

# Marine Corps Air Station El Toro Installation Restoration Program

## Public Information Materials

12/3/97

### Restoration Advisory Board Meeting held at Irvine City Hall Irvine, CA

#### Materials/Handouts Include:

- RAB meeting agenda/Public notice - 12/3/97 RAB meeting.
- RAB draft meeting minutes - 9/24/97 RAB meeting (*Minutes were approved at the 12/3/97 meeting.*)
- Presentation - "Updates on MCAS El Toro Activities: DoD Equipment Transfer of Soil Vapor Extraction Equipment, OU-3A Feasibility Study, VOC Source Area Activities" by Bernie Lindsey, Remedial Project Manager, Southwest Division Naval Facilities Engineering Command.
- Presentation - "MCAS El Toro Landfills and Institutional Controls" by Dante J. Tedaldi, Ph.D. and P.E., Project Manager (CLEAN II/Bechtel Corp.) MCAS El Toro and MCAS Tustin
- Handout, "Institutional Controls, What they are and how they are used" Dept. of Defense, Office of the Deputy Under Secretary of Defense, Environmental Security, BRAC Environmental Program Fact Sheet, Spring 1997.
- Handout, "Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills," U.S. EPA, Office of Solid Waste and Emergency Response, Quick Reference Fact Sheet, December 1996.
  
- Agency Comments - U.S. Environmental Protection Agency
  - U.S. EPA Approval of Draft Final Feasibility Study Reports for Operable Unit 2C - Sites 3 & 5, MCAS El Toro, August 14, 1997 (letter dated November 3, 1997)
  - U.S. EPA Comments on Draft Proposed Plan for Closure of Inactive Landfills, Sites 2, 3, 5, and 17, MCAS El Toro (letter dated November 3, 1997).
  - U.S. EPA Response to Proposed RD/RA Schedule for MCAS El Toro (letter dated November 5, 1997).
  
- Agency Comments - Cal-EPA, Department of Toxic Substances Control
  - Cal-EPA DTSC Comments on Round 6 Groundwater Monitoring Report, MCAS El Toro (letter November 12, 1997).
  - Cal-EPA DTSC Comments, Draft Proposed Plan for Operable Units 2B (Sites 2 & 17) and 2C (Sites 3 & 5), MCAS El Toro (letter dated November 17, 1997).

**MCAS El Toro  
Restoration Advisory Board  
Meeting**

**3 December 1997 6:30-9:00 PM  
Irvine City Hall  
Conference and Training Center  
One Civic Center Plaza  
Irvine**

**AGENDA**

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

Joseph Joyce  
Marine Corps/Navy RAB Co-chair

***Old Business (6:40-7:10)***

Approval of 9/24/97 Minutes (6:40-6:45)

Greg Hurley  
RAB Community Co-chair

Two Records of Decision Signed by BRAC Cleanup Team (6:45-6:50)

Joseph Joyce

RAB Questionnaire/Survey Results (6:50-7:00)  
and Report on 10/29/97 RAB Subcommittee Meeting

Greg Hurley

RAB Installation Restoration Program Sites Tour (7:00-7:10)

Marcia Rudolph and  
Joe Barney, RAB Members

***New Business (7:10-8:30)***

Regulatory Agency Comment Update (7:10-7:25)

Glenn Kistner  
U.S. Environmental Protection  
Agency

Tayseer Mahmoud  
Cal-EPA, Dept. of Toxic  
Substances Control

Update on Norton Air Force Base Soil Vapor Extraction  
Equipment for Use at MCAS El Toro (7:25-7:35)

Bernie Lindsey  
U.S. Navy/Southwest Division

Update on OU-3A, Sites 8, 11 and 12 (7:35-7:45)

Bernie Lindsey

Break (7:45-7:50)

MCAS El Toro Landfills, Sites 2, 3, 5, and 17 -  
Institutional Controls (7:50-8:30)

Andy Piszkin  
U.S. Navy/Southwest Division

- Site Descriptions of Landfills
- Institutional Controls Identified and Evaluated for MCAS  
El Toro Landfills

***Meeting Summary (8:30-8:50)***

Greg Hurley

Meeting Evaluation

Future Topics and Meetings

***Closing (8:50-9:00)***

Joseph Joyce & Greg Hurley

PUBLIC NOTICE

***MARINE CORPS AIR STATION  
EL TORO***

**Restoration Advisory Board Meeting**



***Participate in the environmental restoration and cleanup  
program underway at MCAS El Toro.  
Your input is welcome!***

**Wednesday, December 3, 1997  
6:30 - 9:00 p.m.**

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

This meeting will feature the following activities and presentations:

- ***Institutional Controls for MCAS El Toro Landfills - Installation Restoration Program Sites 2, 3, 5, and 17***
- ***Update on Sites with Shallow Soil Concerns - Installation Restoration Program Sites 8, 11, and 12***



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

**Commanding General  
AC/S, Environment (IAU)  
Attn: Mr. Joseph Joyce, MCAS El Toro  
P.O. Box 95001, Santa Ana, CA 92709-5001  
(714) 726-3470 or 726-3386**

**MARINE CORPS AIR STATION EL TORO**  
**RESTORATION ADVISORY BOARD MEETING**

**September 24, 1997**

*MEETING MINUTES*

A Restoration Advisory Board (RAB) meeting for Marine Corps Air Station (MCAS) El Toro was held Wednesday, September 24, 1997 at the Irvine City Hall. The meeting began at 6:35 p.m. These minutes summarize the discussions and presentations from the meeting.

**WELCOME, INTRODUCTIONS, AGENDA REVIEW**

Mr. Joseph Joyce, Marine Corps RAB Co-Chair, opened the meeting by introducing himself and welcoming everyone. He reminded the group to sign in and include their name and address on the sign-in sheet, so all in attendance will receive a copy of the meeting minutes and the next RAB meeting agenda. Following self-introductions made by all in attendance, Mr. Joyce provided an overview of the meeting agenda. Two new items were added: 1) a presentation by Capt. Matt Morgan regarding rocket propelled ordinance and ammonium perchlorate; and 2) discussion of a questionnaire for RAB members developed by Greg Hurley, RAB Community Co-Chair.

Mr. Joyce also had three announcements:

- In regard to the next update to the MCAS El Toro Base Realignment and Closure (BRAC) Cleanup Plan (BCP), he extended an invitation for two members from the RAB's BCP Subcommittee to participate in a January 1998 meeting pertaining to the document.
- Two Record of Decisions (RODs) were in the process of being signed by the BRAC Cleanup Team. The ROD for Operable Unit (OU) 2A, Site 24, Volatile Organic Compound (VOC) Source Area, Soil Vapor Extraction in the Vadose Zone had been signed on September 23, 1997 by both the State of California's Regional Water Quality Control Board, Santa Ana Region and MCAS El Toro. The U.S. Environmental Protection Agency (U.S. EPA) and State of California's Department of Toxic Substances Control (DTSC) were expected to sign the ROD by September 30, 1997. The ROD for OU-2A and OU-3A No Action Sites is also expected to be signed by the BRAC Cleanup Team by September 30, 1997.
- Mr. Joyce offered an opportunity for RAB members and others interested community members to participate in the upcoming October 29, 1997 RAB subcommittee meeting covering budget priorities and corresponding projects that support the Station's cleanup effort.

## OLD BUSINESS

### Review and Approval of August 6, 1997 Meeting Minutes

A motion was raised to amend the minutes on page four. It was noted that the chemical, perchloric acid, should be changed to ammonium perchlorate. The motion was adopted and the RAB minutes were approved.

### Rocket Propelled Ordnance - Capt. Matt Morgan, BRAC Public Affairs Officer, MCAS El Toro

Capt. Matt Morgan's presentation regarding rocket propelled ordinance provided clarification of a concern first raised at the August 6, 1997 RAB meeting. The concern centered on the use and disposal of rocket propelled munitions at MCAS El Toro and the chemical ammonium perchlorate, a substance used in the solid rocket fuel of these weapon systems. Capt. Morgan explained that rocket propelled munitions are stored in magazines at the Station. These munitions meet hazardous materials (HAZMAT) handling and storage requirements and are accompanied with Material Safety Data Sheets (MSDSs) with detailed information and instructions. He further explained that this ordinance, when used for training operations, is attached to various aircraft at MCAS El Toro. When aircraft return to the Station they are no longer carrying these munitions.

Concerning the disposal of rocket propelled munitions at the Station, Capt. Morgan said, that to the best of his knowledge, no rocket propelled munitions have ever been disposed of at the Station's Explosive Ordnance Disposal (EOD) Range, also referred to as Installation Restoration Program Site 1. The order of detonation for these munitions is too high to be disposed of at MCAS El Toro, therefore, ordinance disposal of this type is conducted at Naval Air Facility El Centro, Camp Pendleton, and other bases suited to handle such activities. If some unusual circumstances occur and an aircraft that is carrying these munitions has to return to MCAS El Toro, and the aircraft cannot make it to Camp Pendleton, the ordinance is disposed of out at sea in a specially designated area.

Capt. Morgan explained that the Station's EOD Range is primarily a training facility that exclusively uses the explosive substances, C4 and TNT, to dispose of ordinance. He informed the group that Station has an agreement with the Orange County Sheriff's Department and the Fire Department to dispose of confiscated ammunition (primarily small arms rounds) and fireworks, especially around the July 4<sup>th</sup> holiday. In response to a question regarding ammunition disposal at the EOD Range, Capt. Morgan said that bullets are packed in a C4 formula, it is exploded using TNT, and the explosion vaporizes the ammunition. In regard to the environmental investigations at the EOD Range, RAB members need to discuss those issues with Joseph Joyce and Glenn Kistner, U.S. EPA Project Manager.

A RAB member expressed concern about the residue from C4 and TNT. Mr. Joyce informed the RAB that the Army Corps of Engineers will ensure that Site 1 will meet close out requirements, which include investigation for residue from explosives, when the site is no

longer being used for ordnance training. Close out of Site 1 will be coordinated through the appropriate regulatory oversight agency. Future updates will be provided to the RAB.

## **NEW BUSINESS**

### **Community Questionnaire - Greg Hurley, RAB Community Co-Chair**

At the August 6, 1997 RAB meeting, Mr. Hurley, provided a brief reminder to RAB members about their responsibility to talk with members of the community about the environmental cleanup program at MCAS El Toro. In a follow-up to that reminder, he prepared a "Community Questionnaire" requesting input from RAB members on what the RAB can collectively do to better assist or facilitate such communication with the respective constituency each RAB member represents, the general community, or other interested parties. He welcomed everyone at the meeting to fill out the questionnaire and return it tonight or by mail to either himself or Joseph Joyce. Mr. Hurley said he would compile the responses and report back to the RAB.

### **MCAS El Toro Installation Restoration Program Site Tour - Joseph Joyce, RAB Marine Corps Co-Chair**

Mr. Joyce announced that on Saturday, October 25, 1997 at 9:00 a.m. a tour of the Installation Restoration Program sites at MCAS El Toro would be conducted. The bus tour would show current treatment systems that are operational and some of the remedial actions that have taken place. Mr. Joyce asked that the reservation form (provided at the sign-in table) be completed and returned to him by October 10, 1997 to ensure a seat on the bus. He reminded meeting attendees to provide the number people in their party on the reservation form. Along with the reservation form, the tour information flyer included directions to the tour starting point at the Officer's Club and Mr. Joyce's mailing address and fax number. He said the bus will depart promptly at 9:00 a.m. from the Officer's Club.

### **Regulatory Agency Comment Update - Glenn Kistner, Project Manager, U.S. EPA and Tayseer Mahmoud, Project Manager, Cal-EPA Department of Toxic Substances Control (DTSC)**

Mr. Kistner reported that U.S. EPA recently completed its review of the Draft Feasibility Study for Operable Unit (OU) 3A Sites 8, 11, and 12. The key general comment U.S. EPA had pertained to the formatting of the document. He said that the document was difficult to follow even for an experienced technical reviewer. The U.S. EPA has requested that the Navy rewrite some text to make it easier to follow. For specific comments on document formatting and comments pertaining to the technical aspects of the document, he suggested reviewing the handout provided. Mr. Kistner advised RAB members to call him if they had any questions regarding any of the comments.

Mr. Mahmoud provided two handouts containing DTSC's technical comments. One covered review comments on the Draft Feasibility Study for OU-3A Sites 8, 11, and 12. General comments pertained to the quantification of risk in the health risk assessment and exposure

pathways. Also, the report needs to be more specific regarding land use restrictions proposed for Site 8. DTSC also provided technical comments on the March 1997 groundwater monitoring report that presents sampling results from a network of 181 monitoring points at MCAS El Toro.

A RAB member expressed interest in having EPA and DTSC report back to the RAB on how Agency comments to documents have been responded to. The RAB wants to know if the Agencies are satisfied with the responses. Mr. Joyce pointed out that responses to Agency comments are provided to the RAB Co-Chair and the applicable RAB Subcommittee Co-Chairs. In the future, Mr. Kistner and Mr. Mahmoud would brief the RAB regarding such responses.

A RAB member interjected with a concern about the lack of response to comments that she sent to Mr. Joyce and Mr. Kistner regarding the OU-3A No Further Action Sites during the public comment period. Mr. Joyce reminded the RAB that comment letters received during the public comment period are not responded to individually in letter form. According to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process adhered to under the Installation Restoration Program at MCAS El Toro, all comments received during the formal 60-day public comment period are attached to the Record of Decision (ROD) in the form of a Responsive Summary, which provides both comments and responses. He reminded the RAB that the signing by key BRAC Cleanup Team members of the ROD for OU-2A, Site 24, Soil Vapor Extraction in the Vadose Zone and of the ROD for the OU-3A No Further Action Sites, is expected to be completed by September 30, 1997. After the signatures are received, the RODs will be placed in the Information Repository at the Heritage Park Regional Library in Irvine for the public to review at their leisure. The RODs will also be available at the Administrative Record (AR) File at the Station.

### **MCAS El Toro Environmental Budget Update - Brian Sanders, Program Manager, Southwest Division Naval Facilities Engineering Command (SWDIV)**

Mr. Sanders presented an overview of the BRAC environmental budget process. The purpose of his presentation was to provide RAB members with a better understanding of the role of the budgeting process for environmental investigation and restoration projects and the obtaining of funds needed for these activities. He defined a budget as a document that expresses, in financial terms, the plan for accomplishing an organization's objectives for a specified period of time. For MCAS El Toro, the budget is an extension of the BRAC Cleanup Plan (BCP) that describes the strategic plan for environmental restoration. Subsequently, budgets developed clarify the dollars needed to implement that plan.

### **Federal Budget Process**

Mr. Sanders explained that the federal budget funds non-discretionary items (2/3 of the budget) and discretionary items (1/3 of the budget). The Department of Defense (DoD) budget falls into the discretionary items category and consists of 10 to 15 percent of the entire federal budget and the DoD competes equally with all the rest of the appropriations.

The DoD budget funds the four major service branches and all other defense agencies which all support the overall mission of the DoD. The Department of the Navy (DoN) receives a portion of the DoD budget and these funds are directed at several different programs including, but not limited to: military and civilian personnel; ships; airplanes; other transportation; weapons; research, development test and evaluation; facilities; environmental compliance; and BRAC, which includes the BRAC Environmental Program.

He further explained that this is a very structured process and developing budgets requires many justifications up and down the ladder. This involves evaluating the budget climate, prioritizing projects, and explaining why money is needed for certain programs each year. This begins internally at SWDIV and all other DoN and DoD commands and proceeds all the way up to the Secretary of the Defense, to the President and Congress. Overall, the process of developing a one year budget takes two years to complete and involves nine key submittal and approval steps that serve as checks and balances.

Using Fiscal Year (FY) 2000 as an example, he explained that in November 1997 the first step is completed and it involves submitting budget requirements. (The handout provided a step-by-step description of the nine-step FY 2000 budget cycle.) One key step is an assessment of what is needed throughout the Navy (includes the Marine Corps) followed by submittal of the DoN budget to the Secretary of Defense. At this level the Navy budget competes with the four other branches and other defense agencies. Budgets are evaluated and modified to meet the overall mission of DoD. Then the DoD budget is submitted to the Office of Management and Budget. From here DoD budgets are competing with all nondiscretionary and discretionary programs. The final step will occur in September 1999 when Congress approves the federal budget. He explained that budget planning for each year actually considers needs, requirements and budgets for a five-year time frame from FY 2000 to FY 2005.

### **Station/SWDIV Budget Priorities**

Mr. Joyce explained the budget process from the Station/SWDIV level. If there is a situation with an immediate danger to human health, it is addressed immediately without going through the budget process. Typically, the budget process involves listing all projects that need to be completed, determining the requirements of each, and figuring out the anticipated costs. Before asking for needed funds, those requirements are further determined and refined. Projects are then prioritized. Those of highest priority are funded first while others are funded in later years. A key part of the prioritizing is evaluating the impacts a site has to human health and the environment and those with the highest impact are funded first. He added that bases with a solid environmental program and a reuse plan are prioritized by the DoN for funding over bases that do not have a reuse plan. Mr. Sanders stated that environmental cleanup is in the best interests of the Navy and Marine Corps because after the BRAC cleanups are completed the Navy's dollars can be used elsewhere to support the overall mission of the Navy and Marine Corps.

## **Current Status**

Mr. Sanders explained that projects funded in previous years are currently being worked on. Also, the obligation of the FY 1997 budget is being completed, Congressional approval of the FY 1998 budget is forthcoming, the Office of the Secretary of Defense is reviewing the FY 1999 budget, and SWDIV is preparing FY 2000 to FY 2005 requirements. In regard to the Installation Restoration (IR) Program budget for MCAS El Toro, \$70.1 million has been obligated from FY 1985 through FY 1997. Mr. Sanders clarified that "obligated" means that various contracts have been signed and awarded, this money is considered spent. Obligated money also includes all in-house Navy and Marine Corps expenses. The FY 1998 budget request for MCAS El Toro is \$24 million. Some of the key activities that will occur in FY 1998 include: initiating landfill designs, starting the cleanup at Site 24 using the soil vapor extraction system, and groundwater monitoring. He also said that SWDIV and the Marine Corps anticipates that a final groundwater cleanup remedy will be proposed and selected.

Mr. Sanders concluded his presentation by explaining that MCAS El Toro competes for funds and that the requirements for the IR Program are based on various input sources. These sources include: DoN policy, the Base Cleanup and Closure Teams, the RAB, and other influences. He reminded RAB members that their point of contact for all budget matters is Mr. Joyce. A question and answer session followed.

## **Budget Presentation Question and Answer Session**

A RAB member asked what the DoD will do to fund cleanups after the BRAC funds expire six years from now. Mr. Joyce said that funding options for cleanup are being coordinated at the Navy and Marine Corps headquarters level in Washington DC. Some alternate funds may come from the Environmental Restoration Navy Account.

In response to a RAB member's question regarding contamination migrating off-Station, Mr. Joyce stated that the Marine Corps is responsible for such cleanup. He clarified to RAB members that 85 percent of the base is clean and environmentally suitable for transfer with unrestricted land use. The other 15 percent of the Station has been impacted by past maintenance practices where releases occurred. To qualify for funds under the Installation Restoration (IR) Program, any contamination must have been associated with past releases as a result of MCAS El Toro activities, and are defined as such under CERCLA. He clarified that cleanup of underground storage tanks is done under the BRAC Environmental Compliance Program, a different funding source than those used for IR Program sites. Also, surveys have been conducted of buildings at the Station for lead-based paint and asbestos. Remediation is not done, notification is sent out explaining that if a building was constructed before 1978 it may contain lead-based paint. Buildings with asbestos materials will not be remediated, the notification process is also applied. Asbestos is not hazardous to human health unless it is friable. If so it will be taken care of under "operational" laws and requirements to abate the hazard, not under the IR Program.

A RAB member asked for clarification on the costs estimates for groundwater cleanup (VOC Source Area and off-Station contaminated groundwater). Andy Piszkin, Lead Remedial

Project Manager from SWDIV, said that August 1996 estimates (1997 dollars) were \$24 to 50 million for groundwater cleanup.

Capt. Morgan pointed out that after the Station closes, the Marine Corps' commitment does not go away. The Station will be cleaned up, the Federal Facilities Agreement between the Marine Corps, U.S. EPA, and the State of California assures that needed cleanup will be done.

**Update on Federal Facilities Agreement (FFA) Schedule - Mr. Andy Piszkin, Lead Remedial Project Manager, Southwest Division Naval Facilities Engineering Command**

Mr. Piszkin handed out a copy of his slide presentation which was updated from the August 6, 1997 RAB meeting. He stated that some dates from the previous RAB meeting handout had changed and reminded the RAB that the schedule dates are the *anticipated dates* for these activities.

Mr. Piszkin reiterated that two RODs are in the process of being signed by the BRAC Cleanup Team (see WELCOME, page 1 and Regulatory Agency Comment Update, page 4).

Mr. Piszkin noted that for the vadose zone soil cleanup at Site 24, there are a series of primary post-ROD documents that need to be submitted to the Agencies for review. These documents specifically pertain to the remedial design/remedial action (RD/RA) activities that will be performed. Submittal to the Agencies of the plan of action detailing the timeline and schedule for RD/RA activities and document submittals is anticipated for mid- to late-October, twenty-one days after the ROD is signed. Document submittals consist of RD/RA Work Plans, the Preliminary Remedial Design, the Final Remedial Design, the Construction Quality Assurance Plan, the Construction Quality Control Plan, the Contingency Plan, and the Project Closeout Report. Briefly, this document process results in designing the cleanup system, approval of the design, and an overall plan to implement the proposed and approved remedy.

Mr. Piszkin said that the schedule for the Landfill Sites (OU-B, Sites 2 & 17 and OU-2C, Sites 3 & 5), has for the most part been on track. However, a delay to the remaining schedule is anticipated due to a document review crunch by U.S. EPA's legal counsel which is extremely busy reviewing a number of RODs for federal facilities, two of which pertain to MCAS El Toro. He said the goal of the Marine Corps and SWDIV is to get the ROD signed within the fiscal year and a concerted effort is being made.

Mr. Piszkin stated that schedule dates pertaining to VOC Source Area and Regional Groundwater cleanup have not been officially changed in the last two months but these dates are to be negotiated by the BRAC Cleanup Team members [Marine Corps, U.S. EPA, and the State of California's Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB), Santa Ana Region]. The groundwater cleanup pertains to OU-2A, the VOC Source Area (Site 24) and OU-1, regional groundwater that is impacted by Site 24. The negotiations between the DoN (on behalf of the Marine Corps) and the Orange County Water District are a key reason for schedule changes. He noted that schedule for the Proposed Plan and Agency review and subsequent activities will be revised.

In regard to OU-3A, Sites 8, 11, and 12, the recently prepared Draft Feasibility Study Report underwent Agency review. Most of the comments have been received and they are being addressed and incorporated into the document. It is anticipated that the schedule for these sites will have delays mainly due to U.S. EPA legal counsel's current document review crunch and the numerous activities that need to be completed before the close of the fiscal year. It is anticipated that the Proposed Plan should stay on schedule and be completed for Agency review next year.

Mr. Piszkin announced that the schedule for OU-3B, Sites 1, 7, 14 and 16, is tentative due to end of year funding issues. He said that funding is prioritized for the highest need sites. Future activities for Sites 7 and 14 have not been funded yet since they are a lower priority at this time. It is anticipated that activities for Sites 7 and 14 may be pushed out farther. Site 1, the EOD Range, was discussed during Capt. Morgan's presentation on page 2.

**RAB Participation in the Installation Restoration Program at MCAS El Toro - Joseph Joyce, RAB Marine Corps Co-Chair**

Mr. Joyce's presentation summarized participation and progress achieved by the MCAS El Toro RAB since its inception in January 1994. He began by reading the Mission Statement developed by a core group of initial RAB members. To date, 26 RAB meetings, all open to the public, have been held. He also added that all RAB meetings are publicly announced in area newspapers. He mentioned the key RAB subcommittees that have been established and emphasized the important role they have played in document reviews and bringing community concerns to the table. The RAB has provided input into significant issues, most notably recent discussions on landfill consolidation, that were considered in the feasibility studies developed for the landfill sites. He also discussed the RAB's participation in the tours of the Installation Restoration Program sites, the Community Environmental Response Facilitation Act/Environmental Baseline Survey, and presentations made earlier this year to the Defense Environmental Task Force. Some of the other issues of concern to the RAB have been funding requirements for RABs and the format for public meetings. He also mentioned how important the RAB's input is in developing agendas for RAB meetings and in providing constructive criticism during the meeting evaluations.

Mr. Joyce recognized the importance of document review and the role RAB members play. He mentioned many of the key reports the RAB has reviewed, these include remedial investigation/feasibility study (RI/FS) reports, the annual revision of the Base Realignment and Closure Plan, quarterly groundwater monitoring reports, and the MCAS El Toro Community Relations Plan. To date, the RAB has reviewed 30 documents pertaining to remediation activities at MCAS El Toro.

In closing, Mr. Joyce thanked RAB members for being active participants in the environmental cleanup decision making process. He emphasized the positive working relationship that has developed among RAB members and the project managers and point of contacts from the Marine Corps, SWDIV, U.S. EPA, and California EPA. He stressed that the community is actively involved primarily because of strong and effective RAB participation.

Mr. Hurley mentioned that in the near future, the MCAS El Toro RAB may be asked for input on a proposal for a national RAB. If there are new rounds of bases closures, a national RAB may be established to help with the start-up of other RABs. Advice sought may specifically center on what such a national RAB could and should do. More information on this issue will be presented when it becomes available.

## **MEETING EVALUATION AND FUTURE TOPICS**

### **During the meeting evaluation RAB members provided the following comments:**

- Regarding budget presentation - need better definition of terms and acronyms and more complete picture of budget tasks.
- Prefer Agency comments at the beginning of meeting rather than at the end, these comments are quite valuable.
- Questions asked during budget presentation were cut-off. (Mr. Joyce responded that this was done to maintain the time schedule presented in the Agenda, a preference stated during the evaluation session at the last RAB meeting.)
- Time schedule is helpful.
- Minutes from August 6, 1997 RAB meeting very well done.
- Active participation a plus.
- Tonight's meeting ended on time.
- Number of topics is just right.
- Handouts should be double-sided copies.
- Handout of the RAB Meeting Schedule for December 1997 to December 1998 needs some date corrections. (Mr. Joyce said a corrected copy will be included with the meeting minutes in the next RAB meeting mailer.)

### **Suggestions for future presentation topics and meetings:**

- Irvine Desalter Project.
- DoD future land use guidance and restrictions.
- Lead-based paint and asbestos.
- Landfill Sites 2, 3, 5, and 17.
- Update on Sites 8, 11, 12.
- Site 8 - future land use restrictions.
- Projection of when remediation will be complete.
- A subcommittee meeting should be held before the next public meeting. (Mr. Joyce reminded RAB that subcommittee meetings can be called at any time by the subcommittee meeting chair.)

## **CLOSING ANNOUNCEMENTS/FUTURE MEETING DATES**

The next RAB meeting is scheduled for 6:30 to 9:00 p.m., Wednesday, December 3, 1997 at the Irvine City Hall, Conference and Training Center, One Civic Center Plaza, Irvine.

The meeting was adjourned at 8:55 p.m.

**Attachments:**

-Sign-in sheets.

**Handouts provided at the meeting and available at the Information Repository:**

- RAB meeting agenda/Public notice - 9/24/97 RAB meeting.
- RAB draft meeting minutes - 8/6/97 RAB meeting.
- MCAS El Toro project mailing list coupon.
- MCAS El Toro project web site information.
- Information Brochure - El Toro Pipeline, Defense Fuel Supply Center.
- Questionnaire for MCAS El Toro RAB Members.
- Presentation - BRAC Environmental Budget Process, by Brian Sanders, Program Manager, Southwest Division Naval Facilities Engineering Command.
- Presentation - MCAS El Toro Schedule Update, Federal Facility Agreement - 9/24/97, by Andy Piszkin, Remedial Project Manager, Southwest Division Naval Facilities Engineering Command.
- Flyer - RAB Installation Restoration Program Site Tour.
- Presentation - RAB Progress in the Installation Restoration Program, by Joseph Joyce, RAB Co-Chair, 9/24/97.
- MCAS El Toro RAB Schedule December 1997-December 1998.

**- Agency Comments - U.S. Environmental Protection Agency**

- U.S. EPA Technical Comments, Draft Phase II Feasibility Study OU-3A Sites, MCAS El Toro, and Extension Request, September 3, 1997.

**- Agency Comments - Cal-EPA, Department of Toxic Substances Control**

- Cal-EPA DTSC Comments on Round 5 Groundwater Monitoring Report, MCAS El Toro, August 7, 1997.
- Cal-EPA DTSC Comments, Draft Phase II Feasibility Study OU-3A Sites, MCAS El Toro, August 26, 1997.

*A copy of these minutes and the handouts provided at the RAB meeting 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 phone number is (714) 551-7151. Library hours are Monday through Thursday, 10 am to 9 pm; Friday and Saturday, 10 am to 5 pm; Sunday 12 pm to 5 pm.*

**Navy and Marine Corps Internet Access - Environmental Web Sites**

*RAB meeting minutes are also located on the Navy's Southwest Division Environmental Web Page. There are two different internet addresses, both sites are identical and either one can be used:*

**<http://ivory.nosc.mil/~saundel/default.html>**

**<http://www.efdswest.navy.mil/DEP/ENV/default.htm>**

*For more information on environmental cleanup activities at MCAS El Toro you may access the Marine Corps Air Bases Western Area Web Site: **[www.miramar.USMC.mil/BRAC/main.htm](http://www.miramar.USMC.mil/BRAC/main.htm)***

**MCAS EL TORO**  
**RESTORATION ADVISORY BOARD MEETING**  
**September 24, 1997**

***RAB MEMBER SIGN-IN SHEET***

Name	Signature	Name	Signature
Allen, Bob	<i>Bob Allen</i>	Mathews, Thomas	<i>Thomas Mathews</i>
Barney, Col. Joseph P. (ret)	<i>Joseph P. Barney</i>	McVicker, Robert R.	<i>Robert R. McVicker</i>
Bennett, Dr. Charles	<i>Charles Bennett</i>	Meier, Fred J.	<i>Fred J. Meier</i>
Brady Jr., Paul	<i>Paul Brady</i>	Mountford, Dan	<i>Dan Mountford</i>
Britton, George	<i>George Britton</i>	Murphy, Don	<i>Don Murphy</i>
Cohn, Enid	<i>Enid Cohn</i>	Olquin, A. Richard	<i>A. Richard Olquin</i>
Crompton, Chris	<i>Chris Crompton</i>	Reavis, Gail	<i>Gail Reavis</i>
Gallagher, George M.	<i>George M. Gallagher</i>	Ritchie, Col. E.J.	<i>E.J. Ritchie</i>
Hayes, Finola	<i>Finola Hayes</i>	Rudolph, Marcia	<i>Marcia Rudolph</i>
Herndon, Roy	<i>Roy Herndon</i>	Shayegan, Maria	<i>Maria Shayegan</i>
Hurley, Greg - Co-Chair	<i>Greg Hurley</i>	Sievers, Larry	<i>Larry Sievers</i>
Hersh, Peter	<i>Peter Hersh</i>	Sipp, Jr., Myron L.	<i>Myron L. Sipp, Jr.</i>
Joyce, Joseph - Co-chair	<i>Joseph Joyce</i>	Vasquez, Barbara	<i>Barbara Vasquez</i>
Kistner, Glenn	<i>Glenn Kistner</i>	Vitale, Larry	<i>Larry Vitale</i>
Koepke, Jeffrey	<i>Jeffrey Koepke</i>	Woodings, Bob	<i>Bob Woodings</i>
Mahmoud, Tayseer	<i>Tayseer Mahmoud</i>	Zweifel, Donald E.	<i>Donald E. Zweifel</i>
Matheis, Mary Aileen	<i>Mary Aileen Matheis</i>	Jenny W. ...	<i>Jenny W. ...</i>

**MCAS EL TORO  
RESTORATION ADVISORY BOARD MEETING  
September 24, 1997**

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

NAME <i>(Please print clearly)</i>	AFFILIATION	MAILING ADDRESS	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
GREG BARELA	ASST Supp. DFSP - NORWALK	15306 NORWALK	921-2271-562 562-921-4044	
John Rifintol	SUPPORTENT DFSP NORWALK	15306 NORWALK	921-2271-562 562-921-4044	
Brian Sanders	SWDIV NAUFA	1220 Pacific Highway San Diego CA	0195560250 6195560248	
HASAN DOGRUL	DEFENSE FUEL SUPPLY CENTER	8725 John J. Kingman Rd FT. BELVOIR, VA	(703) 767-8313	
JOSEPH V. TRANI	DEFENSE FUEL SUPPLY CENTER	3171 N. GAFFEY ST. SAN PEDRO, CA 90731	(310) 335-3090 x106	
GARY SIMON	COUNTY OF ORANGE LRA	300 NORTH FLOWER ST. SANTA ANA, CA	(714) 834-2095	
JOSEPH FARBER	CITY OF IRVINE	P.O. Box 19575 Irvine 9226-9575	(714) 724-6065	/
RONALD OKUDA	DTSC	245 W. BROADWAY, SUITE 350 LONG BEACH, CA 90802	(562) 590-4885	

**MCAS EL TORO  
RESTORATION ADVISORY BOARD MEETING  
September 24, 1997**

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

NAME <i>(Please print clearly)</i>	AFFILIATION	MAILING ADDRESS	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Candy Haggard	LRIA	10 Civic Center Plaza Santa Ana CA 92701 3rd Floor	714 834 3033	
Duke Kerin	Woodward-Clyde	2020 E. First St. #400 Santa Ana	714 835 6880	N
BERNIE LINDSEY	NAVY - SWDIV		619-556-0250 x242	
BRIAN JUDD	COUNTY OF ORANGE	300 N. FLOWER, Rm 720 SANTA ANA 92703	714 834-2742	
ANDY PISZKIN	DEPT OF THE NAVY	SAN DIEGO	619-556-0250 x240 619-556-0248	✓

**MCAS EL TORO  
RESTORATION ADVISORY BOARD MEETING  
September 24, 1997**

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

NAME <i>(Please print clearly)</i>	AFFILIATION	MAILING ADDRESS	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Scott KEHE	NAVY ROICC EL TORO		(714) 726-2506	
REYNALDO GARCIA	ECS Risk Control	P.O. Box 6080, #355 Mission Viejo, CA 92690	(714) 583-7763 (714) 583-7791	
MICHAEL HATBERKORN	County LZA	1921 PALOMAR OAKS WAY Site 200 CARLSBAD CA 92008	760-431-9501	

# MCAS El Toro

## RAB Meeting Schedule

### December 1997 - December 1998

The Conference and Training Center (CTC) at Irvine City Hall has been reserved for RAB meetings on the following dates printed in **bold** (the last Wednesday of the month), unless noted otherwise. Generally, the format for the RAB meeting schedule now calls for having RAB meetings every other month. Other dates listed in *italic* indicate when a meeting room has been reserved for a RAB subcommittee meeting.

#### 1997

- **December 3, 1997\*** (CTC Meeting Room)

#### 1998

- **January 28, 1998**
- **March 25, 1998**
- **May 27, 1998**
- **July 29, 1998**
- **+September 30, 1998**
- **+December 2, 1998 \***

#### *Subcommittee Meetings*

- *February 25, 1998*
- *April 29, 1998*
- *June 24, 1998*
- *+August 26, 1998*
- *+October 28, 1998*

\* Scheduled for first Wednesday of December instead of last Wednesday in November, the day before Thanksgiving).

+ Awaiting confirmation from City of Irvine

## **UPDATES**

**Marine Corps Air Station - El Toro**

**DoD EQUIPMENT TRANSFER  
OU-3A FEASIBILITY STUDY  
VOC SOURCE AREA ACTIVITIES**

**Bernie Lindsey, Remedial Project Manager  
December 03, 1997**

1

## **DoD Equipment Transfer**

- **MCAS El Toro Site 24 ROD**
  - Soil Vapor Extraction (SVE)
- **Norton AFB**
  - Completed SVE - Fall 1997
- **SVE Extraction/ Treatment Equipment**
  - Approved Design
  - Proven Performance

2

## **OU-3A Feasibility Study (FS)**

- **Sites 8, 11, and 12**
- **Draft FS submitted - Summer 1997**
- **Agency Comments Finalized  
November 1997**
- **Draft Final FS Submittal - January  
1998**

3

## **VOC Source Area**

- **Groundwater Remediation Pilot  
Testing**
- **Planning Commenced November  
1996**
- **Field Work Commenced June 1997**

4

## **Objectives**

- **Characterize VOC Migration**
- **Further Characterize Stratigraphy**
- **Estimate VOC Removal and  
Compare**
  - groundwater extraction
  - vacuum-enhanced groundwater  
extraction
- **Perform Groundwater Testing and  
Analysis**

5

# **LANDFILLS AND INSTITUTIONAL CONTROLS**

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***Dante J. Tedaldi, PhD, PE***

***Bechtel Corp.***

***MCAS El Toro and MCAF Tustin***

***Project Manager***

# **MCAS EL TORO BASE REALIGNMENT AND CLOSURE TEAM**

---

## **MEMBERS**

- BEC--JOSEPH JOYCE**
- USEPA--GLENN KISTNER**
- CA-EPA DTSC--TAYSEER  
MAHMOUD**

# **US EPA'S PRESUMPTIVE REMEDY APPROACH**

---

- **GUIDES THE PROCESS OF IDENTIFYING A PROVEN METHOD OF LANDFILL CLOSURE**
- **USEPA HAS EXTENSIVE LANDFILL EXPERIENCE ON A NATIONAL LEVEL**

# **US EPA'S PRESUMPTIVE REMEDY**

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- **STREAMLINED RI/FS**
- **FOCUSED FS ON CONTAINMENT--  
LANDFILL CAP**

# **US EPA'S PRESUMPTIVE REMEDY APPROACH**

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## **COMPONENTS EXAMINED:**

- LANDFILL CAPPING**
- MONITORING**
- INSTITUTIONAL CONTROLS**
- LEACHATE COLLECTION AND TREATMENT**
- GAS COLLECTION AND TREATMENT**
- SOURCE AREA GROUNDWATER CONTROL**

# **US EPA'S PRESUMPTIVE REMEDY APPROACH**

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## **COMPONENTS RETAINED:**

- **LANDFILL CAPPING**
- **MONITORING**
- **INSTITUTIONAL CONTROLS**

# **FEASIBILITY STUDY PRINCIPAL CLOSURE OBJECTIVE**

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**PROTECTION OF PUBLIC HEALTH  
AND ENVIRONMENT THROUGH:**

**PREVENTION OF DIRECT CONTACT  
WITH LANDFILL MATERIALS,  
AND ELIMINATION OR REDUCTION  
OF INFILTRATION OF WATER INTO  
LANDFILL**

# **ALTERNATIVES EXAMINED**

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**1 - NO ACTION**

**2 - INSTITUTIONAL CONTROLS AND  
MONITORING**

***CONTAINMENT AND ALTERNATIVE 2***

**3 - MONOLITHIC SOIL CAP**

**4 - SINGLE-BARRIER CAP**

**5 - SINGLE-BARRIER CAP WITH  
ADDITIONAL COMPONENTS**

# **PURPOSES OF INSTITUTIONAL CONTROLS**

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- **PROTECTION OF HUMAN HEALTH  
AND THE ENVIRONMENT**
- **PROTECTION OF THE ENGINEERED  
REMEDY**

# **INSTITUTIONAL CONTROLS**

---

- **LEASE CONDITIONS AND DEED RESTRICTIONS**
- **PROVISIONS FOR ACCESS FOR MONITORING, MAINTENANCE AND OVERSIGHT ACTIVITIES**

# **LAND USE RESTRICTIONS**

---

- **NO RESIDENTIAL OR CHILD DAY-CARE USE**
- **NO EXCAVATIONS/CONSTRUCTION WHICH MAY DISTURB COVER, WASTE CELL AND/OR MONITORING SYSTEM**
- **NO UNAUTHORIZED VEGETATION AND IRRIGATION**
- **NO REMOVAL OF FENCES/SIGNS**
- **NO WELL INSTALLATION AND GW EXTRACTION AND/OR INJECTION**

**YES, THE PRESUMPTIVE  
REMEDY WILL BE  
PROTECTIVE OF PUBLIC  
HEALTH AND THE  
ENVIRONMENT**

**YES, THE LAND  
SURFACE CAN BE  
REUSED IN MANY  
WAYS**

# **WEB SOURCES OF ADDITIONAL INFORMATION**

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- **USEPA SUPERFUND PAGE**

**[www.epa.gov/superfund/index.html](http://www.epa.gov/superfund/index.html)**

- **DoD ENVIRONMENTAL BRAC PAGE**

**[www.dtic.mil/envirodod/envbrac.html](http://www.dtic.mil/envirodod/envbrac.html)**



11/18/97  
gjo

# 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.

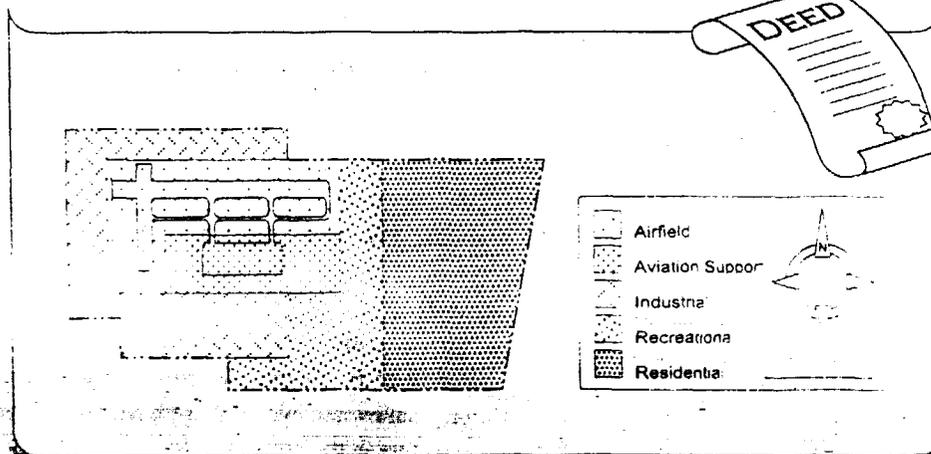
### USES OF INSTITUTIONAL CONTROLS IN ENVIRONMENTAL CLEANUP

- 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?

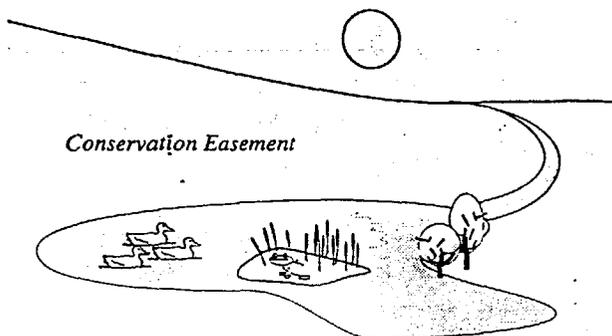
- A proprietary control is a private contractual mechanism contained in

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.



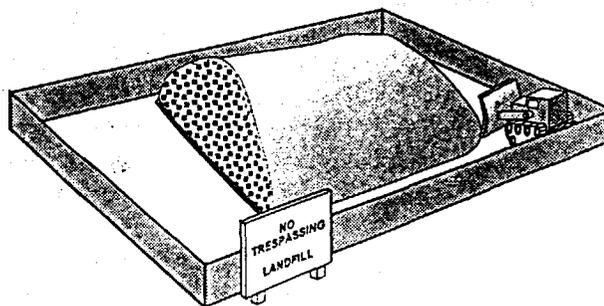
- If the owner violates the easement, the holder may bring suit to restrain the owner.
- An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, 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?

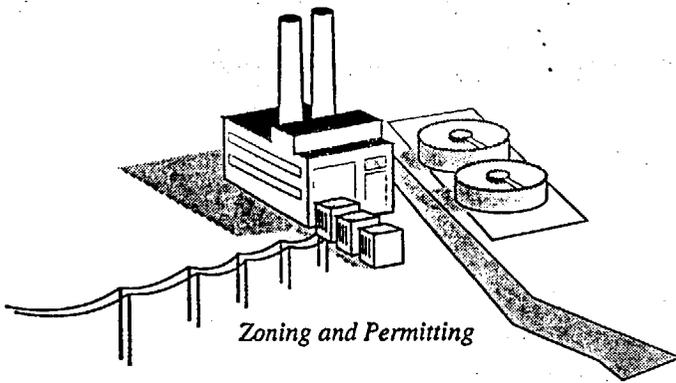
- A covenant is a promise that certain actions have been taken, will be taken, or may not be taken.
- Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners.
- An affirmative covenant is a promise that the owner will do something that the 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.

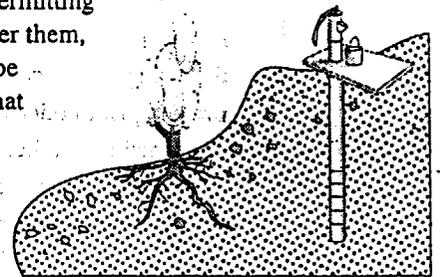
### What are possible governmental controls?

- **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

0697  
1/18

United States  
Environmental Protection  
Agency

Office of  
Solid Waste and  
Emergency Response

Directive No.9355.0-67FS  
EPA/540/F-96/020  
PB96-963314  
December 1996



# Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills

Federal Facilities Restoration and Reuse Office  
Mail Code 5101

Quick Reference Fact Sheet

Presumptive remedies are preferred technologies for common categories of sites based on historical patterns of remedy selection and the U.S. Environmental Protection Agency's (EPA's) scientific and engineering evaluation of performance data on technology implementation. By streamlining site investigation and accelerating the remedy selection process, presumptive remedies are expected to ensure the consistent selection of remedial actions and reduce the cost and time required to clean up similar sites. Presumptive remedies are expected to be used at all appropriate sites. Site-specific circumstances dictate whether a presumptive remedy is appropriate at a given site.

EPA established source containment as the presumptive remedy for municipal landfill sites regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in September of 1993 (see the directive *Presumptive Remedy for CERCLA Municipal Landfill Sites*). The municipal landfill presumptive remedy should also be applied to all appropriate military landfills. This directive highlights a step-by-step approach to determining when a specific military landfill is an appropriate site for application of the containment presumptive remedy. It identifies the characteristics of municipal landfills that are relevant to the applicability of the presumptive remedy, addresses characteristics specific to military landfills, outlines an approach to determining whether the presumptive remedy applies to a given military landfill, and discusses administrative record documentation requirements.

## PURPOSE

This directive provides guidance on applying the containment presumptive remedy to military landfills. Specifically, this guidance:

- Describes the relevant characteristics of municipal landfills for applicability of the presumptive remedy;
- Presents the characteristics specific to military installations that affect application of the presumptive remedy;
- Provides a decision framework to determine applicability of the presumptive remedy to military landfills; and
- Provides relevant contacts/specialists in military wastes, case histories, administrative record documentation requirements, and references.

## BACKGROUND

Municipal landfills are those facilities in which a combination of household, commercial and, to a lesser

extent, industrial wastes have been co-disposed. The presumptive remedy for municipal landfills – source containment – is described in detail in the directive *Presumptive Remedy for CERCLA Municipal Landfill Sites*. Highlight 1 outlines the components of the containment presumptive remedy. Highlight 2 lists the characteristics of municipal landfills that are compatible with the presumptive remedy of containment.

### Highlight 1 Components of the Containment Presumptive Remedy

- Landfill cap
- Source area groundwater control to contain plume
- Leachate collection and treatment
- Landfill gas collection and treatment
- Institutional controls to supplement engineering controls

**Highlight 2**  
**Appropriate Municipal Landfill Characteristics for Applicability of the Presumptive Remedy**

- Risks are low-level, except for "hot spots"
- Treatment of wastes is usually impractical due to the volume and heterogeneity of waste
- Waste types include household, commercial, nonhazardous sludge, and industrial solid wastes
- Lesser quantities of hazardous wastes are present as compared to municipal wastes
- Land application units, surface impoundments, injection wells, and waste piles are not included

The presumptive remedy process involves streamlining of the remedial investigation/feasibility study (RI/FS) or, for non-time-critical removals, an Engineering Evaluation/Cost Analysis (EE/CA) by:

- Relying on existing data to the extent possible rather than characterizing landfill contents (limited or no landfill source investigation unless there is information indicating a need to investigate hot spots);
- Conducting a streamlined risk assessment; and
- Developing a focused feasibility study that analyzes only alternatives consisting of appropriate components of the presumptive remedy and, as required by the National Contingency Plan, the no action alternative.

Several directives, including *Presumptive Remedy for CERCLA Municipal Landfill Sites*, *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites*, and *Streamlining the RI/FS for CERCLA Municipal Landfill Sites*, provide a complete discussion of these streamlining principles.

### USE OF THIS GUIDANCE

EPA anticipates that the containment presumptive remedy will be applicable to a significant number of landfills found at military facilities. Although waste types may differ between municipal and military landfills, these differences do not preclude use of source containment as the primary remedy at appropriate military landfills.

Additionally, EPA continues to seek greater consistency among cleanup programs, especially in the process of

selecting response actions for sites regulated under CERCLA and corrective measures for facilities regulated under the Resource Conservation and Recovery Act (RCRA). In general, even though the Agency's presumptive remedy guidances were developed for CERCLA sites, they should also be used at RCRA Corrective Action sites to focus RCRA Facility Investigations, simplify evaluation of remedial alternatives in the Corrective Measures Study, and influence remedy selection in the Statement of Basis. For more information, refer to the *RCRA Corrective Action Plan*, the proposed *Subpart S regulations*, and the *RCRA Corrective Action Advance Notice of Proposed Rule-making*.

### CHARACTERISTICS OF MILITARY LANDFILLS

The size of the landfill and the presence, proportion, distribution, and nature of wastes are fundamental to the application of the containment presumptive remedy to military landfills.

An examination of 31 Records of Decisions (RODs) that document the remedial decisions for 51 landfills at military installations revealed that no action was chosen for 10 landfills and remedial actions were chosen at 41 landfills (see Appendix). Of these 41 landfills, containment was selected at 23 (56 percent). For the remaining 18 landfills where other remedies were selected, institutional controls only were selected at three landfills, excavation and on-site consolidation were selected at four landfills, and excavation and off-site disposal were selected for 11 landfills.

The military landfills examined in the 51 RODs mentioned above ranged in size from 100 square feet to 150 acres and contained a wide variety of waste types. Of the 41 landfills for which remedial actions were chosen, 14 (34 percent) were one acre or less in size; containment was not selected for any of these landfills. Containment was chosen at 23 (85 percent) of the 27 landfills that were greater than one acre in size. This information suggests that the size of the landfill area is an important factor in determining the use of source containment at military landfills.

The wastes most frequently deposited at these military landfills were municipal-type wastes: household, commercial (e.g., hospital wastes, grease, construction debris), and industrial (e.g., process wastes, solvents, paints) wastes. Containment was the remedy selected at the majority of these sites. Military-specific wastes (e.g., munitions) were found at only 5 of the 51 landfills (10 percent).

Highlight 3 lists typical municipal and military wastes, including:

- (1) Wastes that are common to both municipal landfills and military landfills;
- (2) Wastes that are usually specific to military bases but that do not necessarily pose higher risks than other industrial wastes commonly found in municipal landfills (i.e., low-hazard military-specific wastes), depending on the volume and heterogeneity of the wastes; and
- (3) High-hazard military wastes that, because of their unique characteristics, would require special consideration (i.e., high-hazard military-specific wastes).

The proportion and distribution of hazardous wastes in a landfill are important considerations. Generally, municipal landfills produce low-level threats with occasional hot spots. Similarly, most military landfills present only low-level threats with pockets of some high-hazard waste. However, some military facilities (e.g., weapons fabrication or testing, shipbuilding, major aircraft or equipment repair depots) have a high level of industrial activity compared to overall site activities. In these cases, there may be a higher proportion and wider distribution of industrial (i.e., potentially hazardous) wastes present than at other less industrialized facilities.

## PRACTICAL CONSIDERATIONS

### ***Sensitive Environments***

Site-specific conditions may limit the use of the containment presumptive remedy at military landfills. For example, the presence of high water tables, wetlands and other sensitive environments, and the possible destruction or alteration of existing habitats as a result of a particular remedial action could all be important factors in the selection of the remedy.

### ***Land Use***

Reasonably anticipated future land use is also an important consideration at all sites. However, at military bases undergoing base closure procedures, where expeditiously converting property to civilian use is one of the primary goals, land use may receive heightened attention. Thus, at bases that are closing, it is particularly important for reuse planning to proceed concurrently with environmental investigation and restoration activities. The local reuse group is responsible for developing the preferred reuse alternatives. The Base Realignment and Closure Team should work closely with the reuse group to integrate reuse planning into the cleanup process, where practicable (see the *Land Use in CERCLA Remedy Selection* directive).

## Highlight 3 Examples of Municipal-Type and Military-Specific Wastes

### **Municipal-Type Wastes**

*Municipal landfills contain predominantly non-hazardous materials. However, industrial solid waste and even some household refuse (e.g., pesticides, paints, and solvents) can possess hazardous components. Further, hazardous wastes are found in most municipal landfills as a result of past disposal practices.*

#### Predominant Constituents

Household refuse, garbage, and debris  
Commercial refuse, garbage, and debris  
Construction debris  
Yard wastes

#### Found In Low Proportion

Asbestos  
Batteries  
Hospital wastes  
Industrial solid waste(s)  
Paints and paint thinner  
Pesticides  
Transformer oils  
Other solvents

### **Military-Specific Wastes**

*The majority of military landfills contain primarily nonhazardous wastes. The materials listed in this column are rarely predominant constituents of military landfills.*

#### Low-Hazard Military-Specific Wastes

*These types of wastes are specific to military bases but generally are no more hazardous than some wastes found in municipal landfills.*

Low-level radioactive wastes  
Decontamination kits  
Munitions hardware

#### High-Hazard Military-Specific Wastes

*These wastes are extremely hazardous and may possess unique safety, risk, and toxicity characteristics. Special consideration and expertise are required to address these wastes.*

#### Military Munitions

Chemical warfare agents  
(e.g., mustard gas, tear agents)  
Chemical warfare agent training kits  
Artillery, small arms, bombs  
Other military chemicals  
(e.g., demolition charges,  
pyrotechnics, propellants)  
Smoke grenades

### Highlight 4 Decision Framework

Collect Available Information

- Waste Types
- Operating History
- Monitoring Data
- State Permit/Closure
- Land Reuse Plans
- Size/Volume
- Number of Facility Landfills

Consider Effects of Land Reuse Plans on Remedy Selection

Do Landfill Contents Meet Municipal-Type Waste Definition?

NO

Military-Specific Wastes Are Present; Consult With Military Waste Experts

YES

Is Excavation of Contents Practical?

Note: Site-specific factors such as hydrogeology, volume, cost, and safety affect the practicality of excavation of landfill contents.

No Military Wastes

Military Wastes Present

NO

Is Containment the Most Appropriate Remedy?

Note: Site investigation or attempted treatment may not be appropriate; these activities may cause greater risk than leaving waste in place.

YES

NO/UNCERTAIN

YES

Don't Use Containment Presumptive Remedy (A conventional RI/FS is required.)

NO

USE CONTAINMENT PRESUMPTIVE REMEDY (A streamlined risk assessment and focused feasibility study are used.)

## DECISION FRAMEWORK TO EVALUATE APPLICABILITY OF THE PRESUMPTIVE REMEDY TO MILITARY LANDFILLS

This Section and Highlight 4 describe the steps involved in determining whether the containment presumptive remedy applies to a specific military landfill.

**1. What Information Should Be Collected?** Determine the sources, types, and volumes of landfill wastes using historical records, state files, closure plans, available sampling data, etc. This information should be sufficient to determine whether source containment is the appropriate remedy for the landfill. If adequate data do not exist, it may be necessary to collect additional sampling or monitoring data. The installation point of contact (environmental coordinator, base civil engineer, or public works office) should be contacted to obtain records of disposal practices. Current and former employees are also good sources of information.

**2. How May Land Reuse Plans Affect Remedy Selection?** For smaller landfills (generally less than two acres), land reuse plans may influence the decision on the practicality of excavation and consolidation or treatment of landfill contents. Excavation is a remedial alternative that is fundamentally incompatible with the presumptive remedy of source containment.

**3. Do Landfill Contents Meet Municipal Landfill-Type Waste Definition?** To determine whether a specific military landfill is appropriate for application of the containment presumptive remedy, compare the characteristics of the wastes to the information in Highlights 2 and 3.

**4. Are Military-Specific Wastes Present?** Military wastes, especially high-hazard military wastes, may possess unique safety, risk, and toxicity characteristics. Highlight 3 presents examples of these types of materials. If historical records or sampling data indicate that these wastes may have been disposed at the site, special consideration should be given to their handling and remediation. Caution is warranted because site investigation or attempted treatment of these contaminants may pose safety issues for site workers and the community. Some high-hazard military-specific wastes could be considered to present low-level risk, depending on the location, volume, and concentration of these materials relative to environmental receptors. Consult specialists in military wastes (see Highlight 5) when determining whether military-specific wastes at a site fall into either the low-hazard or the high-hazard military-specific waste category found in Highlight 3.

### Highlight 5 Specialists in Military Wastes

The installation point of contact will notify the major military command's specialists in military wastes (Explosive Ordnance Disposal Team) for assistance with regard to safety and disposal issues related to any type of military items.

#### *Army chemical warfare agents specialists:*

- Project Manager, Non-Stockpile Chemical Materiel, Aberdeen Proving Ground, Maryland 21010-5401, (410) 671-1083.

#### *Navy ordnance related items specialists:*

- The Navy Ordnance Environmental Support Office, Naval Surface Warfare Center, Indian Head, Maryland 20460-5035, (301) 743-4534/4906/4450.

#### *Navy low-level radioactive wastes specialists:*

- The Naval Sea Systems Command Detachment, Radiological Affairs Support Office, Yorktown, Virginia 23691-0260, (804) 887-4692.

#### *Air Force ordnance specialists:*

- The Air Force Civil Engineering Support Agency, Contingency Support Division, Tyndall AFB, Florida 32403-5319, (904) 283-6410.

Responsibilities for response are clearly spelled out in the regulation *Interservice Responsibilities For Explosive Ordnance Disposal*.

**5. Is Excavation of Contents Practical?** The volume of landfill contents, types of wastes, hydrogeology, and safety must be considered when assessing the practicality of excavation and consolidation or treatment of wastes. Consideration of excavation must balance the long-term benefits of lower operation and maintenance costs and unrestricted land use with the initial high capital construction costs and potential risks associated with excavation. Although no set excavation volume limit exists, landfills with a content of more than 100,000 cubic yards (approximately two acres, 30 feet deep) would normally not be considered for excavation. If military wastes are present, especially high-hazard military wastes such as ordnance, safety considerations may be very important in determining the practicality of excavation.

If excavation of the landfill contents is being considered as an alternative, the presumptive remedy should not be used. Therefore, a standard RI/FS would be required to adequately analyze and select the appropriate remedial actions.

**6. Can the Presumptive Remedy Be Used?** The site manager will make the initial decision of whether a particular military landfill site is suitable for the presumptive remedy or whether a more comprehensive RI/FS is required. This determination must be made before the RI/FS is initiated. This decision will depend on whether the site is a potential candidate for excavation, and if not, whether the nature of contamination is such that a streamlined risk evaluation can be conducted.\* A site generally is eligible for a streamlined risk evaluation if groundwater contaminant concentrations clearly exceed chemical-specific standards or the Agency's level of risk or if other conditions exist that provide a justification for action (e.g., direct contact with landfill contents due to unstable slopes). If these conditions do not exist, a quantitative risk assessment that addresses all exposure pathways will be necessary to determine whether action is needed. Before work on the RI/FS workplan is initiated, the community and state should be notified that a presumptive remedy is being considered for the site. It is important for all stakeholders to understand completely how the presumptive remedy process varies from the usual clean-up process, and the benefits of using the presumptive remedy process.

## TREATING "HOT SPOTS"

The presumptive remedy also allows for the treatment of hot spots containing military-specific (or other) waste. While the analysis, *Feasibility Study Analysis for CERCLA Municipal Landfill Sites*, that justified the selection of source containment as the presumptive remedy for municipal landfill sites did not specifically take into account high-hazard military wastes, the high-hazard materials present in some military landfills may be compared to the hazardous wastes at municipal landfills and could potentially be treated as hot spots. For further information and case studies on treatment of hot spots, see the *Presumptive Remedy for CERCLA Municipal Landfill Sites* directive.

## CASE HISTORIES

The case histories below illustrate how use of the municipal landfill presumptive remedy at military landfills follows the decision framework in Highlight 4.

\* See *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*, which states that if MCLs or non-zero MCLGs are exceeded [a response] action generally is warranted.

The decision to use the presumptive remedy can be made for one landfill or as a part of a site-wide strategy (as in the Loring Air Force Base example below), depending on factors such as the nature of the wastes, size of the landfill, land reuse potential, and public acceptance.

The following case histories present examples of where the containment presumptive remedy was or was not applied, based on site-specific conditions.

## Disposal of Municipal-Type Wastes

The Naval Reactor Facility (NRF) site in Idaho Falls, Idaho, was established in 1949 as a testing site for the nuclear propulsion program. The three landfill units at the site received solid wastes similar to municipal landfills. These wastes included petroleum and paint products, construction debris, and cafeteria wastes. Historical records do not indicate that any radioactive wastes were disposed of in these landfill units. The selected remedy for the landfills at the site included the installation of a 24-inch native soil cover designed to incorporate erosion control measures to reduce the effects from rain and wind. The remedy also provided for maintenance of the landfill covers, including subsidence correction and erosion control. Monitoring of the landfills will include sampling of soil gas to assess the effectiveness of the cover and sampling of the groundwater to ensure that the remedy remains protective. Institutional controls will also be implemented to prevent direct exposure to the landfill. The NRF site is an example of where the streamlining principles of the presumptive remedy process, including a streamlined risk assessment and a focused feasibility study, were successfully employed.

## Co-Disposal of High-Hazard Wastes

At the Massachusetts Military Reservation, in Cape Cod, Massachusetts, anecdotal information indicated that munitions had been disposed of at an unidentified location in a landfill that primarily contained municipal-type waste. Ground penetrating radar was utilized to determine if there were any discrete disposal areas containing potential hot spots at this site and found none. Because the munitions waste was not in a known discrete and accessible area, it could not be treated as a hot spot. Consequently, without excavating or treating the munitions waste as a hot spot, the authorities decided to cap the landfill. In this case, the streamlining principles of the presumptive remedy process were applied. For example, site investigation was limited and treatment options were not considered.

## Land Reuse Considerations

At Loring Air Force Base, a closing base in Limestone, Maine, base landfills 2 and 3 (9 and 17 acres, respectively) consisted primarily of municipal and flightline wastes. The selected remedy for these landfills included a multi-layer cap, passive venting system, and institutional controls. The RODs for the landfills, signed in September 1994, required placing a RCRA Subtitle C cap on the landfills. To construct the RCRA cap, the designers estimated that 400,000 to 600,000 cyds of material would have to be placed on the landfills prior to construction of the cap to ensure proper drainage and slopes.

At Loring, the streamlining principles of the containment remedy, a focused feasibility study, and a streamlined risk assessment were applied for landfills 2 and 3. Additionally, the RODs signed for these landfills specified that excavated material from other parts of the base would be used at the landfills to meet subgrade design specifications. To date, more than 500,000 cyds of contaminated soils have been excavated and used as subgrade for the landfills (after demonstrating compliance with RCRA Land Disposal Restrictions). In addition to cost savings realized by providing subgrade, other benefits have been realized, such as limiting the number of parcels requiring deed restrictions and minimizing locations requiring operation and maintenance. At this base, the landfill consolidation efforts resulted in an estimated total cost savings of \$12-20 million while incorporating future land use considerations into the decision process.

The Brunswick Naval Air Station in Brunswick, Maine, contained several landfill sites. One of the first RODs signed, for Sites 1 and 3, called for construction of a 12-acre RCRA Subtitle C cap and a slurry wall, as well as for groundwater extraction and treatment. Subsequently, during the remedy selection process for Site 8, the public objected to containment as the proposed remedy for this relatively small (0.6 acre) site on the grounds that should the base eventually close, containment would create several useless parcels of land. After public comment, the Navy reconsidered, proposing instead to excavate Site 8 and consolidate the removed materials (which consisted of construction debris and soil contaminated with nonhazardous levels of polycyclic aromatic hydrocarbons) as part of the necessary subgrade fill for the landfill cap to be constructed at Sites 1 and 3. In this case, land reuse considerations preempted the selection of a containment remedy.

## PRESUMPTIVE REMEDY ADMINISTRATIVE RECORD DOCUMENTATION REQUIREMENTS

As stated earlier, it must be determined whether the military landfill in question contains military-specific wastes, as described in Highlight 3. This should be followed by a determination of whether anything about these wastes would make the engineering controls specified in the presumptive remedy for municipal landfills less suitable at that site. These determinations must be documented in the administrative record, which supports the final decision. This information, in turn, will assist the public in understanding the evaluation of the site as a candidate for use of the presumptive remedy and the advantage it provides. For further reference, the administrative record requirements for all Superfund sites including military landfills are explained in the *Final Guidance on Administrative Records for Selecting CERCLA Response Actions*.

The administrative record must contain the following generic and site-specific information, which documents the selection or non-selection of the containment presumptive remedy.

### Generic Information

- A. **Generic Documents.** These documents should be placed in the docket for each federal facility site where the containment presumptive remedy is selected. Each EPA Regional Office has copies of the following presumptive remedy documents:
- *Presumptive Remedy: Policy and Procedures*
  - *Presumptive Remedy for CERCLA Municipal Landfill Sites*
  - *Application of the Municipal Landfill Presumptive Remedy to Military Landfills*
  - *Feasibility Study Analysis for CERCLA Municipal Landfill Sites*
- B. **Notice Regarding Backup File.** The docket should include a notice specifying the location of and times when public access is available to the generic file of backup materials used in developing the *Feasibility Study Analysis for CERCLA Municipal Landfill Sites*. This file contains background materials such as technical references and portions of the feasibility studies used in the generic study. Each EPA Regional Office has a copy of this file.

## Site-specific Information

**Focused FS or EE/CA.** Military-specific wastes need to be addressed in site-specific analyses when determining the applicability of the containment presumptive remedy to military landfills. High-hazard military-specific waste materials (e.g., military munitions) require special consideration when applying the presumptive remedy.

As noted on pages 1 and 2 of this directive, the presumptive remedy approach allows you to streamline and focus the FS or EE/CA by eliminating the technology screening step from the feasibility study process. EPA has already conducted this step on a generic basis in the *Feasibility Study Analysis for CERCLA Municipal Landfill Sites*. Thus, the FS analyzes only alternatives comprised of components of the containment remedy identified in Highlight 1. In addition, the focused FS or EE/CA should include a site-specific explanation of how the application of the presumptive remedy satisfies the National Contingency Plan's three site-specific remedy selection criteria (i.e., compliance with state applicable or relevant and appropriate requirements, state acceptance, and community acceptance).

## CONCLUSION

This directive provides guidance for the use of the containment presumptive remedy at appropriate military landfills. The remedies selected at numerous military installations indicate that source containment is applicable to a significant number of military landfills. These landfills need not be identical to municipal landfills in all regards. Key factors determining whether the containment presumptive remedy should be applied to a specific military landfill include the size of the landfill; volume and the type of landfill contents; future land use of the area; and the presence, proportion, and distribution of military-specific wastes.

## REFERENCES

California Base Closure Environmental Committee, *Integrating Land Use and Cleanup Planning at Closing Bases*, December 1994.

Federal Register, 1996. Volume 61, No. 85, May 1, 1996; *Corrective Action for Releases from Solid Waste Management Units at Hazardous Waste Management Facilities, Advance Notice of Proposed Rulemaking*.

Federal Register, 1990. Volume 55, No. 145, July 27, 1990; 40 CFR Parts 264, 265, 270 and 271; *Corrective Action for Solid Waste Management Units at Hazardous Waste Facilities; Proposed (proposed Subpart S regulations)*.

U.S. Environmental Protection Agency, OSWER Directive 93557-04, *Land Use in the CERCLA Remedy Selection*, May 25, 1995.

U.S. Environmental Protection Agency, OSWER Directive 9356.0-03, EPA/540/R-94/081, *Feasibility Study Analysis for CERCLA Municipal Landfill Sites*, August 1994.

U.S. Environmental Protection Agency, OSWER Directive 9902.3-2A, EPA/520/R-94/004, *RCRA Corrective Action Plan*, May 1994.

U.S. Environmental Protection Agency, OSWER Directive 9355.0-49FS, *Presumptive Remedy for CERCLA Municipal Landfill Sites*, September 1993.

U.S. Environmental Protection Agency, OSWER Directive 9355.0-47FS, EPA/540/F-93/047, *Presumptive Remedy: Policy and Procedures*, September, 1993.

U.S. Environmental Protection Agency, OSWER Publication 9380.3-06FS, *Guide to Principal Threat and Low Level Threat Wastes*, November 1991.

U.S. Environmental Protection Agency, OSWER Directive 9355.0-30, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*, April 22, 1991.

U.S. Environmental Protection Agency, OERR, EPA/540/P-91/001, *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites*, February 1991.

U.S. Environmental Protection Agency, OSWER Directive 9833.3A.1, *Final Guidance on Administrative Records for Selecting CERCLA Response Actions*, December 3, 1990.

U.S. Environmental Protection Agency, OSWER Directive 9355.3-11FS, *Streamlining the RI/FS for CERCLA Municipal Landfill Sites*, September 1990.

U.S. Department of Navy, *Interservice Responsibilities for Explosive Ordnance Disposal* OPNAVINST 8027.1G (also known as MCO 8027.1D, AR 75-14; or AFR 32-3002), February 14, 1992.

## NOTICE

The policies set out in this document are intended solely as guidance to the EPA personnel; they are not final EPA actions and do not constitute rulemaking. These policies are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this document, or to act at variance with the guidance, based on an analysis of specific site circumstances. EPA also reserves the right to change this guidance at any time without public notice.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Brunswick NAS, Sites 1 and 3 (OU1), ME, Region 1 6/16/92	Site 1, 8.5 acres; Site 3, 1.5 acres. Sites are in close proximity and not easily distinguishable; the combined volume of Sites 1 and 3 is 300,000 cy	Household refuse, waste oil; solvents, pesticides, paints, isopropyl alcohol	Metals, VOCs, PAHs, PCBs, pesticides	Remedy: Capping (permanent, low-permeability, RCRA Subtitle C cap), of 12 acres with a slurry wall and pump and treat ground water within cap and slurry wall.
Brunswick NAS, Sites 5 and 6 (OU3), ME, Region 1 8/31/93	Site 5, 0.25 acres, 12 cy	Asbestos-covered pipes	Asbestos	Remedy: Excavation, containerization, and transport to landfill Sites 1 and 3 for use as fill under cap.
Brunswick NAS, Sites 5 and 6 (OU3), ME, Region 1 8/31/93	Site 6, 1.0 acre, 8,800 - 18,700 cy	Construction debris, and aircraft parts, asbestos pipes	Asbestos	Remedy: Excavation, containerization, and transport to Sites 1 and 3 landfill for use as fill under cap.
Brunswick NAS, Site 8 (OU4), ME, Region 1 8/31/93	Site 8, 0.6 acres, 5,600 - 14,000 cy	Rubble, debris, trash, and possibly solvents	Metals, pesticides, PCBs <sup>1</sup>	Remedy: Excavation, containerization, and transport to landfill Sites 1 and 3 for use as fill under cap.
Loring AFB, Landfills 2 and 3 (OU2), ME, Region 1 9/30/94	Landfill 2, 9 acres	Domestic waste, construction debris, flightline wastes, sewage sludge and oil-filled switches	PCBs, VOCs, SVOCs, metals, DDT <sup>1</sup>	Remedy: Capping (low-permeability cover system which meets RCRA Subtitle C and Maine hazardous waste landfill cap requirements), passive gas venting system and controls, and institutional controls.
Loring AFB, Landfills 2 and 3 (OU2), ME, Region 1 9/30/94	Landfill 3, 17 acres	Waste oil/fuels, solvents, paints, thinners, and hydraulic fluids	VOCs, SVOCs, DDT, PCBs, metals <sup>1</sup>	Remedy: Capping (low-permeability cover system which meets RCRA Subtitle C and Maine hazardous waste landfill cap requirements), passive gas venting system and controls, and institutional controls.

<sup>1</sup> Contaminants of Potential Concern

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Newport Naval Education and Training Center, McAllister Point Landfill, RI, Region 1 9/27/93	McAllister Point Landfill, 11.5 acres	Domestic refuse, spent acids, paints, solvents, waste oils, and PCB-contaminated transformer oil	VOCs, PAHs, PCBs, pesticides, phenols, metals	Remedy: Capping (RCRA Subtitle C, multi-layer cap), landfill gas management, surface controls, and institutional controls.
Otis Air National Guard, Camp Edwards, Massachusetts Military Reservation, MA, Region 1 1/14/93	Landfill Number 1 (LF-1), 100 acres	General refuse, fuel tank sludge, herbicides, blank ammunition, paints, paint thinners, batteries, DDT, hospital wastes, sewage sludge, coal ash, possibly live ordnance	VOCs, SVOCs, inorganics	Remedy: Capping (composite-low-permeability cover system), institutional controls, soil cover inspection, and ground water monitoring.
Pease AFB (OU1), NH, Region 1 9/27/93	LF-5, 23 acres	Domestic and industrial wastes, waste oils and solvents, and industrial wastewater treatment plant sludge	VOCs, PAHs, arsenic and other metals	Remedy: Excavation, dewatering and consolidation and regrading of waste under a composite-barrier type cap, institutional controls, and extraction and treatment of ground water with discharge to base wastewater treatment facility.
Fort Dix Landfill Site, NJ, Region 2 9/24/91	Main area, 126 acres	Domestic waste, paints and paint thinners, demolition debris, ash, and solvents	VOCs, metals	Remedy: Capping 50-acre portion (New Jersey Administrative Code 7:26 closure plan for hazardous waste), installing gas venting system and an air monitoring system, ground water, surface water, and air monitoring, and institutional controls.
Naval Air Engineering Center (OU3), NJ, Region 2 9/16/91	Site 26, 1500 sq. ft., volume not reported	Oil, roofing materials, building debris	No contamination was detected	Remedy: Source: No action.
Naval Air Engineering Center (OU3), NJ, Region 2 9/16/91	Site 27, 6.4 acres	Scrap steel cable	No contamination was detected	Remedy: Source: No action.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Naval Air Engineering Center (OU17), NJ, Region 2 9/26/94	Site 29, 20 acres	Construction debris, metal, asbestos, solvents, other miscellaneous wastes	VOCs, SVOCs, metals	Remedy: Source: No action.
Plattsburgh AFB, LF-022, NY, Region 2 9/30/92	LF-022, approx. 13.7 acres, approx. 524,000 cy	Household refuse	Metals, pesticides	Remedy: Capping (NY State requirements for solid waste landfills, 12 inch soil cap), and institutional controls.
Plattsburgh AFB, LF-023, NY, Region 2 9/30/92	LF-023, approx. 9 acres, approx. 406,000 cy	Household refuse, debris, car parts	Metals, VOCs, SVOCs, PCB, pesticides	Remedy: Capping (NY State requirements for solid waste landfills, low permeability cap), and institutional controls.
U.S. Army Aberdeen Proving Grounds (OU 1), MD, Region 3 8/30/92	Michaelsville Landfill, 20 acres, greater than 100,000 cy	Household refuse, limited quantities of industrial waste, burned sludges, pesticide containers, paint, asbestos shingles, solvents, waste motor oils, grease, PCB transformer oils, possible pesticides	Metals, pesticides, VOCs, PCBs, PAHs	Remedy: Capping (multi-layer cap in accordance with MDE requirements for sanitary landfills, using a geosynthetic membrane, 0-2 feet compacted earth material), surface water controls, and gas venting system.
Marine Corps Base, Camp Lejeune (OU1), NC, Region 4 9/15/94	Site 24, 100 acres, volume not reported	Fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, spiractor sludge, construction debris	Pesticides, metals, SVOCs, PCBs	Remedy: Source: No action.
Robins AFB (OU1), GA, Region 4 6/25/91	Main area (Landfill No. 4), 45 acres, greater than 100,000 cy	Household refuse, industrial waste	VOCs, metals	Remedy: Capping (to maintain a minimum 2-foot cover over the waste materials), renovation of current soil cover including clearing, filling, regrading, adding soil and clay cover material and seeding to maintain a minimum 2-foot cover over the waste material.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Twin Cities AFB Reserve, MN, Region 5 3/31/92	Main area, approx. 2 acres, volume not reported	Household refuse, small amounts of industrial; some burned waste	VOCs, metals	Remedy: Source: Institutional controls, natural attenuation, ground water and surface water monitoring.
Wright-Patterson AFB, (Source Control Operable Unit) OH, Region 5 7/15/93	LF-8, 11 acres, 187,300 cy	General refuse and hazardous materials	PAHs, pesticides, PCBs, VOCs, metals, inorganics	Remedy: Capping (low-permeability clay cap that complies with Ohio EPA regulations for sanitary landfills which meet or exceed RCRA Subtitle D requirements), institutional controls, ground water treatment and monitoring.
Wright-Patterson AFB, (Source Control Operable Unit) OH, Region 5 7/15/93	LF-10, 8 acres, 171,600 cy	General refuse and hazardous materials	PAHs, pesticides, PCBs, VOCs, metals, inorganics	Remedy: Capping (low-permeability clay cap that complies with Ohio EPA regulations for sanitary landfills which meet or exceed RCRA Subtitle D requirements), institutional controls, ground water treatment and monitoring.
Hill AFB (OU4), UT, Region 8 6/14/94	Landfill 1, 3.5 acres, 140,000 cy	Burned solid waste, small amounts of waste oils and solvents (from vehicle maintenance facility).	VOCs (TCE)	Remedy: Capping (clay or multi-media cap), pumping, treating, and discharging ground water to POTW, treating contaminated surface water, soil vapor extraction, implementing institutional controls and access restrictions.
Defense Depot, Ogden (OU1), UT, Region 8 6/26/92	Plain City Canal Backfill Area, 4,000 cy	Electrical wire, glass, ash, charcoal, asphalt, wood, concrete, plastic and metal fragments	Metals, PCBs, dioxins, furans, VOCs	Remedy: Excavation, sorting, and off-site disposal in a RCRA permitted facility.
Defense Depot, Ogden (OU3), UT, Region 8 9/28/92	Burial Site 3-A: Chemical Warfare Agent Identification Kit Burial Area, 100 cy	Vials of chemical surety agents, broken glass	Metals, chemical warfare agents	Remedy: Excavation, sorting, and off-site disposal in a RCRA permitted facility.
Defense Depot, Ogden (OU3), UT, Region 8 9/28/92	Burial Site 3-A: Riot Control and Smoke Grenade Burial Area, 90 cy	Unfused grenades and grenade fragments, as well as riot control grenades	No contaminants identified	Remedy: Excavation, sorting, and off-site disposal in a RCRA permitted facility.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Defense Depot, Ogden (OU3), UT, Region 8  9/28/92	Burial Site 3-A: Compressed Gas Cylinder Reburial Area	Two compressed gas cylinders and four smaller steel tanks removed from the Chemical Warfare Agent Identification Kit and Riot Control and Smoke Grenade burial areas	Unknown, possible chemical warfare agents	<b>Remedy:</b> Excavation of compressed gas cylinders and disposal by a commercial operator.
Defense Depot, Ogden (OU3), UT, Region 8  9/28/92	Burial Site 3-A: Miscellaneous Items Burial Area, 230 cy	Chemical Warfare Agent Identification Kits containing no CWAs, World War II gas mask canisters, paint, broken glass, wooden boxes, and pieces of iron	No contaminants identified	<b>Remedy:</b> Excavation and transportation for off-site disposal in a RCRA permitted hazardous waste landfill.
Defense Depot, Ogden (OU3), UT, Region 8  9/28/92	Water Purification Tablet Burial Area, 110 cy	Bottles containing halazone water purification tablets	No contaminants identified	<b>Remedy:</b> Excavation and transportation for off-site disposal in a RCRA permitted industrial waste landfill.
Defense Depot, Ogden (OU4), UT, Region 8  9/28/92	4-A, 7500, sq. ft., 3000 cy	Wood, crating materials, paper, greases, debris, medical waste, oils, some burned waste	Pesticides, VOCs, PCBs	<b>Remedy:</b> Excavation and transportation for off-site disposal in a RCRA permitted hazardous waste landfill.
Defense Depot, Ogden (OU4), UT, Region 8  9/28/92	4-B, (inside 4-E), less than 7,500, sq. ft.	Fluorescent tubes	No contaminants identified	<b>Remedy:</b> Excavation and transportation for off-site disposal in a RCRA permitted landfill.
Defense Depot, Ogden (OU4), UT, Region 8  9/28/92	4-C, 6,000 sq. ft	Food products, sanitary landfill waste	Pesticides, VOCs, PCBs	<b>Remedy:</b> Excavation and transportation for off-site disposal in a RCRA permitted landfill.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Defense Depot, Ogden (OU4), UT, Region 8 9/28/92	4-D, 2,000 sq. ft.	Methyl bromide cylinders, halazone tablets (jars)	Possibly methyl bromide	Remedy: Excavation and transportation for off-site disposal in a RCRA permitted industrial landfill.
Defense Depot, Ogden (OU4), UT, Region 8 9/28/92	4-E, 7,500 sq. ft., volume not reported	Oils, spent solvents, industrial waste	PCBs, VOCs, pesticides	Remedy: Excavation and transportation for off-site disposal in a RCRA permitted hazardous landfill.
Rocky Mountain Arsenal, Shell Section 36 Trenches (OU23), CO, Region 8 5/3/90	Shell Trench Area, 8 acres	Rags, plastic and metal cans, glass jars, piping, pipe fittings, insulation, refuse, insulation, liquid and solid wastes generated from the manufacture of pesticides	VOCs, SVOCs, pesticides <sup>2</sup>	Remedy: Capping (physical barrier with a soil and vegetative cover).
Fort Ord Landfills (OU2), CA, Region 9 8/23/94	Landfills, 150 acres	Household and commercial refuse, dried sewage sludge, construction debris, small amounts of chemical waste including paint, oil, pesticides, and epoxy adhesive, electrical equipment	VOCs	Remedy: Capping (California Code of Regulations for non-hazardous waste), institutional controls, extraction, treatment, and recharge of ground water.
Riverbank Army Ammunition Plant Site, CA, Region 9 3/24/94	Landfill, 4.5 acres	Paper, oils, greases, solvents, hospital wastes, construction debris, and industrial sludges	Metals	Remedy: Capping (a multi-layer cap as specified in Dispute Resolution Agreement), pump and treat ground water, discharge treated water to on-site ponds.

<sup>2</sup> Contaminants identified as emanating from the trenches but not contaminants of concern

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Williams AFB (OU1), AZ, Region 9  5/18/94	Landfill LF-04, 90 acres, 59,000 cy	Dried sewage sludge, domestic trash and garbage, wood, metal, brush, construction debris, some solvents and chemicals	Soil, pesticides, SVOCs, inorganics, including beryllium, lead, zinc	Remedy: Capping (a permeable cap with a 24 inch soil cover), stormwater runoff controls, institutional actions, and soil and ground water monitoring.
Williams AFB (OU1), AZ, Region 9  5/18/94	Pesticide Burial Area (DP-13), 0.4 acre	Pesticides	Pesticides, VOCs, metals	Remedy: Source: No action.
Williams AFB (OU1), AZ, Region 9  5/18/94	Radioactive Instrumentation Burial Area (RW-11), 100 sq. ft.	Cement; radioactive instruments	Radium (background levels)	Remedy: Source: No action.
Elmendorf AFB (OU1), AK, Region 10  9/29/94	LF05, 17 acres	General refuse, scrap metal, used chemicals and other scrap material	VOCs, PCBs, metals, PAHs	Remedy: Source: No action.
Elmendorf AFB (OU1), AK, Region 10  9/29/94	LF07, 35 acres	Base generated refuse, scrap metal, construction rubble, drums of asphalt, empty pesticide containers, small amounts of shop wastes, and asbestos wastes	VOCs, PCBs, metals, PAHs	Remedy: Source: No action.
Elmendorf AFB (OU1), AK, Region 10  9/29/94	LF13, 2 acres	Empty drums, metal piping, drums of asphalt, and small quantities of quicklime	VOCs, PCBs, metals, PAHs	Remedy: Source: No action.

DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)

ROD / Site Name, State, Region, ROD Sign Date	Disposal Area, Size, Volume of Waste	Type of Waste Deposited	Contaminants of Concern	Remedy
Elmendorf AFB (OU1), AK, Region 10 9/29/94	LF59, 2 landfills (.5 acres each)	General refuse and construction debris, and tar-seep	VOCs, PCBs, metals, PAHs	Remedy: Source: No action.
Fairchild AFB (OU1), WA, Region 10 2/13/93	Southwest area, 12.6 acres, 407,300 cy	Coal ash, solvents, dry cleaning filters, paints, thinners, possibly electrical transformers.	VOCs	Remedy: Capping (low-permeability cap designed to meet the closure requirements of Washington State's Minimum Functional Standards for Solid Waste handling and of federal RCRA Subtitle D), SVE/ treatment system, extracting contaminated ground water and treating by air stripping and granular activated carbon, disposal off-site, monitoring off-site water supply wells.
Fairchild AFB (OU1), WA, Region 10 2/13/93	Northeast area, 6 acres, 291,000 cy	Coal ash, solvents, dry cleaning filters, paints, thinners, possibly electrical transformers.	VOCs	Remedy: Capping (low-permeability cap designed to meet the closure requirements of Washington State's Minimum Functional Standards for Solid Waste handling and of federal RCRA Subtitle D), SVE/ treatment system, extracting contaminated ground water and treating by air stripping and granular activated carbon, disposal off-site, monitoring off-site water supply wells.
Fort Lewis Military Reservation, Landfill 4 and the Solvent Refined Coal Pilot Plant, WA, Region 10 9/24/93	LF4, 52 acres	Domestic and light industrial solid waste (no landfill records were maintained).	VOCs, metals	Remedy: Source: Institutional controls, treat ground water and soil using SVE and air sparging system.
Naval Air Station, Whidbey Island, Ault Field (OU1), WA, Region 10 12/20/93	Area 6 Landfill, 40 acres. Within Area 6 there are 2 distinct areas where wastes were disposed.	Household waste, construction debris, and yard waste	VOCs	Remedy: Capping (low-permeability cap to meet Washington State Minimum Functional Standards for non-hazardous closure), air stripping ground water, ground water monitoring, and institutional controls.
Naval Air Station, Whidbey Island, Ault Field (OU2), WA, Region 10 12/20/93	Area 2, 13 acres; Area 3, 1.5 acres. Both treated together due to close proximity.	Solid waste from the base, industrial wastes, and construction and demolition debris	Metals, PAHs	Remedy: Source: Institutional controls, ground water monitoring.

**DATA SUMMARY TABLE FOR MILITARY LANDFILLS APPENDIX (CONT.)**

<b>ROD / Site Name, State, Region, ROD Sign Date</b>	<b>Disposal Area, Size, Volume of Waste</b>	<b>Type of Waste Deposited</b>	<b>Contaminants of Concern</b>	<b>Remedy</b>
Naval Reactor Facility, ID, Region 10 9/27/94	Landfill Unit 8-05-1, (350 ft. by 450 ft. by 4-25 ft.)	Construction debris, small quantities of paints, solvents, cafeteria wastes, and petroleum products	Metals, VOCs	Remedy: Capping (24-inch native soil cover), institutional controls.
Naval Reactor Facility, ID, Region 10 9/27/94	Landfill Unit 8-05-51, (450 ft. by 100 -175 ft. by 10-15 ft.)	Construction debris, small quantities of paints, solvents, cafeteria wastes, and petroleum products	Metals, VOCs	Remedy: Capping (24-inch native soil cover), institutional controls.
Naval Reactor Facility, ID, Region 10 9/27/94	Landfill Unit 8-06-53, (900 ft. by 1200 ft. by 7- 10 ft.)	Construction debris, small quantities of paints, solvents, cafeteria wastes, and petroleum products	Metals, VOCs	Remedy: Capping (24-inch native soil cover), institutional controls.



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

November 3, 1997

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS EL Toro  
P. O. Box 95001  
Santa Ana, CA 92709-5001

Re: EPA Approval of Draft Final Feasibility Study Reports for Operable Unit 2C - Sites 3&5,  
MCAS El Toro, California, August 14, 1997

Dear Mr. Joyce:

This letter is to notify you that the United States Environmental Agency (EPA) has no further comments on the document referenced above. The document is hereby approved.

Please contact me at (415) 744-2210, if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Glenn R. Kistner".

Glenn R. Kistner  
Remedial Project Manager  
Federal Facilities Cleanup Branch

cc: Tayseer Mahmoud, DTSC  
Andy Piszkin, SWDIV  
Larry Vitale, RWQCB



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

November 3, 1997

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS El Toro  
P. O. Box 95001  
Santa Ana, CA 92709-5001

Re: EPA Comments on Draft Proposed Plan for Closure of Inactive Landfills, Sites 2, 3, 5, and  
17

Dear Mr. Joyce:

The United States Environmental Protection Agency (EPA) has reviewed the above-referenced document and have the following comments:

**General Comments:**

While the Proposed Plan is generally well-written, easy to understand and contains sufficient information for meaningful public comment, there are some areas that could be clarified.

EPA generally agrees with the Navy's selection of Alternative 3 for the 4 landfill Sites, as long as the alternative is consistent with reuse. EPA also would support Alternative 4D for Site 5 if the reuse is a golf course (Alternative 4D would reduce water infiltration in conjunction with irrigation), and Alternatives 5 or 6 for Site 3 which would potentially expand reuse options. The additional costs associated with these alternatives are also not much more than the costs estimated for Alternative 3.

**Specific Comments:**

1. pg.1, first paragraph; We suggest adding language that explains the process in more detail such as; "A final remedy for the sites will be selected only after the public comment period has ended and all comments have been reviewed and considered. The final remedy will be documented in the Record of Decision (ROD)."

2. pg.1, 4th paragraph; Please add "approximately" before "30 years".

3. pg.1, "Opportunities for Community Involvement", 1st paragraph - last sentence; please add the word "formally" before "comments on the alternatives."
4. pg.1, "Opportunities for Public Comment", last paragraph - last sentence; please add "or in person at the Public Meeting mentioned above." to the end of the sentence.
5. pg. 2. Site 2; suggest changing "bisected" to "crossed".
6. pg.2, Site 2; The middle of the paragraph states that Site 2 is bisected by an unlined constructed drainage channel that is located between the two landfill areas. Which two landfill areas?
7. pg. 2, "Landfill Investigations" - 2nd paragraph; suggest replacing the word "conduit" with "means".
8. pg.3; Suggest removing "fate and transport" and use "modeling analysis" or just "analysis".
9. pg.3; 2nd paragraph; suggest replacing, " biodegradation" with "biological breakdown".
- 10) pg. 3, 2nd paragraph; suggest adding, "(where drinking water is taken)" after, "do not impact regional groundwater."
11. pg.3; The last sentence states that monitored Natural Attenuation (NA) is recognized by US EPA as a viable method for cleanup of groundwater. While this is true, it is misleading to include this with a "presumptive remedy". EPA does *not* consider NA to be a presumptive remedy. The Proposed Plan appears to be recommending 2 remedies: 1) capping as a presumptive remedy and, 2) NA. If this is so, then it should be clearly stated at the beginning of the document. After referencing NA, the phrase "it is expected to reduce contaminant levels in groundwater within a reasonable time frame." should be added.
12. pg.4; After the discussion of Site 17, recommend adding a sentence stating "Details of the removals conducted at Sites 2 and 17 are on page 8."
13. pg.4; In the middle of the first paragraph under "Human Health and Ecological Risk Assessments," the sentence starting with "[A]lthough the risk assessments are based on very conservative assumptions, only the soils surrounding ...." is a little hard to follow. In other words, what does the first part of the statement about risk assessments based on a very conservative assumption have to do with the second part of the sentence, i.e., that only the soils surrounding the buried wastes were sampled?
14. pg.4; The sentences beginning with "This approach is typical for landfills".... and "Sampling of landfill materials".... and " Drilling into the landfills" .... are repeated from page 2 and should

be deleted to make the Risk Assessment section briefer.

15. pg 4; Please add the Regional Water Quality Control Board to the paragraph underlying "Identifying Exposure Pathways".

16. pg 5; Suggest deleting the first two sentences under the heading "Estimating Human Health and Ecological Risks" as they basically say the same thing as the sentences that follow.

17. pg.5; The paragraph under the same heading should be revised to state; "To manage risks and protect human health from known or suspected carcinogens, U. S. EPA has established acceptable *exposure levels* at general concentration levels that represent an *excess* upper bound lifetime cancer risk to an individual of between  $10^{-4}$  (1 additional case in a population of 10,000) and  $10^{-6}$  (1 additional case in a population of 1,000,000) using information between dose and response. Various site specific factors such as exposures, types of contaminants and potential future uses are factored into the selection of a remedy that protects human health."

18. pg.5; Suggest inserting icons in "Soil", "Groundwater", and "Ecological" headings.

19. pg.5; "Soil," Is "100,000,000" correct?

20. pg.5. Suggest inserting, (e.g., insects) between invertebrate and diet in last sentence.

21. pg.6; Please bold or italicize words describing the various remedies.

22. pg.6, 2nd paragraph; Please add (dilution, etc.) after monitored natural attenuation.

23. pg.6; Suggest using different coloring, fonts& hatching, etc., to Alternative 3 or any other alternative chosen, to distinguish between the alternatives.

24. pg.7; Suggest deleting the first full paragraph since it does not really add value to such a lengthy document.

25. pg.7; The illustration on this page should be titled or labeled.

26. pg.7; More should be done to highlight the preferred alternative.

27. pg.7; Suggest replacing 2:1 with some other description (e.g. double, twice as much,etc.).

28. pg.9; "Postclosure Maintenance" - first sentence: change "are begun" to will begin."

29. pg.10; Compliance with ARARs - states that the preferred alternative meets all ARARs. What about the other alternatives (excluding including Alternative 1 (no action)? Also on this page, under "Reduction of TMV," the statement "all alternatives are expected to achieve reduction in TMV" should be qualified by adding the phrase "except alternative 1."

30. pg.10; Add "Alternative 3" after "Evaluation of" in the heading.

31. pg.10; Suggest changing the font (Times Roman with italics?) of the paragraph under the page heading.

32. pg.11: Delete the first two rows from the Table entitled "Comparative Analysis of Alternatives" since these two are threshold criteria that must be met. In other words, an alternative that does not meet both criteria does not even get to this point of being compared to other alternatives.

33. pg.11; Add the number of the preferred alternative when discussing it.

34. pg.13; Suggest using a different font in color box to make type easier to read.

35. pg.14; ARARs:

First, the statement that remedial actions at sites listed on the NPL must meet ARARs is not completely accurate. All remedial actions necessary to carry out sections 104 (Response Authorities) and 106(Abatement Actions), regardless of whether the site is on the NPL, shall be carried out in accordance with section 121, including the requirement to comply with ARARs. Section 121 applies to federal facilities through section 120.

Second, the organization of the ARARs is very confusing. For instance, the State ARARs are listed under each State Agency. We suggest that the ARARs section be reorganized in the following manner: First, the ARARs should begin with the Federal ARARs, listing these according to location-specific, chemical specific and action-specific requirements. Then, this should be followed by a listing of State ARARs, again by location-specific, chemical-specific and action-specific requirements. This could be done through an ARARs Table, which should have the following: specific citation to the Federal or State law or regulation, description of the specific requirement that must be complied with, whether the requirement is applicable or relevant and appropriate, and the site to which the requirement applies. Please note that the state regulations for municipal solid waste landfills (which these sites appear to be) are now in Title 27 although there are still some requirements in Title 23 Chapter 15 that may be potential ARARs. The distinction between these two apparently is this: Title 27 contains all the permitting requirements for solid waste landfills while Title 23 Chapter 15 regulates remediation of waste management units (landfills) regardless of whether they are permitted or not. If the waste in these landfills are hazardous waste, the appropriate regulations are Title 22 (RCRA Subtitle C). In that instance, Title 27 and Title 23 (Chapter 15) should only be cited as ARARs if these contain more stringent requirements than Title 22.

36. pg.15; Last sentence in first paragraph refers to this as the IRP process. Isn't this more appropriately known as the CERCLA process?

37. pg.15; The information in the text concerning the various OUs is very "busy". Can the

information be portrayed in another manner such as using bullets or by categorizing the individual site OUs?

38. pg.16; Mr. Andrew Bain is in the Superfund Division not in the Office of Haz. Waste.

If you have any questions, please feel free to contact me at (415) 744-2210.

Sincerely,



Glenn R. Kistner  
Remedial Project Manager  
Federal Facilities Cleanup Branch

cc: Tayseer Mahmoud, DTSC  
Larry Vitale, RWQCB  
Andy Piszkin, SWDIV  
Tim Latas, Bechtel



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

November 5, 1997

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
AC/S Environment (1AU)  
MCAS EL Toro  
P. O. Box 95001  
Santa Ana, CA 92709-5001

Re: EPA Response to Proposed RD/RA Schedule for MCAS EL Toro, CA

Dear Mr. Joyce:

This letter is in response to your letter dated October 20, 1997, that contained a proposed schedule for Remedial Design/Remedial Action (RD/RA) deliverables for MCAS El Toro. Your letter proposed a June deliverable date for a Preliminary RD Report, an October deliverable date for a Final RD report, as well as an October deliverable date for Construction Quality Assurance (QA) and Quality Control (QC) Plans.

As I stated during our Base Closure Team (BCT) phone conference today, EPA does not agree with those proposed dates. We believe that there are some tasks that can be performed concurrently to expedite the RD/RA process and that deliverables such as RD and Construction QA/QC Plans may be submitted for agency review even before the RD/RA Work Plan has been approved.

In addition to the above, I stated that it is not necessary in this case to submit predesign documents. Instead, it will be necessary to submit only a draft Final and Final Design. EPA will not require a Preliminary Design in light of MCAS EL Toro utilizing the existing Soil Vapor Extraction (SVE) system from Norton AFB.

Therefore, EPA is requesting that you submit a new schedule that is consistent with an abridged RD/RA process. Please feel free to contact me at (415) 744-2210, if you have any questions or if you would like to discuss this further.

Sincerely,

A handwritten signature in cursive script that reads "Glenn R. Kistner".

Glenn R. Kistner  
Remedial Project Manager  
Federal Facilities Cleanup Branch

information be portrayed in another manner such as using bullets or by categorizing the individual site OUs?

38. pg.16; Mr. Andrew Bain is in the Superfund Division not in the Office of Haz. Waste.

If you have any questions, please feel free to contact me at (415) 744-2210.

Sincerely,



Glenn R. Kistner  
Remedial Project Manager  
Federal Facilities Cleanup Branch

cc: Tayseer Mahmoud, DTSC  
Larry Vitale, RWQCB  
Andy Piszkin, SWDIV  
Tim Latas, Bechtel



al/EPA

November 12, 1997

Pete Wilson  
Governor

Department of  
Toxic Substances  
Control

Peter M. Rooney  
Secretary for  
Environmental  
Protection

45 West Broadway,  
Suite 350  
Long Beach, CA  
0802-4444

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
U.S. Marine Corps Air Station - El Toro  
P. O. Box 95001  
Santa Ana, California 92709-5001

Dear Mr. Joyce:

**COMMENTS ON ROUND 6 GROUNDWATER MONITORING REPORT,  
MARINE CORPS AIR STATION (MCAS) EI TORO**

The Department of Toxic Substances Control (DTSC) has completed the review of the above subject report dated October 1997, prepared by CDM Federal Programs Corporation. The report presents the results of the July 1997 groundwater sampling round from a network of 77 monitoring wells/monitoring ports at MCAS El Toro.

This letter is to transmit DTSC's and Department of Health Services comments on the document. DTSC commented on two previous groundwater monitoring reports concerning low-flow sampling protocol and quality control while collecting groundwater samples. Despite our comments, it appears that these issues were not corrected prior to the Round 6 sampling. DTSC is concerned that the information provided in the report may not be useful to support future decisions for determination on the long-term groundwater monitoring plan. Please correct the deficiencies and provide a response to the enclosed comments to assist us in the review of future documents. If you have any questions, please call me at (562) 590-4891.

Sincerely,

Tayseer Mahmoud  
Remedial Project Manager  
Base Closure Unit  
Office of Military Facilities  
Southern California Operations

Enclosures

cc: See next page.

*Mr. Joseph Joyce*  
*November 12, 1997*  
*Page 2*

cc: Mr. Glenn Kistner  
Remedial Project Manager  
Superfund Division (SFD-8-2)  
U. S. Environmental Protection Agency  
Region IX  
75 Hawthorne Street  
San Francisco, California 94105-3901

Mr. Lawrence Vitale  
Remedial Project Manager  
California Regional Water Quality  
Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3339

Ms. Deirdre Dement  
Department of Health Services  
Environmental Management Branch, MS 396  
P. O. Box 942732  
Sacramento, California 94234-7320

Mr. Larry Davidson  
CDM Federal Programs Corporation  
3760 Convoy Street, Suite 210  
San Diego, California 92111

Dr. Dante Tedaldi  
Bechtel National, Inc.  
401 West A Street, Suite 1000  
San Diego, California 92101-7905

Mr. Terry Feng, BSII (45) 7 A 41 (SF01)  
Bechtel Group, Inc.  
50 Beale Street  
San Francisco, California 94105-1895

Mr. Gregory F. Hurley, Esq.  
Brown, Pistone, Hurley & Van Vlear  
8001 Irvine Center Drive, Suite 900  
Irvine, California 92618-2921

*Mr. Joseph Joyce*  
*November 12, 1997*  
*Page 3*

cc: Mr. Andy Piszkin  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division - Code 1831.AP  
1220 Pacific Highway  
San Diego, California 92132-5187



Cal/EPA

**MEMORANDUM**

*Pete Wilson  
Governor*

*Department of  
Toxic Substances  
Control*

*245 West Broadway,  
Suite 350  
Long Beach, CA  
90802-4444*

*Peter M. Rooney  
Acting Secretary for  
Environmental  
Agency*

**TO:** Mr. Tayseer Mahmoud  
Remedial Project Manager  
Department of Toxic Substances Control  
Office of Military Facilities  
Southern California Region

**FROM:** Mr. Ronald Okuda *R.O.*  
Hazardous Substances Scientist  
Department of Toxic Substances Control  
Office of Military Facilities  
Southern California Region

**DATE:** November 12, 1997

**SUBJECT:** Comments on "Groundwater Monitoring Report, July Sampling Round, Marine Corps Air Station El Toro, California"

---

As requested by Mr. Tayseer Mahmoud, I have reviewed the document entitled "Groundwater Monitoring Report, July 1997 Sampling Round, Marine Corps Air Station (MCAS) El Toro, California" (the Report), dated October 1997. The Report was prepared by CDM Federal Programs Corporation (CDM Federal) for the Naval Facilities Engineering Command, Southwest Division (SWDIV). The Report presents the results from the July 1997 groundwater sampling round (Round 6) and water level measurements collected in June and August 1997. As part of my review, I examined the comments provided by Ms. Sherrill Beard, Certified Hydrogeologist, Geological Services Unit, DTSC on the previous groundwater monitoring reports.

In addition to the objectives described in the Final Groundwater Monitoring Plan (1995), DTSC requested that groundwater samples that detected elevated gross alpha and gross beta values also have isotopic analysis for individual radionuclides. The *Draft Final Phase II Remedial Investigation Report for Operable Unit 2B - Site 2* (1996) indicated gross alpha concentrations above the Maximum Contaminant Level (MCL) of 15 pCi/L. The elevated gross alpha values indicated a potential that radionuclides may be leaching from the landfill. DTSC, in consultation with the California Department of Health Services, Environmental Management Branch, requested the isotopic radioanalysis to determine whether the source of the radionuclides were derived from a

natural or manmade source (i.e., disposal into the landfill). The selected groundwater samples were analyzed for Strontium 89/90, Cesium 134, Radium 226 and Radium 228. The Navy should discuss the rationale for choosing these specific radionuclides, especially Cesium 134. Was it because they are the most likely radionuclides to be found on a military installation?

## GENERAL COMMENTS

### 1. Low-Flow Well Purging and Sampling

DTSC provided comments on two previous groundwater monitoring reports; the *Draft Quarterly Groundwater Monitoring Report, February 1997* and the *Groundwater Monitoring Report, March 1997 Sampling Round (Round 5)*. In both cases, DTSC identified technical issues which causes us to question the quality of the information included in the reports. Specifically, DTSC mentioned that the low-flow sampling protocol being conducted is not acceptable. As stated in our August 7, 1997 letter, there is a concern that the pump rate is too high which may lead to high turbidity values and mixing of stagnant well water and formation water. These issues were not corrected prior to the Round 6 sampling. The sampling logs indicate that a purge rate of 0.3 or 0.5 gallons per minute was used without determining the optimum purge rate for each well. The Round 6 sampling logs also show that groundwater samples from monitoring wells 02\_NEW7 and 02\_NEW11 had high turbidity values (186.4 NTu and 227.4 NTu, respectively).

### 2. Section 8.3, Site Specific Analyses, Page 8-2

The Report states that all Round 6 monitoring wells sampled for gross alpha and gross beta were additionally sampled for selected radionuclides. Groundwater monitoring wells 04\_UGMW63 and 05\_DGMW67 were not analyzed for selected radionuclides because of equipment failure. Since these previous samples appear to have exceeded the MCL for alpha emitters, there is a need for isotopic analysis for radium. The sample collected from monitoring well 05\_DGMW67 also exceeds the MCL for gross beta, which indicates the need for isotopic beta analysis (i.e., Sr-90). The Navy should conduct isotopic analysis of these monitoring wells during the next groundwater sampling round. In addition, monitoring well 05\_NEW1 should also be sampled during the next round to confirm the elevated radium level that was detected. The MCL for radium, which in Radium-226 and Radium-228 combined, is 5 pCi/L. The groundwater analysis of monitoring well 05\_NEW1 detected a combined Radium-226/228 level of 5.5 pCi/L. The Navy should provide a discussion and rationale if they are of the opinion that a response action is not necessary to remediate the groundwater.

3. Quality Control While Collecting Groundwater Samples

Our August 7, 1997 letter noted specific examples of quality control problems occurring during sample events. The sampling logs in the Report indicate that little attempt has been made to correct these deficiencies. Three examples are noted below.

- A. Groundwater samples were collected from monitoring well 01MW101 on July 11, 1997 and September 10, 1997. In both cases, the groundwater samples were collected before three casing volumes were purged. During Round 5, this well was sampled after less than one well casing was purged. The groundwater data from these two rounds of sampling are suspect due to the method in which this well was sampled. This information needs to be evaluated and action taken, such as redevelopment of the monitoring well (See Example 1).
- B. We noted that some Round 5 groundwater samples had high turbidity values which are normally unacceptable. In Round 5, monitoring well 01MW102 had a turbidity value of 239 NTu. The sampling log for Round 6 again shows a high turbidity value for monitoring well 01MW102 (111.5 NTu). In addition, the Round 6 sampling logs indicate high values from monitoring wells 01MW101 (748.6 NTu), 02\_NEW7 (186.4 NTu), 02\_NEW11 (227.4 NTu), 03UGMW26 (465.7 NTu), 04DGMW66 (270.3 NTu), 05DGMW68 (1,370.5 NTu), 09DBMW45 (743.5 NTu), 24\_NEW01 (621 NTu), 24\_NEW05 (293 NTu), 24\_NEW07 (671 NTu) and 18MCAS04 (1,676.7 NTu) (See Example 2). Although the Report discusses potential causes for anomalously high turbidity readings (Section 9.3.3), only the logs for 03UGMW26 and 05DGMW68 note any problems with the equipment. There is also the possibility that the high turbidity readings may be the result of a purge rate that is too high for the well. This issue was raised in our previous letter dated August 7, 1997 in which we questioned whether the field team had sufficient training to recognize obvious discrepancies while taking field measurements.
- C. The low-flow sampling logs again do not indicate whether the water level was monitored during purging and sampling. It is difficult to determine whether the groundwater sample being collected is stagnant well water or formation water. Monitoring well 18BGMW03E provides a good example of our concern. This well was initially sampled on July 8, 1997 and re-sampled on July 11, 1997 due to headspace discovered in the original sample. Although the low-flow purge method was apparently used to collect the groundwater sample, the depth to groundwater (DTW) in the well dropped almost two feet between the initial and

final DTW measurement (See Example 3).

4. Access to Groundwater Monitoring Wells

The Report noted that the sampling team was not able to collect groundwater samples and measure water levels at some monitoring wells for a variety of reasons. It is suggested that a contingency plan be developed so that all designated monitoring wells can be sampled during a sampling event. This is an important issue to resolve prior to the development of a long-term groundwater monitoring program. Failure to consistently measure groundwater parameters may cause uncertainty when interpreting groundwater and contamination trends.

EXAMPLE 1

MARINE CORPS EL TORO GROUNDWATER MONITORING WELL PURGING AND SAMPLING LOG												
PROJECT NO.: 6210-005						TEAM: Non-dedicated Pump ( X ) Dedicated Pump ( )						
PURGING LOG												
WELL NO.: 01MW101						SAMPLE NO.: 01MW101-004R						
PURGING START (Date): 09/10/97 (Time): 12:00						PURGING END (Date): 09/10/97 (Time): 1310						
SAMPLING START (Date): 09/12/97 (Time): 0915						SAMPLING END (Date): 09/12/97 (Time): 0930						
WELL CASING DIAMETER: 2" ( ) 4" ( X ) 5" ( )						WEATHER: clear sunny				TEMP.: 85 °F		
FIELD PERSONNEL'S NAME(S): BRIAN TRINH (CDM), JIM WHITLEY (Water Development Corp.)												
REFERENCE POINT OF DEPTH MEASUREMENT: North of TOC												
OVM READING: —			ORIG. DTW: <sup>9/10/97</sup> 64.77 / <sup>9/12/97</sup> 118.55 feet				FINAL DTW: 144.40 feet					
PURGE METHOD: Packers ( ) Multiple Port ( ) Teflon Bailer ( ) Submersible Grundfos Pump ( X ) 3'												
MEASURED		ORIGINAL		4" = 0.66		CASING		PURGE				
WELL TD		DTW		5" = 0.93		VOLUME		VOLUME				
				6" = 1.50								
153.00		- 64.77		= 88.23		x		= 58.2		Gal/Csg. Vol. x		3 Csg. Vol. = 175 Gal.
PURGE WATER CONTAINERIZED? YES						AVERAGE PURGE RATE: 1.0 gpm						
Pump is set at 150 feet												
ACTUAL TIME	ELAPSED TIME	VOLUME PURGED (gal)	TEMP. (°C)	pH (i.e.)	COND. (umhos/cm)	TURB. (NTU)	DISSOLVED OXYGEN (mg/L)	REDOX (mV)	Air Bubbles Observed (Yes/No)	WATER COLOR	COMMENT	
1200	0	0									11273	
1206	6	13	28.26	7.82	1.23	476.8	-16.0	120.5	No	cloudy	85.40' <sup>9/10/97</sup> 11285' 112.	
1210	10	13	27.59	7.84	1.21	681.1	-16.3	109.8	No	cloudy	11286 94.3	
1217	17	22	27.57	7.85	1.21	263.1	-18.4	99.1	No	cloudy	11295 101.0 4'	
1225	25	33	27.73	7.86	1.17	54.4	-17.5	84.4	No	clear	11306 114.70'	
1230	30	38	27.88	7.86	1.14	74.4	-16.2	75.7 <sup>BT</sup> 81.6 <sup>BT</sup>	No	clear	11311 121.40'	
1235	35	43	27.93	7.84	1.13	61.2	-13.3 <sup>BT</sup> 13.3 <sup>BT</sup>	79.6	No	clear	11316 125.00'	
1245	45	53	28.15	7.81	1.11	61.2	-14.4	78.4	No	clear	11326 132.62'	
1255	55	64	28.53	7.78	1.08	54.5	-14.5	73.7	No	clear	11337 140.00'	
1310	70	70	30.73	7.85	1.04	58.4	-11.9	80.1	No	clear	11343 145.00' well c	
											9/12/97 118.55'	
9/12/97			23.67	8.02	0.00	13.9	3.22	101.7	Yes	clear	118.61'	
0915	* Collect Sample: 01MW101-004R						Number of Containers: 2 bottles		Total Volume Purged = 70 Gal.			
Air Entrainment Survey ( )						Field Blanks ( X )						
SAMPLING LOG												
SAMPLING METHOD: Packer ( ) Disposable Bailer ( X ) Portable Pump ( )												
LAB ANALYSES: VOC ( X )				Filtered Metals ( )				General Chemistry ( )				
Treatability Parameters ( )				Gross Alpha/Beta ( )				Radium-226 ( )		Radium-228 ( )		
Strontium-89 ( )				Cesium-134 ( )								
COMMENT: Initial Meter Reading: 11273						Purge Rate: 1.1 gpm			Estimated #/A min. interval			
Final Meter Reading: 11343												
Field QC Sample Y ( X ) N ( ) Q.C.I.D.: 01MW101-304R 9/12/97 Time: 0925 Number of Containers: 2 bottles												

## EXAMPLE 2

MARINE CORPS EL TORO GROUNDWATER MONITORING WELL PURGING AND SAMPLING LOG												
PROJECT NO.: 6210-005						TEAM: Non-dedicated Pump ( X ) Dedicated Pump ( )						
PURGING LOG												
WELL NO.: 09DBMW45						SAMPLE NO.: 09DBMW45-004						
START (Date): 7/8/97			(Time): 1711			END (Date): 7/8/97			(Time): 1734			
WELL CASING DIAMETER: 2" ( ) 4" ( X ) 5" ( )						WEATHER: Sunny			TEMP.: 73 °F			
FIELD PERSONNEL'S NAME(S): <del>BRIAN TRINH (GDM)</del> Matt Berkshire (Com), Neil Davis (Water Development)												
REFERENCE POINT OF DEPTH MEASUREMENT: TOC												
OVM READING: —			ORIG. DTW: 117.94 feet			FINAL DTW: feet						
PURGE METHOD: Packers ( )			Multiple Port ( )			Teflon Bailer ( )			3' Submersible Grundfos Pump ( X )			
MEASURED		ORIGINAL		4" = 0.66		CASING		PURGE				
WELL TD		DTW		5" = 0.93		VOLUME		VOLUME				
				6" = 1.50								
162.00		117.94		= 44.06		x		= 29.1 Gal./Csg. Vol.		x 3 Csg. Vol. = 87.2 Gal.		
PURGE WATER CONTAINERIZED? YES						AVERAGE PURGE RATE: 6.6 gpm						
											Pump is set at 140 feet	
ACTUAL TIME	ELAPSED TIME	VOLUME PURGED (gal.)	TEMP. (°C)	pH (s.a.)	COND. (umhos/cm)	TURB. (NTU)	DISSOLVED OXYGEN (mg/L)	REDOX (mV)	Air Bubbles Observed (Yes/No)	WATER COLOR	COMMENT	
1714	3	20.7	26.97	6.80	1.91	1271	7.01	807	No	cloudy		
1715	4	27.6	25.33	6.79	1.95	292	7.52	79.5	No	cloudy		
1716	5	34.5	24.87	6.78	1.95	289.5	7.73	80.5	No	cloudy		
1718	7	48.3	24.63	6.77	1.95	477.5	8.07	82.3	No	cloudy		
1719	8	55.2	24.59	6.77	1.95	435.3	8.03	83.3	No	cloudy		
1720	9	62.1	24.56	6.77	1.95	390.0	8.07	83.3	No	cloudy		
1721	10	69.0	24.56	6.76	1.95	320.6	8.01	83.7	No	cloudy		
1722	11	75.9	24.55	6.76	1.95	819.7	7.96	84.1	No	cloudy		
1723	12	82.8	24.56	6.76	1.96	619.2	8.11	84.2	No	cloudy		
1724	13	89.7	24.56	6.76	1.95	743.5	8.09	84.2	No	cloudy		
1728	* Collect Sample: 09DBMW45-004						Number of Containers: 3					
Air Entrainment Survey ( )						Field Blanks ( )						
SAMPLING LOG												
SAMPLING METHOD: Packer ( )			Bailer ( )			Portable Pump ( X )						
LAB ANALYSES: VOC ( X )			Filtered Metals ( )			General Chemistry ( X )						
Treatability Parameters ( )			Gross Alpha/Beta ( )			Radium-226 ( )			Radium-228 ( )			
Strontium-89 ( )			Cesium-134 ( )									
COMMENT: Initial Meter Reading: 89413			Purge Rate: 6.5 gpm			Estimated 1.3 min. interval						
Final Meter Reading: 89564			Total Volume Purged: 151 gallons									
Field QC Sample Y ( N )			QC I.D.: 09DBMW45-324			Time: 1733			Number of Containers: 3 bottles			
* Samples were collected after all parameters were stable as described in the SAP, Section 6.2.2 (Temp.=1°C; pH=0.2; EC=5%)												

EXAMPLE 3

MARINE CORPS EL TORO GROUNDWATER MONITORING WELL PURGING AND SAMPLING LOG										
PROJECT NO.: 6210-005					TEAM: Non-dedicated Pump ( ) Dedicated Pump ( X )					
PURGING LOG										
WELL NO.: 18BGMW03E					SAMPLE NO.: 18BGMW03E-004R					
START (Date): 7/11/97			(Time): 0853		END (Date): 7/11/97			(Time): 0915		
WELL CASING DIAMETER: 2" ( ) 4" (X) 5" ( )					WEATHER: Sunny			TEMP.: 70 °F		
FIELD PERSONNEL'S NAME(S): M. Smits / B Trinh										
REFERENCE POINT OF DEPTH MEASUREMENT: Top of Sounding Tube										
OVM READING: — ORIG. DTW: 105.76 feet FINAL DTW: 107.29 feet										
PURGE METHOD: Packers ( ) Multiple Port ( ) Teflon Bailer ( ) Submersible Grundfos Pump ( )										
TUBING RADIUS			PUMP DEPTH			LOW FLOW PURGE VOLUME				
$((0.03125 \text{ ft})^2 \times 3.14 \times 7.48 \text{ Gal/ft} \times 160) + 0.06] \times 3 \text{ Csg. Vol.} = 11.2 \text{ Gal. (Low Flow purge)}$										
PURGE WATER CONTAINERIZED? YES					AVERAGE PURGE RATE: 0.5 gpm					
ACTUAL TIME	ELAPSED TIME	VOLUME PURGED (gal)	TEMP. (°C)	pH (s.l.)	COND. (umhos/cm)	TURB. (NTU)	DISSOLVED OXYGEN (%)	REDOX (mV)	COMMENT	
0855	2	1.0	23.73	6.28	1.76	163.4	3.34	97.8	Yellow/No air bubbles	
0858	5	2.5	23.90	6.91	1.75	107.9	5.57	58.2	Clear/No air bubbles	
0900	7	3.5	24.16	6.92	1.75	100.4	5.40	54.3	Clear/ "	
0905	12	6.0	24.41	6.91	1.74	88.5	5.39	56.6	Clear/ "	
0908	15	7.5	24.59	6.92	1.74	70.9	5.54	55.6	Clear/ "	
0910	17	8.5	24.61	6.91	1.74	83.6	5.63	54.3	Clear/ "	
0914	21	10.5	24.75	6.90	1.74	52.0	5.84	50.0	Clear/ "	
0920	* Collect Sample: 18BGMW03E-004R							Number of Containers: 1 bottles		14 gallons collected
Air Entrainment Survey ( )								Field Blanks ( )		
SAMPLING LOG										
SAMPLING METHOD: Packer ( ) Bailer ( ) Portable Pump ( )										
LAB ANALYSES: VOC ( ) Filtered Metals ( ) General Chemistry ( )										
Treatability Parameters ( )			Gross Alpha/Beta ( )			Radium-226 ( )		Radium-228 ( )		
Strontium-89 ( )			Cesium-134 ( )			Radon (X)				
COMMENT: Low Flow Purge. Tubing diameter = 3/4" = 0.0625 ft										
Resample due to headspace in previous sample.										
Field QC Sample Y ( ) N ( )					QC I.D.:		Time:		Number of Containers: bottles	
* Samples were collected after all parameters were stable as described in the SAP, Section 6.2.2 (Temp.=1°C: pH=0.2: EC=5%)										

# Memorandum

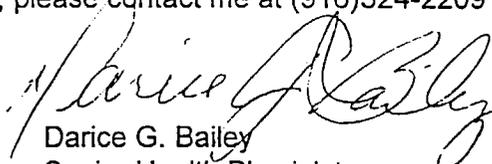
Date : October 24, 1997

To : Mr. Tayseer Mahmoud  
Department of Toxic Substances Control (DTSC), Region 4  
Office of Military Facilities  
245 West Broadway, Suite 425  
Long Beach, California 90803-4444

From : Environmental Management Branch, MS 396  
P.O. Box 942732  
Sacramento, California 94234-7320  
(916) 445-0498

Subject : Department of Health Services (DHS) review of Section 8.0 of the Final Groundwater Monitoring Report July 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station El Toro, California October 14, 1997 (DTSC/DHS workform # 364)

Attached are DHS' comments on the subject document. These comments were generated in support of the Interagency Agreement between DTSC and DHS and were prepared by Ms. Deirdre Dement, Associate Health Physicist. If you have any questions concerning these comments, or if you need additional information, please contact me at (916)324-2209 or Ms. Dement at (916) 324-1378.

  
Darice G. Bailey  
Senior Health Physicist

Attachment

cc: Ms. Deirdre Dement  
601 N. 7th Street, MS 396  
Sacramento, CA 95814

Department of Health Services

Review of Section 8.0 of the *Final Groundwater Monitoring Report July 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station El Toro, California, October 14, 1997*

November 6, 1997

DTSC Resource Planning Form # 364

The following comments and questions are in response to the request from Mr. Tayseer Mahmoud of the Department of Toxic Substances Control to review Section 8.0 of the groundwater monitoring report from the July 1997 sampling round conducted at the Marine Corps Air Station in El Toro, California. (These comments replace those dated October 23, 1997.)

General Comments:

1. This is the first document DHS has reviewed from this facility. It is unclear from the text the purpose of the sampling and analysis for radionuclides in groundwater; this may have been stated in earlier documents which DHS has not had access to. In order for DHS to properly evaluate this facility for its release for unrestricted use, any information regarding historical references to the potential use or existence of radionuclides at this facility and any other sampling and analysis plans or reports regarding the evaluation, potential presence and/or identity of radionuclides should be made available for review.
2. Two letters dated July 1997 and August 14, 1997 written to John Scandura, DTSC from Wayne D. Lee, U. S. Marine Corps were copied to DHS and indicate that potential radiological hazards are being investigated and a radiological survey of Buildings 296 and 297 is planned in the future. DHS would like to be included in the review of any plans or reports regarding radiological issues at Marine Corps Air Station El Toro.

Specific Comments:

1. Section 8.3, Page 8-2. Please explain why the "Selected Radionuclide," cesium-134, was chosen for radioanalysis.
2. Section 8.0, Table 8-3, Page 4 of 6. Please explain why samples taken from Station IDs 04\_UGMW63 and 05\_DGMW67 were not analyzed for the "selected radionuclides" and if there are any plans to further analyze these samples. These samples appear to have exceeded the maximum contaminant levels (MCL) for alpha emitters, which should indicate the need for isotopic analysis of radium. The sample collected from Station ID 05\_DGMW67 also exceeds the MCL for gross beta, which indicates the need for isotopic beta analysis (i.e., Sr-90).

Page 2. DHS November 6, 1997 Review of El Toro Groundwater Monitoring Report, July 1997 Sampling Round.

Specific Comments: (Continued)

3. Section 8.0, Table 8-3, Page 5 of 6. It appears that the combined radium sample results from Station ID 05\_NEW1 exceeded the listed MCL of 5 pCi/L.



November 17, 1997

Cal/EPA

*Pete Wilson  
Governor*

*Department of  
Toxic Substances  
Control*

*Peter M. Rooney  
Secretary for  
Environmental  
Protection*

*245 West Broadway,  
Suite 350  
Long Beach, CA  
90802-4444*

Mr. Joseph Joyce  
BRAC Environmental Coordinator  
U.S. Marine Corps Air Station - El Toro  
P.O. Box 95001  
Santa Ana, California 92709-5001

Dear Mr. Joyce:

**COMMENTS ON DRAFT PROPOSED PLAN FOR OPERABLE UNITS (OU)-2B  
SITES 2 & 17 AND OU-2C SITES 3 & 5, MARINE CORPS AIR STATION  
(MCAS) EI TORO**

The Department of Toxic Substances Control (DTSC) has completed the review of the above subject document dated September 1997 prepared by Bechtel National Inc. The Proposed Plan (PP) presents the Marine Corp's preferred alternative for landfill sites 2, 3, 5, and 17.

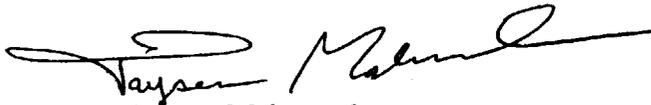
DTSC agrees with the Marine Corp's selection of Alternative 3 for landfill sites 2 and 17. However, although we recognize that the selected remedy, i.e., Alternative 3, is protective to human health and the environment, we have serious concern that this remedy is not compatible with the draft Reuse Plan for future land use as proposed by the Local Redevelopment Authority (LRA) for landfill sites 3 and 5. We request that a separate PP be submitted for OU-2C (sites 3 and 5) in order that this issue can be addressed without causing delay for OU-2B (sites 2 and 17) and because of potential controversy regarding cleanup for sites 3 and 5.

DTSC encourages the Marine's representatives along with the Base Transition Coordinator (BTC) to meet with the LRA to explain the PP and to reconcile environmental priorities with community reuse priorities prior to finalization of remedy selection. The regulatory agencies will be available to assist and participate in the meeting. If the remedy selected is Alternative 3, it is necessary that the LRA be aware that major costs and modification of the ROD would later be necessary to change this decision so as to make the environmental condition of the property suitable for the proposed reuse. If the reuse objectives cannot be achieved due to economic or technical considerations, this determination should be discussed and clarified with the LRA so that land use planners can revise the Reuse Plan accordingly. The LRA should be aware of the consequences of the remedy selected as it impacts the future reuse plan. The outcome of the discussions with the LRA should be included in the PP.

Mr. Joseph Joyce  
November 17, 1997  
Page 2

For additional comments on the PP, please see the enclosed comments. If you have any questions, please call me at (562) 590-4891.

Sincerely,



Tayseer Mahmoud  
Remedial Project Manager  
Office of Military Facilities  
Southern California Operations

Enclosures

cc: Mr. Glenn R. Kistner  
Remedial Project Manager  
U. S. Environmental Protection Agency  
Region IX  
Superfund Division (SFD-8-2)  
75 Hawthorne Street  
San Francisco, California 94105-3901

Mr. Lawrence Vitale  
Remedial Project Manager  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3339

Mr. Peter Janicki  
California Integrated Waste Management Board  
8800 Cal Center Drive  
Sacramento, California 95826

Mr. Steven Sharp  
County of Orange  
Environmental Health Division  
Solid Waste Local Enforcement Agency  
2009 East Edinger Avenue  
Santa Ana, California 92705

*Mr. Joseph Joyce*  
*November 17, 1997*  
*Page 3*

cc: Mr. Tom Mathews  
Director of Planning  
Orange County Environmental Management  
300 N. Flower Street, Third Floor  
P.O. Box 4048  
Santa Ana, California 92702-4048

Mr. Tim Latas  
Bechtel National, Inc.  
401 West A Street, Suite 1000  
San Diego, California 92101-7905

Mr. Gregory F. Hurley, Esq.  
Brown, Pistone, Hurley & Van Vlear  
8001 Irvine Center Drive, Suite 900  
Irvine, California 92618-2921

Mr. Andy Piszkin  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division, Code 1831.AP  
1220 Pacific Highway  
San Diego, California 92132-5187

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**  
**Comments on**  
**Draft Proposed Plan for Landfill Sites 2, 3, 5, & 17**  
**Marine Corps Air Station-El Toro**  
**Dated September 1997**

The list of comments below were prepared by Mr. Tayseer Mahmoud, Remedial Project Manager for Department of Toxic Substances Control (DTSC) and Mr. Ronald Okuda, Environmental Reuse Specialist. We have also attached a memorandum dated October 23, 1997 from Ms. Marsha Mingay, Public Participation Specialist. The memorandum provides additional comments on the document.

**General Comment:**

Overall, DTSC agrees with the Marine Corp's selection of Alternative 3 for Landfill Sites 2 and 17. However, we have serious concern that this remedy is not compatible with the draft Reuse Plan for future land use as proposed by the Local Redevelopment Authority (LRA) for landfill sites 3 and 5. We request the submittal of a separate Proposed Plan (PP) for Sites 3 and 5.

Both the National Oil and Hazardous Substance Contingency Plan (NCP) and U.S. EPA's May 25, 1995 Directive "Land Use in the CERCLA Remedy Selection Process" discuss the selection of a remedy based on realistic assumptions regarding future land uses. As stated in the U.S. EPA memorandum, "... In general, remedial action objectives should be developed in order to develop alternatives that would achieve cleanup levels associated with the reasonably anticipated future use over as much of the site as possible." At MCAS El Toro, the Local Redevelopment Authority (LRA) approved the Reuse Plan for the installation in December 1996. This Reuse Plan will be the basis for the land use assumptions DoD will consider during the development of the Environmental Impact Study. Therefore, this Reuse Plan should be the basis for determination of "reasonably anticipated future use" during the remedy selection process. The Reuse Plan specifies that an industrial/commercial center is planned at the Site 3 landfill, and a golf course at the Site 5 landfill. DTSC does not agree that these future uses could be accommodated by Alternative 3, a native soil cap at these two landfills.

DTSC requests that the LRA be consulted to reconcile environmental priorities with community reuse priorities prior to finalization of remedy selection. DTSC also recommends that the Base Transition Coordinator (BTC) work with the LRA and the Restoration Advisory Board (RAB) to ensure that the community is aware of the PP, and is aware that major costs and modification of the ROD would be necessary to change this decision so as to make the environmental condition of the property suitable for the proposed reuse. If the reuse objectives cannot be achieved due to economic or technical considerations, this determination should be discussed and clarified with the LRA so that land use planners can revise the Reuse Plan accordingly.

### Landfill Site 3

Alternatives 5B or 6B, asphalt caps, would have a better likelihood of supporting a future light industrial/commercial reuse at Site 3. Also, Alternatives 5 and 6 provide the highest degree of long-term effectiveness because they provide the greatest reduction in rainfall infiltration of all activities as mentioned in Section 6.3 of the FS, Comparative Analysis of Alternatives. The statement in the PP that Alternative 3 is “easy to modify” and “allows flexibility for future site use” is misleading. Changes to the remedy would require a modification of the Record of Decision (ROD). Also, the LRA’s request to modify the remedy could be denied by the Marines and/or the regulatory agencies. Issues regarding future liability, cost to modify the cover, and cost to modify the ROD to allow construction of a new remedy need to be clarified.

### Landfill Site 5

Alternative 4D, synthetic flexible membrane liner (FML), appears to be more appropriate for a future recreational use scenario, such as the golf course at Site 5. The FML can be designed to allow irrigation to support vegetation compatible with an irrigated golf course for Site 5. According to the Section 6.3 of the FS, Comparative Analysis of Alternatives, alternatives 4C, 4D, 5A, 5B, 6A, and/or 6B would provide the highest degree of long-term effectiveness because they would provide the greatest reduction in rainfall infiltration of the landfills. Also, the FML liners can withstand large tensile strains.

Alternative 3 requires the installation of a 4-foot-thick layer soil cap on top of the landfill, making the elevation of the landfill higher than that of the surrounding golf course. It would be difficult for the LRA to modify Alternative 3 and make the landfill site suitable for reuse as an irrigated golf course because of the additional grading and liners needed; these would make the elevation of the site even higher than that of the surrounding golf course. In addition, Section 6.4 of the FS states that Alternative 3 under the irrigation scenario would *not* minimize potential leaching of the landfill. DTSC recommends that discussions be held between the BCT and the LRA, which may lead to a compromise between maintaining the protectiveness of the landfill cover and designing the landscaping for a golf course scenario.

### Specific Comments:

#### 1. Page 4, Identifying Exposure Pathways

Please clarify the statement that construction of residential housing units at the landfills is not permitted under California regulations by specifying the regulatory citations to which you refer. Does this refer to risk assessments? Are you saying that appropriate cleanup levels must be met to allow for residential use? Does this refer to institutional controls needed for this site? DTSC agrees that construction

of residential housing at the landfills is not appropriate because of the requirements for methane gas monitoring, effect of differential settlement, prohibition of enclosed basements, utilities, pilings, etc.

2. Page 7, Alternative 2 - Institutional Controls and Monitoring

DTSC disagrees with the statement that land use restrictions could be negotiated at the time the property is leased or transferred. How can a portion of the remedy be negotiated after the ROD is signed?

Institutional controls are used to support the remedy to assure the protection of human health or the environment. As such, institutional controls are as vital to the remedy as any engineering control or technology. As noted in the July 25, 1997 "Responsibility for Additional Environmental Cleanup after Transfer of Real Property" Policy issued by DoD, "...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."

To state that land use restrictions will be "negotiated" at the time of property transfer suggests that the effectiveness of the remedy could be compromised at a later date without disclosure or involvement of the public and regulatory agencies. The statement also suggests that land use restrictions may not be evaluated with the same scrutiny as the engineering alternatives.

(At the time of transfer of BRAC properties, DTSC requests that the Marines enter into a Land Use Covenant with DTSC so as to provide DTSC with a mechanism to enforce deed restrictions after property transfer.)

3. Page 7, Alternative 3 - Preferred Alternative - Single Layer Soil Cap with Institutional Controls and Monitoring

Alternative 3 appears to limit the redevelopment potential of Sites 3 and 5 as described in the approved reuse plan. The PP states that access to the landfill sites would be controlled using institutional controls similar to Alternative 2. One of the institutional controls listed in Alternative 2 would restrict physical access by use of fences and appropriate signs. How is this compatible with future land uses for Sites 3 and 5? A fenced landfill cap constructed of native soil and vegetated with drought-resistant annual grasses would not be compatible with either industrial/commercial or recreational (golf) uses.

DTSC also disagrees with the Marines' response to comments on the FS that the remedial actions at these two sites will be completed before the reuse is implemented. In our opinion, the remedial action may not be implemented until after 1999 when the base is to be closed and transferred to the LRA. The landfill cap alternatives for Sites 3 and 5 should be reevaluated to determine whether or not another remedy would provide a better nexus between the Reuse Plan and the Cleanup Plan.

4. Page 10, A. Threshold Criteria, Number 2

The statement that Alternative 3 meets all ARARs is not entirely accurate. Please clarify that Alternative 3 meets all ARARs for Site 5 as long as institutional controls preventing irrigation are included as a component of the alternative (see Section 5.2.3.2 page 5-11 of the FS).

5. Page 10, B. Primary Balancing Criteria, Number 3

This section states that Alternative 3 is "easy to modify" and "allows flexibility for future site use". This statement is misleading in that changes to the remedy would require a modification of the ROD. The LRA's request to modify the remedy may also be denied by the Marines and/or the regulatory agencies. Issues regarding future liability, cost to modify the cover, and cost to modify the ROD to allow construction of a new remedy need to be clarified.

6. Page 10, B. Primary Balancing Criteria, Number 3, Long-Term Effectiveness

The text should include a discussion regarding the long-term effectiveness of Alternative 4 (FML) for Site 5. Section 6 of the FS, Comparative Analysis of Alternatives, states that Alternatives 4C, 4D, 5A, 5B, 6A, and 6B provide the highest degree of long-term effectiveness because they provide the greatest reduction in rainfall infiltration of all alternatives.

Based on the detailed analysis of alternatives in Section 5.2.3.2 of the FS, the FML is not subject to desiccation in semiarid to arid climates and can withstand large tensile strains resulting from stretching and settlements. Thus, FML is both reliable and an adequate option for long-term effectiveness and permanence. Based on the document's findings, the FML cover would be most compatible with an irrigated golf course. Also, since this design would be virtually impermeable to water infiltration, the FML would greatly minimize any potential environmental and public health and safety problems related to landfill gas generation. Because of its longevity and durability, the FML would also reduce maintenance costs and reduce interruptions in functioning of future facilities such

as a golf course. Alternative 4D is favored over Alternative 3 for a golf course.

7. Page 11, Chart, Comparative Analysis of Alternatives, Item 3, Long-Term Effectiveness and Performance

The relative performance of Alternative 3 should be less than that of Alternative 4D (FML) for Site 5 (Alternative 4D is best not least). See comment #7 above. To solve the problem with the chart, DTSC requests that a separate column for Site 5 be provided so as to compare Alternatives 3 & 4.

8. Page 11, Chart, Comparative Analysis of Alternatives, Item 4, Reduction of Toxicity, Mobility etc.

The relative performance of Alternative 3 should be less than that of Alternative 4D (FML) for Site 5 (Alternative 4D is best not equal to Alternative 3). See Table 6-4 of the FS. This comment also applies to Alternatives 5 and 6 which are rated better than Alternative 3.

9. Page 11, Chart, Comparative Analysis of Alternatives, Item 3, Long-Term Effectiveness and Performance

The relative performance of Alternative 3 should be less than that of Alternatives 5 or 6 for Site 3 (Alternatives 3, 5, & 6 are not equal). See Section 6.3 of the FS. To solve the problem with the chart, you need to provide a separate column for Site 3 to compare Alternatives 3 & 5, & 6.

10. Page 11, Chart, Comparative Analysis of Alternatives, Item 4, Reduction of Toxicity, Mobility etc.

The relative performance of Alternative 3 should be less than that of Alternative 6 for Site 3 (Alternative 6 is best not equal to Alternative 3). See Table 6-4 of the FS.

11. Page 12, Conceptual Design of Alternative 3

a) The text describing Sites 2 and 17 states that the remedy would have institutional controls, including deed restrictions, on development and groundwater use. Since the transfer of Sites 2 and 17 is intended as a federal-to-federal transfer, please clarify how the federal government will record deed restrictions on the property since no "deed" exists.

- b) The figures on page 12 appear to only show the footprint of the landfills. The PP should also include information regarding the dimensions of the landfill covers because they will most likely extend beyond the footprint of the landfills. This will assist the LRA to evaluate the impact of the landfill covers and plan for adjacent uses.

12. Page 13, Land-Use Restrictions

Third bullet item: With the knowledge that the intended future use of Site 5 will be for recreational purposes such as a golf course, how can restricting the planting and irrigation of any type of vegetation be compatible with this proposed use?

For all sites requiring deed restrictions, the restrictions should be appropriate for the intended reuse, and should be specific to that site. The restrictions should state the length of time for the restriction, who will monitor the restrictions, and how the restrictions will be enforced, especially after any transfers occur. As noted in the July 25, 1997 DOD Policy re: "Responsibility for Additional Environmental Cleanup after Transfer of Real Property", "...The community and local government should be involved throughout the development of those implementation and enforcement mechanisms."



DEPT. OF  
TOXIC SUBSTANCES CONTROL

Department of  
Toxic Substances  
Control

45 West Broadway,  
Suite 350  
Long Beach, CA  
562-4444

## MEMORANDUM

TO: Tayseer Mahmoud  
Remedial Project Manager

FROM: Marsha Mingay  
Public Participation Specialist *mm*

DATE: October 23, 1997

SUBJECT: COMMENTS ON MCAS EL TORO'S DRAFT PROPOSED  
PLAN FOR SITES 2, 3, 5 AND 17 (FOUR INACTIVE  
LANDFILLS)

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Pete Wilson  
Governor

Peter M. Roney  
Secretary for  
Environmental  
Protection

The following comments represent comments from the Public Participation Branch within the Department of Toxic Substances Control. The above referenced document was reviewed to ascertain if regulatory requirements were met and assess it's level of clarity to the public. Please forward the following comments to the lead agency for consideration and incorporation into the final Proposed Plan.

If you have any questions regarding these comments, please contact me at (562) 590-4881.

1. Page 1, first paragraph (and various other places throughout document) -- Define the word "inactive". Since you are describing hazardous waste sites, this word could have dual meanings (i.e., the wastes are inactive now versus the landfill no longer receives wastes and therefore is inactive).
2. Page 1, first and second paragraph -- Delete the word "also" since it could be interpreted that you are placing public notification secondary to requesting comments. A suggestion is made to modify and move the last sentence in the first paragraph to the introduction sentence in the second paragraph. The sentence would read, "This Proposed Plan notifies the public of opportunities to comment on these alternatives and provides an overview ..."
3. Page 1, third paragraph, first sentence -- A suggestion is made to delete the word "adequately" since it may be misread as the Marine Corps intent to only adequately protect versus "protect".

*Mr. Tayseer Mahmoud*

*October 23, 1997*

*Page 2*

4. Page 1, third paragraph, second sentence -- Expand the sentence by including the word "environment". This sentence also contains two points that need further elaboration. One, since the groundwater is already contaminated at some sites, the phrase, "prevent groundwater degradation" needs to be clarified. Two, the document later states that the purpose of eliminating or reducing infiltration of surface water is to reduce leachate from occurring. Ultimately, the paragraph needs to first define leachate and then summarize how leachate effects the groundwater and surrounding landfill soils.
5. Page 1, fourth paragraph -- Since there is community interest in consolidation of wastes, it is strongly advised that this paragraph includes a statement that consolidation will occur at three of the landfill sites. A reference to the map on page 12 would be helpful to fully inform the reader of this aspect of the proposed plan.
6. Page 2, all site background descriptions -- In the introduction, add information which states why the lead agency can only "suspect" the types of waste contained within each landfill. To further educate the reader, state the process used to suspect these types of wastes (e.g., records, interviews with former employees).
7. Page 2, Site 2, second sentence -- The description of the landfill is difficult to understand. The phrase, "between the two landfill areas" could lead the reader to ask, "what two landfills?". To clarify for the reader, insert, "see map on page 3", at the end of the sentence.
8. Page 2, Site 3 -- In the beginning of the paragraph, it states, "wastes that are likely to have ..." and then later it states, "The site contains concrete and asphalt pads ...". Please clarify this conflicting information.
9. Page 2, Landfill Investigations -- Clarify by eliminating the conflicting information contained within the first and second paragraphs. The first paragraph states, "Only the soils surrounding the buried landfill materials were sampled ..." and the second paragraph states, "Subsurface soil sampling was conducted to determine ..."
10. Page 2 and 3 -- Please state, either under "Landfill Investigations" or "Investigation Results", the depth of the groundwater samples and the relationship of this aquifer to the drinking water aquifer.

11. Page 2, second paragraph, second sentence -- State the number of soil gas samples which were taken.
12. Page 2, second paragraph, third sentence -- State if chemical of concerns were found outside of the landfill perimeter.
13. Page 2, second paragraph, fourth sentence -- To refresh the reader's mind, restate the definition of leachate.
14. Page 3, first partial paragraph, last sentence -- State what happens to the metals after they precipitate out of the water solution.
15. Page 3, first full paragraph, third sentence -- Add information which clarifies the shape of the plume since "downgradient" and "regional groundwater" are technical terms and may not have clear meaning to the reader. The shape could also be defined by adding it to one of the existing maps in the Proposed Plan.
16. Page 3 and 4 -- The area beginning with, "When TCE and PCE dissolve into groundwater, several ..." and including all text up until the next article, contains information that is outside of this article's heading. It is believed that this information is important but is misplaced. Perhaps a new article heading for this material would be beneficial in bringing the information to the reader's attention.
17. Page 4, Other Site Conditions, Site 2 -- This first paragraph is missing information. For example, the summary leaves one to believe that the removed material is still in a staging area. (Note, the same is true for the description of Site 17). Since this is not correct, additional information is needed.
18. Page 4, Other Site Conditions, Site 2, 3 and 5 -- If correct, please add information which states that the landfills are, or will be, fenced to restrict access. This is especially important for Site 5 since the document provides a scenario of an individual digging into the soil.
19. Page 4, Human Health and ..., first paragraph, third sentence -- Please clarify this sentence. How can the laws and regulations designed to protect public health and the environment be applied if the risk to public health is not defined?

20. Page 4, Human Health and ..., first paragraph, last sentence -- Delete the word "However".
21. Page 4, Human health and ..., second paragraph, last sentence -- To clarify the information, reword to read, "No ecological risk assessment was performed ... or pavement and therefore does not support wildlife habitat. The area is used as a staging and office area for the cleanup contractor at MCAS El Toro."
22. Page 5, first full paragraph, second sentence -- Add the word "adjacent" immediately before "habitat reserves".
23. Page 5, first full paragraph, last sentence -- Since landfill sites are to be fenced, please clarify why children may be playing in the soil. If this was a conservative scenario developed for the health risk, please add information which eliminates the possible misinterpretation.
24. Page 5, Groundwater -- Delete the word, "however".
25. Page 5, Ecological -- Provide additional information. What is the risk to ecological receptors? Special mention should be made to the California gnatcatcher.
26. Pages 6 to 8, Summary of ... Alternatives -- Add information which states; 1) how the alternatives are protective to ecological receptors, 2) how implementation of the remedial action will impact the gnatcatcher, and 3) maintenance required. (Note that this last item will substantiate the statement on Page 10 which states, "Alternatives 5 and 6 (Sites 3 and 5) are also protective of human health and the environment, but require more maintenance to preserve their effectiveness than the single-layer soil cap.")
27. Page 6, first paragraph, last sentence -- Reword to read, "Presumptive remedies can be cleanup activities, control technologies or ...".
28. Page 6, second paragraph, last two sentences -- Clarify if the last sentence provides the rationale for the second to the last sentence. If so, restructure the sentences to establish this relationship.
29. Page 6, last partial paragraph on page -- To clarify, add "(not presented in this Proposed Plan)" immediately after "Other technologies".

30. Page 7, Alternative 3 -- The description should also include consolidation of wastes and location and purpose of riprap.
31. Page 8, Erosion Control ..., first paragraph -- Add the following sentence to the end of this paragraph, "However, depending upon public comments received, additional work may be performed."
32. Page 8; Erosion Control ..., 2nd bullet -- Clarify if debris placed in "central locations within each landfill site" is exposed or covered.
33. Page 9, Alternative 5, first sentence -- To correct information, reword to, "... with either a concrete pavement cap (alternative 5A) or a crushed aggregate based covered by an asphalt pavement cap (Alternative 5B)."
34. Page 9, Alternative 6, first sentence -- To correct information, reword to, "In summary, Alternative 6 ... (plastic) and either a concrete pavement cap (Alternative 6A) or a crushed aggregate base covered with an asphalt pavement cap (Alternative 6B). (See diagram below)"
35. Page 9, diagram for Option 6B -- Insert, in the diagram, the term "Asphalt concrete pavement" and an arrow leading to the appropriate area.
36. Page 10, Evaluation of the Preferred Alternatives, introductory paragraph -  
- After the fourth sentence, insert the following to complete the regulatory requirements. "Public comments are reviewed with the State in order to determine if the alternative remains the most appropriate remedial action" (40 CFR, Section 300.430 (e)(9)(iii)(I)(i)(C)(ii)).
37. Page 10, Primary Balancing Criteria, Number 3, Long Term Effectiveness and Permanence, second paragraph, third and fourth sentences -- Clarify that these sentences are true for all alternatives and not just Alternative 3.
38. Page 10, Primary Balancing Criteria, Number 3, Long Term Effectiveness and Permanence, second paragraph, fifth sentence -- Provide information which supports the statement, "The single-layer soil cap is easy to modify and allows flexibility for future site use". In order to provide equal information for all alternatives, for each site separately, please state how the other alternatives compare on these characteristics .
39. Page 10, Primary Balancing Criteria, Number 3, Long Term Effectiveness and Permanence, second paragraph, sixth sentence -- The sentence states that clay and soil/bentonite barriers are subject to drying and cracking in

39. (continued)  
semiarid climates. To support this conclusion, add information which clarifies if this effect will occur when the material is below the ground surface.
40. Page 11, Modifying Criteria, Number 9, Community Acceptance, second paragraph -- Substitute "request" to "invitation".
41. Page 11, chart, Item 6, Sites 2 and 17, Alternative 5b -- The square is in black ink versus blue. Please change for consistency.
42. Page 13, Institutional Controls -- Add the word "Proposed" to the title. The title should read, "Proposed Institutional Control - MCAS El Toro Landfills".
43. Page 13, Land-Use Restrictions, first paragraph - Add the following words to begin the first paragraph, "If the Proposed Plan is adopted as outlined in this document, the future landowners or users of ...".
44. Page 13, Land-use Restrictions, third bullet -- Add information which eliminates possible confusion as to why prior approval is needed for planting and irrigation when part of the Proposed Plan is to vegetate the landfill area.
45. Page 13, Site Access Restrictions -- To fully address the contents of this section, re-title the article to, "Site Access Restrictions, Monitoring and Maintenance".
46. Page 13, Site Access Restrictions -- Begin the paragraph with the words, "The proposed remedial action ...".
47. Page 13, Groundwater -- Similar to item 46 above, begin the paragraph with, "DON proposes that the future landowners and users ...".
48. Page 14 and 15, Applicable or Relevant ... -- According to US EPA's Community Relations in Superfund: A Handbook, the proposed plan is to be written in lay person's terminology. The legal information presented does not conform to the guidance. Since the Proposed Plan has satisfied the ARAR component of the nine criteria, (in a similar manner to previous Proposed Plans, see page 10 of this draft) it is suggested that the information be deleted.