the most often-found organic ground-water contaminants. When chlorinated compounds are biodegraded, it is important that the degradation be complete, because some products of the breakdown process can be more toxic than the original compounds.

The effects of **dilution** and **dispersion** appear to reduce contaminant concentration but do not destroy the contaminant. Relatively clean water from the ground surface can seep underground to mix with and dilute contaminated ground water. Clean ground water from an underground location flowing into

contaminated areas, or the dispersion of pollutants as they spreading out away from the main path of the contaminated plume also lead to a reduced concentration of the contaminant in a given area.

Adsorption occurs when contaminants attach or *sorb* to underground particles. Fuel hydrocarbons tend to repel water, as most oily substances do. When they have an opportunity to escape from the ground water by attaching to organic matter and clay minerals that also repel water, they do so. This is beneficial because it may keep the contaminants from flowing to an area where they might be a health threat. Sorption, like dilution and dispersion, appears to reduce the concentration and mass of contamination in the ground water, but does not destroy the contaminants.

Why consider natural attenuation?

In certain situations, natural attenuation is an effective, inexpensive cleanup option and the most appropriate way to remediate some contamination problems. Natural attenuation is sometimes mislabeled as a "no action" approach. However, natural attenuation is really a proactive approach that focuses on the confirmation and monitoring of natural remediation processes rather than relying totally on "engineered" technologies. Mobile and toxic fuel hydrocarbons, for example, are good candidates for natural attenuation. Not only are they difficult to trap because of their mobility, but they are also among the contaminants most easily destroyed by biodegradation. Natural attenuation is non-invasive, and, un-

like many elaborate mechanical site cleanup techniques, while natural attenuation is working below ground, the land surface above ground may continue to be used. Natural attenuation can be less costly than other active engineered treatment options, especially those available for ground water, and requires no energy source or special equipment.

Will natural attenuation work at every site?

To estimate how well natural attenuation will work and how long it will take requires a detailed study of the contaminated site. The community and those conducting the cleanup need to know whether natural attenuation, or any proposed remedy, will reduce the contaminant concentrations in the soil and water to legally acceptable levels within a reasonable time.

Natural attenuation may be an acceptable option for sites that have been through some active remediation which has reduced the concentrations of contaminants. However, natural attenuation is not an appropriate option at all sites. The rates of natural processes are typically slow. Long-term monitoring is necessary to demonstrate that contaminant concentrations are continually decreasing at a rate sufficient to ensure that they will not become a health threat. If not, more aggressive remedial alternatives should be considered.

What Is An Innovative Treatment Technology?

Treatment technologies are processes applied to the treatment of hazardous waste or contaminated materials to permanently alter their condition through chemical, biological, or physical means.

Innovative treatment technologies are those that have been tested, selected or used for treatment of hazardous waste or contaminated materials but lack well-documented cost and performance data under a variety of operating conditions.

Because the ability of natural attenuation to be an effective cleanup method depends on a variety of conditions, the site needs to be well-characterized to determine if natural attenuation is occurring or will occur. Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands often provide successful conditions for natural attenuation. Certain geological formations such as fractured bedrock aquifers or limestone areas are less likely candidates for natural attenuation because these environments often have a wide variety of soil types that cause unpredictable ground water flow and make predicting the movement of contamination difficult.

Where is natural attenuation being used?

Natural attenuation is being used to clean up petroleum contamination from leaking underground storage tanks across the country.

Within the Superfund program, natural attenuation has been selected as one of the cleanup methods at 73 ground-water-contaminated sites—but is the sole treatment option at only six of these sites. Some of these sites include municipal and industrial land fills, refineries, and recyclers.

At the Allied Signal Brake Systems Superfund site in St. Joseph, Michigan, microorganisms are effectively removing TCE and other chlorinated solvents from ground water. Scientists studied the underground movement of TCE-contaminated ground water from its origin at the Superfund site to where it entered Lake Michigan about half a mile away. At the site itself, they measured TCE concentrations greater than 200,000 micrograms per liter ($\mu\text{g/L}$), but by the time the plume reached the shore of Lake Michigan, the TCE was one thousand times less—only 200 $\mu\text{g/L}$. About 300 feet offshore in Lake Michigan, the concentrations were below EPA's allowable levels. EPA estimated the plume took about 20 years to move from the source of contamination to Lake Michigan—plenty of time for the microorganisms naturally present in the ground water to destroy the TCE without any outside intervention. In fact, microorganisms were destroying about 600 pounds of TCE a year at no cost to taxpayers. EPA determined that nature adequately remediated the TCE plume in St. Joseph.

For More Information

The publications listed below can be ordered free of charge by faxing your request to NCEPI at 513-489-8695. If NCEPI is out of stock of a document, you may be directed to other sources. Some of the documents listed also can be downloaded free of charge from EPA's Cleanup Information (CLU-IN) World Wide Web site (<http://clu-in.com>) or electronic bulletin board (301-589-8366). The CLU-IN help line number is 301-589-8368.

You may write to NCEPI at:

National Center for Environmental Publications and Information (NCEPI)
P.O. Box 42419
Cincinnati, OH 45242

- *A Citizen's Guide to Bioremediation*, April 1996, EPA 542-F-96-007.
- *Symposium on Intrinsic Bioremediation of Ground Water*, August 1994, EPA 540-R-94-515.
- *Bioremediation Research: Producing Low-Cost Tools to Reclaim Environments*, September 1995, EPA 540-R-95-523a.
- "Natural Bioremediation of TCE," *Ground Water Currents* (newsletter), September 1993, EPA 542-N-93-008.
- "Innovative Measures Distinguish Natural Bioattenuation from Dilution/Sorption," *Ground Water Currents* (newsletter), December 1992, EPA 542-N-92-006.
- *How to Evaluate Alternative Cleanup Technologies for UST Sites*, (Chapter on Natural Attenuation), May 1995, EPA 510-B-95-007.
- *Bioremediation Resource Guide*, September 1993, EPA 542-B-93-004. **A bibliography of publications and other sources of information about bioremediation technologies.**
- *Engineering Bulletin: In Situ Biodegradation Treatment*, April 1994, EPA 540-S-94-502.
- *Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation: A Bibliography of EPA Information Sources*, January 1995, EPA 542-B-95-001. **A bibliography of EPA publications about innovative treatment technologies.**
- *WASTECH® Monograph on Bioremediation*, ISBN #1-883767-01-6. Available for \$49.95 from the American Academy of Environmental Engineers, 130 Holiday Court, Annapolis, MD 21401. Telephone 410-266-3311.

NOTICE: This fact sheet is intended solely as general guidance and information. It is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States. The Agency also reserves the right to change this guidance at any time without public notice.

COMMONLY ASKED QUESTIONS REGARDING THE USE OF NATURAL ATTENUATION FOR CHLORINATED SOLVENT SPILLS AT FEDERAL FACILITIES

*This brochure was developed through a partnership
among the U.S. EPA, Air Force, Army, Navy, and Coast Guard.*

Do federal, state, and local regulations allow natural attenuation as an option for remediation of chlorinated solvents?

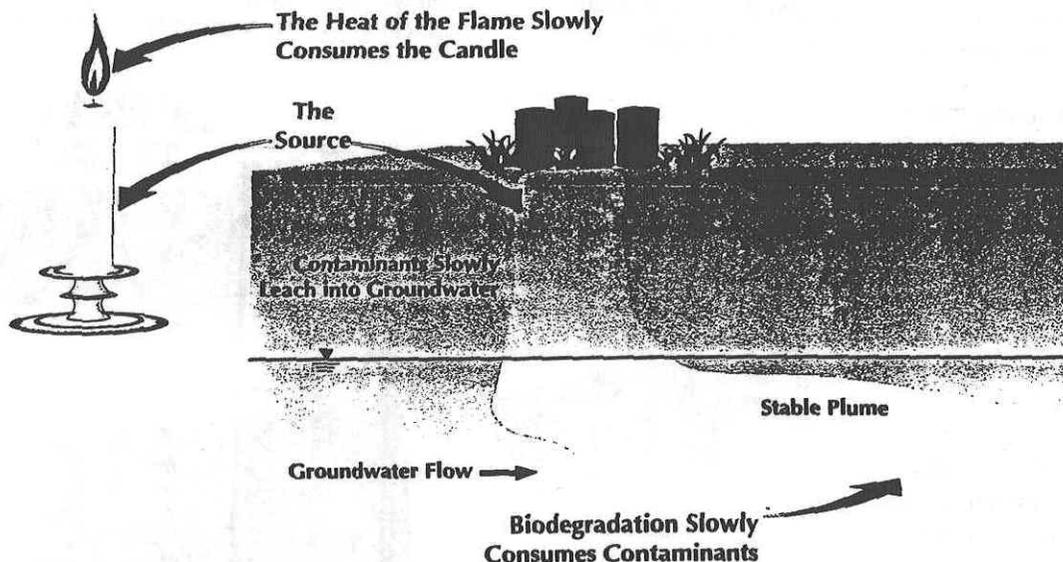
Natural attenuation is recognized by the EPA as a viable method of remediation for soil and groundwater that can be evaluated and compared to other methods of achieving site remediation as a part of the remedy selection process. The selection of natural attenuation as a component of any site remedy should be based on its ability to achieve remediation goals in a reasonable timeframe and protect human health and the environment. EPA recognition of natural attenuation extends to sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Resource Conservation and Recovery Act (RCRA); and underground storage tank (UST) regulations. Natural attenuation is not a default option or a "presumptive remedy." As with any remedy, it must comply with state groundwater use classifications and standards.

"Under certain site conditions, and if properly documented, natural attenuation can be a viable option for remediating sites as a stand-alone option or in conjunction with other engineered remediation." Jim Woolford, Director, EPA's Federal Facilities Restoration and Reuse Office

What is natural attenuation?

When chlorinated solvents such as trichloroethene (TCE) or perchloroethene (PCE) are spilled or leak into the soil or groundwater, several natural processes can occur to destroy or alter these chemicals. These processes, known collectively as natural attenuation, include adsorption to soil particles; biodegradation of contaminants, and dilution and dispersion in groundwater. Many contaminants are prevented from migrating off the site because they are adsorbed to soil particles. Although biodegradation does not occur at all chlorinated solvent sites, it can be an important process in destroying these contaminants. Dilution and dispersion do not destroy contaminants, but can significantly reduce their potential risk at many sites.

"Intrinsic" and "passive" remediation are other terms which have been used to describe the combined effect of these processes. Dr. John Wilson of the EPA compares natural attenuation in groundwater to the flame of a candle. The source of the flame is the wax of the candle just as the source of the groundwater contamination is the concentrated solvents trapped in the soil. The flame appears steady because the wax is destroyed in the flame as fast as it is removed from the candle. In the same way, many groundwater plumes will reach "steady state" at some distance from the source, when biological reactions are able to destroy contaminants as they enter the groundwater from the soil. Eventually, the candle is consumed by the flame just as the contaminants in the soil and groundwater can be attenuated through biodegradation and other natural processes.



How is natural attenuation different from the "do nothing" approach?

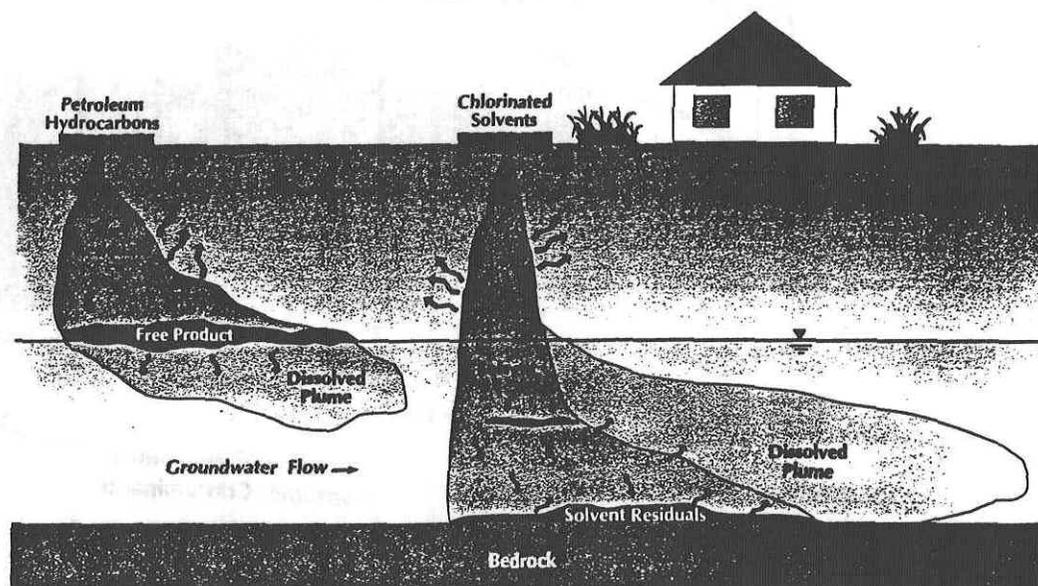
Natural attenuation is sometimes mislabeled as the "do nothing" or "walk away" approach to site cleanup. The truth is that natural attenuation is a proactive approach that focuses on the verification and monitoring of natural remediation processes rather than relying totally on "engineered" processes.

Before natural attenuation can be proposed for any site, significant soil and groundwater data must be collected and evaluated to document that natural attenuation is occurring and to estimate the effectiveness of natural processes in reducing contaminant concentrations over time. If natural attenuation is selected as the preferred site remedy, the party responsible for site cleanup must commit to long-term monitoring to verify that the contaminants pose no risk to human health or the environment and that natural processes are reducing contaminant levels and risk as predicted. Land use and groundwater use are generally controlled on these sites to prevent human exposure to contaminants.

How does natural attenuation of chlorinated solvents differ from natural attenuation of petroleum products such as fuels?

Because chlorinated solvents are synthetic chemicals, they tend to be more resistant to natural biodegradation processes. However, significant evidence now exists that biochemical reactions can also break down chlorinated compounds in the soil and groundwater. These processes are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Despite these limitations, significant progress has been made in understanding the fate and transport of chlorinated solvents and the role of natural attenuation.

Chlorinated solvents also migrate differently than petroleum hydrocarbons. Because chlorinated compounds have a greater density than water, they tend to sink rapidly into the aquifer. When large quantities of solvent are released, they will sink until they encounter an impermeable layer where they form small pools which serve as a long-term source of groundwater contamination. These untreated sources dissolve slowly over time, contaminating large volumes of water.



How can you tell if natural attenuation may work at a site?

Experts in the science of natural attenuation have identified several good indicators or lines of evidence that can be used to prove that natural processes are reducing contaminant concentrations. The following lines of evidence are useful in documenting the natural attenuation of chlorinated solvents:

- Historical trends indicating a decrease in contaminant concentrations, as well as a stable or retreating plume. A stable or retreating plume generally indicates that contaminants are being destroyed as fast as they are dissolved into the groundwater.
- Favorable geochemical conditions. Biological reactions will change the chemical composition of the groundwater. One condition which is particularly favorable for chlorinated solvent destruction occurs in groundwater that has been completely depleted of oxygen and nitrate. Depleted levels of sulfate and elevated levels of dissolved methane are also favorable conditions.
- Breakdown or "daughter" products. Chlorinated solvents are often destroyed by biochemical reactions which remove one chlorine atom at a time from the "parent" or original solvent. When these breakdown products are detected in the groundwater, it provides evidence that contaminant destruction is underway. It is important for biodegradation to be complete, because some breakdown products may be more toxic than parent compounds.
- Laboratory "microcosm" studies. These studies can be used to simulate aquifer conditions and to demonstrate that native bacteria can create the necessary biochemical reactions to destroy contaminants of concern. This technique is sometimes required for chlorinated solvent sites because the biochemical reactions are more complex and more difficult to predict than reactions on petroleum-contaminated sites.

The Air Force Center for Environmental Excellence is developing a comprehensive natural attenuation protocol (Draft Technical Protocol for Natural Attenuation of Chlorinated Solvents in Groundwater) for chlorinated solvent sites. This document describes how this evidence can be collected during site investigation activities and how it can be interpreted to estimate the contribution of natural attenuation in the remediation process.

Will natural attenuation be effective on all chlorinated sites?

Definitely not. Some chlorinated solvent contamination has impacted large quantities of groundwater which will be required for some beneficial use. There are risks associated with the continued migration of these plumes into public drinking water supplies and some form of engineered remediation is needed at these sites. On sites where no current risk to public health or the environment exists, natural attenuation can play an important role in reducing future risk if institutional controls (e.g., deed restrictions and zoning ordinances) can be implemented. Scientists are beginning to observe certain site profiles where natural attenuation has a higher probability of being integrated into the remediation process. These include:

- Sites where chlorinated solvents are spilled with other petroleum compounds (the best biochemical reactions for degradation are produced).
- Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands.
- Sites where shallow (unused) groundwater is separated from deeper groundwater by a thick, low-permeability clay layer.
- Sites where there is little or no source remaining due to active remediation.

Why are chlorinated solvent spills so common at federal facilities?

Chlorinated solvents were developed as superior cleaning solutions for removing grease and carbon buildup from metal parts. For over 40 years they were widely used by U.S. industry and the federal government for a variety of equipment cleaning tasks.

Prior to environmental laws restricting their use, these compounds were often stored in drums or underground storage tanks and disposed of in the sanitary sewer, in evaporation ponds, or mixed with fuels and burned. These solvents have created significant groundwater contamination at many federal facilities. Since 1976, when RCRA was established, the use and disposal of these solvents have been carefully regulated and many chlorinated solvents have been replaced with less harmful substitutes.

Can natural attenuation achieve site cleanup goals?

Natural attenuation may be effective in achieving cleanup goals at some sites, particularly when these goals are based on site-specific risk reduction. For example, if contaminant migration is limited to shallow groundwater, and groundwater use can be controlled, natural attenuation may eventually achieve cleanup goals on some sites. However, natural attenuation is more likely to play a role in cleaning up a portion of a chlorinated site. Natural attenuation is more likely to clean up areas that have lower levels of contamination. Such areas are normally found outside of highly contaminated source areas, or at sites with relatively small source areas.

What are some of the potential advantages and limitations of natural attenuation?

Potential Advantages

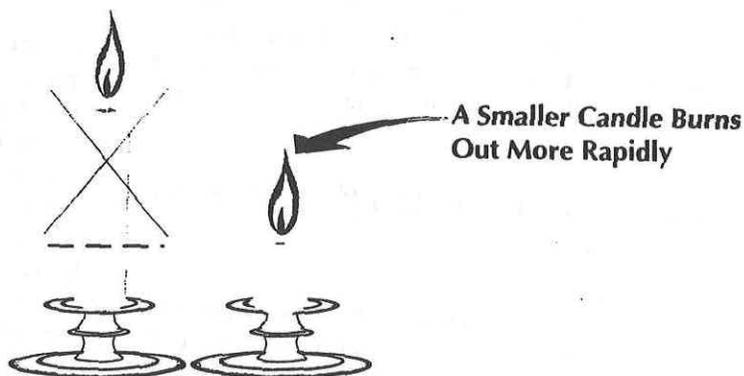
- Less generation or transfer of wastes.
- Less intrusive and disruptive than engineered methods.
- Can be combined with active remedial measures or used to remediate a portion of the site.
- Remediation costs may be lower than with active remediation.

Potential Limitations

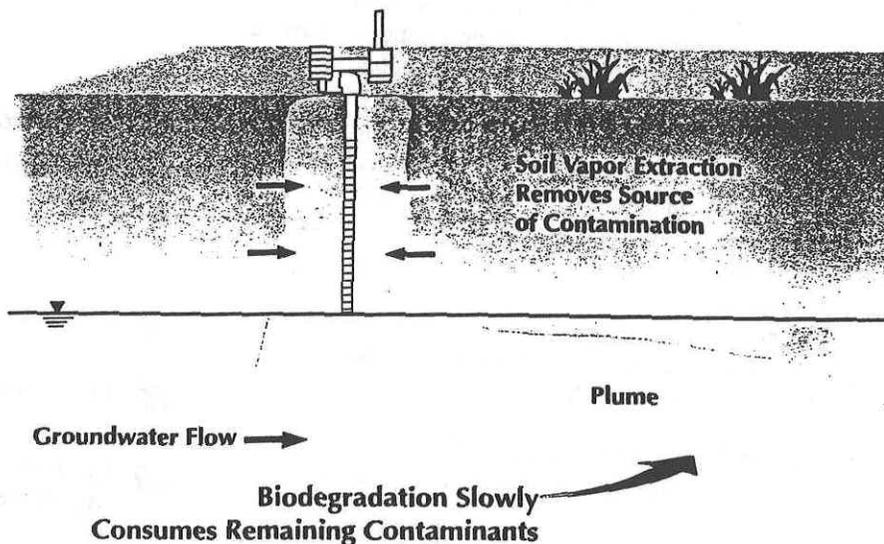
- May require more time to achieve cleanup goals and requires a commitment to long-term monitoring. On some sites, long-term monitoring costs can be excessive.
- If natural attenuation rates are too slow, the plume could continue to migrate.
- Incomplete biodegradation can create new, more toxic contaminants.
- Land and groundwater use controls are often required.

Can natural attenuation processes be enhanced to speed up the cleanup process?

Natural attenuation may be successfully combined with other remediation techniques to achieve cleanup goals within a reasonable time frame. Engineered approaches that may be used in conjunction with natural attenuation include hydraulic containment, soil vapor extraction, source removal, and pump-and-treat methods. In addition, non-toxic organic compounds may be added to enhance the breakdown of contaminants.



Again, the candle provides a useful illustration of how active and natural remediation can be combined. If the top of the candle (the source) is cut off and removed, the flame (plume) will exist for only a fraction of the original time. Soil vapor extraction, free product recovery, soil excavation, and groundwater extraction in the source area are all methods of reducing or containing the source of solvent contamination. The rate at which the candle burns can also be increased by improving the conditions for combustion. As mentioned previously, many chlorinated solvents actually degrade faster in the absence of oxygen under anaerobic conditions. Researchers are now developing methods of adding highly biodegradable organic compounds to increase the natural bacteria population in the groundwater which will consume available oxygen and create these favorable conditions. Regardless of whether an engineered remediation or natural attenuation is used, controls on groundwater use will be required on most chlorinated solvent sites.



What if natural attenuation does not work at a site?

As with any remedy, if monitoring results indicate inadequate progress, it will be necessary to reevaluate the remedial action plan. If this occurs, the remediation project manager would consider implementing an engineered approach for all or part of the plume.

This brochure was developed through a partnership among the U.S. EPA, Air Force, Army, Navy, and Coast Guard. If you would like additional information about natural attenuation and its application at federal facilities, you may fax your request to the National Center for Environmental Publications and Information at (513) 489-8695 or contact the following agency home pages on the Internet:

EPA - <http://www.epa.gov>

Air Force - <http://www.afcee.brooks.af.mil>

Army - <http://aec-www.apgea.army.mil:8080>

Navy - <http://www.nfesc.navy.mil>

Coast Guard - <http://www.dot.gov/dotinfo/uscg>





Superfund Today

FOCUS ON FIVE-YEAR REVIEWS AND INVOLVING THE COMMUNITY

Checking Up On Superfund Sites: The Five-Year Review

The U.S. Environmental Protection Agency (EPA) conducts regular checkups, called five-year reviews, on certain Superfund sites. EPA looks at sites where cleanup left wastes that limit site use. For example, EPA will look at a landfill to make sure the protective cover is not damaged and is working properly. EPA will also review sites with cleanup activity still in progress after five years.

In both cases, EPA checks the site to make sure the cleanup continues to protect people and the environment. The EPA review team conducts the review, asks and answers questions, and writes a report on the results of the review. At some sites, other Federal agencies, a State agency, or an Indian Tribe may do the review, but EPA stays involved in the process and approves the report.

The Five-Year Review is:

- a regular EPA checkup on a Superfund site that has been cleaned up—but waste was left behind—to make sure the site is still safe;
- a way to make sure the cleanup continues to protect people and the environment; and
- a chance for you to tell EPA about site conditions and any concerns you have.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, and inspects the site to make sure it continues to be safe. EPA also needs information from people who are familiar with the site. As someone living close to the site, you may know about things that can help the review team decide if the site is still safe. Here are some examples of things to tell EPA about:

- Broken fences, unusual odors, dead plants, materials leaving the site, or other problems;
- Buildings or land around the site being used in new ways;
- Any unusual activities at the site, such as dumping, vandalism, or trespassing; and
- Ways the cleanup at the site has helped the area.

For More Information ...

... about a Superfund site in your neighborhood, please call the toll-free Superfund/RCRA Hotline at 1-800-424-9346 or the Community Involvement Coordinator in the EPA regional office for your state. Your local EPA office can tell you where you can go to review files on every Superfund site in your area. Often, EPA holds community meetings to let people who live near a site know about site activities. You also may find useful information on the Superfund home page (www.epa.gov/superfund). More information about the five-year review process can be found in the document, "Comprehensive Five Year Review Guidance," EPA 540-R-01-007, OSWER 9355.7-03B-P, June 2001.

The Five-Year Review: *Continuing to Protect You and the Environment*

Step 1: Develop Plan

To plan a five-year review, the site manager forms a review team, which may include an EPA Community Involvement Coordinator, scientists, engineers, and others. The team members decide what they will do at the site and when they will do it. The Community Involvement Coordinator is the member of the team who works with your community during the review.

Your role: EPA will announce the start of the review, probably through a notice in a newspaper or a flyer. Review the notice to see when the review will start.

Step 2: Collect Information

The review team members collect information about site cleanup activities. They talk with people who have been working at the site over the past five years, as well as local officials, to see if changes in local policy or zoning might affect the original cleanup plan. The team usually visits the site to see if the cleanup equipment is working properly, to take new samples, and to review records of activities at the site to make sure the cleanup is still effective. Finally, the review team may talk to people who live or work near the site to learn about site activities during the past five years. They may give you a call or meet with you in person.

Your role: If you know anything about unusual site activities at or around the site, such as trespassing or odors, or have any other concerns, call the Community Involvement Coordinator.

Step 3: Ensure Safety, Announce Findings, and Publish Report

The review team uses the information collected to decide if your community and the environment are still safe from the contaminated material left at the site. If the cleanup activities are keeping people and the environment safe, the team calls them "protective." When cleanup goals are not being met, or when problems come up, the review team will call the cleanup activities "not protective." When the team finishes the five-year review, it writes a report about the information that includes background on the site and cleanup activities, describes the review, and explains the results. The review team also writes a summary and announces that the review is finished. They tell your community (via public notices, flyers, etc.) where to find copies of the report and summary—at a central place called the site repository—for anyone to see.

Your role: Read about the site and learn about the cleanup methods being reviewed. Review the report. Ask the Community Involvement Coordinator any questions you have about the site.

What Happens After The Review?

As long as contaminated materials at the site stop people from freely using the land, EPA will do a review every five years. EPA also regularly monitors the site based on an operations and maintenance plan they develop. For example, the site manager may visit the site and read reports about activities at the site. Also, site workers may visit the site to cut the grass, take samples, or make sure equipment is working. If you see any problems or things that concern you—don't wait for the five-year review—let EPA know right away.



Perchlorate Update

MARCH 2002

The United States Environmental Protection Agency (EPA) has released its revised draft toxicity assessment, "Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization." When finalized, this assessment will be an important update of EPA's health assessment that reflects the state of the science regarding the health effects of the chemical perchlorate. The preliminary revised human health risk estimates found in the document are still undergoing review and deliberations both by the external scientific community and within EPA, and do not represent EPA policy at this stage.

How To Review and Comment on EPA's Draft Perchlorate Toxicity Assessment

The draft perchlorate toxicity assessment is available at EPA's National Center for Environmental Assessment (NCEA) Web site www.epa.gov/ncea under "what's new." Written public comments on the scientific literature and on EPA's characterization of the science in the draft perchlorate assessment will be accepted by EPA's contractor, Eastern Research Group, for consideration during the Agency's document revision process. These comments will be made available to the peer reviewers. Public comments must be received by April 5, 2002. Send your comments to: Eastern Research Group ERG, Attn: Meetings, 100 Hartwell Avenue, Lexington, MA 02421. If your comments are under 50 pages in length, you can send them via email attachment (in Word, WordPerfect or PDF) to meetings@erg.com.

What is Perchlorate?

Perchlorate is both a naturally occurring and man-made chemical. Most of the perchlorate manufactured in the United States is used as the primary ingredient of solid rocket propellant. Wastes from the manufacture and improper disposal of perchlorate-containing chemicals are increasingly being discovered in soil and water.

How Can Perchlorate Affect Human Health?

Perchlorate interferes with iodide uptake into the thyroid gland. Because iodide is an essential component of thyroid hormones, perchlorate disrupts how the thyroid functions. In adults, the thyroid helps to regulate metabolism. In children, the thyroid plays a major role in proper development in addition to metabolism. Impairment of thyroid function in expectant mothers may impact the fetus and newborn and result in effects including changes in behavior, delayed development and decreased learning capability. Changes in thyroid hormone levels may also result in thyroid gland tumors. EPA's draft analysis of perchlorate toxicity is that perchlorate's disruption of iodide uptake is the key event leading to changes in development or tumor formation.

What are the Preliminary Conclusions of the Draft Toxicity Assessment?

The EPA draft assessment concludes that the potential human health risks of perchlorate exposures include effects on the developing nervous system and thyroid tumors. The draft assessment includes a draft reference dose (RfD) that is intended to be protective for both types of effects. It is based on early events that could potentially result in these effects, and factors to account for sensitive populations, the nature of the effects, and data gaps were used. The draft RfD is 0.00003 milligrams per kilogram per day (mg/kg/day). The RfD is defined as an estimate, with uncertainty spanning perhaps an order of magnitude, of a daily exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of adverse effects over a lifetime. As with any EPA draft assessment document containing a quantitative risk value, that risk value is also draft and should not at that stage be construed to represent EPA policy. Thus, the draft RfD for perchlorate is still undergoing science review and deliberations both by the external scientific community and within the Agency.

The assessment provides a hypothetical conversion of the draft RfD to a drinking water equivalent level, assuming factors of 70 kilograms (kg) body weight and 2 liters (L) of water consumption per day. The converted draft estimate would be 1 microgram per liter (ug/L) or 1 part per billion (ppb). If the Agency were to make a determination to regulate perchlorate, the RfD, along with other considerations would factor into the final value.

Does Perchlorate Cause Cancer?

Perchlorate is associated with disruption of thyroid function which can potentially lead to thyroid tumor formation. This draft toxicity assessment accounts for both developmental and tumor formation effects.

Does My Water Contain Perchlorate?

Confirmed perchlorate releases have occurred in at least 20 states throughout the United States (see Figure 2). In EPA Region 9, perchlorate releases have occurred in California, Arizona, and Nevada. Perchlorate has also been released into the Colorado River, which is a drinking water source for some areas of the region. Additional information and maps detailing those sites are available in Chapter 1 of the draft of the "Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization." EPA, other federal agencies, states, water suppliers and industry are already actively addressing perchlorate contamination through monitoring for perchlorate in drinking water and surface water. The full extent of perchlorate contamination is not known at this time.

What is Being Done about Perchlorate?

A peer review of the draft perchlorate

toxicity assessment will be held March 5 and 6, 2002 in Sacramento, CA. The purpose of the peer review is to provide an independent review of the scientific information and interpretation used in the document. Once the assessment is finalized, the reference dose will be used in EPA's ongoing efforts to address perchlorate problems. EPA's draft reference dose represents a preliminary estimate of a protective health level and is not a drinking water standard. In the future, EPA may issue a Health Advisory that will provide information on protective levels for drinking water. This is one step in the process of developing a broader response to perchlorate including, for example, technical guidance, possible regulations and additional health information. A federal drinking water regulation for perchlorate, if ultimately developed, could take several years.

In 1998, perchlorate was placed on EPA's Contaminant Candidate List for consideration for possible regulation. In 1999, EPA required drinking water monitoring for perchlorate under the Unregulated Contaminant Monitoring Rule (UCMR). Under the UCMR, all large public water systems and a representative sample of small public water systems are required to monitor for perchlorate over the next two years to determine whether the public is exposed to perchlorate in drinking water nationwide.

How is Perchlorate Removed from Water?

Several types of treatment systems designed to reduce perchlorate concentrations are operating around the United States, reducing perchlorate to below the 4 ppb reporting level. Biological treatment and ion (anion) exchange systems are among the technologies that are being used, with additional treatment technologies under development.

Many other perchlorate studies have been completed during the last several years. A May 2001 summary of 65 perchlorate treatment studies is available online at www.gwrtac.org/ (click on "Technical Documents" then look for "Technology Status Reports"). The summary report was prepared by the Ground-Water Remediation Technologies Analysis Center. Most of the projects described in the report are bench-scale and pilot-scale demonstrations of water treatment technologies, although several entries describe full-scale systems and soil treatment methods. Most of the projects employ biological treatment methods or ion (anion) exchange technology, although reverse osmosis, nanofiltration, granular activated carbon, and chemical reduction are also discussed. Results of federally-funded perchlorate treatment research, managed by the American Water Works Association Research Foundation (AWWARF), are also becoming available (see www.awwarf.com/research/spperch.asp).

Is Perchlorate-contaminated Water Safe to Drink?

EPA's draft toxicity assessment is preliminary and thus, it is difficult to make definitive recommendations at this stage. Other factors that influence the answer to this question include how much water is consumed, the degree of perchlorate contamination and the health status of the consumer.

Sensitive populations, like pregnant women, children and people who have health problems or compromised thyroid conditions, should follow the advice of their health care provider regarding the amount and type of liquids, including water that should be consumed.

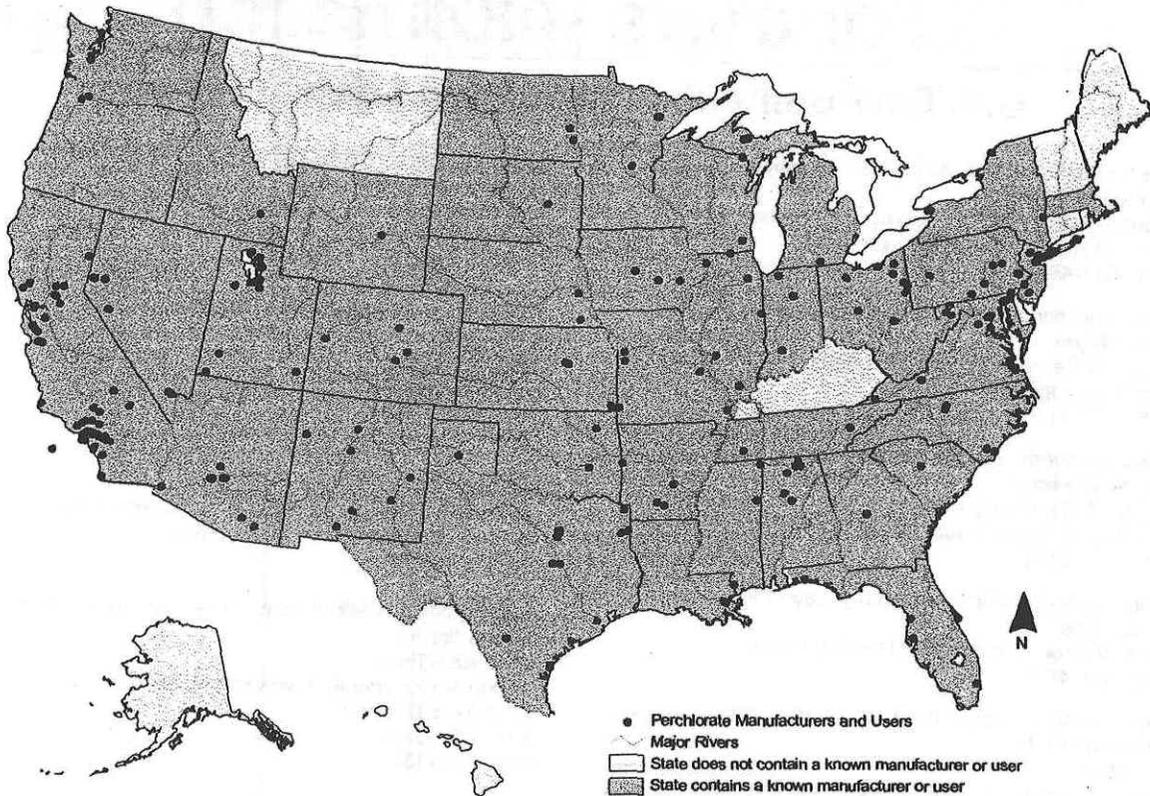


Figure 1: U.S. Perchlorate Manufacturers and Users, as of October 2001

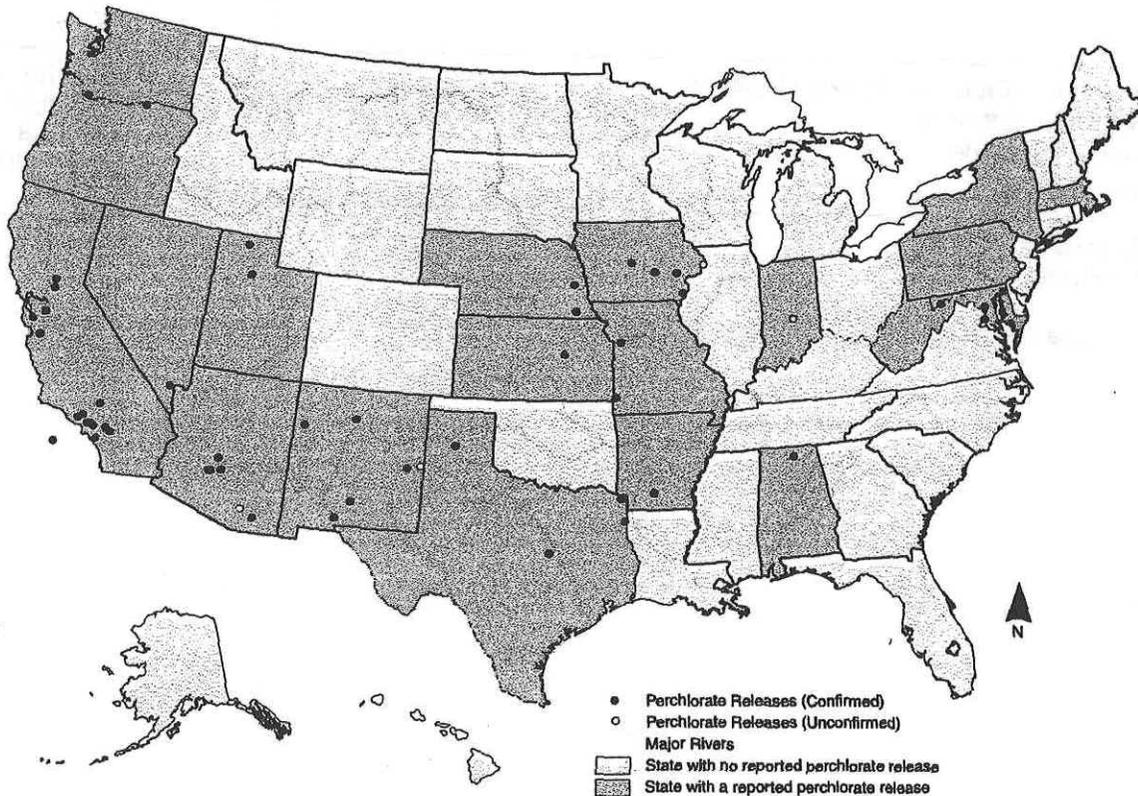


Figure 2: Reported Releases of Perchlorate into the Environment, as of November 2001

For more information

U.S. Environmental Protection Agency Contacts

Direct health and risk assessment questions to:

Annie Jarabek
National Center for Environmental Assessment
Office of Research and Development
(919) 541-4847

Direct questions about occurrence to:

Kevin Mayer
Region 9 Remedial Project Manager
Superfund Division
(415) 972-3176

Direct questions about treatment technology to:

Wayne Praskins
Region 9 Superfund Division
San Gabriel Valley treatment studies
(415) 972-3181

Direct questions about regulatory issues to:

David Huber
Office of Ground Water and Drinking Water
(202) 564-4878

Direct questions about the Integrated Risk Information
System (IRIS) to:

Amy Mills
National Center for Environmental Assessment
Office of Research and Development
(202) 564-3204

During the peer review and in regard to Region 9

Direct press inquiries to:
Lisa Fasano
Region 9 Office of Public Affairs
(415) 947-4307

After peer review and outside of Region 9

Direct press inquiries to:
Dave Deegan
EPA Office of Media Relations
(202) 564-7839

or

Richard David
Immediate Office of the Assistant Administrator
Office of Research and Development
(202) 564-3376

Direct questions about community involvement or the
mailing list to:

Wenona Wilson
Region 9 Community Involvement Coordinator
Superfund Division
(415) 972-3239
(800) 231-3075



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**MCAS EL TORO
RAB MEETING**

Site 11

Transformer Storage Area

Explanation of Significant Differences

May 28, 2003

Presented By

Karnig Ohannessian - SWDIV

Site 11 Background

• Location and Use

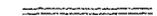
- Located on the northeast side of Building 369 in the southwestern quadrant of former MCAS El Toro.
- Used in the past (~1968 to 1983) as a maintenance and storage yard for transformers that contained polychlorinated biphenyls (PCBs).

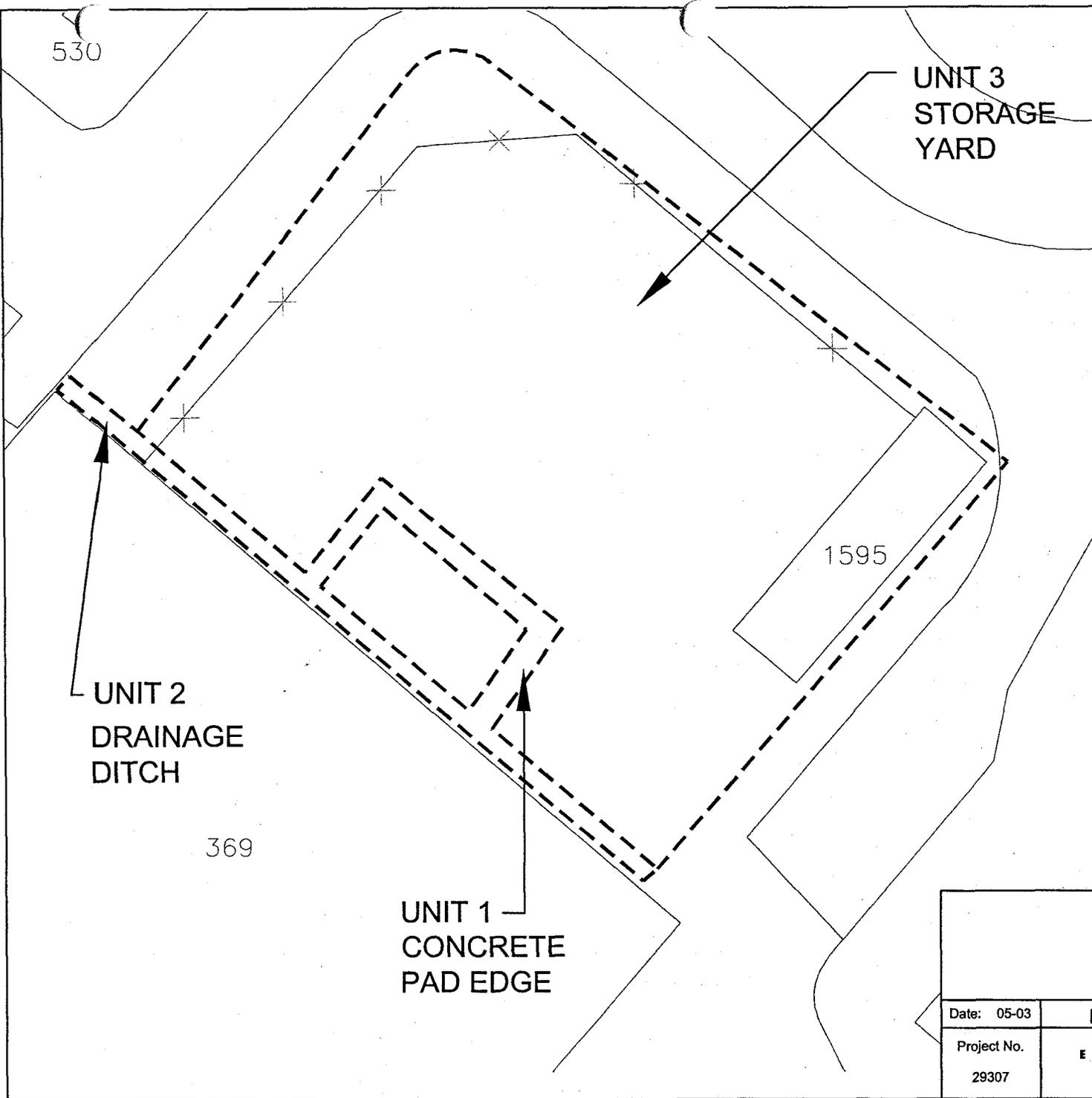
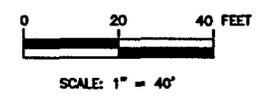
**• Selected Remedy in Final Record of Decision (ROD)
(September 1999)**

- PCB and pesticide contamination confined in top 4.5 feet of soil.
- Groundwater (~100 ft) not threatened.
- **Units 1 and 2 recommended for further action to remove PCB-contaminated soil (133 cubic yards at Unit 1 and 100 cubic yards at Unit 2).**
- **Unit 3 recommended for no further action (no PCBs; low risk).**

M:\p\peda\29307\CTO-89\Site 11\Documents\ESOP\Drawings\Figure 1-2.dwg, 5/23/03

LEGEND

-  ROAD
-  STREAM WASH
-  IRP SITE
-  MCAS EL TORO BOUNDARY



Site Location Map		
IRP Site 11		
Date: 05-03	Former MCAS El Toro	Figure 1
Project No. 29307	 <small>A BECHTEL INTERNATIONAL LTD. COMPANY</small>	

1A

Site 11 Basis for Explanation of Significant Differences (ESD)

- **Post ROD**
 - The ROD documented selection of soil removal at Units 1 and 2 as the site remedy.
 - Remedial Action Strategy document issued December 1999
 - Realized risk-based cleanup goals *could not be achieved*.
 - Requested use of EPA Region 9 PRGs as cleanup goals.
 - Agencies agreed an ESD would be required if the cleanup goals were changed.
- **ESD Contents**
 - Description of the proposed change to the selected remedy and explanation of why the Navy is making the change.

Site 11 ESD Purpose

The purpose of the Site 11 ESD is to describe and justify modifications to the Final ROD (September 1999) by addressing the following:

1. Changes to the risk based concentrations (RBCs) presented in the ROD based on a risk reevaluation.
 - a. Used updated toxicity criteria and slope factors.
 - b. Incorporated additional soil sampling results.
2. The risk reevaluation showed that site risks were lower but still above acceptable levels.

Site 11 Risk Reevaluation

- **Need for Risk Reevaluation**

- Since the Phase II Remedial Investigation (RI) was published, several exposure factors and toxicity indices for PCBs used to calculate risk were updated for the current EPA Region 9 Preliminary Remediation Goals (PRGs).
- Four additional soil samples were collected in May 1999 at depths of 1.5 feet and 3.5 feet below ground surface and analyzed for PCBs and pesticides/herbicides.
 - PCBs and pesticides/herbicides were detected in the samples.
- Risk reevaluation was conducted in order to *incorporate EPA's new scientific data* on exposure factors and toxicity indices and to *incorporate additional field data*.

Site 11 Risk Reevaluation

- **What Was Different?**

- Exposure factors
- Toxicity indices
- Concentrations

- **What Was Not?**

- **Level of protection**
- **Exposure scenarios**
- Chemicals
- Methodology
- Receptors

Site 11 Risk Reevaluation Summary

Unit Number	Risk Reevaluation Reference	Excess Lifetime Cancer Risk (residential scenario)	Excess Lifetime Cancer Risk Drivers	Noncancer Risk (Hazard Index)	Noncancer Risk Drivers
1	Record of Decision (September 1999)	90 in 1,000,000	Aroclor 1260 (99%)	4.5	Aroclor 1260 (99%)
	Reevaluation of Risk (February 2003)	10 in 1,000,000	Aroclor 1260 (99%)	2.5	Aroclor 1260 (>99%)
2	Record of Decision (September 1999)	6 in 1,000,000	Aroclor 1260 (99%)	0.3	—
	Reevaluation of Risk (February 2003)	5 in 1,000,000	Aroclor 1260 (91%) Dieldrin (7%) Heptachlor (1%)	1.1	Aroclor 1260 (99%)
3	Record of Decision (September 1999)	3 in 10,000,000	—	0.017	—
	Reevaluation of Risk (February 2003)	1 in 10,000,000	—	0.01	—

Site 11 Risk Reevaluation

• Risk Reevaluation Results

- Updated risk calculations were generally *lower* than risk estimates presented in the RI report.
- Therefore, calculated site-specific risk-based concentrations were higher *while still achieving the same risk reduction*.
- Following discussions with regulatory agencies, a decision to continue to implement the remedial action at Units 1 and 2 was made.
- Evaluation of cleanup at these units will be based on the residual risk using updated risk parameters.

Site 11 Comparison of ROD and ESD

- **What is Changed?**
 - Cleanup goals
 - Confirmation sampling
- **What is Unchanged?**
 - Chemicals of concern
 - Extent of soil removal
 - Soil disposal and backfill
 - Cost
 - Level of protection
 - Regulatory compliance
 - Cleanup approach
 - Cleanup time

Site 11 Status Update

- **Schedule**
 - ESD
 - BCT Review: February – May 2003
 - Public notice: May 2003
 - Future work
 - Remedial Action Work Plan: February 2003 – September 2003
 - Remedial Action: September 2003 – December 2003
 - Remedial Action Report: March 2004

FORMER MCAS EL TORO RAB BRIEFING

IRP Site 1 Perchlorate Investigation Update May 28, 2003

Presented By
Gordon Brown, RPM
SWDIV

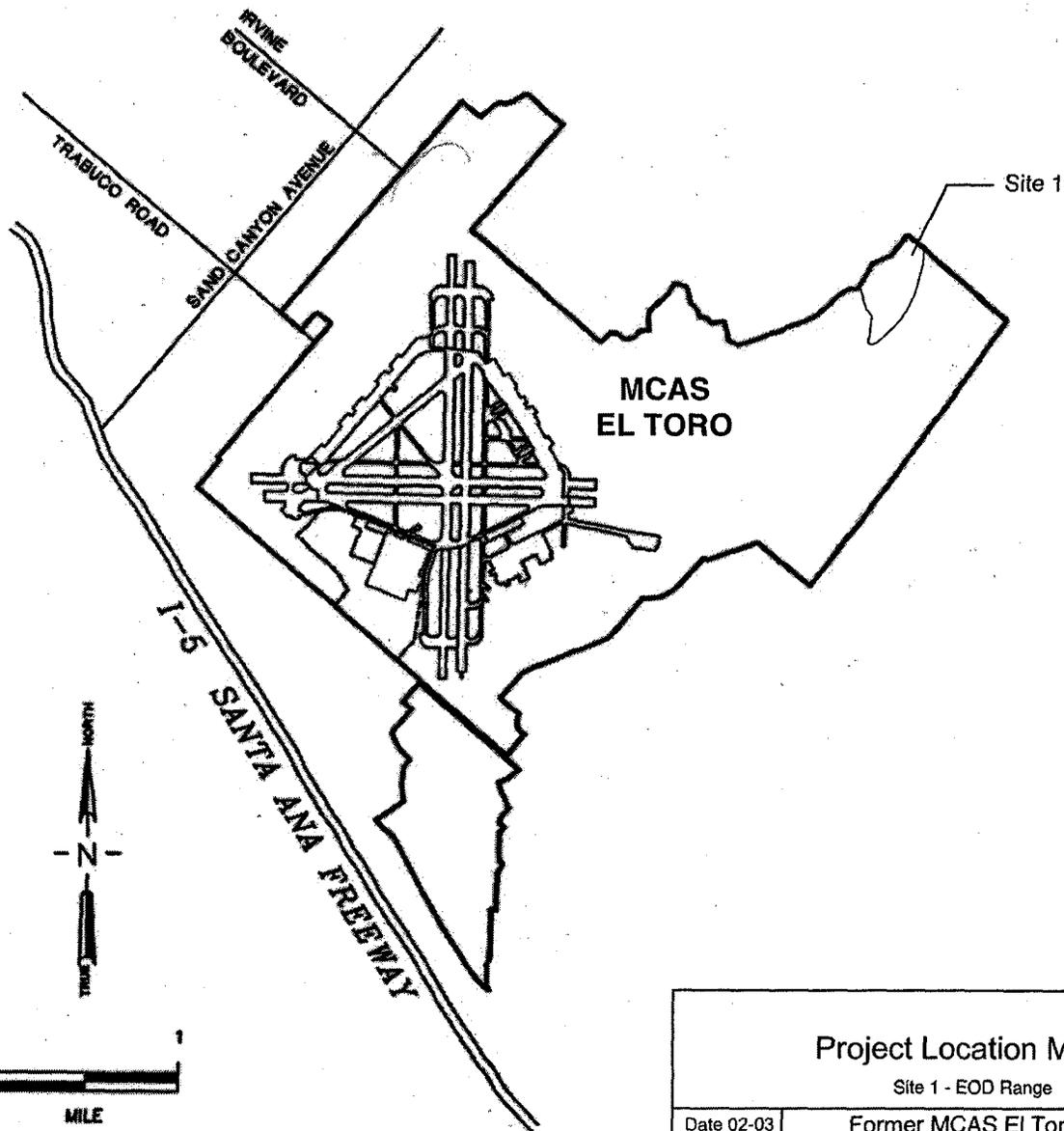
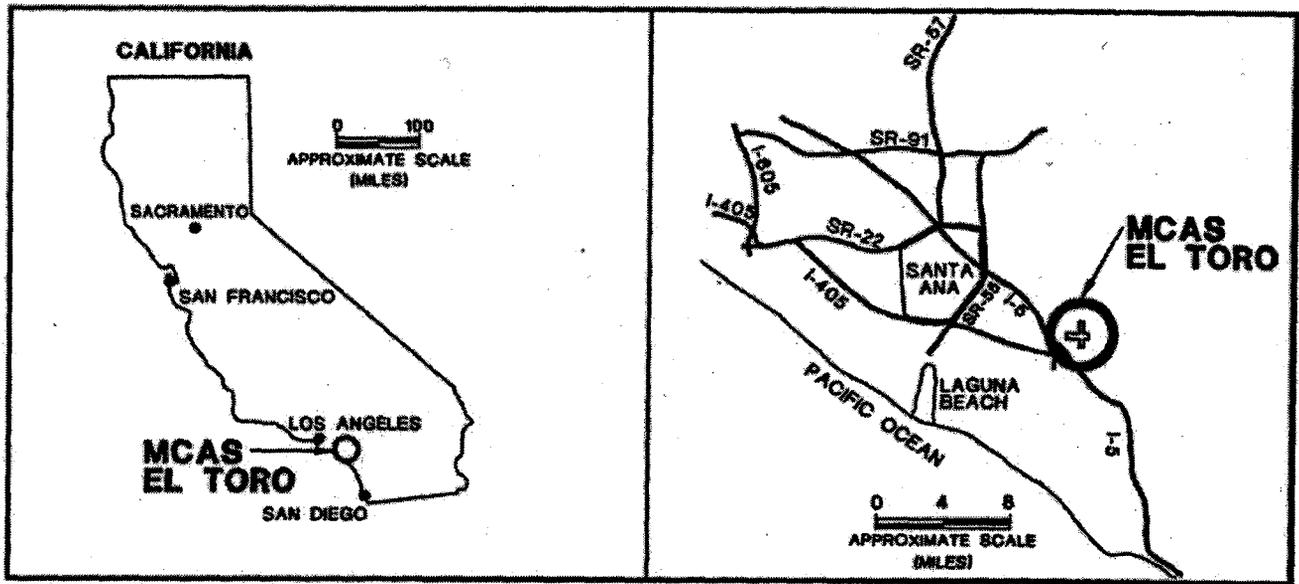
5/28/03

SITE 1 Perchlorate Investigation Update

SITE DESCRIPTION/HISTORY

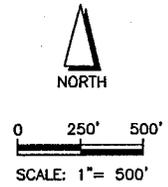
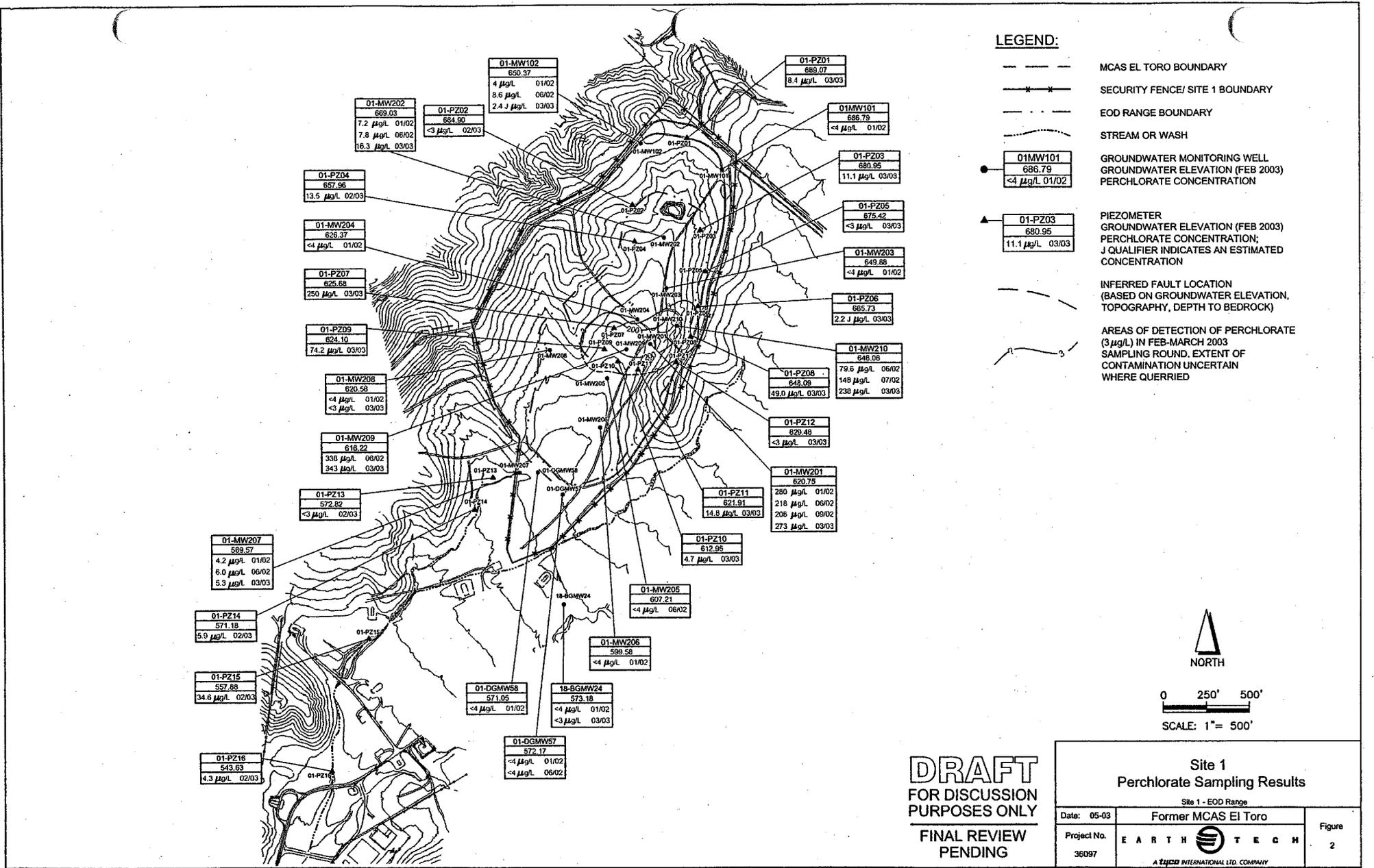
- Approximately 74 acres with the center portion of the site used for EOD Training
- EOD Training performed at the site for more than 40 years (~1953-1999)
- Munitions used in training activities included:
 - Cartridge-actuated devices and ammunition
 - FS Smoke (sulfur trioxide chlorosulfonic acid)
 - Hand grenades, land mines
- Northern EOD Range used by military
- Southern EOD Range used by FBI and Orange County Law Enforcement
- Currently secured by fence/locked gate

5/28/03



Project Location Map		
Site 1 - EOD Range		
Date 02-03	Former MCAS El Toro	Figure 1
Project No. 36097	EARTH TECH <small>A TEXACO INTERNATIONAL LTD. COMPANY</small>	

36097.00.22.02



DRAFT
FOR DISCUSSION
PURPOSES ONLY

FINAL REVIEW
PENDING

Site 1 Perchlorate Sampling Results		
Site 1 - EOD Range		
Date: 05-03	Former MCAS El Toro	
Project No. 36097	EARTH TECH	Figure 2
A TUCO INTERNATIONAL LTD. COMPANY		

SITE 1
Perchlorate Investigation Update

Removal Action Process

- Determination of a need for a removal action by Navy
- Removal Action Options
 - Time Critical
 - Prepare Action Memorandum (Removal Action Work Plan prepared concurrently)
 - Issue Public Notice
 - Implement Removal Action
 - Non Time Critical
 - Prepare Engineering Evaluation/Cost Analysis
 - Make EE/CA available for a 30 Day Public Comment Period
 - Prepare an Action Memorandum (Removal Action Work Plan Prepared concurrently)
 - Implement Removal Action

5/28/03

SITE 1
Perchlorate Investigation Update

Proposed Time Critical Removal Action
Selected for Site 1

- Purpose: Treat Perchlorate in Groundwater in the Suspected Source Area (Central Portion of Site 1)
- Proposed Method:
 - Groundwater Extraction and Treatment using a resin system similar to the IRP Site 2 Treatment System.
 - Treated groundwater will be discharged to the surface:
 - The discharge location is subject to determination
 - Options include upgradient or downgradient of the pumping well(s)

5/28/03

SITE 1
Perchlorate Investigation Update

Proposed Schedule

- **Action Memorandum and Removal Action Work Plan**
 - Draft AM and RA Work Plan: September 2003
 - Draft Final AM and RA Work Plan: December 2003
 - Public Notice: January-February 2004
 - Final AM and RA Work Plan: March 2004
- **Removal Action Implementation**
 - Mobilization & Installation: April – May 2004
 - Operation of Perchlorate Treatment System: May 2004

5/28/03

**MCAS EL TORO
RAB MEETING**

May 28, 2003

**Update on
Property Transfer Support
Documents**

Presented by
Andy Piszkin - SWDIV

**FORMER MCAS EL TORO
Stationwide EBS**

OVERVIEW

- **2002/2003 Environmental Baseline Survey (EBS)**
 - **Objective:** To collect data, document the existing environmental condition of the base, and identify and confirm locations of environmental concern.
 - EBS shall be comprehensive enough to support a Finding of Suitability to Transfer (FOST)

2

**FORMER MCAS EL TORO
Stationwide FOST**

OVERVIEW

- **2003 Finding of Suitability to Transfer (FOST)**
 - **Objective:** To identify property that is environmentally suitable for transfer
 - Includes property of Environmental Condition of Property (ECP) Types 1 through 4
 - *ECP Area Type 1* - Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
 - *ECP Area Type 2* - Areas where only release or disposal of petroleum products has occurred.
 - *ECP Area Type 3* - Areas where release, disposal, and/or migration of hazardous substances have occurred, but at concentrations that do not require a removal or remedial action.
 - *ECP Area Type 4* - Areas where release, disposal, and/or migration of hazardous substances have occurred, and all remedial actions necessary to protect human health and the environment have been taken.

3

**FORMER MCAS EL TORO
Stationwide FOST**

OVERVIEW Continued

- Approximately 84% of the base is environmentally suitable for transfer.
- Actual amount of property transferred may be slightly less due to the footprint of “carve-outs” - areas that will not be transferred due to Navy’s ongoing environmental activities.
- Draft FOST in public review until May 28, 2003.

4

**FORMER MCAS EL TORO
Stationwide FOSL**

OVERVIEW

- **2003 Finding of Suitability to Lease (FOSL)**
 - **Objective:** To identify property that is environmentally suitable for lease.
 - Includes property of ECP Types 5 through 7 (remaining property not in the FOST).
 - *ECP Area Type 5* - Areas where release, disposal, and/or migration of hazardous substances have occurred, removal and/or remedial actions are under way, but all required remedial actions have not yet been completed.
 - *ECP Area Type 6* - Areas where release, disposal, and/or migration of hazardous substances have occurred, but required response actions have not yet been implemented.
 - *ECP Area Type 7* - Areas that are not evaluated or that require additional evaluation.

5

**FORMER MCAS EL TORO
Stationwide FOGL**

OVERVIEW Continued

- **Fundamental Lease Conditions**
 - Operations must not be detrimental to either human occupation and the environment.
 - Operations must not interfere with Navy's on-going or future environmental investigations and remediation activities.
 - Operations must not expose occupants to any existing or potential environmental concerns.

6

Locations of Concern

STATUS	USTs	ASTs	OWSs	APHOs	SWMU (93)/ TAAAs (63)	MSC	PCB XFRMRs	IRP SITES	PRLs
TOTAL (1,027)	404	39	56	124	156	24	124	24	76
NFA (773)	357	36	48	69	96 ^(b)	15	124	13	15
% Complete (75)	88	92	86	79	62	63	100	54	20
In Review (43)	21	2	2	29	17	2	0	0	0
In Progress (180)	25	1	6	26	43	7	0	11	61

Notes: ^a The total number of LOCs listed include LOCs within parcels that have already been transferred; therefore, the total number of LOCs addressed in this EBS is lower.
^b Includes 3 SWMUs (104, 105, & 106) with NFA determinations pending results of radiological survey.



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

February 25, 2003

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Draft Technical Memorandum. Groundwater Modelling, Operable Unit 1 and 2A, Former Marine Corps Air Station, El Toro, dated January, 2003

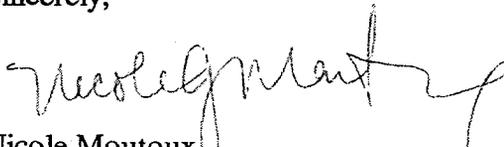
Dear Mr. Piszkin:

EPA has reviewed the above-referenced document. The technical memorandum presents results of groundwater modeling conducted for the TCE plumes at Sites 18 and 24. These modeling results will be used to support remedial design of the groundwater extraction well field which is part of the remedy selected in the Record of Decision for these sites.

Overall, the quality of the technical memorandum is high and the model results closely correlate with measured conditions over the 10-year (January 1991 through December 2001) transient flow calibration. As acknowledged in the conclusions and recommendations section, uncertainties exist with regard to flow rates achievable with the proposed extraction wells in both the shallow and principal aquifer. Some disparity may occur between predicted and achievable plume contours after remedial actions are underway. However, given the length of time that the plume has existed as well as the fact that TCE continues to migrate, it is appropriate to begin extracting TCE mass from groundwater while using data that is collected as part of the monitoring program to further optimize the system.

If you have any questions, please call me at (415)972-3012.

Sincerely,


Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

cc: Triss Chesney, DTSC
John Broderick, RWQCB
Karnig Ohannessian, SWDIV
Herb Levine, EPA
Marcia Rudolph, RAB Subcommittee chair

EPA comments on Draft Technical Memorandum
Groundwater Modeling, OU-1 and OU-2A

GENERAL COMMENTS

1. We appreciate the extensive use of color figures and the detailed presentation of the particle tracking results in plan view.
2. Evaluating the movement of contaminated groundwater between the shallow aquifer and the principal aquifer is a key component of the modeling effort. However, it is difficult to fully comprehend how this occurs without including cross sections. To help illustrate the vertical model discretization and movement of particles between model layers, please include the following cross sections: (1) one regional cross section that shows the vertical profile of the geologic strata at the site, (2) one cross section that shows the model layers in vertical profile and (3) for each scenario, several cross sections that document the pathlines of model particles between layers over the duration of the model simulations. This would help demonstrate how the model discretization incorporates the regional geologic setting and illustrate how model particles move between model layers.
3. The modeling results do not include an active source term or any provision for the possibility that multiple pore volumes will likely be required to remediate the aquifers to site cleanup goals. While this approach is acceptable, given the complexities and uncertainties in estimating groundwater remediation time frames, the Technical Memorandum should include some caveats that indicate the high degree of uncertainty in the model derived estimates for aquifer restoration.
4. In the past EPA has expressed concern over dewatering the shallow groundwater unit. Please provide a figure which shows declining water levels due to extraction over time for the shallow groundwater unit.

SPECIFIC COMMENTS

1. **Section 2.2.1, Transient Flow Calibration, Page 2-4:** The paragraph directly below Table 2-2 discusses the fact that maps depicting computed heads vs. observed heads were not presented for the principal aquifer since it is undergoing pumping and the transient calibration used monthly average pumping rates. It would be highly beneficial to perform a transient calibration of the model domain surrounding one the extraction wells in the principal aquifer using pumping test data or other detailed observation well data to demonstrate that the model is calibrated to instantaneous, transient measurements. This step could be a way to "verify" the model and increase the credibility of the capture zone estimates for the principal aquifer.
2. **Section 2.2.2, Updated Conditions, Page 2-25:** In the paragraph directly below the dispersivity equation, it is stated that "A horizontal transverse dispersivity of 5 feet (one-tenth of longitudinal dispersivity) and a vertical dispersivity of 0.5 feet (one-hundredth of

longitudinal dispersivity) were evaluated in the current model with minimal effect.”
Please describe in more detail what is meant by minimal effect.

3. **Section 2.2.3, Model Assumptions, Page 2-26:** This discussion of the model assumptions does not include any discussion of aquifer pore volumes. In general, model derived cleanup estimates usually underestimate aquifer restoration time frames since the removal of multiple pore volumes of contaminated groundwater is usually required to remediate an aquifer. Please include a discussion of how multiple flushing cycles may be required to remediate the aquifers discussed in this section.
4. **Section 3.2, Extraction Scenarios, Pages 3-2 through 3-21:** No cross sections illustrating the movement of particles between layers are included in this section. Please include particle tracking runs in cross section so the movement of particles between layers can be demonstrated.
5. **Section 3.2, Extraction Scenarios, Pages 3-2 through 3-21:** The travel time for the particle pathlines is not included on the pathline figures. Please provide a “callout” box or other demarcation that documents the travel time for a few of the particle pathlines on each particle pathline figure.
6. **Section 3.3.1, Modeling Uncertainty Discussion, Page 3-22:** This section does not include any discussion of the uncertainty in model derived aquifer restoration estimates or solute transport modeling. Please include a detailed discussion in this section that describes the uncertainty in solute transport modeling and how the model derived aquifer restoration estimates may underestimate the total remediation time due to the possibility that multiple pore volumes may be required to completely flush out the contamination in the aquifer.
7. **Section 4, Conclusions and Recommendations, Page 4-1:** It is stated in the third paragraph that simulation results show that scenario 2 will result in compliance with RAOs. Please also discuss the amount of time required under scenario 2 to achieve MCLs and compare this to the discussion in the ROD for sites 18 and 24.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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75 Hawthorne Street
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February 25, 2003
Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Pilot Testing Documents, OU1 and OU2A Groundwater Remedy submitted by Irvine Ranch Water District, dated February, 2003

Dear Mr. Piszkin:

EPA has reviewed the Pilot Testing documents submitted to us by the Irvine Ranch Water District. These documents contain information about a pilot study to be conducted on three wells in order help determine how best to design the treatment plant that will be used to treat groundwater from the principal aquifer as well as water from the Shallow Groundwater Unit. We are sending our comments to the Navy with a copy to the IRWD because these documents support an FFA deliverable (RD workplan) and the Navy, as a party to the FFA, is ultimately responsible for all FFA deliverables.

EPA's major comment on the documents are with respect to the discharge of potentially high levels of TCE to the municipal sewer system. It may be necessary for IRWD to treat the additionally treat the Reverse Osmosis concentrate prior to discharge. Our attached comments address this issue more specifically.

If you have questions, please call me at (415) 972-3012.

Sincerely,

A handwritten signature in cursive script, appearing to read "Nicole Moutoux".

Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

cc: Steve Malloy, IRWD
John Broderick, RWQCB
Triss Chesney, DTSC
Marcia Rudolph, RAB Subcommittee Chair
Robert Woodings, RAB Co-Chair

Draft Pilot Testing Protocol, Irvine Desalter Project
Marine Corps Air Station El Toro, California
February 2003

GENERAL COMMENTS

1. On page 2, it is stated that the blended water at the Shallow Groundwater Unit (SGU) pilot site at El Toro is not expected to be a characteristic hazardous waste (toxicity) due to blending of highly contaminated groundwater with less contaminated groundwater. However, once the groundwater is run through the reverse osmosis (RO) filters, 80% of the trichloroethylene (TCE) will be concentrated into some fraction of the total groundwater flow. This concentrate may be characteristically hazardous and would likely not be appropriate for discharge to a municipal sewer. Please revise the pilot-scale testing protocol to address the expected quality of the RO filter reject water and provide plans to test this water for volatile organic compounds (VOC) prior to its discharge to the municipal sewer.
2. For clarity, please revise the pilot-scale testing protocol to indicate why RO is performed prior to air stripping instead of vice versa.

SPECIFIC COMMENTS

1. **Section 2.2, Process Description, Page 14:** Condensate may form in the granular activated carbon (GAC) vessels during the pilot-scale test. Please revise the pilot-scale testing protocol to address how condensate, if any, will be stored, characterized, and disposed of.
2. **Figure 1: Process Flow Diagram, Page 17:** The flow diagram for the treatment unit indicates that there are two by-pass lines which will allow the direct discharge of treated or partially-treated water to the municipal sewer. It would seem that at the flow rates proposed for this pilot-scale test, this untreated or partially-treated water could be containerized and treated at a later time. If, however, for some reason this is not possible, please provide some assurance that the sewer district has authorized the discharge of the untreated and partially- treated groundwater to the sewer.

ERRATA

1. Please provide the units for all constituents listed in Table 5.



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

April 3, 2003

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Draft Work Plan, Pre-Design Investigation for Shallow Groundwater Unit Remedy, IRP
Site 24, Marine Corps Air Station, El Toro, dated February 28, 2003

Dear Mr. Piszkin:

EPA has reviewed the draft workplan referenced above. We found the Navy's presentation of the workplan on March 27 informative and helpful in reviewing and preparing our comments. In general, we found the workplan will address the required needs for design of the ultimate groundwater remedy. We have three areas of concern with regard to the workplan.

First, we are concerned that the proposed locations for observation wells may not be close enough to the proposed extraction wells in order to accurately observe drawdown. Second, as discussed at the meeting last week, the plan to use passive diffusion bag sampling (PDB) should address the potential for vertical migration. And finally, the Field Sampling Plan (FSP) should provide more specific direction to the field crew to ensure that field activities are carried out in accordance with the objectives of the FSP. These issues are addressed more thoroughly in the attached comments.

If you have questions, please call me at (415) 972-3012.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicole Moutoux".

Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

cc: Karnig Ohannessian, SWDIV
John Broderick, RWQCB
Triss Chesney, DTSC
Marcia Rudolph, RAB Subcommittee Chair
Robert Woodings, RAB Co-Chair
Herb Levine, EPA

**Comments on the Draft Work Plan, Pre-Design Investigation for Shallow Groundwater
Unit Remedy
IRP Site 24, Volatile Organic Compounds Source Area
Marine Corps Air Station, El Toro, California**

GENERAL COMMENTS

1. In many instances, observation wells proposed for aquifer testing are located more than 100 feet away from extraction wells; many are located more than 400 feet away. According to the Work Plan, the Site 24 aquifer is heterogeneous and extraction rates are anticipated to range from less than 5 gallons per minute (gpm) to approximately 40 gpm, and long-term yields are unknown. This illustrates the heterogeneous and potentially low yielding nature of the aquifer in this area. In addition, as Site 24 is located in an area where significant agricultural pumping occurs, observation wells should be placed such that they are within the cone of influence of the extraction well. The extraction well to be used during the aquifer test should represent the main source of hydraulic influence on the observation wells so that a measurable and steady decline in groundwater elevations can be measured in each observation well over the duration of the aquifer test. Considering these factors, we recommend the Work Plan be revised to include the following:
 - a. Provide calculations that estimate the drawdown versus time at each observation well over the range of anticipated extraction rates for each aquifer test. The groundwater model recently developed can be used to assist in determining this as well as assist in locating observation wells (see next comment).
 - b. Propose the installation of at least two observation wells per aquifer test (one down gradient and one cross gradient) that are located less than 50 feet from the extraction well. The proposal to use the observation wells as secondary measurement points during the aquifer tests appears appropriate. However, due to the low anticipated yields and heterogeneous nature of the aquifer, many of the currently proposed observation wells may not show measurable drawdown during the aquifer tests.
 - c. Evaluate how regional pumping may influence groundwater levels during the aquifer tests and designate a control observation well for each aquifer test located beyond the anticipated cone of influence of the extraction well but screened within the same water bearing unit so it can be determined if regional groundwater levels are rising, declining or stable during the duration of each aquifer test. Provide a rationale in the Work Plan that evaluates the potential for regional groundwater pumping during the aquifer tests and the possible impact this may have on the aquifer test results and how the aquifer test data would be corrected if groundwater extraction not associated with the aquifer tests impacts the aquifer test results.

2. The proposal to use passive diffusion bag samplers (PDB) to evaluate the vertical profile of contamination in select areas seems promising, but is potentially problematic. The Work Plan for Site 24 should provide detailed and defensible rationale for the PDB sampling effort so all stakeholders can understand what and how data will be collected so that the field crew can implement the data collection effort with minimal ambiguity. For example, the text on page 3-3 states that "Samplers will be placed at a minimum 10-foot intervals (with the exception of well 18_TIC55 with intervals of 50-feet) throughout the entire well screen within these wells," while the rationale provided on Table 3-2 states "Use PDB to evaluate the vertical extent of TCE and to confirm previous observations that suggested that high TCE concentrations were associated with finer grained lithologic units." If a goal of the PDB sampling effort is to determine if lithology and concentration can be correlated vertically, it would seem appropriate to place the PDB samplers at lithology changes rather than at regular intervals. In addition, if the fine-grained zones do not transmit sufficient water, then the levels of groundwater contamination measured in the PDB samplers will be more representative of the coarser-grained zones, regardless of where the samplers are placed. Results of PDB sampling at McClellan Air Force Base (AFB) have shown that there can be representativeness issues related to contaminant profiles within screened intervals. To clarify the goals, methodology and possible limitations of the PDB sampling effort, please include the following information in the next submittal of this Work Plan:

- a. Provide a statement which clarifies the objectives and goals of PDB sampling. This should include a discussion about how the data will be used (ie, it will be used to target monitoring zones/extraction zones).
- b. Include rationale for selecting the placement depth for each PDB sampler. Specify how the field crew will install the samplers, how long the samplers will remain in the well, and how vertical migration of water within the well will be monitored.
- c. Include diagrams that illustrate how the PDB samplers will be placed vertically in each well with respect to known lithologic units. This could include profiles of the well screens and lithology versus proposed PDB sampler depths with an emphasis on the areas where the highest levels of contamination are expected.

3. A comparison conducted at Mather AFB of prefilled versus samplers filled on site found that there was less variability with the prefilled PDB sampler. We recommend that the Navy evaluate the Passive Diffusion Membrane Sampler Pilot Study conducted at Mather AFB and the Evaluation of Comparability for Passive Diffusion Membrane Sampler Results conducted at McClellan AFB.

4. The Work Plan does not include any discussion of the methodology for how the proposed aquifer tests will incorporate the known vertical stratification of the aquifer. Accounting for vertical stratification during the proposed aquifer tests is important because many of the proposed extraction wells and observation wells are screened over large intervals that span multiple fine- and coarse-grained zones. Several of the proposed extraction wells

and observation wells are or will be screened at different depths, and may only partially penetrate the saturated thickness of the aquifer. The Work Plan acknowledges that the observed groundwater contamination is stratified. Tests in stratified aquifers often require nested observation wells so the drawdown at different depths in the aquifer can be measured while maintaining the same horizontal distance from the extraction well. Without nested wells, the degree of hydraulic connection between water bearing zones cannot be evaluated. The Work Plan should discuss how the interpretation of the aquifer tests will account for vertical stratification and how they will be corrected for partially penetrating wells and/or wells screened in multiple zones.

5. In many instances, the Work Plan and associated appendices do not include enough specific information to understand what will be done and how the field crew will specifically implement it. Since this Work Plan also includes the Field Sampling Plan, this is the only documentation the project team and the field crew will have to ensure the work is performed properly. The following specific comments address many of the items that need to be addressed.

SPECIFIC COMMENTS

1. **Section 3.3, Decision Inputs, Page 3-2:** Because agricultural pumping may impact the aquifer test result, this section should acknowledge that such influences should be one of the decision inputs for the aquifer tests. Please include the effect of agricultural pumping as one of the decision inputs and describe how agricultural pumping may affect the aquifer test results.
2. **Section 3.7.1 Aquifer Testing and Contaminant Evaluation, Page 3-3:** The Work Plan does not include detailed figures showing the geometric relationship between each proposed extraction well and its associated observation wells and how the wells are oriented in relation to measured groundwater flow directions. Figures to scale, showing the orientation of the monitoring points for the aquifer tests are very important for determining if the placement of the observation wells is correct. Each aquifer test should include observation wells located down gradient and cross gradient of the extraction well so the anisotropy of the aquifer can be evaluated. Here, or in another section of the Work Plan, please provide detailed figures for each aquifer test illustrating the orientation of the extraction well and observation wells with respect to measured groundwater flow directions.
3. **Appendix A, Draft Sampling and Analysis Plan, Section 2.2.3, Aquifer Test, Pages A-8 through A-10:** This section should be revised to include the following: (1) proposed locations for at least two observation wells (cross gradient and down gradient) that are located less than 50 feet from the extraction well, (2) how possible precipitation events will be measured during the aquifer tests, (3) how barometric pressure changes will be monitored during the aquifer tests, (4) how it will be ensured that a constant groundwater extraction rate will be maintained during each aquifer test, (5) how and how often the groundwater extraction flow rate will be measured, (6) how much the groundwater extraction flow rate can deviate before the test must be restarted, (7) where control

observation wells are located so regional groundwater fluctuations can be monitored before, during and after each test, (8) how often manual measurements of groundwater elevation will be taken, (9) what wells will have pressure transducers installed in them, (10) how vertical aquifer stratification will be accounted for during the aquifer tests, (11) detailed figures showing the configuration of the extraction wells and observation wells for each aquifer test, and (12) how the aquifer tests will monitor and incorporate agricultural groundwater extraction if it occurs during the aquifer tests.

4. **Appendix A, Draft Sampling and Analysis Plan, Section 2.2.4, Groundwater Enhancement Using SVE, Pages A-10 through A-13:** This section does not include sufficient detail to understand what will be done, or specifically how the field crew will implement it. Please revise the Work Plan to include: (1) how it will be determined when steady state conditions are achieved, (2) how and how often drawdown will be measured, (3) where a control observation well is located to measure regional fluctuations, (4) how soil gas samples will be collected, and (5) the locations for all analytical sampling to be performed.

5. **Appendix A, Draft Sampling and Analysis Plan, Section 2.3.2.1, Passive Diffusion Bag Sampling, Page A-14:** Considering the experimental nature of this technology for vertical profiling of groundwater contamination in wells screened across multiple stratigraphic zones, the text in this section is not adequate. The Project Procedure for Passive Diffusion Bag Samplers included in Appendix C provides more general details, but is still not specific to this project, and contains limited information on exactly how to perform vertical profiling using PDB sampling. The Work Plan should specifically document how the PDB sampling will be performed so the field crew knows exactly what to do in the field. In addition to providing detailed field methodology for how this sampling technique will be used at Site 24, please revise the Work Plan to note the specific depth each PDB sampler will be placed in the field in relation to stratigraphic zones, observed contamination and screen length, exactly how the PDB samplers will be set at each depth, how long the PDB samplers will be left in place, and what procedures will be used to minimize cross contamination between samples.

In addition, since many of the well screens effectively connect multiple stratigraphic zones, it is appropriate to evaluate where it is anticipated that the majority of the groundwater enters the well screen and provide rationale for how this will be factored into the PDB sampling effort. For example, if the PDB samplers are placed vertically in the well to target fine-grained zones that may contain contamination, the amount of groundwater flowing through these fine-grained zones may be minimal relative to the amount of groundwater flowing through coarser-grained zones located above and below the PDB sampler. This could bias the sampling effort so the measured concentrations are more representative of the coarser-grained zones, when the actual goal of the PDB sampling effort was to determine if contamination is concentrated in the finer-grained zones. In a second Appendix A titled Technical Notes, a large number of PDB sampling limitations are noted. The list of limitations includes a discussion of well screens that transect zones of different hydraulic head. In this section, borehole flow meter testing is given as a possible way to gain insight into where groundwater is entering the well screen. However, none of these limitations, or possible remedies, are discussed in the

Work Plan. The Work Plan should specifically discuss all possible limitations of this sampling method in relation to the objectives of the proposed PDB sampling at Site 24, and provide a way to evaluate in the field if sample bias is occurring.

6. **Appendix A, Draft Sampling and Analysis Plan, Section 2.3.7, Aquifer Test, Pages A-16 through A-17:** This section lacks key information (e.g., flow rate monitoring, precipitation monitoring, irrigation well monitoring, control well monitoring). Refer to previous comments for the type of detailed information that should be included. When the field crew reads this section there should be no ambiguity regarding specifically when, how, or what needs to be done during each aquifer test.

7. **Appendix A, Draft Sampling and Analysis Plan, Section 2.3.8, Groundwater Remediation Enhancement Using SVE, Page A-17:** The text in this section does not include enough detail to understand what will be done or specifically how the field crew will implement it. Please include the following information: (1) where and how often manual water levels will be collected, (2) how often drawdown will be measured in wells installed with data transducers, (3) where a control observation well is located to measure regional fluctuations.



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

April 11, 2003

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Draft Environmental Baseline Survey(February 7, 2003), Technical Information Package of Potential Release Locations Investigation Results(March 20, 2003), and Technical Sheets for Runways and Pesticide Mixing Area(April 3, 2003), Former MCAS El Toro

Dear Mr. Piszkin:

EPA has reviewed the reports referenced above. These reports document the current environmental condition of the base and will be used to support transfer and leasing of base property. Please note that EPA did not review information related to Temporary Accumulation Areas(TAA), RCRA Facility Assessment(RFA) sites, Above Ground Storage Tanks(AST), or Underground Storage Tanks(UST). The enclosed comments address our concerns.

If you have any questions, please call me at (415)972-3012.

Sincerely,

A handwritten signature in cursive script that reads "Nicole Moutoux".

Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

Enclosure

cc: Triss Chesney, DTSC
John Broderick, RWQCB
Kyle Olewnik, SWDIV
Daniel Jung, City of Irvine
Bob Woodings, RAB Co-Chair
Marcia Rudolph, RAB Sub-Committee Chair

**EPA Comments on
Draft Environmental Baseline Survey
MCAS El Toro
April 2003**

GENERAL COMMENTS

1. As discussed at the Base Closure Team Meeting, because the current plan for Anomaly Area 3 is to include it with the cleanup for IRP Sites 3 and 5, please include discussion of it in the text of the section titled, Installation Restoration Program in Chapter 4.
2. Since the intended reuse is known, the EBS should make some reference to it.
3. Please note whether the NEPA requirement has been completed for the new intended reuse? There is no reference to it outside of Appendix E which is not included.

SPECIFIC COMMENTS

1. **Section 2.1.2, Non-Navy Sites, Page 2-4:** There is a discrepancy between the text and Table A-4 in Appendix A. The text on page 2-4 indicates that 7 new Locations of Concern (LOCs) identified by Geosyntec will be further investigated by the Navy. However, Table A-4 indicates that there are 8 sites (APHO-G78, TAA-G165, PCB-GT129, PCB-GT130, PCB-GT131, RFA-G747, RAILROAD-G, and RUNWAYS-G) to be investigated during the EBS. Please resolve this discrepancy.
2. **Section 2.1.4, Personnel Interviews, Page 2-9:** Although the only personnel interviewed in support of this EBS were current employees in occupied buildings that are leased (e.g., caretaker, golf course, stables), this information would be helpful in determining the current-condition of the property. Please include a set of meeting notes for the interviews conducted in support of this EBS.
3. **Section 3.2.3, Surface Water and Hydrology, Page 3-2:** The statement, "Surface drainage in the vicinity of former MCAS El Toro generally flows southwest, following the slope of the land" is not supported by a figure. Please include a topographic figure of the site, or provide topographic information on a figure already included in the EBS.
4. **Section 4.1.1, Potential Release Locations Identified During 2002 EBS, Page 4-1, second bullet:** The text of this bullet indicates that two facilities were assigned an ECP Area Type of Category 5 due to petroleum products. Shouldn't they be category 2?
5. **Section 4.1.2.3, Aerial Photograph Feature/Anomaly Locations of Concern, Page 4-5:** The second paragraph of this section is unclear. The text indicates that 500 APHOs were identified and that, while the majority of these were associated with Installation

Restoration Program (IRP) sites, 53 features/anomalies could not be associated with an IRP site and required additional investigation as APHO LOCs. However, the text then indicates that 68 APHOs have been identified as LOCs and are discussed in this EBS. Please which sites account for the additional 15 LOCs.

6. **Section 4.1.2.3, Aerial Photograph Feature/Anomaly Locations of Concern, Page 4-5:** The EBS does not indicate under which program Anomaly Area 3 is being addressed. This area is identified in Table 4-4, page 4-82 as 7 APHOs that were newly designated and recommended for further investigation. The EBS does not address this new designation until Section 4.1.10 which discusses radioactive materials. Please cross-reference this information in Section 4.1.2.3 and discuss where and how this newly designated area will be addressed. (See general comment above)
7. **Table 4-4, Aerial Photograph Anomaly Sites, Page 4-78:** Several sites recommended for further investigation have a NFA letter associated with them. For example, APHO 31 is designated as an ECP Area Type of Category 7, yet the table associates a NFA letter from the Regional Water Quality Control Board (RWQCB) dated 01/17/2001 with this site. Please clarify this discrepancy.
8. **Section 4.1.3.6, Site 8 - DRMO Storage Yard, Page 4-10:** There is a discrepancy between this section and Section 4.1.3.16, Site 19 - Aircraft Expeditionary Refueling (ACER) Site, on page 4-16. The text on page 4-10 indicates that soil containing polychlorinated biphenyls (PCBs) was excavated in 1994 and used as fill at IRP 19. However, the text on page 4-16 indicates that this activity was performed in 1993. Please resolve this discrepancy.
9. **Section 4.1.3.16, Site 19, ACER Site, Page 4-16:** It is noted that excavation at site 19 was filled with soil containing PCBs from Site 8. Please note the concentrations of PCBs contained in the soil used for backfill and whether some type of disclosure to a potential buyer is necessary.
10. **Section 4.1.4.1, Aboveground Storage Tank Locations of Concern, Page 4-20:** There is a discrepancy between the text on page 4-20 and Table 4-6, Aboveground Storage Tanks (AST). The text indicates that one AST is inactive. However, Table 4-6 indicates that there are 2 inactive ASTs (ASTs 146 and 862). Please resolve this discrepancy.
11. **Section 4.1.4.1, Aboveground Storage Tank Locations of Concern, Page 4-20:** There is information missing from the text regarding the contents of ASTs. Table 4-6 indicates that JP-5 was stored was stored in AST 682, however the text does not include JP-5 as a substance contained in ASTs. Please include this information in the text of Section 4.1.4.1.
12. **Section 4.1.4.1, Aboveground Storage Tank Locations of Concern, Page 4-20:** It is unclear if regulatory concurrence has been obtained for the ASTs requiring no further action. The text indicates that for ECP Area Type Categories 2a, 2b, and 3 regulatory concurrence has been obtained, however, this information is not included in Table 4-6.

Please provide assurance in Table 4-6 that regulatory concurrence has been obtained for ASTs requiring NFA.

13. **Section 4.1.5.2, Drainage Systems, Page 4-24 to 4-26:** Information regarding specific site practices and the ECP Area Type of Category is missing from this section. The text describes limits and requirements set forth by the permits under which MCAS El Toro was operating, but does not describe the actual activities which occurred during the lifetime of these permits. In addition, neither the Sanitary Sewers nor the Storm Water Drainage are given an ECP Area Type of Category. Please provide this missing information in the text of this section or note if it is presented elsewhere in the EBS.
14. **Section 4.1.5.5, Silver Recovery Unit Locations of Concern, Page 4-27:** There is a discrepancy between the text in this section and Table 4-10, Silver Recovery Units, page 4-139. The text indicates that all Silver Recovery Units (SRUs) were given an ECP Area Type of Category 7. However, Table 4-10 indicates that the ECP Category for SRU 03A is 5. Please resolve this discrepancy.
15. **Section 4.1.6, Polychlorinated Biphenyl Locations of Concern, Page 4-28:** It is not clear why transformer ID IRP 8 located at the DRMO Yard was given an ECP Category of 6. The notes in Table 4-11 on page 4-151 indicate that all required response actions have not yet been completed, indicating that the ECP Category would be 5. Please clarify.
16. **Section 4.1.6, Polychlorinated Biphenyl Locations of Concern, Page 4-30:** It is not clear why the site tracked at IRP Site 12 is not included in Table 4-11 or Figure 4-14. The text indicates that PCBs were detected in soil samples taken at the former sludge drying beds. Please include this site in Table 4-11 and on Figure 4-14.
17. **Section 4.2.1.2, Lead Based Paint, Page 4-40:** Please change the wording of the second bullet to state: "Evaluate the need for interim control abatement, or no action for bare soil lead concentrations between 400 and 1200ppm....", not 2000ppm.

MINOR COMMENTS

1. **Section 4.1.2.1, RCRA Facility Assessment (RFA) Locations of Concern, Page 4-3:** The text references Section 4.1.1.3 for Temporary Accumulation Areas (TAAs), Section 4.1.2 for IRP Sites, Section 4.1.3.2 for Underground Storage Tanks, Section 4.1.4.1 for Oil-Water Separators, and Section 4.1.5 for PCBs. These section numbers are not correct. Please revise the text so that it references the correct section numbers.
2. **Section 4.2.1.1, Asbestos-Containing Material, Page 4-38:** The text incorrectly references Table 4-14 for information regarding ACM surveys. This information is provided in Table 4-15. Please correct the text to provide the correct table reference.
3. **Section 4.2.1.4, Drinking Water Quality, Page 4-42:** The text references Table 4-15 for information regarding buildings that were regularly sampled. This information is

provided in Table 4-16. Please correct the text.

4. **Section 4.2.1.5, Air Quality, Page 4-42:** The text references Table 4-16 for information regarding buildings and their associated permitted emission sources. However, this information is provided in Table 4-17. Please correct the text.
5. **Figure 4-5, Installation Restoration Program Sites:** This figure is missing a line indicating where IRP 25 is located. Please provide this line on this figure.
6. **Appendix A, Summary of Environmental Factors by Facility:** The organization and formatting of this appendix is confusing. Continuous page numbers throughout Appendix A are not provided, and two different versions of Table A-4 are included. Neither table contains a complete acronym list in its footnotes. Table A-1 does not define what is meant by the letters "R" and "I" or the numbers in parenthesis. Please revise Appendix A and its tables so that they are formatted with continuous page numbers, only one Table A-4 is provided, and each table includes a definition for each acronym and feature presented within it.

**EPA Comments on
Draft Technical Information Package of Potential Release Locations Investigation Results
and Technical Sheets for Runways and Pesticide Mixing Area
April 2003**

GENERAL COMMENTS

Please note that due to the limited number of samples that were collected at these PRLS and the screening nature of this investigation, when results are over PRGs, EPA generally makes the comment that further investigation should occur or more rationale should be provided.

SPECIFIC COMMENTS

1. **PRL 46:** EPA holds concurrence with NFA pending reporting of drain sample result.
2. **PRL 130:** In the background section, it is stated that NFA has been recommended for 3 TAAs. Please note which agency is reviewing this recommendation.
3. **PRL 133:** EPA holds concurrence with NFA pending drain sample results.
4. **PRL 165:** EPA holds concurrence pending perchlorate sample results.
5. **PRL 347:** EPA concurs with Navy's recommendation for NFA for this PRL.
6. **PRL 350:** EPA concurs with Navy's recommendation for NFA for this PRL.
7. **PRL 376:** EPA concurs with Navy's recommendation for NFA for this PRL. However please note that sample area is now on north end of building when in the specification sheet, it was shown on south end closer to clean out and sewer line. Please reconcile the figures.
8. **PRL 392:** EPA concurs with Navy's recommendation for NFA for this PRL.
9. **PRL 439:** EPA holds concurrence with NFA pending drain sample results.
10. **PRL 443:** The specification sheet for PRL 443 showed that a sample near former the SRU would be collected. No such sample appears to have been collected.
11. **PRL 447:** EPA concurs with Navy's recommendation for NFA for this PRL.
12. **PRL 458:** Please show discharge point to sewer from building.
13. **PRL 463:** In Navy's response to EPA's comments on this PRL, Navy indicated they would show locations of drains. Drains are not shown on the figure

14. **PRL 475:** EPA concurs with Navy's recommendation for NFA for this PRL.
15. **PRL 605:** Navy's response to EPA's comment on spec sheet was that relevant sampling near hazardous waste storage areas would be included but they are not. The concentration of arsenic at HA-2 must be further investigated. The next closest sample is over 120 feet away and the concentration significantly exceeds PRGs as well as MCAS El Toro background value for arsenic.
16. **PRL 606:** Navy's response to EPA's comments on the spec sheet for this PRL stated that previous relevant sampling locations would be shown at hazardous storage shed. These are not shown and additionally background information regarding the shed should be provided in the text.
17. **PRL 625/626:** Navy's response to EPA's comments on the spec sheet for this PRL stated that samples would be collected "from the drainage ditch, at the outfall of the Area Drain Overflow Pipe" as well as "beneath the grease interceptor". Neither of these samples are shown on the diagram. Were they collected?
18. **PRL 632:** EPA concurs with Navy's recommendation for NFA for this PRL.
19. **PRL 634:** EPA holds concurrence on this PRL pending drain sample results.
20. **PRL 636:** EPA concurs with Navy's recommendation for NFA for this PRL.
21. **PRL 651:** EPA concurs with Navy's recommendation for NFA for this PRL.
22. **PRL Runways:** EPA is unable to concur with NFA for the entire runway area. Due to the limited number of sample locations, it is appropriate to further investigate the area near HA-7 where benzo-a-pyrene was found exceeding PRGs:(See general comment above.)
23. **PRL Pesticide Mixing Area:** The concentrations of pesticides found at HA2 should be included on or with this technical sheet. Although the levels of pesticides decreased from HA2 to the next closest sample 15 feet away(DP-1), the fact that Dieldren was found right at the PRG in sample DP-1 taken along with the fact that Dieldren was found at extremely high levels in HA2 could indicate a fairly small hotspot that was not found with current sample locations. Please provide more rationale or further sampling to support NFA.



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

May 15, 2003

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

Re: IRP Site 2 Aquifer Test, MCAS El Toro

Dear Mr. Piszkin:

The purpose of this letter is communicate EPA's concerns about the data that has been collected during the IRP Site 2 aquifer test. In looking at the most recent memo provided (dated April 30, 2003), we continue to have doubts about the usefulness of the data in achieving the primary goal of the work plan. The goal stated in the workplan was to "...gather data that will allow the Navy to select the groundwater remedy for IRP Site 2".

The Navy's goal is to collect data to support selection of a remedy and a design. With the data presented thus far, EPA is not sure how the Navy will have sufficient information to design a groundwater remedy. Our primary concerns are that the extent of TCE and perchlorate contamination are not known, and that pumping monitoring wells is not yielding relevant extraction design data.

Our team is available to discuss this further at the next BCT meeting, either May 28 or 29, if the Navy would like to add Site 2 as an agenda item.

Sincerely,


Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

cc: Gordon Brown, SWDIV
John Broderick, RWQCB
Rafat Abbasi, DTSC
Herb Levine, EPA
Dave Murchison, DTSC



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

May 20, 2003

Mr. F. Andrew Piszkin
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station, El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Draft Final Environmental Baseline Survey, dated April 2003, Former MCAS El Toro,
El Toro, CA

Dear Mr. Piszkin:

EPA received the draft final Environmental Baseline Survey on May 5, 2003. The draft final document reflects revisions made to the document based in part on regulatory comments on the draft EBS. We find the document to be well-organized and well-written. The enclosed comments address our remaining concerns.

If you have any questions, please call me at (415)972-3012.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicole Moutoux".

Nicole Moutoux
Project Manager
Federal Facilities Cleanup Branch

Enclosure

cc: Rafat Abbasi, DTSC
John Broderick, RWQCB
Kyle Olewnik, SWDIV
Daniel Jung, City of Irvine
Bob Woodings, RAB Co-Chair
Marcia Rudolph, RAB Sub-Committee Chair

**EPA Comments on
Draft Final Environmental Baseline Survey
MCAS El Toro
April 2003**

GENERAL COMMENTS

1. The discussion on page 4-6 regarding Anomaly Area 3 should include information about the Removal Site Evaluation as well as include the ECP area type for Anomaly Area 3 within the text. Currently the text refers the reader to Table 4-4 for a discussion of the APHO sites. The table then states that a "removal site evaluation(RSE) is underway at Anomaly Area 3" and provides the area type for each APHO. Because documents have been issued referring specifically to Anomaly Area 3 and not AHPOs 59-65, more information regarding the RSE should be in the text on page 4-6 and the text should indicate the area type for the entire anomaly area 3.

SPECIFIC COMMENTS

1. Figure 6-1a: There is a discrepancy between the area types shown for APHOs 59-65 on figure 6-1a and what is in Table 4-4. Table 4-4 shows the APHOs as area type 7 while the figures shows them as type 5. The figure should be revised to show these APHOs as area type 7.
2. Appendix E, PRL 46: No figure is provided for this PRL.
3. Appendix E, PRL 130: No figure is provided for this PRL.
4. Appendix 2, Pesticide Mixing Area: No figure is provided for this PRL.



BECHTEL ENVIRONMENTAL, INC.

CLEAN 3 TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-95-D-7526

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TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Ms. Karen Rooney, Code 02R1.KR
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: July 22, 2003
CTO #: 38 (EL3)
LOCATION: MCAS El Toro

FROM: Thurman L. Heironimus, Project Manager

DESCRIPTION: MCAS El Toro, Public Information Materials 5/28/03 Restoration Advisory Board Meeting Held at Irvine City Hall, Irvine, CA

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- O - Original Transmittal Sheet
C - Copy Transmittal Sheet
E - Enclosure

Date/Time Received