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# FINAL RESTORATION ADVISORY BOARD RESOURCE MANUAL MCAS CHERRY POINT NC

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CH2MHILL

**Final**

# Restoration Advisory Board Resource Manual

## Marine Corps Air Station Cherry Point
## Cherry Point, North Carolina

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# Acronyms and Abbreviations

| | |
|---|---|
| 2nd MAW | Second Marine Aircraft Wing |
| AOC | area of concern |
| AR | Administrative Record |
| AS/SVE | air sparge/soil vapor extraction |
| ATSDR | Agency for Toxic Substances and Disease Registry |
| BERA | Baseline Ecological Risk Assessment |
| BRAC | Base Realignment and Closure |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CIP | Community Involvement Plan |
| CLEAN | Comprehensive Long-Term Environmental Action— Navy |
| CNO | Chief of Naval Operations |
| CO/CG | Commanding Officer/Commanding General |
| COPC | constituent of potential concern |
| cVOCs | chlorinated volatile organic compounds |
| DERA | Defense Environmental Restoration Account |
| DERP | Defense Environmental Restoration Program |
| DoD | U.S. Department of Defense |
| DoN | Department of the Navy |
| DRMO | Defense Reutilization and Marketing Office |
| DSMOA | Defense State Memorandum of Agreement |
| EAD | Environmental Affairs Department |
| EE/CA | Engineering Estimate/Cost Analysis |
| ERA | Ecological Risk Assessment |
| ER,N | Environmental Restoration, Navy |
| ERP | Environmental Restoration Program |
| FEC | Facilities Engineering Command |
| FFA | Federal Facility Agreement |
| FFS | Focused Feasibility Study |
| FMF | Fleet Marine Force |
| FRCE | Fleet Readiness Center East |
| FS | Feasibility Study |
| FUDS | Formerly Used Defense Sites (Program) |
| FY | fiscal year |
| GSE | ground support equipment |
| HHRA | human health risk assessment |
| HI | hazard index |
| HQ | hazard quotient |
| HRS | Hazard Ranking System |
| IAS | Initial Assessment Study |
| IASS | industrial area sewer system |
| ICs | institutional controls |
| IR | Installation Restoration |
| IRACR | Interim Removal Action Closeout Report |
| IRI | Interim Remedial Investigation |

| | |
|---|---|
| IWTP | Industrial Wastewater Treatment Plant |
| LTM | long-term monitoring |
| MAW | Marine Aircraft Wing |
| MCAS | Marine Corps Air Station |
| MCALF | Marine Corps Auxiliary Landing Field |
| MCOLF | Marine Corps Outlying Field |
| MGD | million gallons per day |
| MMR | Military Munitions Response |
| MNA | monitored natural attenuation |
| MR | Munitions Response |
| MRP | Munitions Response Program |
| NACIP | Navy Assessment and Control of Installation Pollutants |
| NADEP | Naval Aviation Depot |
| NARF | Naval Air Rework Facility |
| NAVFAC | Naval Facilities Engineering Command |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NEPA | National Environmental Policy Act |
| NFA | no further action |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollution Discharge Elimination System |
| NPL | National Priorities List |
| NTCRA | non-time-critical removal action |
| OU | Operable Unit |
| P&T | pump and treat |
| PA | Preliminary Assessment |
| PCB | polychlorinated biphenyl |
| POEI | point of environmental interest |
| POL | petroleum, oil, and lubricants |
| PRAP | Proposed Remedial Action Plan |
| PRB | permeable reactive barrier |
| RA | remedial action |
| RAB | Restoration Advisory Board |
| RAC | remedial action contract |
| RAO | remedial action objective |
| RCRA | Resource Conservation and Recovery Act |
| RD | remedial design |
| RFA | RCRA Facility Assessment |
| RFI | RCRA Facility Investigation |
| RI | Remedial Investigation |
| RME | reasonable maximum exposure |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| RRR | relative risk ranking |
| SAR | SWMU assessment report |
| SARA | Superfund Amendments and Reauthorization Act |
| SI | Site Investigation |
| SLERA | screening-level ERA |

| | |
|---|---|
| SMP | Site Management Plan |
| SOP | standard operating procedure |
| SSI | Supplemental Site Investigation |
| SSP | Site Screening Process |
| STP | sewage treatment plant |
| SVE | soil vapor extraction |
| SVOC | semi-volatile organic compound |
| SWMU | solid waste management unit |
| TAG | Technical Assistance Grant |
| TAPP | Technical Assistance for Public Participation |
| TCRA | time-critical removal action |
| TRC | Technical Review Committee |
| USC | United States Code |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UST | underground storage tank |
| VGM | voluntary groundwater monitoring |
| VI | vapor intrusion |
| VOC | volatile organic compound |
| VSI | Visual Site Inspection |
| WCSD | watershed contaminated source document |

SECTION 1

# Introduction

## 1.1 Overview

A Restoration Advisory Board (RAB) is designed to act as a focal point for the exchange of information between the installation and the local community regarding environmental restoration activities. The purpose of this document is to provide general and specific information about the Environmental Restoration Program (ERP) to assist Marine Corps Air Station (MCAS) Cherry Point RAB members.

The Department of Defense (DoD) ERP was established to address hazardous substances, pollutants, contaminants, and military munitions remaining from past activities at military installations. The focus of the program is to identify, assess, and clean up contamination resulting from historical releases of hazardous wastes into the environment.

The MCAS Cherry Point Partnering Team implements the ERP at the Air Station. The Partnering Team consists of one representative each from the Air Station, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, U.S. Environmental Protection Agency (USEPA) Region 4, and North Carolina Department of Environment and Natural Resources (NCDENR), who are responsible for decision making about the ERP. The RAB serves as another valued partnership in the process.

## 1.2 Site Background

MCAS Cherry Point is a 13,164-acre military installation located in southern Craven County, North Carolina, north of the town of Havelock. MCAS Cherry Point is bounded on the north by the Neuse River, on the east by Hancock Creek, on the south by North Carolina Highway 101, and an irregular boundary approximately ¾ mile west of Slocum Creek to the west. A base location map is presented as **Figure 1-1**.

MCAS Cherry Point was commissioned in 1942. An aircraft assembly and repair shop was added to the MCAS Cherry Point in 1943, which later became known as Naval Aviation Depot (NADEP). During the 1950s and 1960s, the size of MCAS Cherry Point increased from approximately 7,500 acres to more than 11,000 acres. During the 1970s, commercial and residential development of the surrounding area grew substantially. The City of Havelock annexed MCAS Cherry Point in 1980.

The mission of MCAS Cherry Point is to maintain and support facilities, services, and materiel of a Marine Aircraft Wing (MAW) and other activities and units as designed by the Commandant of the Marine Corps, and in coordination with the Chief of Naval Operations. Occupants at the Air Station include 2nd MAW, NADEP, the Naval Hospital, the Dental Clinic, the Naval Air Maintenance Training Group Detachment, and the Defense Reutilization and Marketing Office (DRMO). MCAS Cherry Point has facilities for training and support of the Fleet Marine Force Atlantic aviation units and is also designed as a primary aviation supply point.

## 1.3 Site Regulatory Background

MCAS Cherry Point has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants (NACIP) Program. The NACIP Program was developed under the comprehensive DoD Installation Restoration (IR) Program, which was modeled after the USEPA Superfund Program, authorized by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980. An Initial Assessment Study (IAS) was conducted in 1983 as the first step of the NACIP Program. The purpose of the IAS was to collect and evaluate evidence of pollutants that may have contaminated a site or that pose an imminent human health hazard. Fourteen of the 32 sites identified in the IAS (Sites 1, 2, 4, 5, 6, 7, 10, 13, 15, 16, 17, 18, 19, and 21) were determined to require further investigation.

In 1988, A.T. Kearney, Inc., conducted a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at MCAS Cherry Point, the first step under the RCRA corrective action process. The RFA included a preliminary

review of all available relevant documents, a Visual Site Inspection (VSI), and a Sampling Visit, if appropriate, at the 114 solid waste management units (SWMUs) and 2 areas of concern (AOCs) that were identified. The SWMUs were divided into four groups based on their operation purpose: Flight Line, Naval Air Rework Facility, Maintenance and Support, and Centralized Storage and Treatment. The SWMU designations associated with each group are preceded with F, N, S, and C as appropriate. Based on the observations made during the VSI, a RCRA Facility Investigation (RFI) and a comprehensive inspection of production and waste management/handling areas were recommended. In 1989, the Department of the Navy (DoN) entered into a RCRA Administrative Order on Consent with USEPA to perform RFIs at 35 of the 114 SWMUs identified in the RFA. On December 16, 1994, MCAS Cherry Point was scored and ranked by USEPA for inclusion on the CERCLA National Priorities List (NPL).

Under CERCLA, the Navy acts as the lead agency, in partnership with USEPA and NCDENR to address environmental investigations at the facility through the ERP. Because of the NPL listing and Consent Order, ongoing ERP investigations are being conducted to meet the requirements of both RCRA and CERCLA. Since the Consent Order was signed, additional sites have been identified. The Air Station's RCRA Part B permit identifies 116 SWMUs and 2 AOCs. The Part B Permit was finalized and converted from an Interim Part B permit application under 40 Code of Federal Regulations (CFR) Part 265 to a final Treatment, Storage and Disposal Facility Part B permit in accordance with 40 CFR Part 264 in December of 2004, expiring in December of 2014.

The listing of MCAS Cherry Point on the NPL in 1994 required that the Navy, USEPA, and NCDENR enter into an interagency written agreement known as a Federal Facility Agreement (FFA), which was signed on May 12, 2005. The FFA describes how and when CERCLA-related activities would be conducted at the Air Station and effectively terminated the RCRA Administrative Order of Consent. Under the FFA, all past and future work at ERP sites, SWMUs, and AOCs were reviewed, and courses of action for future work requirements at each site were developed. The FFA includes specific requirements for the preparation and contents of the Site Management Plan (SMP). The SMP is updated annually, and includes the sites currently under investigation following the CERCLA process and the proposed deadlines for completion of deliverables, as specified in the FFA. Please see Section 4.4 of this document for more information regarding the FFA.

An NPL site is a discrete area where hazardous substances or wastes have been deposited, stored, disposed of, or placed. An NPL site is also defined as any other location to which contamination from that area has come to be located. An Operable Unit (OU) is a collection of one or more sites that are being addressed together, typically because of spatial proximity, similar cleanup requirements, or similar historical uses.

The locations of OUs and sites at MCAS Cherry Point are shown on **Figure 1-2** and are described in Section 2. Additionally, graphical summaries of site features and activities at most of the OUs are included in **Appendix A**.

\\aphrodite\proj\USNavFacEngCom\CherryPoint\GIS_Folders\MapFiles\CIP\Figure 1-1 Regional Location Map.mxd

**Legend**
- Military Installation
- County Boundary
- Rivers and Streams

N
W E
S

0 20,000 40,000
Feet

Figure 1-1
Regional Location Map
MCAS Cherry Point, NC

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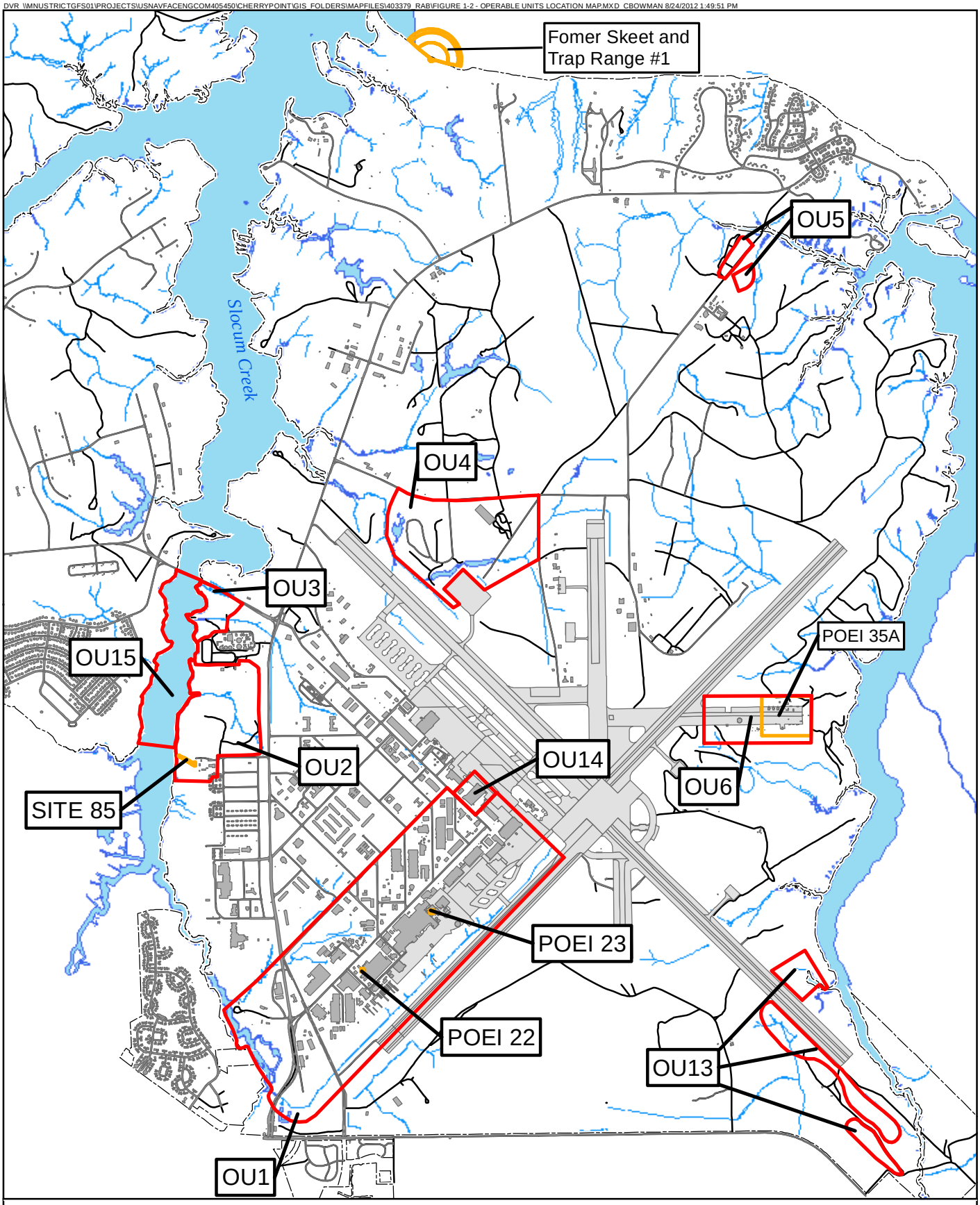
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 1-2 - OPERABLE UNITS LOCATION MAP.MXD CBOWMAN 8/24/2012 1:49:51 PM




**Legend**

- OU Boundary
- Site Boundary
- Buildings
- Runway
- Road
- Base Boundary
- Surface Water

N
W E
S

0 1,500 3,000
Feet

Figure 1-2
Operable Units Location Map
MCAS Cherry Point, North Carolina

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SECTION 2

# Site Descriptions

This section presents a brief description and history of MCAS Cherry Point's ERP sites. Many of the sites are grouped into OUs on the basis of proximity, common waste types, and common activities. Each site was identified in the FFA as requiring a Remedial Investigation/Feasibility Study (RI/FS) and a Record of Decision (ROD) for ultimate closure of each site.

Detailed site descriptions of the OUs and sites under MCAS Cherry Point's ERP and the most updated environmental history can be found in the most current annual SMP. The SMP is available in the Administrative Record (AR) file, which is described in Section 7.1, or upon request from the RAB Installation Co-Chair. An electronic copy of the AR file is maintained on the ERP Web site: http://go.usa.gov/TZO.

In addition to various ERP sites, there are numerous SWMU and underground storage tank (UST) sites at MCAS Cherry Point. SWMUs and USTs are addressed under their respective cleanup programs and are not funded by the ERP. If a previously unknown waste site is discovered, the site will be evaluated to determine whether it will be addressed under CERCLA (ERP), RCRA, or the UST cleanup program. If groundwater contamination is detected at a UST site that is not related to the UST, the groundwater will be addressed as part of a nearby existing IR site or as a new site. There are also potential non-point sources of pollution at the Air Station, including parking lot and airfield runoff. These non-point sources are handled under MCAS Cherry Point's National Pollution Discharge Elimination System (NPDES) permit.

Military munitions cleanup is handled under the Munitions Response (MR) program and managed similarly to the way that cleanup of hazardous waste sites is managed under the IR program. Together, the IR program and the MR program make up the ERP (see Section 4.5 for additional information).

## 2.1 Operable Unit 1

OU1 is an industrial area in the southern portion of MCAS Cherry Point and covers approximately 565 acres. A majority of the area is covered with buildings, pavement, and portions of the flight line. The primary tenants of OU1 are Fleet Readiness Center East (FRCE) and the DRMO. OU1 is bounded by C Street and Sandy Branch to the north and northwest, portions of Runway 5 to the east and southeast, and the East Prong of Slocum Creek to the west. The boundaries of OU1 and the site locations within OU1 are shown on **Figure 2-1**.

There are 12 FFA sites within OU1, assigned on the basis of their proximity to each other within the industrialized section of MCAS Cherry Point. Six of these sites have been identified as contributing contamination to groundwater (Sites 42, 47, 51, 52, 92, and 98) and constitute the OU1 Central Groundwater Plume[1].

A Focused RI/FS was conducted for OU1 groundwater in 1996, and identified data gaps and recommended a treatability study at Sites 16, 42, and 92, such as a bench-scale enhanced oxidation study. An Interim Record of Decision (IROD) for the OU1 Central Groundwater Plume documented that a groundwater extraction and treatment, commonly called pump and treat (P&T), system be installed for groundwater remediation. This P&T system was installed in 1998. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1 by altering local groundwater gradients, the P&T system was shut down in February 2005.

In 1996, a pilot-scale air sparge/soil vapor extraction (AS/SVE) system was installed at Site 16 to perform groundwater remediation. In 1997, a time-critical removal action (TCRA) was conducted at Site 16 that included removal of a debris pile containing asbestos, steel storage tanks, and soil contaminated with petroleum hydrocarbons. A full-scale AS/SVE system was installed in 1998 as part of a non-time-critical removal action (NTCRA). The MCAS Cherry Point Partnering Team agreed to shut down the AS/SVE system in February 2005

[1] The OU1 Central Groundwater Plume has been referred to in previous documents as the "OU1 Central NADEP Groundwater Plume," the "OU1 Central Hotspot Groundwater Plume," or variations of both.

because it was not achieving the remedial action objectives (RAOs). The system components were initially left in place in order to allow for later reuse. In 2008, an evaluation was performed to determine the condition of the system components and the actions necessary to restore the system to operation. The evaluation revealed that the system components had degraded such that reuse without substantial equipment replacement and rehabilitation would not be possible. The major system components were removed in 2009 and the remainder of the system was decommissioned (including well abandonment) in 2011.

Initiated in 1994, an RI for OU1 was finalized in November 2002 that included all of the OU1 sites. The RI recommended that an FS and additional ecological evaluation be conducted. Post-RI ecological investigation work began in late 2003, and in August 2005, the Baseline Ecological Risk Assessment (BERA) for OU1 was finalized.

Conducted along with and following the RI, a number of ecological studies were conducted in OU1 and adjacent water bodies (i.e., Slocum Creek, East Prong Slocum Creek, Sandy Branch, and Schoolhouse Branch): Fish Consumption Human Health Risk Assessment (HHRA) for Slocum Creek (June 1999); Screening Level and Step 3A Ecological Risk Assessment (ERA) in Slocum Creek (November 2001); Step 3A Addendum to the ERA (July 2003); and the BERA (August 2005).

As recommended in the BERA, additional sampling within Sandy Branch Tributary #2 and adjacent floodplain areas was performed in March 2006. The March 2006 post-BERA sampling results were discussed by the MCAS Cherry Point Partnering Team at several meetings in 2006 and 2007. Through these discussions, a “cleanup” strategy was planned for Sandy Branch Tributary #2 and adjacent floodplain areas that would be carried out as an NTCRA. The NTCRA was intended to remove constituent of potential concern -contaminated media to levels protective of at-risk ecological receptors (i.e., benthic macroinvertebrates). In preparation for the NTCRA, an Engineering Estimate/Cost Analysis (EE/CA) was prepared and finalized in January 2008. The EE/CA compared and evaluated several removal action alternatives and formed the basis of the selection of a sediment and soil removal technique for the NTCRA. The removal action work plan was completed in May 2008 and the NTCRA was conducted in June to August 2008. The final RA closeout report was submitted in June 2009.

The voluntary groundwater monitoring (VGM) program at OU1 was conducted in 2004 and 2005 to support efforts in assessing groundwater conditions at OU1 and to aid in development of viable remedial alternatives. A more comprehensive groundwater sampling event involving the majority of monitoring wells at OU1 was conducted in April 2006. Data from this event have been reported in an OU1 RI Addendum.

The sites comprising the Central Groundwater Plume within OU1 have recently completed the RI/FS stage of the CERCLA process and are entering the Proposed Remedial Action Plan (PRAP or Proposed Plan) stage. The final RI Addendum report was submitted in April 2009; this document updates the OU1 conceptual site model and presents the results of additional investigation activities related to the OU1 Central Groundwater Plume that have been conducted since the 2002 RI report. A key element of the RI Addendum is better delineation of the nature and extent of chlorinated volatile organic compound (cVOC) groundwater contamination beneath and near Building 133. A baseline groundwater sampling event at Building 133, which was performed in advance of a treatability study to evaluate an enhanced biodegradation technology for treating cVOCs in groundwater, indicated that the cVOC plume within Building 133 extended beyond previously delineated boundaries and had concentrations significantly higher than previously found.

FS activities began for the OU1 Central Groundwater Plume following the completion of the OU1 RI Addendum in April 2009; the OU1 Central Groundwater Plume FS was finalized in August 2011.

The other FFA sites at OU1 that are not source areas for the OU1 Central Groundwater Plume (Sites 14, 15, 16, 17, 18, and 83) are at various stages in the CERCLA process. A no further action (NFA) ROD was signed for Sites 14, 15, 17, 18, and 40 in September 2010.

With regard to the remaining OU1 sites, Sites 16 and 83, a supplemental investigation was conducted in 2009 at Site 83 to determine whether pesticide contamination has been sufficiently delineated. A report of the findings of this investigation was finalized in May 2010. Additional assessments of human health risk were conducted for both Sites 83 and 16 in 2010 and 2011, respectively, to include more recent data collected since the 2002 OU1 RI.

The Site 83 HHRA was completed in August 2010 based on the findings of the Site 83 supplemental investigation. The evaluation concluded that for both current and potential future land use, Site 83 does not pose unacceptable health risks to any of the evaluated receptors. Subsequently, a Supplemental RI report was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 83. The Site 83 Supplemental RI report was finalized in May 2011 and concluded that no further action is warranted for Site 83 and recommended that the site proceed to an NFA Proposed Plan and ROD. The NFA Proposed Plan for Site 83 was finalized in March 2012 and the NFA ROD was signed in October 2012.

The Site 16 HHRA was completed in May 2011 and included more recent data collected as part of the 2005 BERA. The evaluation concluded that human health risks fall within the target range for acceptable risk for the relevant exposure scenarios. A Supplemental RI report for Site 16 was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 16.

### 2.1.1 Sites Contributing to the OU1 Central Groundwater Plume

The 1996 Focused RI/FS report identified a volatile organic compound (VOC) plume at OU1. At that time, the plume had been delineated to include the majority of the southern portion of OU1, including a small portion of Building 133.

Six sites within OU1 have been identified as contributing to groundwater contamination within the OU1 Central Groundwater Plume:

- Site 42—Industrial Wastewater Treatment Plant,
- Site 47—Industrial Area Sewer System (IASS),
- Site 51—Building 137 Former Plating Shop,
- Site 52—Building 133 Former Plating Shop and Ditch,
- Site 92—VOCs in Groundwater near the Stripper Barn, and
- Site 98—VOCs in Groundwater near Building 4032.

In 2001, an enhanced bioremediation treatability study involving the injection of Hydrogen Release Compound (HRC®) into surficial aquifer groundwater at Site 51 was initiated. The purpose of the treatability study was to determine the effectiveness of HRC® to remediate a small plume of chlorinated VOCs in the shallow groundwater beneath the site. At the end of the 1-year post-injection monitoring period, the concentration of total cVOCs had been reduced more than 90 percent in the heart of the plume, but individual constituent concentrations remained above regulatory screening criteria. The study concluded that to further reduce residual concentrations, additional treatment would be needed.

During baseline groundwater sampling conducted in late 2004 in preparation for an OU1 groundwater treatability study, high VOC concentrations were identified in an area previously not included in the plume. Subsequent groundwater sampling revealed the highest plume concentrations located below Building 133.

In 2004, another enhanced bioremediation treatability study involving the injection of EHC™ into surficial aquifer groundwater was initiated at Sites 51 and 52. Similar to the 2001 treatability study, the purpose of this treatability study was to determine the effectiveness of EHC™ to remediate chlorinated VOCs in the shallow groundwater beneath each site. Groundwater monitoring of VOCs and geotechnical parameters was conducted before the EHC™ injection in late 2004. The treatability study included four post-injection monitoring events during an 8-month period. The final post-injection performance monitoring event was completed in November 2005. The results are summarized in a December 2007 treatability study report that indicated that the EHC™ injection was initially effective in reducing cVOC concentrations in wells located near the injection points and that cVOC mass reduction was achieved. However, the concentrations of some of the contaminants rebounded significantly with time, in part due to under-dosing of the injected substrate, as well as the likely presence of contributing cVOC sources such as dense non-aqueous phase liquids in the aquifer.

A vapor intrusion (VI) evaluation was initiated in 2008 to assess potential human health risks from the migration of cVOC vapors from the OU1 Central Groundwater Plume into the interiors of buildings located above the plume. The VI investigation was multi-phased in nature, proceeding in a step-wise approach to evaluate the potential

indoor air VI pathway. The Phase 1 OU1 VI field sampling was conducted in November 2009. A VI evaluation report that included the results of the Phase 1 field sampling was finalized in January 2011. The Phase 2 field sampling was performed in May and June 2011. The Phase II VI investigation report was finalized in May 2012 and determined that vapor mitigation is not required for existing buildings based on current conditions. It was recommended that a performance monitoring and construction planning program be incorporated into the selected remedy for the OU1 Central Groundwater Plume to continue VI evaluation in the future.

In April and May 2009, additional groundwater investigation activities were conducted within the Central Groundwater Plume at OU1 with two objectives: (1) to further define the horizontal and vertical extent of cVOC groundwater contamination, and (2) to provide data to further evaluate the efficacy of natural attenuation on cVOCs within the Central Groundwater Plume. Fourteen new monitoring wells were installed to address plume delineation data gaps, and a large-scale groundwater sampling event was conducted in which the 14 new wells and 160 existing wells were sampled for VOCs and natural attenuation parameters. The results of the 2009 additional investigation activities were reported in a technical memorandum in January 2010 and the data were utilized in the FS for the OU1 Central Groundwater Plume, which was finalized in 2011. The PRAP for the OU1 Central Groundwater Plume is expected to be finalized in 2013.

Two pilot studies were underway in 2012 to investigate the efficacy of potential groundwater treatment options to address the OU1 Central Groundwater Plume. The purpose of these pilot studies is to gather information to aid in the selection of potential remedies to address the plume and also to possibly contribute in the remedial design (RD) phase. The first is a field-scale pilot study to evaluate the site-specific effectiveness of in-situ enhanced bioremediation downgradient of Building 133 near the source of the OU1 Central Groundwater Plume. This pilot study will also gather data necessary for the optimization of full-scale implementation following remedy selection. It includes the installation of 14 injection wells (7 nested pairs, each consisting of 1 upper surficial and 1 lower surficial aquifer well) and 5 monitoring wells (2 upper surficial and 3 lower surficial aquifer wells), the injection of reagents (i.e., emulsified vegetable oil and a bioaugmentation culture), and post-injection performance monitoring via five rounds of groundwater sampling and analysis. Pilot study field activities were completed in June 2011. Post-injection groundwater monitoring activities are underway and will be completed in 2013.

In March 2011, the MCAS Cherry Point Partnering Team agreed to move forward on a second pilot study to construct a permeable reactive barrier (PRB) in the downgradient portion of the Central Groundwater Plume near East Prong Slocum Creek. The PRB will be a maximum of approximately 600 feet in length and consist of a combination of zero-valent iron and sand. The results of the PRB pilot study will help determine the maximum feasible trenching depth that can be achieved given the subsurface conditions at MCAS Cherry Point and may also provide valuable data for a future RD report for the Central Groundwater Plume. The PRB was installed in August 2012 and performance monitoring activities began.

Closure of the OU1 Central NADEP Groundwater Plume will be complete when groundwater concerns for each of these sites have been addressed.

### Site 42—Industrial Wastewater Treatment Plant

Site 42 is located in the center area of OU1. The IASS (Site 47) carries wastes from industrial sources (i.e., FRCE) such as metal plating, painting, aircraft maintenance, and vehicle maintenance. The Industrial Wastewater Treatment Plant (IWTP) effluent is discharged via sewer lines to the installation's wastewater treatment plant. Over the years, the IWTP has undergone several upgrades and improvements.

Sludge from the IWTP was formerly disposed of by landfill or lagoon storage (e.g., OU2, Site 10). The RFA indicated that the IWTP was used to treat wastes from industrial sources such as metal plating, painting, aircraft maintenance, vehicle maintenance, and stormwater from bermed containment areas. A P&T system was installed in 1998 to remediate the OU1 Central Groundwater Plume, and the treatment component of this system was located at the IWTP. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1 by altering local groundwater gradients, the groundwater P&T system was shut down in February 2005.

### Site 47—Industrial Area Sewer System

Site 47 consists of an interconnecting system of underground pipes and aboveground drains and connections that transfer industrial wastewater from various areas of the installation to the IWTP (Site 42). Originally constructed in 1942, portions of the IASS have been added and/or expanded to connect facilities that formerly discharged to the sanitary or storm sewer systems. Site 47 only includes the IASS within the OU1 boundary.

Industrial processes that currently or historically created wastewater discharge to the sewer system include metal plating, metal finishing, solvent degreasing, paint stripping, painting, fuel storage, fueling, aircraft washing, and general maintenance. Concentrated wastes are no longer discharged to the industrial sewers, but are containerized and transported to the IWTP for treatment.

In 1993, an installation-funded infiltration and leakage study was conducted on the IASS to identify sewer segments needing repairs or replacement. Segments identified in the study as needing repair or replacement was subsequently addressed.

### Site 51—Building 137 Former Plating Shop

Site 51 is a former plating shop located in Building 137 situated in the FRCE. The plating shop operated from 1942 to 1990 and consisted of an area of approximately 4,000 square feet and included a 3-foot-deep concrete sump for containment of spillage and tank overflows.

Plating shop wastes, consisting of plating solution overflow and rinse water containing zinc and chromium, were discharged to the sump. The sump was constructed of steel and set into a concrete pit covered with wood grating. Concrete piers were present in the sump so that tanks and equipment could be mounted above the sump. The sump discharged to the IASS (Site 47) until 1987, at which time the sump was plugged and the plating shop converted to a closed-loop system. From then until the plating shop was relocated in 1990, wastes were transported to the IWTP (Site 42) in portable containers for batch treatment.

In 1996, the former plating shop area was extensively cleaned and renovated to house an autoclave for the adjoining helicopter blade facility.

### Site 52—Building 133 Former Plating Shop and Ditch

Site 52 is a former Plating Shop located in Building 133 inside the FRCE. Similar to Site 51, the plating shop operated from 1942 to 1990, and consisted of an area of approximately 2,000 square feet that included a 2.5-foot-deep sump for containment of spillage and tank overflows. In 1996, the plating shop area was cleaned and renovated and is currently used to inspect and process aircraft parts.

Former employees indicated that the ditch portion of Site 15 (Ditch and Area behind FRCE [formerly NADEP]) described in the 1983 IAS was likely the former ditch behind Building 133 subsequently covered in the 1970s with an addition to Building 133. Consequently, this former ditch is actually part of Site 52.

### Site 92—VOCs in Groundwater near the Stripper Barn

Site 92 is a cVOC-contaminated groundwater plume near the Stripper Barn portion of Building 137. The area around the site is covered with buildings and concrete, and portions of the industrial sewer system (Site 47) are located beneath and around the Stripper Barn.

The Stripper Barn is the area where paint is removed from aircraft. In the past, large quantities of solvent were used to remove paint; spent solvent flowed into the industrial sewer system. The current paint removal method requires approximately 90 percent less solvent, and spent solvent is captured for proper disposal.

### Site 98—VOCs in Groundwater near Building 4032

Site 98 is a small plume of VOC-contaminated groundwater near Building 4032, located southeast of the IWTP. Site 98 was discovered by MCAS Cherry Point during an investigation of USTs at Building 4032 in 1994, and was identified as a new site for inclusion in the FFA in 1999.

## 2.1.2 OU1 Sites not contributing to the Central Groundwater Plume

### Site 14—Motor Transportation

Site 14 is the Motor Transportation facility located on the northern edge of OU1 and bisected by Curtis Road. Site 14 is approximately 9 acres and covered with asphalt and gravel surfaces. The area includes vehicle maintenance buildings, parking lots, and wash racks. The paved area adjacent to Building 160 is used to store motor pool vehicles, while the unpaved area adjacent to Building 157 is used for heavy equipment storage and includes a paved parking area adjacent to the building.

In the 1950s and 1960s, waste oil was reportedly applied to the unpaved parking lots for dust control. In 1994, an SWMU assessment report (SAR) was initiated by MCAS Cherry Point to investigate the waste oil release. The SAR recommended the application of surfactant to the area affected by the waste oil release.

The results of the 2002 OU1 RI activities included the detection of lead in soil at concentrations above background, which may have been the result of the application of waste oil on the site for dust control or related to the UST sites (Tank Farm C) within the Site 14 boundary. Lead was found in groundwater; however, it was likely the result of leaking gasoline storage tanks and not the result of lead leaching from the soil.

A site closure request letter, dated October 4, 2002, was sent to NCDENR, which stated that the CERCLA program would address cVOC compounds at Tank Farm C. The MCAS Cherry Point Partnering Team agreed in December 2006 that the area within the boundary of Site 14 had been closed under the UST program. Additionally, it was agreed that the cVOC groundwater contamination below the area of a former UST program remediation system, south of the ERP Site 14 boundary and outside the Tank Farm C boundary, would be addressed under CERCLA.

In 2007, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 14. Site 14 was addressed in an NFA Proposed Plan and NFA ROD that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

### Site 15—Ditch and Area behind FRCE (Formerly NADEP)

Site 15 is located along the southeastern edge of OU1 and was described in the IAS as an unpaved 25-acre area between FRCE and a drainage ditch adjacent to Runway 5.

In 2008, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 15. Site 15 was addressed in an NFA Proposed Plan and NFA ROD (CH2M HILL, 2010c) that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

### Site 16—Landfill at Sandy Branch

Site 16 is a former borrow pit area that was subsequently used as a disposal site. The site is located on the western edge of OU1 and adjacent to East Prong Slocum Creek. The site contains a building and several structures and currently sites a municipal solid waste transfer facility, bulk materials storage (e.g., rip-rap, gravel, fill dirt, and mulch), and a vehicle impound lot. Originally identified as being 11 acres in area, aerial photographs and site reconnaissance have indicated that Site 16 is closer to 19 acres.

Between 1946 and 1948, up to 20,000 gallons of waste oil, one or more 55-gallon drums of potassium cyanide, and unspecified quantities of other wastes (e.g., municipal-type refuse) were disposed of at the site. Aerial photographs indicated possible dumping after 1949.

In 1996, a pilot-scale air sparge/soil vapor extraction (AS/SVE) system was installed for groundwater remediation. In 1997, a time-critical removal action (TCRA) was conducted to remove a debris pile containing asbestos, steel storage tanks, and petroleum contaminated soil. In 1998, a full-scale AS/SVE system was installed as part of an NTCRA for the removal of VOCs in groundwater. The MCAS Cherry Point Program Partnering Team agreed to shut down the AS/SVE system in February 2005 because it was not achieving the RA objectives (RAOs). The system components were initially left in place in order to allow for later reuse. In 2008, an evaluation was performed to determine the condition of the system components and the actions necessary to restore the system to operation. The evaluation revealed that the system components had degraded such that reuse without substantial

equipment replacement and rehabilitation would not be possible. The major system components were removed in 2009 and the remainder of the system was decommissioned (including well abandonment) in 2011.

In 2006, it was determined that the concentration of TCE at monitoring well 16GW04 may be of concern with respect to the potential for negative impacts from groundwater discharge to the adjacent surface water body (East Prong Slocum Creek). In order to determine if the high concentration of TCE is restricted to the area around 16GW04, and whether or not the concentration is related to onsite sources, additional soil and groundwater sampling in the vicinity of 16GW04 was conducted in June 2007. The results of the sampling event were included in a technical memorandum that was finalized in May 2008, which concluded that no potential sources of the cVOCs in groundwater had been found in soil in the vicinity of monitoring well 16GW04.

Beginning in August 2007, monitoring well 16GW04 was sampled on a quarterly basis to monitor the levels of VOCs in the groundwater in the vicinity of the well. Subsequent to the 2007 Monitoring Well 16GW04 area investigation, the OU1 RI Addendum concluded that the cVOC contamination found in 16GW04 and other areas of Site 16 was the result of the downgradient migration of cVOC contamination that is part of the OU1 Central Groundwater Plume. In June 2008, quarterly monitoring of 16GW04 was discontinued.

An FS was initiated in 2008 for Site 16 (as part of an FS for Sites 16 and 83) to address the human health risks from polycyclic aromatic hydrocarbons (PAHs) in surface soil identified in the 2002 OU1 RI. During preliminary Site 16 and 83 FS activities, it was determined that additional investigation activities were warranted at Site 83 (see subsequent Site 83 subsection below), and the partnering team decided to address Site 16 separately.

A Site 16 human health risk evaluation for soil was completed in May 2011 to update the human health risk assessment performed as part of the 2002 OU1 RI that included Site 16 as part of a larger soil grouping. The 2011 risk evaluation included the earlier Site 16 soil data from the 2002 OU1 RI along with more recent soil data collected as part of the 2005 OU1 BERA. The evaluation concluded that the only scenario with potentially unacceptable risks was the future residential scenario, with arsenic being one of the major drivers of carcinogenic risk. However, arsenic concentrations in soil at Site 16 are consistent with MCAS Cherry Point background concentrations and are attributable to natural conditions. By adjusting the risk calculations to account for the naturally occurring arsenic, the hypothetical carcinogenic risk to a future resident was within the target acceptable risk range.

A Supplemental RI Report for Site 16 was prepared in 2012 that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 16. A Proposed Plan is currently being prepared for the site.

The cVOCs in groundwater beneath Site 16 are being addressed as part of the OU1 Central Groundwater Plume since the cVOC contamination found beneath the site was the result of the downgradient migration of cVOC contamination that is part of the OU1 Central Groundwater Plume rather than onsite sources.

### Site 17—DRMO Drainage Ditch

Site 17 is a drainage ditch, approximately 300 feet long, located in the southeastern portion of OU1, next to the DRMO. The ditch discharges to the storm sewer drainage system, which flows to the east toward the Runway 5 Ditch then southwest to Schoolhouse Branch and ultimately into East Prong Slocum Creek. The adjacent 1-acre DRMO storage area was historically used for material storage including transformers containing polychlorinated biphenyls (PCBs). Petroleum, oil, and lubricants (POL) were reportedly used for dust control in the storage yard. It was reported that transformers were drained into the ditch from 1961 to 1968. A removal action was conducted in 1995 to remove PCB-contaminated soil and sediment. However, the 2002 OU1 RI indicated the possibility that PCB-contaminated soil above the 10 milligrams per kilogram (mg/kg) action level still existed at Site 17.

Additional investigation activities were conducted in August 2008 to either confirm that concentrations of PCBs and the pesticide dieldrin are below regulatory screening criteria or indicate that the earlier removal action was inadequate and additional RA is warranted. The results indicated that PCB concentrations in soil were below the 10 mg/kg action level. For dieldrin, it was concluded that the concentrations in soil and groundwater were the result of basewide pesticide applications rather than a site-specific release. With regard to PCBs, a new,

permanent monitoring well was installed at Site 17 in April 2009, and a groundwater sample was collected in May 2009 and analyzed for PCBs. No PCBs were detected in the sample, and the MCAS Cherry Point Partnering Team agreed at the May 2009 partnering meeting that no further action was necessary at Site 17. Site 17 was addressed in an NFA Proposed Plan and NFA ROD that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010.

### Site 18—Facilities Maintenance Compound

Site 18 is a fenced outdoor storage area approximately ½-acre in size, located in the southwest corner of OU1 near Schoolhouse Branch. The bermed concrete storage area was historically used for transformer storage, and minor occasional leak of PCB-laden fluid has been reported. No PCBs were detected in the soils and no further action was recommended at Site 18.

In 2007, the MCAS Cherry Point Partnering Team agreed that no further investigation activities were required for Site 18. Site 18 was addressed in an NFA Proposed Plan and NFA ROD that included Sites 14, 15, 17, 18 and 40. The NFA ROD for these sites was signed in September 2010. A small area of chlorinated VOC groundwater contamination north of Site 18 is not related to the site, and is being addressed as part of the OU1 Central Groundwater Plume.

### Site 83—Building 96 Former Pesticide Mixing Area

Site 83 is a former pesticide mixing area located in the southwest portion of OU1, adjacent to Site 16. The site is approximately 1 acre in size, covered by asphalt and concrete with some grassy area, and consisted of Buildings 96 (former pesticide shop) and 418 (storage area) along with a bermed concrete wash rack and catch basin. Building 96 was constructed before 1948, and reportedly used as a pesticide mixing and storage area from 1965 to 1981. With the construction of a new pesticide shop, Building 96 was converted to equipment storage and administrative space until it was demolished in 1997. The wash rack and catch basin discharged to an area adjacent to a steep bank leading to a wetland area located on the banks of East Prong Slocum Creek.

Identified in 1997 by MCAS Cherry Point, an SAR was conducted in 1998 and groundwater and soil contamination was identified. Groundwater and soil contamination was identified and additional investigation was recommended as part of the comprehensive evaluation of OU1.

Soil samples that were collected from the Site 83 area during the 2002 OU1 RI were found to have elevated levels of metals, PAHs, and pesticides. A field investigation was conducted in August 2009 to confirm earlier results and to further delineate the extent of pesticide contamination in soil and groundwater. A report of the findings of this investigation was finalized in May 2010. An additional assessment of human health risk based on the findings of the Site 83 supplemental investigation was conducted in 2010, and concluded that for both current and potential future land use, Site 83 does not pose unacceptable health risks to the any of the evaluated receptors. Subsequently, a Supplemental RI Report was prepared that included a summary of the investigation results and human health and ecological risk evaluations performed at Site 83. The Site 83 Supplemental RI Report was finalized in May 2011 and concluded that NFA is warranted for Site 83 and recommended that the site proceed to an NFA Proposed Plan and ROD. The NFA Proposed Plan for Site 83 was finalized in March 2012 and the NFA ROD was signed in October 2012.

## 2.2 Operable Unit 2

OU2 is located in the west-central portion of MCAS Cherry Point adjacent to Slocum Creek, and covers approximately 104 acres. OU2 is bounded by the sewage treatment plant (STP) to the north, Roosevelt Boulevard to the east, a residential area to the south, and Slocum Creek to the west. There are three FFA sites grouped within OU2 because of their proximity to the Old Sanitary Landfill (Site 10):

- Site 10 – Old Sanitary Landfill,
- Site 46 – Polishing Ponds No. 1 and No. 2, and
- Site 76 – Vehicle Maintenance Area (Hobby Shop).

The location and boundaries of OU2 and the site locations within OU2 are shown on **Figure 2-2**.

The Initial Assessment Study (IAS) conducted in 1983 identified Site 10 while Sites 46 and 76 were identified during subsequent studies conducted in 1988 and 1995, respectively. Initiated in 1994, the RI for OU2 was finalized in 1997 and concluded that groundwater in the surficial aquifer was contaminated with a wide range of organic contaminants (VOCs, semi-volatile organic compounds [SVOCs], and pesticides) and metals. In addition, several VOC "hot spot" areas of soil contamination were identified. An FS was recommended to evaluate potential RAs. Remedial alternatives for OU2 evaluated in the FS were presented in the PRAP and finalized in the ROD for OU2 in 1999. The selected remedy included monitored natural attenuation (MNA) of groundwater, in situ soil treatment by soil vapor extraction (SVE) at major soil hot spots, and institutional controls (ICs). Land use controls (LUCs) were established for all or portions of the three sites, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use.

Long-term monitoring (LTM) at OU2 began in October 2002, and is conducted annually to ensure the effectiveness of natural attenuation. In 2007, LTM sampling was changed from an annual to a quarterly basis. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD. An effort to evaluate and optimize the OU2 LTM program based on the findings to date was completed in May 2011. The LTM Evaluation recommended changes to the OU2 LTM program for groundwater and surface water monitoring. The new OU2 LTM program began in 2012.

### 2.2.1 Site 10—Old Sanitary Landfill

Site 10, the Old Sanitary Landfill, located adjacent to Slocum Creek, covers approximately 40 acres and is divided by Turkey Gut, a small perennial stream that flows northwest into Slocum Creek. The site consists of a sanitary landfill, former sludge impoundments, and a former drum storage area used to store petroleum products. The former drum storage area is currently used to store miscellaneous equipment and is fenced and covered with gravel.

Site 10 served as the primary landfill at MCAS Cherry Point beginning in 1955. Before the late-1970s, all landfill activities were conducted south of Turkey Gut. Subsequent to that time, landfill operations also occurred north of Turkey Gut. Landfill operations ceased in the early to mid-1980s. The quantity of wastes disposed of at Site 10 is unknown. Industrial wastes reportedly disposed of in the landfill included POL, solvents, and sludges.

In 1996, an SVE pilot study was conducted at Site 10, and in 1997 a full-scale SVE system was installed to treat soil at four soil hot spot areas. According to the 5-year review conducted in 2002, the SVE remedy was operating as designed and VOC mass removal had continued to increase at two hot spots, 1 and 3, while little to no removal observed at the two other hot spots, 2 and 4. The SVE treatment of the soil hot spots was discontinued in August 2003 because the system was no longer removing a significant mass of contamination; was not performing as a cost-effective remedial approach; and to allow the area to regain equilibrium (i.e., to return to its natural state without the SVE) before collecting soil samples.

After the SVE system was shut down, periodic (roughly annual) soil sampling commenced at Site 10, Hot Spots 1, 2, 3, and 4. Soil sampling occurred in January 2004, April 2005, January 2006, and November 2006. The January 2004 sampling results indicated that soil VOC concentrations at Hot Spots 1 and 4 were below the screening criteria and these hot spots were removed from further annual sampling. The April 2005 sampling results indicated that VOCs in soils at Hot Spot 3 were below the screening criteria, and this hot spot was also removed from the annual sampling. The January 2006 sampling results defined specific VOCs that exceeded the screening criteria at Hot Spot 2, and further sample analyses at Hot Spot 2 were restricted to these analytes. The November 2006 Hot Spot 2 sampling results indicated several VOCs that exceeded screening criteria. Based on these results, the MCAS Cherry Point Partnering Team agreed to conduct additional soil sampling in order to further delineate the soil contamination within Hot Spot 2. Samples were collected in July and December 2007. These samples did not successfully delineate the contamination, and additional samples were collected in 2008 to complete Hot Spot 2 investigation activities.

The Site 10 SVE system removal was completed in April 2010 and a Construction Closeout Report was finalized in July 2010.

Since OU2 has a ROD in place, a Focused FS (FFS) that evaluated additional remedial alternatives for soil at Site 10, Hot Spot 2 was finalized in February 2011. The Proposed Plan for Site 10, Hot Spot 2 was finalized in April 2011. The preferred alternative presented in the Proposed Plan includes the installation of a soil cover over areas of Hot Spot 2 where soil concentrations exceed North Carolina Soil Screening Levels (NC SSLs) to prevent direct exposure and limit infiltration and migration of soil/waste contamination to groundwater. The preferred alternative also includes groundwater monitoring to ensure protection of Slocum Creek from groundwater discharge to surface water. The OU2 ROD Amendment was signed in September 2011. LUCs established under the 1999 ROD for OU2, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use, apply to the entire area of Site 10 and were not changed by the 2011 ROD Amendment. The soil cover was successfully installed at Site 10, Hot Spot 2, in January and February 2012, and a Construction Closeout Report was finalized in August 2012. An Interim Remedial Action Closeout Report (IRACR) for OU2 Site 10, Hot Spot 2, is to be completed and signed in fiscal year 2013.

### Site 46—Polishing Ponds No.1 and No. 2

Site 46 is located to the north of Site 10, and consists of two inactive, unlined ponds. The ponds are approximately 12 feet deep and served as wastewater aeration basins for the STP from 1942 until 1996. The treated wastewater was discharged to Slocum Creek via an NPDES-permitted outfall. With upgrades to the STP, the ponds were no longer required for aeration. The ponds have been retained for potential future storm water management. Before any use of these inactive ponds, concurrence will be obtained from USEPA and NCDENR. MCAS Cherry Point submitted a Closure Plan for this site to the State of North Carolina in December 1988. USEPA Region 4, which formerly had primacy, agreed to waive the closure requirements, allowing the ponds to be addressed under the NCDENR RCRA authority.

Due to the previous RCRA activities and its proximity to other sites, Site 46 was incorporated into the ERP ICs for OU2. In December 2006, the Cherry Point Partnering Team agreed that there was no CERCLA contamination related to Site 46 and that the polishing pond footprints could be removed from the IC boundaries for OU2. The IC related to prohibition of groundwater use was retained for the small land area in between the polishing ponds and Slocum Creek, as documented in a letter from NAVFAC Mid-Atlantic to EPA dated May 19, 2008.

### Site 76—Vehicle Maintenance Area (Hobby Shop)

Site 76 is located south of Site 10, and consists of a fenced area approximately 2 acres in size and contains garage buildings and parking areas where personal vehicles are repaired. Site 76 is the only site at OU2 that is currently active. Ongoing site activities include auto maintenance and auto body repair. Based on a review of historical aerial photographs, the Site 76 area was developed between 1958 and 1964.

ICs established under the 1999 ROD for OU2, which restrict site use to industrial use only, restrict access to certain areas with installed fences and signs, prohibit intrusive activities, and prohibit groundwater use, apply to the entire area of Site 76 with the exception of the area restricted with fences and signs.

## 2.3 Operable Unit 3

OU3 is located in the west-central portion of MCAS Cherry Point adjacent to Slocum Creek and covers approximately 19 acres. OU3 is bounded by Slocum Road to the north, the STP and OU2 to the south, Slocum Creek to the west, and a wooded area to the east. The location and boundaries of OU3 and the locations of the two FFA sites (6 and 7) within OU3 are shown on **Figure 2-3**.

Both Site 6 and 7 were identified in the IAS conducted in 1983. Initiated in 1994, the RI for OU3 was finalized in 1996 and concluded that contamination characteristics are quite different between Site 6 and Site 7. The soil material at Site 6 is relatively free of contamination. No distinct fly ash layers remain on site, although some black silty soil material was found in several points around the ponds. For Site 7, data indicated that the area immediately surrounding the former incinerator is fairly clean; however, soil surface contaminants (e.g., metals and benzene) were detected indicating a localized area of soil contamination.

An FS was recommended to evaluate potential RAs. Remedial alternatives for OU3 evaluated in the FS were presented in the PRAP and finalized in the ROD for OU3 in 2000. The selected remedy included MNA of groundwater at Site 7, enhanced bioremediation (i.e., air sparging) of an isolated area of soil contamination at Site 7, and ICs at Sites 6 and 7.

LTM of groundwater, surface water, and sediment is conducted annually to ensure the effectiveness of natural attenuation. ICs implemented at OU3 prohibit intrusive activities below the water table, prohibit groundwater use, and restrict access to authorized personnel only. Site 6 has been restricted to industrial use only, while Site 7 has been designated as “no use authorized.”

Annual LTM of groundwater began in October 2002. In 2007, the LTM sampling frequency at OU3 was increased to a quarterly basis and in 2010 the sampling frequency was reduced to every third quarter (9 months). In 2011, LTM sampling was discontinued when the constituents detected in groundwater no longer exceeded the performance standards identified in the ROD. The final RA Completion Report (RACR) was submitted in April 2012 and documented that the RA for OU3 has met the RAOs stated in the ROD and has achieved Response Complete (RC). The ICs at OU3 will continue to be in effect and will remain unchanged as part of the long-term management of OU3.

### 2.3.1 Site 6—Fly Ash Ponds

Site 6 formerly consisted of three unlined ponds bounded by Slocum Creek to the west, Luke Rowe’s Gut to the south, Slocum Road to the north, and a wooded area to the east. The ponds covered approximately 2.5 acres and were approximately 10 to 15 feet deep. There are wetland areas adjacent to Slocum Creek and Luke Rowe’s Gut, and a portion of the site lies within the 100-year floodplain of Slocum Creek. Historical aerial photographs indicated that the ponds were not constructed until the late 1950s. Earlier aerial photographs indicate the presence of a natural pond and/or shallow depressions. The third pond appeared in an aerial photograph from 1978.

Fly ash and cinders from the former power plant were disposed of in the ponds from the 1940s until about 1970. The ponds were then reportedly used for the disposal of lime/alum sludge from the potable water treatment plant from December 1980 until the new water treatment plant became operational in mid-1994. It was also reported that up to 5,000 gallons of waste POL were disposed of in the ponds.

In 1996, as part of the closure of the water treatment plant, MCAS Cherry Point removed the ponds at Site 6. This non-IR-related effort was accomplished by solidifying and excavating the pond sludge, removing piping and debris, and leveling and revegetating the site with pine seedlings, as part of a Longleaf Pine Initiative aimed at returning the land to its natural state.

### 2.3.2 Site 7—Old Incinerator and Adjacent Area

Site 7 formerly consisted of an incinerator and open burning ground that covered approximately 5 acres. It is bounded by the STP to the south and east, Luke Rowe’s Gut to the north, and Slocum Creek to the west. The former incinerator was reportedly located adjacent to Luke Rowe’s Gut in the eastern part of the site. The open burning area was reportedly south of Luke Rowe’s Gut near its confluence with Slocum Creek.

From the 1940s until approximately 1955, waste POL, NADEP wastes, and other wastes, including municipal refuse, were burned in the incinerator or on adjacent grounds. Aerial photographs indicate that the incinerator was removed between 1981 and 1984.

In 2000, an air sparge (AS) remediation system was installed at Site 7 for enhanced bioremediation of a localized area of soil contaminated with benzene. In 2001, three additional AS wells were installed to address a small area of contamination just outside the treatment area. In 2003, soil and groundwater monitoring results indicated that benzene in the soil had been remediated, and the AS system was shut down. The AS system was removed in 2007. Following the shutdown of the AS system, annual LTM results indicated that groundwater benzene concentrations had not rebounded. LTM was discontinued in 2011 when it was confirmed that the constituents detected in groundwater no longer exceeded the performance standards defined in the OU3 ROD.

## 2.4 Operable Unit 4: Site 4—Borrow Pit/Landfill

OU4 consists of one FFA site, Site 4, and is located in the northwest-central portion of MCAS Cherry Point and covers approximately 130 acres. Site 4 is located north of Runway 14, and is bounded by Mill Creek to the south and west, Access Road to the north, and Duffy Road to the east. The location and boundaries of OU4 are shown on **Figure 2-4**.

Site 4 consists of several borrow pits and a fenced and lined drum storage area located in the north-central portion of the site. Identified in the IAS and RFA, the borrow pits at Site 4 were initially excavated in the 1940s and were used in the 1950s to dispose of demolition and asbestos wastes. Other wastes, including wastes from NADEP, may have also been disposed of at Site 4; however, no records were maintained on the types or amounts of wastes. The majority of historical activities at Site 4 took place in the western portion of the site, where the borrow pits used for waste disposal were located. The borrow pit area is currently a land clearing and inert debris (e.g., construction and demolition) landfill, while the drum storage area is used by the NADEP for storage of new material.

Finalized in 2002, the RI for OU4 indicated two areas of localized groundwater contamination with the VOCs 1,1,2,2-tetrachloroethane and benzene. The RI also revealed elevated lead concentrations in Mill Creek sediments that originated from an offsite inactive skeet and trap range located immediately northeast of Site 4. It was concluded that since the lead originated from military munitions at an operational military range and did not originate from site activities at OU4, the lead was not a RCRA solid waste or the result of a release regulated under CERCLA. Therefore, the Navy, USEPA, and NCDENR agreed to remove the lead from the OU4 remedy selection process, and the Navy investigated the lead and is addressing it under the military munitions program.

A final FFS was recommended to evaluate potential RAs. Remedial alternatives for OU4 evaluated in the FFS were presented in the PRAP and finalized in the ROD for OU4 signed in September 2005. The selected remedy for OU4 included MNA of groundwater and ICs that will limit exposure to and prohibit the use of surficial groundwater. The LUCs will limit exposure to groundwater by prohibiting the use of surficial aquifer groundwater, except for monitoring. The RD was finalized in April 2006. An IRACR for OU4 was signed in October 2006, which signified that the LUCS are in place and have been recorded in the appropriate documents. The RA includes both LUCs and MNA of groundwater for wells that have shown concentrations of COCs above North Carolina Groundwater Quality Standards (NC2L).

The Navy and MCAS Cherry Point initiated VGM in October 2003 to monitor VOC and SVOC concentrations that were found to exceed State groundwater quality standards during the RI. VGM was conducted on a semiannual basis in 2004 and 2005, and continued beginning in 2006 as LTM as part of the selected remedy in the OU4 ROD. In 2007, the LTM sampling frequency changed to a quarterly basis. To address persistent benzene concentrations detected above North Carolina Groundwater Quality Standards in the monitoring well that is sampled as part of LTM activities at OU4, the Navy conducted additional investigation activities in the vicinity of this monitoring well to delineate the extent of benzene in groundwater and to collect some soil samples. The investigation activities were conducted in three phases between July 2010 and March 2011. Benzene was detected in groundwater above the NC 2L during all three events, but was not detected in any of the soil samples. Additional soil and groundwater samples were collected from the site in November 2011 for use in a bench-scale treatability study to evaluate the injection substrate Electron Acceptor Solution (EAS™) as a means to stimulate anaerobic biodegradation of dissolved-phase benzene at OU4. Target iron and sulfate reducing bacteria that are necessary for a successful bench-scale treatability study were not detected in groundwater or soil samples. During the January 2012 partnering meeting, the partnering team decided to discontinue the bench-scale study and continue with the original MNA remedy, given that the maximum benzene concentrations were relatively low and the plume did not appear to be migrating based on the LTM data. The team also decided to add a newly-installed monitoring well, 4GW10, to the current LTM well network and to reduce the sampling frequency from quarterly to semi-annually. Ongoing LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards defined in the OU4 ROD.

# 2.5 Operable Unit 5

OU5 is located in the northeastern portion of MCAS Cherry Point. OU5 consists of two FFA sites, 1 and 2, that were grouped into one operable unit because of their proximity, history, and common waste types. Site 19 (Borrow Pit/Landfill North of Runway 32) was formerly part of OU5, but was transferred to OU13 because the site is closer to the other OU13 sites. The location and boundaries of OU5 are shown on **Figure 2-5**.

Sites 1 and 2 were identified in the IAS and RFA. Between 1985 and 1987, groundwater samples were collected at Site 1 as part of an Interim Remedial Investigation (IRI) to identify contaminated sites. The IRI concluded that groundwater had not been affected by historical waste practices at Sites 1 and 2, and that no further investigation was recommended. A 21-unit RFI was conducted in 1991 confirmed no releases to groundwater; however, seepage was observed and as a result, it was not possible to conclude that there had been not been any releases from the borrow pits. Therefore, additional groundwater monitoring and sampling of surface water and sediment surrounding the sites was recommended.

During the OU5 RI investigation, soil, groundwater, surface water, and sediment samples were collected. The RI results did not indicate any significant risks to human health or the environment; however, VOC concentrations slightly exceeded State groundwater standards in several monitoring wells at Site 2. The Final RI was submitted in August 2005.

A final FFS was recommended to evaluate potential RAs. Remedial alternatives evaluated in the FFS were presented in the PRAP and finalized in the ROD for OU5 signed in July 2006. The selected remedy for Site 1 was NFA while the selected remedy at Site 2 consisted of MNA of groundwater and ICs that will limit exposure to and prohibit the use of surficial groundwater.

In October 2003, the Navy initiated VGM at OU5 to monitor VOC concentrations found to exceed State groundwater standards during the RI field investigation. VGM was conducted on a semiannual basis into 2006, when the LTM program that is part of the remedy specified in the OU5 ROD replaced it. In 2007, the sampling frequency for LTM changed to a quarterly basis.

The Final RI for OU5 was submitted in August 2005. The FFS was finalized in October 2005. The Final OU5 PRAP was submitted in November 2005. The OU5 ROD was finalized in May 2006 and signed July 21, 2006. It was determined that no further action was necessary at Site 1; therefore, the ROD only addresses an RA at Site 2. The Selected Remedy for Site 2 included MNA for groundwater and ICs to limit exposure to and prohibit the use of surficial aquifer groundwater, except for monitoring. Upon finalization of the ROD, the RD for OU5 was completed in October 2006 and outlined the implementation of MNA and LUCs at Site 2. An IRACR for OU5 was signed in September 2008, which documented that the LUCS were in place and were recorded in the appropriate documents.

LTM was discontinued in 2011 after all COC concentrations in four consecutive rounds of sampling were below their respective performance standards. As a result, all RAOs for OU5 had been achieved. A RACR establishing RC for OU5 was finalized in January 2012 and site closure activities have been initiated, to include well abandonment and the removal of established ICs.

## 2.5.1 Site 1—Borrow Pit/Landfill

Site 1 consist of an area of approximately 4 acres and is located west of an access road in the northeastern portion of MCAS Cherry Point. It is a former borrow pit area that was later used for waste disposal. The northern boundary of Site 1 is approximately 100 feet south of Reed's Gut, and the other boundaries include an unnamed tributary to the west, a line 200 feet north of an unpaved road to the south, and the unpaved access road to the east.

The area was originally a borrow pit area that was later used for waste disposal. Site use reportedly began in the mid- to late-1950s, and continued for an unknown period of time. No records were kept detailing the quantities or types of wastes that were disposed of at the site. Some chemical waste, crushed 55-gallon drums, and

construction and demolition debris were reported to have been disposed of at the site, but only small amounts of rubble and trash were seen onsite during the IAS.

### 2.5.2 Site 2—Borrow Pit/Landfill

Site 2 consist of an area of approximately 6 acres and is located east of an access road in the northeastern portion of MCAS Cherry Point, directly opposite Site 1. The area is bounded on the east and northeast by an unnamed tributary to Reed's Gut, an unpaved road to the south and southwest, and the unpaved access road to the west.

Like Site 1, it is a former borrow pit area that was later used for waste disposal. Site use reportedly began in the mid- to late-1950s, and continued for an unknown period of time. No records were kept detailing the quantities or types of wastes that were disposed of at the site. Some chemical waste, crushed 55-gallon drums, and construction and demolition debris were reported to have been disposed of at the site, but only small amounts of rubble and trash were seen onsite during the IAS.

## 2.6 Operable Unit 6: Site 12—Crash Crew Training Area

OU6 includes one FFA site, Site 12, the Crash Crew Training Area, and consists of the eastern portion of Runway 28, an east-west trending runway along the eastern edge of MCAS Cherry Point. Initially a second site, Site 35, was included in OU6 because of its proximity to Site 12. However, Site 35 is listed as a RCRA SWMU and therefore was remediated under the provisions of RCRA. The boundaries and location of OU6 are shown on **Figure 2-6**. Site 12 is located along the south-central portion of Runway 28. Grassy areas to the north, south, and east border the runway, with dense woods beyond the grass. Hancock Creek is located approximately 700 feet east of the eastern end of Runway 28.

Site 12 was identified in the IAS and RFA, which indicated that Site 12 had been used for crash crew training activities since themed-1960s. According to the IAS, waste petroleum products and burnable solvents (likely non-chlorinated) were formerly burned in one of two circular bermed areas on Runway 28, but that only contaminated fuel was burned at the time the report was written. The IAS also indicated that spills and leaks from the burn pits were evident and that stained and oily soil was present in the drainage swale south of Runway 28.

Sampling was conducted during a 21-unit RFI in 1991. Total petroleum hydrocarbon (TPH) contamination was detected in the soil and sediment samples, and additional sampling of all media was recommended. Additional samples were collected in 1993. TPH contamination was found to be limited in area and depth; however, further investigation of inorganic constituents in soil and groundwater was recommended at Site 12.

During a 1999 site visit, some clarification was obtained regarding the nature of the burn pits that pre-dated the current concrete burn pit constructed in 1985. According to interviewed crash crew personnel, the former burn pits were constructed of dirt placed on top of the asphalt runway surface and shaped into circular berms. The crash crew personnel recalled the existence of two dirt burn pits of this type, and indicated that fuels (including gas and diesel) and magnesium aircraft parts were formerly burned in the pits. A review of historic aerial photographs revealed five separate locations where earthen burn pits had once been located since the early 1960s, with either two or three of the burn pits being present at any one time.

The Crash Crew Burn Pit is a circular concrete pad currently used to burn waste JP-5 (i.e., jet fuel) to train crash crews to extinguish fires. The concrete burn pit was constructed in the mid-1980s, and is approximately 100 feet in diameter with a 5-inch-high curb around the circumference. The burn pit is drained through subsurface piping to a nearby oil–water separator, as is a circular trench drain that rings the outside of the burn pit to capture fire water not contained within the burn pit. Between 1985 and 1990, effluent from the oil-water separator was discharged through a NPDES-permitted outfall to the nearby drainage swale. Around 1990, the effluent pipe of the separator was welded shut. After training exercises or a heavy rainfall, facilities maintenance personnel pump all liquids from the oil–water separator and transport them to the IWTP.

The Draft RI conducted for OU6 concluded that, based on the limited number of constituents that pose potential human health risk only within an unrealistic exposure pathway, an FS did not appear to be warranted, and no further action was recommended at Site 12. However, regulator concerns regarding the extent of sampling

beneath historic burn pit locations were expressed, and a Supplemental Site Investigation (SSI) was initiated in October 2003. The final SSI, completed in May 2005, included additional soil and groundwater sampling beneath the former burn pit locations. The final RI report incorporated the SSI and was submitted in August 2005.

The RI recommended that an FFS be prepared for Site 12 addressing the VOCs naphthalene and 2-methylnaphthalene exceedences in subsurface soil and groundwater at Burn Pit E.

A Final FS was recommended to evaluate potential RAs. Remedial alternatives evaluated in the FS were presented in the PRAP and finalized in the ROD for OU6 signed in September 2006. The selected remedy for OU6 included removal of contaminated soil, MNA for groundwater, and ICs that will limit exposure to and prohibit the use of surficial groundwater.

The removal of contaminated soils at OU6 began in March 2007 and was completed in May 2007. The Draft IRACR was submitted in July 2007, but finalization of the document was suspended after successful completion of the remediation and the likely closure of OU6 was found to be imminent in early 2008.

The Navy and MCAS Cherry Point initiated VGM at OU6 in May 2005 to monitor VOC concentrations found to exceed State groundwater quality standards identified in the FS. VGM was conducted on a semiannual basis until 2007, when the OU6 LTM program established in the ROD replaced it.

In late 2008, LTM activities were terminated at OU6, as all organic compound COCs were found during four or more consecutive quarterly sampling events to either be no longer detected or at concentrations below the performance standards specified in the OU6 ROD. In addition, the recurring elevated arsenic concentrations in a single monitoring well were found to be the result of a damaged well screen; upon retrofit of the monitoring well, the arsenic concentrations were found to be below regulatory screening criteria in multiple sampling events. A RACR establishing RC for OU6 was finalized in August 2008.

## 2.7 Operable Unit 13

OU13 consist of an area of approximately 61 acres and is located in the southeastern portion of MCAS Cherry Point near Runway 32. OU13 contains two FFA sites, Sites 19 and 21, as well as releases to groundwater from Site 44B, a former sludge application area. OU13 is not currently used for any active purpose other than providing a buffer of cleared land adjacent to Runway 32. The location and boundaries of OU13 and the site locations within OU13 are shown on **Figure 2-7**.

Sites 19 and 21 were identified in the IAS and RFA, and Site 44B was identified in the 21-unit RFI. Between 1985 and 1987, groundwater samples were collected at Sites 19 and 21 as part of an IRI to identify contaminated sites. In November 1991, additional groundwater samples were collected at OU13 as part of the 21-unit RFI to support a Corrective Measures Study and to verify releases from various sites. During the RI field activities for OU13 conducted in 1994 and 1999, soil, groundwater, surface water, sediment, and fish tissue samples were collected. An FS was recommended to evaluate remedial alternatives associated with potential unacceptable risks to human health based on concentrations of VOCs, pesticides, and/or inorganic constituents that exceeded screening criteria in groundwater and surface water.

A final FFS was recommended to evaluate potential RAs. Remedial alternatives evaluated in the FFS were presented in the PRAP and finalized in the ROD for OU13 signed in September 2005. The selected remedy for OU13 included MNA of groundwater and ICs that will limit exposure to and prohibit the use of surficial groundwater.

In October 2003, the Navy initiated VGM at OU13 to monitor VOC concentrations found to exceed State groundwater quality standards identified in the FFS. VGM was conducted on a semiannual basis until 2006, when it was supplanted by the LTM program for OU13 specified in the ROD. In 2007, the LTM sampling frequency was increased to quarterly. In August 2012, four consecutive rounds of sampling confirmed that all of the constituents detected in groundwater no longer exceeded the performance standards defined in the OU13 ROD. As a result, LTM in support of the MNA remedy was terminated. A RACR, documenting that the RAOs for OU13 have been achieved and that no further CERCLA action is required, was finalized in May 2013.

### 2.7.1 Site 19—Borrow Pit/Landfill (South of Runway 32)

Site 19 consists of an area of approximately 16 acres that includes several former borrow pits that were reportedly used for waste disposal. Site 19 is located on the northern side of Runway 32, with Hancock Creek and the tributary Shop Branch to the north and east. There are wetland areas adjacent to Hancock Creek and Shop Branch.

Parts of Site 19 were first disturbed in 1949 and used through the early 1960s. Fly ash from the steam plant, wastes from NADEP, and asbestos-lined piping may have been disposed of in the borrow pits. No records were kept detailing quantities or specific types of wastes.

### 2.7.2 Site 21—Borrow Pit/Landfill (South of Runway 32)

Site 21 consists of an area of approximately 36 acres that includes several borrow pits that were reportedly used for waste disposal. Site 21 is located south of Runway 32, and Shop Branch runs through Site 21 before crossing under the runway.

Similar to Site 19, parts of Site 21 were first disturbed in 1949 and used through the early 1960s. Fly ash from the steam plant, wastes from NADEP, and asbestos-lined piping may have been disposed of in the borrow pits. No records were kept detailing quantities or specific types of wastes.

### 2.7.3 Site 44B—Former Sludge Application Area

Site 44B consists of a relatively flat 11-acre area adjacent to Site 21 where sludge from the STP was applied. The area was reportedly a landfill in the 1950s and 1960s, and the waste reportedly included asbestos pipe. Between September and November 1987, liquid sludge from the STP digesters was reportedly land-applied at Site 44B. The sludge may have contained organic compounds and other constituents that were not digested during the sewage treatment process.

## 2.8 Operable Unit 14: Site 90—Building 130 VOC-Contaminated Groundwater

Site 90 is a cVOC-contaminated groundwater plume first identified near Building 130, which is used as an aircraft hangar. Prior to the current CERCLA investigation, the only investigations and remedial activities in the Building 130 area have been carried out as part of a Base Realignment and Closure (BRAC) project conducted in 1994 and the abandoned aviation fuel pipeline investigation managed by the MCAS Cherry Point UST program. The location and boundaries of OU14 are shown on **Figure 2-8**.

In 1994, soil and groundwater samples were collected in the Site 90 area to support a BRAC project aimed at identifying potential contamination, which would require cleanup prior to construction of new facilities. Designated as BRAC Site 7, no significant risks were identified; however, the report stated that remediation was needed for soils impacted with TPH above State criteria.

In 1995, a Site Assessment was conducted focusing on the abandoned underground aviation fuel line system. Investigative results indicated that multiple releases of jet and gasoline-grade fuels had occurred at several locations over time and the presence of free product (i.e., jet fuel) in groundwater was observed at the western end of Building 130.

In 1997, a Corrective Action Plan was submitted which included the recovery of free product and the restoration of petroleum-contaminated soil and groundwater at Building 130. The proposed remediation system in the Building 130 area consisted of free product recovery, groundwater remediation by air sparging, and soil remediation by soil vapor extraction. In 2001, the remediation system at Building 130 was constructed.

In 2000, groundwater samples were collected as part of the OU1 RI and based on the groundwater data, it was decided that Site 90 be addressed separately from OU1. In 2001, a RI for Site 90 was initiated with the preparation and regulatory approval of the RI Work Plan. The October 2002 Phase I fieldwork included groundwater and soil sampling and indicated that the cVOC plume in the Hanger 130 area extended further downgradient (northwest) than previously thought. Consequently, a Phase II investigation was conducted in October 2003 to determine the

full extent of the cVOC plume in the surficial aquifer and included sampling nearly 60 monitoring wells along the flight line area. In April 2005, a Phase III data gap investigation was conducted and included installation of monitoring wells and groundwater sampling, as well as ecological sampling of sediments and surface water in the unnamed tributary of Mill Creek on the edge of the flight line area. The Phase II Interim Report was submitted in June 2005.

During initial examination of the Phase III RI results, it was determined that data gaps still existed with regard to potential surface water and sediment contamination in the drainage ditch to the northwest of OU14. Based on the data gaps, a screening-level ERA (SLERA) was conducted for OU14 (Site 90) as part of the ongoing Phase III RI. Because the area that includes Site 90 is industrialized and consists of paved surfaces (e.g., runways, taxiways, aircraft parking areas) and buildings, there was no habitat or ecological resources present within the site boundaries that were addressed as part of the SLERA. Instead, aquatic receptors in a downgradient stream (water column biota and benthic macroinvertebrates) were evaluated for potential risk from exposure to cVOC-contaminated groundwater originating from Site 90 that could possibly discharge to surface water and sediment of the stream. This perennial stream, which is an unnamed tributary of Mill Creek, is approximately 1,400 feet long and 1,000 feet northwest of Site 90. Surface water and sediment samples were collected in April 2006, and the SLERA was performed in June 2006. The SLERA concluded that contaminated groundwater is not contributing significant levels of contaminants of potential ecological concern (COPECs) to the downgradient aquatic habitat, and no further ecological investigation are warranted for OU14.

The Final OU14 RI Report was submitted in December 2008, and includes the results of the human health and ecological risk assessments. Based on an evaluation of the data collected during all phases of the RI, including historical data, cVOC contamination is limited to surficial aquifer groundwater, while petroleum UST-related contamination is prevalent throughout the site in soil and surficial aquifer groundwater.

The Baseline Human Health Risk Assessment (HHRA) results showed no risks above acceptable ranges from exposure to surface water, sediment, or groundwater from the Yorktown Aquifer. With respect to surficial aquifer groundwater, the HHRA results indicated potentially unacceptable risks for hypothetical future potable water use by an adult resident (iron), future child resident (benzene, arsenic, iron, and manganese), and lifetime resident (vinyl chloride and arsenic). No risks or hazards above acceptable ranges were identified for the construction worker, current/future industrial worker, or an adult/ adolescent trespasser/visitor.

The results of the vapor intrusion screening showed no indication of the need to mitigate vapor issues under current industrial exposures, based on a comparison of estimated indoor air concentrations to occupational exposure limits. No COPCs exceeded the occupational exposure limits—that is, no immediate action is needed for current OU14 site workers or for future workers at any location under current occupational exposure conditions.

Based on the results documented in the RI report, it was recommended that an FS be completed to evaluate remedial alternatives to address potential human health risks (calculated in HHRA and exceedences of NC2L Groundwater Standards) related to cVOCs in the surficial aquifer groundwater. Remedial alternatives for petroleum contamination are under the purview of the UST Program. The OU14 FS report was submitted and finalized in 2009.

The vapor intrusion screening indicated a need for further evaluation of the vapor intrusion pathway to refine the understanding of the potential pathway for future onsite industrial workers and future residents if new buildings or structures are to be built. Therefore, indoor air vapor issues will be evaluated in the future, if necessary, prior to construction of new buildings. Remedial alternatives for groundwater would indirectly address vapor issues.

The Proposed Plan for OU14 was completed in April 2009; the selected remedy was MNA for groundwater and ICs to address groundwater and potential vapor intrusion issues. The public meeting to present the OU14 Proposed Plan was held in May 2009 and the public review and comment period extended into June 2009. The Final ROD for OU14 was submitted in August 2009 and was signed on September 28, 2009.

The RD for the IC portion of the selected remedy was finalized in March 2010. This RD defines the IC boundaries for OU14 and describes how ICs will be implemented and enforced. The initiation of the MNA portion of the

remedy was implemented in stages, commencing with a baseline round of groundwater monitoring to establish initial groundwater conditions at the time of remedy implementation and to provide additional data to allow the optimal placement of additional monitoring wells to complete the network for LTM going forward. The baseline sampling activities were completed in June 2010. Following the evaluation of the data from this sampling event, additional LTM monitoring well locations were recommended and the LTM work plan was finalized in 2011. The LTM program at OU14 consists of annual groundwater sampling from 73 surficial aquifer monitoring wells to evaluate the progress of the MNA groundwater remedy. LTM activities are to continue until COC concentrations reach the performance goals specified in the ROD. The first annual round of LTM groundwater sampling was conducted in June 2011. The report presenting the LTM results was finalized in May 2012.

An IRACR for OU14 was prepared to document the implementation of the RA (ICs and MNA of groundwater) and the establishment of remedy-in-place (RIP). The IRACR was finalized in June 2011.

## 2.9 Operable Unit 15: Site 82—Slocum Creek in the Vicinity of OU2 and OU3

OU15 is the portion of Slocum Creek adjacent to OU2 and OU3 located along the east bank of Slocum Creek. The northern boundary of OU15 is the Slocum Bridge and the southern boundary extends across the creek from the southern boundary of OU2. The location and boundaries of OU15 are shown on **Figure 2-9**.

Remedial investigations conducted for OU2 and OU3 included sampling and analysis of surface water and sediment in the portion of Slocum Creek adjacent to OU2 and OU3. While the RI identified unacceptable risks to human health within the onshore boundaries of OU2 and OU3, there was some uncertainty concerning potential risks associated with Slocum Creek surface water and sediment adjacent to OU2 and OU3 and with potential risks associated with the consumption of fish from Slocum Creek. Therefore, the decision was made by the Navy, USEPA, and NCDENR to designate the portion of Slocum Creek adjacent to OU2 and OU3 as OU15 allowing completion of the decision documents (i.e., RODs) for OU2 and OU3 and subsequent implementation of RAs. Additional studies (e.g., risk assessments) were conducted for OU15 to determine potential risks to human health and the environment from past contaminant migration from OU2 and OU3 into Slocum Creek.

During 1998 and 1999, surface water, sediment, and fish samples were collected from Slocum Creek in support of the HHRA and the ERA. Fish tissue sampling was conducted in Slocum Creek in 1998 to support the HHRA, while additional surface water and sediment samples were collected from Slocum Creek near OU2 and OU3 in 1999 to support the ERA. The risk assessment concluded that there were no unacceptable risks to human health from exposure to constituents detected in surface water and sediment or from consumption of fish from Slocum Creek. The risk assessment also concluded that there were no unacceptable risks to ecological receptors associated with OU15 surface water and sediment. The results of the risk assessments indicate that, based on available information, OU15 does not present an unacceptable risk to human health and the environment.

The OU15 PRAP was finalized in October 2002, followed by the final OU15 ROD, which was signed in July 2003. A no-action alternative was selected for OU15 based on the determination that there were no risks to either human health or the environment.

## 2.10 Points of Environmental Interest 22 and 23—Radioactive Waste Storage Areas #1 and #2

Both points of environmental interest (POEI) 22 and POEI 23 are located within the FRCE. POEI 22 is located in a covered fenced, bermed area near the western corner of Building 133, and POEI 23 is located in the southeast corner room of Building 134. The location and boundaries of POEI 22 and 23 are shown on **Figure 2-10**.

POEI 22 consists of a concrete pad and curb covered with an overhead roof that is fenced to control site access, while POEI 23 consist of a concrete floor room approximately 20 by 30 feet in area. The POEIs were initially identified during separate site visits in February and April 1998, respectively. Both areas were historically used to store low-level radioactive solids such as magnesium thorium, a byproduct of the aircraft manufacture process.

Waste scrap, millings, etc., were strictly managed in accordance with the standard operating procedure for ionizing radiation and placed in sealed 55-gallon drums, properly labeled, stored and disposed of by radiological safety office personnel. By following the standard operating procedure, there was extremely low probability for a radiological release at either POEI.

Based on this information, it was recommended in an October 2000 POEI closure request that POEIs 22 and 23 be classified as requiring no further action. In September 2000, the Tier I Partnering Team agreed to retain these areas as POEIs pending receipt of additional information regarding operations at the sites. In April 2006, based on the survey report, RASO determined that POEIs 22 and 23 met the NRC criteria for unrestricted use. In April 2008, the Navy submitted a letter to USEPA documenting the findings of the 2006 RASO survey and requesting closure of POEIs 22 and 23. USEPA responded in May 2008 with a concurrence letter approving the NFA designation for POEIs 22 and 23. As a result, these sites are closed and are no longer active Preliminary Screening Areas.

## 2.11 POEI 35a—High Power Engine Run-Up Area and Test Cells

POEI 35a consists of the eastern end of Runway 28, next to Site 12 (OU6). The runway surface in this area is mostly asphalt, with a number of relatively small concrete pads. The area is bordered with grassy areas with dense woods beyond. The location and boundaries of POEI 35a is shown on **Figure 2-11**. POEI 35a is also known as Site Screening Area (SSA) 35a.

The majority of the area is used for engine high power run-up activities where aircraft engines, either mounted on racks or within the aircraft, are run at high speeds for maintenance purposes. The southwestern portion of POEI 35a is used for experimentation of long-term storage and preservation of aircraft. POEI 35a was identified during a 1997 site visit as a potential contaminant source area based on the historical activities at similar sites.

Sampling results from 1996 and 1999 field efforts were presented in the POEI Evaluation Report. Completed in January 2004, the final report concluded that there had not been a significant release of contaminants to the environment from POEI 35a (SSA 35a) and recommended no further action at the site. The Decision Document for POEI 35a (SSA 35a) documenting the NFA decision was signed in June 2004.

## 2.12 Site 85—Hobby Shop Disposal Area

Site 85 is a waste disposal area located near the eastern shoreline of Slocum Creek that covers approximately ½ acre. Situated immediately west of the Auto Hobby Shop (OU2, Site 76) and south of the old sanitary landfill (OU2, Site 10), the majority of Site 85 consists of a forested area sloping to the west toward Slocum Creek. The location and boundaries of Site 85 are shown on **Figure 2-12**.

Site 85 contained a significant amount of largely surface debris that had been disposed of at the site. The exposed debris included empty 55-gallon drums, empty 5- to 15-gallon steel pails, automobiles, concrete debris, office equipment, rubber tires, fire hoses, steel matting, pipes, metal spectator bleachers, and various other items. No records indicating the quantities or types of wastes disposed of at the site are known to exist, nor is it specifically known when disposal activities occurred.

In 1997, site inspections revealed evidence that MCAS Cherry Point residents, including children, had accessed and used the site for play activities. A rope swing was found hanging from a tree. As a result of this discovery, an emergency response action was taken to secure the site with fencing to prevent potential human exposure. Following a wetlands delineation effort to minimize wetlands impacts, a debris removal action was completed at the site, with approximately 30 to 40 cubic yards of debris removed from the site.

In 2001, a Site Screening Process (SSP) investigation was conducted at Site 85. The SSP investigation included the collection of soil and groundwater samples to determine if residual contamination remained at the site following the debris removal, and whether groundwater had been impacted by past disposal activities. The SSP report completed concluded that there was no significant contamination and no further action was recommended. An SSA Decision Document for Site 85 was signed in September 2003, documenting regulatory concurrence with the NFA recommendation.

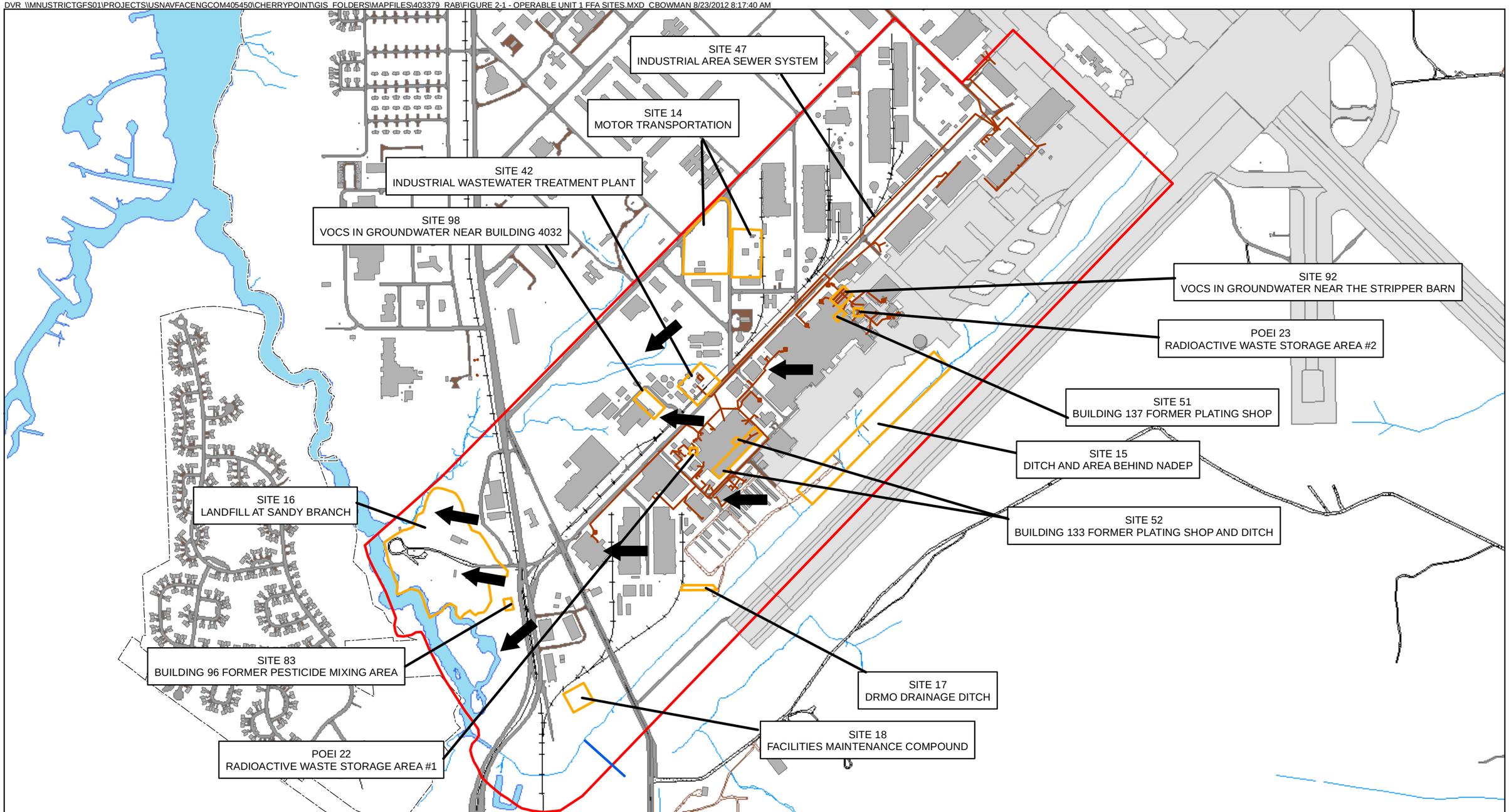
## 2.13 Former Skeet and Trap Range #1

Former Skeet and Trap Range #1 is located within MCAS Cherry Point along the Neuse River adjacent to the golf course, and is a part of the MCAS Cherry Point NPL site (**Figure 2-13**). The former shooting station was located in an area that is currently a forested riparian buffer zone between the golf course greenway and the Neuse River. The shooting station was oriented to the north with almost the entire shotfall zone being in the Neuse River.

According to the Range Identification and Preliminary Range Assessment, completed by the U.S. Army Corps of Engineers in 2001, MCAS Cherry Point requested the construction of six skeet or trap sets and two shotgun flexible mounts on September 8, 1943. Both skeet and trap shooting were conducted at the range site. Skeet shooting consisted of a shooter moving through a series of eight stations shooting at clay target disks, which are thrown from elevated towers. Trap shooting consisted of a shooter standing at one location shooting at clay target disks that are thrown from a pithouse. Shooting is done with shotguns using varying sizes of lead shot. The site was in use before the United States Fish and Wildlife Service regulated the use of lead shot to protect waterfowl from the effects of lead poisoning. The Skeet Range appears on maps from 1949 through 1955 and is no longer used for the firing of live ammunition, as the site is now associated with the golf course. The Range Identification and Preliminary Range Assessment states that the types of munitions used at the range included 12-gauge shotguns and number 7½ shot. No information is available regarding the quantity of munitions that were used.

Field activities for an SI were completed in May 2009, and included the collection of surface water samples that were analyzed for total and dissolved metals, hardness, PAHs, and water quality parameters; sediment samples that were analyzed for metals, PAHs, grain size, and total organic carbon; and surface soil samples that were analyzed for metals, PAHs, and perchlorate. Findings of the field activities are documented in the SI report finalized in October 2010 (CH2M HILL, 2010b). Based on detections of several PAHs in soil, surface water, and sediment, the Navy has pursued the development of a Watershed Contaminated Source Document (WCSD) to determine whether these detections are related to Former Skeet and Trap Range #1 or the result of non-site-related, anthropogenic sources of contamination. In addition, the Navy has conducted an Expanded SI to collect additional samples to further characterize PAH concentrations in surface water and sediment in and around the Former Skeet and Trap Range #1. The Expanded SI fieldwork was conducted in February 2012 and the Expanded SI report and WCSD were completed in 2012. A no further action Decision Document was finalized in March 2013.

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-1 - OPERABLE UNIT 1 FFA SITES.MXD CBOWMAN 8/23/2012 8:17:40 AM




**Legend**

- OU Boundary
- Site Boundary
- Base Boundary
- Buildings
- Road
- Runway
- Railroad
- Surface Water
- Industrial Area Sewer System
- Groundwater Flow Direction

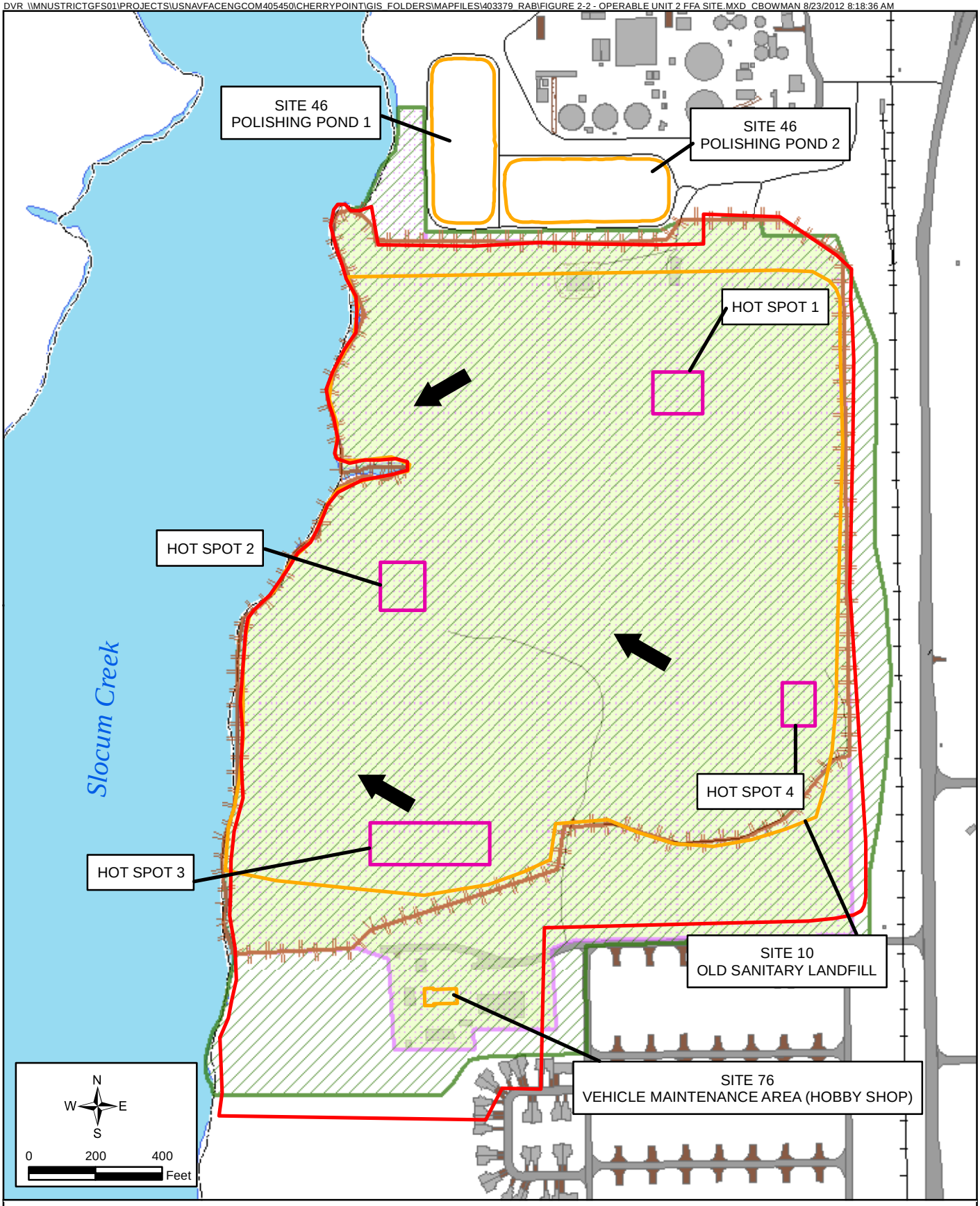
N
W E
S

0 450 900
Feet

Figure 2-1
Operable Unit 1 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-2 - OPERABLE UNIT 2 FFA SITE.MXD CBOWMAN 8/23/2012 8:18:36 AM



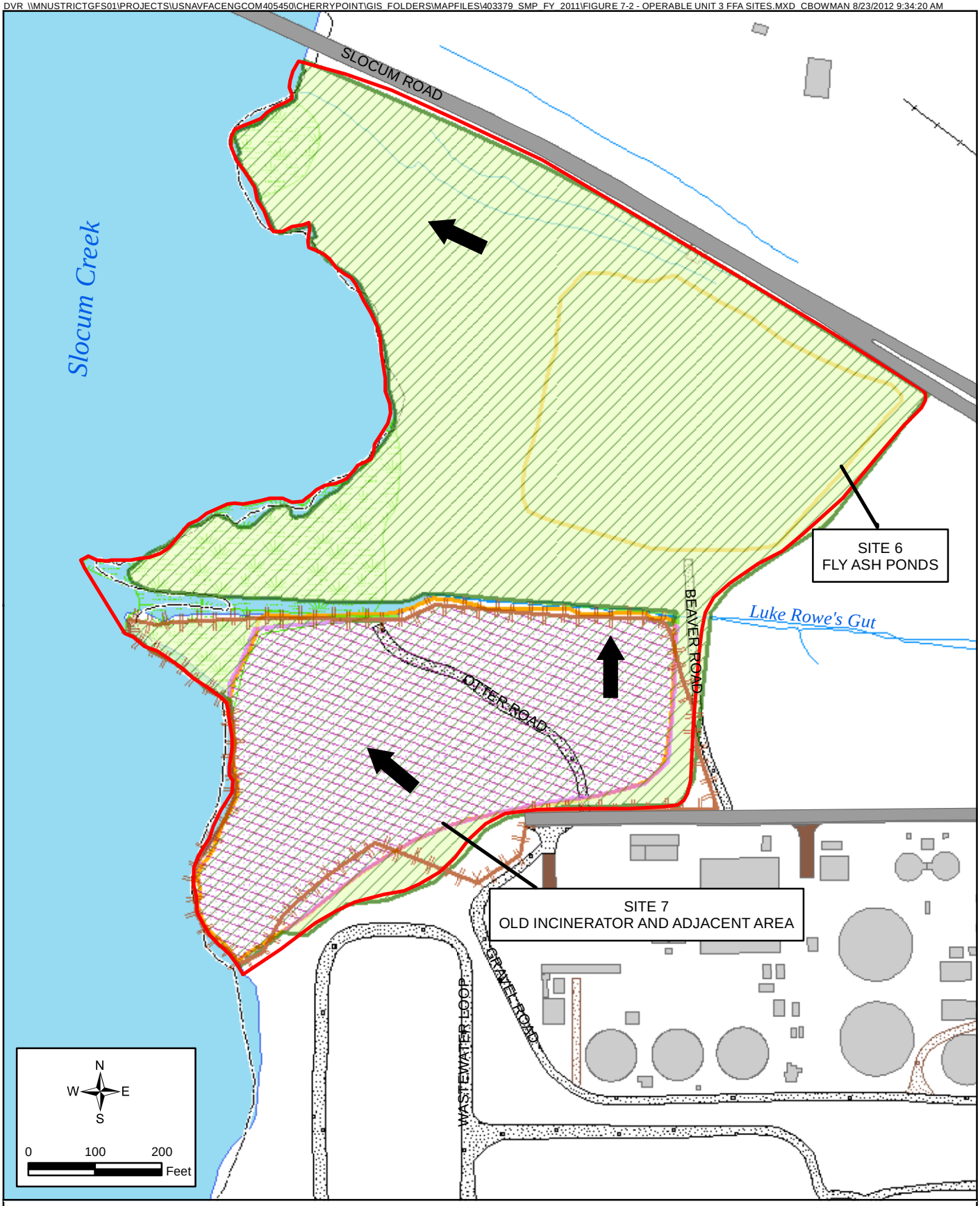

**Legend**

- OU Boundary
- Site Boundary
- Hot Spots
- Buildings
- Base Boundary
- Road
- Groundwater Use Prohibited
- Intrusive Activities Below Water Table Prohibited
- Restricted Access - Fence & Signs Required
- Site Use Restricted - Industrial Use Only
- Groundwater Flow Direction

Figure 2-2
Operable Unit 2 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_SMP_FY_2011\FIGURE 7-2 - OPERABLE UNIT 3 FFA SITES.MXD CBOWMAN 8/23/2012 9:34:20 AM



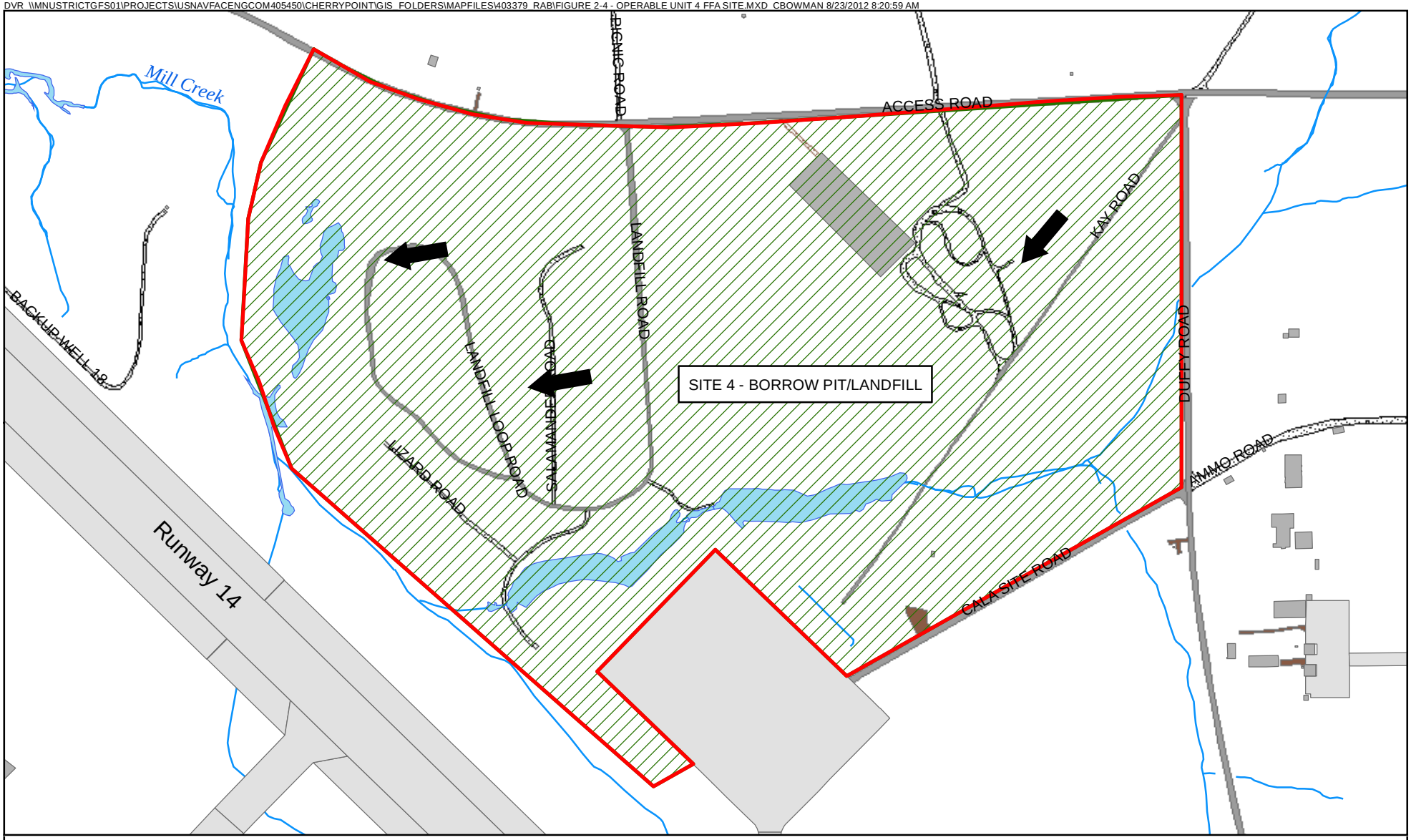

**Legend**

- OU Boundary
- Site Boundary
- Base Boundary
- Buildings
- Wetlands
- Road
- Surface Water
- Groundwater Use Prohibited
- Intrusive Activities Prohibited
- Restricted Access - Fence & Signs Required
- Site Use Restricted - Industrial Use Only
- Site Use Restricted - No Use Authorized
- Groundwater Flow Direction

Figure 2-3
Operable Unit 3 FFA Sites
MCAS Cherry Point, North Carolina

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-4 - OPERABLE UNIT 4 FFA SITE.MXD CBOWMAN 8/23/2012 8:20:59 AM




**Legend**

- OU Boundary
- Land Use Control Boundary; Surficial Groundwater Use Prohibited
- Buildings
- Runway
- Road
- Surface Water
- Groundwater Flow Direction

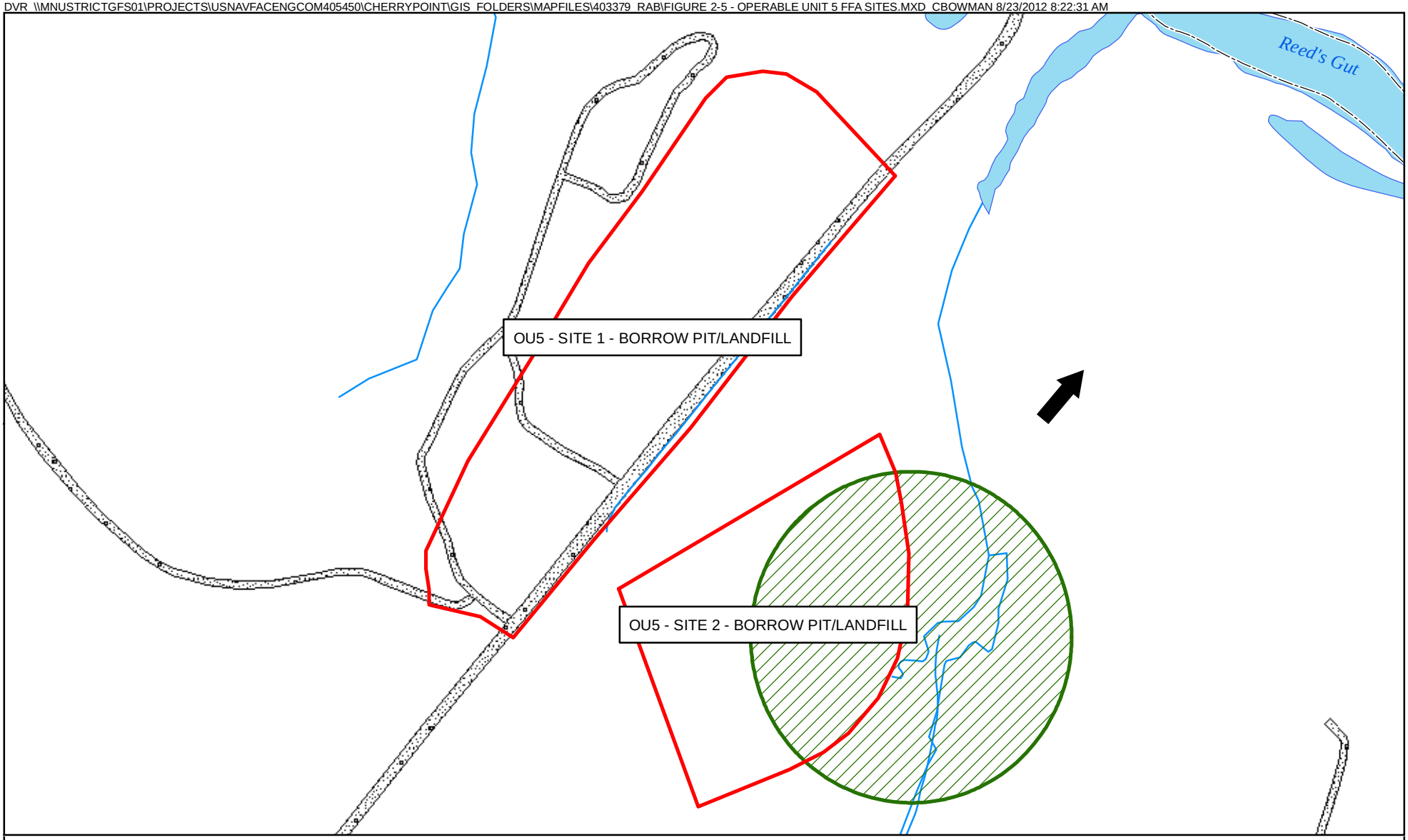
N
W E
S

0 250 500
Feet

Figure 2-4
Operable Unit 4 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-5 - OPERABLE UNIT 5 FFA SITES.MXD CBOWMAN 8/23/2012 8:22:31 AM




**Legend**

- OU/Site Boundary
- Land Use Control Boundary
  Surficial Groundwater Use Prohibited
- Base Boundary
- Road
- Surface Water
- Groundwater Flow Direction

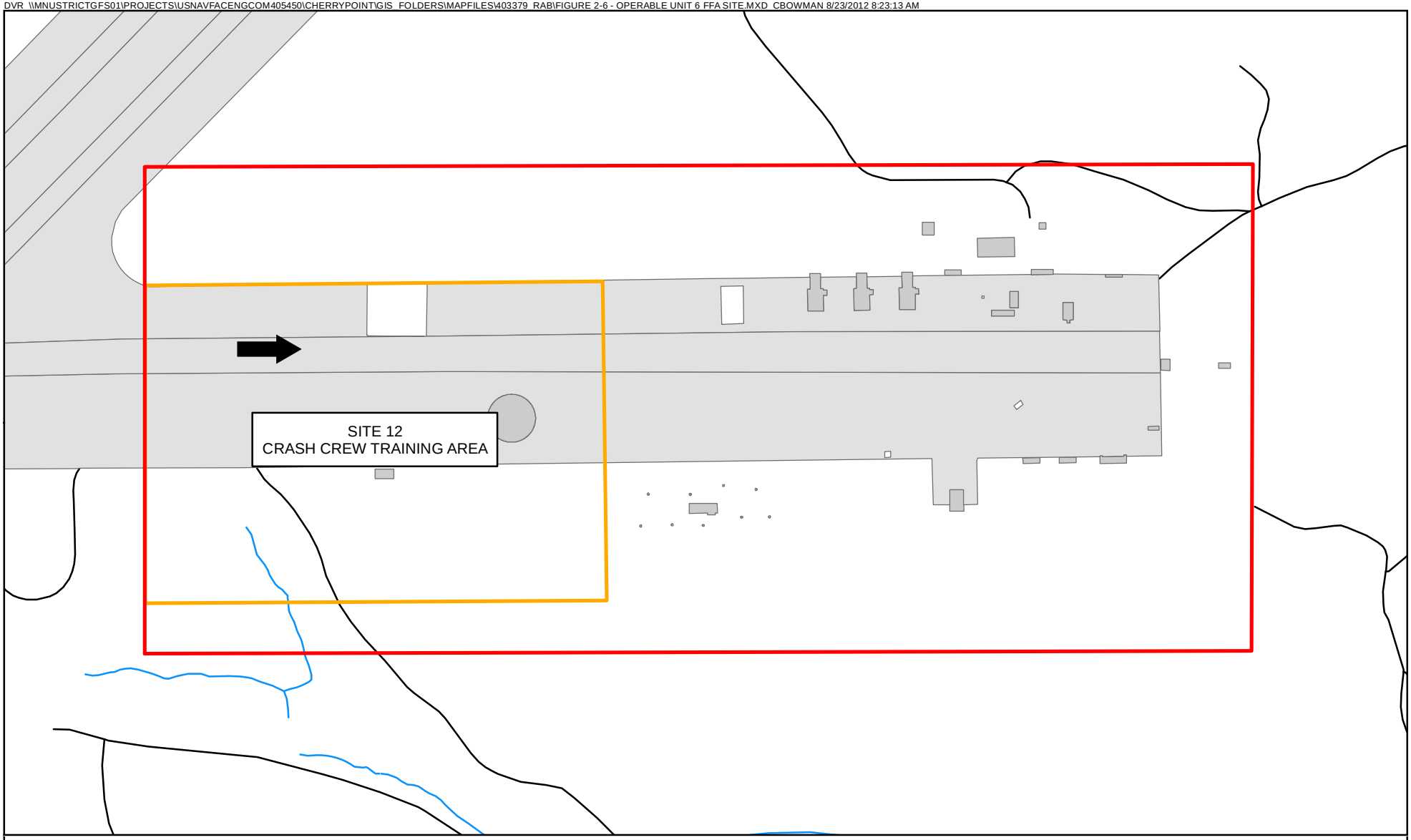
N
W E
S

0 112.5 225
Feet

Figure 2-5
Operable Unit 5 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-6 - OPERABLE UNIT 6 FFA SITE.MXD CBOWMAN 8/23/2012 8:23:13 AM




**Legend**

- OU Boundary
- Site Boundary
- Runway
- Buildings
- Surface Water
- Groundwater Flow Direction

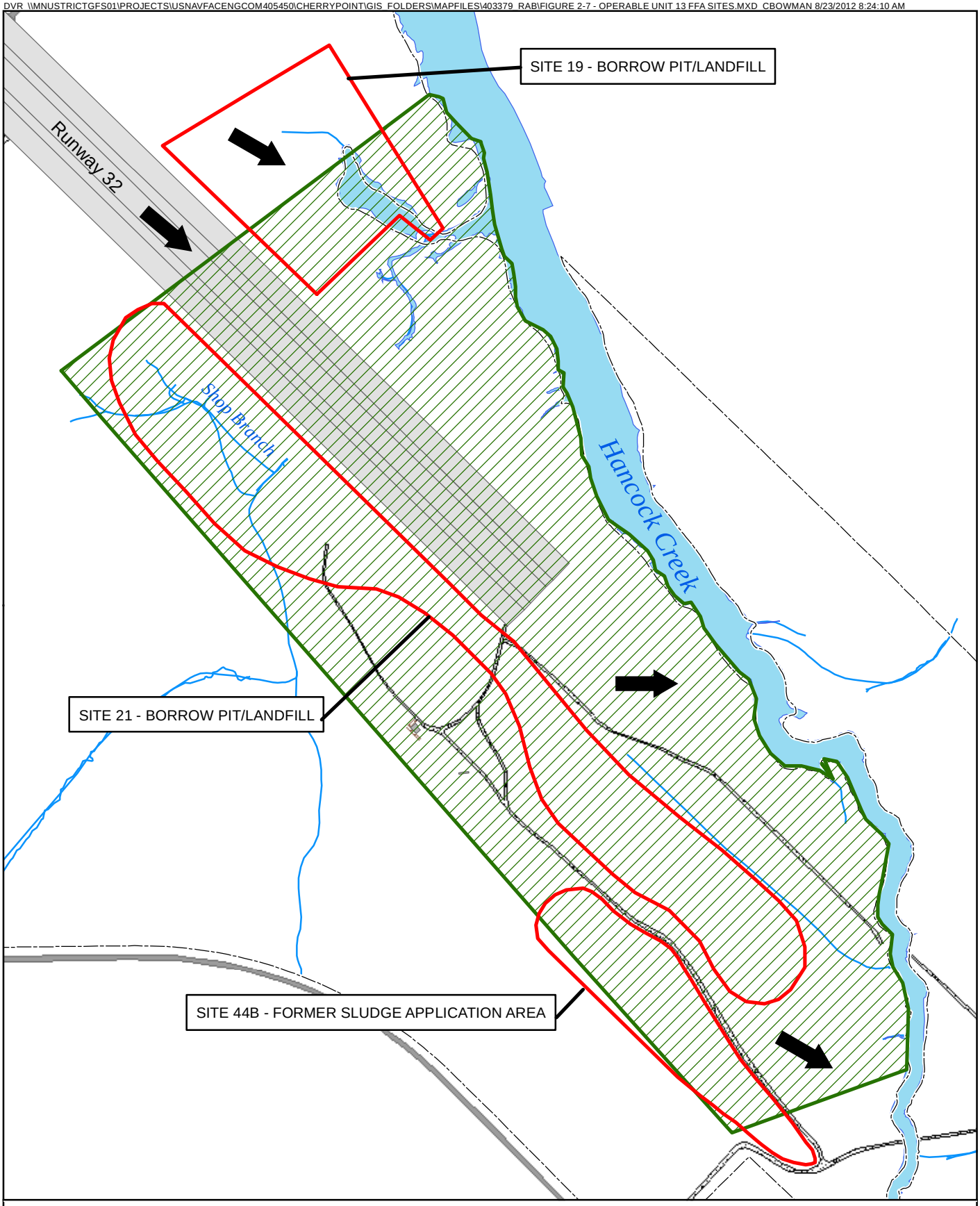
N
W E
S

0 150 300
Feet

Figure 2-6
Operable Unit 6 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-7 - OPERABLE UNIT 13 FFA SITES.MXD CBOWMAN 8/23/2012 8:24:10 AM




**Legend**

- OU/Site Boundary
- Land Use Control Boundary
  Surficial Groundwater Use Prohibited
- Base Boundary
- Buildings
- Groundwater Flow Direction
- Road
- Runway
- Surface Water

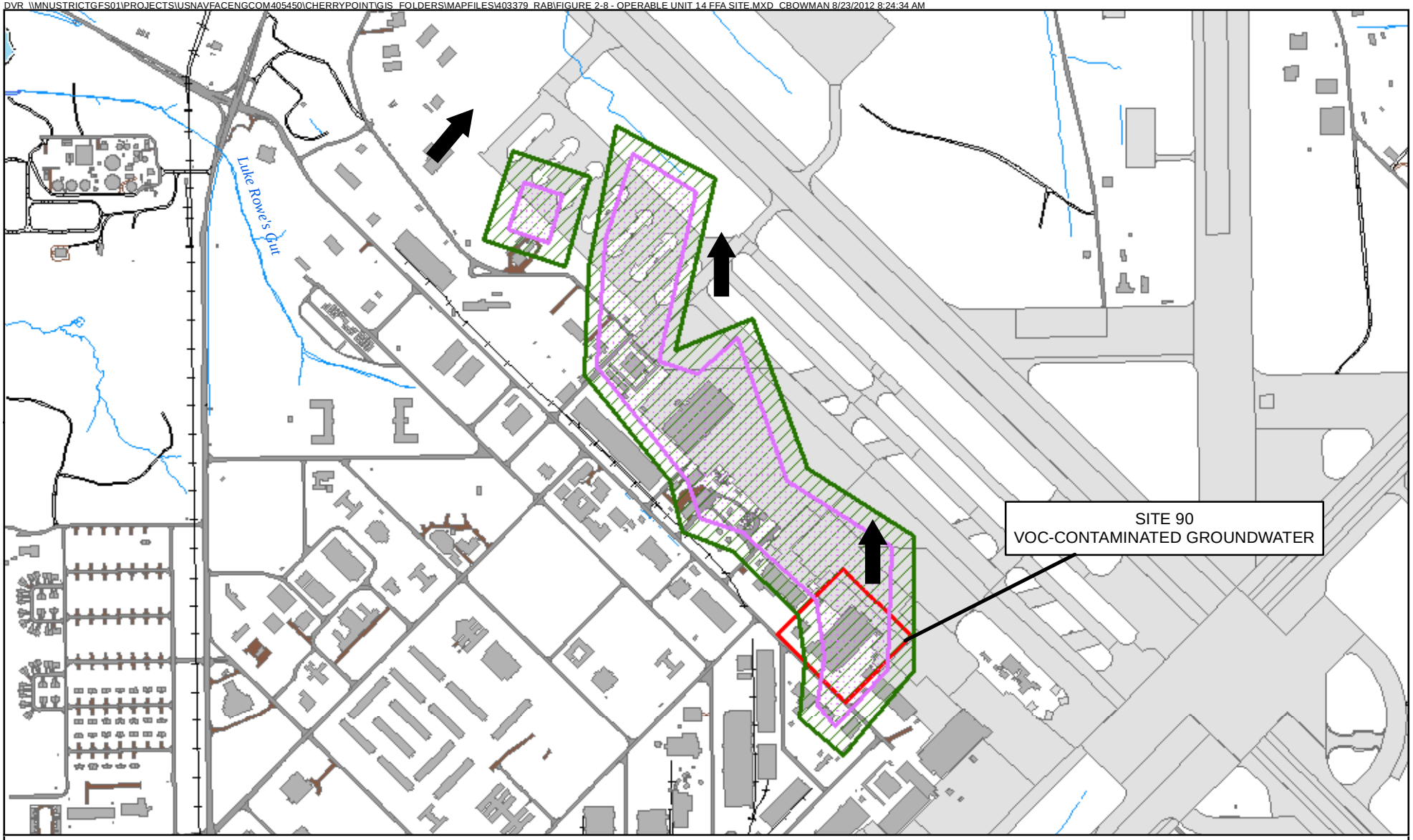
N
W E
S

0 300 600
Feet

Figure 2-7
Operable Unit 13 FFA Sites
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-8 - OPERABLE UNIT 14 FFA SITE.MXD CBOWMAN 8/23/2012 8:24:34 AM




**Legend**

- Intrusive activities below the water table prohibited/Vapor Intrusion evaluation required for building construction/modification
- Well installation and groundwater use prohibited (except for monitoring and remediation purposes)
- Groundwater Flow Direction
- Surface Water
- Railroad
- OU/Site Boundary
- Buildings
- Road
- Runway

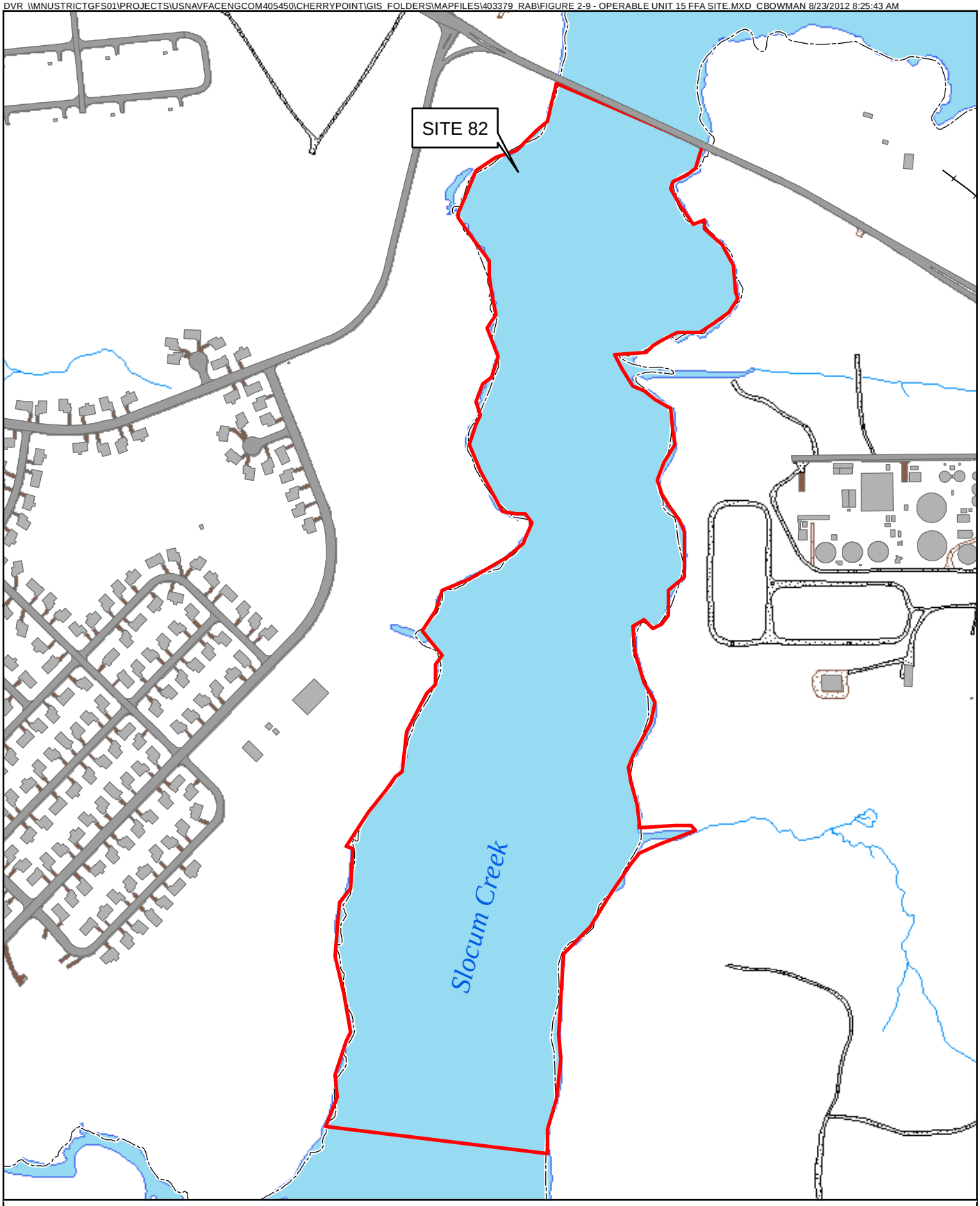
N
W E
S

0 500 1,000
Feet

Figure 2-8
Operable Unit 14 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-9 - OPERABLE UNIT 15 FFA SITE.MXD CBOWMAN 8/23/2012 8:25:43 AM




**Legend**

- OU/Site Boundary
- Base Boundary
- Buildings
- Road
- Surface Water

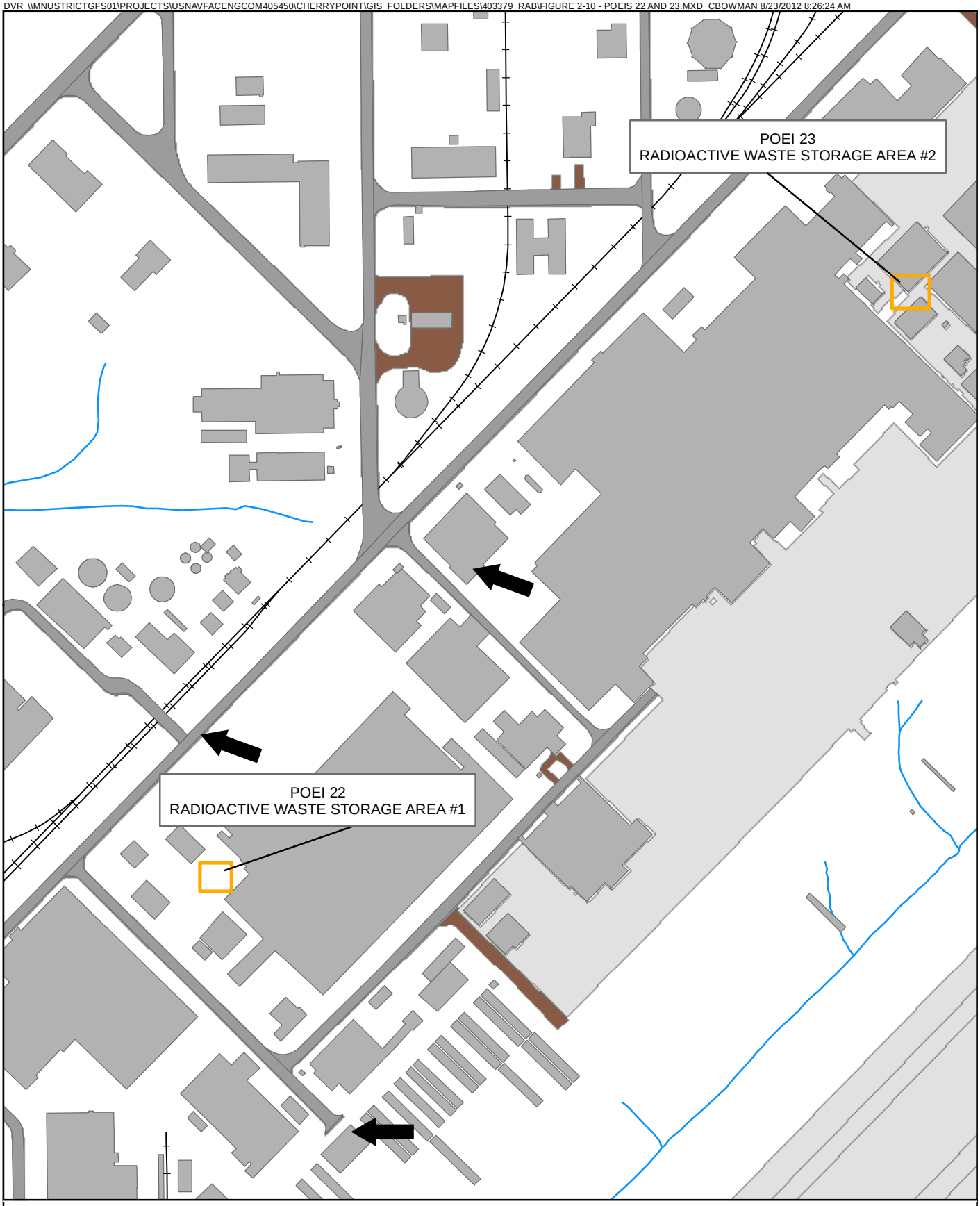
N
W E
S

0 250 500
Feet

Figure 2-9
Operable Unit 15 FFA Site
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-10 - POEIS 22 AND 23.MXD CBOWMAN 8/23/2012 8:26:24 AM




**Legend**

- POEI Boundary
- Buildings
- Buildings - Demolition Scheduled
- Road
- Runway
- Groundwater Flow Direction
- Paved Driveway
- Railroad
- Surface Water

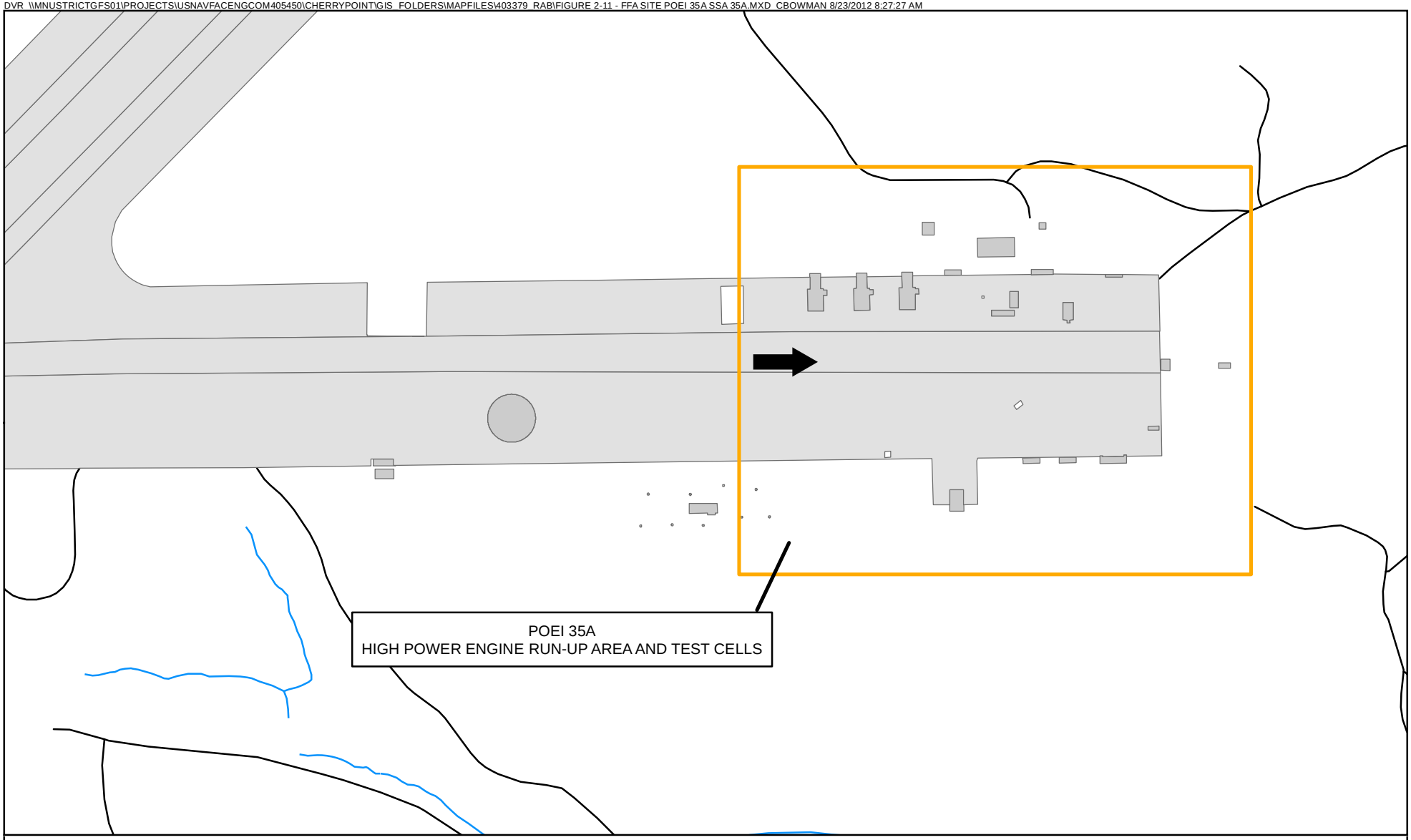
N
W E
S

0 150 300
Feet

Figure 2-10
POEIs 22 and 23
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-11 - FFA SITE POEI 35A SSA 35A.MXD CBOWMAN 8/23/2012 8:27:27 AM




**Legend**

- POEI Boundary
- Runway
- Buildings
- Surface Water
- Groundwater Flow Direction

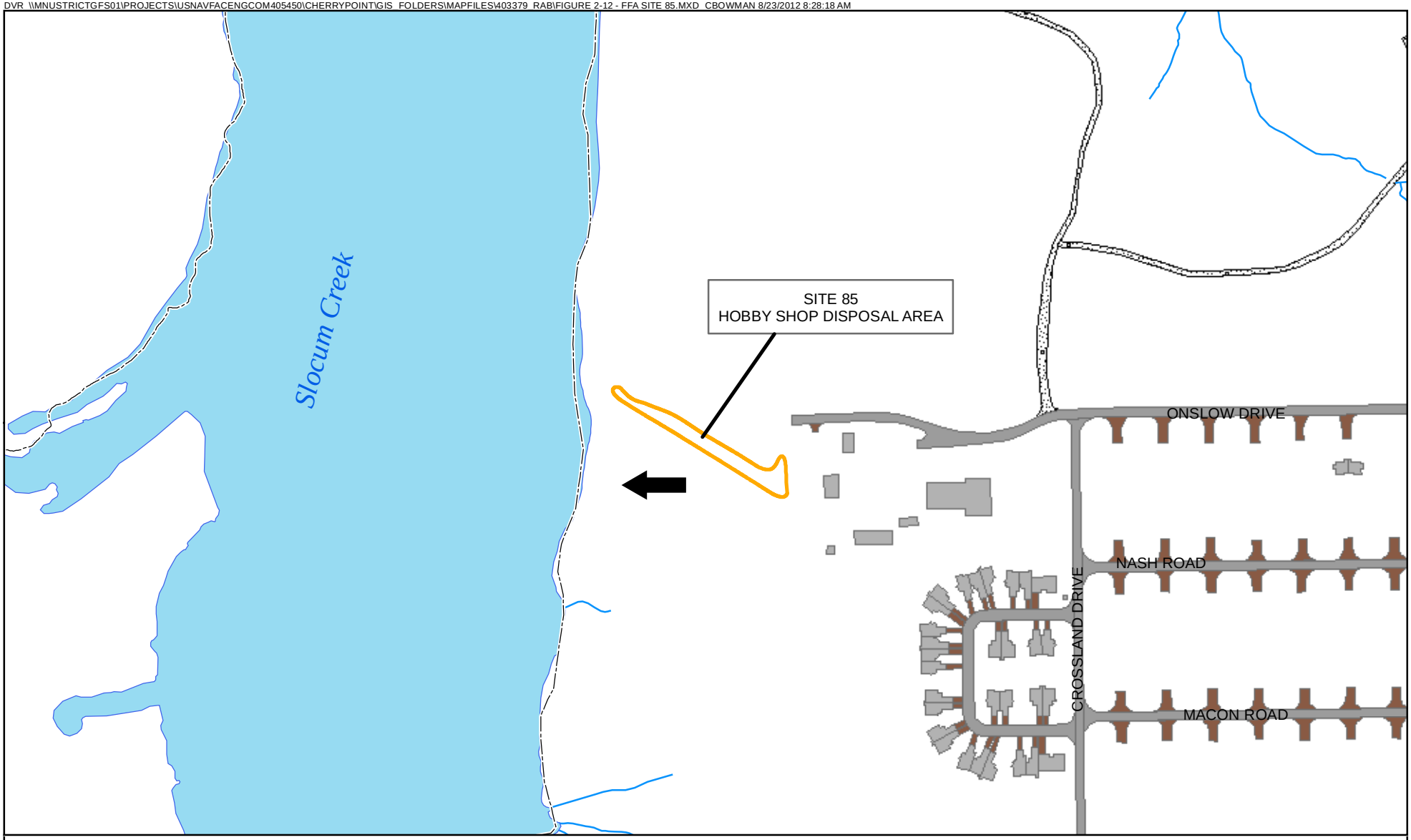
N
W E
S

0 150 300
Feet

Figure 2-11
FFA Site POEI 35a (SSA 35a)
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-12 - FFA SITE 85.MXD CBOWMAN 8/23/2012 8:28:18 AM




**Legend**
- Site Boundary
- Base Boundary
- Road
- Buildings
- Surface Water
- Groundwater Flow Direction

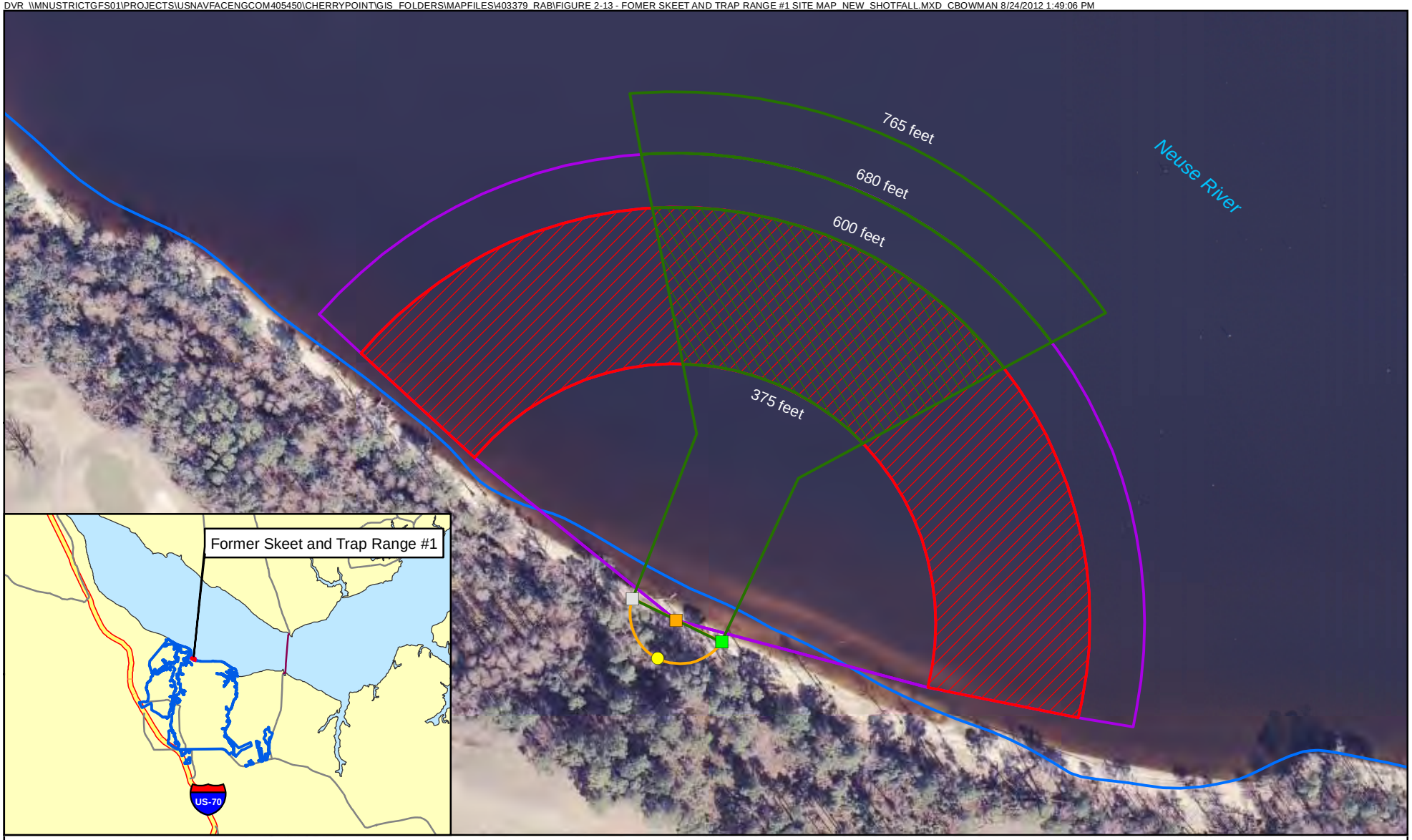
N
W E
S

0 150 300
Feet

Figure 2-12
FFA Site 85
MCAS Cherry Point, NC

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHERRYPOINT\GIS_FOLDERS\MAPFILES\403379_RAB\FIGURE 2-13 - FOMER SKEET AND TRAP RANGE #1 SITE MAP_NEW_SHOTFALL.MXD CBOWMAN 8/24/2012 1:49:06 PM




**Legend**

- Installation Boundary
- Former Skeet and Trap Range #1
- Theoretical Skeet Shotfall Zone
- Area of Maximum Skeet Shotfall
- Theoretical Trap Shotfall Zone
- Area of Maximum Trap Shotfall
- High House
- Low House
- Control House
- Pit House

N
W E
S

0 100 200
Feet

Figure 2-13
Former Skeet and Trap Range #1
MCAS Cherry Point
North Carolina

CH2MHILL

SECTION 3

# Removal Actions and Interim Remedial Actions

Removal actions are taken to prevent immediate and substantial harm to human health. RAs are conducted to prevent a potential release of contaminants and/or further migration of contaminants. RAs are conducted as part of the final site remedy. Historic removal and RAs that have been conducted or identified at MCAS Cherry Point FFA sites are presented below, listed according to the OU and site. The Navy will continue to identify possible removal and RAs as investigation activities continue.

## 3.1 Operable Unit 1

### 3.1.1 Site 16—Landfill at Sandy Branch

In 1996, a pilot-scale AS/SVE system was installed for groundwater remediation to determine operational viability at the site. In 1997, a time-critical removal action was conducted at the site to remove an exposed debris pile containing asbestos, steel storage tanks, and soil contaminated with petroleum hydrocarbons. In 1998, a full-scale AS/SVE system was installed as part of a non-time-critical removal action for VOCs in groundwater. The partnering team agreed to shut down the AS/SVE system in February 2005, due to completion of the removal action.

### 3.1.2 OU1 Central Groundwater Plume Interim Remedial Action

In 1996, with the promulgation of the Interim ROD for the OU1 Central Groundwater Plume, development of a P&T groundwater remedial system was initiated to remove VOCs in groundwater by “stripping” VOCs from the extracted groundwater. Construction on the system started in early 1997 with the drilling of ten groundwater extraction wells. The P&T system was completed in late 1998 and operational in February 1999. As a result of decreasing efficiency and the potential for interference with ongoing attempts to further define the nature and extent of groundwater contamination beneath OU1, the P&T system was shut down in February 2005. Alternative remediation technologies were evaluated as part of the OU1 FS activities.

### 3.1.3 Site 51—Building 137 Former Plating Shop

In 2001, an enhanced bioremediation treatability study was initiated involving the injection of HRC into surficial aquifer groundwater at Site 51. The purpose of the treatability study was to determine the effectiveness of the technique to remediate a small plume of cVOCs in the shallow groundwater beneath each site. In mid-2001, prior to injecting the substrate, groundwater sampling was conducted to provide an initial baseline of VOC concentrations and geotechnical parameters (e.g., pH, temperature, etc.). In late 2001, HRC was injected into 25 injection points followed by 6 post-injection monitoring events over a 1-year time period. At the end of the 1-year, post-injection monitoring period, the concentration of total cVOCs had been reduced more than 90 percent in the heart of the plume, but individual constituents remained at concentrations above regulatory screening criteria. The study concluded that to further reduce residual concentrations, additional treatment would be needed.

### 3.1.4 Site 51—Building 137 Former Plating Shop and Site 52—Building 133 Former Plating Shop and Ditch

In 2005, an enhanced bioremediation treatability study was initiated at Sites 51 and 52. Similar to the 2001 treatability study performed at Site 51 using HRC®, this treatability study involved injecting the substrate EHC into shallow groundwater beneath each site for the purpose of determining its effectiveness to remediate cVOCs. In late 2004, prior to the EHC injection, groundwater monitoring of VOC concentrations and geotechnical parameters (e.g., pH, temperature, etc.) was conducted to gain a baseline perspective of groundwater conditions. EHC was injected into 47 injection points (21 points at Site 51 and 26 points at Site 52), and four post-injection monitoring events were conducted over an 8-month time period with the final post-injection performance monitoring event completed in November 2005. The results were evaluated to determine the effectiveness of the EHC injection, and were summarized in a treatability study report that was finalized in December 2007. The report concluded that the EHC injection was initially effective in reducing cVOC concentrations in wells located near the

injection points and that cVOC mass reduction was achieved. However, the concentrations of some of the contaminants rebounded significantly with time, in part due to under-dosing of the injected substrate as well as the likely presence of contributing cVOC sources such as dense non-aqueous phase liquids in the aquifer.

### 3.1.5 Sandy Branch Tributary #2

In 2007, the MCAS Cherry Point Partnering Team developed a clean-up strategy for Sandy Branch Tributary #2 and adjacent flood plain areas that would be carried out as a NTCRA. The NTCRA would remove sediments and soil contaminated with various COPCs (several inorganics, pesticides, PAHs, and other SVOCs) to levels protective of at-risk ecological receptors (i.e., benthic macroinvertebrates).

In preparation for the NTCRA, an EE/CA was prepared and finalized in January 2008. The EE/CA compared and evaluated several removal action alternatives and formed the basis of the selection of a sediment and soil removal technique for the NTCRA. The selected remedial alternative was the mechanical excavation of stream sediments and floodplain soil/sediment followed by backfilling with clean fill material.

The Removal Action Work Plan to implement the NTCRA was finalized in May 2008, and the NTCRA was completed between June and August 2008. The RA closeout report was finalized in June 2009.

### 3.1.6 OU1 Central Groundwater Plume In-Situ Enhanced Bioremediation Pilot Study

In August 2010, the MCAS Cherry Point Partnering Team agreed to conduct a field-scale pilot study at OU1 to evaluate the site-specific effectiveness of in-situ enhanced bioremediation downgradient of Building 133 near the source of the Central Groundwater Plume. The purpose of this pilot study is to gather information to aid in the selection of a final remedy to address the plume and also to possibly contribute in the Remedial Design phase. The pilot study includes the installation of 14 injection wells (seven nested pairs, each consisting of one upper surficial and one lower surficial aquifer well) and 5 monitoring wells (two upper surficial and three lower surficial aquifer wells), the injection of reagents (i.e., emulsified vegetable oil and a bioaugmentation culture), and post-injection performance monitoring via 5 rounds of groundwater sampling and analysis. The pilot study well installation and reagent injection field activities were completed in May and June 2011. Post-injection groundwater monitoring activities are underway and will be completed in 2013.

### 3.1.7 OU1 Central Groundwater Plume Permeable Reactive Barrier Pilot Study

In March 2011, the MCAS Cherry Point Partnering Team agreed to move forward on a pilot study to construct a PRB in the downgradient portion of the Central Groundwater Plume near East Prong Slocum Creek. The PRB will be 600 feet in length and consist of a combination of zero-valent iron and sand. The results of the PRB pilot study will help determine the maximum feasible trenching depth that can be achieved given the subsurface conditions at MCAS Cherry Point and may also provide valuable data for a future Remedial Design (RD) report for the Central Groundwater Plume. The PRB installation was completed in August 2012.

## 3.2 Operable Unit 2: Site 10—Old Sanitary Landfill

In 1996, a SVE pilot study was conducted at Site 10, and in 1997 a full-scale SVE system was installed to treat soil at four soil hot spot areas. According to the 5-year review conducted in 2002, the SVE remedy was operating as designed and that VOC mass removal had continued to increase at significant rates at two hot spots, 1 and 3, while little to no removal observed at the two other hot spots, 2 and 4. The SVE treatment of the soil hot spots was discontinued in August 2003 because the system was no longer removing a significant mass of contamination; was not performing as a cost-effective remedial approach; and to allow the area to regain equilibrium (i.e., to return to its natural state without the SVE) before collecting soil samples.

After the SVE system was shut down, periodic (roughly annual) soil sampling was conducted at Site 10, Hot Spots 1, 2, 3, and 4 between 2004 and 2006. The sampling results indicated that soil VOC concentrations at Hot Spots 1, 3, and 4 were below the screening criteria and these hot spots were removed from further sampling. Further soil sampling was conducted at Hot Spot 2 in 2007 and 2008 to complete the delineation of contamination.

The system removal was completed in April 2010 and a Construction Closeout Report was finalized in July 2010.

LTM of groundwater associated with the MNA component of the remedy began in October 2002, and includes the collection of groundwater, surface water, and sediment samples in and around OU2. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

An effort to evaluate and optimize the OU2 LTM program based on the findings to date was completed in May 2011. The OU2 LTM Evaluation recommended changes to the groundwater and surface water monitoring programs; in May 2011, the MCAS Cherry Point Partnering Team agreed to move forward with the proposed changes. The new OU2 LTM program began in 2012.

Since OU2 has a ROD in place, to address Hot Spot 2 soil contamination an FFS that evaluated additional remedial alternatives for soil at Site 10, Hot Spot 2 was finalized in February 2011. The Proposed Plan for Site 10, Hot Spot 2 was finalized in April 2011. The preferred alternative presented in the Proposed Plan consisted of the installation of a soil cover over areas of Hot Spot 2 where soil concentrations exceed NC SSLs to prevent direct exposure and limit infiltration and migration of soil/waste contamination to groundwater. The preferred alternative also included groundwater monitoring to ensure protection of Slocum Creek from groundwater discharge to surface water. An OU2 ROD Amendment was completed and signed in September 2011.

The soil cover was successfully installed at Site 10, Hot Spot 2, in January and February 2012, and a Construction Completion Report was finalized in August 2012. An IRACR for OU2 Site 10, Hot Spot 2, is to be completed in fiscal year 2013.

## 3.3 Operable Unit 3

Annual LTM of groundwater began in October 2002. In 2007, the LTM sampling frequency at OU3 was increased to a quarterly basis and in 2010 the sampling frequency was reduced to every third quarter (9 months). In 2011, LTM sampling was discontinued when the constituents detected in groundwater no longer exceeded the performance standards identified in the ROD. The final RA Completion Report (RACR) was submitted in April 2012 and documented that the RA for OU3 has met the RAOs stated in the ROD and has achieved RC. The LUCs at OU3 will continue to be in effect and will remain unchanged as part of the long-term management of OU3.

### 3.3.1 Site 6—Fly Ash Ponds

In 1996, as part of the closure of the Air Station water treatment plant, the ponds at Site 6 were removed by solidifying and excavating the pond sludge, removing piping and debris, leveling the berms, and revegetating the site. The site was re-vegetated with pine seedlings in 1996 by MCAS Cherry Point personnel, as part of a “Longleaf Pine Initiative” to return the land to its natural state.

### 3.3.2 Site 7—Old Incinerator and Adjacent Area

In 2000, an AS system was installed at Site 7 to remediate a localized area of benzene soil contamination. AS was selected in favor of SVE due to the very shallow water table at the site, which would have been problematic for SVE. Based on the results of confirmatory soil samples collected in February 2001, it was noted that the extent of benzene contamination in soil at Site 7 extended beyond the radius of influence of the current AS system to the southwest and northeast. As a result, additional AS points were installed to address the extended area of contamination. Based on soil and groundwater monitoring results indicating that the AS system had effectively remediated the soil hot spot, the AS system was shut down in mid-2003. The MCAS Cherry Point Partnering Team agreed in October 2006 to remove the components of the AS system at Site 7, as it was not anticipated that any future use would be required. The AS system was removed in May 2007.

## 3.4 Operable Unit 4: Site 4 – Borrow Pit/Landfill

LTM of groundwater associated with the MNA component of the remedy began in May 2006. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

# 3.5 Operable Unit 5: Site 2—Borrow Pit/Landfill

LTM of groundwater associated with the MNA component of the remedy began in May 2006. LTM was discontinued in 2011 after all COC concentrations in four consecutive rounds of sampling were below their respective performance standards; as a result, all RAOs for OU5 had been achieved. A RACR establishing RC for OU5 was finalized in January 2012 and site closure activities were initiated.

# 3.6 Operable Unit 6

## 3.6.1 Site 12—Crash Crew Training Area

The removal of contaminated soils in the vicinity of former Burn Pit E began in March 2007 and was completed in May 2007. The purpose of the project was to remove a tar-like layer in subsurface soil that was a potential source of ethylbenzene, naphthalene, and 2-methylnaphthalene to groundwater. The excavation had a total depth of approximately 7.5 feet below ground surface and the total excavated volume was approximately 2,859 cubic yards, including asphalt.

Excavation was accomplished using a hydraulic excavator. The top 3 feet of soil was stockpiled as anticipated "clean" overburden. Soils excavated from 3 to 7 feet below ground surface were stockpiled as waste. Verification samples were collected from the potentially clean overburden stockpiles to verify that the overburden could be used as backfill at the site. Due to NC SSL exceedences observed in the verification samples, the stockpiled overburden material was not used as backfill at the site, and additional backfill material from an offsite source was used to fulfill the deficit in backfill quantities. Characterization sample results indicated that the overburden material could be disposed of at a Subtitle D landfill.

The final limits of excavation were verified by confirmation samples collected at six sidewall and four bed (floor) locations of the excavation. The confirmation samples were analyzed for ethylbenzene, 2-methylnaphthalene, and naphthalene. Confirmation sample concentrations were less than NC SSLs, thereby confirming that impacted soil had been removed in accordance with the soil RA requirements. The site was then backfilled with clean fill, compacted, and the surface restored with an asphalt pavement consisting of a stone base, 8 to 12 inches thick, covered by 3 inches of asphalt.

Upon completion of the asphalt installation, a new monitoring well, 12GW08, was installed in the center of the excavation area in accordance with the RA Work Plan in order to allow LTM of groundwater directly beneath the former location of contaminated soils.

LTM of groundwater associated with the MNA component of the remedy began in June 2007. In late 2008, LTM activities were terminated at OU6, as all COCs were found during four or more consecutive quarterly sampling events to either be no longer detected or at concentrations below the performance standards specified in the OU6 ROD. A RACR establishing RC for OU6 was finalized in August 2008.

# 3.7 Operable Unit 13

LTM of groundwater associated with the MNA component of the remedy began in May 2006. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

# 3.8 Operable Unit 14

LTM of groundwater began with the collection of a baseline round of LTM samples in June 2010. The LTM program at OU14 consists of annual groundwater sampling from 73 surficial aquifer monitoring wells to evaluate the progress of the MNA groundwater remedy. The first annual round of LTM groundwater sampling was conducted in June 2011. LTM will continue until it is confirmed that the constituents detected in groundwater do not exceed the performance standards identified in the ROD.

## 3.9 Site 85—Hobby Shop Disposal Area

Site 85 contained a significant amount of surface debris that had been disposed of at the site. The exposed debris included empty 55-gallon drums, empty 5- to 15-gallon steel pails, automobiles, concrete debris, office equipment, rubber tires, fire hoses, steel matting, pipes, metal spectator bleachers, and various other items. No records indicating the quantities or types of wastes disposed of at the site are known to exist, nor is it specifically known when disposal activities occurred.

In 1997, site inspections revealed evidence that MCAS Cherry Point residents, including children, had accessed and used the site for play activities. As a result of this discovery, an emergency response action was taken to secure the site with fencing to prevent potential human exposure. In 1998, following a wetlands delineation effort to minimize wetlands impacts, a debris removal was conducted, with approximately 30 to 40 cubic yards of debris removed from the site.

SECTION 4

# Environmental Regulations and Processes

## 4.1 Resource Conservation and Recovery Act

RCRA was enacted by Congress in 1976 as an amendment to the Solid Waste Disposal Act to address municipal and industrial solid waste. There are three programs regulated under RCRA: solid waste, hazardous waste, and USTs.

The goals of RCRA are as follows:

- Protect human health and the environment from the hazards posed by waste disposal,
- Conserve energy and natural resources through waste recycling and recovery,
- Reduce or eliminate, as expeditiously as possible, the amount of waste generated, including hazardous waste, and
- Ensure that wastes are managed in a manner that is protective of human health and the environment.

RCRA also provides corrective action authority for cleanup of pre-RCRA hazardous waste management units and non-hazardous SWMUs.

## 4.2 Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA, also known as Superfund, was enacted by Congress in 1980. This law gives the Federal government the authority to respond to releases or potential releases of hazardous substances into the environment that may eventually lead to harmful effects to the public or ecosystems. Cleanup costs are funded by taxation of chemical and petroleum industries.

The roles of CERCLA are as follows:

- Establish prohibitions and requirements for closed and abandoned hazardous waste sites,
- Name person(s) or parties responsible for releases of hazardous wastes at these sites, and
- Establish funds for cleanup when no responsible party can be identified.

CERCLA authorizes two kinds of response actions:

- Short-term removals, where actions can be taken to address releases or threatened releases requiring prompt response; and
- Long-term remedial response actions, which permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious but are not immediately life threatening.

## 4.3 Superfund Amendments and Reauthorization Act

On October 17, 1986, Congress amended CERCLA by passing the Superfund Amendments and Reauthorization Act (SARA). Based on USEPA's first 6 years of administering the Superfund program, SARA was passed to strengthen CERCLA authorities. Specifically, SARA:

- Stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites,
- Required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations,

- Provided new enforcement authorities and settlement tools,
- Increased state involvement in every phase of the Superfund program,
- Increased the focus on human health problems posed by hazardous waste sites,
- Encouraged greater citizen participation in making decisions on how sites should be cleaned up (see the Superfund Community Involvement Handbook in **Appendix B**), and
- Increased the size of the trust fund to $8.5 billion.

In addition, SARA "required USEPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the NPL. More information is available at http://www.epa.gov/superfund/policy/sara.htm.

## 4.4 Federal Facility Agreement

The listing of MCAS Cherry Point on the NPL in 1994 required that the Navy, USEPA, and NCDENR enter into an interagency written agreement known as an FFA, which describes how and when CERCLA-related activities would be conducted at the base. Under the FFA, all past and future work at ERP sites, SWMUs, and AOCs were reviewed and a course of action for future work requirements at each site was developed. The purpose of the FFA is to ensure that the appropriate remedial (cleanup) actions are taken as necessary to protect human health and the environment and to expedite the cleanup process. The parties included in the FFA are partners in the ongoing environmental investigations at MCAS Cherry Point under the Navy's ERP. The FFA provides a procedural framework for the continued cooperation and exchange of information among the parties.

The FFA is available in the AR file, which is described in Section 7.1.

## 4.5 Defense Environmental Restoration Program

The Defense Environmental Restoration Program (DERP), along with its corresponding funding component, the Defense Environmental Restoration Account (DERA), was created in 1986 when Congress amended CERCLA. The DERP is managed by the DoD Office of the Deputy Undersecretary of Defense (Installations and Environment). Excerpts from the DERP 2010 Annual Report to Congress can be found in **Appendix C**.

The DERP was established to address hazardous substances, pollutants, contaminants and military munitions remaining from past activities at military installations and formerly used defense sites (FUDS). Environmental restoration at BRAC installations is also part of the DERP.

Within the DERP, the DoD created two distinct programs, the IR Program and the munitions response (MR) Program, to address remediation of its sites. The IR program addresses sites impacted by hazardous substances, focusing on releases of pollutants or contaminants that pose a risk to human health or the environment. The MR program allows the DoD to respond to unexploded ordnance and military munitions waste at areas other than operational ranges.

Currently, there are approximately 28,000 sites at 4,200 active installations, BRAC installations, and FUDS properties in the IR program. By the end of fiscal year (FY) 2009, the DoD had completed cleanup at:

- 78% of hazardous waste sites and 43% of military munitions response sites on active installations,
- 79% of hazardous waste sites and 62% of military munitions response sites on BRAC installations, and
- 70% of hazardous waste sites and 35% of military munitions response sites on FUDS properties.

More information on the DERP is available at the Defense Environmental Restoration Program web page: https://www.denix.osd.mil/derp/.

### 4.5.1 Navy Environmental Restoration Program

The *Department of the Navy Environmental Restoration Program 2010 Progress Report* summarizes the history, organization, status, recent developments, and policy of the Navy's ERP. Excerpts of the 2010 Progress Report can be found in **Appendix D**.

The 2006 *Navy Environmental Restoration Program Manual* summarizes the organization and responsibilities of DoD and DoN offices and provides detailed discussions of terminology and procedures used in implementing the Navy/Marine Corps' ER Program. Topics covered by the manual including funding and prioritization of sites; the site investigation and remediation process (summarized in section 4.6 of this document); community involvement and RABs; and other topics that are discussed more briefly in this document.

The primary policy and guidance for the Navy's environmental programs, including environmental restoration and pollution prevention, is OPNAV INST 5090.1C (30 Oct 2007).

The *Navy Environmental Restoration Program Manual,* OPNAV INST 5090.1C, annual DoN progress report, and a wealth of other information about the Navy/Marine Corps ER Program are available via links on the NAVFAC Environmental Restoration & BRAC website: https://portal.navfac.navy.mil/go/erb.

### 4.5.2 Environmental Restoration, Navy

Environmental Restoration, Navy (ER,N) provides the Navy funding required for environmental restoration, munitions response, reduction and recycling of hazardous waste, and removal of unsafe buildings and debris. Funding is made available to the Secretary of the Navy by Congress, which then determines its distribution to the various programs. The ER,N is only available to address past contamination. Past contamination is defined as contamination resulting from the release, deposition, storage, disposal, or placement of hazardous substances, pollutants or contaminants, which is attributable to an installation action at a site that occurred before October 17, 1986. Sites where contamination continued to occur on or after October 17, 1986, are generally not eligible for ER,N funding, with the exception of UST remediation. UST contamination is eligible for ER,N funding if it was discovered during initial integrity testing conducted before December 22, 1993. UST contamination discovered after this date is not ER,N eligible and remedial funding must be provided by the installation or claimant (e.g., by the Defense Energy Support Center).

### 4.5.3 Installation Restoration Program

The IR Program is a Navy initiative to identify, investigate, and clean up former waste disposal sites. In general, chemical waste originated from various activities, to include: industrial operations (e.g., electroplating, stripping, etching, cleaning, etc.) conducted by NADEP (formerly Naval Air Rework Facility); aircraft and ground support equipment painting operations conducted by NADEP and 2nd MAW; and MCAS Cherry Point power generation, to name a few. At the time, the DoD followed industry-wide standard methods to dispose of these wastes (e.g., solvents, waste oil, batteries, coal ash, wastewater sludge, etc.). For example, solid wastes were typically deposited in low-lying areas and covered with soil. Over time, however, new regulations and approaches were developed for waste disposal. RCRA was enacted in 1976 to deal with wastes at sites that are still operational, while CERCLA was enacted in 1980 to investigate and clean up abandoned hazardous waste sites. As environmental awareness and knowledge progressed alongside the enactment of environmental legislature, the DoD altered disposal practices to protect the environment and to conform to the environmental regulations.

The Navy's IR program was initiated in 1986, following the enactment of the SARA legislation, and replaced the NACIP. The purpose of the DoN IR program is to reduce the risk to human health and the environment from past waste disposal operations and hazardous material spills at DoN activities in a cost-effective manner consistent with DERP requirements.

The three primary governmental entities involved in the cleanup of past contamination at MCAS Cherry Point are the USEPA, the state of North Carolina, and NAVFAC. The mission of USEPA is to protect human health and safeguard the environment. USEPA is the federal agency responsible for providing guidance on hazardous waste site operation issues and USEPA Superfund site cleanup activities. USEPA Region 4, based in Atlanta, Georgia, is responsible for oversight of MCAS Cherry Point ERP. NCDENR is the lead stewardship agency for the preservation

and protection of North Carolina's environment and natural resources. Based in Raleigh, North Carolina, NCDENR Division of Waste Management, Superfund Section evaluates uncontrolled hazardous waste sites within the state and partners with DoD and USEPA to address cleanup goals, maximize stakeholder involvement, and improve the decision-making process to accomplish environmental restoration at DoD installations.

The DON's ER Program operates under the supervision of the Assistant Secretary of the Navy Installations and Environment {ASN (I&E)]. Under the ASN (I&E), the primary responsibility for overseeing and implementing the ER Program is given to the Chief of Naval Operations Energy and Environmental Readiness Division, the Commandant of the Marine Corps Facilities and Services Division, and NAVFAC. The NAVFAC Facilities Engineering Commands (FECs) are assigned to execute cleanup at the sites within their specific geographic regions. The FECs are subordinate commands under NAVFAC and provide environmental engineering, technical, legal, and contracting assistance to installations within their respective geographic areas of responsibility. NAVFAC Mid-Atlantic Division (NAVFAC Mid-Atlantic), based in Norfolk, Virginia, executes the ERP for MCAS Cherry Point at the field level through the Remedial Project Manager (RPM) who is responsible for the management of the ERP at the installation level. The RPM's responsibilities include identifying resources needed to effectively implement the RA process including CERCLA response actions and ER,N eligible RCRA Corrective Actions. The RPM coordinates the work of Navy technical support agencies and contractors to accomplish ERP goals and policies. The RPM is involved in all aspects of the project including interagency relationships, funding, scheduling, design, and RA.

Because the ERP may affect the mission of an installation, the health and welfare of the people who work and live on or near the installation, and the public's attitude in neighboring communities toward an installation, the Commanding Officer/Commanding General of an installation must be consulted and kept fully informed about ERP decisions and actions affecting their installation. MCAS Cherry Point coordinates with the NAVFAC Mid-Atlantic RPM concerning all ERP cleanup matters through the Environmental Affairs Department (EAD) at MCAS Cherry Point.

### 4.5.4 Munitions Response Program

The munitions response program (MRP) works to reduce the risks to people and the environment from munitions and explosives of concern. The MRP was established in 2001 to more effectively and efficiently (1) investigate the hazards posed by past military munitions-related activities, and (2) carry out response actions.

The MRP is part of the Navy and Marine Corps' Environmental Restoration Program, with investigations and response actions generally following the CERCLA site investigation process described in section 4.9. Like the ERP, it is funded by the Defense Environmental Restoration Account. In order to make the best use of funding, Congress directed DoD to prioritize all munitions response sites based on the potential risk posed to human health and the environment.

On October 5, 2005, DoD published the Munitions Response Site Prioritization Protocol (MSRPP, Protocol) as a federal rule at 32 CFR 179. The Protocol applies to sites that are included in DoD's inventory of defense sites, but does not include any operational range, operating munitions storage or manufacturing facility, or facility that is used or permitted for the treatment or disposal of military munitions.

The Protocol requires installations to set priorities for munitions response sites, based on the overall conditions at each munitions response site. Prioritization is initiated in the Preliminary Assessment/Site Investigation (PA/SI) stages of the CERCLA process, is reviewed annually, and is updated as the investigation provides additional information.

The Protocol's central feature is the three hazard evaluation modules. A site's relative priority is determined by computing the scores for the site under one or more of these modules:

- Explosive hazards posed by munitions and explosives of concern are evaluated using the Explosive Hazard Evaluation Module.

- Hazards associated with chemical warfare materiel (CWM) are evaluated using the CWM Hazard Evaluation Module. Note: There is no evidence to suggest that CWM were used or disposed of at munitions sites on MCAS Cherry Point.
- Health and environmental hazards posed by munitions constituents and incidental non-munitions-related contaminants are evaluated using the Health Hazard Evaluation Module.

Next, the site must be sequenced for response action, in comparison with other Navy and Marine Corps sites. DoD's policy is that a munitions response site with higher relative risks will be dealt with before a site with lower relative risks. The most important factor is the site's relative risk, but other factors can influence sequencing decisions, including:

- Cultural and social factors,
- Economic factors,
- Reasonably anticipated future land use,
- Availability of appropriate technology,
- Short-term and long-term ecological effects, and
- Other environmental impacts.

## 4.6 Site Investigation Process

The ERP site investigation process is based on and closely follows the CERCLA investigative process, beginning with a PA/SI to distinguish between sites that pose little or no threat to human health or the environment and sites that may pose a threat and require further investigation. This stage involves a review of historical documents and a VSI. If the PA results in a recommendation for further investigation, an SI is performed. During the SI, media samples, such as water and soil, are collected to confirm or deny the presence of potentially hazardous substances.

Based on the results of the PA/SI, an RI may be needed. An RI is designed to learn more about the site contamination and determine if any known contamination is migrating from the site. During this phase, samples are usually collected from the soil, groundwater, surface water, soils, and sediments. The resulting data provide information about the extent of possible contamination and rate of migration, if applicable. In addition, the data collected during the RI can be used to assess the human health and ecological risk associated with the site contamination.

The human health and ecological risk assessments are used to calculate the "baseline risk" of a contaminated site. Specifically, this is an estimate of the likelihood of health or ecological problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a site, the following four steps are taken:

- Analyze Contamination. The concentrations of site contaminants are reviewed and compared to past scientific studies on the effects these contaminants have had on humans and/or animals. Comparing the data to past studies helps determine which contaminants are most likely to pose the greatest threat to human health.
- Estimate Exposure. The various exposure pathways are determined, along with the possible human exposure concentrations, frequency, and length of exposure. These data are used to calculate a reasonable maximum exposure (RME), indicating the highest level of human exposure that could reasonably be expected to occur.
- Assess Potential Health Dangers. Using both the RME and information on the toxicity of each chemical of concern, the cancer and noncancer risks are evaluated. The cancer risk represents the likelihood of any kind of cancer resulting from a contaminated site, and is expressed as an upper bound probability (a 1-in-10,000 chance). For noncancer risk, a hazard quotient (HQ) is calculated, representing the ratio between the reference dose (dosage at which no adverse health effects are expected to occur) and the RME. This establishes a threshold level, usually an HQ less than 1 below which noncancer health effects are no longer predicted.

- Characterize Site Risk. The potential risks from the individual contaminants and exposure pathways are added together to calculate the total site risk. The total noncancer risk is calculated as the sum of all HQs and is called a hazard index.

HQs are also used to evaluate the ecological risk. For example, adverse effects to ecological receptors are not expected when an HQ is less than 1.

An FS may be conducted concurrently with the RI. The data collected in the RI influence the development of remedial alternatives able to meet environmental standards, considering factors such as the degree of contamination and potential human health and environmental risks. A variety of remedial methods are considered, including the No Action alternative. Next, a PRAP is presented, outlining several feasible or likely alternatives and recommending the preferred remedial method.

The public has an opportunity to comment on the PRAP during an announced formal public comment period. Site information is compiled and placed in the general ERP information repositories established at local libraries and online for public review. The public comments are reviewed, and the responses are recorded in a document called a Responsiveness Summary. At the end of the public comment period, an appropriate remedial alternative is chosen to protect human health and the environment. The ROD document is then issued that explains the selected RA and includes the Responsiveness Summary.

The final stage in the process is the Remedial Design/Remedial Action (RD/RA). The RD phase is where the technical specifications for cleanup remedies and technologies are designed. The RA is the actual construction or implementation phase of the cleanup process.

**Figure 4-1** presents a schematic showing the environmental restoration process under CERCLA.

### 4.6.1 Partnering Team Process

Partnering is a process where all parties involved in the decision-making process work together, as a team, to achieve mutually beneficial goals. The relationship is based on the development of communication and trust among team members, a dedication to common goals and an understanding of each team member's individual expectations and values. The team takes joint responsibility for maintaining and nurturing the partnering relationship. The common goal is to protect human health and the environment while reducing cleanup costs and time. For example, in the Navy ERP in Virginia, partnering was first used on a limited basis in 1992 to resolve issues surrounding the initiation of an FFA for the Naval Weapons Station Yorktown. Based on this initial success, a formal partnering process began at Naval Weapons Station Yorktown in 1995.

The Navy, USEPA Region 4, and NCDENR coordinate cleanups at North Carolina installations through three different tiers (levels) of partnering teams. At each tier, participants contribute expertise and resources to achieve common goals and provide installations with tools to effectively address cleanup.

Tier I teams include individuals representing the installation's environmental office, the Navy, NCDENR, and USEPA project managers, contract staff, and technical specialists. The members of the team work to improve the quality and consistency of actions taken at the installation by meeting regularly to develop strategies, evaluate studies, and establish and execute required remedies.

Tier II teams are made up of program managers that mirror Tier I representatives. Their primary role is to support Tier I teams by resolving issues raised by Tier I, discussing new guidance and policy, providing clarification and guidance, and addressing technical concerns. Policy conflicts that cannot be resolved at the Tier II level are elevated to Tier III.

Tier III consists of senior-level managers responsible for key environmental policy, programming and budget decisions. These managers work together, to resolve potential differences in organizational policies that might hinder the progress of Tiers I and II. Tier III also assists in making sure resources are available for Tiers I and II and are able to share ideas and resources across North Carolina.

The MCAS Cherry Point ERP Tier I Partnering Team includes representatives from NAVFAC Mid-Atlantic, MCAS Cherry Point EAD, NCDENR, and USEPA Region 4.

### 4.6.2 Community Involvement Plan

The Community Involvement Plan (CIP) is part of the public's "right-to-know" process and is required by CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The CIP and other required and recommended community involvement activities are described in the USEPA's Superfund Community Involvement Handbook, which is included as **Appendix B**.

Specifically, the CIP documents the findings of interviews to identify community concerns and outlines community involvement activities to be carried out by the Navy, to respond to community concerns and information needs, as part of the ER program.

The MCAS Cherry Point CIP was recently updated in August 2012. The Navy's objectives with regard to the CIP are to:

- Provide factual and timely information,
- Encourage community involvement,
- Obtain feedback from the concerned communities,
- Answer questions, and
- Encourage further understanding of the ERP.

Excerpts from the MCAS Cherry Point CIP (Section 3 Community Background and Section 4 Community Involvement Program) can be found in **Appendix E**. The full CIP is available in the AR file (see section 7.1.1) or upon request from the RAB Installation Co-Chair.

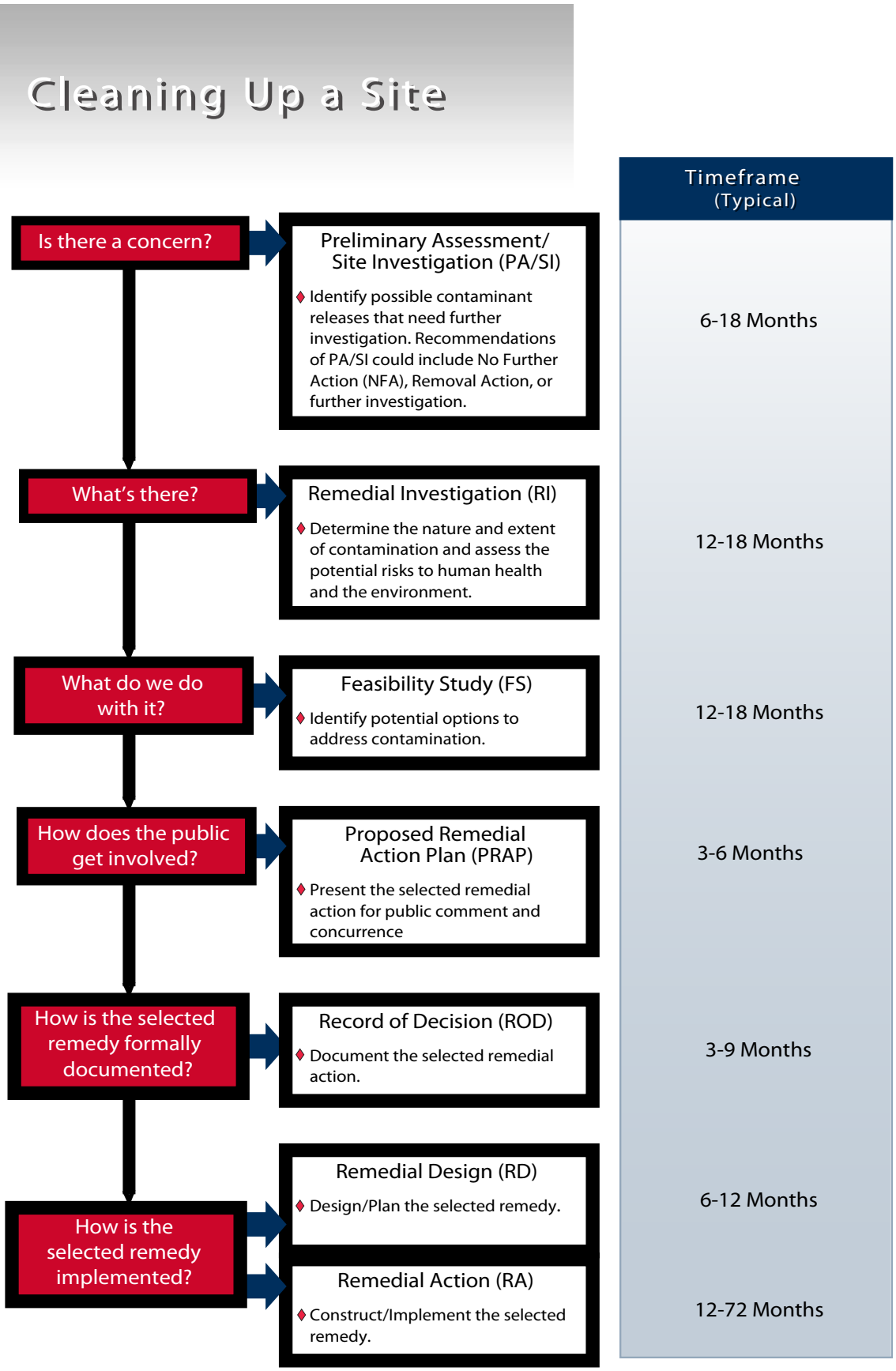



Figure 4-1
Environmental Restoration Process under CERCLA
MCAS Cherry Point, NC

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SECTION 5

# Restoration Advisory Board

The purpose of the RAB is to bring together community members of diverse interests, to enable an early and continued two-way communication between the installation and the surrounding community.

A RAB is made up of representatives of the military installation, USEPA, the state, local groups, and community members, who provide advice to decision makers. The cleanup process is discussed in an interactive environment, where all members are equal.

An important benefit of a RAB is the ability to provide a direct line of communication between communities and regulators. DoD utilizes RABs as a forum to share information on the environmental restoration process, remediation technologies, and restoration progress and to encourage communities affected by cleanup to participate in the decision-making process, ask questions, and share ideas.

RABs complement other DoD community involvement initiatives such as a Community Relations Plan/ CIP, Technical Assistance for Public Participation (TAPP), public notices, information repositories, and BRAC Cleanup Teams.

The RAB program is one of the largest federal agency public involvement efforts. DoD ensures that installation representatives and the other RAB members have access to the tools and resources necessary to make the program effective. As of FY 2010, DoD maintained 265 RABs on active installations, BRAC installations, and FUDS properties. Additional information about the status of RABs nationwide is available in the Defense Environmental Programs Annual Report to Congress, available on the web at: https://www.denix.osd.mil/arc/. Excerpts from the FY 2010 annual report can be found in **Appendix C**.

DoD regulations, policies and other information pertaining to RABs can be found on the DoD Environment Safety and Environmental Health Network and Information Exchange, on the web at https://www.denix.osd.mil/rab/.

## 5.1 Restoration Advisory Board Rule

DoD published the Final RAB Rule at 32 CFR Part 202 in May 2006. The Rule was initially proposed in the Federal Register for public comment in August 1996. The RAB Rule addresses RAB scope, characteristics, composition, funding, establishment, operation, and adjournment. The RAB Rule was structured to maximize flexibility for RABs and installations nationwide. The Final RAB Rule is included as **Appendix F**.

Some key points of the Rule are:

- RAB Operating Procedures—Each RAB is expected to develop a mission statement and operating procedures that address the needs of the installation and community. Required activities are to publish RAB meeting notices in local newspapers, making all RAB meetings open to the public, prepare minutes of RAB meetings, and making all documents prepared for or by the RAB available for public inspection and copying until the RAB ceases to exist.
- Conditions for RAB Adjournment & Dissolution—DoD set the conditions for RAB adjournment and dissolution, such as requirements for adjourning procedures, dissolving a RAB, dissolution procedures, reestablishing an adjourned or dissolved RAB, and public comment. Consultation with USEPA, the state, RAB members, and the local community, as appropriate, will take place before a final decision is made to adjourn or dissolve a RAB.
- Documenting RAB Activities—The Proposed Rule provides specific instructions for the documentation of RAB activities. This includes what information should be included in the Public Information Repository, including efforts to survey community interest, steps taken to establish a RAB, how the RAB relates to the community involvement program, and steps taken to adjourn the RAB.

- Other public involvement activities—A RAB is intended to complement other community involvement efforts occurring at an installation. It does not replace other types of community outreach and participation activities required by applicable laws and regulations.

For a DoD-wide summary of RAB status, resources, and activities, refer to the FY 2010 *Defense Environmental Programs Annual Report to Congress* located on the web at: http://www.denix.osd.mil/arc/ARCFY2010.cfm. Excerpts from this report are included in **Appendix C** of this manual.

## 5.2 Regulatory Agency Participation

USEPA's Federal Facilities Restoration and Reuse Office has worked with DoD to foster public participation and link communication networks, with the RAB as a key part of the process. In 1994, USEPA and DoD jointly developed and published guidance for establishing and operating RABs, prior to the RAB Rule. The 1994 guidance is available on the web at: http://www.epa.gov/swerffrr/documents/rab.htm.

USEPA's involvement on the RAB varies based on the NPL status of the installation. For installations that are on the NPL, USEPA is committed to full involvement on the RAB. For installations that are not on the NPL, USEPA's involvement will be at the discretion of USEPA's regional offices.

State environmental agencies participate in RABs, whether or not the installations are on the NPL. For installations that are not on the NPL, the state agency is the lead regulatory agency.

USEPA states that the RAB is not a replacement for other types of community outreach and participation activities required by law, regulation, or policy. All other public involvement requirements must still be completed, including the community relations requirements for CERCLA as amended by SARA (see **Appendix B**), the public involvement requirements of RCRA, the National Environmental Policy Act, and any state environmental regulations.

## 5.3 RAB Roles and Responsibilities

The RAB is a valuable partner in the cleanup process. Although the RAB is not a decision-making body, it provides, at a minimum, input on the environmental cleanup program and acts as an advisor to the cleanup team. As an advisory committee, the RAB reviews environmental documents and plans, provides advice, and relates community concerns to MCAS Cherry Point and communicates back to the community. The RAB and MCAS Cherry Point share responsibility for encouraging further public participation and informing the community of upcoming cleanup plans.

The RAB is expected to represent the interest of the general public and to serve as a focal point for communicating with the local community. A RAB may coordinate community outreach efforts such as newsletters, public information forums, and public meetings. Community members are encouraged to attend and observe the RAB meetings. The achievements of the RAB are highly dependent on the dedication of its members and the leadership of its co-chairperson.

The RAB operates in an advisory role rather than a decision-making role. Beyond this basic guideline, each RAB has the flexibility to establish its own rules of order. The RAB conducts regular meetings that are open to the public and held at convenient times and locations.

The RAB has two co-chairpersons, the installation co-chair appointed by the installation commander and a community co-chair representing the RAB and selected by the community RAB members. The co-chairs coordinate the RAB meetings.

The responsibilities of the RAB are to:

- Provide advice to regulatory agencies,
- Consider important cleanup issues,
- Review and evaluate technical documents,

- Recommend priorities, and
- Conduct regular meetings that are open to the public.

Installations are expected to take into consideration the recommendations provided by the RAB. Because DoD does not intend for Federal Advisory Committee Act requirements to apply to RABs, group consensus is not a prerequisite for RAB recommendations. Because each individual provides advice as an individual, not as a group, installations include in the decision-making process advice representing the minority view of members.

# 5.4 Restoration Advisory Board History

## 5.4.1 Establishing the Technical Review Committee

In December 1987, MCAS Cherry Point initiated efforts to establish a Technical Review Committee (TRC). The purpose of the TRC was to review the IR program efforts underway at Cherry Point and to provide input into the decision-making process.

In response to letters submitted to various federal, state, and local governmental agencies requesting TRC representation, the initial TRC was assembled comprising of representatives from the USEPA Federal Facilities Branch, NCDENR (Solid Waste Management Section and Division of Environmental Management), Craven County Emergency Management, Naval Facilities Engineering Command, and MCAS Cherry Point (EAD and Public Affairs Office). The first TRC meeting was held on April 19, 1989.

Additional TRC members added later included representatives from the National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Forest Service, and the Agency for Toxic Substances and Disease Registry.

## 5.4.2 Transition to Restoration Advisory Board

In April 1994, as part of the 1994 DoD Environmental Restoration Program Management Guidance, DoD formally issued a policy for expanding community participation by establishing Restoration Advisory Boards (RABs) at active DoD facilities. In September 1994, DoD and EPA jointly issued the Restoration Advisory Board Implementation Guidelines that provided a strategy for establishing RABs.

The MCAS Cherry Point TRC members automatically were made members of a new RAB for the Air Station. In response to a solicitation notice for community member positions on the RAB, 20 applicants responded with interest. In September 1995, the five top candidates were interviewed by the TRC. The Commanding General, Major General Fred McCorkle, officially approved the candidates in October 1995, the newly appointed RAB community members were officially notified in December 1995, and the 15 remaining candidates not selected were notified by mail in January 1996.

The newly formed MCAS Cherry Point RAB consisted of:

- Grace Evans, Oriental,
- Patricia McClellan-Green, Morehead City,
- Lewis Mitchell, Havelock,
- Neil Scarborough, Havelock,
- Henry Sermons, Havelock (TRC member), and
- Eugene Smith, Havelock.

The initial RAB meeting was held on January 30, 1996. During the June 1996 RAB meeting, Grace Evans was elected as the RAB Community Co-Chair and the RAB Charter was signed. In September 2000, Patricia McClellan-Green was elected as the RAB Community Co-Chair.

In November 1999, MCAS Cherry Point solicited additional RAB interest among local civic action groups. Letters of interest with enclosures (RAB Fact Sheet and RAB Membership Application) were mailed to the following groups: Atlantic Baptist Association, Havelock; Chamber of Commerce, Havelock, Morehead City, and New Bern; Craven County Health Department; Elks Lodge, Morehead and New Bern; Knights of Columbus, Havelock; Masonic Lodge, Havelock; Moose Lodge, Havelock, New Bern, and Newport; and Rotary Club of Morehead City.

During the 1999/2000 timeframe, three of the initial RAB members (Lewis Mitchell, Henry Sermons, and Eugene Smith) departed the RAB and four new community members were accepted to the RAB. In 2003, two additional community members were accepted to the RAB. The new RAB members' names, communities, and dates of application (month and year) are listed below:

- Ray Silverthorne, Jr., New Bern, December 1999;
- William "Bill" Smart, Havelock, December 1999;
- James "Jim" Berry, Oriental, January 2000;
- Georgiana Bircher, New Bern, April 2000;
- Elizabeth "Beth" Chagaris, New Bern, January 2003; and
- Robert Meadows, Beaufort, February, 2003.

During the 2004/2011 timeframe, Elizabeth Chagaris moved and therefore resigned from the RAB; Grace Evans retired from the RAB; Bill Smart passed away. David Wickersham joined the RAB in 2010.

The MCAS Cherry Point RAB currently consists of 11 members, seven of which are community members and four of which are agency representatives from the Tier I Partnering Team (the Air Station's Environmental Affairs Department, NAVFAC Mid-Atlantic, EPA, and NCDENR). Collectively, the current RAB community members have contributed over 50 years of service to the community. As of August 2012, the RAB community members are:

- Patricia McClellan-Green, Morehead (Community Co-Chair);
- James "Jim" Berry, Oriental;
- Georgiana Bircher, New Bern;
- Robert Meadows, Beaufort;
- Neil Scarborough, Havelock;
- Ray Silverthorne, Jr., New Bern; and
- David Wickersham, Pamlico County.

### 5.4.3 Soliciting Interest in the Restoration Advisory Board

In August 2002, an effort was made to increase awareness and interest in the RAB by mailing letters to each of the approximately 175 names on the "Hotspots" newsletter mailing list, inviting them to the August 21, 2002 RAB meeting at the Holiday Inn in Havelock. MCAS Cherry Point's Community Relations Contractor conducted face-to-face meetings with county managers, city/town managers, and city/town clerks. The purpose of these meetings was to solicit local government interest in the RAB, provide an understanding of the RAB and its function in the MCAS Cherry Point ERP, and extend an invitation to the August RAB meeting.

### 5.4.4 Restoration Advisory Board Accomplishments

Through its first decade, the MCAS Cherry Point RAB met quarterly. In recent years, as the ERP has progressed, RAB meetings have occurred twice yearly, or more often as needed.

Since the RAB was established in 1996, the RAB has participated in the following activities:

- Held more than 30 quarterly/semi-annual meetings;
- Attended two training sessions in 1998, designed to familiarize the RAB with the newly developed ERP web site and the new TAPP program; received training during the May 2008 RAB meeting about the MRP's prioritization process and the initial priority scoring of the Air Station's munitions sites;
- Participated in five site tours from 1996 to 2004, in which RAB community members and Duke University Marine Lab environmental students visited active remedial sites aboard MCAS Cherry Point, including the OU1 IWTP P&T system; the OU1 Site 16 AS/SVE system; the OU2 Site 10 SVE system; and the OU3 Site 7 AS system;
- Attended 12 public meetings to review and comment on PRAPs for sites/operable units;
- Participated in three Navy-sponsored RAB conferences: Former community co-chairs Grace Evans attended the November 2000 DoD Environmental Cleanup Stakeholders' Forum; current community co-chair Patricia

McClellan-Green attended the March 2001 DoN RAB Co-Chair Workshop and the July 2004 DoN RAB/TRC Training Workshop;

- In March 2002, EPA, NCDENR, and the Air Station, in a RAB Recognition Day event, officially recognized the RAB's outstanding service to the local community by serving as the community's eyes and ears for environmental restoration activities at Cherry Point;
- In December 2005, the MCAS Cherry Point RAB celebrated a "Decade of Success;" and
- In September 2011, the RAB celebrated a 15-year anniversary.

### 5.4.5 Communication with the Public

Fact sheets and newsletters are concise documents (typically 1 to 4 pages for a fact sheet, more for a newsletter) written to summarize information from key documents, such as RIs and Proposed Plans, and to update the public about the status of the Environmental Restoration Program. They are written for non-technical audiences and use straightforward graphics to describe technical issues. The purpose is to provide stakeholders with accurate, easy-to-understand information and promote understanding of the issues and approaches to MCAS Cherry Point's environmental investigations and munitions response activities.

- In 1995, a fact sheet was developed to accompany RAB membership applications, providing information on becoming a RAB member and outlining the responsibilities and requirements of a RAB.
- In 1998, the RAB developed the "Hotspots" newsletter to provide the public with highlights of the ERP activities, which MCAS Cherry Point EAD periodically published and distributed to interested parties from 1998 to 2005.
- Fact sheets with a brief overview of the ERP and MRP were provided to respondents during the 2003 and 2011 CIP community interviews.
- In February 2008, a fact sheet was developed to summarize the findings of the Five-Year Review of ongoing environmental cleanup actions at OUs 1, 2, 3, 4, 5, 6, and 13.

The detailed "Hotspots" newsletter is no longer being published, due to the decline in public interest in the ERP at MCAS Cherry Point. A few examples are provided in **Appendix G** of this manual. The 2006 RAB Manual contains a complete set of Hotspots newsletters.

The Air Station will continue to develop and distribute periodic fact sheets focusing on cleanup milestones, such as Five-Year Reviews, at specific environmental or munitions sites. **Appendix G** provides examples of fact sheets developed for MCAS Cherry Point's Environmental Restoration Program.

In addition, several agencies, such as USEPA and the DoD, generate fact sheets to inform for the public about the environmental restoration process and technologies. Several of these fact sheets can be found in **Appendix G**.

SECTION 6

# Funding

## 6.1 Defense Environmental Restoration Account

The DERA is part of the DERP, which was established to enable the Secretary of Defense to conduct a program of environmental restoration at facilities under jurisdiction of the Secretary. The DERA was established as a "transfer account" with all funds appropriated to the Secretary of Defense for functions relating to environmental restoration being appropriated to the transfer account and subsequently transferred to other appropriate accounts for use in conducting environmental restoration activities.

DERP funding is split between ER and BRAC accounts. ER funds active installations and FUDS. BRAC solely funds realigned and closed sites. Active installations are those where the military currently conducts training and operations, and FUDS are properties that DoD once operated, owned, or leased. BRAC installations are properties that have been or will be transferred to communities or to other federal and state agencies. DoD activities do not receive or have access to the CERCLA Superfund. Expenses incurred in the cleanup of sites under the installation restoration program are funded out of the ER or the BRAC appropriation.

There are five ER accounts, one each for the Army, Navy, Air Force, and FUDS, with cleanup for defense agencies like the Defense Logistics Agency being funded from the defense-wide account. With more than 30,000 sites requiring funding to execute restoration goals, the DERP budget must accommodate present restoration requirements and anticipate future needs. Three factors determine allocation of funds: site prioritization, identification of new sites, and program goal progress.

Congress appropriates funding in support of the DERP for each of the five ER accounts. The military service of agency responsible for their respective ER or BRAC account allocates these funds to execute the restoration process based on cleanup priority and the management plan previously defined at the beginning of the fiscal year.

## 6.2 Environmental Restoration, Navy

ER,N provides the funding required for environmental restoration efforts at all DoN facilities, which includes U.S. Marine Corps activities. In 1998, Congress devolved the DERA to the individual departments (Air Force, Army, Navy, FUDS, and Defense Wide), making it the responsibility of each military component to budget for environmental restoration within their total obligation authority. The devolved DoN environmental restoration account is the ER,N account.

While devolvement means that funds are more readily available for execution at the beginning of the fiscal year, it also means that environmental restoration requirements now compete in the budget process with all other DoN needs. The ER,N account is centrally managed through the Chief of Naval Operations (N45) down to the FECs.

It is DoN policy to use ER,N as the exclusive source of funding for environmental restoration at active installations as defined in the DERP. Priority for using ER,N funds is determined using the relative risk approach that ranks sites according to risk (high, medium, low), with high-risk sites receiving higher priority.

Other types of funds are not authorized to be used in lieu of, or to supplement, ER,N funds. This does not preclude the use of other funding to clean up current spills or conduct activities that are not eligible for the DERP. ER,N funding may also be used to demonstrate new or innovative detection or cleanup technologies that offer the potential to markedly reduce time or costs. The use of ER,N funds for multi-agency demonstration projects must be approved by the Assistant Secretary of the Navy (Installations and Environment).

As established by the Defense State Memorandum of Agreement (DSMOA), ER,N funding is used to provide funds to state regulatory agencies for payment of oversight costs and include state oversight, inspection, review, comment, participation in meetings, and public outreach programs related to the DoN ERP within that state. ER,N funding is also used to provide funds to pay state oversight costs associated with FFAs that require state

involvement at DoN NPL sites. However, where neither an FFA nor a DSMOA exists, the DoN does not have authority to use ER,N funds to pay state oversight costs.

Similar costs associated with USEPA oversight are not eligible for payment under ER,N. The DoD does provide support to assist USEPA in their budget requests, so that proper funding levels are provided for adequate USEPA oversight of the DERP.

History and projections of ER,N funding and expenditures is available in the DoN annual Restoration Program Report. Excerpts of the 2010 report are available in **Appendix D**.

## 6.3 Comprehensive Long-Term Environmental Action Navy / Remedial Action Construction Contracts

The Comprehensive Long-Term Environmental Action—Navy (CLEAN) contracts are administered through the divisions of NAVFAC. Typically, there is at least one CLEAN contract per division. The CLEAN contracts generally cover environmental investigation work relating to the portions of the CERCLA process from the preliminary assessment through the remedial design.

RA work is usually conducted through large, pre-placed RA contracts (RACs). There is typically at least one RAC per division, and the contract generally covers the portions of the CERCLA process related to remedial construction. The contractors awarded a RAC in a particular NAVFAC division are generally prohibited from working on site investigations and assessments typical of a CLEAN contract in that same division, and vice versa.

Both the CLEAN and RAC contracts are multi-year, task order-type contracts, ranging from $75 million to $300 million in potential work. The majority of funds administered under the CLEAN and RAC contracts are ER,N funds.

## 6.4 Technical Assistance for Public Participation

The DoD recognizes that the complexity of environmental restoration issues can hinder a community's understanding and acceptance of cleanup efforts at a military installation. For this reason, the DoD works to improve awareness of technical issues and enhance meaningful community involvement through TAPP. The TAPP program provides RAB community members with access to independent technical support through the use of government purchase orders. It is intended to supplement existing sources of support and foster a relationship of trust and understanding between the community and the installation. When the expertise to do so is unavailable within the membership, they may seek independent technical support with the TAPP program providing for the procurement of this support.

TAPP is used by DoD to provide a RAB with funding to employ the services of independent technical consultants to advise on specific aspects of environmental restoration projects. The consultants work with the RAB to help them understand the technical nature of restoration documents and the proposed remedy. With better knowledge of the environmental issues, challenges, and proposed remedies, community members can better participate in the restoration process. TAPP also fosters improved communication between DoD and communities to build increased trust and confidence.

Community members of a RAB may request from an installation's commanding officer, or appropriate DoD official, technical assistance from private-sector sources. Only community members of RABs may request TAPP support on behalf of the RAB. A request for TAPP must represent the wishes of the majority of the community members of the RAB.

The ER,N account provides TAPP funding and may not exceed $100,000 during the life of the restoration program at the installation. TAPP purchases of technical support are limited to $25,000 or 1 percent of restoration cost to complete (the total cost of installation cleanup) per year, whichever is less, with a $100,000 lifetime cap on the amount available to any one RAB per installation. Waivers to the $25,000 annual and $100,000 total funding limits may be approved by the Deputy Assistant Secretary of the Navy, using the recommendations of the installations of the installation Commander or other designated authority. Requests for waivers are initiated by the RAB

community members and forwarded by endorsement with recommendations by the installation commander through the chain-of-command.

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

## 6.5 Technical Assistance Grant

A TAG is a USEPA program developed for the purpose of providing money for activities (e.g., RAB) that facilitate community participation in decision-making at eligible Superfund sites. An initial grant up to $50,000 is available to qualified community groups so they can contract with independent technical advisors to interpret and help the community understand technical information about their sites.

To ensure that the people whose lives were affected by abandoned hazardous wastes would have a say in actions to clean them up, Congress made public involvement in decision making an important part of the Superfund process by establishing the TAG program as part of SARA of 1996. TAGs are available at sites listed on the NPL or proposed for listing on the NPL and for which a response action has begun. Since the first TAG was awarded in 1988, more than $20 million has been awarded directly to community groups.

For more information about TAG, visit the EPA web site at
http://www.epa.gov/superfund/community/tag/index.htm.

## 6.6 Defense and State Memorandum of Agreement

The DoD values the active participation of state regulatory agencies in its environmental restoration program. Partnering with the states and their regulatory agencies allows the DoD to streamline the decision-making process and improve restoration efficiency. In doing so, the DoD is better able to understand and address state-specific issues and ensure consistency of environmental decisions within a state and to better protect human health and the environment.

The DSMOA program is a partnership between the DoD and states (and territories). The DoD developed the DSMOA program to enhance the involvement of states in the cleanup of DoD installations. The DSMOAs allow DoD to reimburse states for services supporting environmental restoration activities at military facilities and specifies the conditions under which a state will be reimbursed for costs of providing services in direct support or ER,N-funded or BRAC-funded activities. This partnership ensures more efficient and cost-efficient environmental restoration at DoD installations.

After signing a DSMOA, the DoD and the state enter into a 2-year cooperative agreement (CA) that provides a planning and funding framework for the environmental restoration services the state will perform on behalf of the DoD. State participation includes such areas as document review and technical oversight. A CA requires mutual planning and coordination between DoD project managers and the state, from initiation of the cleanup through site closeout. By developing and maintaining mutual trust through an open, team approach, the department and state are able to expedite environmental restoration activities so that impacts to human health and the environment are quickly mitigated.

Since the implementation of the DSMOA program in 1986, installations across the country have reduced costs, accelerated environmental restoration, and improved community relations by restoring sites more efficiently. As of FY 2010, DoD had signed 53 DSMOAs with 48 states, 4 U.S. territories, and the District of Columbia. Of the 53 eligible partners, 52 have signed CAs for the FY08-FY10 funding period. The Navy signed two cooperative agreements, with California and West Virginia, outside the DSMOA program for the FY08-FY10 period. Additional information about DSMOA reimbursements to DoD's partners is available in **Appendix C**.

SECTION 7

# Recordkeeping

## 7.1 Administrative Record File

The AR is a collection of documents used by the Navy to select a RA or removal action for a CERCLA site. Regardless of the nature of the hazardous waste site, an AR must be maintained. The AR also serves as the basis for any future legal review of decisions made by the Navy concerning RA taken at a site. While remedial response is still ongoing at an installation, and documents are still be added, it is called an AR File. When all responses are complete, the AR is also complete.

The AR includes, but is not limited to, the following:

- Documents and materials containing information that may form a basis for the Navy's selection of a response action,
- Documents and materials available to the Navy at the time the decision was made, and
- Documents and materials that were considered by or relied upon by the Navy.

DoD policy requires the Navy (and Army and Air Force), to collect and retain environmental restoration records in the course of the decision-making process and in accordance with applicable USEPA guidelines, statutes and regulations, and with Navy records management directives about how records should be retained, classified, and stored.

The AR serves two purposes. First, CERCLA requires that the AR act as a vehicle for public participation in selecting a response action. Second, under CERCLA, judicial review of any issue concerning the adequacy of any response action is limited to the contents of the AR. Under this provision of CERCLA, the AR is the sole source of documentation that can be used by a party challenging a response action. It is also the sole source of documents available for the defense of a responsible action by the Navy. If the AR is incomplete or inaccurate, it may significantly impact the Navy's ability to defend, and the court's ability to review, a challenged decision.

The official MCAS Cherry Point AR File is maintained by NAVFAC Mid-Atlantic. The Navy periodically adds new documents to the AR File as site work progresses. An electronic copy of the AR File is maintained on the Environmental Restoration Program Web site: http://go.usa.gov/TZO. For those without internet access at home, the Havelock-Craven County Public Library has a computer prioritized for Web access to the AR File (see section 7.1.1).

### 7.1.1 Information Repository

CERCLA and the NCP require that each installation establish an Information Repository, at a location that is near the site, easily accessible to the public, and available for inspection at times convenient to the public. The Information Repository at a minimum includes a copy of the AR File for the installation and may also contain other documents pertinent to the activities at the installation.

The MCAS Cherry Point Information Repository was established in January 1993 at the Havelock-Craven County Library. The Information Repository available for public review during the library's normal operating hours. The library is an ideal location as it has handicapped access, is open in the evening and on weekends, and has copying facilities available. In 2006, MCAS Cherry Point converted the information repository from paper copies to an electronic version, thereby reducing the demand on limited shelf space in the public library.

The AR File is accessible through a library computer, via the MCAS Cherry Point Environmental Restoration Program web site at http://go.usa.gov/TZO. Individuals may print, according to the library printing procedures, any document contained in the AR File. During public comment periods, hardcopies of documents are placed in the library for ease of access.

**MCAS Cherry Point Information Repository Information**

| Repository | Location | Hours | Contact |
|---|---|---|---|
| Havelock-Craven County Public Library | 301 Cunningham Blvd.<br>Havelock, NC 28532 | Monday-Wednesday<br>10 a.m. to 8 p.m.<br>Thursday-Friday<br>10 a.m. to 6 p.m.<br>Saturday 10 a.m. to 4 p.m. | (252) 447-7500<br>http://newbern.cpclib.org |

## 7.1.2 Environmental Restoration Glossaries

**Appendix H** provides glossary of commonly-used terms in the IR and MR programs, along with the following additional resources:

- A page, with alphabetical links, from the extensive online NAVFAC Acronyms and Glossary of Environmental Restoration Terminology. The NAVFAC glossary may be accessed directly from the NAVFAC Environmental Restoration & BRAC website: https://portal.navfac.navy.mil/go/erb .
- A copy of the USEPA Superfund glossary with links for additional information. The Superfund Glossary can be accessed directly via a link at the bottom of the web page: http://www.epa.gov/superfund/about.htm.

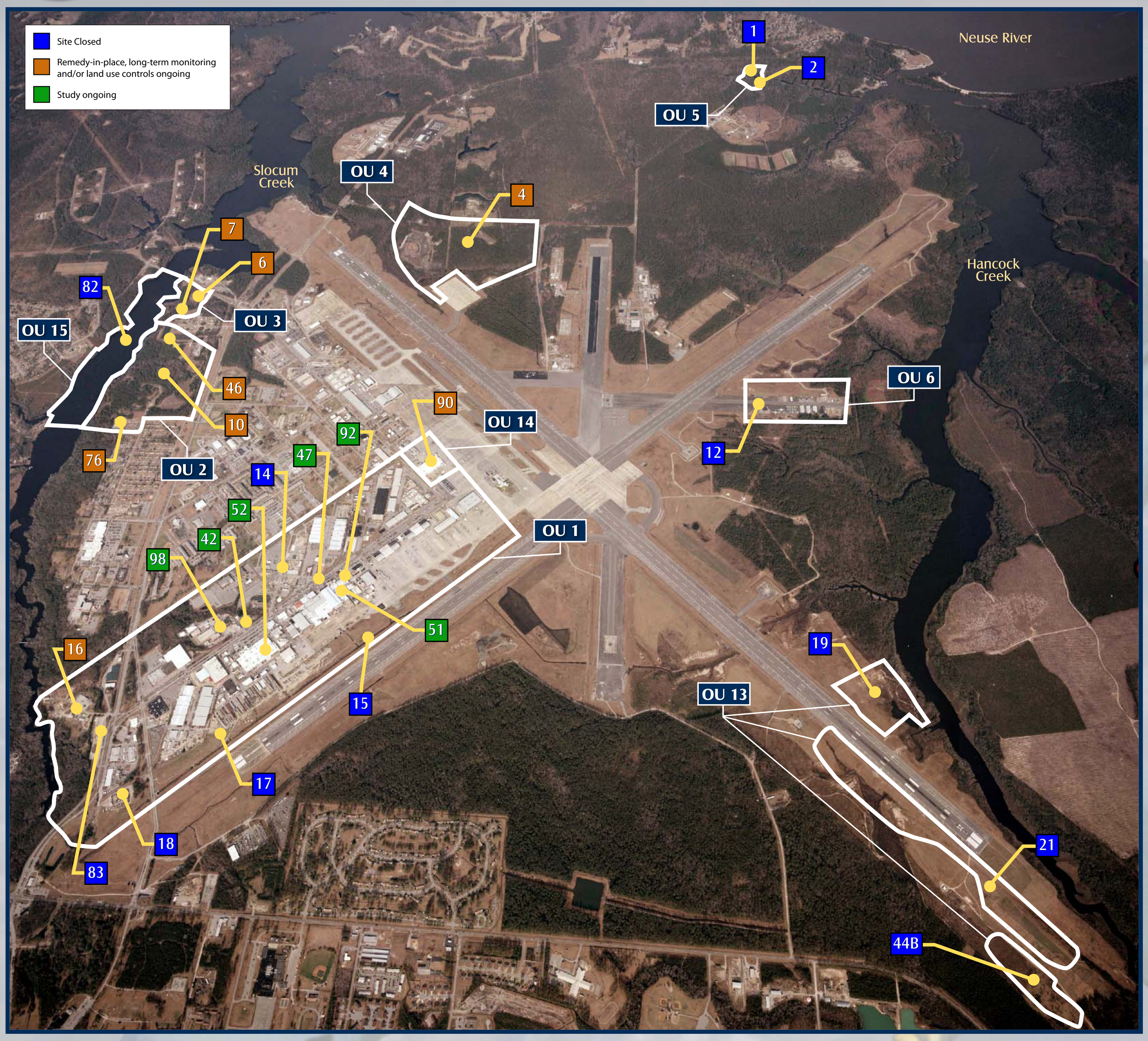
SECTION 8

# Web Sites of Interest

| | |
|---|---|
| MCAS Cherry Point Environmental Restoration Program | http://go.usa.gov/TZO |
| MCAS Cherry Point Website | www.cherrypoint.marines.mil |
| NAVFAC Environmental Restoration & BRAC website | https://portal.navfac.navy.mil/go/erb |
| DoD Environmental Management Directorate | https://www.denix.osd.mil/em/ |
| Defense Environmental Network & Information Exchange (DENIX), Environmental Restoration Program | https://www.denix.osd.mil/derp/ |
| DENIX RAB web page | https://www.denix.osd.mil/rab/index.cfm |
| DoD Technical Assistance for Public Participation (TAPP) Program (2000 guidance) | http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA376044&Location=U2&doc=GetTRDoc.pdf |
| National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR 300 | http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr300_main_02.tpl |
| NC Department of Environment and Natural Resources (NCDENR) | http://www.ncdenr.gov |
| NCDENR Superfund Section | http://portal.ncdenr.org/web/wm/sf |
| USEPA Superfund information site | http://www.epa.gov/superfund/ |
| USEPA Region IV | http://www.epa.gov/region04 |
| US EPA Technical Assistance Grant (TAG) information | http://www.epa.gov/superfund/community/tag/index.htm |
| DoD/USEPA RAB guidance | http://www.epa.gov/swerffrr/documents/rab.htm |
| USEPA Contaminated Site Cleanup Information “CLU-IN” | http://www.clu-in.org/ |
| Agency for Toxic Substances and Disease Registry (ATSDR) | http://www.atsdr.cdc.gov/ |

# Appendix A
# MCAS Cherry Point RAB Poster Boards

# MCAS Cherry Point
# Installation Restoration Program




| OU1 | Site | Description |
|---|---|---|
| | 14 | Motor Transportation |
| | 15 | Ditch and Area Behind NADEP |
| | 16 | Landfill at Sandy Branch |
| | 17 | DRMO Drainage Ditch |
| | 18 | Facilities Maintenance Compound |
| | 42 | Industrial Wastewater Treatment Plant (IWTP) |
| | 47 | Industrial Area Sewer System |
| | 51 | Building 137 Plating Shop |
| | 52 | Building 133 Plating Shop and Ditch |
| | 83 | Building 96 Former Pesticide Mixing Area |
| | 92 | VOCs in Groundwater Near the Stripper Barn |
| | 98 | VOCs in Groundwater Near Building 4032 |

| OU2 | Site | Description |
|---|---|---|
| | 10 | Old Sanitary Landfill |
| | 46 | Polishing Ponds No. 1 and No. 2 |
| | 76 | Vehicle Maintenance Area (Hobby Shop) |

| OU3 | Site | Description |
|---|---|---|
| | 6 | Fly Ash Ponds |
| | 7 | Old Incinerator and Adjacent Area |

| OU4 | Site | Description |
|---|---|---|
| | 4 | Borrow Pit/Landfill (North of Runway 14) |

| OU5 | Site | Description |
|---|---|---|
| | 1 | Borrow Pit/Landfill |
| | 2 | Borrow Pit/Landfill |

| OU6 | Site | Description |
|---|---|---|
| | 12 | Crash Crew Training Area |

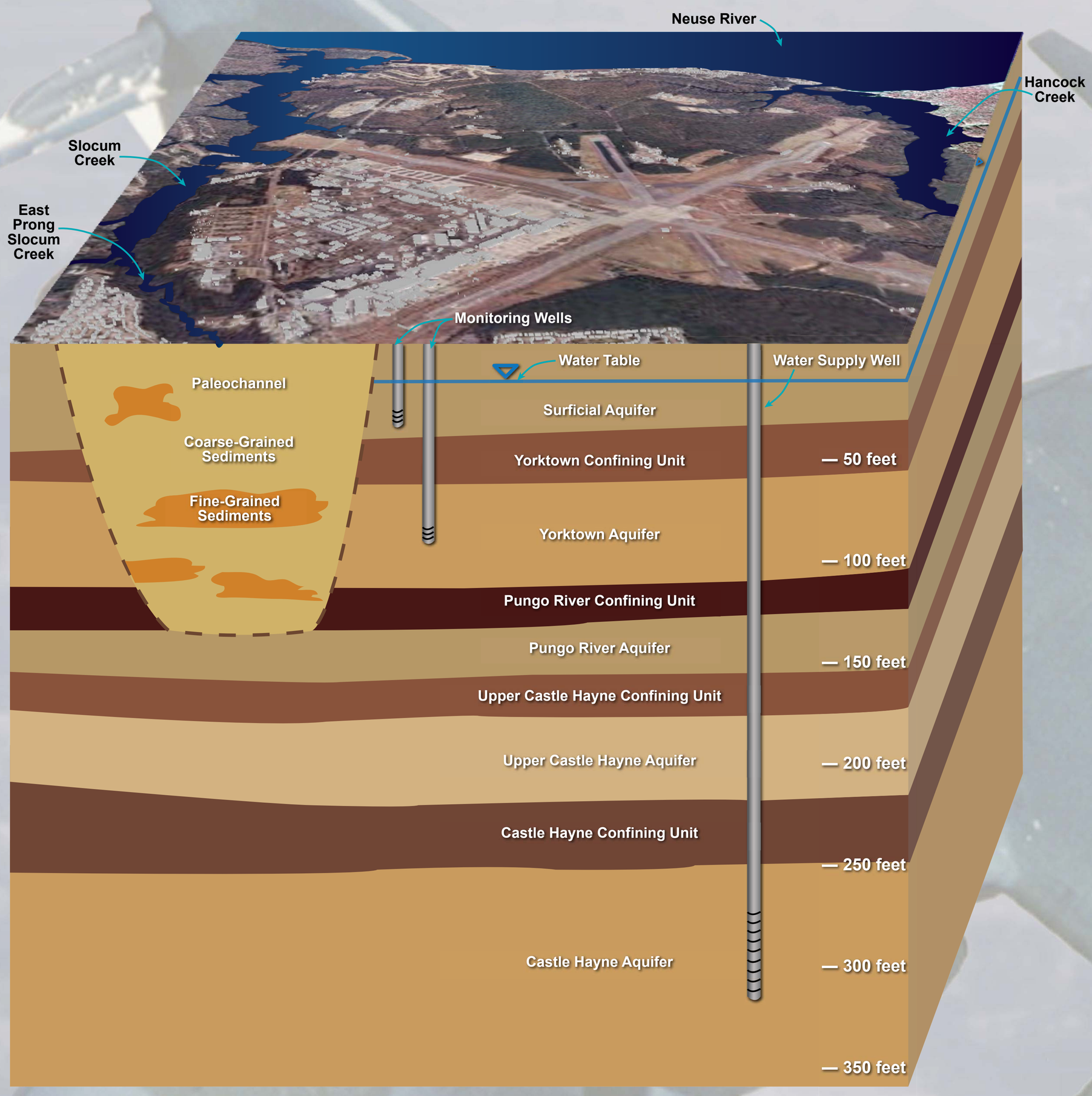
| OU13 | Site | Description |
|---|---|---|
| | 19 | Borrow Pit/Landfill (North of Runway 32) |
| | 21 | Borrow Pit/Landfill (South of Runway 32) |
| | 44B | Former Sludge Application Area |

| OU14 | Site | Description |
|---|---|---|
| | 90 | Building 130 Area Chlorinated VOC-Contaminated Groundwater |

| OU14 | Site | Description |
|---|---|---|
| | 82 | Slocum Creek in the Vicinity of OU2 and OU3 |

# MCAS Cherry Point Hydrogeology

MCAS Cherry Point




- MCAS Cherry Point is underlain by a series of sandy, water-bearing zones called aquifers, which are separated by flow-restricting clay layers called confining units.
- Beneath the western portion of the Air Station, a former river channel eroded away the sediments of the Surficial and Yorktown aquifers and deposited younger-aged sediments in a feature called a paleochannel. The geology and the directions of groundwater flow are more complicated in this area of MCAS Cherry Point.
- Based on the analysis of samples from approximately 2,000 monitoring wells, the vast majority of groundwater contamination beneath MCAS Cherry Point is confined to the Surficial aquifer (approximately 10 to 60 feet below the ground surface). A very limited amount of groundwater contamination is present in isolated areas of the Yorktown aquifer, but none has been found in the deeper aquifers.
- MCAS Cherry Point has about 25 drinking water wells ranging in depth from 195 to 330 feet below ground surface that draw water from the Castle Hayne aquifer.

# Cleaning Up a Site

MCAS Cherry Point

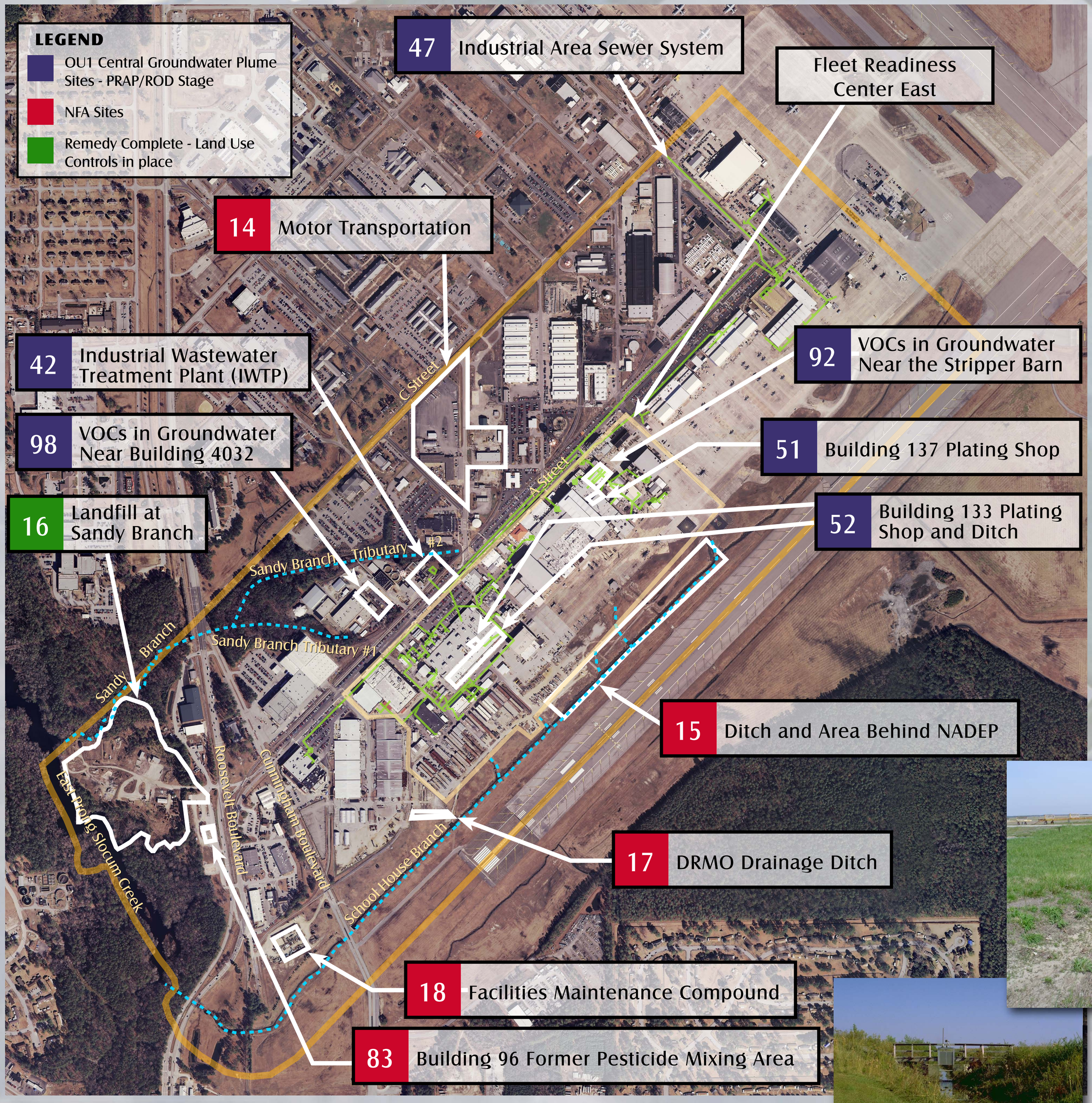
| | | Timeframe *(Typical)* |
|---|---|---|
| **Is there a concern?** | **Prelimimnary Assessment/ Site Investigation (PA/SI)**<br>• Identify possible contaminant releases that need further investigation. Recommendations of PA/SI could include No Further Action (NFA), Removal Action, or further investigation. | 6-18 Months |
| **What's there?** | **Remedial Investigation (RI)**<br>• Determine the nature and extent of contamination and assess the potential risks to human health and the environment. | 12-18 Months |
| **What do we do with it?** | **Feasibility Study (FS)**<br>• Identify potential options to address contamination. | 12-18 Months |
| **How does the public get involved?** | **Proposed Remedial Action Plan (PRAP)**<br>• Present the selected remedial action for public comment and concurrence | 3-6 Months |
| **How is the selected remedy formally documented?** | **Record of Decision (ROD)**<br>• Document the selected remedial action. | 3-9 Months |
| **How is the selected remedy implemented?** | **Remedial Design (RD)**<br>• Design/Plan the selected remedy.<br><br>**Remedial Action (RA)**<br>• Construct/Implement the selected remedy. | 6-12 Months<br><br>12-72 Months |

ES1120350114DC

# Operable Unit 1

MCAS Cherry Point

- OU1 is approximately 565 acres and consists of 12 sites within the industrial portion of the Air Station.
- The primary remaining contamination issue is the OU1 Central Groundwater Plume, an area of groundwater contaminated with chlorinated volatile organic compounds (VOCs).
- No Further Action (NFA) is required or a remedy is in place at 6 of the 12 OU1 sites. The remaining 6 OU1 sites comprise the OU1 Central Groundwater Plume; a Record of Decision (ROD) selecting a remedy is anticipated by the end of 2013.



Site 17 - DRMO Drainage Ditch

Site 15 Ditch

East Prong Slocum Creek

Building 160 within Site 14 (Motor Transportation)

Site 42 – Industrial Wastewater Treatment Plant (IWTP)

Bulk material storage area within Site 16 (Landfill at Sandy Branch)

Fleet Readiness Center East

# Operable Unit 1

# Environmental Restoration Issues

MCAS Cherry Point

View of OU1 looking east

## Groundwater

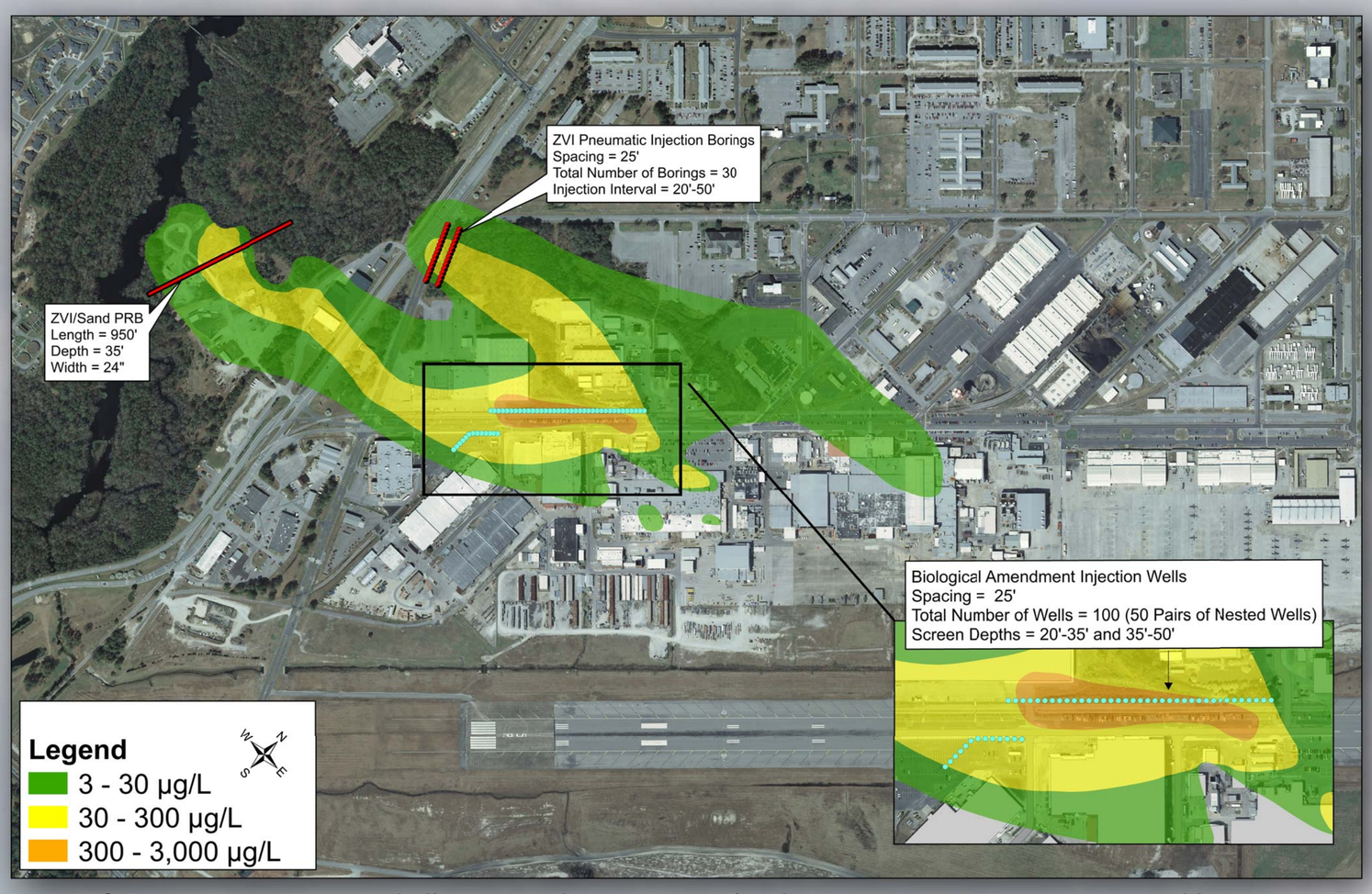
- A large area of volatile organic compound (VOC) contamination is present in OU1 groundwater, and is referred to as the OU1 Central Groundwater Plume. The VOCs mainly consist of trichloroethene (TCE) and daughter compounds formed from the natural breakdown of TCE.
- The VOCs are believed to originate from industrial solvents used in degreasing and plating operations and from wastewater leaks in the industrial area sewer system.
- The proposed remedy for the OU1 Central Groundwater Plume sites is In-Situ Enhanced Bioremediation in the Source Zone, a Zero Valent Iron (ZVI) Permeable Reactive Barrier (PRB) in the Downgradient Zone, and Monitored Natural Attenuation, Land Use Controls, and Vapor Intrusion Monitoring in all areas.
- The Record of Decision (ROD) to authorize the OU1 Central Groundwater Plume remedy selection is anticipated to be signed in 2013.

## Soil and Sediment

- Two removal actions were conducted in 1995:
  - Removal of debris and soil contaminated with asbestos, petroleum, and lead at Site 16 (Landfill at Sandy Branch).
  - Removal of soil and sediment contaminated with polychlorinated biphenyls (PCBs) at Site 17 (DRMO Drainage Ditch).
- A non-time-critical removal action (NTCRA) was conducted in 2008 to remove soil and sediment within the Sandy Branch Tributary #2 floodplain contaminated with several polycyclic aromatic hydrocarbons (PAHs), non-PAH semi-volatile organic compounds (SVOCs), pesticides, and metals.
  - After completion of the NTCRA, no remaining unacceptable risks were identified and no further evaluation or action is warranted at OU1 for ecological receptors.

Sandy Branch Tributary #2

Sediment removal during 2008 Sandy Branch Tributary #2 NTCRA




Areas of VOC contamination in shallow groundwater at OU1 (Highest concentrations in orange and lowest in green). Also shows the conceptual layout of the proposed remedy elements for the OU1 Central Groundwater Plume.

Restored section of Sandy Branch Tributary #2 following 2008 NTCRA

# Operable Unit 2

MCAS Cherry Point

- OU2 is approximately 104 acres and consists of 3 sites (Sites 10, 46, and 76).
- A Record of Decision (ROD) was signed in August 1999 documenting the remedy for OU2:
  - Natural attenuation and long-term monitoring (LTM) for groundwater.
  - Soil vapor extraction (SVE) at four Site 10 soil "hot spots" with volatile organic compound (VOC) contamination.
  - Land use controls, including restricted access (fencing and warning signs) and constraints on land use.
- SVE successfully treated soils at Hot Spots 1, 3, and 4 and the system was shut down in 2003.
- A ROD Amendment was signed in 2011 to address soil contamination at Site 10 Hot Spot 2 by installing a soil cover over impacted soils; the soil cover was installed in 2012.
- LTM of OU2 groundwater began in 2002. An effort to re-evaluate and optimize the OU2 LTM program was completed in 2011, and the new program began in 2012.

## Site 10
### Old Sanitary Landfill

- Former 40-acre landfill from 1955 until the mid-1980s.
- Basewide primary disposal site for household refuse and industrial waste, including petroleum, oil and lubricants (POLs), solvents, and sludges.

Installation of the soil cover at Site 10 Hot Spot 2

Site 10 Hot Spot 2 after soil cover installation

## Site 46
### Polishing Ponds No. 1 and No. 2

- Two inactive aeration basins for wastewater from the Sewage Treatment Plant (STP) from 1942 to 1996.

Site 46

Central landfill area

## Site 76
### Vehicle Maintenance Area (Hobby Shop)

- Facility used for personal auto maintenance, body repair, and vehicle storage since the early 1960s.

Hobby Shop

Groundwater sampling during LTM activities

# Operable Unit 3

MCAS Cherry Point

- OU3 is approximately 19 acres and consists of 2 sites (Sites 6 and 7).
- A Record of Decision (ROD) was signed in September 2000 documenting the remedy for OU3:
  - Natural attenuation and long-term monitoring for groundwater.
  - Air sparging for treatment of volatile organic compound (VOC) contamination in Site 7 soil.
  - Land use controls, including restricted access (fencing and warning signs) and constraints on land use.
- Air sparging successfully treated the VOCs in soil and the system was shut down in 2003.
- Long-term monitoring of groundwater was terminated in 2011 when all contaminants detected in groundwater no longer exceeded the performance standards in the OU3 ROD.
- OU3 achieved Response Complete in 2012, but land use controls to address metals in soil will continue to be in effect as part of the long-term management of OU3.

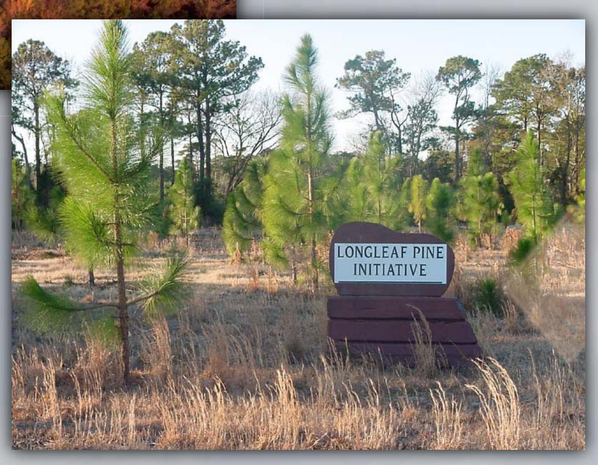
## Site 6
### Fly Ash Ponds

- Three former ponds used for disposal of power plant fly ash and cinders (1940s to 1970) and lime/alum sludge from the potable water treatment plant (1980 to 1994).
- In 1996, the 2.5-acre pond area was removed, regraded, and revegetated with pine seedlings as part of a "Longleaf Pine Initiative".

## Site 7
### Incinerator Adjacent Area

- Former incinerator and open burning area covering approximately 5 acres.
- From the 1940s until 1955, municipal refuse, waste petroleum, oil and lubricants (POLs), and other industrial waste were burned in the incinerator and the adjacent open burning area.
- The air sparging system began operating in 2000 and was shut down in 2003 when soil clean up goals were achieved.

Site 6 former fly ash ponds



Longleaf Pine Initiative at Site 6

Luke Rowe's Gut separating Sites 6 and 7

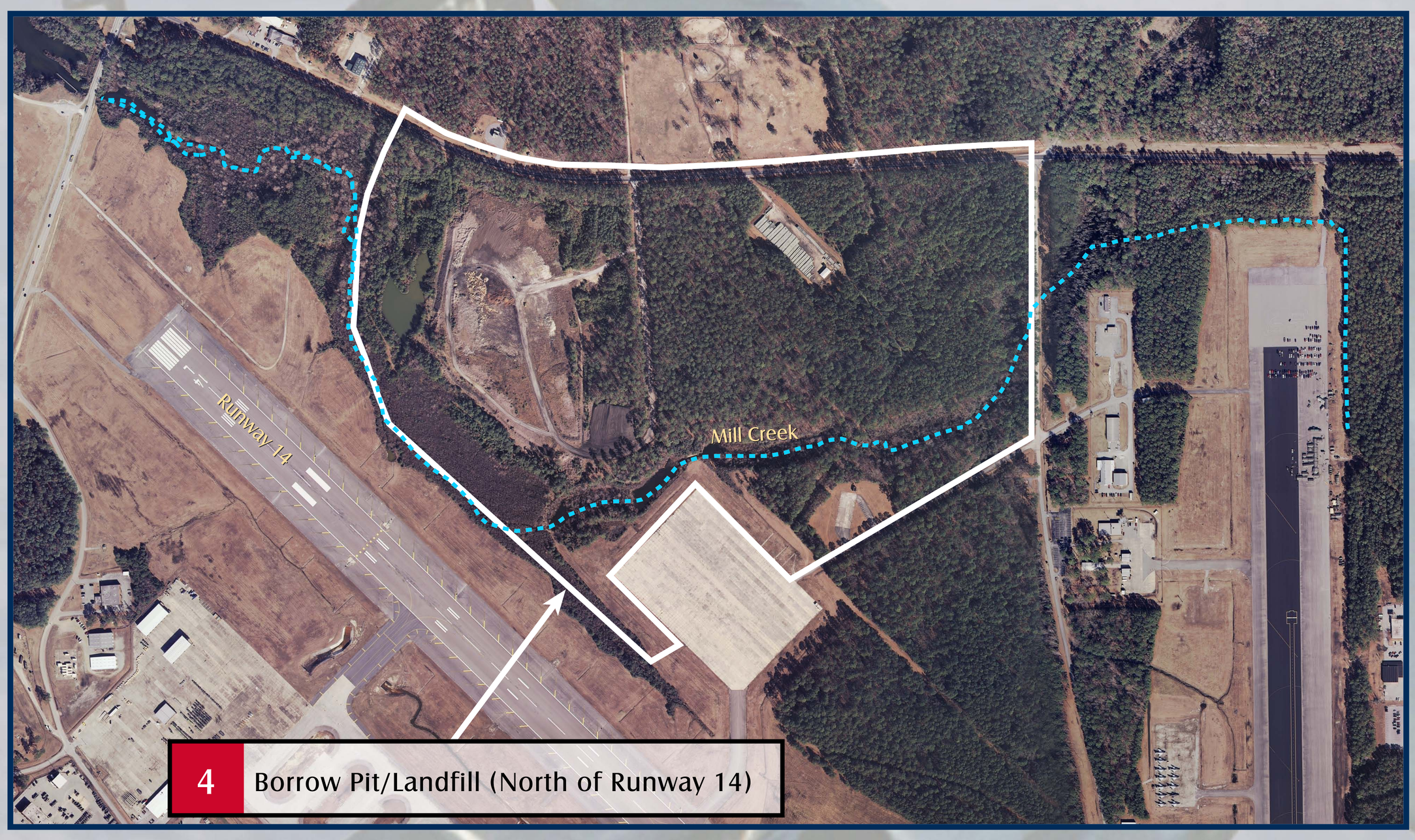
Site 7 warning signs

Former air sparging system at Site 7

# Operable Unit 4

MCAS Cherry Point

- OU4 is approximately 130 acres and consists of 1 site (Site 4).
- A Record of Decision (ROD) was signed in September 2005 documenting the remedy for OU4:
  - Natural attenuation and long-term monitoring for groundwater to address several chemicals found infrequently above State groundwater standards (primarily benzene).
  - Land use controls, including restricted groundwater use and constraints on excavation that encounters groundwater.
- Long-term monitoring of groundwater and land use controls will continue until all groundwater contaminants no longer exceed the performance standards in the OU4 ROD.




## Site 4
### Borrow Pit/Landfill (North of Runway 14)

- Formerly consisted of several borrow pits that were later used for waste disposal, a lined drum storage area, a construction debris landfill, and an asbestos disposal area.
- Borrow pit excavation and disposal activities occurred in the 1940s and 1950s.
- Starting in 1982, construction debris and asbestos were disposed of in the borrow pit area. In 1997, the area was permitted as an active land clearing and inert debris (LCID) landfill, and is currrently used for recycling of unpainted/untreated wood, yard waste, and inert construction debris.

LCID landfill entrance

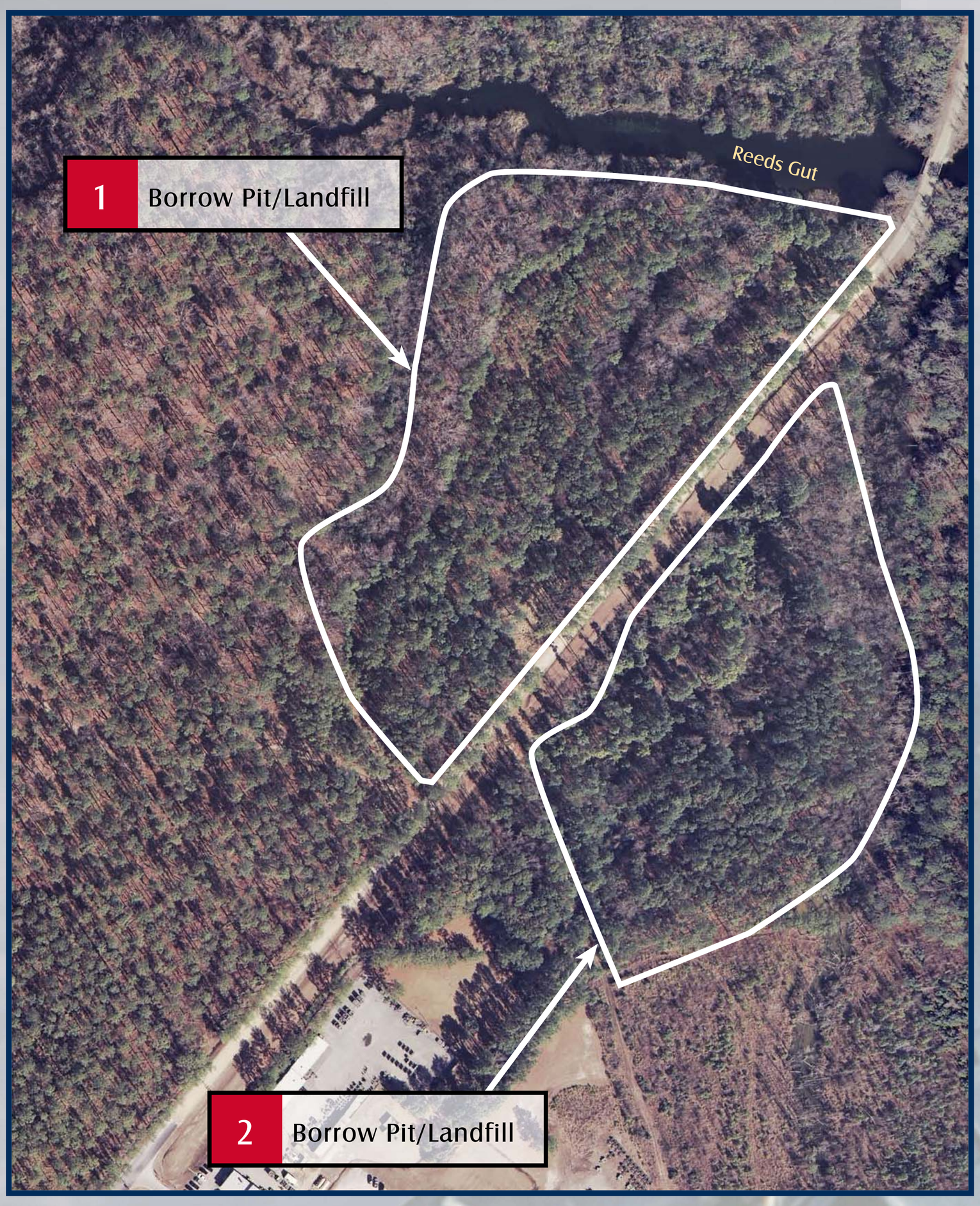
OU4 and LCID landfill area looking southeast

Permitted LCID landill

Mill Creek at OU4

# Operable Unit 5 (Closed)

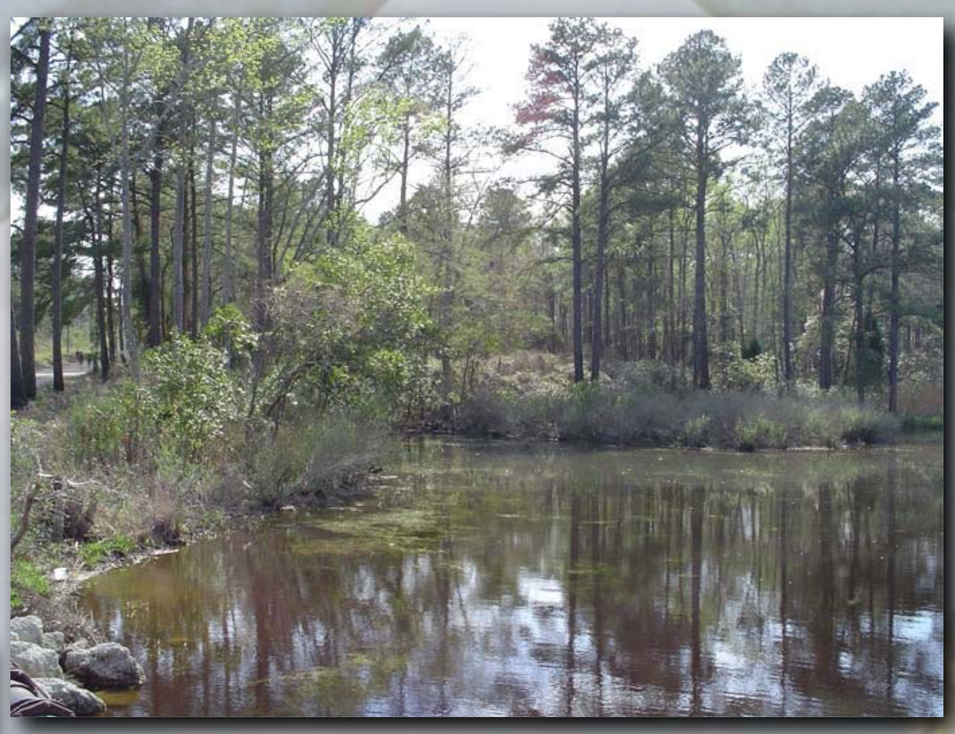
MCAS Cherry Point




- OU5 is approximately 17 acres and consists of 2 sites (Sites 1 and 2).
- A Record of Decision (ROD) was signed in July 2006 documenting the remedy for OU5:
  - No further action for Site 1.
  - Natural attenuation and long-term monitoring for Site 2 groundwater to address several chemicals found infrequently above State groundwater standards (benzene, trichloroethene, and vinyl chloride).
  - Land use controls, including restricted groundwater use and constraints on excavation that encounters groundwater.
- Long-term monitoring of groundwater was terminated in 2011 when all contaminants detected in groundwater no longer exceeded the performance standards in the OU5 ROD.
- OU5 achieved Response Complete and Site Closure in 2012, allowing the removal of land use controls.

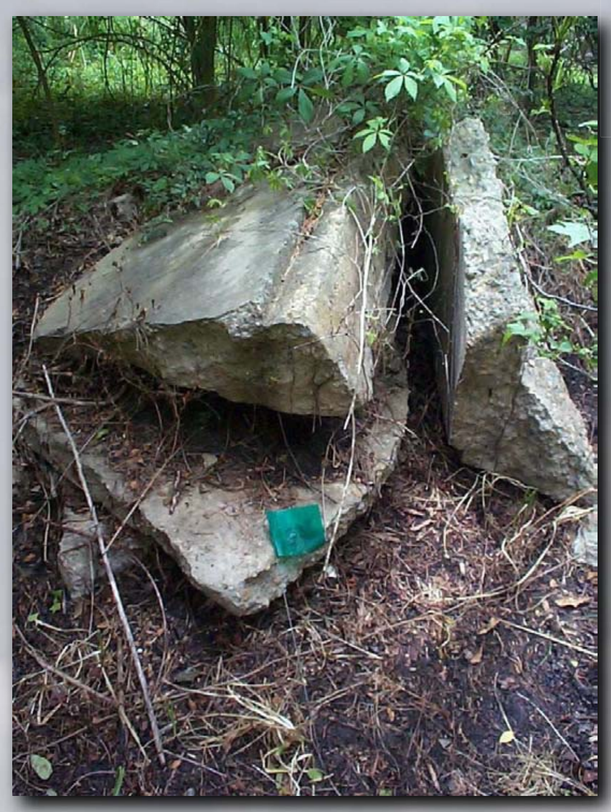
## Site 1 and 2
### Borrow Pits/Landfills

- Former borrow pits and disposal areas for construction debris and possibly some industrial waste. Several empty 55-gallon drums have been found among areas of surface debris.
- Disturbed areas are approximately 4 acres for Site 1 and 6 acres for Site 2.
- Use of the sites for borrow pits began in the mid to late 1950s.



View of Site 1 from Reed's Gut

Site 1 debris



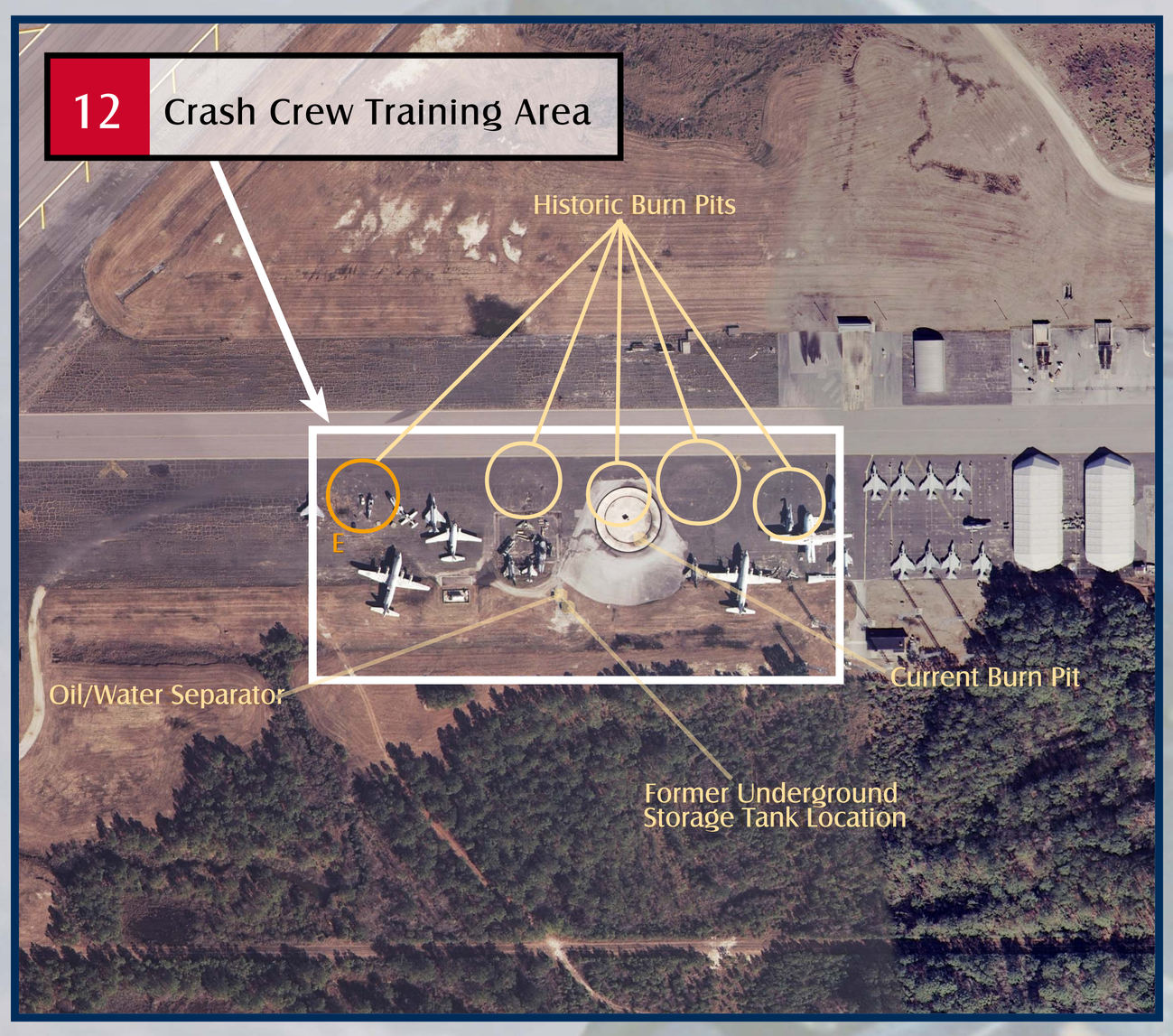
Construction debris pile – Site 1

Construction debris pile – Site 2

# Operable Unit 6 (Closed)

MCAS Cherry Point

- OU6 is approximately 7 acres and consists of 1 site (Site 12) located along former Runway 28.
- A Record of Decision (ROD) was signed in September 2006 documenting the remedy for OU6:
  - Excavation and offsite disposal of contaminated soil beneath former Burn Pit E (see "Soil Removal Action" box below).
  - Natural attenuation and long-term monitoring for groundwater to address petroleum-related compounds (naphthalene, 2-methylnaphthalene, and ethylbenzene).
  - Land use controls, including restricted groundwater use and constraints on excavation that encounters groundwater.
- Long-term monitoring of groundwater was terminated in 2008 when all contaminants detected in groundwater no longer exceeded the performance standards in the OU6 ROD.
- OU6 achieved Response Complete and Site Closure in 2008, allowing the removal of land use controls.




## Site 12
### Crash Crew Training Area

- Former location of a series of burn pits formed by circular rings of dirt placed on the runway surface; these historic burn pits were used to burn waste fuel for fire-fighting practice beginning in the mid-1960s.
- The current crash crew burn pit was constructed in 1985, and consists of a 100-ft. diameter concrete pad with a concrete curb and drainage system to capture runoff.
- Other site features include an oil/water separator that receives burn pit runoff and a former waste oil underground storage tank that was removed in 1995.

## Soil Removal Action at Former Burn Pit E Location

- In March 2007, nearly 2,900 cubic yards of soil were removed from beneath the former Burn Pit E location, down to a total depth of 7.5 feet.
- The excavated soil was sampled for toxicity characteristics and disposed of at an offsite, permitted landfill
- The excavation was backfilled with clean soil and the area was repaved with asphalt.

Crash crew training activities at the current burn pit

Close-up of current burn pit and drain

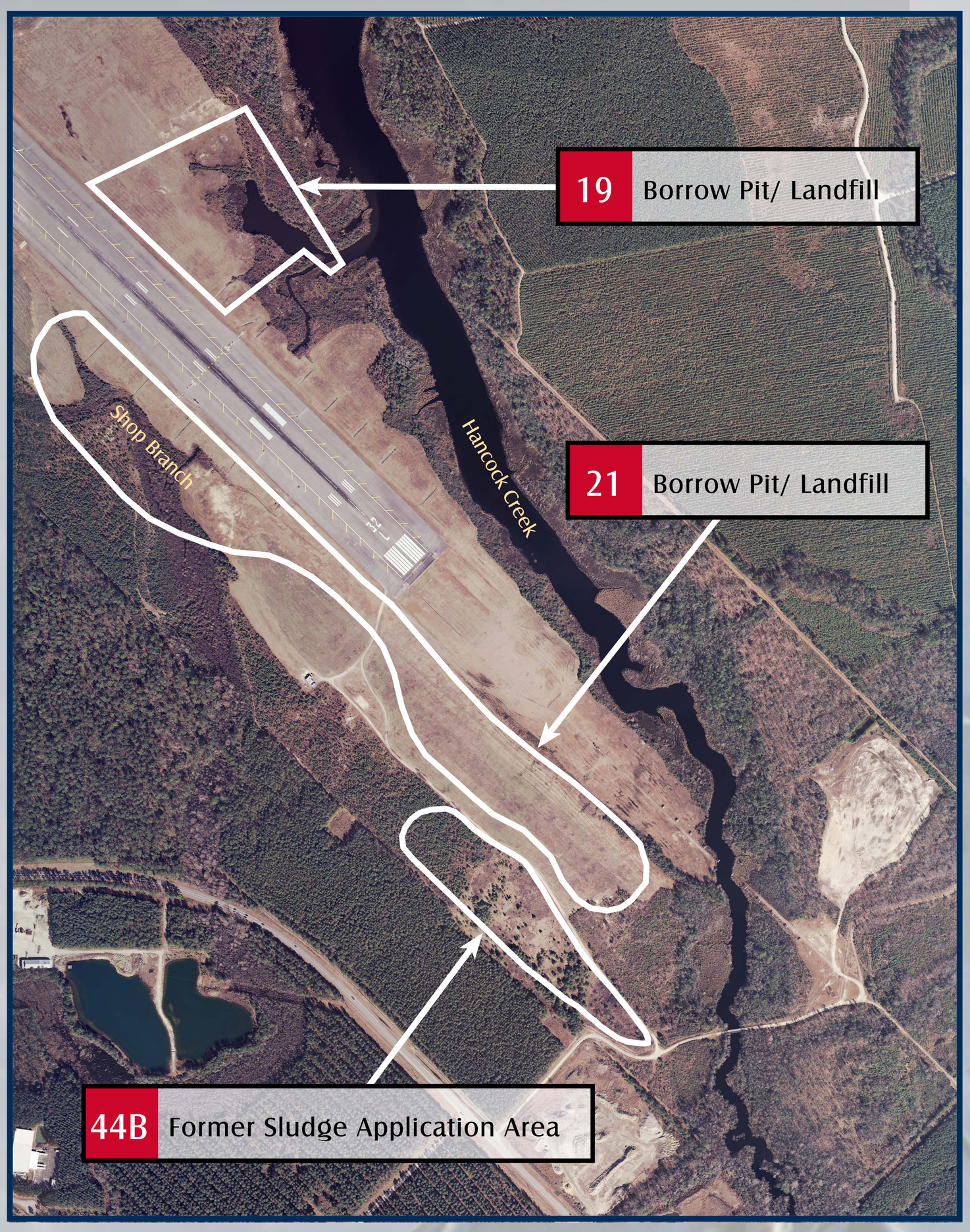
Asphalt removal prior to soil excavation

Soil excavation

Backfilling excavated area

# Operable Unit 13 (Closed)

MCAS Cherry Point




- OU13 is approximately 61 acres and consists of 3 sites (Sites 19, 21 and 44B).
- A Record of Decision (ROD) was signed in September 2005 documenting the remedy for OU13:
  - Natural attenuation and long-term monitoring for groundwater to address several chemicals found infrequently above State groundwater standards (primary 1,1-dichloroethene and vinyl chloride).
  - Land use controls, including restricted groundwater use and constraints on excavation that encounters groundwater.
- Long-term monitoring of groundwater was terminated in 2012 when all contaminants detected in groundwater no longer exceeded the performance standards in the OU13 ROD.
- OU13 achieved Response Complete and Site Closure in 2013, allowing the removal of land use controls.

## Site 19 and 21
### Borrow Pits/Landfills

- Consists of areas north and south of Runway 32L that include several former borrow pits that were later used for waste disposal.
- The first borrow pits were excavated in 1949 and the sites continued to be used until the early 1960s.
- No disposal records exist that list the quantities or types of wastes, but they are believed to include fly ash from the power plant and possibly industrial waste and asbestos-lined piping.

## Site 44B
### Former Sludge Application Area

- An area adjacent to Site 21 where liquefied sludge from the Air Station sewage treatment plant was land applied in 1987.
- In the 1950s and 1960s, the area was reportedly a disposal site for wastes that may have included asbestos piping.

Former sludge application area

Borrow pit/landfill area facing Runway 32L

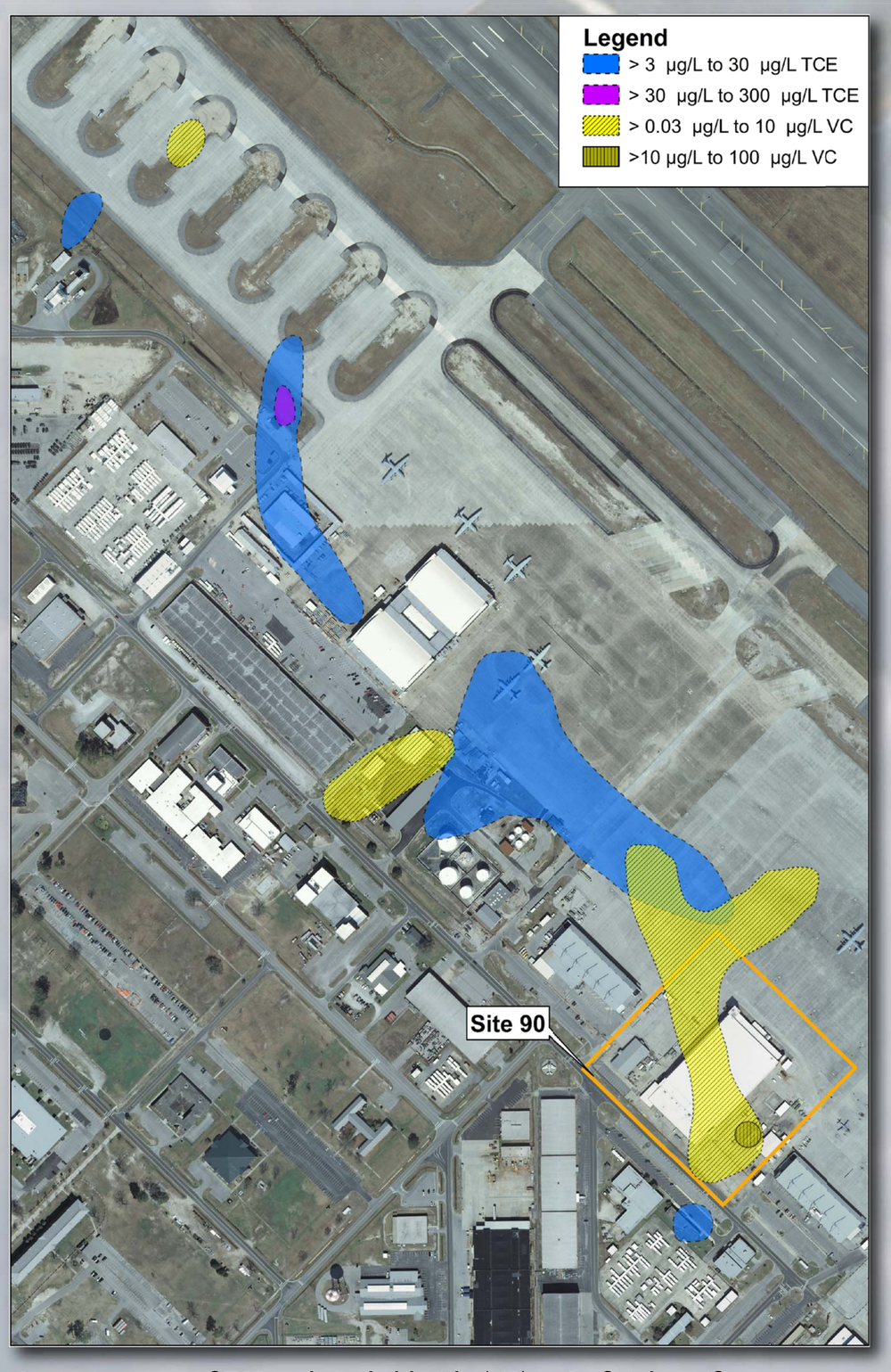
Site 19 adjacent to Hancock Creek

Hancock Creek next to Runway 32L approach lights

# Operable Unit 14

MCAS Cherry Point

- OU14 includes one site (Site 90) characterized by groundwater contamination beneath the flightline area surrounding a large aircraft hangar (Building 130) adjacent to Runway 14L.
- A Record of Decision (ROD) was signed in September 2009 documenting the remedy for OU14:
  - Natural attenuation and long-term monitoring for groundwater to address volatile organic compounds (VOCs), namely trichlorethene (TCE) and daughter compounds formed from the natural breakdown of TCE.
  - Land use controls, including restrictions on groundwater use, constraints on excavation that encounters groundwater, and a requirement to evaluate the potential for vapor intrusion to indoor air in the event of new building construction or existing building modification.
- Long-term monitoring of groundwater and land use controls will continue until all groundwater contaminants no longer exceed the performance standards in the OU14 ROD.




Concentrations of TCE and vinyl chloride (VC) in Surficial aquifer groundwater at OU14

## Site 90
### Building 130 VOC-Contaminated Groundwater

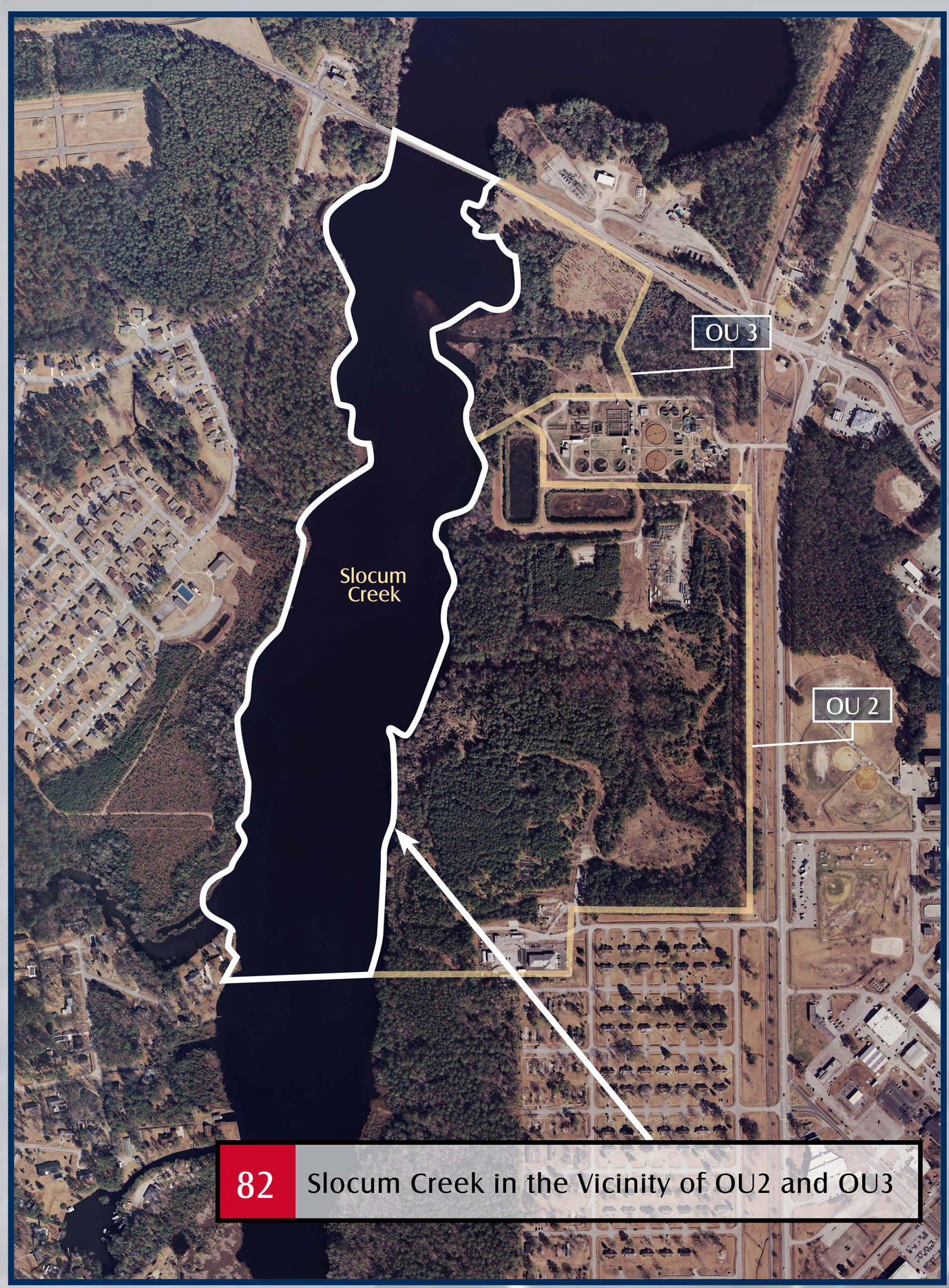
- Groundwater contamination at OU14 was first discovered near Building 130, but was later found to extend to the northwest, along most of the flightline area.
- There are no records of releases that indicate the origin of groundwater contamination, although an aircraft wash rack near Building 130 appears to be one of several likely sources.

Wash rack southeast of Building 130

Flightline area with Building 130 at left

# Operable Unit 15 (Closed)

MCAS Cherry Point




- OU15 includes one site (Site 82) and consists of the portion of Slocum Creek immediately adjacent to Operable Units 2 and 3.
- The U.S. Navy, the U.S. Environmental Protection Agency, and the North Carolina Department of Environment and Natural Resources agreed that no remedy or clean up was needed to protect human health and the environment.
- A Record of Decision (ROD) was signed in June 2003 documenting a "No Action" remedy for OU15.

## Site 82
### Slocum Creek in the Vicinity of OU2 and OU3

- Soil and groundwater contamination within OU2 and OU3 was investigated in the 1990s, and clean up actions were implemented at both OUs by the early 2000s.
- Site 82 was established to investigate potential risks to human health and the environment from fish consumption and exposure to surface water and sediment adjacent to OU2 and OU3.
- The results of human health and ecological risk assessments indicated no unacceptable risks from exposure to chemicals detected at OU15.

View of OU2 and OU3 adjacent to Slocum Creek at the mouth of Luke Rowe's Gut

Slocum Road Bridge at north end of OU15

Slocum Creek looking south from the Slocum Road Bridge

# Appendix B
# Superfund Community Involvement Handbook

United States
Environmental Protection
Agency

# Superfund Community Involvement Handbook

Solid Waste and
Emergency Response
(5204G)

EPA 540-K-05-003
April 2005
www.epa.gov/superfund

# Errata/Revisions to Pre-Publication Versions

Pre-publication versions of this document have been available in print since June 2001 and online since October 2001. The following revisions to the pre-publication versions appear in this document:

Revision 1 (June 2001): Chapter 5 (Implementing Community Involvement in Remedial Actions), section 12 (Operation and Maintenance), rewritten.

Revision 2 (December 2001): Name of original Appendix was changed to Appendix A: Superfund Community Involvement Requirements. Added Appendix B: Superfund Community Involvement Directives. Revised Chapter 2 to include an explanation of the Directives.

Revision 3 (April 2002): References to "SARA" in Appendix A were changed to "CERCLA". "Notice and Comment Period on Consent Decrees" was changed to "Notice and Comment Period on Settlement Agreements."

Revision 4 (April 2005): Added Appendix C: Community Involvement During Enforcement Actions, a revision of a chapter from the 1992 publication *Community Relations in Superfund: A Handbook*. Appendix C provides additional detail on Superfund community involvement activities and requirements during enforcement activities at Superfund remedial and removal sites. Also, eight OSWER Directives were added to Appendix B.

EPA 540-K-05-003
April 2005

# Superfund Community Involvement Handbook

Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
Washington, DC

# Notice

The policy and procedures set out in this document are intended solely for the guidance of Government personnel. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the U.S. Environmental Protection Agency. Officials may decide to follow the guidance provided in this document, or to act at variance with the guidance, based on an analysis of site circumstances. The Agency reserves the right to change this guidance at any time without public notice.

# Acknowledgments

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# CHAPTER 1 INTRODUCTION

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The U. S. Environmental Protection Agency (EPA) applies the term **community involvement** to its commitment to early and meaningful community participation during Superfund cleanup. The foundation of Superfund's community involvement program is the belief that members of the the public affected by a Superfund site have a right to know what the Agency is doing in their community and to have a say in the decision-making process. This *Handbook* presents legal and policy requirements for Superfund community involvement and additional suggestions for involving the community in the Superfund process. These suggestions are based on experience and are intended to enact EPA's commitment to providing the public with every opportunity to become meaningfully involved in the Superfund process.

## Background

When Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, in 1980, it incorporated public involvement into the Superfund process. Congress intended to ensure that the people whose lives were affected by abandoned hazardous wastes and EPA's actions to clean them up would have a say in what happened in their community.

Since then, Congress, through passage of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and EPA, through administrative reforms, have further strengthened the role of community members in the Superfund process. While EPA retains the final responsibility and authority to decide what will happen at a Superfund site, the Agency values and seriously considers community input.

Over the years, EPA's Superfund program has learned a lot about working with people affected by hazardous waste cleanups. Initially, "community involvement" was called "community relations," and although the wording may not seem significant, the concept of public participation was new, even in the private sector. The idea of imparting information to citizens was understood, but the idea of involving citizens and using their advice in making decisions was novel. Consequently, early community relations activities mostly focused on information dissemination rather than on exchange of information and ideas with the community.

As the Agency learned more about hazardous wastes and cleaning them up, so did the general public. Now people in every community have an opportunity to be as informed about Superfund issues as the EPA experts. People who live near Superfund sites should play a meaningful role in the decisions that affect their community. Many people have made a substantive contribution to the site assessment and cleanup process when they have taken the time to become involved.

## How to Use The Handbook

This *Handbook* contains guidance on how to implement an effective community involvement program:

- **Chapter 2, The Role of Community Involvement in Superfund**, describes the mission statement of the Superfund Community Involvement Program, community involvement legal requirements and policy guidelines, the big ideas in community involvement, and the shared community involvement responsibilities of the members of the Site Team.
- **Chapter 3, Risk Communication**, focuses on the fundamentals of risk communication to promote informed public participation in Superfund risk assessment and risk management decisions.
- **Chapter 4, Early Planning for Meaningful Community Involvement**, explains the importance of conducting community interviews and accepting community ideas. This chapter also discusses steps necessary

for drafting a Community Involvement Plan that encourages collaboration and sharing information with the public.

- **Chapter 5, Implementing Community Involvement in Remedial Actions**, outlines the steps in the Superfund process and explains required and recommended outreach activities that should occur at each step. This chapter starts with Site Assessment and finishes with deletion from the National Priority List.
- **Chapter 6, Implementing Community Involvement in Removal Actions**, discusses required and recommended community involvement procedures for Superfund removal actions. This chapter covers emergency removals, time-critical removals, and non-time-critical removals.
- **Chapter 7, Dealing with the Media**, discusses how the Site Team can improve its relationship with the media by becoming a valuable resource. This chapter addresses how to establish a media perimeter, conduct briefings, provide visuals, understand and work within different news cycles, use carefully defined messages, and obtain feedback.
- **Chapter 8, Community Involvement at Federal Facilities**, addresses the differences between responses managed by EPA and those led by Federal facilities or States. The chapter emphasizes the Site Team's interaction with other lead agencies to improve outreach and community involvement at these sites.
- **Chapter 9, Community Involvement Activities During Residential Relocation**, presents suggestions for conducting community involvement and outreach activities at sites where residents are being either temporarily or permanently relocated.
- **Appendix A** presents a comprehensive list of statutory and regulatory community involvement requirements in the Superfund program. This list represents the minimum requirements for community involvement under the law. However, be aware that truly successful community involvement typically requires actions beyond the basic requirements.
- **Appendix B** presents ten OSWER Directives related to Superfund community involvement.
- **Appendix C** presents additional detail on Superfund community involvement activities and requirements during enforcement activities at remedial and removal sites.

This *Handbook* cross-references many of the tools and resources found in the *Superfund Community Involvement Toolkit*, referred to hereafter as the *Toolkit*.

# CHAPTER 2 THE ROLE OF COMMUNITY INVOLVEMENT IN SUPERFUND

The most current version of this publication is available at www.epa.gov/superfund

## Mission Statement

The mission of the Superfund Community Involvement Program is to advocate and strengthen early and meaningful community participation during Superfund cleanups.

### The Concept

"Community involvement" is the name EPA uses to identify its process for engaging in dialogue and collaboration with communities affected by Superfund sites. EPA community involvement is founded on the belief that people have a right to know what the Agency is doing in their community and to have a say in it. Its purpose is to give people the opportunity to become involved in the Agency's activities and to help shape the decisions that are made.

Superfund community involvement is not a public relations effort to sell the Agency or its plans to the community, nor is it just the communication of information. Remedies that have community concerns and interests factored into them are less controversial and more likely to be accepted. Community involvement is the vehicle EPA uses to get community concerns and interests to the decision-making table.

### The Letter of the Law versus the Intent of the Law

CERCLA, as implemented by the National Contingency Plan (NCP), requires specific community involvement activities that must occur at certain points throughout the Superfund process. The Appendix to this document lists these activities according to the steps in the cleanup process. EPA policy, however, goes beyond the letter of the law and recommends the implementation of additional community involvement activities not required by the NCP.

In CERCLA, Congress was clear about its intent for the Agency to provide every opportunity for residents of affected communities to become active participants in the process and to have a say in the decisions that affect their community. Congress, in establishing the Superfund program, wanted the Agency to be guided by the people whose lives are impacted by Superfund sites. The intent of the law is restated in the NCP at 40 CFR 300.430(c)(2)(ii): "(A) Ensure the public appropriate opportunities for involvement in a wide variety of site-related decisions, including site analysis and characterization, alternatives analysis, and selection of remedy; and (B) Determine, based on community interviews, appropriate activities to ensure such public involvement."

> *"You will be most successful when you regularly interact with the community and proactively share information in an understandable way."*
> ***Paul Groulx, OSC, Region 1***

Satisfying the intent of the law—ensuring that the public has appropriate opportunities for involvement—may include implementing the formal and informal outreach activities listed in the *Superfund Community Involvement Toolkit*, which complements this document. This *Handbook* cross-references many of the tools and resources in the *Toolkit*. The *Toolkit* includes a number of standard and innovative outreach activities that EPA can use to satisfy the intent of the law. EPA has learned that making the extra effort to listen to and involve people leads to a smoother and more timely cleanup. Most communities can accept a remedy, even if they are not completely satisfied with it, provided they understand how the decision was reached and had a meaningful part in reaching the decision.

## The Site Team

Integrating community involvement into every phase of cleanup requires the commitment of all members of a Superfund Site Team. Team members typically include: a Remedial Project Manager (RPM) or On-Scene Coordinator (OSC) or both; the Community Involvement Coordinator

(CIC); a Site Assessment Manager (SAM); an attorney; and other technical staff.

The RPM or OSC is the overall project manager and is responsible for all site activities, including public outreach and community involvement. The role of the project manager is vitally important in public participation and outreach. The active involvement of the project manager promotes public participation among all team members and ensures the integration of community involvement in the cleanup process. Furthermore, the community sees that the entire Site Team is involved in public participation, which encourages the community to become interested and involved in the Superfund process. This ultimately helps to establish EPA's credibility in the community and to build trust between EPA and the community.

The CIC is responsible for advising the project manager and the Site Team on required community involvement activities and on activities that are recommended to ensure the community has every opportunity to be involved. The CIC often is delegated responsibility for planning community involvement and public outreach activities and for implementing most of these activities. However, an activity is most effective when it is implemented by the entire Site Team.

*A site in Region 2 provides an example of how early and meaningful public involvement can lead to a better cleanup. The community at this site played a substantive role in planning for the cleanup. A community task force was organized prior to the initiation of the Remedial Investigation (RI) to test the effectiveness of early community involvement in the Superfund cleanup process. The task force provided assistance and valuable input to EPA on the best approach for dealing with soils, sediments, and ground-water contamination. The Remedial Project Manager reported that the task force contributed significantly to the cleanup effort, primarily through early scoping of issues and dissemination of information to the community.*

*At a site in Region 5, EPA developed a partnership with a community group, the Minority Health Coalition. This partnership was pivotal in overcoming years of mistrust and community dissatisfaction about a former municipal landfill. EPA solicited community input on the remedy and changed the plans for dealing with groundwater issues as a result of community concerns. The community also came up with useful suggestions for removing an underground storage tank and designing a cap for the landfill.*

A good example of how a community involvement activity is planned and implemented is community interviews, which are conducted to obtain information for the Community Involvement Plan (CIP). The CIC can plan the interviews and make the necessary arrangements. Then, the CIC and the project manager (and other team members, if possible) can conduct the interviews. Through this approach, citizens see that there is broader interest in what they have to say, and the project manager starts establishing trust with the community. The project manager also will obtain a firsthand understanding of community interests and sentiments.

All Site Team members should participate in community involvement activities whenever possible. Team members should contact key people in the community periodically and also take time during site visits to meet informally with community members. Although project managers may not be able to participate in all community involvement activities, they should be briefed after key activities and maintain contact with the CIC, other team members, and the community.

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*An RPM at a State-led site worked directly with community residents. He listened to community input but made it clear that the final decision rested with the regulatory agency. Citizens formed a community group and felt empowered because the group could give input directly to the decision maker. They felt that the RPM was sensitive to the community's concerns about the potential economic impact of the cleanup. The community was very satisfied with the remedy selected, which takes an innovative approach and will be much less costly than other options that were considered.*

## Big Ideas in Community Involvement

### Community Involvement Objectives

On January 21, 1991, EPA issued Office of Solid Waste and Emergency Response (OSWER) Directive 9230.0-18, based upon Superfund Management Review Recommendation #43B. Among other things, the directive states that "it is important that we demonstrate to citizens that they are involved in the decision-making process." The directive emphasizes the objective that EPA should make every effort to fully incorporate the public's concern into site decision making. The Superfund Management Review listed four steps necessary to satisfactorily accomplish this incorporation: "listen carefully to what citizens are saying; take the time necessary to deal with their concerns; change planned actions where citizen suggestions have merit; and explain to citizens what EPA has done and why."

The recommendations of the Superfund Management Review have been restated in the general community involvement objectives listed below:

- *Keep the public well informed of ongoing and planned activities*. Most communities, including those that appear unconcerned, want to be informed of EPA's activities even when there appears to be nothing going on at the site. It is a mistake to believe that if there is nothing significant to share with the community, there is no need to talk to the community.
- *Encourage and enable the public to get involved*. People should be able to talk to the RPM and other members of the Site Team at regularly scheduled meetings or teleconferences, and should be able to easily get in touch at other times.
- *Listen carefully to what the public is saying*. Superfund managers and staff should listen carefully to the concerns and comments of citizens throughout the Superfund cleanup process. It is in the interest of Superfund staff to listen to what people are saying not only during the comment period after the Proposed Plan is issued, but during the entire process. The long-term success of the project is enhanced by involving the public early and often. Carefully considering the public's concerns throughout the process leads to better decision making. Some Site Teams have successfully adopted innovative techniques for soliciting citizen input. These include community workgroups, open houses, and informal discussions. Site Teams are encouraged to try as many of these techniques as possible to communicate with the community. (See the

*After several years of community hostility and distrust at a Superfund smelter site, EPA organized a Coordinating Forum that included community members and other key stakeholders. The forum assisted in the development and selection of a remedy for residential cleanup that all participants could support. That remedy was implemented without any major problems, and the forum has continued to work on plans for cleaning up the smelter site.*

Community Involvement Tools in the *Toolkit* for a detailed list and description of how and when to use different outreach techniques).

- *Identify and deal responsibly with public concerns*. Incorporating public concerns into site decisions need not be a cause for delay or excessive cost. By allocating sufficient time and resources for community involvement at the outset, the Site Team can successfully address community concerns in site decisions. For example, 30 days may not be enough time for an interested public to read and comment on a proposed plan. The Site Team will engender more trust and support if it works with the community to establish a realistic review period from the outset. OSWER Directive #9230.0-08 of March 8, 1990, titled "Planning for Sufficient Community Relations," provides additional guidance and instructs Regions to dedicate adequate resources to support additional community involvement needs. The directive recommends that Regions "...establish a discretionary fund that they could use to fund additional work necessary to respond to citizen concerns."
- *Change planned actions where public comments or concerns have merit*. It is crucial that EPA remain flexible and be willing to alter plans when a local community presents valid concerns. In recent years, EPA has demonstrated an increased willingness to change or significantly alter its preferred remedy. In some instances, public input has saved EPA from mistakes and unnecessary costs. It is more cost-effective to spend time, energy, and money working with the public regularly than to deal with resistance created when a community believes it has been left out of the process. EPA may remain unpersuaded after hearing from the public, but it is EPA's responsibility to seriously consider suggestions and provide feedback demonstrating that community comments were carefully and thoughtfully considered. The measure of success should not be whether the community applauds the remedy because EPA did what the community asked, but whether or not EPA honestly listened to people who participated and genuinely responded to their concerns.
- *Explain to citizens how EPA considered their comments, what EPA plans to do, and why EPA reached its decision.* Regardless of the outcome of site decisions, EPA must fully communicate those decisions to the public. The most thorough vehicle for such communications is the "responsiveness summary," EPA's written response to comments received from the public. It is imperative that the public be able to see EPA's response to their concerns and comments in writing. Responses should be clear and candid, not loaded with technical and

*An On-Scene Coordinator (OSC) at a New England site encouraged community members to form a task force to guide decision making at the site. The OSC took the position that he "worked for the community." He saw it as his job to keep people informed and get their buy-in. He listened and built a foundation based on communication. The OSC acknowledges that it took a lot of effort up front to give residents a stake in the effort. "I empowered the community without giving the store away," he said.*

*Once the task force was formed, the OSC listened to what they had to say. EPA's initial plan called for demolition and on-site burial of waste under a cap. The task force found it would be more prudent to remove everything to avoid land use restrictions and monitoring requirements. EPA and the State worked hard to make the recommendation work. The Site Team had an ambitious yet realistic plan and a battle cry of "ahead of schedule and under budget," and they did it.*

legal jargon, and provide reasons and justifications explaining EPA's decision. Although the responsiveness summary is the most visible and comprehensive explanation of EPA decisions, it is only one component of the process. EPA should explain site decisions throughout the entire cleanup, rather than only at a few key stages. EPA must establish and maintain a dialogue through which site decisions are discussed as they are made, as well as make Superfund documents more available to the public throughout the cleanup process.

## Core Values for Public Participation

The Superfund program endorses the core values for public participation developed by the International Association for Public Participation. These core values are also incorporated into the Model Plan for Public Participation developed by the National Environmental Justice Advisory Council and are the foundation upon which EPA should base its interactions with communities:

- People should have a say in decisions about actions that affect their lives.
- Public participation includes the promise that the public's contribution will influence the decision.
- The public participation process communicates the interests and meets the needs of all participants.
- The public participation process seeks out and facilitates the involvement of those who are potentially affected.
- The public participation process involves citizens in defining how they participate.
- The public participation process communicates to participants how their input was or was not used.
- The public participation process provides participants with the information they need to participate in a meaningful way.

## Summary

The purpose of Superfund's Community Involvement Program is to provide the mechanism through which EPA and a community can work collaboratively on a good solution to the hazardous waste problem confronting that community. As practiced by EPA, community involvement fulfills the statutory and regulatory requirements of CERCLA, as well as the intent of the law. At most sites, the success of community involvement has a direct impact on the success of the overall cleanup. For this reason, EPA's preferred cleanup remedy, as presented in the Proposed Plan, should reflect community concerns as much as possible. When it does, the community usually is more willing to accept the Proposed Plan. This will eliminate potential delays in the implementation of cleanup plans.

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# CHAPTER 3 RISK COMMUNICATION

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## Introduction

This chapter discusses the principles underlying effective risk communication and focuses on the need for the Superfund Site Team and all others involved in communication and decision-making activities at a Superfund site to understand and implement these principles (see the **Risk Communication** tool in the *Toolkit* for additional tips on effective risk communication and references to useful resources). Communication of risk will be effective only if the Agency's overall communication effort at a site is effective. This means establishing early communication networks that build trust and credibility. While there is a need to explain the technical basis for EPA's decisions and their effects on the risk facing the public, risk communication involves much more than merely "informing" the public. It is an on-going, two-way process between the government and the public. The government must provide information to the public in an understandable and useful manner.

> *"Significant community involvement in the risk assessment led to a better product and increased public confidence in the project."*
> ***Fred MacMillan, RPM, Region 3***

Risk communication activities are an integral part of the Community Involvement Plan (CIP; see also the **Community Involvement Plan** tool in the *Toolkit*). Basic objectives and criteria for successful risk communication should increase:

- Agency awareness of the public's perception of risks at a site;
- Public understanding of the chemicals of concern and corresponding potential effects on human health and the environment;
- Public understanding of the risks of remedial actions; and
- Public understanding of how the agency uses risk assessment in decision-making at a site.

Even an effective risk communication process does not guarantee consensus on the proper remediation activity among all affected parties. The goal of the risk communication strategy is to increase the understanding and involvement of interested parties in the process rather than reach unanimity. To that end, the public needs to be informed of Superfund's mandate to address public health and environmental threats from hazardous waste sites, rather than achieving zero-risk or to return waste sites to their best use.

Risk assessment is used in the Superfund process to help answer questions regarding: the risks of doing nothing to clean up a site; exposure and cleanup levels; and risks from undertaking cleanup activities. The public is much more likely to accept an Agency decision if it has been involved in the decision-making process and helped to establish exposure levels. In some ways, effective risk communication gains the Agency the "benefit of the doubt" when making decisions. Risk communication allows the public to feel that, although it may not be in total agreement with agency actions, EPA should be allowed to proceed as long as the public can hold the Agency accountable and verify its activities.

This chapter reviews the basic principles underlying effective risk communication. It also provides practical guidance on how to discuss technical issues with the public and address their concerns.

## Principles of Risk Communication

The "public" is not a single entity. Rather, it is made up of a wide range of individuals including, but not limited to, potentially responsible parties, individuals living near a site, members of special interest groups, and state and local politicians. Any communication effort must be directed to the specific needs of targeted public sectors. For purposes of this chapter, we simply refer to the "public," while recognizing its many sub-groups.

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## The Seven Cardinal Rules of Risk Communication

The goal of risk communication is to promote public involvement that is informed, reasonable, thoughtful, solution-oriented, and collaborative. EPA plays a pivotal role in shaping these attitudes. The *Seven Cardinal Rules of Risk Communication* are the principles for effective risk communication developed by EPA. They are recommendations, not hard and fast rules.

1) **Accept and involve the public as a legitimate partner.** This can be accomplished by involving the community and all other parties that have an interest in the issue early. Keep in mind that you work for the public.

2) **Plan carefully and evaluate your efforts.** Successful risk communication planning and evaluation entails: (1) clear, explicit objectives; (2) assessment of strengths and weaknesses of risk data; (3) attention to the needs and interests of various groups; (4) staff training (including technical staff) in communication skills; (5) message rehearsal and testing; and (6) evaluation and "lessons learned."

3) **Listen to the public's specific concerns.** Do not make assumptions about what people know, think, or want. Instead, take the time to find these out by listening to parties with an interest in the issue and and recognizing their feelings. People often are more concerned about trust, credibility, competence, control, fairness, caring, and compassion than mortality statistics or quantitative risk assessments.

4) **Be honest, frank, and open.** State your credentials, but do not ask or expect to be trusted. If you do not know an answer or are uncertain, acknowledge it and respond with the answer as soon as possible. Do not hesitate to admit mistakes or disclose risk information. Try to share more information, not less; otherwise, people may think you are hiding something.

5) **Coordinate and collaborate with other credible sources.** Take the time to coordinate with other organizations. Try to issue communications jointly with other credible sources. Few things make risk communication more difficult than conflicts or public disagreements with such sources.

6) **Meet the needs of the media.** Be open with and accessible to reporters. Realize that reporters must meet their deadlines. Provide risk information tailored to the needs of each type of media. Prepare in advance and provide background material on complex issues. Do not hesitate to follow up on stories with praise or criticism. Establish long-term relationships of trust with specific editors and reporters. Keep in mind that the media are usually more interested in reporting politics rather than risk, simplicity rather than complexity, and danger rather than safety (see the **Media** tool in the *Toolkit* and Chapter 7 in this *Handbook*).

7) **Speak clearly and with compassion.** Be sensitive to norms, such as speech and dress. Whether addressing large groups or individuals, use simple, non-technical language. Communicate on a personal level by using vivid, concrete images or examples and anecdotes that make technical risk data come alive. Use comparisons to help put risks in perspective, but avoid comparisons that do not include distinctions that people consider important. Acknowledge and respond with words and actions to emotions that people express—anxiety, fear, anger, outrage, and helplessness. Always try to include a discussion of actions that are underway or can be taken. Tell people what you cannot do. Promise only what you can do, and be sure to do what you promise.

Although these appear to be basic, common-sense rules for communication, they are frequently ignored. The Site Team must make special efforts to incorporate these communication rules into all projects.

**Risk Communication Is...**

*A two-way process that:*

- *Discusses risk and other concerns to identify mutual solutions;*
- *Responds effectively to public outrage; and*
- *Is genuine and sincere, and conducted with people's interests in mind.*

**Risk Communication Is Not...**

- *A public relations scheme to steer the public into seeing it EPA's way; or*
- *Another way of better explaining EPA's point of view.*

## Addressing Technical and Non-Technical Concerns

Individuals are often much more concerned with non-technical issues, such as fairness and control, than with the technical details of risk assessment. The risk communicator needs to address both technical risk assessment and non-technical concerns. Agency representatives have a tendency to focus on the technical issues, often to the exclusion of the public's other concerns. When this occurs, the Agency representative is not communicating with the public, especially since the public often views risk differently than do the technical experts.

Too often, experts in government or industry complain that the public is being irrational or emotional by failing to see the wisdom of the technical assessment. These experts feel that if they could just educate the public to the "real" risk (*e.g.*, injury from a Superfund site), then most of their concerns could be dispelled. That assumption is not realistic. The public's perception of risk can be driven by non-technical concerns and no amount of explanation of the technical data will address non-technical fears.

This is not to say that the technical aspects of risk assessment are not important. On the contrary, the technical aspects of the risk assessment are usually the basis for risk management decisions. The Site Team should be prepared to respond to both technical questions from the public regarding the scientific underpinnings of site management decisions and any non-technical issues raised by the public. In turn, a good risk communication strategy prepares the Site Team to deal with non-technical public concerns about risk and provides opportunities for the public to understand the technical aspects of risk assessment.

"Lay people sometimes lack certain information about hazards. However, their basic conceptualization of risk is much richer than that of the experts and reflects legitimate concerns that are typically omitted from expert risk assessment. As a result, risk communication and risk management efforts are destined to fail unless they are structured as a two-way process. Each side, expert and public, has something valid to contribute. Each side must respect the insights and intelligence of the other." - P. Slovic, "Perceptions of Risk," *Science*, 236:285, 1987

The "bottom line" is to establish trust and credibility between EPA and the public. The following sections identify some general guidelines to help explain risk to a lay audience, describe technical issues, and respond to the public's non-technical concerns.

## Non-Technical Public Concerns

Any explanation of the risk around a Superfund site must be coupled with a recognition of the issues that are driving the public's perception of risk at the site. Public perceptions of risk are very important. Agency staff need to realize that if the

public perceives something as a risk then it is a risk, no matter how minimal technical experts consider the risk to be. Researchers have identified factors that contribute to the way the public perceives a risk. Given the same technical risk assessment, these factors will affect whether individuals view a problem as more or less risky.

| Less Risky | More Risky |
|---|---|
| Voluntary | Involuntary |
| Familiar | Unfamiliar |
| Natural | Man Made |
| Fair | Unfair |
| Controlled by Self | Controlled by Others |
| Chronic | Catastrophic |
| Not Memorable | Memorable |

An example is the perception of the risk of smoking. If the 350,000 Americans who die of cancer from smoking every year all died on the same day, smoking would probably be prohibited. Because the risks from smoking are chronic, rather than catastrophic, they are perceived as less serious.

The public will generally consider the hazards of a Superfund site to be more risky for each of the above factors (with the exception of chronic versus catastrophic). For example, fairness is usually judged by whether there is an equitable distribution of risks and benefits. In the Superfund context, the public living near the site bears the risk while someone else has benefitted.

The communicator can use this insight into how the public perceives risk by addressing factors that can be changed, whenever possible. For example, the community's involvement in the decision-making process will increase the sense of control and lower the perceived risk. When the factor itself cannot be changed, acknowledging its presence and the legitimacy of those in the community who are "outraged" by it will help assuage concerns raised by the public. If the public does not believe that you take its concerns seriously, it may be less willing to listen to your technical explanations.

When using risk comparisons to explain the risk assessment or to put risks into perspective, do not compare risks that affect risk perception differently. For example, it is usually inappropriate to compare a voluntary risk, such as driving a car, to an involuntary one, such as living near a Superfund site. The public will often view these as non-comparable and will respond negatively to attempts to link them.

## Explaining Technical Issues

Early explaining of the risk assessment process for a Superfund site to the public is a critical component of the risk communication strategy; the earlier the Agency provides explanations, the better the outcome. The public needs to understand how EPA arrives at the determination of risk, what information is used, how the information is used, the uncertainties inherent in the process, and how uncertainties are addressed. Site Team members should familiarize themselves with the Superfund risk assessment process and how it is used in site decision-making regarding risk management, which will prepare them to

*Community residents near a Superfund site were angry with EPA. The Community Involvement Coordinator (CIC) asked key residents to invite their neighbors and friends for an informal session with him, the toxicologist, and the hydrogeologist. He also invited the strongest opponent to attend each session so that critics knew that the Agency was dispensing consistent and correct information. The CIC held as many as three sessions per week over several weeks. The sessions helped citizens understand site risks and helped the community to trust EPA.*

answer technical questions from the public more effectively.

The public needs to understand that for a risk to exist, the following three factors must be present: 1) site contamination; 2) contaminant pathways that reach surrounding populations; and 3) populations that may be exposed to site hazards. If any of these factors are missing, little or no risk is present. Other important technical issues for the public to understand include:

- The four steps of risk assessment—data collection and analysis, exposure assessment, toxicity assessment, and risk characterization;
- The use of Reasonable Maximum Exposure (RME) as the highest exposure that is reasonably expected to occur at a site, considering land use, intake variables, and pathway combinations;
- The methods used by the agency to calculate risk from carcinogens and risk from non-carcinogens;
- The fact that there is always some risk of exposure to carcinogens at a site;
- Potential health and ecological effects associated with the chemicals of concern; and
- Other site-specific issues that should be brought to the public's attention.

Problems often arise when either too much or too little information is provided. The spokesperson often fails to determine precisely what information the public needs and in what form. Consequently, the tendency is to provide too much information, which muddles the message and does not meet the public's needs or the Agency's objectives. After carefully selecting information to provide to the public, other sources of information should be acknowledged to avoid perceptions that information is being withheld.

Communicating technical information to the public can be accomplished using the following general guidelines (adapted from C. Chess, B.J. Hance, and P. Sandman, *Improving Dialogue with Communities*, NJ Department of Environmental Protection, 1987) :

- Do not underestimate the ability of the public to assimilate technical information. Keep in mind that if there is a compelling reason for people to learn new information, they will make an effort to acquire an understanding of a new subject, even if it is technical.
- Try to determine what risk information people need and in what form. This determination means the spokesperson should take the time to "know his/her audience." Be willing to summarize information that the audience needs, rather than present everything the communicator knows.
- Anticipate and respond to people's concerns about their personal risk. Remember the factors driving the public's concern.
- Be sure to provide adequate background when explaining risk numbers. Use non-technical language as much as possible.
- Be prepared to provide information in foreign languages as needed.
- Provide information responsive to public concerns that is neither too complex nor patronizing.
- Put data in perspective and try to express the risk in different ways.
- Use language consistent with the expertise of your audience and avoid jargon and words that may mean one thing to one group and something else to another. For example, Agency personnel often say they use a "conservative" model to estimate risk, meaning that the model tends to overestimate the likely risk. The public, however, may likely think of "conservative" in its political sense as favoring the preservation of existing conditions.
- Explain the process (the steps in the Superfund risk assessment process). Be willing to discuss uncertainties. Reviewing this process with the public will demonstrate that the risk numbers are not derived from a "black box."

- Use graphics and visual aids.
- Collaborate with other credible experts.
- Be careful when comparing environmental risk to other risks.

## Risk Comparisons

One of the best ways to communicate technical issues is to use comparisons that provide context for a situation. However, inappropriate comparisons can have disastrous results for the credibility and efforts of the communicator.

Staff should use comparisons only in conjunction with factors that affect the way the public perceives risks associated with the site. Do not use comparisons that ignore these factors. For example, do not compare an involuntary risk, such as groundwater contamination, to a voluntary risk, such as smoking. The communicator should avoid comparisons that trivialize the risk, such as indicating that one has a greater chance of developing cancer from a contaminant in peanut butter than from living near a Superfund site. This comparison may be technically true, but it is irrelevant and may anger the general public.

As with any technical discussion, be careful to document the accuracy of risk estimates used in comparisons. An inappropriate or inaccurate comparison can lower audience interest and participation to the point that they no longer hear the message being communicated. The following are guidelines for using risk comparisons:

- A risk comparison should not address acceptability of risk, since "acceptability" is a value question rather than a technical one. Use comparisons that put risks in perspective. This can help individuals determine the acceptability of the risk for themselves.
- Compare the risks associated with your proposed solution or action to that of alternative solutions.
- Quantitative comparisons usually are more useful than probability comparisons.
- Use comparisons of the same risk at different times (i.e., before and after remediation).
- Use comparisons with a standard (for example, if the standard for cleanup at a Superfund site is a risk level of one in a million, the remedial action seeks to reduce the risk to that level).
- Compare different estimates of the same risk (*e.g.*, estimates from communities, industry, and your own). If someone else has a higher or lower risk estimate, note the difference.

When explaining risk comparisons to the public, keep the overall communication goal in mind: to provide the public with useful information so that it can understand and participate in the process. The public may only want to know "Is it safe?" It might be useful when explaining estimated excess cancers to point out that 25-33 percent of the population will likely contract some form of cancer during their lifetime, regardless of exposure at this or any site. Again, do not try to imply that the risk at the site is acceptable, but rather provide information to help the public put the risk into perspective. Point out, without sounding glib or condescending, that individuals have to make their own determinations about what they consider safe. For example, a $10^{-6}$ level chosen by EPA at a site is not risk-free. It is the level determined by EPA at which the risk posed to human health and the environment is low enough to warrant no further action.

## Involving the Public

Ideally, the public should be involved as early as possible in decisions affecting a Superfund site. Early involvement is important not only from a community involvement standpoint, but also because the public can provide valuable information and input into the risk assessment, including pathways of exposure, historical activity, and potential future use of the site. Such information can be collected from the public during the site inspection phase, but most certainly should be by the initiation of the remedial investigation.

Involving the community in risk assessment activities is not always easy, even if the proper groundwork has been laid. Establishing a conversational rapport with citizens who are not familiar with the Superfund risk assessment process may be difficult. At sites where the community is actively involved in the risk assessment process, staff may have difficulty scheduling meetings that are convenient for both Agency officials and community residents. High staff turnover found in many federal and state agencies may be frustrating for both the agency and the community as the two try to establish a working relationship based on familiarity and trust. Despite these difficulties, early community involvement in risk assessment activities should be undertaken at all sites.

Community involvement is best coordinated through a risk communication strategy, which is incorporated into the Community Involvement Plan (CIP). In developing the strategy, Agency staff should anticipate the kinds of questions the public will have at each stage of the process and the plan for suitable information to be distributed at each step. For example, during the period leading up to the risk assessment—preliminary assessment, site inspection, and listing—the public likely will be most concerned about immediate risks from the site, such as effects on drinking water from their wells.

During the risk assessment period, the public may focus on their future well-being and the progress of the risk assessment once immediate concerns have been addressed. The Site Team may hear questions such as: "Will the Agency find out how much contamination there is and where it will go?" or "Is the Agency considering children's exposure?" or "Is the Agency taking into account people who grow vegetables?" The best opportunity for community involvement in the risk assessment process is during the exposure assessment step. Exposure information may be gathered from the public during community interviews or through a workshop designed to explain risk assessment and gather exposure information.

After the risk assessment is completed, concerns often will turn to the overall effectiveness of the remedial action. The public may ask questions such as: "If wastes are left on site, how can the remedy's effectiveness be guaranteed?" or

*At a very controversial Region 3 site, EPA invited stakeholders to provide input into what became one of the most complicated risk assessments the Agency had ever undertaken. Community members responded with ideas on approaches to the risk assessment and information about things such as house-cleaning practices, resident longevity, and land use practices.*

*When a PRP-funded community group offered to conduct the risk assessment, EPA invited the group to participate as a partner in the assessment process. Data, methods, issues, and concerns were shared and discussed. Despite varying agendas, the risk assessment was collegial. EPA shared a preliminary draft of the risk assessment with the community group, which provided valuable data corrections.*

*By involving members of the community in the assessment itself, EPA gained helpful information and established a high level of public confidence. Although not everyone was pleased with the conclusions of the risk assessment, no one felt left out of the process.*

*EPA gained a better understanding of people's misgivings about a very technical process, and the community gained a greater respect for EPA's risk assessment process. Most importantly, each gained a better sense of other's priorities, in the process overcoming much distrust and many preconceptions.*

"What guarantees are there that no effects from exposure will occur in 20 years?" or "What are the risks from conducting the cleanup?" Staff should use a variety of community involvement techniques to answer these questions.

Staff should not selectively involve the public in the risk assessment process. For example, staff should not gather exposure information at a public meeting without explaining the risk assessment process. Nor should they release risk assessment information without explaining it. Selective involvement can create false expectations and damage trust and credibility.

## Techniques

Several techniques are available to establish an effective communication network.

**One-to-One or Small Group:** This is an effective method to communicate with interested individuals or groups. It is low-key and non-threatening, and can facilitate a useful one-to-one exchange of information.

**Public Meeting:** This technique may be effective early to explain the Superfund process to the community and later to focus on risk assessment and the RI/FS. A public meeting in the early stages of Superfund is a clear sign to the community that the Agency wants to establish an open rapport from the beginning, even if it does not have complete information to answer all of the public's questions. Later, meetings can be used to answer more specific questions and inform the public about precisely what is occurring at the site. Remember the guidelines discussed above for communicating technical issues.

**Workshop and Less Formal Interaction:** Depending on its relationship with the community, the Agency may choose a less formal, more interactive community involvement technique, such as workshops, to describe Superfund's risk assessment process and how it will be used. A workshop early in the RI/FS process is a good opportunity to present Superfund procedures and timeframes and discuss the public's expectations of the Agency at the site. A workshop also may be useful just before the completed risk assessment is released to the public.

*A teacher from a school near a Superfund site with lead and mercury contamination asked a Community Involvement Coordinator (CIC) about educating children and their parents about the site risks in a manner appropriate for their age groups. The CIC organized an exhibit in the school auditorium with a variety of information on lead and mercury. There were pamphlets for parents and school staff on what to do in case of emergencies. For the children, the CIC showed two short films on the dangers of lead and mercury poisoning. Parents and children asked questions relating to the movies. Afterwards, many adults said that the movies delivered a clear message about the hazardous substances. Many said it was a great way to show the students, parents, and teachers what mercury looked like in "real life," without the danger of having it present. Visualization of toxic effects also strengthened the message.*

**Focus groups:** Focus groups are in-depth interactive discussions led by a facilitator. They are designed to obtain information from selected participants and test ideas or techniques. Potential uses for focus groups in risk communication include:

- Explaining risk perceptions;
- Evaluating perceptual uses and information processing;
- Testing risk communication materials;
- Selecting risk communication channels;

- Designing risk-mitigating polices; and
- Assessing risk communication effectiveness.

## Summary

An effective risk communication strategy promotes meaningful community involvement early in the cleanup process. The goals of risk communications are to help individuals understand risk assessment and help technical staff understand community perceptions and concerns. Understanding risk assessment enables individuals in the community to better understand agency actions, allowing them to participate fully in the decision-making process. Trust between the community and EPA helps prevent conflicts and facilitates resolution of conflicts that arise. If staff follow the seven cardinal rules and the guidelines established in this chapter, trust and credibility in the community have a better chance to develop.

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# CHAPTER 4 EARLY PLANNING FOR MEANINGFUL COMMUNITY INVOLVEMENT

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## When to Start

The first question to answer in community involvement is: "when to start?" Planning for community involvement should begin during the site assessment phase. Site assessment is the initial phase of a Superfund response to a hazardous waste release or threat of release. Site assessments consist of a preliminary assessment and a site inspection (PA/SI).

If no immediate threat is present that requires emergency response, then, during the site assessment, EPA and the State evaluate the severity of reported hazardous waste releases. The Site Team should plan for community involvement if the response action is expected to last more than 120 days. The plan should include:

- Designating a Community Involvement Coordinator (CIC);
- Contacting key local officials;
- Assembling community profiles; and
- Explaining site assessment activities to the community.

## Preliminary Assessment

Preliminary assessments are limited in scope, generally involving a review of site records, permits, pathway data, target data, and land titles to establish past activities at the site (e.g., waste produced or disposed) and the need for further investigation. A preliminary assessment is typically a "desk-top review," and usually does not require a site visit or sampling. As a result, there is little need for organized community involvement during the preliminary assessment beyond designating a CIC and possibly calling key local officials.

If it is likely that the site will be placed on the National Priorities List (NPL) or is a long-term removal, it may be wise to contact key local officials, such as the mayor, city council members, public health and works officials, and members of local planning boards. Staff should keep informed about the results of the preliminary assessment to plan any follow up contacts with the community. If the preliminary assessment indicates that a site inspection is not needed, the same key community officials should be informed. If a site inspection is needed, local officials should be advised that the site is slated for further government investigation and given an approximate schedule. Providing information to interested officials and residents, especially when they request it, can improve future relations and communication efforts.

## Site Inspection

The purpose of the site inspection is to gather information to determine whether the site should be placed on the NPL or will require a removal action. A site inspection may involve one or more visits by State or EPA field teams to evaluate site hazards. Because a site inspection involves teams working in protective clothing, community interest in the site will likely increase. Consequently, the Site Team should obtain the schedule for all field activities, including work by the Field Investigation Team, the Technical Assistance Team, and the Technical Enforcement Support Team.

Although it is not required, the Site Team may want to prepare the community beforehand for any on-site visits by technical work teams. The individuals to contact include:

- Local officials;
- Heads of community organizations;
- Citizens who have expressed concerns to local, state or federal officials;
- People who live closest to, or on, the site;
- Principals of schools near the site;
- Local businesses near the site; and
- Potentially responsible parties.

Advance notice can help to prevent alarm about the appearance of government officials and contractor teams at the site. Consider placing a display advertisement in a local newspaper or request the newspaper to include an article about

planned site activities. The more open EPA is with the community, the more likely the Agency will be trusted. Not informing the community (passively) can be interpreted as withholding information (actively).

During the site inspection, the Site Team should identify key community leaders and organizations to interview. This identification can be accomplished by assembling a community profile and updating it as often as necessary. A community profile outlines local issues, events, and players (see the **Community Profiles** tool in the *Toolkit*). Assembling a profile helps the Site Team to understand local issues and people, and may help the Site Team determine whether any preliminary community involvement should be conducted. Furthermore, a community profile helps the Site Team to develop a communication strategy and a Community Involvement Plan (CIP).

> *"The sooner you reach out the better. You will be more successful with early, humble coordination."*
> ***Rita Engblom, RPM, Region 6***

To assemble the community profile, the Site Team should:

- Acquire information about the site by conferring with the Site Assessment Manager and other Regional and State staff;
- Conduct research on the Internet;
- Confer with local resources and contacts; and
- Identify interested officials, citizens, and organized groups.

When acquiring information about the site, consider some of the following characteristics:

- Demographics;
- Ethnic backgrounds;
- Languages;
- Sensitive populations;
- Media interest and contacts;
- Previous cleanup activity;
- Interest in obtaining a Technical Assistance Grant (TAG);
- Interest in forming a Community Advisory Group (CAG);
- Popular activities; and
- Accessible resources.

> *By accessing the U.S. Department of Housing and Urban Development (HUD) web page, an EPA CIC learned that Step-Up (HUD's Worker Training program) was active in a community near a Superfund site. He met with the local Step-Up contact to learn more. Then, using HUD's geographic information systems, he gathered local demographic data that improved the communication strategy for the site.*

Conducting research on the Internet is a great way to assemble information for a community profile. WasteLAN (formerly called CERCLIS3) is a national database with extensive information on hazardous waste sites, including site history, cleanup progress, and milestones (see the **WasteLAN** resource in the *Toolkit*). Geographic Information Systems (GIS) contain demographic information regarding environmental and socio-economic characteristics. For instance, both the U.S. Department of Housing and Urban Development's 20/20 GIS program and EPA's LandView GIS program track population by: race; population per square mile; population by age; percentage of minority households in the surrounding area; numbers of households living in poverty; and community support programs.

The Site Team also should take advantage of the multimedia facet of LandView, which identifies other hazardous waste sites or permitted facilities. It is critical that information on other local EPA facilities or environmental activities in other media be thoroughly noted in the community profiles,

addressed in the community interviews, and included in the CIP so that the Site Team is familiar with other local EPA activities and will be able to maintain credibility with the community when questioned about the impact of those activities. In addition, knowledge of multimedia issues at a site can help to set the proper level and methods for community involvement. For instance, if EPA has already been active in the community, fact sheets may be sufficient. Conversely, if a community has never dealt with EPA, more community involvement activities may be necessary.

Local contacts (*e.g.*, community leaders, store owners, activists, and long-time residents) should be consulted to identify stakeholders and begin creating a mailing list. Conferring with local resources and contacts also will help you to see local issues from an insider's perspective. Research the site's history by visiting the public library and searching local publications for information. These documents can convey a lot of information about site contamination, EPA's previous involvement, and the risk that site contaminants pose to residents.

The Site Team should explain to the community that a site inspection is not evidence of a confirmed problem. To help explain this, the Site Team should develop a brief communication strategy to determine the message, the audience, and the vehicle to communicate the message (see the **Communication Strategies** tool in the *Toolkit*). Possible vehicles to communicate the message include public advertisements, flyers, telephone hot lines, and fact sheets. Although there are a variety of vehicles to choose from, the fact sheet is used most frequently (see the **Fact Sheets** tool in the *Toolkit*). Whatever vehicle is used, it should explain the purpose of the site inspection and its possible outcomes (*e.g.*, proposal of the site for the NPL, placement of the site in a category, or referral of the site to another program to address hazardous waste problems). In addition, a contact name and phone number should be included for members of the public seeking further information.

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# CHAPTER 5 IMPLEMENTING COMMUNITY INVOLVEMENT IN REMEDIAL ACTIONS

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## About The Superfund Remedial Process

This chapter provides a comprehensive discussion of how a Site Team should advocate and strengthen early and meaningful community participation during a Superfund remedial action. Remedial actions are long-term actions taken by EPA to study and clean up sites listed on the NPL. These actions have a number of distinct phases, each with its own set of community involvement activities.

In this chapter, each phase in the remedial process is discussed in sequence:

1. Discovery
2. Preliminary Assessment/Site Investigation
3. Proposed Listing on the NPL
4. Final Listing on the NPL
5. RI/FS Begins
6. FS Completion and Proposed Plan
7. Notice and Comment on Consent Decree (if necessary)
8. Pre-ROD Significant Changes (if necessary)
9. Record of Decision
10. Post-ROD Significant Changes (if necessary)
11. Remedial Design/Remedial Action
12. Operation and Maintenance
13. Proposed NPL Deletion and Final NPL Deletion in the *Federal Register*

Some of these phases may run concurrently.

The section for each phase includes an introduction followed by a discussion of the phase's required community involvement activities and additional recommended community involvement activities. Discussions of specific community involvement activities (*e.g.*, public comment periods, fact sheets, *etc.*) in this chapter are brief, and the reader is referred to the *Community Involvement Toolkit* for further details. The chapter discusses community involvement requirements for certain phases—including Final Listing on the NPL and FS Completion and Proposed Plan—in more detail due to their greater complexity and importance. References to community involvement tools and resources in the *Toolkit* are denoted with bold typeface. Integrating community involvement into every phase of a remedial action requires the commitment of all members of a Superfund Site Team. Team members at a remedial action site typically include: the Community Involvement Coordinator (CIC), the Remedial Project Manager (RPM) (plus possibly an On-Scene Coordinator (OSC) if the site includes a removal action), a Site Assessment Manager (SAM), an attorney, and other technical staff.

> *"Frequent open and honest communication fosters a high level of trust and cooperation."*
> ***Mark Doolan, RPM, Region 7***

The RPM is the overall project manager with responsibility for everything that occurs at the site. The CIC is responsible for advising the project manager on required community involvement activities and recommending activities that will ensure the community has every opportunity to be involved. Involvement by all members of the Site Team in community involvement planning and implemenation activities ensures integration of community involvement in the cleanup process and furthers public participation.

## 1. Discovery

Discovery is the first phase of the Superfund remedial process. Sites may be discovered in a number of ways. A person may report a hazardous substance release to the National Response Center, citizens may petition EPA to investigate potential releases, or state and local governments may request that EPA investigate a potential release. Once discovered, a site is added to WasteLan, EPA's database of reported hazardous waste sites (formerly known as CERCLIS3, see

the **WasteLan** resource in the *Toolkit*). Once a site is included in WasteLan, EPA schedules it for site assessment.

## 2. Preliminary Assessment/ Site Inspection

After discovery, EPA conducts a site assessment, consisting of a preliminary assessment and a site inspection (PA/SI), to determine whether hazardous materials are present at the site. The site assessment phase may be the community's introduction to EPA and and the first time citizens hear about the possible presence of hazardous wastes near their homes. This phase can be very frightening for residents. They may feel threatened or uncomfortable about having limited control over the hazardous waste problem in their community. This fear and concern is why it is important to design an effective community involvement plan during this phase.

**Preliminary Assessment**. During the preliminary assessment, EPA searches permits, titles, and other records to gather data about past activities, exposure pathways, and human and other biological targets at the site. Record searches and other data gathering will involve or affect citizens. Consequently, the community will learn that EPA is investigating the site for dangerous substances. If the site is a likely candidate for listing on the NPL, the Site Team should obtain the schedule of all field activities to be conducted by EPA contractors. The Site Team may want to prepare the community before any on-site visits by technical work teams and alleviate any concerns about the presence of government officials and contractor teams working at the site.

**Site Inspection**. During the site inspection, field work begins. Workers wear protective equipment in case hazardous substances are present. Understandably, these protective measures frighten some people. Because of this fear, it is recommended that EPA conduct community outreach to explain what EPA is doing at the site. Although the field work that occurs during the site assessment is limited, the Site Team can still use this time to brief the community on the Superfund process, imminent and long-term risk, and what to expect. Early briefings can help the Site Team build trust in the community.

### Outreach Activities During PA/SI

Although community involvement is not required during either the preliminary assessment or the site investigation phases of site assessment, EPA does involve the community at sites that garner public interest and sites with a high probability of being placed on the NPL. Regions should consider the following factors when deciding whether a site should receive more extensive community involvement efforts during site assessment:

- The likelihood that the site will be included on the NPL;
- The site's proximity to other NPL sites and the level of public interest at those sites;

*Sometimes the community can provide valuable information about a site's history that may not be available elsewhere. Community members at a Region 4 site were not satisfied with EPA's site investigation because it relied on aerial photographs. They thought EPA had not done enough to seek out information about past practices from people who live near the site. Working with EPA, members of a Community Advisory Group (CAG) for the site helped by talking with local media to raise awareness and encourage people to step forward. The CAG group hoped to solicit information from long-time residents with knowledge of site history or other past practices who may have been reluctant to talk with "outsiders" from EPA.*

- The site's location with respect to the population centers; and
- The amount of current interest in the site, as measured by attention from citizens' groups, local residents, and the media.

During the site assessment phase, the people most likely to be aware of potential site problems and interested in government response are local officials, including the mayor, city council members, the public health chief, the public works chief, and members of local planning boards. Therefore, one of the first actions staff should take is to contact state and local officials, the congressional delegation, and key citizens who can provide information about the scope and history of the problem.

Other individuals to contact include:

- Heads of community organizations;
- Citizens who have expressed concerns to local, state, or federal officials;
- People who live closest to, or on, the site;
- Principals of schools near the site;
- Local businesses near the site; and
- Potentially responsible parties.

Some recommended outreach activities to conduct at this point are:

- Designating a CIC who can advise the Site Team on community involvement and field the community's questions.
- Distributing **Fact Sheets** to let residents know EPA is conducting site assessment activities (see the **Fact Sheets** tool in the *Toolkit*).
- Holding informal **Public Availabilities/Poster Sessions** (see the **Public Availabilities/Poster Sessions** tool in the *Toolkit*).
- Distributing flyers throughout the community (in schools, grocery stores, and churches).
- Using news releases (see the **Media** tool in the *Toolkit*).
- Creating a **Mailing List** of concerned citizens (see the **Mailing List** tool in the *Toolkit*).
- Establishing a toll-free telephone hotline and publicizing its availability (see the **Telephone** tool in the *Toolkit*).

EPA should follow up with the community after a PA/SI has been completed to explain the results and the evaluation and scoring that will happen during the next phase. Site sampling and scoring often take many months to perform, and the time lag between the SI and the decision to proceed with a remedial investigation (RI) may lead to considerable frustration. The Site Team should issue a fact sheet describing the preliminary findings to reassure the community that EPA is actively addressing the site.

EPA should always notify the community when a decision is made about the site. Local officials and the public should hear such news directly from the Site Team, rather than from the news media or other sources.

## 3. Proposed Listing on the NPL

The Hazard Ranking System (HRS) is the screening tool used by EPA to evaluate risks to public health and the environment associated with a site. Using the HRS, EPA assigns a score between 0 and 100 to indicate the relative seriousness of the risks posed by the site. The factors reflected in the HRS score include the level of contamination at the site in air, soil, and water (including surface, ground, and drinking water); the size of the population at risk; the ecological area at risk; and the likelihood that people will come into direct contact with contaminants at the site. The HRS score accounts for the potential for ecosystem destruction, effects on the human food chain, and actual or potential contamination of ambient air.

The HRS score is one way to determine whether a site is placed on the NPL, and, if so, its priority ranking on the list. Once a site is scored, it may be placed on the NPL for any of three reasons:

- The site scores 28.5 or higher using the HRS;

- The state in which the site is located designates the site as its highest priority; or
- The U.S. Agency for Toxic Substances and Disease Registry (ATSDR) issues a health advisory for the site, and EPA believes that a remedial action is the best response.

If a site does not qualify for the NPL, it may be addressed by other Superfund response programs, such as removal and emergency response. Sites not meeting Superfund removal or remedial response criteria may be handled under other environmental laws, such as the Resource Conservation and Recovery Act or the Clean Water Act. Sites also may be referred to other federal programs, such as the Brownfields Economic Redevelopment Initiative, or may be handled by state hazardous substance response programs, including voluntary cleanup programs.

If a site is placed on the NPL, several community involvement activities are required.

### Community Involvement/Outreach Activities During Listing on the NPL

Once EPA decides to propose a site for listing on the NPL, the Agency is required to conduct several community involvement activities. During the listing phase, EPA is required to:

- **Publish notice in the *Federal Register***. EPA must publish its proposal to list the site on the NPL and its request for public comments in the *Federal Register* (see the **Public Comment Periods** tool in the *Toolkit*).
- **Publish a public notice of EPA's *Federal Register* proposal.** The Site Team must publish a notice in a major local newspaper of general circulation to announce the *Federal Register* proposal and initiation of a public comment period.
- **Hold a public comment period**. The Site Team must hold a public comment period of at least 60 days.
- **Prepare a written response**. EPA must consider all public comments and publish a responsiveness summary that addresses significant comments and any significant new data received during the public comment period (see the **Responsiveness Summary** tool in the *Toolkit*).
- **Publish final listing on the NPL**. EPA must revise and publish the final rule in the *Federal Register* no less than 30 days prior to the effective date of the site listing.

The Site Team should anticipate increased community concern or interest when a site is proposed for the NPL. During the NPL listing process, EPA recommends that the Site Team distribute a fact sheet that describes the site, outlines the NPL process, explains the timeframe for NPL listing, and describes how the public can submit comments. The fact sheet also presents a good opportunity for introducing the availability of Technical Assistance Grants (TAGs). This fact sheet should be placed in the information repository when it is established.

Listing attracts media attention. Preparing a press release to accompany the fact sheet may be useful. (see the **Media** tool in the *Toolkit*).

## 4. Final Listing on the NPL in the *Federal Register*

Once EPA has considered and responded to the comments received on its proposal to list a site on the NPL, the Agency must announce in the *Federal Register* its final decision to list the site. Several community involvement activities must occur before RI field activities begin.

### Community Involvement Activities After Final Listing on the NPL

Before RI field activities start, EPA must:

- **Conduct community interviews**. The Site Team must conduct personal interviews to solicit people's concerns and determine how and when people want to be involved (see the **Community Interviews** tool in the *Toolkit*).

- **Prepare a formal Community Involvement Plan (CIP)**. The Site Team must prepare a CIP based on community interviews and other relevant information. The CIP must specify outreach activities that the Agency expects to undertake (see the **Communication Strategies** and **Community Involvement Plan** tools in the *Toolkit*).
- **Establish and maintain an information repository**. The site team must establish at least one information repository at or near the location of the response action (see the **Information Repository** tool in the *Toolkit*).
- **Establish the administrative record.** The Site Team must establish and place the administrative record in the information repository.
- **Issue public notice of information repository.** The Site Team must publish a notice in a major local newspaper informing the public of the establishment of the information repository and the availability of the administrative record (see the **Public Notice** tool in the *Toolkit*).
- **Publish notice of Technical Assistance Grants (TAGs)**. The Site Team must inform the community of the availability of technical assistance grants (see the **Technical Assistance for Communities** tool in the *Toolkit*).

### More About Community Interviews

The success of community involvement planning depends on community interviews with state and local officials, community leaders, media representatives, potentially responsible parties, and interested residents. The Site Team should use community interviews as a tool to construct the CIP. Typically, these interviews are conducted one-on-one in the person's home or office. However, phone interviews or focus groups occasionally may be appropriate. The most successful interviews are face-to-face discussions that allow the Site Team to determine public concerns and learn how and when local residents want to be involved. The information gathered from 15-25 community interviews provides the basis for development of the CIP. Community interviews also can help to establish a positive relationship with the community.

*A member of a community group at a Colorado site suggests that the role of the community and the procedures it must follow should be clearly stated by EPA at the beginning. EPA should have information on resources available to a community ready to go out as soon as a hazardous waste response situation is discovered. EPA should identify the players in the process early and determine the information necessary for the community to make informed decisions and provide meaningful input into any response actions, including to whom the participants should direct their input. EPA also should identify available financial and/or technical assistance resources, including the availability of Technical Assistance Grants.*

Community interviews usually are scheduled over two to three days, and often are supplemented with additional unplanned interviews and follow up conversations. When contacting individuals to schedule interviews, the Site Team should explain briefly and clearly the purpose of the interviews. Specifically, staff should explain that they will be talking with area residents and local officials about community concerns regarding the site, and that community interviews are held so EPA can prepare a meaningful community involvement plan. Staff should convey to the interviewees that detailed technical information about site problems or future site actions is not yet available. While some community members may not be willing to be interviewed, generally most citizens, including PRPs, will realize that the discussions are a significant opportunity to

*A CIC attended a basketball game at a local high school. By introducing herself to local citizens, she built trust and showed that she was making an effort to get to know them. The people she met that day were more candid in their interviews, and later became advocates for EPA.*

express their concerns. Staff should speak first with state and local officials to obtain background information and to let them know that area residents will be interviewed. Officials have an understandable interest in Agency activities that affect their constituents.

For remedial actions, community interviews should be conducted after the site is formally listed on the NPL and before the RI/FS begins. If the situation warrants (this can be determined by using the **Hot Sites Template** resource in the *Toolkit*), consider conducting community interviews before the site is listed on the NPL.

### More About Community Involvement Plans

Once the Site Team has conducted the community interviews, it should develop a Community Involvement Plan (CIP). Previously known as the Community Relations Plan (CRP), the CIP is central to Superfund community involvement. It specifies the outreach activities that EPA will undertake to address community concerns and expectations. The CIP is a public document that should be placed in the information repository. The CIP format should include a cover page that identifies the CIP as an EPA document, and also include information specifying what EPA *will* do, not what EPA *should* do.

The CIP should explain how the Site Team will involve the community in site cleanup, rather than provide information about the site itself. It should identify the community's issues, needs, and concerns, and identify specific activities, outreach products, or programs EPA will use to address the community's concerns. For example, if groundwater contamination is an issue, the CIP should identify it as such, and state that "EPA will conduct a series of workshops with a hydrogeologist to explain groundwater." If the health effects of the substances are an issue, then the CIP should propose an activity featuring a toxicologist to talk about the site-specific contaminants, their known effects on people, and how they move through groundwater.

*As part of an overall community involvement strategy at a controversial site, a Region 8 CIC determined that formation of a CAG was an appropriate way to involve the community, and took steps to help citizens organize themselves. She invited a diverse group of community leaders to an informational meeting and asked them to suggest other leaders who should be involved in forming a CAG. They participated in a second organizational meeting.*

*Because of her prior research and knowledge of the community, the CIC knew the emotional nature of the subject matter and the potential for internal conflict, given the fact that the group included people with very different perspectives—including individuals whose family members had suffered site-related health effects and others who were employees of the PRP. That's why, when the CAG held its first "official" meeting, it was led by an outside facilitator. Neutral third-party facilitation was necessary because of the potential for future problems. Even though members suggested that she continue to facilitate meetings herself, the CIC didn't want to put EPA in the "middle," where the trust and credibility the Agency had built in the community could be threatened.*

The CIP also should establish a time line for activities (*e.g.*, "As the Site Team receives sampling results, we will hold a series of ground water workshops"). While the CIP is a public document, remember that the CIP is written for the Site Team.

In general, the CIP should include:

- An overview of the CIP;
- A capsule site description;
- Community background information;
- Community issues and concerns;
- Highlights of the CIP;
- Community involvement activities and timing (including the communication strategy);
- A copy of the interview questions;
- An official contact list (do not include names of private citizens interviewed or the site mailing list);
- The location for public meetings;
- The location of the information repository; and
- Local media contacts.

Interviews are strictly confidential. Names, addresses, and phone numbers of private citizens interviewed should not appear in the CIP, and there should be no way to trace information or comments to any private citizen. However, local officials and representatives of PRPs interviewed in their official capacity should be identified in the list of contacts.

CIP preparation should begin with information about interested officials, citizens, and organized groups. This information should be collected in the community interviews. Also consult the community profile assembled during the planning phase for the following information:

- Multimedia aspects of the site (any other EPA or state activity regarding the environment or other permitted facilities at or near the site);
- Any past news articles, editorials, or letters to the editor that give insight into local perceptions;
- An overview of the demographics; and
- Any need for translating documents (see the **Translation Services** tool in the *Toolkit*);

The **Community Involvement Plan** tool in the *Toolkit* contains a sample Community Involvement Plan and a Community Involvement Activities Template.

### More About Communication Strategies

The CIP is the comprehensive strategy for all community involvement and outreach at the site. A communication strategy for each element of the overall CIP should guide the development and become part of the CIP. Communication strategies saves time and money by helping the Site Team plan site-related communication with the public and other stakeholders. They also can be used to expedite the flow of information for sudden, unfolding events. A good communication strategy provides the "why, what, who, when, where, and how" of relaying information.

Specifically, a communication strategy provides a structure for identifying issues, problems, and actions that require outreach. A communication strategy is a list of messages, audiences, potential message vehicles, required resources, and feedback mechanisms to meet the unique communication needs of each Superfund site. For help in developing communication strategies, see the **Communication Strategies** tool in the *Toolkit*.

### More About the Information Repository

An information repository is a record maintained at or near a Superfund site that contains all correspondence, reports, and documents pertaining to the site as well as general Superfund program information. At an information repository, people can research the site, review the law pertaining to the cleanup, and learn how to participate in the cleanup. The information repository should be established early and be well publicized. At least one repository must be established at or near a remedial site before the RI/FS begins. The Agency must inform the public of the information reposi-

tory. The availability of the administrative record must be announced through the publication of notices in a local newspaper of general circulation.

The two most significant decisions relating to the information repository are location(s) and choosing the materials to be included. The number of repositories established depends on the remoteness of the site to surrounding communities. Specific locations often are determined during community interviews. Repositories should be convenient to the public where photocopying equipment is available. Common locations include public libraries, city halls, or public health offices. Other locations include fire stations and religious buildings. If a photocopying machine is not available, one may be purchased with site funds.

Repository contents should be organized and indexed. Multiple copies should be made in case documents are lost or misplaced. Repository documents should be updated regularly. If possible, Site Team members should visit the information repository at least once a year to ensure that its contents are current. A sample information repository index is provided in the **Information Repository** tool in the *Toolkit*.

### More About Public Notice

Public notices are advertisements published in local newspapers, broadcast on local radio, or sent as mailings to announce public comment periods for EPA decisions, major project milestones, and the establishment of information repositories. The public notice is one of the methods that EPA uses to solicit community participation. The goal of a public notice is to communicate an important announcement to as many people as possible in the affected community. To that end, public notices should be attractive and located in main sections of the paper. Notices should not be placed with legal notices. For more information about public notices, see the **Public Notice** tool in the *Toolkit*.

*One Region makes a regular practice of putting a Resource Book at its site information repositories, since the mounds of paper in the Repository can be overwhelming for citizens. The Region finds that the Resource Book helps citizens understand the Superfund process better and provides the site-specific information they want.*

*One CIC saved a lot of time by transmitting public notices to a local newspaper via an e-mail message specifying the dates the notice should appear and attaching the public notice. The CIC also faxed the public notice to the newspaper to ensure that the newspaper had a hard copy from which to proof the attached document. This exchange took only a few minutes, instead of the hours or days a request by mail or in person might have taken.*

### More About Technical Assistance Grants

EPA provides technical assistance to communities to help citizens understand site-related information. By law, EPA must inform communities about the availability of Technical Assistance Grants (TAGs) and assist them in applying for these grants. EPA also informs citizens about obtaining assistance through other programs, such as the university-based Technical Outreach Services for Communities (TOSC) program and the Department of Defense's Technical Assistance for Public Participation (TAPP) program.

Under the TAG program, initial grants of up to $50,000 are available to qualified groups affected by a response action. Additional funding is available for sites that meet certain criteria. TAGs can be used to hire a technical advisor, who is an independent expert that can explain technical information and help articulate the community's concerns (see the **Technical Information for Communities** tool in the *Toolkit)*.

*Community members at a Region 6 site agree that the TAG they received from EPA enabled the community to participate more effectively in decision making at the site. "Our ability to respond intelligently [to information from EPA and the PRPs] in the language they understand depends on having a good technical advisor, and we had one of the best" said one member of the community group that received the TAG.*

## 5. RI/FS Begins

After a site is listed on the NPL, the Agency performs a remedial investigation (RI) to gather data needed to determine the nature and extent of contamination at a site, establish site cleanup criteria, identify preliminary alternatives for remedial action, and support technical and cost analyses of alternatives. After the RI has commenced, EPA conducts the feasibility study (FS), which considers different alternatives for cleaning up the site and recommends selection of a cost-effective alternative. Together, these studies usually are referred to as the RI/FS.

The RI/FS is the most critical phase of the Superfund process, and is the time when it is easiest to lose the community. From the time that a work plan is prepared through the completion of the RI/FS, the Site Team should obtain information from the community and learn the community's perspective on site hazards. The Site Team should ensure that the community is informed about what to expect from the RI/FS, is aware of current activities, can track progress at the site, and has every opportunity to participate in deciding upon the Proposed Plan. The specific outreach activities the Site Team is responsible for are discussed below.

Although the RI/FS usually takes 18 to 24 months to complete, actual on-site work usually lasts no more than several weeks to several months. The rest of the time, analytical work is performed at the office or in a laboratory. EPA presence at the site is rare and limited to periodic monitoring or additional sampling. During this period, the Site Team focuses on receiving, reviewing, and analyzing data, and identifying remedy options.

### Recommended Outreach Activities During RI/FS

Although community involvement activities are not required during the RI/FS, EPA recommends that at least one community involvement activity be held each year during the RI/FS.

This is the period during which the community hears the least from EPA. From a purely technical perspective, many Site Teams conclude there is nothing occurring that is of interest to the community. Since there is nothing unusual or alarming happening and the Site Team does not want to raise false hopes or fears, it may believe that nothing needs to be shared with the community. However, the community often wants information about the

*While EPA held regular public meetings prior to issuing its first cleanup plan at one Region 1 site, community interest in the site seemed limited until the Agency announced the proposed remedy. EPA's Proposed Plan for the site was met with strong and widespread opposition from community stakeholders and PRPs. EPA extended the public comment period on the Proposed Plan, and, in response to those comments, decided to withdraw it.*

*EPA helped stakeholders form a coordinating committee to facilitate active community involvement in decision-making. Eventually, these coordination efforts led to development and acceptance of a far less costly and less intrusive alternative that won support from all stakeholder groups in the community.*

site and ongoing EPA activities, even when there may be nothing significant to report. A lack of communication or information typically results in one of two community responses: either people's fears, anxieties, anger, and frustration intensify, or they may adopt a false sense of security by becoming complacent. Either response can be problematic for meaningful community involvement.

When EPA does not provide official information, residents sometimes turn to other experts who seem more willing to talk to them. These experts may include people or groups with their own agendas. Intentionally or not, these experts can stir up fears and other concerns that would not have otherwise arisen had EPA maintained contact. The end result is usually a significant delay in the process while the Agency responds to misinformation and calms resulting fears and anxieties. Sometimes in these situations, there is a perception that the delay was caused by too much community involvement, when in actuality, too little community involvement was to blame.

The other response to a lack of information from EPA is community complacency. The community may perceive EPA's seeming lack of concern as an indication that the site is harmless. The community may come to the conclusion that things are not as serious as EPA portrayed, that EPA may have overreacted, and that there is really nothing to worry about. Consequently, the site becomes an afterthought and community life returns to normal. At the same time, the Site Team sees a quiet community and concludes the residents either are unconcerned or uninterested. In this case, the Site Team also can be lulled into a false sense of security, which validates reasons for not issuing information.

These attitudes can result in a contentious response to the announcement of the Proposed Plan. Because of this lack of communication comes as a complete surprise to the community, and the community's reaction is just as surprising to the Site Team. Citizens balk at the proposed remedy, they wonder how EPA came up with the idea, they complain that EPA's decision had no local input, and they believe EPA's request for comment is simply a meaningless exercise. The end result is that the Agency needs to delay the process to conduct community involvement work that should have been done all along.

Recent research conducted at active sites indicates that citizens need to hear from EPA on a continuing basis. People are reassured and feel more empowered by simple communication from EPA, even if nothing more is said than "we still have not received the test results from the lab." Therefore, the Agency recommends that regular outreach activities continue throughout the RI/FS, with the Site Team organizing at least one community involvement activity per year.

Community involvement activities that have proven useful during this phase include **Community Visioning**, **Fact Sheets**, **Focus Groups**, and **Informal Activities** such as community visits. Other helpful activities include **On-Site Activities**, such as site tours, **Presentations** to local officials, civic groups, and school groups, **Public Availabilities/Poster Sessions**, site-update **Telephone** hotlines, and **Workshops**. See the *Toolkit* Table of Contents for more information about these outreach tools.

The purpose of these activities is to prepare the community for the publication of the Proposed Plan.The Site Team needs to decide which of these or other suggested activities are appropriate during the RI/FS process. These community involvement tools are described in detail in Part II of the *Community Involvement Handbook* and *Toolkit*. The tools included in Part II are guides, not rules. However, the Agency expects the Site Team to draft CIPs that use these tools. They can be used as presented, modified, or combined to address the unique situation at each site.

Person-to-person interaction is necessary for the community to get to know Site Team members and vice versa. Personal interactions, either by telephone or in person, contribute more to the

development of trust and cooperative working relationships than any other form of outreach. Availability sessions, public meetings, workshops, and TV or radio appearances work well.

Some EPA Regions schedule an information public meeting at the beginning of RI field work. Here, the RPM and CIC introduce themselves and the role of EPA, and describe what is and is not known about the site and the implications of this information. The Site Team explains the RI work plan, the type of work anticipated, what they hope to learn, what they expect to find, and safety precautions. Some Site Teams demonstrate protective gear and monitoring equipment at the meeting so that people can become familiar with it. This optional public meeting is an excellent opportunity to educate both the community and the Site Team. Whether it is a public meeting or availability session, some form of person-to-person outreach or community involvement activity during this phase is important to the community and beneficial to the Site Team.

Other Regions take community outreach into the local schools. Site Team members make presentations, either to a large assembly or to specific classes. Team members show students the safety equipment and protective gear and even let some students try on the gear. Educating children also can be a way of educating adults, since children talk to their parents. Furthermore, information brought from school may carry a level of credibility unavailable through other means. Recent studies show that such efforts have positive, long-term effects in the community.

### More About Community Advisory Groups

A Community Advisory Group (CAG) is a committee, task force, or board made up of residents affected by a Superfund or other hazardous waste site. A CAG provides a public forum where representatives of diverse community interests can present and discuss their needs and concerns related to the site and the site cleanup process. CAGs are a community initiative and responsibility. They function independently of EPA, but they can be a very effective community outreach and participation tool. The Agency encourages CAG development, and EPA Regions provide administrative support for CAGs at many Superfund sites. Experience indicates that CAG involvement in the process results in better decisions on how to clean up sites.

CAGs may not be appropriate at every Superfund site. The Site Team should consider several factors when evaluating whether a CAG would be appropriate. For example, they should consider

*"Providing the community with early drafts of technical documents is worthwhile in the long run."*
***Mark Doolan, RPM, Region 7***

*In Chattanooga, TN, citizens addressed environmental problems through a visioning process by setting goals to achieve a shared vision, designing action plans, and implementing projects throughout the community. The high level of commitment generated through an inclusive, open process enabled the community to finance and implement projects without the opposition often seen in community change projects.*

*The Site Team at one site found public meetings were never well-attended. They found it was better to invite community members to come by the site. The RPM was in the trailer the same hours every day. Wednesday night was "Open Trailer Night," with coffee and cookies. Community members appreciated the RPM's availability, interest and responsiveness. Among other things they said: "He always made the time to answer questions and listen to complaints;" "He never shied away from face-to-face forums;" and "He was devoted to the site."*

The most current version of this publication is available at www.epa.gov/superfund

> *One Region that needed to distribute bottled water to residents around a site recognized the critical importance of explaining why bottled water should be used and how to avoid using tap water. The CIC coordinated with a sixth grade teacher, and gave a presentation to school children. The students put on a play that was a hit in the community.*

the likelihood of long-term cleanup activity at the site. CAGs usually can be beneficial at both remedial sites and removal sites, particularly non-time critical removals. However, the time required to organize and begin CAG operations, which can vary from a few weeks to several months, may preclude CAGs at time critical removal sites and other removal sites where cleanup activities will be brief.

The Site Team also should assess the level of community concern and interest in site cleanup decisions and consider whether there are any environmental justice issues or concerns regarding the site. Has the community expressed an interest in forming a CAG? A community with a high level of interest and concern about remedial activities or significant environmental justice concerns related to the site should be a strong candidate for a CAG. Forming a CAG may not be feasible, however, if there are too many competing interests at the site.

Community interviews or profiles from early in the process are a good source of information when considering whether to recommend formation of a CAG. Once EPA determines that a CAG may be appropriate at a site, the CIC, Site Manager, and other members of the Site Team should explain the CAG concept to the community, recommend it as a vehicle for involvement in the decision-making process, and offer the Agency's assistance in forming and maintaining the CAG should the community choose to form one. If EPA determines that a CAG would not be appropriate at a site, it is important to document the Agency's reasons in a way that can be shared to community residents who express interest. For more information, see the **Community Groups** tool in the *Toolkit*.

## 6. Feasibility Study Completion and Proposed Plan

The RI/FS process ends with the release of the RI/FS documents and the Proposed Plan for remedial action. This should be a time of intensive community involvement. The Site Team must inform the public about, and receive comments on, all remedial alternatives considered in the RI/FS, the Agency's preferred alternative, the rationale for the preference, and proposed waivers to cleanup standards.

Good technical work during this phase is crucial to a good Proposed Plan. Good community involvement is crucial to the community's understanding and acceptance of that plan. According to Stephen Covey, author of *7 Habits of Highly Successful People*, "People don't care how much you know until they know how much you care." This concept is paramount to effective community involvement. It does not matter how good the work or the plan is if the community does not understand or accept it.

### Community Involvement Activities Related to FS Completion and the Proposed Plan

At a minimum, the following activities must be conducted:

- **Develop a Proposed Plan**. The Site Team must develop a Proposed Plan for public comment. The plan must summarize the remedial alternatives presented in the analysis of the RI/FS and identify the preferred alternative, the rationale for that preferred alternative, any proposed waivers to cleanup standards, and documents that support EPA's decision.
- **Publish notice of the Proposed Plan**. The Site Team must publish a **public notice** of the availability of the Proposed Plan and RI/FS, a

brief summary of the Proposed Plan, and an announcement of the **Public Comment Period** in a major local newspaper of general circulation (see the **Public Comment Periods** and **Public Notices** tools in the *Toolkit*).

- **Place the Proposed Plan in the information repository**. The Site Team must make the Proposed Plan and any supporting analysis and information in the administrative record at the **Information Repository** (see the **Information Repository** tool in the *Toolkit*).
- **Hold a public comment period**. The Site Team must provide a reasonable opportunity (not less than 30 days) for the submission of comments. The Site Team must extend this comment period by at least 30 days upon timely request. Although notifying the public of the extension is not required, the Site Team should consider publishing a notice of the extension, or at a minimum, mailing a copy of the extension to those on the site mailing list.
- **Hold Proposed Plan public meeting**. The Site Team must hold a public meeting on the **Proposed Plan** (see the **Public Meetings** tool in the *Toolkit*). The Site Team must provide a transcript of all formal public meetings held during the public comment period. EPA must make the transcripts available to the public via the administrative record.
- **Prepare a written responsiveness summary**. The Site Team must prepare a responsiveness summary that responds to significant public comments, criticisms, and new relevant information submitted during the public comment period. The responsiveness summary becomes part of the Record of Decision (see the **Responsiveness Summaries** tool in the *Toolkit*).

The community involvement activities required for the Proposed Plan are largely impersonal. The Site Team should conduct additional outreach focusing on person-to-person contact during the Proposed Plan phase. There are a number of tools that can be used to personalize this phase. To help explain the Proposed Plan, EPA recommends that the Site Team use at least one of the following outreach tools: **Informal Activities**, **Presentations**, **Public Availabilities/Poster Sessions**, and **Workshops** (see the tools for all in the *Toolkit*).

While it is not required, distribution of the Proposed Plan to the entire site mailing list and any other interested parties is recommended. The site team should place copies of the Proposed Plan in information repositories at or near the site.

### More About the Proposed Plan

The Proposed Plan reflects the decisions made by the lead and support agencies and is a critical part of remedy selection and the administrative record. The Site Team should consult the ROD guidance for information about how to develop the Proposed Plan. The following section provides a brief summary of the discussion contained in the ROD guidance.

The Proposed Plan must be presented at a public meeting, usually referred to as the Proposed Plan public meeting. In the past, Site Teams have put considerable emphasis on this event. However, experience has shown that community involvement activities throughout the entire RI/FS process are at least as important as the Proposed Plan public meeting.

The Site Team can present the Proposed Plan in either the expanded or fact sheet format discussed in the ROD guidance. Regardless of the format, the Site Team should write the plan in a clear and concise style and use illustrations and figures to summarize the information in the RI/FS.

Preparation of the Proposed Plan should be a joint effort of the Site Team. The RPM, CIC, and Regional Counsel should ensure that the Proposed Plan is technically accurate, satisfies statutory requirements, and includes all the necessary information in a clear and concise style that is understandable to members of the community.

In addition to clearly summarizing the alternatives from the detailed analysis of the RI/FS, the Proposed Plan must specify the preferred alterna-

tive and the rationale for the preference, citing the evaluation criteria identified in the ROD Guidance. The Proposed Plan should notify the public about how to obtain additional information (*e.g.*, information repositories/administrative record, RI/FS report, public meetings, contact person), as well as when to submit comments.

The presentation of the preferred alternative should emphasize that the Agency has not made a final decision and is open to suggestions on how the preferred alternative, or the other alternatives, might be modified to better satisfy the remedial objectives of the site. In other words, the Proposed Plan should clearly indicate that the Agency encourages public comments on all alternatives, not just the preferred alternative. The Agency may alter the preferred alternative or shift from the preferred alternative to another if public comments or additional data indicate that these modifications are warranted.

### More About the Proposed Plan Fact Sheet

The Proposed Plan is a concise, easy-to-read synopsis of the action EPA proposes to take. Unlike the ROD, it is not a legal document that binds EPA to an action, and it should not read like a legal document. Instead, the Proposed Plan is a communications tool required by the NCP as a means of informing the general public about all of the alternatives considered and EPA's preferred remedy. It also notifies the community that it will have an opportunity to comment. The Proposed Plan should be released as a fact sheet, preferably no more than eight pages long, and distributed to all stakeholders. A more formal Proposed Plan may be prepared and placed in the information repository. In this case, summarize it in a Proposed Plan fact sheet, and use the fact sheet to direct readers to copies of the formal plan.

The primary message to convey in the fact sheet is the proposed remedy for the site. Provide this information first, rather than starting with background on the site, other remedies considered, or any other information. Explain that the fact sheet

> *"Learning what the citizens are thinking far in advance of the development of the proposed plan is a tremendous advantage."*
> ***Tony Able, RPM, Region 4***

briefly summarizes the formal plan for the remedy. Include why the remedy was chosen over other proposals, then list the other remedies that were considered. Explain in a few sentences what each remedy would entail and why EPA proposed to eliminate it. After that, offer a more detailed explanation of the proposed remedy. Provide general information on the findings of the RI/FS. Explain in more detail what will be done to clean up the site, the impact it will have on the community, the cost, and the duration of construction.

If applicable, be sure to announce that the formal plan is available for review and comment in the information repository. Include the address and hours of the repository and a phone number for requesting copies. Include instructions on how and when to submit public comments.

### More About Public Notice of the Proposed Plan

The advertisement published in the newspaper should provide a brief summary of the Proposed Plan and inform the public of the opportunity to comment on the RI/FS and Proposed Plan. The notice should summarize the alternatives and identify the preferred alternative. It should also:

- explain how to submit oral and written comments;
- identify the location of the information repositories and administrative record;
- name a contact person and how to reach him or her; and
- provide the opportunity for a public meeting, or state the time and place of a public meeting if one has been scheduled.

The announcement should be made at least two weeks prior to the beginning of the public comment period so that the public has sufficient time

*One CIC scheduled regular talks at a bookstore, similar to those given by visiting authors. The presenter spoke about very specific site-related topics and kept the speech to about half an hour. The first ten minutes always were devoted to giving a quick summary of events that had occurred at the site, the next 15 minutes covered the topic, and the last five minutes summarized the main points. After the presentation, the presenter fielded questions.*

to obtain and read the document. In order to reach as broad an audience as possible, the advertisement should be designed to attract attention and engage the reader. The Site Team should consider purchasing ad space in the most widely read section of the newspaper.

### More About the Public Comment Period and Public Meeting

The public comment period offers special community involvement challenges and opportunities. If implemented properly, it can also contribute to the quality of the selected remedial alternative. The Site Team should maintain communication with local officials and interested community members, explain the remedial alternatives in understandable terms, and solicit public input. If this communication is done effectively, concerned groups and individuals can see that their interests are receiving serious consideration. Effective communication should make a significant difference in the acceptability of the final remedy. The public comment period, beyond the 30-day minimum, must be extended by at least 30 additional days upon receipt of a "timely" citizen request. Although "timely" is considered to be within the first two weeks of the comment period, staff should make every reasonable effort to accept requests received at any time during the comment period. If the comment period is extended, staff should publish a public notice to announce the extension of the comment period.

CERCLA and the NCP require EPA to provide an opportunity for a public meeting at or near the site regarding the RI/FS and Proposed Plan. The Site Team also may choose to conduct a formal public hearing, although this alternative is neither required nor always encouraged. Public hearings, at which concerned individuals formally state their comments but no Agency response is given, are primarily a vehicle for the public to get comments into the record, rather than a means for the Agency to engage in a dialogue with the community. If the Agency receives a request for a hearing, staff should explain the distinction between public meetings and hearings and verify that a hearing is what is desired. The public's need often can be met in a more informal, productive, and less resource-intensive manner. If a hearing is needed, the preferred approach is to hold it in conjunction with small informal meetings or other communications techniques.

*One CIC decided to inform local stakeholders about an opportunity for review and comment on the proposed cleanup plan by holding a public meeting to announce the opportunity and invite interested parties to a public participation workshop. The meeting was held at a library on a Saturday afternoon, and attracted a large and diverse audience.*

*The workshop took place on the following Saturday and provided information about: (1) requirements for public review of and comment on site activities; (2) pros and cons of the process; and (3) how citizens can maximize their contributions. A workshop hand-out offered step-by-step guidance for reviewing the site information and filing comments. As a result of his actions, more than half of the workshop attendees submitted comments on the proposed cleanup plan.*

The Site Team also must provide an opportunity for submission of written and oral comments on the RI/FS and Proposed Plan. The Site Team must keep a transcript of the public meeting conducted during the comment period and make the transcripts available to the public as part of the administrative record and information repository. Such transcripts are used by EPA to consider oral comments made during meetings. Other substantive discussions regarding the RI/FS, Proposed Plan, or proposed waivers received by other means, such as telephone calls or meetings with individuals during the public comment period, must also be documented. This documentation may be done through a record of communication, tapes, or notes that must be placed in the administrative record. Agency staff should encourage written comments to ensure they are fully reflected in the record.

## 7. Notice and Comment on Consent Decree (if necessary)

Sometimes after the Proposed Plan is developed, the Potentially Responsible Parties (PRPs) will negotiate and enter into settlement agreements or consent decrees with EPA to do the cleanup. To conclude such negotiations, EPA enforcement staff and the PRPs may make modifications to the Proposed Plan. Therefore, EPA must inform the community of the consent decree and allow the community to provide input.

### Community Involvement Activities for Consent Decrees

In the event that there is an enforcement agreement, the following requirements apply:

- Publish a notice of the proposed agreement in the *Federal Register* at least 30 days before the agreement becomes final, identifying the name of the facility and the parties to the proposed agreement.
- Provide an opportunity for comments and for consideration of comments (see the **Public Comment Periods** and **Responsiveness Summaries** tools in the *Toolkit*).

Under the law, consent decree negotiations are not open to the public. Therefore, once a consent decree emerges, the community may feel victimized. Closed discussions between EPA and PRPs often result in reduced trust and increased resistance on the part of the community.

Fortunately, there are a few things that the Site Team can do to prevent a community from feeling victimized by a consent decree. During consent decree negotiations, the Site Team can use focus groups and informal activities as tools to involve the community.

- **Focus groups** are facilitated discussions about the site and the community's concerns voiced by small groups of stakeholders. Focus groups are a useful tool for understanding stakeholders' opinions on site activities, why they feel as they do, and their needs and expectations. By holding separate focus group sessions with different groups, the Site Team can find out how the community will react to different proposals being considered in negotiations (For more information on using focus groups, see the **Focus Groups** tool in the *Toolkit*).
- **Informal activities** are unstructured visits to the community to give people a chance to get to know members of the Site Team and to discuss the site in a relaxed atmosphere. Informal activities can include visiting a resident's home, hosting an information booth at a local festival, or going door-to-door in a neighborhood close to the site. Such activities allow the Site Team to inform the community about the consent decree. Be aware that any such communication should be cleared with Regional Counsel well in advance of the activity. Typically, the most the Site Team will be able to tell a community is that negotiations may or may not occur and may or may not result in a consent decree. These efforts may not seem like much, but such communication can go a long way in preventing unpleasant surprises once a consent decree is signed. Such

activities allow the Site Team to identify community concerns regarding the consent decree and direct those concerns to EPA's representative at the negotiation table (see the **Informal Activities** tool in the *Toolkit*).

### More About Community Involvement Activities for Enforcement Actions

CERCLA created two complementary methods to clean up hazardous waste sites. The first created a trust fund to pay for site clean up. The second provides EPA with authority to identify PRPs linked to the site and negotiate settlements with PRPs for site cleanup work or to issue administrative orders directing them to do so. EPA may also recover the costs of such actions from PRPS when the trust fund has been used.

Since the passage of CERCLA in 1980, several states have enacted similar laws under which they may undertake site cleanup and recover costs from PRPs. Citing their own authority, they may issue orders or enter into settlement agreements with PRPs. The enforcement process is essentially the same as that followed by EPA.

Agency staff should try to help citizens understand Superfund program goals and activities, including enforcement actions. If community concerns are fully identified early in the remedial process, the agency is better able to address these concerns in the proposed plan.

**Community Involvement Plan.** In fostering community involvement during enforcement actions, CICs should follow the same steps as for fund-financed projects. The steps critical to community involvement are conducting interviews of local citizens and formulating a CIP. Once the CIP has been developed, the CIC and other members of the Site Team should ensure that community involvement activities outlined in the CIP take place. The administrative record is one method to ensure that the public can access information about site activities. This and other methods should be considered and used to inform and involve the public.

The agency in charge of response actions will develop and carry out community involvement activities at enforcement-lead sites. PRPs may participate in community involvement activities only at the discretion of the Regional Office. PRPs do not develop the CIP. The Regional Office will oversee any PRP community involvement activities. PRPs may participate in community involvement activities at sites where they are conducting a removal, RI/FS, remedial design, remedial action, or operation and maintenance. The CIP should cover any PRP participation in community involvement activities. In these cases, the PRPs may wish to participate in public meetings or in the preparation of fact sheets that the agency must review before release to the public. The contents of press releases, however, are not negotiated with PRPs.

The completed CIP should be provided to all interested parties and placed in the administrative record and information repository. If the CIP is revised, the final revised copy should be made available to the public and placed in the administrative record and information repository.

Community involvement activities outlined in a CIP for a PRP-lead site should not compromise the settlement process and the likely schedule of enforcement actions. Technical discussions may be identified in the CIP as community involvement activities. The CIP should document the Agency's approach to coordinating and sharing information with PRPs. Special conditions on Agency interaction with PRPs should be spelled out in the administrative order or consent decree, not in the CIP.

The public must be informed early when PRPs are participating in community involvement activities identified in the CIP. When this happens, the public should be informed that the site response team prepared the plan. Staff should communicate this by preparing a fact sheet and stating clearly at a public meeting that EPA, and not the PRPs, prepared the CIP, retains all decision-making authority, and directs all community involvement activities.

The CIP also should describe how the litigation process affects community involvement activities. Litigation generally does not occur until after the remedy is selected, but community involvement staff should explain early in the process that legal constraints on community involvement activities may apply during negotiations or litigation. Community involvement staff may choose to describe EPA interaction with the U.S. Department of Justice (DOJ). If litigation is pursued, the CIP will be amended to reflect the potential effects of litigation on community involvement activities. When referral for litigation is the initial enforcement action, the CIP should specify activities that are to be conducted during litigation to the extent known at that time.

*The mayor of a town with a Superfund site held a series of meetings with community leaders to encourage community participation in discussions with EPA and PRPs on site cleanup plans. The process continued after the ROD was signed, but broke down prior to the consent decree when the community came out opposed to the selected remedy, incineration. The community had little confidence in the process leading to the RI and the selected remedy, and felt that EPA had "let the fox into the henhouse." When the consent decree was approved, incinerator construction began and residents asked EPA's ombudsman to intervene when fumes generated by construction overwhelmed the PRPs' control apparatus.*

*EPA stopped work on the site. The community asked for an alternative remedy, and the PRPs agreed to develop one. To help various interest groups at the site work out the problems, EPA proposed formation of a Community Advisory Group, which ultimately helped interests work together by improving relations between EPA and the community.*

**Enforcement Actions and Community Involvement at Remedial Sites.** Community involvement and outreach activities should be planned as early in the enforcement process as possible. Generally, this outreach should occur before the issuance of a RI/FS special notice. Meetings with small groups of citizens, local officials, and other interested parties are extremely helpful for sharing general information and resolving questions. These meetings may also serve to provide information on the Agency's general enforcement process. Also, the information repository and administrative record are sources from which the public may obtain specific information about the site, general Superfund process, and other Agency materials.

Negotiations about private party response actions or payment of cleanup costs are conducted in confidential sessions between the PRPs and EPA or the state. PRPs may be unwilling to negotiate without a guarantee of confidentiality. This expectation of confidentiality restricts the type and amount of information that can be made public.

Special effort should be made prior to the negotiation moratorium to warn the public that little information will be available during negotiations. Neither the public nor the technical advisor (if one has been hired by a community) may participate in negotiations between EPA, DOJ, and the PRPs unless all those parties agree. Instead of direct participation by the public in negotiations, community involvement staff may wish to mail out a fact sheet on the Superfund enforcement process and the moratorium schedules for the specific site.

The public should be informed when agreements are reached and when consent decrees are referred to DOJ, lodged, and entered by the court. A press release may be issued if a site mailing list has not yet been established. If a mailing list exists, notices can be sent at the time of the press release.

Once a case is in court, only information from court files will be available to the public. Agency

*A CIC and RPM presented a site update to a county's Grand Jury panel that included graphics, maps, and slides of the former mine site. Afterwards, the audience stated an interest in seeing the site first hand. Two weeks later, the RPM and CIC led a site tour for 25 people that included a visit to an adjacent site where EPA was completing removal of contaminated soil. Fact sheets and a chronology of EPA activities were provided as handouts.*

statements about the case must be cleared with DOJ. The Office of Regional Counsel (ORC) team member will arrange for that clearance and consult with DOJ on statements concerning site status, such as investigations, risk assessments, and response work. The ORC is responsible for informing staff about consultations with DOJ.

## 8. Pre-ROD Significant Changes (if necessary)

If needed, the Site Team may have to address significant changes to the Proposed Plan prior to selection of the final remedy. If new information significantly changes the basic features of the remedy in the Proposed Plan with respect to scope, performance, or cost prior to adoption of the final remedy proposed in the ROD, the Site Team is required to do different community involvement activities. These activities will depend upon whether the significant changes could or could not be reasonably anticipated by the public based on information in the Proposed Plan, supporting analysis, and administrative record.

### Pre-ROD Community Involvement Activities

If new information that significantly changes the basic features or cost of the remedy becomes available after the publication of the Proposed Plan, and if these changes could be reasonably anticipated by the public based on information in the Proposed Plan, supporting analysis, and administrative record, then the Site Team must include a discussion of the significant changes and reasons for such changes in the ROD. However, if EPA determines that the significant change could not have been reasonably anticipated by the public based on information in the Proposed Plan, supporting analysis, and administrative record, then the Site Team must:

- **Issue a revised Proposed Plan**. Prior to the selection of the remedy, the Site Team must issue a revised Proposed Plan that includes a discussion of the significant changes and the reasons for such changes.
- **Hold a public comment period**. The Site Team must seek additional public comment on the revised Proposed Plan (see the **Public Comment Periods** tool in the *Toolkit*).
- **Prepare a written response**. The Site Team must respond to significant comments (see the **Responsiveness Summaries** tool in the *Toolkit*).

When revisions to the Proposed Plan necessiate a a new round of public comment, public understanding of those significant changes is crucial. EPA recommends that the Site Team use some of the following community involvement tools:

- **Revised fact sheet**. Distribute a revised Proposed Plan fact sheet explaining significant changes and the process for holding a new round of public comments (see the **Fact Sheets** tool in the *Toolkit*).
- **Public availability/poster session**. The Site Team should host a public availability/poster session to explain significant changes and the need for a new round of public comment. Public availabilities and poster sessions are less structured than public meetings; they are preferred in situations in which public meetings are not required (see the **Public Availability/Poster Session** tool in the *Toolkit*).
- **Informal activities**. The Site Team should engage in some informal outreach activities, such as setting up an exhibit booth at a com-

munity event or going door-to-door, to explain the significant changes and the new round of public comments (see the **Informal Activities** tool in the *Toolkit*).

- **On-Site activities**. Depending upon the nature of the significant changes, this point in the process might present a good opportunity for the Site Team to host a site tour, during which the team can explain the site, the nature and extent of contamination, and the significant changes to the revised Proposed Plan (see the **On-Site Activities** tool in the *Toolkit*).
- **Telephone hot lines**. If the Site Team has not already set up a toll-free telephone hot line, this would be a good time to do so. If the hot line is already operating, it should be updated to explain the revised Proposed Plan and the new round of public comments (see the **Telephone** tool in the *Toolkit*).

## 9. Record of Decision

After EPA considers comments on the Proposed Plan, it selects a final remedy, which is published in the Record of Decision (ROD). The ROD is the official documentation of how EPA considered the remedial alternatives and why EPA selected the final remedy.

### Community Involvement Requirements During the ROD

During selection of the final remedy in the ROD, the Site Team must:

- **Publish a notice of the availability of the ROD in a major local newspaper**. The Site Team must notify the public of the availability of the ROD through publication of a notice in a major local newspaper (see the **Public Notices** tool in the *Toolkit*).
- **Review the CIP for needed changes**. After the signing of the ROD and prior to the initiation of the Remedial Design, the Site Team shall review the CIP to determine whether it should be revised to include additional public involvement activities during the RD/RA phase (see the **Community Involvement Plans** tool in the *Toolkit*).

### More About Public Notice of ROD

EPA is required to publish a newspaper notice, preferably a display ad, which informs the public that the ROD has been signed and announces the availability of the final remedial action plan selected by EPA. The advertisement should provide a brief summary of the selected remedy and explain where a copy of the ROD can be obtained or reviewed.

### ROD Outreach Activities

When the ROD is issued, the Site Team should make a concerted effort to inform the community that EPA has made a decision about the site remedy. This information needs to be disseminated as widely as possible. Although placing a notice in a newspaper is required, it probably is the least effective way of notifying the community. Other more effective approaches for notifying the community about the ROD include:

- **Fact sheets**. Distribute a fact sheet explaining the remedy in the ROD. (see the **Fact Sheets** tool in the *Toolkit*, which includes sample fact sheets and fact sheet templates).
- **Public availability/poster session**. The Site Team can host a public availability/poster session to explain the ROD (see the **Public Availabilities/Poster Sessions** tool in the *Toolkit*).
- **Informal activities**. The Site Team can engage in informal outreach activities, such as setting up an exhibit booth at a community event, to announce the ROD (see the **Informal Activities** tool in the *Toolkit*).
- **On-site activities**. The ROD announcement might present a good opportunity for the Site Team to host a site tour. (see the **On-Site Activities** tool in the *Toolkit*).
- **Press briefings and news releases**. Most local television and radio stations will broadcast public service announcements related to sites.

*At a controversial site, a CIC held regular conference calls with EPA representatives, reporters, editors, local officials, and interested residents. Twelve lines were dedicated for each call. The date and time of the call were announced in advance. The calls were conducted on a quarterly basis at first, but as work intensified, they were held monthly, then bi-weekly, and weekly.*

*The CIC also placed weekly updates on a toll-free hot line that citizens could call at their convenience. This information answered the basic questions of affected residents and saved the CIC time responding to individual messages. In the end, the ROD was not contested.*

Site Team members may appear on a live radio or cable television call-in shows. The Site Team can respond to questions and also explain the selected remedy. When participating on this type of show, develop messages and repeat them frequently to ensure the key mesages are conveyed to the public (see the **Media** tool in the *Toolkit* and Chapter 7, "Dealing with the Media," in this *Handbook*).

- **Postcard or flyer**. Prepare a post card or flyer to announce the ROD and distribute it to people on the site mail list. Place the flyer or post card in various locations throughout the community, such as schools, libraries, or grocery stores.

## 10. Post-ROD Significant Changes

After a ROD is signed, the PRP sometimes will settle with EPA and agree to perform the remedy selected in the ROD. If any post-ROD remedial action or enforcement action under CERCLA §106 is taken, or if any settlement or consent decree under CERCLA §106 or §122 is entered into, and if such action, settlement, or decree differs significantly from the ROD, then EPA must take one of the following actions:

- If the differences in the settlement or consent decree do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost, the Agency must issue an explanation of significant differences and make the explanation and supporting information available to the public in the administrative record and information repository. Additionally, a notice that briefly summarizes the significant differences and states the reasons for such differences must be published in a major local newspaper of general circulation.
- If the differences in the settlement or consent decree fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost, EPA must propose an amendment to the ROD.

To amend the ROD, EPA must:

- **Publish a notice of availability of the proposed amendment**. The Site Team must publish a notice of availability and a brief description of the proposed amendment in a major local newspaper of general circulation.
- **Provide time for comments**. The Site Team must provide at least 30 days for the submission of written and oral comments on the proposed amendment (the comment period must be extended by a minimum of 30 days, upon timely request).
- **Provide public meeting opportunity**. The Site Team must provide the opportunity for a public meeting during the comment period.
- **Keep a transcript of comments**. The Site Team must keep a transcript of comments received at the public meeting.
- **Include an explanation of the amendment**. The Site Team must include a brief explanation of the amendment and a response to each of the significant comments, criticisms, and new relevant information received during the comment period in the amended ROD.

Once the ROD has been amended, EPA must:

- **Publish a notice of availability of the amended ROD**. The Site Team must publish a notice of availability of the amended ROD in a major local newspaper of general circulation.
- **Place the amended ROD in the information repository.** The amended ROD and supporting information must be placed in the administrative record and information repository before commencement of the remedial action.

### Post-ROD Outreach Activities

When a settlement agreement or consent decree has caused EPA to propose an amendment to the ROD, EPA must perform the community involvement requirements outlined above. Because settlement negotiations are closed to the public, the settlement and the resulting proposed ROD amendments may come as an unpleasant surprise to the community, and significantly undermine community trust and cooperation. To avoid this result, EPA recommends that the following additional community outreach activities be undertaken:

- **Fact sheets**. Distribute a fact sheet explaining how EPA proposes to amend the ROD and any changes to the scope, performance, and cost of the remedy. The fact sheet should remind the public of its opportunity to comment on the proposed amendments to the ROD (see the **Fact Sheets** tool in the *Toolkit*, which includes sample fact sheets and fact sheet templates).
- **Public availability/poster session**. The Site Team should host a public availability/poster session to explain the proposed amendments to the ROD and the need for a new round of public comment. Public availabilities and poster sessions are preferred in situations in which public meetings are not required (see the **Public Availabilities/Poster Sessions** tool in the *Toolkit*).
- **Informal activities**. The Site Team should engage in informal outreach activities, such as setting up an exhibit booth at a community event or going door-to-door to explain the proposed amendments to the ROD and the new round of public comments (see the **Informal Activities** tool in the *Toolkit*).

> *"Engage in meaningful dialogue and you will minimize delays from public misunderstanding and criticism."*
> ***Ed Als, RPM, Region 2***

- **On-site activities**. Depending upon how tangibly the amendments proposed for the ROD can be demonstrated on site, this time might present a good opportunity for the Site Team to host a site tour. During the tour, the Site Team can provide a history of the site and describe the nature and extent of contamination and the changes to the remedy contemplated by the settlement or consent decree (see the **On-Site Activities** tool in the *Toolkit*).
- **Telephone hot lines**. If the Site Team has not set up a toll-free telephone hot line, this would be a good time to do so. Alternatively, if the hot line was established earlier in the process, it should be updated to explain the proposed amendments to the ROD and the new round of public comments (see the **Telephone** tool in the *Toolkit*).

## 11. Remedial Design/ Remedial Action

Remedial Design/Remedial Action (RD/RA) is the phase during which EPA designs and implements the cleanup remedy selected in the ROD. As with the other phases, RD/RA has its own set of community involvement opportunities and potential problems. The disruption imposed on communities during the construction phase can cause communities to become agitated and vocal.

While the remedial design phase usually is uneventful since little or no field work is conducted, the remedial action phase can be very disruptive to the community, with extensive construction, dust, noise, and heavy truck traffic

that carries on for months or years. Members of the public may express anger and surprise when construction begins. Moreover, regardless of the success of community involvement efforts prior to construction, there always will be newcomers to the community or people who recently started paying attention who may be especially bothered by the impact of construction on their lives.

The Site Team should continue any ongoing communications and outreach efforts and engage in further efforts. At least one community involvement or outreach activity should be performed each year during the design phase of the remedy. These activities should emphasize that EPA is making progress with the design and, whenever possible, advise the community when construction may begin. Fact sheets or flyers work well to inform the community about the progress of the design. Some Regions require the site team to hold a public meeting at the 75 percent design completion point to educate the community about the project and the potential impact on residents.

### Community Involvement Activities During RD/RA

The NCP requires EPA to do the following after the remedial design is approved and before construction begins:

- **Issue a fact sheet**. After completion of the final design, the Site Team must issue a fact sheet (see the **Fact Sheets** tool in the *Toolkit*).
- **Provide a public briefing**. The Site Team must provide a public briefing about the final engineering design prior to the initiation of remedial action (see the **Presentations** and **Public Meetings** tools in the *Toolkit*).

The community should be informed about the work to be done, planned work hours, truck traffic, health and safety precautions, and monitoring to confirm that there are no releases. The community also should be informed about issues such as whether and how the remedial action will affect school bus routes and schedules, local traffic patterns, noise, and health and safety issues. Procedures for notifying nearby residents in the event of a release or other emergency also should be established.

*Sometimes a previously "sleepy" site can become a community involvement challenge when new issues arise late in the Superfund cleanup process. A last-minute challenge occurred at a Region 4 site where the community became aware during the design phase that EPA was considering allowing the PRPs to discharge untreated groundwater into a sewer line. The discharge issue galvanized the community. EPA scheduled a public meeting to hear residents' concerns on this and other site-related issues and helped the community form a Community Advisory Group (CAG). EPA organized site visits and worked closely with the CAG to address community concerns. The Agency agreed to continue investigating the site. While those involved agree that the CAG should have been formed much earlier in the process before major site decisions were made, they also agree that the group has played a significant role at the site and has helped build trust between the community and EPA.*

The required activities should be supplemented with activities such as public availabilities/poster sessions, site tours, radio show appearances, or something similar on a local TV news show or local cable TV station. These activities should educate the community about what can be expected to occur during the construction phase.

The Site Team also may want to consider special events and facilities at the site that allow residents to see the progress first hand, such as observation decks, special site tours, and other

methods that will eduacate and inform the public. Again, the more the residents know, the better the chances of avoiding controversy.

## 12. Operation & Maintenance

During the Operation and Maintenance (O&M) phase, EPA must conduct a review of the remedy every five years. The project manager forms a Site Team for the five-year review, which may consist of a CIC, scientists, engineers, and other technical personnel. The review includes: examining site data; visiting the site; taking new samples; and talking with affected residents.

EPA is required to notify the community and other potentially-interested parties that a five-year review will be conducted at their site. The Site Team may interview community members to get their views about current site conditions, problems, and concerns. If there is a site CAG or TAG, representatives of these groups should be briefed at appropriate stages of the five-year review. The Site Team also may conduct additional community involvement activities, such as issuing fact sheets or holding a public meeting.

Upon completion of the five-year review, the Site Team is required to write a review report which includes background on the site and cleanup activities, a description of what was done during the five-year review, and an explanation of the results. The explanation of results must include a protectiveness statement for each remedy under review indicating whether the remedy is protecting human health and the environment. While it is not required, the Site Team may choose to ask for public comment on the report.

Upon completion of this report, the Site Team will write a summary of the review report and place the report and its summary in the site repository. The Site Team then will announce that the review is complete, and that the report and summary are available for the public to review. For more information about community involvement strategies during a five-year review, read Appendix A of the *Comprehensive Five-Year Review Guidance.*

## 13. Proposed NPL Deletion and Final NPL Deletion in the *Federal Register*

A site can be deleted from the NPL when EPA determines that no further response is needed. Procedures for NPL site deletion are similar to rulemaking for NPL site additions. Regional staff need to prepare a deletion docket containing all pertinent information supporting the deletion recommendation before transmitting this docket to EPA Headquarters for review. The Site Team should ensure that the Regional public docket and local information repositories contain copies of all supporting information prior to publication of public notification statements announcing EPA's intent to propose a site deletion.

The following community involvement activities are required during deletion from the NPL:

- **Publish a notice of intent**. The Site Team must publish a notice of "intent to delete" in the *Federal Register*.
- **Hold a public comment period**. In the notice, the Site Team must solicit public comments through a public comment period of a minimum of 30 calendar days (see the **Public Comment Periods** tool in the *Toolkit*).
- **Publish a public notice of availability**. The Site Team must publish a public notice of the intent to delete the site from the NPL. The notice should be published in a major local newspaper at or near the site (see the **Public Notices** tool in the *Toolkit*).
- **Place copies in the Information Repository**. The Site Team must place copies of information supporting the proposed deletion in the information repository (see the **Information Repository** tool in the *Toolkit*).

- **Respond to public comments**. The Site Team must respond to each significant comment and any new data submitted during the comment period and include this responsiveness summary document in the final deletion package (see the **Responsiveness Summary** tool in the *Toolkit*).
- **Place the deletion package in the Information Repository**. The Site Team must place the final deletion package in the local information repository once the notice of the final deletion has been published in the *Federal Register*.

### More About the Notice of Intent to Delete

The Site Team must prepare the "Notice of Intent to Delete" to appear in the *Federal Register* and appropriate local publications. Additional information in the notice should include:

- A summary of EPA deletion criteria and how the site meets the criteria;
- The locations of Regional dockets;
- The locations of local information repositories containing relevant documents;
- The name and address of a Regional contact where comments may be sent;
- A brief site history, including location, former use, contaminants, and date added to the NPL;
- A description of all response actions taken at the site (including the scope of the RI, if applicable, the results, and the conclusions);

*One CIC organized a celebration around the demolition of four smokestacks at a Superfund site. The stacks had been an eyesore in the community. The media was involved, as well as the Regional Administrator and a local Congressman. Local residents printed programs for the demolition and organized a fair with a helicopter ride. The CIC distributed a fact sheet and media package about the stack demolition.*

*Another CIC held a ceremony when work at a site was completed. The occasion was the completion of on-site revegetation to create a bird sanctuary. Since the site appeared to be nothing more than a grassy field, the celebration focused on the removal of EPA's Superfund sign and the unveiling of a new sign designating the site as a sanctuary.*

- A summary of cleanup standards and criteria and results of all confirmatory sampling;
- A summary of Superfund community involvement activities;
- A description of EPA's close-out plan for the site that explains operation and maintenance procedures, the monitoring program that will be implemented, and any institutional controls that will be used at the site;
- An acknowledgment of State concurrence to delete the site;
- A description of procedures for deleting a site from the NPL; and
- A statement indicating that EPA retains the authority to spend money on and take action at a deleted site if future conditions warrant such actions.

### Additional Outreach Activities during NPL Deletions

The last important activity is a special event to commemorate completion and recognize citizens who have helped (see the **Citizen Recognition** and **Special Events** tools in the *Toolkit*). Regions have tried a variety of activities intended to bring closure to the site for the community, as well as for the Site Team. In most cases, the complete process has taken longer than anyone expected or wanted, and a special event signals success or finality for all involved. In some cases, it can also serve to formally return land to the community. Grand openings, dedications, and naming ceremonies are all appropriate. The purpose of such special events is to involve the community and

demonstrate to them in a dramatic fashion that the project is complete.

## Community Involvement on Prospective Purchasers Agreements

Prospective Purchaser Agreements (PPAs) are agreements between EPA and prospective purchasers of contaminated properties that contain covenants not to sue. These covenants release purchasers from liability for past contamination. The covenants not to sue are intended to encourage safe reuse or redevelopment of contaminated property that would have substantial benefits to the community (*e.g.*, through job creation or productive use of abandoned property).

EPA issued a "Guidance on Agreements with Prospective Purchasers of Contaminated Property" in May 1995, which expanded the circumstances under which the Agency will consider entering into PPAs. Previous guidance limited use of these covenants to certain situations. The 1995 guidance allows EPA to consider "indirect public benefit" as one of the considerations. A model PPA was issued in October 1999. A PPA tracking system also has been developed within the WasteLAN database.

### Community Involvement Activities for EPA Agreements with Prospective Purchasers of Contaminated Property

Because settlements with prospective purchasers are not expressly governed by CERCLA, there is no legal requirement for public notice and comment. However, in light of EPA's May 1995 policy of accepting "indirect public benefit" as a partial consideration, and the fact that the PPAs will provide contribution protection to the purchaser, the surrounding community and other members of the public should be afforded an opportunity to provide comments on the settlement, wherever feasible. This is particularly important in urban communities and at facilities where environmental justice is an issue.

At these sites, the Site Team should disseminate information and facilitate public input. Seeking cooperation with state and local government agencies also may facilitate public awareness and involvement. Additionally, the Site Team should make a case-by-case determination of the need and level of measures needed to ensure meaningful community involvement with respect to the agreement. Some PPAs may be subject to relatively short deadlines. In these circumstances, the Site Team should allow sufficient time for appropriate approvals and public comment prior to the deadline.

## Summary

The Superfund remedial process can be traumatic for a community, and it is incumbent upon the Agency to help citizens deal with it. It is in EPA's best interest to involve citizens in every aspect of the cleanup. The more they feel involved in the decision-making process, the greater their sense of ownership and buy-in, and the more readily they will accept the proposed remedy.

# CHAPTER 6 IMPLEMENTING COMMUNITY INVOLVEMENT IN REMOVAL ACTIONS

The most current version of this publication is available at www.epa.gov/superfund

## Introduction

This chapter presents a comprehensive discussion of how a Site Team should implement early and meaningful community involvement during removal actions. Removals are short-term responses to immediate threats to human health or the environment. Since removals vary in their duration, they present unique community involvement challenges and opportunities. The type and frequency of community involvement activities will vary with the length and urgency of the removal action. Consequently, the community involvement approach for a removal action should be flexible and responsive to changing site conditions and to the needs of the surrounding community.

> *"Be visible and available. Seek out opportunities to meet with community members during their normal activities. Always find the time to answer questions and listen to concerns."*
> ***Paul Groulx, OSC, Region 1***

In this chapter, community involvement approaches and methods are discussed for three types of removal actions: emergency responses, time-critical removals, and non-time-critical removals. The unique community involvement approach for each type of removal action is discussed in detail. Required community involvement activities, as well as recommended activities, are presented, as is a discussion of the community involvement challenges and opportunities posed by removal actions. The chapter begins with an overview of Superfund removal actions and planning tips for conducting community involvement and outreach during removal actions. A variety of community involvement activities and suggestions and the rationale for conducting them are presented throughout the chapter. Details about each activity are provided in the *Community Involvement Toolkit*.

## About Superfund Removal Actions

Removal actions are characterized by their urgency and duration. There are three basic types of removals:

1) ***Emergency Responses*** are short-term (one-day to three months) actions requiring the immediate removal of hazardous materials to protect human health and the environment. Typical emergency responses address imminent threats, such as fires, explosions, or toxic spills. Communications focus on quickly disseminating information to warn of the potential threats and explain the protective measures EPA is taking.
2) ***Time-Critical Removals*** are situations where EPA must begin cleanup activities within six months of discovery of hazardous materials to protect public health and safety. Community involvement and outreach activities are similar to emergency responses, although more time usually is available to plan outreach activities.
3) ***Non-Time-Critical Removals*** occur when EPA determines that a removal action is appropriate and the situation allows EPA a planning period of six months or more prior to the beginning of removal activities at the site. These sites do not present an immediate threat to public health or safety. In non-time-critical removals, EPA must complete an Engineering Evaluation and Cost Analysis (EE/CA) that describes the cleanup and approach. Because of the longer time frame, the community involvement and outreach activities are similar to those performed for remedial actions.

Even though the response time varies according to the type of removal, the key is developing a successful outreach plan for the situation. Early and continued community involvement and outreach—particularly for non-time-critical removal actions—will help promote community acceptance of the cleanup solution and may

prevent or substantially reduce conflict with the community or other stakeholders as the process proceeds.

## Roles and Responsibilities

The On-Scene Coordinator (OSC) is responsible for all response activities conducted during a removal action, including non-technical activities such as communications, public outreach, and community involvement. The OSC can delegate these responsibilities to another OSC, a Community Involvement Coordinator (CIC), or other response agency personnel. Regardless of who performs these functions, outreach, media relations, and community involvement activities are important and necessary elements of a successful cleanup conducted under removal authority.

Since the OSC is responsible for all site activities, he or she must decide early in the response whether additional communications support and expertise are needed. This decision should be based upon the complexity and expected duration of the removal action and the interest of the community and the media. The OSC also relies on advice and support from the CIC or Regional press office when making decisions concerning media relations and public outreach.

The CIC plays an important role in a removal action. The role of the CIC in any type of removal action is to support the OSC and serve as a communications and outreach advisor. The OSC depends on the CIC's expertise and capabilities for developing and implementing a communication strategy for the removal action. This reliance on the CIC by the OSC requires the CIC to quickly gain an understanding of community concerns and the media's needs during a removal action and to develop a strategic plan to address the communication/outreach needs. The CIC advises the OSC of the communication/outreach issues and the proposed communications plan. After this consultation, the CIC coordinates with the OSC to implement the communications plan.

Communications and outreach work best when the OSC and the CIC work as a team to manage all community involvement activities, including community outreach, media relations, coordination with stakeholders, and information dissemination. A teaming arrangement allows the OSC to focus on the technical issues concerning the response while the CIC focuses on the communication and outreach issues. In this arrangement, the OSC coordinates with the CIC to identify key messages or technical issues that need to be disseminated to the media or the surrounding community. The OSC also keeps the CIC informed of technical cleanup activities so that the CIC can knowledgeably respond to questions from the media or the community. The CIC advises the OSC of key concerns of the media and community and suggests approaches for addressing those concerns.

## Planning for Communications/Outreach During Removal Actions

Once a removal action begins, the OSC and the support team helping with communications should be prepared to implement a variety of communication and outreach activities quickly to meet the needs of the community and other stakeholders. To improve this capability, the EPA removal Site Team should plan and prepare for communications prior to removal actions. Provided below are several suggestions for planning and preparing for a removal action:

- Develop a "Response Communications Toolkit" for emergency and time-critical responses. The Toolkit should include: electronic templates of press releases and fact sheets that explain EPA's role in responding to the situation; checklists of activities to perform at the incident; tips for dealing with the media; and lists of contacts in the media and other response organizations. The Toolkit also should include a list of equipment and materials

needed for a field office, such as a laptop computer, portable printer, printing paper, notepads, pens, tape, stapler, folders, telephone equipment, fax machine, and other basic office equipment and materials.

- Establish a network of contacts in the response community at the local, state, and federal level. In medium and large emergency response situations, all three governmental levels will be involved in the response.
- Develop templates of communication strategies to facilitate identification of key audiences, messages, and communication approaches and methods.
- Define roles and responsibilities of all response personnel who will conduct communication and outreach activities. Understanding the roles of each individual prior to the incident will improve teamwork and coordination during the incident.
- Participate in training and desktop exercises to improve coordination pertaining to communications and outreach.
- Become familiar with the Joint Information Center (JIC) model for coordinating communications during multi-agency responses (See the text box on page 54).
- Develop fact sheets for each type of removal action and fact sheet templates that can be modified to address site-specific and community needs.

## How to Conduct Community Involvement/Outreach During Removal Actions

The approach for conducting community involvement and outreach at removal actions depends on the severity and the duration of the particular response. In all removal actions, certain activities are required by the National Contingency Plan (NCP). The number of required activities increases with the duration of the response action (see the summary of the required activities in the Appendix). Experience has shown that meeting the minimum requirements often is insufficient to adequately meet the community's needs and concerns. Performing the minimum communication/outreach activities can be sufficient at some sites; however, at most sites much more needs to be done. The OSC, with advice from the Site Team, determines the extent of community outreach and involvement needed for the particular response. This determination is best made by conducting an analysis of the communication needs for the specific removal action. Such a determination can be accomplished through a communications strategy.

A communication strategy is critical to a successful outreach effort during removals (see the **Communication Strategy** tool in the *Toolkit*). A communication strategy answers four key questions: 1) Who are the individuals and organizations impacted by the removal action (i.e., the audience)? 2) What are the key communication issues, such as a community's needs and concerns? 3) What are the key messages EPA needs to convey to the public? and 4) Which techniques or activities are most appropriate to meet the community's needs or to convey EPA's message? These questions need to be answered before any communications or outreach activity is conducted. These answers can be derived informally through a discussion among Site Team members or formally in a written document. For an emergency response, a discussion typically suffices, given the time constraints.

For time-critical and non-time-critical responses, a formal document, such as a Community Involvement Plan (CIP), is more appropriate. A Community Involvement Plan is required for removals that require more than six months.

No single approach works for all sites or situations. The Site Team should be flexible and willing to adjust the communication approach and strategy. Regardless of the general communication strategy and the particular outreach

*Most removal actions are relatively small in scope and limited to EPA or one other state or federal agency. In these cases, the OSC can manage the coordination of communications and outreach. However, some removal actions involve multiple public or private agencies and organizations. For these occasions, the OSC should consider establishing a Joint Information Center (JIC).*

*A JIC is a centralized communications hub designed to coordinate communications so that timely, useful, and accurate information can be provided to the public and media. The purpose of the JIC is to gather incident data, analyze public perceptions of the response, and inform the public. Representatives from response agencies are assigned specific functions and tasks to manage information flow and outreach during the incident. The JIC structure works equally well for large or small situations and can expand or contract in size to meet the specific needs of the incident.*

*Through a JIC, response agencies can work together and speak with a single voice. By maintaining a centralized communication facility, resources are better managed, the issuance of mixed messages is reduced, and duplication of effort is minimized. Use of a JIC allows for tracking and maintaining records and information more accurately.*

*Additional information on establishing a JIC is available in a National Response Team (NRT) document,* Joint Information Center Model: Collaborative Communications During Emergency Response.

activity, there are simple principles that make an outreach program successful. These include:

- Be available and accessible. Accessibility to the community is critical to establishing EPA as the leader of a removal action. The OSC or the Site Team must anticipate and respond to the fear, confusion, and concerns of the community. Being available to answer questions or listen to concerns helps to address the immediate insecurities and fears felt by many community members. Accessibility also increases the community's familiarity with EPA and the Site Team, which ultimately increases comfort level and reduces fear.
- Respond quickly to community questions, concerns, and needs. Responding quickly increases the community's trust and confidence in EPA and the Site Team. Conversely, responding slowly, or not at all, increases the community's fear and leads to mistrust. If time is needed to respond to a request from a stakeholder, explain when an answer will be provided. Always follow up by explaining what has or has not been done to address the person's concern, even if the news is bad. A person that does not hear back from EPA will assume that he or she is being ignored.
- Be honest and open. Never lie or be misleading. A community that learns that EPA staff has been misleading will not believe EPA in the future and will question every decision EPA makes. If an answer is not known, say, "I don't know but will find out." Once an answer is in hand, follow up should be immediate.
- Educate the impacted community about the Superfund program, both in terms of what is possible and not possible. This education will help to manage expectations. If people understand that EPA is prohibited legally from doing something, they will not expect EPA to do it. Conversely, if they do not understand what cannot be done under the Superfund program, they will wonder why it is not being done.

- Empathize with community members or other stakeholders. Listen to people, be concerned, and treat people as you would like to be treated if you found yourself in similar circumstances.
- Be creative and imaginative, particularly when designing or implementing outreach activities. Design activities to meet community needs.
- Recognize that impacted citizens can be a source of help to EPA. Local residents/business owners often know what has occurred at a site and can share this information with EPA. However, EPA needs to ask questions or encourage people to provide the information. Also, local residents can help disseminate information throughout the community.

Adopting these attitudes and principles helps to establish a relationship of mutual respect and trust with the community. Although stakeholders may disagree with specific EPA decisions, they are more likely to understand and accept the decisions if they trust EPA and believe the decision-making process is fair and considers their input.

When an OSC does an initial site assessment at a potential removal site and determines the site probably will require a removal action of more than six months, the OSC or CIC should consider canvassing the area and coordinating meetings with local public officials and the media. This can be an opportunity to gain a better understanding of community concerns and to explain EPA's emergency response and removal program. This early involvement helps to build a relationship with the community, and is particularly important if the site becomes a non-time-critical removal or a remedial action after a time-critical removal. A well-informed community familiar with EPA and its programs will be less skeptical of EPA decisions made during for the longer-term cleanup.

> *"Take the time to anticipate public concerns and likely reactions and develop effective involvement strategies."*
> ***Andy Bain, CIC, Region 9***

## Community Involvement/ Outreach During Emergency Responses

By definition, an emergency is an unforeseen event that requires immediate action. For EPA and the OSC, the initial focus of a response action is to eliminate the immediate threat or potential threat. Equally important is communicating with the impacted community to inform them of events and to respond to questions. During an emergency response, EPA needs to give the public prompt, accurate information on the nature of the release or threat of release and the actions to mitigate the threat.

Emergency responses are designed to address imminent threats such as fires, explosions, toxic spills or any other immediate threat to public health and the environment. They typically involve:

- Evacuating or temporarily relocating people to remove them from direct harm;
- Stabilizing or detonating flammable or explosive hazardous materials;
- Providing site security by posting signs, erecting fences, or posting guards;
- Providing an alternative water supply, such as bottled water; and
- Treating, storing, or disposing of hazardous substances, such as controlling drainage, stabilizing berms, draining lagoons, capping soils or sludge, excavating and removing contaminated soil, removing drums and other containers, or using chemical stabilizers.

The OSC is authorized to take whatever steps are necessary to protect the surrounding community. This authority includes informing the media and the community of the emergency and the response plans. The NCP requires EPA to inform the community and to designate a spokesperson during an emergency response. The OSC can

serve as the spokesperson or that responsibility can be delegated to a CIC or other qualified field personnel. This decision should be made early in the response, as soon as the OSC has determined the potential communication needs for the response. For multi-agency or complicated responses, the OSC should consider establishing a Joint Information Center (JIC) to handle communications and outreach.

Community involvement and public outreach during an emergency present many challenges because of the time constraints and hectic nature of the response, the potential involvement of multiple agencies and organizations, and the limited availability of resources. There is often no pre-planning period. Regardless, successful community involvement and public outreach can be planned and implemented during emergencies. See the section below entitled, "Community Involvement During Time-Critical and Non-Time-Critical Removal Actions," for planning ideas and approaches that can be applied to emergency response.

From the perspectives of surrounding residents and business owners, an emergency response is a potential threat to their health, family, and property, and a significant disruption to their daily routine and life. Consequently, local residents and others impacted by the emergency will be fearful, feel powerless, and possibly be outraged. These concerns and feelings must be addressed by the OSC or the Site Team. Providing frequent and timely information about the emergency response and how it will impact residents helps to alleviate some of these concerns. In most cases, information about individual sample results and health issues should be disseminated directly to individuals. General information can be disseminated through public meetings, telephone calls, door-to-door visits, or leaflets. In rare cases, critical information can be disseminated quickly through the media. The more personal the approach, the more comfortable people will become with the situation and with EPA. The exception to this rule is if people are in immediate danger. In such cases, all communication avenues should be used, including the media, door-to-door notification, radio announcements, or any emergency response notification procedures used by local authorities.

Provided below are specific activities and approaches that can be used to plan or conduct community involvement and outreach activities during an emergency response.

### Outreach Activities During Emergency Response

At a minimum, the Site Team needs to perform three activities required by the NCP:

1) **Designate an Agency spokesperson**. In a timely manner, this representative must inform the community of actions taken, respond to inquiries, and provide information concerning the release of hazardous substances.
2) **Notify affected citizens**. The spokesperson must promptly notify the citizens immediately affected by the release, as well as state and local officials, and when appropriate, civil defense or emergency management agencies.
3) **Establish an administrative record**. Staff must establish an administrative record containing documents that form the basis for selecting the response action. The administrative record must be available for public review. Staff must notify the public of the availability of the administrative record by publishing an announcement in a major newspaper of general circulation. For emergency responses lasting less than 30 days, placement of the administrative record file in one central location fulfills statutory requirements.

The role of the agency spokesperson can be filled by the lead OSC, a CIC, another OSC, or any qualified field staff (see the **Spokesperson** tool in the *Toolkit*). During complex, multi-agency responses, the OSC should consider establishing a JIC to coordinate the release of information to

the public through the media (see the **Media** tool in the *Toolkit*).

The activities required by the NCP typically are insufficient for informing the media, the public, and interested stakeholders during an emergency response. Many other options should be considered by the Site Team. Some of these options are:

- Designate a communications lead, such as a CIC, to advise the OSC on community involvement issues and assist the OSC with the media.
- Canvass the neighborhood to identify residents' needs, fears, and concerns.
- Formulate a quick communication strategy and implement the approach and activities accordingly.
- Coordinate with Regional EPA staff to brief them about the response and to ask for assistance, if necessary. Specifically, contact the Regional Press Office, Office of Congressional Liaison, other OSCs and CICs, public affairs, and state contacts.
- Disseminate information to the media through interviews, press briefings, and news releases. Also see Chapter 7, "Dealing with the Media," in this *Handbook*. Prepare key messages for interactions with the media. If no information is available, tell the media that information will be disseminated as soon as accurate information becomes available. For press briefings and interviews, identify a facility (tent, office, trailer), schedule the briefing/interview, and notify the press of the time and location (see the **Media** tool in the *Toolkit*).
- Distribute photographs. Take photographs or use available photographs, maps, or aerial photographs. These images can be distributed to the media and the public, used to document the response, or placed in fact sheets. This will help satisfy the media's and public's need for official information about the emergency (see the **Maps, and Aerial Photographs** tool in the *Toolkit*).

**Community Involvement Requirements for Emergency Responses and Removal Actions**

| Activity \ Type of Action | Emergency Response (On-site activity lasts less than 30 days) | Time Critical Removal (On-site activity lasts less than 120 days) | Time Critical Removal (On-site activity lasts more than 120 days) | Non-Time Critical Removal |
|---|---|---|---|---|
| Designate an Agency spokesperson | ✔ | ✔ | ✔ | ✔ |
| Notify affected citizens | ✔ | ✔ | ✔ | ✔ |
| Establish an administrative record | ✔ | ✔ | ✔ | ✔ |
| Publish a notice of availability of the administrative record | | ✔ | ✔ | ✔ |
| Hold a public comment period | | ✔ | ✔ | ✔ |
| Respond to public comments (prepare a responsiveness summary) | | ✔ | ✔ | ✔ |
| Establish an information repository | | | ✔ | ✔ |
| Publish a notice of availability of the information repository | | | ✔ | ✔ |
| Conduct community interviews | | | ✔ | ✔ |
| Prepare a Community Involvement Plan | | | ✔ | ✔ |
| Publish a notice of availability and a brief description of the EE/CA | | | | ✔ |

- Distribute regular **Facts Sheets** to let residents know about EPA's emergency response activities. Use existing fact sheets on the removal program, toxic spills, EPA's emergency response program and other topics. Develop new site-specific fact sheets using templates developed for emergency response situations (see the **Fact Sheets** tool in the *Toolkit*).
- Publicize and host **Public Meetings** to deliver information to a large group of people, to let community members voice their concerns, and to foster interaction between the Site Team and the community (see the **Public Meetings** tool in the *Toolkit*).
- Establish a local or toll-free **Telephone** hotline and publicize its availability. The hotline can be constantly manned to respond immediately to questions, play taped announcements that provide current updates on site activities, or permit callers to leave messages or ask questions (see the **Telephone** tool in the Toolkit).
- Be prepared to expand the community involvement and outreach program when local residents need to be temporarily evacuated or relocated to protect them from potential harm. (see the **Residential Relocation** tool in the *Toolkit* and Chapter 9, "Community Involvement Activities During Residential Relocation," in this *Handbook*).
- Determine community demographics and, if necessary, translate documents or radio public service announcements into appropriate languages (see the **Translation Services** tool in the *Toolkit*).
- Develop a risk communication approach that meets the needs of the community (see the **Risk Communication** tool in the *Toolkit* and Chapter 3, "Risk Communication," in this *Handbook*). Emergency responses require skilled risk communication and a willingness to work with frightened residents and the media.

> *"Ask for help. If you sincerely seek information or support from a community, you will almost always get something worthwhile."*
> ***Donn Walters, CIC, Region 6***

## Community Involvement/ Outreach During Time-Critical and Non-Time-Critical Removal Actions

Since both time-critical and non-time-critical removals have longer planning periods than emergency response actions, more planning may be devoted to community involvement and outreach activities. Additional activities are required by the NCP, and supplemental activities may be needed to adequately address community concerns and needs. Although there are differences between community involvement and outreach approaches and activities for time-critical and non-time-critical removals, the differences are due primarily to regulatory requirements. Supplemental activities and the rationale for conducting these activities at each type of removal action are identical. The specific requirements for each type of removal action are listed in the chart on page 55.

In time-critical and non-time-critical removal actions, EPA should perform outreach and other community involvement activities as early as possible. For example, the OSC, preferably with a CIC, could meet with local officials, media, and residents during the initial site assessment to explain EPA's removal program. Early involvement builds trust with the community and provides an opportunity for EPA to explain the removal process. If the site is subject to a non-time-critical removal or remedial action, a well-informed community will be more supportive of EPA's role as longer-term work continues.

The longer the removal action takes, the more important it is to communicate and involve the community. This communication can be done through many different activities. The important

thing is to match the method with the situation so that the purpose of the activity is met, whether it is conveying information about the incident, soliciting information about the site, or providing training/educational materials about the Superfund program and process.

### Time-Critical Removals

A removal is time-critical when EPA has determined that there is no immediate emergency and a removal must begin in less than six months to prevent the situation at the site from becoming an emergency. Although time-critical removals are almost as urgent as emergency responses, they provide more time for planning and conducting removal activities. The NCP requires specific community involvement activities during time-critical removals.

The NCP (at 40 CFR 300.415(n)(2) and (3)) divides time-critical removals into two sets of community involvement requirements (see the table on page 55). The first set of applies when less than six months exist before the removal must begin. When less than six months exist before removal initiation, the NCP lists community involvement requirements that are similar to those implemented during emergency response.

The second set applies when EPA determines that the time-critical removal action will extend beyond 120 days from the initiation of on-site response activities. Because there is more time, the NCP adds more community involvement requirements. The community involvement requirements and recommendations for both sets of time-critical removals are described below.

### Non-Time-Critical Removals

A non-time-critical removal occurs when EPA determines that a removal action is appropriate and there is time for at least a six month planning period prior to when the removal must start. The Site Team must complete an Engineering Evaluation and Cost Analysis (EE/CA) for non-time-critical removals. The EE/CA is similar to a

*At a site where an emergency response was underway, EPA discovered a corroded tank of anhydrous hydrofluoric acid (HF) releasing vapors. This discovery required evacuation of about 400 residents while the HF was transferred from the storage tank. The Site Team agreed that early and frequent coordination with local officials and citizens was essential. Their proactive coordination efforts were richly rewarded: EPA gained added information about the plant from people who had worked there when it was active, and the local government coordinated much of the support for the HF transfer.*

*A coordination and planning group that included staff from EPA, local government, the state and other federal agencies, met regularly to plan the evacuation. The OSC reported that the group coordinated much of the time-consuming logistical work required for the evacuation.*

*The group did not rely on newspaper notices and fact sheets to keep the community informed. Instead, local fire and police personnel went door-to-door in the evacuation area, handing out flyers, explaining the situation, reassuring residents, and delivering details about safety plans. Local ministers kept their congregations updated on the situation.*

*EPA and state and local agencies conducted a public meeting two weeks before the evacuation. Turnout was large, but residents were not anxious or upset. The meeting proceeded in an orderly, cooperative manner, and was broadcast by a local TV station. Although the evacuation itself was stressful, it proceeded smoothly, with the community coming together in support of EPA.*

> *"Tremendous gains can be achieved by partnering with community leaders to engage the public."*
> ***Noemi Emeric, CIC, Region 5***

Remedial Investigation/Feasibility Study, except that it is shorter and less formal. The EE/CA is an important milestone for community outreach activities because several of the NCP's community involvement requirements hinge upon the timing of the EE/CA. The next section provides a complete description of these requirements.

### Outreach Activities for Time-Critical and Non-Time-Critical Removals

The initial communication/outreach activities conducted during time-critical and non-time-critical removal actions vary according to the urgency of the response and the needs of the impacted community. The NCP requires EPA to perform several activities for time-critical and non-time-critical removal actions.

The NCP lists the following required activities for all time-critical and non-time-critical responses:

- **Designate an Agency spokesperson.** In a timely manner, this representative must inform the community of actions taken, respond to inquiries, and provide information concerning the release of hazardous substances.
- **Notify affected citizens.** The spokesperson must notify promptly the citizens immediately affected by the release, as well as state and local officials, and when appropriate, civil defense or emergency management agencies.
- **Establish an administrative record.** The Site Team must establish an administrative record containing documents that support the selection of the response action. For time-critical and non-time-critical removals, the administrative record must be available at both a central location and at or near the site (see the **Information Repository** tool in the *Toolkit*).
- **Publish a notice of availability of the administrative record.** The Site Team must notify the public of the availability of the administrative record within 60 days of the initiation of on-site removal activity by publishing an announcement in a major local newspaper of general circulation (see the **Public Notices** tool in the *Toolkit*). The Site Team also must inform the public when information repositories, which may house the administrative record, are created.
- **Hold a public comment period.** If appropriate, the Site Team shall provide a public comment period of no less than 30 days from the time that the administrative record file is made available for public inspection. A comment period is appropriate if cleanup activity is ongoing at the time the administrative record is made available for public inspection and if the comments received from the public are expected to affect future action at the site (see the **Public Comment Periods** tool in the *Toolkit*).
- **Prepare a responsiveness summary.** The Site Team must prepare a written response to significant comments and new data submitted during the public comment period. The responsiveness summary should be placed in the administrative record (see the **Responsiveness Summaries** tool in the *Toolkit*).

The role of the Agency spokesperson can be filled by the lead OSC, a CIC, another OSC, or any qualified field staff (see the **Spokesperson** tool in the *Toolkit*). Staff must coordinate with the OSC about all news releases or statements made by participating agencies.

### Additional Activities for Time-Critical Removals Extending Beyond 120 Days

The NCP requires more community involvement and outreach activities during time-critical removals that are expected to extend beyond 120 days from the initiation of the removal. When the Site Team becomes aware that the removal action

will extend beyond 120 days, the NCP requires the Site Team to perform the following activities. These activities must be completed within 120 days of the initiation of the removal action:

- **Conduct community interviews.** The Site Team must conduct interviews with local officials, community residents, public interest groups, or other interested or affected parties to solicit their information needs and concerns, and determine how or when citizens would like to become involved in the Superfund process (see the **Community Interviews** tool in the *Toolkit*).
- **Prepare a Community Involvement Plan.** The Site Team must prepare a Community Involvement Plan (referred to as a "Community Relations Plan" in the NCP and previous guidance documents) based on the community interviews and other relevant information. The plan specifies the community involvement activities that the agency expects to undertake during the response (see the **Community Involvement Plan** tool in the *Toolkit*).
- **Establish an information repository.** The Site Team must establish at least one local information repository at or near the location of the response action. The information repository must contain the administrative record and other documents (see the **Information Repository** tool in the *Toolkit*). The information repository is meant to provide the public easier access to site-related documents. All items in the repository must be made available for copying.
- **Publish a notice of availability of the information repository.** The Site Team must inform the public of the information repository. If the Site Team knows that site work will extend beyond 120 days, it can publish a single public notice to announce the availability of both the information repository and the administrative record. (see the **Public Notices** tool in the *Toolkit*).

### Additional Outreach Activities for Non-Time-Critical Removals

For non-time-critical removal actions, the NCP requires activities similar to those required for time-critical removals extending beyond 120 days, but they occur on a different schedule. The timing of community involvement and outreach events for non-time-critical removals depends upon the schedule for development and approval of the EE/CA. Activities must be performed prior to completion of the EE/CA, when it is approved, and after it is announced.

By the time the EE/CA approval memorandum is signed, the Site Team must:

- **Establish an information repository.** Establish at least one local information repository at or near the site so the public will have easy access to site-related information and documents. The information repository must contain the administrative record and other appropriate items, and these items must be available for copying (see the **Information Repository** tool in the *Toolkit*).
- **Publish a notice of availability of the information repository and administrative record.** The Site Team must notify the public of the availability of the administrative record and the information repository within 60 days of the initiation of on-site removal activity by publishing an announcement in a major local newspaper of general circulation (see the **Public Notices** tool in the *Toolkit*).

Prior to completion of the EE/CA, the Site Team must:

- **Conduct community interviews.** The Site Team must conduct interviews with local officials, community residents, public interest groups, or other interested or affected parties to solicit their concerns, information needs, and elicit how or when citizens would like to be involved in the Superfund process (see the **Community Interviews** tool in the *Toolkit*).

- **Prepare a Community Involvement Plan.** The Site Team must prepare a formal Community Involvement Plan based on the community interviews and other relevant information. The plan must specify the community involvement activities that EPA expects to undertake during the response (see the **Community Involvement Plans** tool in the *Toolkit*).

After completion of the EE/CA, the Site Team must:

- **Publish a notice of availability of the EE/CA.** The Site Team must publish a public notice of the availability and a brief description of the EE/CA in a major local newspaper (see the **Public Notices** tool in the *Toolkit*).
- **Hold a public comment period.** After the completion of the EE/CA, the Site Team must provide a public comment period of no less than 30 days for the submission of written and oral comments on the EE/CA. Upon timely request (defined as those the Agency receives approximately two weeks before the close of the comment period), the Site Team should extend the public comment period by a minimum of 15 days (see the **Public Comment Periods** tool in the *Toolkit*).
- **Prepare a responsiveness summary.** The Site Team must prepare a written response to significant written and oral public comments submitted during the public comment period. The responsiveness summary must be placed in the information repository (see the **Responsiveness Summaries** tool in the *Toolkit*).

### Recommended Outreach Activities for Non-Time-Critical Removals

While conducting time-critical and non-time-critical removals, the Site Team may determine that additional community involvement and outreach activities should be performed to adequately meet the needs of the community. The OSC or the Site Team should consider:

- **Designating a communications leader**, such as a CIC, to advise the OSC on community involvement activities and relieve the OSC of the responsibility of dealing with the media.
- **Preparing a communication strategy.** For time-critical removals extending beyond 120 days and for non-time-critical removals, the Community Involvement Plan serves as the communication strategy and plan for the response. For a shorter duration time-critical removal, the Site Team must develop an informal communications strategy to plan community involvement and outreach activities. A communication strategy can be as simple as a checklist.
- **Developing a checklist** to track community involvement activities and ensure activities are completed within the often chaotic schedule of a removal action. The checklist typically consists of three components:
  1. **People to contact**, including U.S. Senators and Representatives, mayors, newspapers, TV and radio stations, concerned citizens, and impacted residents.
  2. **Major site events and background information** that, at a minimum, includes information about the location of the release and how it was identified, what caused the release of hazardous substances, what hazardous substances are or are suspected to be present, the nature of the threat posed by the release, what action is planned, and what actions already have been conducted.
  3. **Community involvement activities that EPA will conduct**. These activities should be related to various target audiences (*e.g.*, public officials, the media, and community residents) at a removal scene. This list should correspond to the CIP for the site.
- Distributing regular **Fact Sheets** to let residents know about EPA's response activities. These fact sheets should be site specific and brief, typically no more than two pages long. It is better to issue multiple fact sheets, each concerned with a single subject or message, than to issue a lengthy fact sheet with too many messages or too much information. Brief

fact sheets are read; longer ones usually are not (see the **Facts Sheets** tool in the *Toolkit*) .

- Producing site-specific **Videos**. Videos allow residents to see what is happening and progress made at the site. They give residents a clear picture of site activity in ways that written materials cannot. These can be produced by a contractor and distributed to local news or cable stations. They also should be placed in the information repository (see the **Videos** tool in the *Toolkit*).
- Publicizing and hosting **Public Meetings** to deliver information to a large group of people, to let community members voice their concerns, and to foster interaction between the Site Team and the community. Be aware, however, that public meetings can be the least effective way of soliciting or distributing information. To ensure a public meeting is useful to both EPA and the community, consult the community when planning the meeting. If possible, let local residents plan the agenda and determine the time and location (see the **Public Meetings** tool in the *Toolkit*) .
- Hosting **Public Availability/Poster Sessions** where EPA staff or other experts can discuss cleanup activities with residents. Another option is to display posters that describe cleanup activities and to have EPA staff available to answer questions. Posters also can be displayed in public areas, such as libraries or grocery stores (see the **Public Availability/ Poster Sessions** tool in the *Toolkit)*.
- Using **Informal Activities** such as unstructured community visits to give people a chance to meet EPA staff and to discuss the site in a relaxed atmosphere. This can be a very effective method for distributing information quickly, and sends the message that EPA wants to keep the community informed. One approach is to go to every home in a given area and talk with residents or distribute materials. Possible materials include fact sheets, updates, meeting notices, work schedules, and notices of road closings or changes in traffic patterns. Since placing materials in mail boxes is against federal law, use door hangers to leave information (see the **Informal Activities** tool in the *Toolkit*).
- Making **Presentations** to brief local officials about the threat remaining at the site and the progress being made by EPA to address it (see the **Presentations** tool in the *Toolkit*).

*At a removal site in California, EPA overcame considerable community resistance caused by a history of problems with state regulators and earlier missteps caused by inadequate development of its risk communication messages.*

*The Site Team mounted a proactive, energetic, and focused effort to reach out to the community, beginning with a strategy to engage the community. They offered workshops and poster sessions, made door-to-door visits, engaged in dialogue with focus groups, distributed easy to understand fact sheets, and established an Internet-based database of resources. Eventually, EPA facilitated a successful private buy-out deal between the site's PRPs and 65 residents.*

*Because of the attention and persistence, the Site Team's relationship with the community finally began to improve. The same community organizer who earlier criticized the Agency called the Community Involvement Coordinator "a genuine partner," and praised the commitment and motivation of the Site Team. Eventually, the community accepted compromise solutions based on an increasing trust in EPA. A Community Advisory Panel, organized by both EPA and the PRPs, is now focusing on land reuse options to be funded by the PRPs.*

- Building an observation deck. Removals are especially conducive to the use of observation decks. These structures, built high and within exclusion zones, enable people to get a clear view of activities as they occur. An observation deck also can be used for site tours (see the **On-Site Activities** tool in the *Toolkit*).
- Using press briefings, and news releases. Most local stations will broadcast public service announcements related to sites. Many radio or TV stations also have live call-in shows on which the Site Team can appear. These outlets allow residents to speak with the Site Team and ask questions, and the Site Team can describe cleanup plans and progress. When working with the media, the Site Team needs to develop messages and repeat them frequently to ensure that important information is conveyed to the public (see the **Media** tool in the *Toolkit* and Chapter 7, "Dealing with the Media," in this *Handbook*).
- Producing and distributing **Maps and Aerial Photographs**. Use existing photographs or maps, or take photographs. Use a digital camera if possible because the pictures can be printed immediately if a color printer is available. Digital pictures are easy to include in press briefings and fact sheets. Maps and photographs can be distributed to the media and the public or included in site fact sheets or other educational materials (see the **Maps and Aerial Photographs** tool in the *Toolkit*).
- Being prepared to expand the community involvement program if impacted residents and businesses have to be temporarily or permanently relocated. During relocations, the community involvement program needs to be expanded significantly to adequately inform and advise residents about relocation as well as to identify and address their unique needs and concerns (see the **Residential Relocation** tool in the *Toolkit* and Chapter 9, "Community Involvement Activities During Residential Relocation," in this *Handbook*).
- Establishing on-site information offices to collect and distribute information and interact with the public. These offices are a necessity at complex sites, especially those involving relocation of residents.
- Establishing a local or toll-free **Telephone Hotline** and publicizing its availability. The hotline can be staffed continually to respond immediately to questions, it can play taped announcements that provide updates on site activities, or it can permit callers to leave messages (see the **Telephone** tool in the *Toolkit*).
- Translating documents or providing translators, if a portion of the impacted residents are non-English speaking (see the **Translation Services** tool in the *Toolkit* for suggestions and approaches for obtaining translation services).
- Developing a risk communication approach that meets the needs of the community. Long-term removals require skilled risk communication and a willingness to work with frightened residents (see the **Risk Communication** tool in the *Toolkit* and Chapter 3 in this *Handbook*.

## Summary

Removal actions can be frightening to communities because they happen quickly. The key is to remember that removal actions are faster and more fluid than remedial actions. They allow less time for planning and require the Site Team to be flexible and responsive. It is in EPA's best interest to involve citizens in every aspect of the action. Involving citizens early and sharing information can help ensure a safe and quick response action.

# CHAPTER 7 DEALING WITH THE MEDIA

The most current version of this publication is available at www.epa.gov/superfund

## In General

The media is the best means of reaching a large audience quickly. However, unless an advertisement is being purchased, the media decides what they will cover and how. The Site Team can influence the media's decisions by fostering a relationship with them and by using and repeating carefully defined messages.

> *"Be willing to shed your own preconceptions and to listen to and learn from your critics. Share ownership, responsibility, work, and credit."*
> ***Fred MacMillan, RPM, Region 3***

The Site Team usually work with the media under two circumstances:

1) When EPA wants to use the media: EPA has something it wants the media to disseminate to the public; and
2) When the media wants to use EPA: someone is covering a story that directly or indirectly relates to the site.

In reality, news issued by the Site Team is a publicity release rather than "news," *per se*. Although the Site Team may believe an announcement is news, the media often defines news as something that is different, unexpected, or controversial. Information about a local Superfund site can be newsworthy, but it must be immediate in nature to be considered news. Information generally is not considered news if it happened days ago, or will happen in the future.

Most citizens consider developments related to local Superfund sites to be news and look for this information in local media outlets. It is appropriate to use the media to publicize a site-related decision, an upcoming meeting, changes in schedule, or changes in activities or expectations. However, the decision about what is "news" rests with the editor, so unless information is placed in a paid advertisement, little control can be exerted over what reporters or editors do with a news release.

For this reason, the Site Team should deliver the message to affected residents and local officials first. Deliver the message directly to them, and then use the media to reinforce it and distribute it further. Remember that people would rather learn about important issues that affect them from someone directly rather than by reading about it in the newspaper. However, in an emergency, it is imperative to reach the media first to alert the public of any dangers.

Work on presenting a well-defined message and building a good relationship with the reporters and editors. A positive relationship will improve the odds that the media will pick up and use your message with as little alteration as possible. To do this effectively, learn how each medium gathers and presents news and understand the different needs of radio, television, and print media. News releases should be tailored to each medium (see the **Media** tool and its attachments, especially Attachment 1: "Guidelines for Working with the Media," in the *Toolkit*).

The Site Team should always be aware of media deadlines, especially it is a resource for a story. If a deadline is not met, another source will be used, and the missed deadline will be remembered.

> *At a Superfund site where the cleanup was completed, enabling site deletion from the NPL, the Community Involvement Coordinator crafted a final message-specific strategy. The key message she wanted to convey was that the successful site cleanup resulted from two factors: community partnerships and an important technological advancement developed at the site that cut cleanup time by 50%. By crafting a well-defined and newsworthy angle, (the technological breakthrough), her message received Regional front-page coverage.*

It is best to use a combination of the following two approaches to media coverage:

- **Paid media**. Media space or time is purchased from a media outlet. This media is advertising, and it is the only way to guarantee total control of the message.
- **Unpaid media**. The media chooses to cover site news as a story. The Agency has less control over how the story is reported, but, in return, the Agency can benefit from the increased credibility of the story stemming from the independence of the reporter. The Agency can improve the chances that a message in such a story will be clearly communicated by anticipating the hard questions, repeating the carefully designed messages, and earning the media's trust as a resource.

## Be A Resource

Becoming a resourse is the first step in building good media relations. To be an effective resource, the Site Team must be an accessible and credible source of information, whether the news is good or bad. Working as an effective resource increases the likelihood that the media will work cooperatively with the Site Team when needed.

Do not fear working with the media, which is rarely out to "get" anyone. Good reporters are unbiased and do not give preferential treatment. Remember that the media's job is to smell out a good story. Never evade and never lie, because the lie will become the story. Likewise, remember that good reporters are never "off duty." Thus, avoid making glib or "off the record" comments.

## Build the Relationship

Building a good working relationship with the media is as important as getting the facts to the media. Becoming a reliable source of credible information is key. Here are some other suggestions for building a relationship with the media:

- Stop by reporters' offices whenever possible, bring them up to date, and ask if they need anything.
- While visiting the reporter, occasionally visit the editor (print), assignment editor (TV), or news director (radio) for the same purpose.
- Invite reporters to the site and give them a tour.
- Whenever something interesting is occurring, invite the media to cover it.
- If a reporter calls you on a slow news day to solicit some "news," seize the opportunity and do your best to find something.
- If a story is inaccurate, call the reporter and explain what's wrong, but never complain.
- Learn and remember the different styles and needs of each media outlet with which you work, and attend to them as much as possible.
- Have current information packets available for new reporters assigned to the Superfund site.
- Be patient with reporters. They cover many stories and may need to be reminded about the site, even though you recently visited or talked with them.

## Use the Media Tools

The news release and the media log are important tools for working with the media. Both are discussed in the **Media** tool in the *Toolkit*. The **Media** tool also has the following nine attachments: Guidelines for Working with the Media; How to Choose a Medium; Guidelines for Picking a Media Event; How to Reach the Media; How to Prepare a News Release; Sample News Release; Other Media Tools; Media Log; and Message Template.

## Working with the Media in Emergency Situations

In emergency situations, it is often more effective to deal with the media first rather than directly with affected residents, since broadcast media can provide a "real time" means of reaching the most

people in an emergency. Plus, hazardous material emergencies tend to be news, and the media will almost certainly cover the story.

Depending on the situation, it may be necessary to have officials, possibly local authorities, go door-to-door to alert people of the incident and actions to take. Public meetings, availabilities, and site tours are not typically appropriate until the site has emerged from emergency status. Until that time, the attention of the responding team must be focused on stabilizing the emergency.

### Media Contact

One of the key goals is to make the response team's job easier by assigning a member of the Site Team, such as an On-Scene Coordinator (OSC) or Community Involvement Coordinator (CIC), to handle the media and the nontechnical aspects of the response. The best way to view this goal is by thinking in terms of information. The more information the media contact provides to the media and the public, the less the Site Team members will be distracted by information seekers. Make it known that this person is the first point of contact for anyone wanting or needing information.

### Establish Boundaries and Structure

If possible, establish a media perimeter. Depending on the situation, this perimeter may be out of the Agency's hands. When establishing boundaries, remember the media's need for "visuals." Placing them too far away will frustrate the media. Do what is possible within the parameters of safety and good sense to accommodate them.

Establish a place for media briefings based on factors such as the perimeter of the site, the terrain, the number of media present, and the type of media present (TV, radio, or print). Each type of media has different needs. The place selected may range from a nearby hotel conference room to a spot in front of a fence or in a field. Consider the backdrop for the visuals.

Identify and work with other on-scene media relations specialists as needed. In particular, bear in mind that other interested parties, including PRPs, will have public relations workers on the ground and in contact with the media. Use the Joint Information Center (JIC) approach whenever possible (see Chapter 6).

Identify the time for the first media briefing. Try to schedule this time within the first half-hour of the spokesperson's arrival on scene. The spokesperson should inform the media and the Site Team about when and where the first briefing will be held. Decide who among the Site Team will give a statement at the first media briefing.

Find a place to prepare for media briefings. Time is needed to prepare key messages and set the guidelines for the scene, including a schedule for daily media briefings and other interviews with the Site Team members. Consider forming a media pool to limit access to the site. A pool consists of one TV crew, a radio reporter, and a print reporter and photographer, all of whom agree to share their material with the other interested media outlets. Members of a pool should be chosen by their colleagues, not by EPA.

### The News Cycle

News has a life cycle. The initial cycle begins when the media first learn of the situation and decides to cover it and lasts until the next deadline. Each subsequent cycle is about 24 hours. However, new technology used by the electronic media is making this less predictable. The first news cycle is the critical one because this is when EPA must deliver its message, establish the Agency as competent and caring, and designate the Site Team spokesperson as the point of contact.

Be aware of subsequent news cycles. After the first day, unless things continue to happen, the event becomes less newsworthy. Subsequent cycles provide opportunities to keep the media informed and to provide updates. Continue to

hold briefings as long as necessary and appropriate. As long as pertinent information is presented, the media will keep coming. If briefings are held just to hold briefings, the media will stop attending. Always answer questions that were left unanswered in the previous briefing.

### Local Media versus National Media

Do not succumb to the perceived importance of the national media at the expense of the local media. Local media should have priority in most cases. The national media eventually will leave, but the local media will remain interested long after the site has been stabilized. For formal briefings in a room, set aside the front row of seats for the local media. During question sessions, make it a point to pick a local person for the first question and, if possible, the last.

### Think Visuals

Select visual aids to be shown to the media. If none are available, determine when some may become available. Get a map and distribute it to the media as soon as possible (include in the map the location of the media area and the location of future media briefings). Try to have one additional visual aid in each of the first few briefings. Visual aids can be an updated map, a tour of a small part of the affected area, a graph of acceptable levels, a fact sheet on the contaminant with a picture, a clear jar filled with some of the contaminant, or anything else that is appropriate.

### "No Comment," "Off the Record," and "Not for Attribution"

Never lie or evade. Never say "no comment" without explaining the policy behind why you cannot comment (*e.g.*, "It is EPA policy to not speculate on such matters"). Do not make "off the record" comments. Determine whether you need to coordinate with a public affairs or press office or can deal directly with the media (see the **Media** tool in the *Toolkit*).

### Closure/Critique

Do not leave the media "in the lurch." Space briefings out when new information is slow. The media will sense this winding down as closure. The Site Team should continue to help the media meet their deadlines and ensure they know the spokesperson can be reached. The media should know that one or more members of the Site Team is available for other issues and can become a valuable resource for them.

Keep media contacts on the mailing list as the cleanup continues. Most of the media will continue to update the story, but may not have a crew on site. Be honest with them about time frames regarding new information.

Before they leave, ask for feedback on what went well and what could be improved. Most journalists will offer feedback. If they are unable to do so because of a deadline, ask if you can call them at a more convenient time. After the media have departed, the Site Team should review notes and do a self-critique. What went well? Was it planned or did it just happen that way? What could have been done to make it better?

## Summary

The media can be a strong asset for Superfund outreach efforts, but do not assume the media can be controlled or used at will. Appoint a media contact to be a ready, accessible, and credible source of information. Understand that news is what the editor says it is. The Site Team can influence the media's decisions about what is news by fostering its relationship with the media, by using carefully defined messages, and by repeating those messages frequently. Pay attention to media deadlines. Unless there is an emergency situation, go to your primary audience before you go to the media.

# CHAPTER 8 COMMUNITY INVOLVEMENT AT FEDERAL FACILITIES

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## The Federal Government as Owner of Superfund Sites

This chapter describes community involvement at Superfund sites that are owned or operated by the federal government. While the basic steps in the Superfund process are the same for federal facilities as for other sites, there are important differences in the way community involvement is conducted at these sites and the role of EPA's Site Team. This chapter highlights the relationship between EPA and the federal agency responsible for the cleanup of a facility and special concerns that should be addressed in community involvement strategies at federal facilities. Roles for the Site Team members at these sites may range from oversight of the process, to advising the federal site owner, to cooperative management of day-to-day community involvement activities. This chapter also describes Superfund community involvement policies and practices of the Department of Energy (DOE) and Department of Defense (DoD)—the two largest owners of federal facilities—and discusses the roles of DOE's Site-Specific Advisory Boards (SSABs) and DoD's Restoration Advisory Board (RABs).

The roles and responsibilities for the Site Team involved in Superfund cleanups at federal facilities differ from those at non-federal sites in a number of ways. The regulatory enforcement tools available to EPA, the community involvement policies of the federal Potentially Responsible Party (PRP), and public perceptions all may vary somewhat from non-federal facility cleanups. As at all Superfund sites, there are three categories of stakeholders with an interest in the outcome at federal facility sites: the regulators (EPA and state agencies), the regulated (federal site owners), and the public. The key difference at federal facilities is the relationship between the regulator and regulated party as parts of the same government and the effect of this relationship on the perceptions of the public. It may not seem this way to personnel within a particular agency or department, but as far as the public is concerned, the federal government is a single entity that "speaks with a single voice," as reflected in the conduct and outcome of a federal action.

> *"Getting the public more involved is the right thing to do and will usually lead to better decisions."*
> ***David Page, RPM, Department of Energy***

Given this perceived conflict of interest, the federal government should avoid adopting the "DAD" (Decide, Announce, and Defend) approach in its interactions with the public for federal facility cleanups. The most important thing to remember is that regardless of the roles, perspectives, and outlooks of the various federal agencies involved in the cleanup of the site, the public generally sees the federal government as a monolith that should be taking care of a problem that it never should have created in the first place.

According to government estimates, federal facilities account for approximately half of the liability for Superfund cleanups across the U.S., including the largest single sites and the sites with the widest varieties of contamination. These sites pose the greatest cleanup challenges. Long-term cleanup time and cost estimates for federal facilities range up to 75 years and $400 billion.

## Interagency Agreements

EPA's CERCLA enforcement responsibilities extend to federal facilities. The consequence of this authority, coupled with the liability ownership circumstances described above, is that the federal government must enforce CERCLA as much against itself as against any other group of responsible parties. Normally, the federal government can not sue itself. Conflicts between a federal regulatory agency (such as EPA) and a regulated federal agency (such as DoD and DOE) may occur, but, within Superfund, these conflicts are not resolved as at other NPL sites, where EPA

is able to compel PRP activities through consent decrees, administrative orders, and cost recovery actions. Rather, Superfund cleanups at federal facilities depend on the ability of federal regulators and responsible parties to agree on and carry out a remedy. The negotiated agreement reached by EPA and the federal party responsible for the cleanup of a federal facility is embodied in the interagency agreement (IAG). IAGs cover the post-RI/FS steps in the remedial process for the site, including remedy selection, design, implementation, operation, and maintenance. The IAG also should cover community involvement requirements for the facility, including the framework for community involvement.

While the regulatory framework and implementation tools for federal facility cleanups differ from those at other remedial sites, the steps in the Superfund process and the basic tenets and requirements of CERCLA, including community involvement requirements, apply equally at federal facilities. Equal application means that any and all public notice, comment, and meeting requirements, administrative record requirements, and other community involvement requirements must be followed at federal facilities. Similarly, the community involvement strategies discussed in Chapter 5 should form the basis for a sound Community Involvement Plan at federal facilities. Bear in mind, the only thing that distinguishes federal facilities from other NPL sites is the relationship of EPA as regulator to the regulated federal site owner; the same rules apply to all sites, as do the same strategies for effective community involvement.

## Cooperation and Communication

The keys to successful community involvement at federal facilities are cooperation between EPA and the responsible federal agency and prompt, effective communication between these agencies and the local community. Cooperation between federal agencies and communication with the public are especially important given the conflict of interest and accountability issues that appear whenever the federal government enforces a law against itself. The public will not be interested in the particulars of any conflicts between EPA and the federal site owner, and may cast a suspicious eye on any delays in the cleanup process caused by such conflicts as part of a pattern of the government "going easy" on itself.

With regard to effective communication, a 1993 report by the Federal Facility Environmental Restoration Dialogue Committee (FFERDC) identified three weaknesses in the ways that federal agencies disseminate information on federal facilities cleanups:

- Stakeholder opinions are often solicited late in the process after site investigations are completed;
- The extent and effectiveness of information dissemination and exchange are inconsistent among agencies; and
- Stakeholders perceive that their requests for information are treated by federal agencies as burdensome rather than as a right of citizenship.

In response, FFERDC recommended three principles to guide information dissemination during federal facilities cleanups:

- Federal agencies have an obligation to ensure that information is provided to interested parties within regulatory and resource constraints;
- Information dissemination and exchange processes should ensure the timely release of information to public stakeholders and provide the basis for informed involvement in decision making; and
- Information dissemination and exchange processes must be consistent with the Freedom of Information Act.

## EPA as Advisor at Federal Facilities

At most federal facility sites, the role of EPA's Site Team is best described as an advisor to the federal agency leading the cleanup. The basic strategies for effective community involvement (early involvement, a meaningful role for local stakeholders in decision making, attention to the special needs of the community) are the same at federal facilities as they are at other sites. The difference is that the Site Team, as an advisor to the process, is one step removed from ensuring that effective strategies are implemented, increasing the need for prompt and effective communication and coordination with the federal PRP in the development of the Community Involvement Plan for the site. The Site Team should do more than simply make themselves available to the federal PRP as needed. EPA is the expert among federal agencies on Superfund community involvement and should do all it can to guide community involvement at federal facilities to ensure success, even if it is not the lead agency at the site.

## Federal Facility Advisory Boards

In its interim and final reports, the FFERDC recommended that responsible federal agencies establish advisory boards at federal facilities to provide stakeholders with a formal mechanism for sharing information and participating in decisions that affect the health and environment of their communities. In response, DOE established SSABs, while DoD formed RABs. These advisory boards are established either upon the initiative of the federal agency or in response to stakeholder interest. As of June 1998, more than 200 SSABs and RABs have been established. These boards serve as valuable conduits between the federal government and the public by providing opportunities for regular contact between the agencies and public stakeholders. Through these boards, the parties are able to discuss their concerns and better understand the competing needs and requirements of the government and local citizens. The boards augment citizen evaluations of site plans for technical adequacy. The boards also broaden the scope of decision making to account for local stakeholder issues in addition to consideration of technical data required under CERCLA's public comment rules.

SSABs and RABs are intended to complement and facilitate existing community involvement activities rather than supplant broader community involvement, since not everyone with an interest in the facility may have the time, ability, or inclination to serve on a board. EPA Site Teams and their federal agency counterparts should ensure that all stakeholder concerns have an opportunity to be heard and that these advisory boards do not become the only means of community involvement at federal facilities.

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# CHAPTER 9 COMMUNITY INVOLVEMENT ACTIVITIES DURING RESIDENTIAL RELOCATION

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## When Residential Relocation is Part of the Response Action

This chapter describes community involvement at Superfund sites where temporary or permanent relocation of residents on or near the site is part of the remedy. While the basic guidelines for effective community involvement are the same for relocation sites as for other sites, there are special challenges facing the Site Team in these communities. In general, community involvement and other staff should be prepared to go the extra mile in these communities, where residents must deal with both threats of real and perceived contamination prior to the relocation, and the prospect and reality of being moved out of their homes and communities.

Close management of the situation and constant communication among all stakeholders in the relocation process are the keys to effective community involvement at these sites, and these requirements will be invoked repeatedly in this chapter. This chapter also explains EPA's interim policy on Superfund-related relocations, the Uniform Relocation Act, administered by the U.S. Department of Transportation, and the use of Technical Assistance Grants (TAGs) and Community Advisory Groups (CAGs) at relocation sites.

The roles and responsibilities for the Site Team at relocation sites can be seen as "Community Involvement Plus." Everything in the previous chapters in this *Handbook* applies to relocation sites before consideration of the special needs of communities that will be relocated as part of a remedy. Relocation settlements can take years to negotiate and complete. In the meantime, residents are living on or near contaminated sites. These residents share the same concerns regarding the threat of contamination posed by the site, and the plans for dealing with those threats, as residents at other Superfund sites. Added to these concerns is the relocation itself and the special concerns it raises, such as a fair appraisal, adequate compensation, and the stress of finding a new home. These difficulties can be complicated by the hard feelings that can arise at the perceived injustice of the situation, by the lack of trust of the government, and by other apprehensions that arise from being uprooted. The Site Team must have a thorough understanding of the relocation process and sensitivity to the needs of the residents. This understanding will help residents get through this very difficult transition.

> *"Community involvement [at relocation sites] is most effective when it commences as soon as the first article appears in the local newspaper."*
> ***Anna Gabalski, NY State Dept. of Health***

Given the added stress placed on residents who will be relocated, trust-building is of paramount importance for the Site Team at relocation sites. As always, building trust depends on open, honest communication and attention to the concerns of residents. This is paticularly important in relocation communities, where the government not only is already suspect but will be a party negotiating property settlements and compensation. The situation is best served when the Site Team employs all of the communication management strategies and practices described in this *Handbook* and the *Toolkit* to their fullest extent (see the **Residential Relocation** tool in ther *Toolkit*).

## EPA Interim Policy/Federal Uniform Relocation Act

Permanent relocation is considered a remedial action under the NCP. EPA issued its *Interim Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions* (OSWER Directive 9355.0-71P) on June 30, 1999. The policy provides direction to EPA Regional

decision makers on when to consider permanent relocation as part of a Superfund remedial action, and stresses four major points surrounding the consideration of relocation:

- EPA's preference is to address the risks posed by contamination by using well designed cleanup methods that allow people to remain safely in their homes and communities;
- EPA may consider a permanent relocation alternative as part of the feasibility study if certain site conditions (found in the policy) are encountered;
- EPA should involve the community early in the process and keep residents informed of activities at the site;
- EPA cannot conduct a permanent relocation of tribal members without tribal government approval.

Permanent relocations are selected as part of the overall remedy for a site as embodied in a Record of Decision (ROD). The decision-making criteria that apply to other parts of a remedy, including application of the nine criteria found in the NCP, also apply to the decision to relocate residents permanently.

The interim policy specifically discusses the importance of community involvement in the relocation process, and covers the role of TAGs and CAGs at relocation sites. The interim policy states: "Community involvement activities at a particular site should be tailored to meet the various needs and concerns of individual citizens within the affected community. EPA should also explore opportunities to partner with other federal, state, and local agencies, non-governmental organizations, and non-profit organizations to help identify other potential assistance that may be available to the relocated residents or to those in the community left behind."

The interim policy restates the applicability of the Uniform Relocation and Real Property Acquisition Policies Act (URA) to the implementation of the decision to relocate residents. The URA includes requirements and procedures to be followed by the federal government when acquiring properties and compensating displaced residents and sets standards for the habitability of new housing for displaced residents. The URA requires the federal government to provide relocation services to reduce the burden on relocated residents, which is the responsibility of the Site Team at Superfund relocation sites. The Site Team should be familiar with the URA and the applicable property acquisition regulations and be ready to explain the formalities of the process to residents and extend the services required under the URA.

## Special Community Needs at Relocation Sites

The keys to successful community involvement at relocation sites are close management of the situation and prompt, effective communication among EPA, community residents, and others. As mentioned above, community involvement can not begin early enough at relocation sites. In addition, nothing may contribute more to the quality of the community involvement services rendered than the regular presence in the community of experienced and highly qualified community involvement professionals who are available to assist community members in making the transition to a new community. The Site Team should consider establishing a community resource center with a full-time staff dedicated to providing assistance to residents facing relocation and providing the close management of the process needed to reach a successful conclusion.

Building trust in the community is critical. For the Site Team, this is an everyday part of their job, and there is no substitute for open, effective communication and dealing fairly and responsively with the community. This need for openness is especially high in communities where the government has not only delivered the news of potential contamination risks, but also is dealing

directly with individuals in the property acquisition process. Similar to the special challenges at federal facilities, the government must make an extra effort to build trust at relocation sites.

The Site Team should take a customer service approach in implementing its community involvement plan at relocation sites. Though the relocation process involves a transaction, as properties are acquired and owners are compensated, the activities of the Site Team should never be perceived as transaction-oriented. Rather, it should be clear to all members of the community that community involvement personnel are there to help them get through the process and safely into a new home. Relocation is usually a very stressful event for residents, and the strain felt by people can often spill over into their dealings with others, including EPA staff.

> *"EPA must have experienced people on the ground in relocation communities to provide direct services and deal with problems before they get a chance to snowball."*
> ***Pat Seppi, CIC, EPA Region 2***

The Site Team should be prepared to provide technical and legal assistance related to the appraisal, negotiation, settlement, and property transfer process, as well as assistance in obtaining new housing, with an emphasis on encouraging home ownership. This assistance will require knowledge of the URA and other relocation programs, knowledge of the technical requirements of appraisals, and familiarity with working with real estate agents and lenders and the tax consequences of property acquisition. All of these are in addition to the regular needs of a community located near a Superfund site. In other words, take everything in Chapters 2 through 8 of this *Handbook* and add to it the special needs of residents being relocated.

At all times and in all technical and community assistance areas, the Site Team must be prepared to provide one-on-one services. Unlike many other communities, residents subject to relocation will require individual attention, as each has an individual relationship with the government under the circumstances. In addition, the added pressures felt by families subject to relocation should be remembered at all times.

## TAGs and CAGs at Relocation Sites

The interim relocation policy encourages the use of TAGs for the hiring of relocation experts by communities. Relocation experts hired with TAG funds can provide independent assistance to communities. The Site Team should ensure that the community is aware of the TAG program and given whatever assistance is needed in the TAG application process.

The interim policy also encourages the use of CAGs or similar bodies that engage the community in the relocation process by providing a public forum for stakeholders to present and discuss needs and concerns related to the site and the relocation process in a meaningful way. CAGs can be very valuable mechanisms for facilitating open, active participation by stakeholders in the relocation process. The Site Team should ensure that the CAG is truly representative of the variety of interests in the community. A CAG that is perceived as "stacked" against any community stakeholder interest ultimately may do more harm than good. Whenever possible, the Site Team should work with community leaders in establishing a CAG or other forum.

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# Appendix A
# SUPERFUND COMMUNITY INVOLVEMENT REQUIREMENTS

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# Appendix A
# SUPERFUND COMMUNITY INVOLVEMENT REQUIREMENTS

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Community involvement requirements are presented below in a table that lists the requirements by site activity. The legislative citation is provided for each of the site activities. For a graphical presentation of the requirements, refer to the maps, "Community Involvement Activities Throughout the Superfund Removal Process" and "Community Involvement Throughout the Superfund Remedial Process," found in the preface of this *Handbook*. These maps combine the list of required activities described below with a list of recommended activities to involve the community effectively.

The Site Team is responsible for ensuring that the Agency meets all of the legal and policy requirements relative to community involvement and for ensuring that the community has been given an opportunity to participate in the process. This table lists and describes the **minimum** community involvement requirements that EPA must conduct at a Superfund site. Simply fulfilling these requirements will not necessarily result in effective community involvement at a site. Rather, these requirements are intended to be the foundation for more comprehensive activities at sites.

> *"Don't be afraid to go beyond the traditional community relations approach. Adapt your style and activities to the community."*
> ***Mike Holmes, RPM, Region 8***

| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Removal Actions** | | |
| Agency Spokesperson | In the case of all CERCLA removal actions taken pursuant to 300.415 or CERCLA enforcement actions to compel removal response, a spokesperson shall be designated by the lead agency. The spokesperson shall inform the community of actions taken, respond to inquiries, and provide information concerning news releases. All news releases or statements made by participating agencies shall be coordinated with the project manager. The spokesperson shall notify, at a minimum, immediately affected people, State and local officials and, when appropriate, civil defense or emergency management agencies. | The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) 40 C.F.R. 300.415(n)(1) |
| Administrative Record | The lead agency must establish an administrative record and make the administrative record available to the public at a central location at or near the site. | CERCLA 113(k); NCP 40 C.F.R. 300.820 |

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| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Removal Actions (continued)** | | |
| **For Removal Actions With A Planning Period of Less Than Six Months** | | |
| Notice and Availability of Administrative Record | Within 60 days of the start of on-site removal activity, the lead agency must make the administrative record available to the public and issue a notice of availability in a major local newspaper. | NCP 40 C.F.R. 300.415(n)(2)(i) and 300.820(b)(1) |
| Public Comment Period | The lead agency must provide a public comment period, if appropriate, of not less than 30 days from the time the administrative record is made available. | NCP 40 C.F.R. 300.415(n)(2)(ii) 300.820(b)(2) |
| Response to Significant Comments | The lead agency must prepare a written response to significant comments. | NCP 40 C.F.R. 300.415(n)(2)(iii) |
| **For Removal Actions Expected to Extend Beyond 120 Days** | | |
| Community Interviews | By the end of the 120-day period, the lead agency must conduct interviews with local officials, public interest groups, or other interested parties to determine their concerns and information needs, and to learn how citizens would like to be involved in the Superfund process. | NCP 40 C.F.R. 300.415(n)(3)(ii) |
| Community Involvement Plan (CIP) | The lead agency must prepare a formal CIP, based on community interviews and other relevant information, specifying the community involvement activities the lead agency expects to undertake during the response period. The lead agency must complete this CIP within 120 days of the start of on-site removal activity. | NCP 40 C.F.R. 300.415(n)(3)(iii) |
| Information Repository Establishment and Notification/Notice of Availability of Administrative Record | Within 120 days of the start of on-site removal activity, the lead agency must establish at least one information repository at or near the location of the removal action that contains items available for public inspection and copying. The lead agency must inform the public of the establishment of the information repository and provide notice of the administrative record in this repository. | NCP 40 C.F.R. 300.415(n)(3)(iii) |

| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Removal Actions (continued)** | | |
| **For Removal Actions With a Planning Period Of At Least Six Months** | | |
| Community Interviews and Community Involvement Plan (CIP) | The lead agency shall at a minimum comply with the requirements set forth in paragraphs (n)(3)(i), (ii), and (iii) of this section prior to completion of the Engineering Evaluation and Cost Analysis (EE/CA), or its equivalent, except that the information repository and the administrative record file will be established no later than when the EE/CA approval memorandum is signed. (Essentially, EPA must conduct community interviews and prepare a CIP prior to the completion of the EE/CA.) | NCP 40 C.F.R. 300.415(n)(4)(i) |
| Information Repository/ Administrative Record Establishment and Notification | The lead agency must establish the information repository and make the administrative record available no later than the signing of the EE/CA approval memorandum. | NCP 40 C.F.R. 300.415(n)(4)(i) |
| Notice of Availability/ Description of the EE/CA | The Agency must publish a notice of availability and a brief description of the EE/CA in a major local newspaper of general circulation. | NCP 40 C.F.R. 300.415(n)(4)(ii) 300.820(a)(1) |
| Public Comment Period | Upon completion of the EE/CA, the lead agency must provide at least 30 days for the submission of written and oral comments. The lead agency must extend this comment period by at least 15 days upon timely request. | NCP 40 C.F.R. 300.415(n)(4)(iii) 300.820(a)(2) 300.825(b) and (c) |
| Responsiveness Summary | The Agency must prepare a written response to significant comments and make this responsiveness summary available to the public in the information repository. | NCP 40 C.F.R. 300.415(n)(iv) |

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| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions NPL Additions** | | |
| Publication of Proposed Rule and Public Comment Period | EPA must publish the proposed rule in the *Federal Register* and seek comments through a public comment period. | NCP 40 C.F.R. 300.425(d)(5)(i) |
| Publication of Final Rule and Response to Comments | EPA must publish the final rule in the *Federal Register* and respond to significant comments and significant new data submitted during the comment period. | NCP 40 C.F.R. 300.425(d)(5)(i) |
| **Prior to Remedial Investigation (RI):** | | |
| Community Interviews | The lead agency must conduct interviews with local officials, public interest groups, and community members to solicit their concerns and information needs and to learn how and when people would like to be involved in the Superfund process. | NCP 40 C.F.R. 300.430(c)(2)(i) |
| Community Involvement Plan (CIP) | Before commencing field work for the remedial investigation, the lead agency must develop and approve a complete CIP, based on community interviews and other relevant information, specifying the community involvement activities that the lead agency expects to undertake during the remedial response. | NCP 40 C.F.R. 300.430(c)(2)(ii)(A-C) |
| Information Repository | The lead agency must establish at least one information repository at or near the location of the response action. Each information repository should contain a copy of items developed, received, published, or made available to the public, including information that describes the Technical Assistance Grant application process. The lead agency must make these items available for public inspection and copying and must inform interested citizens of the establishment of the information repository. | CERCLA 117(d) NCP 40 C.F.R. 300.430(c)(2)(iii) |

| Site Activity | Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions (continued)** | | |
| Technical Assistance Grant (TAG) Notification | The lead agency must inform the public of the availability of Technical Assistance Grants and include in the information repository material that describes the Technical Assistance Grant application process. | NCP 40 C.F.R. 300.430(c)(2)(iv) |
| **Upon Commencement of Remedial Investigation:** | | |
| Administrative Record | The lead agency must establish an administrative record, make it available for public inspection, and publish a notice of its availability. The lead agency must comply with the public participation procedures required in 300.430(f)(3) and shall document such compliance in the administrative record. | CERCLA 113(k); NCP 40 C.F.R. 300.815 (a-c) |
| Administrative Record Notification | The lead agency must publish a notice of availability of the administrative record in a major local newspaper of general circulation. | NCP 40 C.F.R. 300.815(a) |
| **Upon Completion of the Feasibility Study (FS) and Proposed Plan:** | | |
| RI/FS and Proposed Plan Notification and Analysis | The lead agency must publish a notice of the availability of the RI/FS and Proposed Plan, including a brief analysis of the Proposed Plan, in a major local newspaper of general circulation. The notice also must announce a comment period. | CERCLA 117(a) and (d); NCP 40 C.F.R. 300.430(f)(3)(i)(A) |
| Public Comment Period on RI/FS and Proposed Plan | The lead agency must provide at least 30 days for the submission of written and oral comments on the Proposed Plan and supporting information located in the information repository, including the RI/FS. This comment period will be extended by a minimum of 30 additional days upon timely request. | CERCLA 117(a)(2); NCP 40 C.F.R. 300.430(f)(3)(c) |

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| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions (continued)** | | |
| Public Meeting | The lead agency must provide an opportunity for a public meeting regarding the Proposed Plan and supporting information to be held at or near the site during the comment period. | CERCLA 113 and 117(a)(2); NCP 40C.F.R. 300.430(f)(3)(i)(D) |
| Meeting Transcript | The lead agency must have a court reporter prepare a meeting transcript that is made available to the public. | CERCLA 117(a)(2); NCP 40 C.F.R. 300.430(f)(3)(i)(E) |
| Notice and Comment Period for Settlement Agreements | A notice of a proposed settlement must be published in the *Federal Register* at least 30 days before the agreement becomes final. This notice must state the name of the facility and the parties to the proposed agreement. Those persons who are not parties to the agreement must be provided an opportunity to file written comments for a period of 30 days. | CERCLA 122; NCP 40 C.F.R. 300.430(c)(5)(i) and (ii) |
| **Pre-Record of Decision Significant Changes:** | | |
| Responsiveness Summary | The lead agency must prepare a response to significant comments, criticisms, and new data submitted on the Proposed Plan and RI/FS, and ensure that this response document accompanies the Record of Decision (ROD). | CERCLA 113 and 117(b); NCP 40C.F.R. 300.430(f)(3)(i)(F) |
| Discussion of Significant Changes | The lead agency must include in the ROD a discussion of significant changes and the reasons for such changes, if new information is made available that significantly changes the basic features of the remedy and the lead agency determines that the changes could be reasonably anticipated by the public. | NCP 40 C.F.R. 300.430(f)(3)(ii)(A) |

| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions (continued)** | | |
| Revised Proposed Plan and Public Comment | Upon the lead agency's determination that such changes could not have been reasonably anticipated by the public, the Agency must issue a revised Proposed Plan that includes a discussion of the significant changes and the reasons for such changes. The Agency must seek additional public comment on the revised Proposed Plan. | NCP 40 C.F.R. 300.430(f)(3)(ii)(B) |
| **After the ROD is signed:** | | |
| ROD Availability and Notification | The lead agency must make the ROD available for public inspection and copying at or near the site prior to the commencement of any remedial action. Also, the lead agency must publish a notice of the ROD's availability in a major local newspaper of general circulation. The notice must state the basis and purpose of the selected action. | NCP 40 C.F.R. 300,430(f)(6) |
| Revision of the CIP Site Activity | Prior to remedial design, the lead agency should revise the CIP, if necessary, to reflect community concern, as discovered during interviews and other activities, that pertain to the remedial design and construction phase. | NCP 40 C.F.R. 300.435(c)(1) |
| **Post-ROD Significant Changes:** | | |
| When the remedial or enforcement action, or the settlement or consent decree, differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost: | | |
| Notice and Availability of Explanation of Significant Differences | The lead agency must publish a notice that briefly summarizes the explanation of significant differences (ESD) and the reasons for such differences in a major local newspaper, and make the explanation of significant differences and supporting information available to the public in the administrative record and information repository. | NCP 40 C.F.R. 300.435(c)(2)(i) (A) and (B) 300.825(a)(2) |

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| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions (continued)** | | |
| When the remedial or enforcement action, or the settlement or consent decree, fundamentally alters the basic features of the selected remedy with respect to scope: | | |
| Notice of Availability/ Brief Description of Proposed ROD Amendment | The lead agency must propose an amendment to the ROD and issue a notice of the proposed amendment in a major local newspaper of general circulation. | NCP 40 C.F.R. 300.435(c)(2)(ii)(A) |
| Public Comment Period, Public Meeting, Meeting Transcript, and Responsiveness Summary | The lead agency must follow the same procedures for notice and comment as those required for completion of the feasibility study (FS) and Proposed Plan. | NCP 40 C.F.R. 300.435(c)(2)(ii)(B)-(F) |
| Notice and Availability of Amended ROD | The lead agency must publish a notice of availability of the amended ROD in a major local newspaper and make the amended ROD and supporting information available for public inspection and copying in the administrative record and information repository prior to commencement of the remedial action affected by the amendment. | NCP 40 C.F.R. 300.435(c)(2)(ii)(G) and (H) 300.825(b) |
| **Remedial Design:** | | |
| Fact Sheet and Public Briefing | Upon completion of the final engineering design, the lead agency must issue a fact sheet and provide a public briefing, as appropriate, prior to beginning remedial action. | NCP 40 C.F.R. 300.435(c)(3) |

| Site Activity | Minimum Requirement(s) | Source(s) |
|---|---|---|
| **Remedial Actions (continued)** | | |
| **NPL Deletions:** | | |
| Public Notice and Public Comment Period | EPA is required to publish a notice of intent to delete in the *Federal Register* and provide notice of the availability of this announcement in a major local newspaper. EPA must also provide a comment period of at least 30 days on the proposed deletion. | NCP 40 C.F.R. 300.425(e)(4) (i) and (ii) |
| Public Access to Information | Copies of information supporting the proposed deletion must be placed in the information repository for public inspection and copying. | NCP 40 C.F.R. 300.425(e)(iii) |
| Response to Significant Comments | EPA must respond to each significant comment and any significant new data submitted during the comment period and include these responses in the final deletion package. | NCP 40 C.F.R. 300.425(e)(iv) |
| Availability of Final Deletion Package | The final deletion package must be placed in the local information repository once the notice of final deletion has been published in the *Federal Register*. | NCP 40 C.F.R. 300.425(e)(5) |

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# Appendix B
# SUPERFUND COMMUNITY INVOLVEMENT DIRECTIVES

The most current version of this publication is available at www.epa.gov/superfund


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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER 9230.0-99

**MEMORANDUM**

**SUBJECT:** Early and Meaningful Community Involvement

**FROM:** Elaine F. Davies, Acting Directior
Office of Emergency and Remedial Response

**TO:** Superfund National Policy Managers, Regions 1 - 10

**PURPOSE**

To improve early and meaningful community involvement in Superfund site decision-making.

**BACKGROUND**

In an April 10, 2001, memo on EPA's Regulatory Decision Process, Administrator Whitman endorsed "vigorous public outreach and involvement" in working toward environmental goals. Her support for effective public participation is consistent with the Agency's draft Public Involvement Policy (65 *Fed. Reg.* 82335, December 12, 2000). Among other things, the draft Policy emphasizes that Agency programs, when implementing their responsibilities, should:

1. Plan and budget for public involvement.
2. Identify interested parties.
3. Consider technical or financial assistance.
4. Provide timely and useful information and outreach.
5. Conduct meaningful involvement activites.
6. Assimilate public input and provide good feedback.

Superfund has a long-standing commitment to community involvement (also known as public participation) that incorporates these functions. In a 1991 memo (OSWER Directive 9230.0-18), one of my predecessors, Henry Longest, encouraged site responders to "demonstrate to citizens that they are involved in the decision-making process." That memo identified four key practices:

- Listen carefully to what community members are saying.
- Take the time needed to deal with community concerns.
- Change planned actions where community input has merit.
- Explain to the community what EPA has done and why.

This memo builds on the 1991 memo and encourages more substantive involvement of communities from the very outset of a cleanup. The involvement should begin prior to any on-site work and continue throughout the cleanup process, including during any 5-year reviews. This memo focuses on six practices that you should be implementing during Superfund responses.

## PRACTICES FOR EARLY AND MEANINGFUL INVOLVEMENT

**1) Energize the community involvement plan (CIP).** The CIP should be a living vision that is focused, current and helpful. Ideally, a draft of the CIP should be reviewed by the community to ensure that the CIP is on target and meaningful. Making the involvement plan an actual partnership plan, endorsed by the community, is a best practice. All site team members should contribute to early development and implementation of the CIP.

**2) Provide early, proactive community support.** You should do more to promote and give assistance to communities from the very outset of the work at a site. Superfund has a variety of community assistance mechanisms: Technical Assistance Grants, Community Advisory Groups, Technical Outreach Services to Communities, and the Superfund Job Training Initiative. You should make sure community groups know about these opportunities by the end of the site investigation and you should encourage them throughout the cleanup process to take advantage of what is available. You should also be creative in identifying site-specific ways to enhance the ability of a community to participate (e.g., arranging for educational activities or facilitation services).

**3) Get the community more involved in the risk assessment.** You should assume the community will be able to understand risk assessments and provide useful input. If the right questions are posed, the community can make important contributions from tHE outset. In particular, you should ask community members about patterns and practices of chemical usage, exposure pathways, and health concerns. At big or controversial sites, you should share a draft of the scope of work with the community and answer questions that are raised about it. You should also provide regular and clear feedback on the progress of the risk assessment and its results. For more ideas, see OSWER Directive 9285.7-01E- P, Community Inovlvement in Superfund Risk Assessments.

**4) Seek early community input on the scope of the remedial investigation/feasibility study (RI/FS).** Soliciting input before the start of the RI/FS on its scope and approach is a concrete demonstration that you take early involvement seriously. In particular, you need to ask the community what cleanup alternatives should be evaluated during the FS and then consider thoughtfully the input you get. This does not mean you have to do or include exactly what the community wants. It does mean you should listen carefully to identify and understand significant concerns that have merit and should be addressed.

**5) Encourage community involvement in identification of future land use.** The Superfund Redevelopment Initiative focuses on helping communities participate in identifying future land use and Superfund sites. Early during removal and remedial site planning, you should work with the community to develop a process for exploring future use. This should inlude providing the information and tools to make this exploration a success. The community should have the lead in assessing its social, economic and recreational needs and in giving us its perspective of the most likely future use. You should encourage this effort, while not advocating particular views or opinions.

**6) Do more to involve communities during removals.** Early and meaningful community involvement at removals is important. Whether it is an emergency response or a non-time critical action, community involvement should not be neglected or postponed. While initial calls should be to state and local authorities, soon thereafter you should reach out to the entire community, which may have a high level of anxiety and concern about health and safety. You need to demonstrate our sincere concern and credibility in order to set the stage for the community cooperation that may be critical during the response (e.g., during an evacuation or relocation). You should not wait to share important information. If you proceed in a spirit of “early, humble coordination,” as one On-Scene-Coordinator once put it, you will be suprised at how much good input and help you get.

## IMPLEMENTATION

The practices described above are good ways to help achieve early and meaningful community involvement (see attachment for a handy checklist). They are by no means the only effective approaches. Indeed, they may not even be appropriate in certain circumstances. Each community is different and deserves its own, well-thought-out involvement plan. As you conduct removal and remedial actions, you should be creative and proactive in looking for opportunities that meet the needs and interests of the community, while making sound cleanup decisions. You should always be clear about the respective roles of the participants to avoid creating unrealistic expectations about how decisions will be made.

The responsibility for community involvement is a team effort. You achieve the best results when all the key players -- the remedial project manager, the on scene coordinator, the risk assessor, the legal advisor, the site assessment manager and the community involvement coordinator -- cooperate to effectively involve the community. Also, all program managers should look for ways to encourage community involvement and to recognize staff members who successfully practice it.

## CONCLUSION

Public involvement is an integral part of both removal and remedial actions. Involvement should occur early and be sustained in a meaningful way throughout all stages of our work. This is strongly encouraged by EPA's Public Envolvement Policy and should lead to better cleanups and more satisfied communities.

Copies of this document are available on our web site at http://www.epa.gov/superfund/pubs.htm. General questions about this topic should be referred to the Call Center at 1-800-424-9346.

Attachment

cc: Jeff Josephson, Lead Region Coordinator, USEPA Region 2
NARPM Co-Chairs
On-Scene Coordinators
Community Involvement Managers
OERR Records Manager, IMC 5202G
OERR Documents Coordinator, HOSC 5202G

## Key Practices for Early and Meaningful Community Involvement at Superfund Sites

From OSWER Directive 9230.0-18

- Listen carefully to what community members are saying.
- Take the time needed to deal with community concerns.
- Change plans where community suggestions have merit.
- Explain to the community what EPA has done and why.

From OSWER Directive 9230.0-99

- Energize the community involvement plan.
- Provide early, proactive community support.
- Get the community more involved in the risk assessment.
- Seek early community input on the scope of the remedial investigation/feasibility study.
- Encourage community involvement in identification of future land use.
- Do more to involve communities during removals.

### Useful Resources

EPA Draft Policy on Public Involvement:
http://www.epa.gov/stakeholders/policy.htm

Model Plan for Public Participation:
http://es.epa.gov/oeca/oej/nejac/pdf/modelbk.pdf

Lessons Learned about Superfund Community Involvement:
http://intranet.epa.gov/oerrinet/topics/cioc/lessons/index/htm

Community Involvement in Superfund Risk Assessments:
www.epa.gov/oerrpage/superfund/programs/risk/ragsa/ci-ra.htm

Superfund Community Involvement Website:
http://www.epa.gov/superfund/action/community/index.htm

Superfund Redevelopment Initiative Website:
http://www.epa.gov/superfund/programs/recycle/recycle.htm

EPA Stakeholder Website:
http://www.epa.gov/stakeholders/intro.htm

International Assoc. of Public Participation Practitioner Tools:
http://www.iap2.org/practitionertools/index.html

Community Partnering for Environmental Results: A computerized learning program for developing community involvement skills (see Regional Training Officer or Community Involvement Manager for access)

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
WASHINGTON, D.C. 20460

OSWER 9230.0-18

**MEMORANDUM**

**SUBJECT:** Incorporating Citizen Concerns into Superfund Decision-making (Superfund Management Review: Recommendation #43B)

**FROM:** Henry Longest, II, Director
Office of Emergency and Remedial Response

**TO:** Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, IX
Director, Hazardous Waste Division
Region X

Community Involvement Coordinators, Regions I-X

**PURPOSE**

To ensure the incorporation of citizen concerns into Superfund site decision-making.

**BACKGROUND**

In EPA's capacity and willingness to incorporate community concerns into site decision-making are among the most important measures of Superfund's community relations program. Although EPA has made significant progress in its promotion of mutually satisfactory two-way communication with the public, room for improvement exists in integrating the public's concerns into site decisions.

EPA has established methods for soliciting citizen concerns, but that represents only the first step. Citizens rightfully expect that EPA will then carefully consider and fairly evaluate the concerns the community has voiced, making it imperative that EPA pay close attention to such input. It is not enough that we solicit and read public comments. It is important that we demonstrate to citizens that they are involved in the decision-making process.

The impacts of citizen input will be more obvious at some sites than at others, and will not always, of course, be the principal determinant in site decisions. EPA must make every effort, however, to fully incorporate those concerns into site decision-making. The Superfund Management Review (SMR) mentions four steps necessary to satisfactorily accomplish this: "...listen carefully to what citizens are saying; take the time necessary to deal with their concerns; change planned actions where citizen suggestions have merit; and explain to citizens what EPA has done and why." (p.5-7). The following recommendations discuss in detail each of these steps.

**Implementation:**

**1) Listen carefully to what citizens are saying** Superfund managers and staff should listen carefully throughout the technical process to the concerns and comments of local communities. It is in the interest of Superfund to listen to what citizens are saying not only during the comment period after the proposed Plan is issued, but during the entire process. Although some may see only the short term view that a community's involvement slows the decision-making process and causes costly delays, it has been EPA's experience that the long term success of the project is enhanced by involving the public early and often. Carefully considering citizen concerns before selection of a preferred remedy will lead to better decision-making.

Some Regions have successfully adopted innovative techniques for soliciting citizen input. These include community workgroups, open houses, and informal "roundtable" discussions. Regions are encouraged to try as many of these techniques as possible to communicate with citizens.

**2) Take the time necessary to deal with citizens' concerns.** Incorporating citizen concerns into site decisions need not be a cause for delay or, for that matter, excessive cost. By allocating sufficient resources to community relations and, maintaining an awareness of citizen concerns throughout the process, Regions can successfully assimilate citizen concerns into site decisions.

The most effective way to provide time to deal with citizen concerns is by building a schedule at the outset that allows adequate time (and resources) for public involvement. Such planning should include, among other things, the likelihood that commentors may request an extension of the public comment period following issuance of the Proposed Plan, as allowed by section 300.425(f)(3)(i)(C) of the National Contingency Plan (NCP). In accordance with the Slit, site managers should announce a thirtyday comment period, but anticipate the possibility of a sixty-day period. Also, effective planning and early citizen involvement will allow site managers to anticipate those particularly coptroversial sitep or proposed remedial actions, which may warrant an additional extension of the comment period.

OSWER Directive #9230.0-08 of March 8, 1990, entitled "Planning for Sufficient Community Relations," provides additional guidance and instructs Regions to dedicate adequate resources to support additional community relations needs. The guidance included the S1R recommendation that Regions "...establish a discretionary fund that they could use to fund additional work necessary to respond to citizen concerns." (p.5-7).

**3) Change planned actions when citizen suggestions have merit.** It is crucial that EPA remain flexible, and willing to alter plans where a local community presents valid concerns. In recent years, EPA has demonstrated an increased willingness to change or significantly alter its preferred remedy. In some instances, citizen input has saved EPA from mistakes and unnecessary costs. It is obviously more cost effective to spend time, energy and money working with the public on a regular basis, than to deal with resistance created when a community believes it has been left out of the process.

With regard to changing planned actions, EPA's measure of success should not be whether or not the community applauds the remedy because EPA did what it asked, but whether or not EPA honestly listened to citizens, and genuinely took into account their concerns. EPA may remain unpersuaded after hearing from citizens, but it is EPA's responsibility to reinforce to citizens that their comments were carefully and thoughtfully considered.

**4) Explain to citizens what EPA has done and why.** Regardless of the outcome of site decisions, EPA must fully communicate those decisions to the public. The most thorough vehicle for such communication is the responsiveness summary- As recommended by the SMR, EPA has revised the format of responsiveness summaries to make them more easily understandable to citizens without compromising the legal and technical goals of the document. It is imperative that the public be able to see in writing EPA's response to their concerns and comments. As the SMR notes, "Whether EPA can do what citizens ask or not, we should always provide them a clear explanation of the basis for our decision." (p.5-7). The public needs clear, candid responses, rather than volumes of technical and legal jargon piling up evidence for why EPA's original decision vas the only possible one.

Although the responsiveness summary represents the most visible and comprehensive vehicle for explaining EPA decisions to the public, it is only one component of a process. EPA should explain site decisions throughout the entire cleanup, rather than only at few key stages. That is, EPA must establish and maintain a dialogue through which we discuss site decisions as they develop, as well as make Superfund documents more available to the public throughout the cleanup process.

**Conclusion:**

Although Superfund has firmly established its ability to share information with, and receive it from, the public, the , program nevertheless needs to better incorporate citizen concerns into site decisions. ‘The recommendations outlined above will move Superfund closer to that goal. For more information regarding Community Relations in Superfund, contact Melissa Shapiro or Jeff Langholz of my staff at FTS 398-8340 or FTS 3988341, respectively.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 4 1990

OSWER Directive No. 9203.0-06
OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

**MEMORANDUM**

**SUBJECT:** Superfund Responsiveness Summaries
(Superfund Management Review: Recommendation #43E)

**FROM:** Henry L. Longest II, Director
Office of Emergency and Remedial Response

Bruce M. Diamond, Director
Office of Waste Programs Enforcement

**TO:** Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, IX
Director, Hazardous Waste Division
Region X

**PURPOSE:**

To improve responsiveness summaries so that they are more responsive to local communities' concerns.

**BACKGROUND:**

The Administrator's Superfund Management Review (the "90-Day Study") raised important questions about the structure and use of responsiveness summaries in the selection of remedy process. As the "90-Day Study" concluded:

> "Whether EPA can do what citizens ask or not, we should always provide them a clear explanation of the basis for our decision. A responsiveness summary should reflect a genuine attempt to come to grips with citizens' questions and concerns; it should not appear to be an advocacy brief piling up evidence for why EPA's original decision was the only possible one."

The responsiveness summary serves two vital functions: first, it provides the decision-maker with information about the views of the public, government agencies, the support agency and potentially

responsible parties (PRPs) regarding the proposed remedial action and other alternatives. Second, it documents how comments have been considered during the decision-making process and provides answers to all significant comments.

As the "90-Day Study" notes, the public needs "clear, candid" responses. They need simple, accessible information that may not be provided by summaries aimed at PRPs. Many citizens do not see the responsiveness summary as a valid vehicle through which their concerns can be addressed. This perception by citizens frustrates them and makes the Agency's job of meaningful response to citizens much more difficult.

POLICY:

The new format described below addresses these problems. It is intended to provide responsiveness summaries that can deal thoroughly with complicated legal and technical issues while maintaining true responsiveness to local communities. This will be accomplished by dividing the document into two parts. It will satisfy the needs not only of the public, but also of the PRPs.

1) Responsiveness summaries should be divided into two parts.

2) Part I will be a summary of commentors' major issues and concerns, and will expressly acknowledge and respond to those raised by the local community. "Local community" here means those individuals who have identified themselves as living in the immediate vicinity of a Superfund site and are threatened from a health or environmental standpoint. These may include local homeowners, businesses, the municipality, and, not infrequently, PRPs. Part I should be presented by subject, and should be written in a clear, concise, easy to understand manner.

3) Part II will be a comprehensive response to all significant comments. It will be comprised mostly of the specific legal and technical questions and, if necessary, will elaborate with technical detail on answers covered in Part I. This part shall be of such length and terminology as deemed necessary by the authors. Like Part I, it will be divided according to subjects.

4) Part I's importance is in the simplicity and accessibility of both its language and presentation. Because Parts I and II will inevitably deal with similar or overlapping issues, the responsiveness summary should state clearly that any points of conflict or ambiguity between the two parts shall be resolved in favor of the detailed technical and legal presentation in Part II.

5) Ordinarily, the Community Relations Coordinator and the Remedial Project Manager should be responsible for preparing the responsiveness summary, with Office of Regional Counsel acting in an advisory capacity.

6) Where possible, a response to a "yes or no" question should begin with a "yes" or "no," before launching into a detailed explanation. If the question cannot be answered with a "yes" or "no," then a statement to that effect should be made at the beginning of that answer.

This approach will often lengthen the overall responsiveness summary. However, the trade-off will be that local communities will receive a much more "responsive" document, where the public can easily retrieve and understand answers without compromising the other statutory goals of the responsiveness summary.

Additional information on preparing a responsiveness summary may be found in Community Relations in Superfund: A Handbook, Interim Version, OSWER Directive 9230.0-3B, and in Community Relations During Enforcement Activities and Development of the Administrative Record, OSWER Directive 9836.0-1A. If you have any questions about responsiveness summaries, or wish to make comments please contact Jeff Langholz of the Community Relations staff at FTS 382-2460.

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**NOTICE:** The policies set out in this memorandum are intended solely for the guidance of Government personnel. They 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 memorandum, or to act at variance with the guidance, based upon an analysis of specific site circumstances. The Agency also reserves the right to change this guidance at any time without public notice.

cc: Community Relations Coordinators, Regions I - X
Regional Counsel, Regions I - X

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 7 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

OSWER DIRECTIVE 9230.0-08

SUBJECT: Planning for Sufficient Community Relations
(Superfund Management Review: #43)

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI
Director, Toxic and Waste Management Division
Region IX
Director, Hazardous Waste Division
Region X

PURPOSE

The purpose of this short sheet is to provide guidance to Regional staff on planning for sufficient community relations activities.

BACKGROUND

The Superfund Management Review (SMR) found that "limited time and resources for Regional staff keep them from doing the communication they think necessary and essential. Site managers and community relations staff are concerned that EPA may be letting some potentially serious conflicts develop with communities because they cannot get out to the sites early enough or frequently enough." This document has been prepared to help Superfund managers promote earlier and more frequent citizen involvement at Superfund site communities.

GUIDANCE

This guidance identifies specific planning activities that have been used successfully in the Regions. These activities encourage Superfund managers to take the following steps:

- integrate community relations into all technical phases,
- ensure responsive community relations activities,
- dedicate adequate resources to support community relations needs, and
- establish realistic schedules to meet Superfund site community needs.

## I. Integrate Community Relations Into All Technical Phases

Integrating community relations into the remedial process at sites is a team effort that takes the commitment of both the Community Relations Coordinator (CRC) and the Remedial Project Manager (RPM). To integrate community relations into the remedial process, Regions should do the following:

- Train all technical staff in community relations. Because technical staff are site managers, it is important for them to understand community relations concepts and requirements. RPMs have found the two-day Community Relations Skills Training Course, sponsored by headquarters, to be extremely useful. This free course is offered periodically in each Region. Many Regions have also developed their own Regional training programs that are very successful.

- Encourage RPMs to be active in community relations. Community relations works best when the CRC and RPM are a team in which the RPM is an active player. While CRCs can provide expert advice and guidance, RPMs should not divorce themselves entirely from all community relations activities. To do so alienates community relations from the overall remedial process. Involvement by the RPM furthers public participation and ensures integration of community relations in the remedial process.

  One way for RPMs to be involved is for them to participate in the community interviews conducted as part of the Community Relations Plan (CRP). Frequently, these interviews can be scheduled to coincide with the RPM's trip to the site on other matters. Even though the RPM may not be active in the interviews or assist in the preparation of the CRP, the RPM's presence has several positive effects. Citizens see that there is real interest in what they have

to say, the RPM begins to know individuals in the community (which is a start to establishing trust), and the RPM gets first-hand understanding of community interests and sentiments.

It is also effective for RPMs to participate in other community relations activities. They can coordinate with the CRC to attend community meetings, make periodic telephone calls to key people in the community, or informally visit with community members when they make site visits. Although they will not be able to participate in all community relations activities, they should request briefings after key activities and keep a steady dialogue with the CRC.

- Make CRCs integral members of the site team. CRCs have expertise in planning and implementing community relations, but they can only contribute if they are made members of the site team. RPMs must recognize however, that just as their own workloads preclude them from participating in all community relations activities, CRCs have tremendous workload requirements that result in their inability to attend all site meetings. Therefore, the RPM and CRC need to coordinate at critical points and keep each other up to date at all times.

## II. Ensure Responsive Community Relations Activities

The SMR found that about one-quarter to one-third of Superfund sites were controversial enough to warrant extensive community involvement. To respond to this critical finding, the study recommended that "...EPA should inform citizens early at all sites, and should then work most intensively at those sites where there appear to be substantial citizen concerns and incipient controversies." To ensure that community needs are identified and appropriate community relations activities are performed, EPA should do the following:

- Prepare community relations plans (CRPs) and keep them current. The CRP is the main tool that identifies community relations needs and CRC activities for a given site. Because the CRP is developed prior to the beginning of Remedial Investigation field work, it is an early opportunity for EPA to assess the level and nature of citizen concerns. It can be the basis of an initial assessment to determine whether the site will require extensive community involvement.

Although EPA is required to revise the CRP after the Record of Decision (ROD) is signed, several Regions do not wait until this technical milestone is reached. Instead, if changes at the site occur, the RPM and CRC should update the CRP so the document is accurate and timely. Periodic updates also bring Regional staff into the community, provide EPA additional opportunities to talk with the public and continue fostering good relationships between the Agency and the site community.

- Maintain regular communications with the community. Communities want to know they are being heard. This can be accomplished by making monthly telephone calls to key local officials or citizen leaders. These telephone calls help the RPM and CRC follow community interest in the site and let the community know that EPA wants the community's input. The RPM and CRC can also use this communication technique to update the community on site progress and other site-related activities. Regions have also set up toll-free numbers that are advertised to residents in a site community. This technique provides citizens with easy access to EPA and can let EPA know if there are unresolved issues or problems in the community.

  Another way to maintain contact with the community is through fact sheets. Some Regions have implemented a policy of preparing bi-monthly fact sheets for all sites. A fact sheet can include information that encourages public participation by encouraging citizens with questions and/or comments to write or call the RPM and CRC. It may also include a blank mailing label where citizens who are not already part of the mailing list are encouraged to add their names. The letters or telephone calls that RPMs and CRCs receive assist EPA in measuring the level and type of interest that exists. This understanding is critical to planning and scheduling responsive community relations activities.

In order to perform these planning and communication activities, as well as respond to specific community needs, adequate resources must be available.

## III. Dedicate Adequate Resources to Support Community Relations Needs

The allocation of adequate resources is a vital step in planning for sufficient community relations and requires cooperation and coordination between EPA technical and community

relations staff. The following resource planning guidelines are currently in use in many Regions to assist in allocating adequate funds toward community relations activities.

- The more complex a site is, the greater the community relations needs will be. The CRP identifies the community relations activities required by a given site and serves as a useful planning tool for preparing the community relations budget. RPMs, in consultation with CRCs, should prepare a budget with sufficient funds for staffing and financing planned community relations activities. In addition, Regions should do the following:

- Establish "...a discretionary fund that [can be used] to fund additional work necessary to respond to citizen concerns," as recommended by the SMR. Responding to the public's request for more sampling activities is a possible way to make use of the discretionary fund. The discretionary fund may also be used to finance additional community relations activities at a site where the level and nature of community interest warrants additional activities not included in the original budget. As described in the SMR, the discretionary fund can enable RPMs and CRCs to respond to the site community's needs, thereby enabling the citizens to become "partners in the (decision-making) process, rather than angry adversaries."

- Determine appropriate staffing. EPA Managers need to consider the site's community relations needs in making technical staff decisions. Whenever possible, EPA managers need to staff the most controversial sites with more senior personnel who are experienced in dealing with the public.

  In the event that one team member must be replaced, an EPA manager may be able to preserve some level of continuity by keeping the second team member at the site. For example, whenever possible, if the RPM is new, the CRC should not be switched. As quickly as possible, new staff need to be educated about the site's history and the community's involvement and concerns.

## IV. Establish Realistic Schedules To Meet Superfund Site Community Needs

Community relations activities are part of the Superfund process and need to be built into every remedial schedule. If adequate time is not factored into the schedule to meet community relations needs, delays imposed by citizens are more likely.

ROD deadlines should be based on remedial schedules that reflect both technical and community relations milestones. By working closely with CRCs, RPMs can become familiar with the public involvement needs of a community and plan accordingly. Many Regions use the following techniques to meet Superfund site community needs:

- Anticipate public involvement needs throughout the remedial process. For scheduling purposes, it is best to determine well in advance which communities will request standard 30-day public comment periods and which will need extensions, based on the level of community interest, involvement, and other site-related activity. If a site community shows little interest in a site, a 30-day public comment period is generally required. If, however, there is substantial interest in the site, the RPM should factor adequate time (generally 60 days) for public comment and response into the remedial schedule. Anticipating the amount of time a community will need for a public comment period is critical to scheduling realistic ROD deadlines.

- Plan for a public meeting to initiate each public comment period. At least one month of planning is required. The CRCs assist the RPM in coordinating a public meeting by contacting the local community leaders, providing notice of the meeting in local newspapers, preparing a fact sheet, preparing graphics for the presentation, and providing overall meeting logistics support. It is best to reserve the meeting space at least four weeks ahead of time. The RPM, CRC, and other guest speakers at the meeting should organize a planning meeting at least three weeks ahead of the public meeting. The public notice should be placed in the local newspapers two weeks in advance of the meeting. The "dry run," or rehearsal, should take place one week before the meeting. Advance planning and practice is key to preparing an effective public meeting.

- Track upcoming technical milestones with community relations needs. Some Regions have established computer-based tracking systems to assist RPMs and CRCs in closely coordinating technical and community relations activities. Other Regions use manual tracking systems or hold bi-weekly or monthly coordination meetings between RPMs and CRCs. Whether the Regions use computer-based manual tracking systems to track both technical and community relations milestones at each Superfund site is not important. What is critical, however, is that regular tracking and coordination of efforts is taking place between RPMs and CRCs.

By considering the community relations needs at all stages of the Superfund process, RPMs can work with CRCs to prepare remedial schedules that reflect realistic remedial goals and deadlines, and provide sufficient lead time for planning community relations activities.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 31 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive No. 9230.0-09

MEMORANDUM

SUBJECT: Community Relations: Use of Senior Environmental Employees in Superfund (Superfund Management Review: Recommendation 43.K,L)

FROM: Henry Longest II, Director
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, IX
Director, Hazardous Waste Division
Region X

Community Relations Coordinators, Regions I - X

**Purpose:** To report on the use of SEEs in the Superfund program and to offer guidance on their future use.

**Background:** The Superfund Management Review (SMR) indicated the need to improve the frequency and consistency of communication with the public. A method suggested in the SMR to help accomplish this goal is to expand Superfund's use of the Senior Environmental Employee (SEE) program.

Established in 1976, the SEE program supplies valuable labor to EPA through sixty-four non-profit senior citizens' associations. Over the years, SEEs have made valuable contributions both to Superfund and to EPA in general. The popularity of the program rests not only in the diverse skills and experience that SEEs bring to our organization, but also in the fact that their employment does not count against full-time employee hiring ceilings.

To arrange for SEE support, EPA program offices submit requests to the Office of Research and Development, which then provides funds for SEE salaries, overhead, and travel. The funds are in the form of a grant that is awarded to one of the associations.

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SEEs in Superfund work mostly within the Technical Assistance Grant (TAG) program. Within the TAG program the SEEs serve a valuable role, engaging in a number of important activities before, during and after the awarding of a grant. Prior to the award of the grant, SEEs distribute TAG application packages to interested groups, process "letters of intent" submitted by citizens' groups, and conduct the formal notification process to advise the public that letters of intent have been received and that a grant has been awarded. During the awarding process, SEEs advise citizens' groups on preparing the grant application, help these groups establish efficient procurement and record keeping systems, and assist groups in negotiating with prospective technical advisors and preparing subagreements with these advisors. After the grant award has been made, SEEs review grant recipient requests for grant agreement modifications, help EPA establish and maintain an official record of activities for the grant, and analyze financial reports, progress reports and other correspondence.

Although the SEE program has been beneficial to the implementation of the TAG program, SEE staff, TAG coordinators, and community relations staff members have identified a few obstacles that prevent the program's full success. Among these impediments are a lack to training provided to the SEEs, absence of clear definition of the SEE's role, and EPA hesitancy to treat SEEs as Agency colleagues. The following section addresses these issues, and also makes a recommendation on expanding the role of SEEs into the community relations program.

**Objective:** To improve and expand the role of SEEs in the Superfund program.

**Implementation:** The following four recommendations are aimed at improving the use of SEEs, while increasing their overall role in Superfund.

1) Provide adequate training to SEEs. Regions should make every effort to provide a comprehensive orientation to SEEs. Whether accomplished through established formal training, or through individual instruction, we must take the time to introduce SEEs to the intricacies of EPA, Superfund, and their specific role. SEEs come from a variety of backgrounds and bring to the EPA a wealth of life experience -- tailor their orientation to fit their individual needs.

2) Provide SEEs with clear job descriptions. No Agency-wide definition of the SEE's role exists. Although the positions filled by SEEs are similar in many ways, their responsibilities will vary from Region to Region. Regions are free to tailor the

responsibilities of a SEE to suit specific programmatic needs. Whatever the SEE's role may be, he or she and EPA should both be aware of the expectations of the position. Create a job description that accurately reflects the role that the Region needs filled by the SEE. Regions may wish to contact other Regions to exchange position descriptions and ideas regarding the role of SEEs.

3) Treat SEEs as if they are Agency colleagues. SEEs are not EPA employees. They do, however, occupy a special undefined ground between contractor and EPA employee. While we might not afford to them all the privileges and responsibilities we extend to our EPA employees, we still should treat them with the courtesy and respect commensurate with their position and experience. Include them in strategy meetings. Listen to their suggestions... Make them feel a part of the team. They are talented, experienced colleagues, providing a valuable service to our program.

4) Broaden SEE roles to include activities other than TAG. Regions are encouraged to expand the use of SEEs, where appropriate. Although the majority of SEEs' work has been within the TAG program, they should not be limited to TAG. The community relations program, in particular, can use SEEs in their outreach efforts. For example, where a site is some distance from an EPA office, Regions can hire a local person at the site to answer questions and distribute information.

SEEs have shown themselves to be valuable assets to our program, and Superfund management is committed to further improvement and expansion of their role in clean-up activities. For more information regarding the use of SEEs in Superfund please contact Melissa Shapiro of my staff at FTS 382-3250 or Jeff Langholz at FTS 382-2460.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 19 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive #9230.0-13

**MEMORANDUM**

**SUBJECT:** Minimizing Problems Caused by Staff Turnover (Superfund Management Review: Recommendation #43 M,N,O)

**FROM:** Henry L. Longest II, Director
Office of Emergency and Remedial Response

**TO:** Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI
Director, Toxic and Waste Management Division
Region IX
Director, Hazardous Waste Division
Region X

**Purpose:** To minimize community relations problems caused by the frequent turnover of EPA Superfund staff.

**Background:** The Superfund Management Review (SMR) found that staff turnover often hinders communication between EPA staff and affected communities. The SMR suggests that many important goals of the Superfund Community Relations Program, such as maintaining consistent contact with citizens to secure their trust and confidence in EPA, are not being met, and will not be met, if EPA staff do not work together to maintain continuity both within the Agency and with the community.

Problems resulting from staff turnover will likely occur if community members are not aware that a staff change has been made or why it has been made. The problems increase if the new staff member is not familiar with the history of the site, past community relations activities at the site, and/or the personal relationship that his or her predecessor had with the community.

**Implementation:** The SMR offers the following recommendations to Regional Superfund teams to help maintain continuity throughout staff turnover:

1) Communicate staff changes to the community as soon as possible. Sharing staff changes with the public is without a doubt the most effective way to minimize the problems caused by turnover. EPA should inform the community of staff changes either before they occur or as soon after as possible. The following techniques offer methods to maintain continuity with communities despite inevitable complications caused by geographical constraints, abrupt staff resignations, and lengthy position vacancies.

- Send out notices and/or fact sheets to inform community members of an approaching staff change. If the change is sudden, and advance notice is not possible, send the notices out as soon after the change as possible. If it is not feasible to develop a written notice specifically for the purpose of explaining the staff transition, include the information in the next site mailing that is distributed, regardless of its primary intent.

- Subject to approval by the particular employees involved, include information about why the change is occurring, where the departing employee will be working, and a profile of the new employee including his or her credentials. This is particularly important at sites where the community has requested that an employee be replaced, and then for some unrelated reason, that employee actually leaves the Agency.

- Introduce the new employee to local officials and community leaders who are involved at the site. This provides an opportunity, either by telephone or through direct contact, to respond to questions and concerns they may have about the change.

- "Pass the torch" during a public forum, such as a public meeting, and have the outgoing staff member introduce his or her replacement. Introductions should include a short profile of the new staff member, and the outgoing staff member should give a brief statement about his or her destination. Although this is the most effective way to introduce new staff to the community, a few constraints can make this type of event difficult. For example, often an outgoing employee does not give ample notice to allow time to plan such a meeting, or leaves before the meeting takes place, or the position does not get filled immediately, leaving no one to whom the torch may be passed.

2) Educate new staff about the site's history, the community's involvement and concerns, and the importance of those concerns. Regions should establish a close working relationship between Community Relations Coordinators (CRCs) and Remedial

Project Managers (RPMs) to ensure that new staff receive community relations information immediately upon their arrival in the Regional office or their assignment to a new site. If, for example, an RPM is new to a site, the CRC should be responsible for welcoming the RPM, handing over detailed site-related information, and briefing them on any community concerns that developed during the tenure of the previous RPM. This should literally happen during the new RPM's first day on the job. Regions also should utilize their experienced senior staff to advise new RPMs and CRCs, and help them to "learn the ropes."

3) Maintain continuity on the site team. If one member of a team leaves, the other should not leave soon, if possible. For example, if the RPM is replaced, the CRC should remain, and vice versa. Management should consider the continuity of the team before reassigning staff. This will help mitigate the problems associated with major personnel changes.

4) Provide communications training to all Superfund staff who deal directly with the public. Provide community relations skills training for new staff members as soon as they come on board to prepare them for community relations activities. If turnover is too frequent to hold training every time a new person comes on board, at least insure that the new person is given a community relations handbook and is briefed about basic community relations skills until he or she can attend a training. If possible, develop an abridged community relations training, or mini-training, to prepare new staff members until they can attend a more formal, comprehensive training.

Conclusion: Frequent staff turnover within the Superfund program can be a detriment to community relations at Superfund sites. The strong, positive rapport EPA strives to build with citizens must not be undermined by poor continuity between Superfund and the public, and within the Superfund staff. By utilizing the simple, yet effective, techniques mentioned above, Regions can minimize the disruption caused by staff turnover.

For more information regarding community relations in Superfund, contact Melissa Shapiro or Jeff Langholz of my staff at FTS 398-8340 and FTS 398-8341, respectively.

cc: Regional Community Relations Coordinators (I-X)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 15 1990

OSWER Directive #9230.0-15

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

**MEMORANDUM**

**SUBJECT:** Role of Community Interviews in the Development of a Community Relations Program for Remedial Response

**FROM:** Henry L. Longest II, Director, Office of Emergency and Remedial Response

**TO:** Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, IX
Director, Hazardous Waste Division
Region X

**PURPOSE:**

To offer guidance in response to recent Regional Office questions regarding the community relations interviews required by the National Contingency Plan.

**BACKGROUND:**

Without a doubt, the interviews are the single most important element in the development of a site-specific community relations plan (CRP). The CRP, in turn, serves as the backbone of the entire community relations program during a remedial response. I hope you find the following information useful in clarifying the role of this crucial activity.

**POLICY:**

1) The CRP should be based upon interviews conducted with the community. The National Contingency Plan (NCP) requires interviews and the development of a CRP based upon them. Among the community relations activities required by Section 300.430(c)(2)(i)of the NCP is "...preparing a formal community relations plan (CRP), based on the community interviews and other relevant information..."

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2) Interviews should be conducted among a variety of people. Staff ordinarily speak first with State and local officials to obtain background information and to let these people know that area residents will also be interviewed. The group of interviewees should not, however, be limited to these officials. "These discussions with elected officials cannot in themselves generate enough information to develop an adequate community relations plan. Special efforts must be made to interview local residents, particularly those who are not affiliated with any group." (Community Relations in Superfund -- A Handbook, OSWER Directive #9230.0-3B, p.3-4). Staff should interview a broad range of people so as to gain the greatest variety of perspectives about the site, including potentially responsible parties. Furthermore, the staff should "...never limit conversations to the most visible groups or individuals." (Community Relations Handbook, p.3-4)

3) Interviews should be conducted with at least 15 - 25 residents. It is imperative that staff interview a group that represents a cross-section of the community. This number is typically at least fifteen to twenty-five persons, depending on the size and complexity of the site, but it can be more. At one particularly complex site, for example, Regional staff conducted over two hundred interviews.

4) Contractors should never conduct interviews without the presence of EPA staff. EPA dependence on contractors has been a particularly controversial issue and community relations was named in a recent memorandum from Administrator Reilly as an area potentially vulnerable to contractor misuse (See attached memorandum). Interviews are most often conducted by some combination of the Remedial Project Manager, community relations staff, enforcement staff and contractors. Remedial Project Managers are especially encouraged to conduct community interviews as a way of learning about a community and its issues, as well as meeting community leaders early and fostering positive relationships.

For more information regarding community interviews, refer to Chapter 3 of Community Relations in Superfund -- A Handbook, and Section 300.430(c)(2)(i) and accompanying preamble of the NCP. If you have additional questions, please contact Melissa Shapiro of my staff at FTS 382-2350 or Jeff Langholz at FTS 382-2460.

Attachment

cc: Public Affairs Directors
Regional Community Relations Coordinators

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 5 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive #9230.0-16

**MEMORANDUM**

**SUBJECT:** Making Superfund Documents Available to the Public Throughout the Cleanup Process, and Discussing Site Findings and Decisions as They are Developed (Superfund Management Review: #43 G,H,Q,R,T)

**FROM:** Henry L. Longest II, Director
Office of Emergency and Remedial Response

**TO:** Director, Waste Management Division,
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division,
Region II
Director, Hazardous Waste Management Division,
Regions III, VI
Director, Toxic and Waste Management Division,
Region IX
Director, Hazardous Waste Division,
Region X

Community Relations Coordinators, Regions I - X

**Purpose:** This directive presents recommendations for improving Superfund efforts towards timely release of information to the public during site cleanup activities.

**Background:** The Superfund Management Review (SMR) emphasizes the importance of expanding the public's role in the Superfund process, and identifies public access to information as an indispensable element of meaningful citizen participation. Both the SMR and our own experience continue to point to this as among the most important, and potentially most frustrating, problems in our attempts to deal openly with the communities at Superfund sites. Citizens' beliefs -- even where unfounded -- that we are slow or unwilling to share information compromise our ability to convince them that site cleanups are being conducted as well and as fast as they should be. The SMR makes five recommendations on this crucial issue. The five specific recommendations are:

- Discuss site findings and decisions as they are developed (43.G)

- Make documents available throughout the process, not just during the public comment period (43.H)

- Be more aggressive in supplying information to citizens and their technical advisors (43.Q)

- Ensure access to information by establishing convenient repositories, reviewing, and releasing documents and placing them in repositories quickly, and notifying citizens of the availability of information (43.R)

- Identify ways to bring citizens into technical discussions early (43.T)

A recent survey of Regional Community Relations Coordinators with regard to implementation of these five SMR recommendations found that, although Regions are making considerable progress in fulfilling these recommendations, there still is room for improvement. The following seven recommendations are designed to foster such improvement.

**Implementation:** By drawing from existing Regional practices, as well as suggesting new activities, we hope to further improve the timing, amount, and type of information made available to citizens. This sharing of ideas and experience is particularly important in a program like Superfund community relations, where there are limited resources and a high level of public interest.

Regions should reassess their efforts to meet the five SMR recommendations and consider adding the following techniques. Many of these activities can be adapted successfully to meet a particular Region's overall, as well as site specific, needs.

1. Involve Citizens During the PA/SI Stage. The SMR stressed that neither citizens nor PRPs should have to wait until the end of the Remedial Investigation and Feasibility Study to learn the results of Superfund site investigations. This means that when citizens are interested, Regional Superfund staff should make information about the site findings available as early as the Preliminary Assessment (PA) and Site Investigation (SI) stages of the process. Regions should not routinely initiate community relations activities at all PA/SI sites,

however, because resources cannot support a full-scale community participation program for all discovered sites. Instead, Regions should select PA/SI sites to receive the attention of the community relations staff, based on a consideration of the following factors:

- the likelihood that the site eventually will be included on the National Priorities List (NPL). Community relations staff will work with technical staff to determine a site's potential for being listed. Regions should avoid raising public interest about PA sites only to have to subsequently halt community contact when the sites are not listed on the NPL;

- the location of the site with regard to other existing NPL sites, and the community interest level at those sites;

- the location of the site relative to population centers;

- the amount of media coverage, as well as direct feedback from citizens' groups and local residents. While we do not want to exacerbate community concerns at sites that may prove to be relatively minor problems, we do need to respond fully to known high levels of community interest at sites we are investigating.

Once a Region decides to initiate the community relations process at a PA/SI site, they may conduct a variety of activities, including the following:

- contacting local officials for information;

- briefing local officials and key community leaders on progress at the site;

- beginning to develop a site mailing list;

- issuing a fact sheet on the preliminary findings and the Hazardous Ranking System score;

- setting up a site "hotline" -- a toll free number that community members can use to report information and direct questions to EPA staff.

When the site is proposed for the NPL, the Region should issue a news release and contact local officials and key citizens. The Regions may do this by telephone, through briefings, or in meetings.

Addressing citizen concerns early provides valuable input about the interests and concerns of the site community. This information can be incorporated into the Community Relations Plan (CRP). Early community relations also fosters trust between a site community and EPA, and helps the community to have realistic expectations regarding the frequency of EPA contact with them.

2. Increase Regularity of Site Contact. Recommendations 43.G, 43.H, and 43.Q all call attention to the importance of establishing regular, frequent contact between EPA and the public, particularly at sites where a great deal of community interest exists. The citizens will feel EPA is being more responsive to their concerns if they have regular meetings rather than sporadic contact at key decision points. For instance, one Region found that it was valuable to meet with citizens to obtain their comments on the draft Community Relations Plan so that the public is involved before the plan goes into effect. In addition, open houses, telephone calls, availability sessions, and frequent meetings with Technical Assistance Grants (TAG) holders and citizen groups will allow them to work more effectively with EPA.

Although regularity of site contact is an important element in the building of trust between EPA and the community, it is not the only ingredient. Citizens must have contact with all key staff, and such contact must be of high quality. Specifically, it is vital for the Remedial Project Manager (RPM) and other technical staff to be heavily involved in direct communication with the public. Such interaction not only will ensure that citizens have access to the staff with the most technical and site specific knowledge, but also will guarantee that the site managers see firsthand and are aware of citizen concerns. Furthermore, to ensure quality contact with the community, all staff should be trained in interpersonal communication skills. (See the "Office of Solid Waste and Emergency Response Training Course Catalog" for a listing of courses available to increase our proficiency in communication. Of special value are the courses on "Answering Tough Questions," "Communicating With the Media," and "Community Relations in Superfund: Concepts and Skills for Response Staff.")

3. Bring Citizens into Technical Discussions. Regions should try to have at least one community representative present during all external technical discussions, except those involving negotiations between EPA and Potentially Responsible Parties (PRPs). When legal or logistical considerations preclude citizen participation in technical discussions, some Regions have discovered that a good compromise is to make minutes of the meeting available to the public. For communities with high interest, Regions also can hold availability sessions after closed technical discussions.

Superfund managers should do everything possible to involve the public in technical discussions, especially at enforcement-lead sites where citizens may feel left out of the process. In cases when information is "enforcement sensitive", the Regions should make an extra effort to keep regular lines of communication open by emphasizing the information that can be shared with the public.

4. Increase Coordination Between Technical and Community Relations Staff. Many Regions have found that integrating various EPA staff into "site teams" facilitates cooperative, efficient and well coordinated cleanup activities. Managers should value the roles of all team members and keep regular lines of communication open between technical and community relations staff. To facilitate this communication, some Regions have found it helpful for RPMs and Community Relations Coordinators to conduct on-site interviews and planning sessions together as team members. In addition, Regional community relations staff are encouraged to coordinate document distribution with Superfund technical and legal staff. An organized team approach will ensure that important documents are released as soon as possible.

5. Release Near Final Documents When Appropriate. Since the EPA review process often can be quite extensive and time consuming, the community may become impatient awaiting the release of an important document. Therefore, in cases of high community interest, EPA may choose to release "draft" documents in near final form. Staff should make clear to the community the "draft" status of the document. One Region has suggested that draft documents should be:

- Maintained in separate binders from final documents, with extensive disclaimers and caveats, and;
- Printed on paper that is pre-labelled with "DRAFT-DRAFT-DRAFT" diagonally across each sheet in red ink.

Although the release of near final documents may speed the dissemination of information to the public, Regions are strongly urged to emphasize the non-final status of the document.

In addition to timely sharing of site documents with the public, Superfund is committed to equal access to information for both PRPs and citizens. Regions should routinely ensure that PRPs and citizens can access the same documents at the same stages of the cleanup, except where "enforcement sensitive" information precludes such disclosure. Unless the information clearly jeopardizes ongoing negotiations with PRPs, it should be equally available to all parties.

6. Expand Site Mailing Lists. One of the most cost-effective methods of providing Superfund site communities with information is through mailings. The incremental cost of distributing site fact sheets to a greater number of community residents is extremely small, because the greatest portion of costs is associated with writing and preparing a fact sheet. Therefore, some Regions have pursued ways of expanding site mailing lists, beyond just those citizens who have expressed an interest in the site. Specifically, EPA has utilized community groups and local agencies to send out EPA fact sheets as part of their regular mailings. Also, these and other groups have offered to include information on the Superfund site in their regular newsletters.

7. Make Information Repositories User-friendly. Regions should make the large quantities of information contained in repositories as accessible as possible. For example, Regions can conduct site visits and request public input regarding the location of information repositories, as well as set up secondary locations at the request of citizens. These can be done as part of an ongoing effort to establish and maintain complete, convenient information repositories. In addition, Regions also can offer TAG recipients the convenience of being a secondary location of a repository. This provides easy access to the repository for a group that is likely to use it frequently. Finally, Regions should monitor the repository periodically to ensure that it is in order and complete, as well as label file cabinets, book shelves and binders with "EPA" stickers to clearly designate them as Superfund site documents.

**Conclusion:** Making documents available to the public throughout the cleanup process and discussing site findings and decisions as they are developed will more fully involve citizens in the cleanup process and ensure two way communication between Superfund staff and local communities. Using the recommendations

in this directive will enhance community relations efforts and expand the public's role in the Superfund process.

For further information regarding Superfund community relations activities, please contact Melissa Shapiro or Jeff Langholz of my staff at FTS 398-8340 and FTS 398-8341, respectively.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 28 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive #9230.0-17

**MEMORANDUM**

**SUBJECT:** Using State and Local Officials to Assist in Community Relations (Superfund Management Review: Recommendation #43.K,L)

**FROM:** Henry L. Longest II, Director
Office of Emergency and Remedial Response

**TO:** Director, Waste Management Division
Regions I, IV, V, VII, VIII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Region III, VI, IX
Director, Hazardous Waste Division
Region X

Community Relations Coordinators, Regions I - X

**Purpose:** To increase communication with the public by involving State and local officials.

**Background:** The Superfund Management Review (SMR) found that EPA's communication with citizens near Superfund sites is not as frequent as site managers and community relations staff believe necessary due to limited resources and the difficulties encountered in accessing remote sites. The SMR suggested that, as a "way of coping with resource and distance problems," EPA use State and local officials to augment our own efforts in community relations. The SMR also pointed out, however, that it may not be appropriate to use State and local officials where we and they disagree about the course of action. According to the SMR, "such disagreements make it both difficult and inappropriate for a State or local official to represent EPA." (Superfund Management Review, p. 5-10)

Our experience tells us that, under certain circumstances, State and local officials can be effective contributors to community relations activities. Citizens often feel more

comfortable communicating with an official who is a member of their community, and who may have first-hand knowledge about a site. Many Regions already use State and local officials, and, in some Regions, the State actually has the lead for community relations.

**Objective:** To discuss specific methods for using State and local officials to increase Superfund's communication with the public.

**Implementation:** The following recommendations describe the use of State and local officials to serve as liaisons, to provide and maintain information, and to assist in public meetings.

1) Use State and local officials as a liaison between the public and EPA. Because State and local officials often are very well-informed about a site, its history, and the affected community, they can serve as effective liaisons between the public and EPA, channeling information and communications between the interested parties quickly and aptly. For example, Regions can designate an official as a point of contact. The official could then field inquiries from the public and relay them to the appropriate person in the Region or link a Regional staff member with concerned citizens or community leaders. Furthermore, as the local officials become familiar with both the Superfund process in general and cleanup activities at the site, they will be able to handle more of the routine questions themselves, thereby helping EPA, as well as the public.

Using local officials as a liaison also helps increase the frequency of communication with the community, particularly when a site is far away from the Regional office. In some cases, this may be the best or only way to ensure adequate communication. Because local officials will ordinarily live nearer the site than do Regional staff, the community has easier and more frequent access to them than to EPA staff. However, Regional staff must also visit the site and meet with the community on a regular basis.

While using State or local officials as a liaison, there are several points to consider before making that decision. First, local officials frequently are not well-versed in Superfund community relations. Local officials can be effective in this role only where Regions educate them about the Superfund process and, of course, keep them fully informed about site progress.

Also, State and local officials assisting with community relations must still perform the role to which they were appointed or elected. That role may require them to be involved at the site in an official capacity in which they might have to "wear two hats." This makes it especially important to define the officials' roles when the community relations plan is being drafted, or in the case of State officials, when the Community Relations Coordinator first assesses the State's capability for taking the lead for community relations.

Finally, even where State and local officials are assisting EPA, the Region needs to retain control over the release of site information. Our experience indicates that it is appropriate to give State and local officials a significant but clearly supporting role in community relations activities. This assistance may not be appropriate in every Region, and should be considered on a case-by-case basis. Thus, Regions should evaluate not only the relationship between EPA and such officials, but also the relationship between the officials and the community, before seeking their assistance. Furthermore, although the involvement of State and local officials can increase communication with the public, it cannot and should not be a substitute for EPA's direct involvement with the community.

2) Use State and local officials to maintain and provide information. As noted earlier, Regional offices are often located far away from a site. Some Regions find it helpful to use State, and more often local officials, to help establish and maintain information repositories near the site. Because local officials frequently have first-hand knowledge of the site, they can help determine convenient places for the repository. Where State or local officials are helping in this way, it is especially important that Regions provide the officials with documents for the repository as soon as they are available.

Some States have developed what have proven to be effective communications tools and systems of their own for providing information to the public. Regions often copy or borrow these aids, such as mailing lists, and save time by not duplicating the effort that went into creating them. Regions should learn what communications tools and systems are available through their States as early in the community relations process as possible.

State and local officials' knowledge of and experience with a site and its history, and especially their understanding of the community, provide a wealth of information for the Regions. EPA

can utilize State and local officials' knowledge and experience to identify people to interview for the community relations plan, to gather background information for fact sheets, and to review press releases and other documents. Capitalizing on this first-hand source of information allows Regions to begin the community relations process faster and helps target the effort for the particular community. Because of their ties to a community and their history with a particular site, State and local officials can be an extremely valuable group of effective communicators of site information. These officials represent a resource whose potential to contribute should not be underestimated.

3) Use State and local officials to assist in public meetings. Having State or local officials introduce EPA Regional staff or otherwise participate in a public meeting helps visibly demonstrate a mutually supportive working relationship among the Region, State and local officials, and the community. Both the appearance of cooperation and the underlying relationship require, of course, that Regions maintain frequent contact with State and local officials to keep them informed of site progress and the schedule for public meetings.

Regions also should include State and local officials in dry runs of the meeting to confirm their role at the meeting. If the officials' role includes speaking, the dry run will provide a final opportunity to understand their view before it is aired to the public. These dry runs may also help to resolve issues prior to a public meeting where there are known differences of opinion between the State or local official and EPA.

Some Regions also use community organizations, such as the League of Women Voters, to assist in public meetings. Members of the organization can provide introductions and even moderate the meeting. Although not State or local "officials," organizations like these are viewed as impartial parties, and consequently make excellent third-party moderators. Using such organizations also demonstrates to the community the Region's willingness to include as many members of the community as possible in the community relations process.

**Conclusion:** Using State and local officials to assist Regions in community relations activities can be an effective way to increase the frequency and consistency of community relations at Superfund sites. In order for it to be effective, Regions must solicit assistance from the officials early in the community

relations effort; ensure that the officials are educated about how Superfund works; and maintain an avenue of communications with the officials to keep all parties well-informed. State and local officials will often have great credibility with citizens and their cooperation and participation can help greatly to build public confidence around Superfund cleanup activities.

For further information regarding the involvement of State and local officials in community relations, please contact Melissa Shapiro of my staff at FTS 398-8340 / (703) 308-8340 or Jeff Langholz at FTS 398-8341 / (703) 308-8341.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 30 1990

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OWSER Directive #9230.0-20

**MEMORANDUM**

**SUBJECT:** Innovative Methods to Increase Public Involvement in Superfund Community Relations (Superfund Management Review Recommendation #43.A)

**FROM:** Henry L. Longest II, Director
Office of Emergency and Remedial Response

Timothy Fields Jr. for H.L.L.

**TO:** Director, Waste Management Division,
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Director, Hazardous Waste Management Division,
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Director, Toxic and Waste Management Division,
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Director, Hazardous Waste Division,
Region X

Community Relations Coordinators, Regions I - X

**Purpose:** To discuss and present innovative techniques for increasing public involvement in Superfund Community Relations.

**Background:** The Superfund Management Review found that citizens question whether they actually influence EPA's decisions regarding Superfund sites. Many citizens believe EPA's community relations program is just "sophisticated public relations" and not a program to involve citizens in the decision-making process.

Although Superfund is improving in its efforts to listen to citizen concerns, and where applicable, to incorporate them into site decisions, there still is room for more improvement. Rather than merely acknowledge and occasionally utilize citizen input, Superfund should actively encourage such participation. Superfund must go beyond that which is required, and establish new and creative methods of community outreach.

**Implementation:** The six techniques described below have proven effective in increasing public involvement in the Superfund process. While some are recent innovations, others were developed many years ago, but new and better ways of using them have bolstered their effectiveness. The list does not pretend to be exhaustive. Instead, it shows some of the outreach vehicles Regions have found to be particularly effective in encouraging citizen participation. Regions should make every effort to integrate as many as possible of these activities into the cleanup process.

1) **Citizen Work Groups:** Since the mid 1980s, citizen work groups -- also known as technical information committees, citizen information committees, or community work groups -- have been established at sites across the country. Widely recognized as one of the best mechanisms for increasing public involvement in the decision-making process, citizen work groups are structured organizations for the discussion and exchange of information between decision-makers and the affected public. Work groups have become more widespread and sophisticated as people realize their effectiveness.

Citizen work groups generally consist of State and local officials, representatives from community groups, and EPA staff including at least the Remedial Project Manager (RPM) and the Community Relations Coordinator (CRC). The size of the group and the number of meetings it holds depends on the public's interest in the site, activity at the site, and material to be reviewed.

A successful citizen group does not guarantee agreement about technical issues, nor does it eliminate controversy between citizens and EPA. Regions state that successful work groups help EPA identify and understand community concerns that are important to address during the cleanup process. The groups also give citizens an opportunity to gain a better understanding of the complexity of the cleanup process, as well as the technical aspects of the remedial alternatives available. Armed with this kind of technical knowledge and given a forum in which to discuss their concerns, citizens provide relevant and valuable information to aid in decision-making.

A few factors limit the effectiveness of a work group. Occasionally, one or two well-organized community interests dominate the group, squelching other important interests or obscuring the community's real concerns. In other instances, members of the group will fail to report back to their constituents, limiting the dispersal of information. To avoid these obstacles, work groups should contain a wide representation of the community and develop ground rules for the meetings that allow all groups to participate equally.

Work groups are highly labor-intensive and time-consuming. Also, the additional information citizens receive through the work group may occasionally result in EPA extending comment periods to allow them time to understand the technical issues and prepare comments. Most Regions agree, however, that the benefits of having the group outweigh any negative aspects. Their experience demonstrates that work groups are an effective way to give the public a greater role in the decision-making process at a Superfund site.

2) Citizen Superfund Workshop: Few citizens understand the complexity of the Superfund process. This frustrates citizens who want to be involved at the site and contributes to their distrust of the Agency. One Region recently developed a six-hour Citizen Superfund Workshop for all Regions that provides citizens with an overview of the Superfund program. Through lecture, discussion and case studies, the workshop provides participants with a general summary of the cleanup process, as well as an explanation of the various opportunities for public involvement.

The success of the pilot workshop held in Spring 1990 indicates that it could be a very effective way of increasing public involvement at Superfund sites. Not only does it familiarize citizens with the Superfund process, but it also tells them when and how to become involved in the process. In addition, the workshop itself gets citizens involved with EPA, and it gives both parties a chance to meet one another and begin developing rapport.

The workshop is especially effective if given early in the Superfund process. An ideal time is during development of the Community Relations Plan. Regions should convey to participants that the workshop is not a debate on the merits of the Superfund program or a precise indication of how work will be conducted at their site, but a lesson on how the program operates in general.

The workshop is inexpensive and requires only one or two instructors. Guidance materials necessary to conduct the workshop have been developed and distributed to all Regions.

3) Bilingual Communication: Bilingual communication helps break language barriers that prevent non-English speaking citizens affected by a Superfund site from becoming involved or aware of activities at the site. Regions have used bilingual fact sheets for many years, most notably in the Spanish and Portuguese languages. Recently, a few Regions have expanded their bilingual services to include translating other informational materials besides fact sheets, developing bilingual summaries of publicly available technical documents, and

providing translators at public meetings and hearings. These techniques give non-English speaking citizens access to more information about Superfund sites and enable them to participate more broadly and effectively in community relations activities.

4) Citizen Awards for Participation: For a citizen to be highly involved at a Superfund site -- organizing and running a community group for instance -- requires a good deal of time and dedication on the person's part, especially because activities at sites span many years. This can deter some citizens from ever becoming involved at a site and lead to "burn out" among those that do. One Region is encouraging public involvement -- and recognizing the dedication it takes -- by presenting the "Citizen Participation Award." The award is bestowed on an individual, usually representing a citizen group, who has significantly contributed to public involvement at a Superfund site in the Region. The Region states that the award demonstrates to the community the value EPA places on public involvement, and thus encourages further participation.

5) Increased Interviews: Increasing the number of interviews with citizens is one of the most effective methods to enhance citizen participation. Many Regions conduct, where necessary, more than the required 15 - 25 interviews to be used as a basis of the Community Relations Plan. Depending on the site, Regions have conducted anywhere from dozens to hundreds of interviews. Regions should not hesitate to increase the number of interviews to reflect both the complexity and the level of citizen interest at a site. Although this effort may require substantial labor and resources at the outset of community relations work, it helps ensure that the Region identifies and focuses attention on those issues that are most important to the community.

Regions should first determine the scope and history of any problems at the Superfund site, using interviews with local officials and key citizens, and an availability session or public forum. If EPA determines, based on this evaluation, that the site will likely require more aggressive community involvement, the Agency should make plans to significantly expand its interviewing efforts.

Regions have found interviews to be a particularly effective way to gather information. Often issues emerge during the interviews that some citizens would hesitate to air during a public meeting. Increasing the number of interviews enables the Region to develop a highly responsive program for addressing citizens' concerns and involving the community in the decision-making process.

6) Open Houses/Availability Sessions: Some citizens find public meetings intimidating and may be afraid to voice their concerns at them. Open houses -- or availability sessions -- provide an informal, personal setting in which citizens can discuss their concerns one-on-one with EPA officials. While open houses are not new to public involvement, their use is steadily increasing. Regions are beginning to move beyond only the customary "ice-breaker" open house, toward a more consistent offering of these valuable opportunities throughout the process.

Open houses usually take place at convenient public locations where the Region can set up displays containing information about the site, provide staff to discuss technical information with citizens, or just meet with the community in an informal manner. Regions say that the open houses help the community learn more about the site and about the EPA officials that will be working on it. It helps, one community relations coordinator said, "to show the community that the RPM and other EPA officials are just people." Another said it enabled the Region to "hear from other citizens besides the vocal minority that tends to dominate public meetings." Others use open houses to mark strategic points in the cleanup process.

Open houses are relatively inexpensive, but require planning and participation from a variety of EPA officials who are knowledgeable about the site.

Conclusion: The techniques discussed in this memorandum require additional cost and effort. However, by taking a proactive approach to community relations, and going a step beyond the required activities, the Superfund program will better avoid or resolve conflict with citizens. By encouraging mutually satisfactory two-way communication and promoting increased public involvement in site decision-making, the Superfund program will move closer toward acceptance of citizens as legitimate partners in the cleanup process. The techniques for increasing citizen participation outlined in this memorandum will help achieve this goal.

For further information regarding public involvement in Superfund, please contact Melissa Shapiro or Jeff Langholz of my staff at FTS 398-8340 and FTS 398-8341, respectively.

# Appendix C
# COMMUNITY INVOLVEMENT DURING ENFORCEMENT ACTIVITIES

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***Note*: Appendix C is an edited reprint of Chapter 6 of *Community Relations in Superfund: A Handbook* (EPA 540-R-92-009, dated January 1992) titled Conducting Community Relations During Enforcement Activities and Development of the Administrative Record.**

**This Appendix expands on the information found in Chapters 5 and 6 of the current Handbook and provides more detail on Superfund community involvement activities and requirements during enforcement activities at Superfund remedial and removal sites. All references in this Appendix are to the current Handbook.**


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# Appendix C
# COMMUNITY INVOLVEMENT DURING ENFORCEMENT ACTIVITIES

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This Appendix reviews the CERCLA enforcement program and discusses enforcement actions, community involvement, and the administrative record. It provides specific discussions on:

- Community interview planning and development of Community Involvement Plans (CIPs) for enforcement-lead sites;
- Enforcement activities requiring public participation;
- Community involvement during specific enforcement actions and settlements; and
- The relationship between community involvement and the administrative record for remedy selection.

The chapter discusses how enforcement actions may affect overall community involvement planning and activities. Enforcement-lead sites occasionally are more complex because there may be a degree of mistrust between the affected community and the responsible parties. The process for negotiating a fair, effective remedy and oversight of responsible party work needs to be explained to the public. This chapter provides some guidance on how this can be done.

## C.1 OVERVIEW OF THE CERCLA ENFORCEMENT PROGRAM

CERCLA created two complementary methods to cleanup hazardous waste sites. The first program uses a trust fund to clean up pollutants and contaminants at these sites. The second program provides EPA the authority to identify potentially responsible parties (PRPs) linked to the site. PRPs are those who may have owned or operated hazardous waste sites, or generated, transported, or disposed of hazardous substances. CERCLA gives EPA the authority to negotiate settlements for site cleanup work or to issue administrative orders directing them to do so. EPA may also sue PRPs to repay the costs of such actions when the trust fund has been used.

Since the passage of CERCLA in 1980, several States have written similar laws. They too may undertake site cleanup and recover costs from PRPs. Citing their own authority, they may issue orders or enter into settlement agreements with PRPs. The enforcement process is essentially the same as followed by EPA.

The agency attempts to identify PRPs as early as possible. Where practical, the agency notifies these parties of their potential liability when the site is scheduled for some action. The agency will then encourage the PRPs to do the work. If the PRPs are willing and capable of doing the work, the agency will attempt to negotiate an enforcement agreement with them. The settlement document for conducting agreed upon removals or remedial investigations and feasibility studies (RI/FS) is generally an administrative order on consent (AOC), which is signed outside of court.

On other occasions, a judicial consent decree may be signed, which a judge reviews and approves. The Department of Justice (DOJ) files the settlement agreement with the court on behalf of EPA. Consent decrees are primarily used for remedial design and remedial action (RD/RA). The agency then will oversee the work performed by the PRPs. Both AOCs and consent decrees are enforceable in court.

If a settlement is not reached, the agency can use its authority to issue a unilateral administrative order (UAO) directing PRPs to perform removal or remedial actions at a site. If the PRPs do not respond to an administrative order, the agency has the option of filing suit to compel performance.

Finally, if the PRPs do not perform the work and the agency undertakes it, a suit may be brought against the PRPs. When there is evidence tying them to the pollution at the site, the agency will try to recover site expenditures. This is known as "cost recovery," and is an agency priority.

Agency staff should try to help citizens understand Superfund program goals and activities,

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including enforcement actions. In this effort, the agency needs to consider the concerns of the local community. If community concerns are fully identified early in the remedial process, the agency is better able to address these concerns in the proposed plan.

## C.2 COMMUNITY INVOLVEMENT RELATED TO ENFORCEMENT ACTIVITIES AND ADMINISTRATIVE RECORDS

In fostering community involvement during enforcement actions, community involvement coordinators (CICs) should follow the same steps as for fund-financed projects. The steps critical to community involvement are conducting interviews of local citizens and formulating a Community Involvement Plan (CIP). Once the CIP has been developed, the CIC and other members of the site team should ensure that community involvement activities outlined in the plan take place. The administrative record file (the incomplete record as it is being compiled) can be used to ensure that the public is informed of site activities and how to get involved in decisions made at the site.

### C.2.1 Community Interviews

In addition to general preparation for community interviews (see Handbook Section 5.4 and Toolkit Tab 5), community involvement staff should work with technical and legal staff to identify special precautions that should be taken during community interviews (e.g., where there is sensitivity to pending litigation or the political climate of the community). By discussing the site with the Remedial Project Manager (RPM) and other staff in advance of the interviews, community involvement staff can be better prepared to address local concerns.

The community involvement staff, with the RPM and legal staff, should interview different local groups before developing the CIP. Some interviews may already have been conducted in the community as part of the ranking process for the National Priorities List (NPL). These early discussions, however, do not replace community interviews held during development of a CIP. The information sought covers specific areas that are not necessarily discussed during the listing process.

Community involvement coordinators are not investigators of PRP actions at the site. If this type of information is volunteered during interviews, the CIC should advise the resident that civil investigators will follow-up on this information. The CIC should inform civil investigators of such pertinent information.

To incorporate the full range of views, agency staff may consider interviewing PRPs residing in the community. In some cases, only the current owner or operator is contacted. The circumstances and PRPs vary at every site. Significant variables include PRP contribution of hazardous wastes to the site and their standing in the community. The site response team will determine whom to interview. This team is composed of the CIC, On-Scene Coordinator (OSC) or RPM, Regional Counsel, and equivalents at the State level when the State has the lead.

### C.2.2 Community Involvement Plans

Using information obtained during the community interviews, the agency develops a CIP that reflects consideration of local concerns and styles of communication preferred by the community. The CIP format is described in Handbook Section 5.4 and Toolkit Tab 7.

The CIP is a critical planning tool for agency staff and the public, as it will likely affect many people. CIPs for sites with viable PRPs should receive input from all members of the site response team directly affected by activities scheduled in the

plan. These team members will jointly develop the CIP at PRP-lead sites. For example, attorneys should approve the accuracy of legal information and technical staff should verify physical descriptions and contaminants at the site.

The community involvement staff should insert methods to enhance public participation into the CIP, citing characteristics of the community. The CICs may also wish to consider that some sites will take years to clean up. A long-term response action may require creative planning to keep the public informed at various points along the way. The CIP may be used to reflect such a strategy.

The CIC is ultimately responsible for ensuring that the community involvement requirements of CERCLA are fulfilled. Therefore, the CIC is responsible for approving the CIP with concurrence on specific sections by members of the team.

Internal discussions with all team members during project planning is a useful mechanism for guarding against releases of information that might be detrimental to the enforcement process. Coordination activities among community involvement staff, technical staff, and legal counsel depend on the site-specific situation. The key is to plan activities and then agree upon procedures for reviewing information. **This need for coordination is perhaps the most crucial message of this chapter**. Although the agency must share information about a site with those directly affected by the site, this information exchange should be technical and not legal, and must be coordinated so as not to jeopardize negotiations with PRPs.

Community involvement activities outlined in a CIP for a PRP-lead site should not compromise the settlement process and the likely schedule of enforcement actions. Technical discussions may be identified in the CIP as community involvement activities. The CIP should document the agency's approach to coordinating and sharing information with PRPs. Special conditions on agency interaction with PRPs should be spelled out in the administrative order or consent decree, not in the CIP.

The public must be informed early when PRPs are willing to participate in community involvement activities identified in the CIP, but they should know that the site response team prepared the plan. Staff should do this by preparing a fact sheet and stating this at a public meeting. EPA retains all decision-making authority and directs all community involvement activities—not the responsible parties.

The CIP also should describe the litigation process. Community involvement staff may choose to describe EPA interaction with DOJ and potential effects that litigation may have on the scope of community involvement activities. If litigation is pursued, the CIP will be amended to reflect the potential effects of litigation on community involvement activities. When referral for litigation is the initial enforcement action, the CIP should specify activities that are to be conducted during litigation to the extent known at that time.

Once a case is in court, only information that can be ascertained from court files will be available to the public. Agency statements about the case must be cleared with DOJ before issuance. The Office of Regional Counsel (ORC) team member will arrange for that clearance and consult with DOJ on statements concerning site status, such as investigations, risk assessments, and response work. The ORC is responsible for informing staff about consultations with DOJ.

### C.2.3 Potentially Responsible Party Involvement

The agency in charge of response actions will develop and carry out community involvement activities at enforcement-lead sites. PRPs may participate in community involvement activities only at the discretion of the Regional Office. PRPs do not develop the CIP. The Regional Office will oversee any PRP community involve-

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ment activities. PRPs may be involved in community involvement activities at sites where they are conducting a removal, RI/FS, RD/RA, or operation and maintenance. If a PRP will be involved in community involvement activities, the CIP should reflect that involvement. In these cases, the PRPs may wish to participate in public meetings or in the preparation of fact sheets that the agency must review before release to the public. The contents of press releases, however, will not be "negotiated" with PRPs.

The completed CIP should be provided to all interested parties and placed in the administrative record file and information repository. If the CIP is revised, the final revised copy should be made available to the public and placed in the administrative record file and information repository.

# C.3 ENFORCEMENT ACTIONS AND COMMUNITY INVOLVEMENT AT REMEDIAL SITES

## C.3.1 Introduction

Community involvement activities should be planned as early in the enforcement process as possible. Generally, this should occur before the issuance of a RI/FS special notice. Meetings with small groups of citizens, local officials and other interested parties are extremely helpful for sharing general information and resolving questions. These meetings may also serve to provide information on the agency's general enforcement process. The information repository and administrative record are sources from which the public may obtain information about the site, general Superfund process, and other agency materials. A detailed discussion of the relationship between the administrative record and information repositories can be found below in Section C.6.5 of this Appendix.

Litigation generally does not occur until after the remedy is selected. However, community involvement staff may need to explain early in the process that legal constraints on community involvement activities may apply during negotiations or litigation.

## C.3.2 Notice to Potentially Responsible Parties

Notice letters are used to inform PRPs of their potential liability and provide an opportunity for them to enter into negotiations. The list of PRPs should be provided to staff for inclusion on the site mailing list.

Well before the RI/FS starts, EPA usually sends an information request letter to PRPs about their activity at the site. "General notice" letters are then sent to PRPs advising them of possible liability. A "special notice" letter (SNL) will be sent to PRPs prior to the initiation of a RI/FS or RD/RA. The SNL begins a 60-day moratorium for the PRPs to submit a good faith offer stating that they are willing to do the work. After the close of the moratorium, the agency can choose to initiate work if it determines PRPs are acting in bad faith or are incapable of doing the work.

If a good faith offer is received, an additional 30 days are available for negotiating the RI/FS and 60 days for the RD/RA. A 30-day extension to the RD/RA moratorium can be granted by the Regional Administrator and a second 30-day extension by the Assistant Administrator for OSWER. In total, RI/FS negotiations may last 90 days and RD/RA can take 180 days. Detailed guidance on issuance of notice letters is discussed fully in the *Interim Guidance on Notice Letters, Negotiations, and Information Exchange* (OSWER Directive 9834.10).

In cases where EPA decides it is inappropriate to issue special notice letters, CERCLA §122(a) requires PRP notification in writing of this decision. The justification for not issuing the special notice must state why it was not appropriate to

enter into formal negotiations. This justification should be provided to all identified PRPs and to Administrative Record Coordinators (ARCs) for placement in the administrative record.

### C.3.3 Negotiations

The confidentiality of statements made during negotiations is a well-established principle of our legal system. Its purpose is to promote a thorough and frank discussion of the issues between the parties to resolve differences. Confidentiality not only limits what may be revealed publicly, but also ensures that offers and counter-offers made in the course of negotiations will not be used by one party against the other in ensuing litigation.

Negotiations about private party response actions or payment of cleanup costs are conducted in confidential sessions between the PRPs and EPA or the State. Special educational efforts should be made prior to the negotiation moratorium to warn the public that little information will be available to them during negotiations. Neither the public nor the technical advisor (if one has been hired by a community) may participate in negotiations between EPA, DOJ, and the PRPs unless all parties agree. Otherwise, the ability of the parties to assert confidentiality at some later date may be affected. Instead of direct participation by the public in negotiations, community involvement staff may wish to mail out a fact sheet on the Superfund enforcement process and the moratorium schedules for the specific site.

PRPs may be unwilling to negotiate without a guarantee of confidentiality. They may fear public disclosure regarding their personal liability and other sensitive issues that may damage their litigation position or standing in the community. This expectation of confidentiality restricts the type and amount of information that can be made public.

ORC staff should consult with and obtain the approval of other members of the technical and Regional Counsel team before releasing any information regarding negotiations. If the site has been referred or is in litigation, DOJ approval also should be obtained.

The public should be informed when agreements are reached (when AOCs are signed, UAOs are issued, and consent decrees are referred to DOJ, lodged, and entered by the court). A press release may be issued if a site mailing list has not yet been established. If a mailing list exists, notices can be sent at the time of the press release.

### C.3.4 Community Involvement Following a RI/FS Order

RI/FS settlements usually take the form of an AOC. When PRPs are not willing to cooperate, EPA (or a State that has its own legal authority) may issue a UAO. UAOs are a powerful enforcement tool to help facilitate settlement. Their most apparent use is to order PRPs to do the work.

EPA rarely issues UAOs for a RI/FS. This is because ordering a recalcitrant PRP to conduct studies that assess the nature and extent of contamination at a site can result in bad performance and slow the site cleanup. In cases where PRPs do not sign an AOC, EPA will normally fund the work and pursue cost recovery.

When the PRPs are conducting a RI/FS, the settlement triggers a “kick-off” meeting with the public to explain the AOC and outline the next steps. Community involvement, technical and legal staff should attend this meeting. Issues that should be clarified include EPA approval of the PRP’s work plan, PRPs performance of the RI/FS, and agency oversight of the PRP’s work. A fact sheet on the RI/FS process should be distributed at this meeting and sent to those on the site mailing list, including local officials. An announcement should be made about where the administrative record file will be located (see Handbook Section 5.4 and Toolkit Tab 21). The administrative record will include the detailed analysis of alternatives and all RI/FS information

the agency considered in selecting a final remedy. It should be used as a tool to facilitate public involvement in that selection.

While the RI/FS is being performed, CICs can involve the public in a number of ways. For example, small group discussions or workshops can be held to discuss the RI/FS. Fact sheets can be developed with the assistance of the RPM about progress at the site and sent to those on the site mailing list. The Technical Assistance Grant (TAG) program can be discussed, and interested groups encouraged to fill out applications (see Handbook Section 5.4 and Toolkit Tab 41).

When the RI/FS is completed, the agency will issue a proposed plan and publish a notice announcing a public comment period. At a minimum, the notice is to be published in a major local newspaper of general circulation. The notice should be a "display" advertisement rather than buried in the "legal notices" section. A formal comment period of at least 30 calendar days is to be provided for the public to submit oral and written comments. This comment period can be extended to 60 days upon request by the public.

An opportunity for a public meeting is required during the public comment period. A transcript of the meeting on the proposed plan is to be available to the public in the administrative record file, and may be distributed through the information repositories or upon request. See Handbook Appendix A for a complete outline of these specific public participation requirements and Toolkit Tab 32 for more on public meetings.

After the public comment period on the proposed plan has closed, a responsiveness summary is prepared. It provides lead agency decision-makers with information about community preferences on remedial alternatives and general concerns about the site. It also demonstrates to members of the public how their comments were considered during the decision-making process. A Record of Decision (ROD) is then issued as the final proposed plan for a particular site or operable unit at the site. Most NPL sites are divided into distinct areas, depending on the work to be conducted at each area and the physical characteristics of the overall site. For example, operable unit #1 may refer to soil cleanup, while operable unit #2 may be for groundwater cleanup.

Both the ROD and the responsiveness summary will be placed in the administrative record file and other information repositories. In addition, the responsiveness summary may be distributed to commenters and those on the site mailing list. See Handbook Appendix A and Toolkit Tabs 33 and 36 for further information on requirements for public notices and availability of the ROD and responsiveness summary.

### C.3.5 Public Notice and Comment on Consent Decrees for RD/RA

After publication of the ROD, the agency will attempt to reach agreement on a RD/RA under strict negotiation deadlines. PRPs often prefer to reach a negotiated settlement rather than be subject to the terms of a UAO.

When a negotiated settlement is reached, the proposed consent decree will be submitted to the U.S. District Court for approval, as required under CERCLA §122(d)(1). It is a legally binding agreement between the agency and the PRPs. In some cases, the State signs as a third party to the agreement. The delay between the time the consent decree is referred to DOJ and lodged with the court may be as long as several months. To let the public know of the agreement, a press release may be issued at this time announcing the settlement and its terms.

At the time DOJ lodges the consent decree with the court, a notice of the proposed agreement must be published in the *Federal Register*. There must also be a notice of a public comment period on the proposed consent decree before its entry by the court as a final judgment.

Responsible parties who are non-settlers to the agreement usually take this opportunity to raise

their own concerns. They may go so far as to file a court case to block entry of the consent decree. States may do likewise if they believe a consent decree does not protect their interests.

The public comment period must be at least 30 calendar days in length and may be extended upon request. The proposed consent decree may be withdrawn or modified if comments demonstrate that it is inappropriate, improper, or inadequate.

To ensure that public comment opportunities are extended to interested parties, agency staff may issue a second press release after the consent decree has been lodged as a proposed judgment with the court. For PRP-lead sites, DOJ should notify the Regional Counsel for the particular site and provide a copy of the *Federal Register* notice of the decree. Regional Counsel should ensure that technical and community involvement staff are informed of this.

Community involvement staff can then mail copies of the press release or copies of the *Federal Register* notice to persons on the site mailing list. The press release should indicate how copies of the consent decree document may be obtained, including its location and that of other relevant documents. The procedures for public comment on the consent decree and a contact name for obtaining further information also should be announced. The public notice and press release for the consent decree may be combined.

Communications with the public should focus on the remedial provisions of the settlement agreement. Details of the negotiations, such as the behavior, attitudes, or legal positions of PRPs, any compromises incorporated in the settlement agreement, evidence, or attorney work-products, must remain confidential.

Section 102 of OSWER Directive 9835.17, *U.S. EPA Model CERCLA RD/RA Consent Decree*, provides specific language about responsible party participation in community involvement:

> "Settling Defendants shall propose to EPA (and the State) their participation in the Community Involvement Plan to be developed by EPA. EPA will determine the appropriate role for the Settling Defendants under the plan. Settling Defendants shall also cooperate with EPA (and the State) in providing information regarding the Work to the public. As requested by EPA (or the State), Settling Defendants shall participate in the preparation of such information by dissemination to the public and in public meetings which may be held or sponsored by EPA (or the State) to explain activities at or relating to the Site."

During the formal comment period, a public meeting may be held. Agency staff must offer the opportunity for a public meeting when there are significant community issues or concerns or the site team thinks a meeting is prudent. If held during the public comment period, these meetings should be documented and significant oral comments received during the meeting addressed in a response to comments document on the consent decree.

Based on new information or because of technical difficulties in implementing a remedy, it may be necessary to amend the original ROD to justify a change in scope, performance, or cost of the final plan. If the changes do not fundamentally alter the remedy selected in the ROD, the agency must issue an explanation of significant differences and make the explanation and supporting information available to the public in the administrative record and information repository. A notice that briefly summarizes the significant differences and the reasons for them must be published in a major local newspaper of general circulation.

On rare occasions, a selected remedy may be found ineffective during the implementation phase. The agency will then propose a different remedy and amend the ROD. An amendment to a ROD requires a public comment period that should, if possible, coincide and be held jointly

with the comment period for the consent decree. See Handbook Section 5.10 for further discussion of post-ROD significant changes.

Once the public comment period on the proposed consent decree has closed, DOJ staff (in cooperation with EPA and State staff) will consider each significant comment and write a response. DOJ will then file a "Motion to Enter" the consent decree, response to comments, and comments received. The Motion to Enter the consent decree and response to comments are released to the public at the same time. The agency should use information repositories to make these documents available to the public. A third press release may be issued at this time announcing entry of the consent decree.

### C.3.6 Community Involvement During PRP Remediation

The lead agency retains responsibility for community involvement during a PRP-lead remediation that conforms with a consent decree or any enforcement order. The scope and nature of community involvement activities will be the same as for fund-lead response actions. When PRPs participate in community involvement activities at the site, EPA, State, and PRP roles need to be explicitly defined. A PRP may not have been involved in the initial stages of the CIP, but later may show sufficient interest, commitment, and capability to warrant some level of participation. The lead agency should then re-evaluate the PRP's role in conducting community involvement and a new CIP may be developed. PRP involvement in community involvement activities also may be addressed in the consent decree or other enforcement orders.

### C.3.7 Technical Discussions

Technical meetings are used to share technical information and provide an orientation to the enforcement process. One of the objectives in holding technical meetings is to explain how the remedy may or will (depending on whether a ROD has been signed) address the conditions of the site. Workshops exploring the approach to the site and project status can occur at any point up to and beyond remedy selection. If held during RI/FS or RD/RA negotiations, they should be separate from legal discussions. The RPM may host a technical discussion without PRP concurrence. However, willingness of the PRPs to participate may facilitate a more open and honest dialogue with the community.

Technical information must be documented and made available to the public in the administrative record file up to the signing of the ROD. Technical or factual information discussed during RI/FS negotiations also should be included in the administrative record file. Issues of liability, however, are not included in the administrative record file unless that liability information was relied upon for selecting the remedy.

Community groups may need assistance interpreting technical information on the nature of the contaminants, their relative risk, and alternatives for investigation and cleanup. EPA can provide Technical Assistance Grants (TAGs) to communities to hire their own consultants. See Handbook Section 5.4 and Toolkit Tab 41 for further discussion of these grants.

## C.4 COMMUNITY INVOLVEMENT DURING REMOVAL ACTIONS

Public participation during removal actions should be encouraged to the extent possible. However, there will be times when this participation may need to be constrained. The NCP, this Handbook, and removal guidance establish the community involvement and administrative record requirements for removal actions.

The enforcement program encourages PRPs to conduct or pay for removal actions where appropriate. The lead agency may arrive at an agreement with the PRPs to conduct a removal at any time, typically using an AOC. In the

absence of a negotiated agreement, EPA or the State (where they have the authority) may issue a UAO to a PRP to undertake a removal.

By their nature, situations that require emergency removals do not allow for extensive public involvement. Adjustments to the community involvement process must be made to accommodate time constraints. Community involvement requirements for removal actions are outlined in Handbook Chapter 6 and Appendix A. In general, the longer the planning period prior to on-site removal activities, the more extensive the community involvement requirements.

UAOs and AOCs are public documents available to the affected community through the administrative record file. In addition, community involvement staff should discuss the terms of the order and describe the removal action to citizens, local officials, and the media. If the PRP subsequently fails to respond to the order, public statements regarding future actions at the site should be cleared with appropriate technical and legal staff.

Community involvement activities during removals conducted by PRPs should be the same as for fund-financed removals. PRPs may participate in community involvement, subject to the considerations described in Section C.2.3 above.

# C.5 COMMUNITY INVOLVEMENT DURING SPECIFIC ENFORCEMENT ACTIONS AND SETTLEMENTS

## C.5.1 Mixed Funding, *De Minimis* and Cost Recovery Settlements

EPA is advocating an enforcement-first policy that maximizes the use of various settlement tools to increase the number of sites remediated using private resources. The use of mixed funding and *de minimis* agreements offer innovative approaches to the settlement process.

Mixed funding agreements are settlements whereby EPA settles with some of the PRPs for less than 100 percent of the response costs. The three types of mixed funding settlements are:

- **Preauthorization:** Settling PRPs agree to conduct the response action and EPA agrees to pay for part of the costs by approving, in advance, the basic elements of a claim for reimbursement. After completion of an agreed-upon amount of work, the PRPs may file their claim against the Fund.
- **Mixed Work:** PRPs conduct discrete portions of the response activity while the agency conducts the remainder.
- **Cash Outs:** Settling PRPs pay a portion of the response costs and the agency conducts the response action.

Characteristics of the site and PRPs may lend themselves to mixed funding settlements. In general, the best candidates for mixed funding are cases in which the PRPs offer a substantial portion of the total response costs and the agency has a strong case against financially viable non-settling PRPs.

In general, a PRP may be considered a *de minimis* contributor if the contribution of waste, by amount and toxicity, is minimal in comparison to other hazardous substances present at the site. Volume and toxicity information must be well-documented, and the settlement should involve a minor portion of the response costs. *De minimis* settlements may be reached with PRPs who meet the basic requirements of CERCLA §122(g)(1).

A PRP also can be a *de minimis* landowner if he did not conduct or permit the generation or handling of any hazardous substances on his property. He could assert that he did not contribute to the release of contamination at the site or had any knowledge of the generation, transporta-

tion, storage, treatment, or disposal of any hazardous substances at the time he purchased the property. This could ultimately be proven as a valid third-party innocent landowner defense.

*De minimis* settlements can be finalized through an administrative order on consent or consent decree. The first *de minimis* contributor and the first *de minimis* landowner settlements in each Region require Headquarters concurrence. Subsequent settlements require Headquarters consultation. DOJ concurrence is required for *de minimis* settlements at sites where total response costs exceed $500,000.

Cost recovery settlements or arbitration under CERCLA §122(h) are pursued to return revenues to the Trust Fund and encourage voluntary PRP response. The lead agency is required to publish a notice of the proposed mixed funding, *de minimis*, or cost recovery agreements in the *Federal Register*. The notices must identify the facilities concerned and the parties to the proposed settlements.

A public comment period of at least 30 days is required for all Federal consent decrees. Agency staff should provide notice, such as a press release, notice to persons on the site mailing list or an advertisement in a local newspaper of general circulation, to supplement the *Federal Register* notice. A press release should provide a contact for further information.

The agency must consider all comments filed and determine if the proposed settlement requires modification where comments demonstrate that the proposed agreement is inappropriate, improper, or inadequate. The final settlement and response to comments must be released at the same time to the public. This can be accomplished by placing both documents in the administrative record file. The responsiveness summary also should be sent to those who commented.

Settling PRPs will receive notice from the agency that the agreement will go into effect unchanged or that modifications are required. A statement that the responsiveness summary may be obtained from the administrative record file or upon request should be added to this notice.

### C.5.2 Injunctive Litigation

An injunctive case may be referred to DOJ for litigation at any point in the enforcement process, which may change the scope of community involvement activities. Community involvement activities at the site should be re-evaluated by the site team, and changes to accommodate confidentiality should be agreed upon by the site team, including DOJ. While consideration should be given to implementing the existing Community Involvement Plan, litigation may require changes in public disclosures. For example, the court may impose a gag order or place restrictions on information released during negotiations or at public meetings that address the site remedy. Under these circumstances, the DOJ attorney will advise the site team on how to proceed.

### C.5.3 Cost Recovery

Where a fund-financed cleanup is conducted, EPA may sue PRPs to recover costs. Cost recovery generally follows removal actions or the start of remedy construction. Community interest in the site may have lessened by this time unless other operable units remain to be addressed.

A spokesperson chosen by the site team, in coordination with DOJ, should take the lead in responding to inquiries regarding current site conditions. All inquiries regarding litigation should be forwarded to the lead agency cost recovery team, which will prepare a response, subject to the concurrence of DOJ.

### C.5.4 Interaction with RCRA and other Federal and State Laws

RCRA §3008(h), the interim status corrective action authority, allows EPA to take enforcement action to require cleanup at a RCRA interim status facility when the agency has information that there has been a release of hazardous waste or other contaminants. Two orders are frequently

used to implement the cleanup program. The first order requires the facility owner or operator to conduct a RCRA Facility Investigation/Corrective Measures Study (RFI/CMS), similar to the RI/FS. Once the remedy has been selected, a second order requires design, construction, and implementation of that remedy.

RCRA guidance outlines minimum public involvement requirements and suggestions on how to expand that involvement. In many ways the RCRA guidance uses procedures and ideas drawn from the Superfund community involvement program. Thus, coordination is useful between Superfund and RCRA staff at sites where actions under both CERCLA and RCRA are anticipated. Superfund CICs may want to become familiar with this guidance and with RCRA Public Involvement Coordinators to ensure that the agency presents a coordinated approach. Refer to OSWER Directive 9901.3, *Guidance for Public Involvement in RCRA Section 3008(h) Actions*, for specific information on RCRA actions taken under §3008(h).

Familiarity with other Federal or State laws, such as the Clean Air and Clean Water Acts, generally makes the role of the community involvement coordinator easier because many media often are represented at a hazardous waste site. A general knowledge of Federal or State requirements helps in conversing with the public.

# C.6 THE ADMINISTRATIVE RECORD AS PART OF COMMUNITY INVOLVEMENT

## C.6.1 Overview

CERCLA §113(k)(l) requires the establishment of an administrative record, which serves as the basis for selecting a remedy at a Superfund site. It also requires that a copy of the administrative record be made available to the public at a central location and a location at or near the site. §113(k)(2) requires EPA to outline procedures for interested persons to participate in developing the administrative record. Subpart I of the NCP details how the administrative record file (the incomplete record as it is being compiled) is assembled, maintained, and made available to the public. After the signing of the ROD, referencing the "file" is no longer necessary.

Throughout the decision-making process, from remedial investigation to selection of remedy, the administrative record file must be available for public inspection. The information in the record file is crucial to the public since it contains the information upon which the lead agency bases its decisions when selecting a final remedy. Community involvement staff should use the record file as a tool to facilitate public involvement.

Publicly available documents concerning remedy selection have to be available to all interested parties at the same time. Lead agency staff are required to provide opportunities to the public to review and comment on site information. For example, if the lead agency requests PRPs to review a plan, other local residents should review the plan as well. When a kick-off meeting is scheduled to explain the final work plan and obtain opinions, all members of the public, including residents and PRPs, should be invited.

Documents that contain confidential or privileged information that is considered or relied upon for selecting a response action should be placed only in the confidential portion of the administrative record file. To the extent feasible, the documents should be summarized in such a way as to be disclosable and the summary placed in the publicly available portion.

The administrative record file and CIP should be made available to the public no later than the initiation of the remedial investigation phase, which is usually when the RI/FS work plan is approved. The timing for establishing the administrative record file for a removal action depends

on the nature of the removal. According to NCP §300.820(a)(1), for removals with a planning period of at least six months before the start of on-site activities, the record file must be made available to the public when the engineering evaluation/cost analysis (EE/CA) or its equivalent is available for public comment. For removals with a planning period of less than six months, the record file must be available to the public no later than 60 days after the start of on-site cleanup.

### C.6.2 Purpose of the Administrative Record

The administrative record has two purposes. First, the record provides an opportunity for the public to be involved in the process of selecting a remedy for the site. During this process, information is reviewed and made available in the publicly accessible administrative record file. Second, if the lead agency is challenged concerning the adequacy of a response action, judicial review of that selection will be limited to the administrative record. This means that a court's review is based upon the same information that was before the lead agency at the time of its decision. The public should be advised that their comments have to be submitted in a timely manner to be considered.

### C.6.3 Community Involvement Coordinator Responsibilities for the Administrative Record

The OSC or RPM, in consultation with the Regional Counsel, is responsible for deciding which documents are to be included in the administrative record. The Administrative Record Coordinator (ARC) is responsible for its compilation and maintenance. The Regional Administrator or his designate is responsible for certification of the record for litigation. Community involvement staff will have some general duties in developing the record file, but every Region has defined different roles. In general, community involvement staff should focus on the relationship of the administrative record file to information repositories, public notices, and public comments.

Community involvement staff and administrative record staff should coordinate the location of the administrative record file and information repository. CERCLA requires that the administrative record be available to the public at or near the facility for public inspection and copying. If the information repository does not contain a copying facility, the Region or State may want to arrange for copying the record file. EPA is not required to copy the information for interested parties.

The notice of availability for the administrative record is to be published in a major local newspaper of general circulation. A copy of that public notice is to be placed in the record file and may also be made available to the public through the community involvement mailing list (see Section C.6.1 for a discussion of when the administrative record file must be made available to the public). This notice may be combined with other notices of availability depending on the timing of activity at a site. Note that the public is not notified each time a document is added to the record file.

Notices should be coordinated between community involvement and administrative record staffs to use resources most efficiently. For a more complete discussion of the notice of availability, consult OSWER Directive 9833.3A-1, *Final Guidance on Administrative Records for Selecting CERCLA Response Actions*.

The completed CIP is to be placed in the administrative record file. Community involvement staff should advise the Administrative Record Coordinator that the CIP is final and provide a copy.

Information in records of communication generated by the community involvement staff that are considered or relied on in selecting the response action should be included in the record file. In addition, community involvement staff should take appropriate steps to ensure that community involvement documents required to be placed in the administrative record file are provided to the Regional official responsible for the record file.

The text of all comments submitted during the public comment period by the public, including PRPs, should be included in the record file. Responses to all significant comments (in the responsiveness summary) must also be placed in the administrative record file. The responses may be combined by subject or other category.

The record file should reflect the agency's consideration of all significant public comments. The agency may notify commenters that comments submitted prior to a formal public comment period must be resubmitted or specifically identified during the public comment period to receive formal response by the agency. Alternatively, the agency may notify a commenter that the agency will respond to the comment in a responsiveness summary prepared at a later date. The agency, however, has no duty to respond to any comments received before the formal comment period or to respond to comments received during the public comment period until the close of the public comment period.

Comments received after the formal comment period closes but before the ROD is signed should be included in the record file and labeled as a "late comment." Since a responsiveness summary may already have been prepared at this point, the agency will respond to late comments only if they contain significant new information that could not have been submitted during the public comment period. This new information would have to substantially support a need to significantly alter the remedy selected.

Comments received after the ROD is signed should be placed in a post-decision document file. They may be added to the administrative record if the documents are relevant to the selection of the remedy that the ROD does not address. In addition, these comments may be added to the administrative record if there is a significant change in a remedy selection that is addressed by an explanation of significant differences or in an amended decision document. The guidance on administrative records cited above gives additional information in this regard.

### C.6.4 Other Community Involvement Coordinator Responsibilities

Because of Regional differences, community involvement staff may have other responsibilities, including:

- Assessing the impact of the administrative record file on local information repositories (e.g., because of its volume) by consulting with officials at the repositories. This should be done with the Administrative Record Coordinator. CICs and ARCs will need to cooperate on space issues, shelving, microfilming, and housekeeping chores.
- Providing the ARC with information on methods used to notify the public of the availability of the record file. Such methods include announcements in public meetings, workshops, small group discussions, fact sheets sent to the site mailing list, and local newspapers announcing public comment periods and other public notices.
- Making the transcript of the local meeting on the proposed plan available, as required under CERCLA §117(a).
- Providing assistance to the ARC to ensure that final comments made by EPA on important documents generated by the State or a Federal facility are documented in writing and included in the administrative record file. States and Federal facility staff will compile and maintain the record files for their own sites.

All staff involved in Superfund activities should acquaint themselves with the administrative record requirements.

### C.6.5 Relationship Between the Administrative Record and Information Repositories

SARA §113(k)(l) requires that the administrative record be made available to the public at or near

The most current version of this publication is available at www.epa.gov/superfund

the facility. Duplicates of the administrative record may be placed at any other location. The original files concerning remedy selection should be located at the EPA Regional Office. A copy of these files must be located at or near the site except in the case of emergency removal actions lasting less than 30 days. In those situations the record may be at a central location such as the EPA Regional Office.

SARA §117(d) requires that each item developed, received, published, or made available to the public be accessible for viewing and copying at or near the facility. These items are generally included in the information repository.

The administrative record file should be located at one of the information repositories that already may exist for community involvement purposes. The information repository, maintained by community involvement staff, may contain additional information of interest to the public that is not part of the record file, such as press releases and newspaper articles. Documents in the record file should be separated from materials in the information repository.

Local libraries, town halls, and public schools are typically used for repositories and administrative record files because they are publicly accessible. In some instances, the volume of information available for community involvement and administrative record purposes may be larger than the capacity of these facilities. Where space for the information repository is inadequate for supporting the administrative record file, an alternate location for the record file may be established. ARCs and CICs should also consider converting documents to microfilm to reduce space problems.

ARCs should estimate the volume of information expected to be included in the repository and meet with appropriate local officials to discuss space requirements. When separate locations are established, ARCs and CICs should ensure uniformity of the documents. In this context, CICs should carefully review their responsibilities for the administrative record (see Sections C.6.3 and C.6.4).

Each administrative record file must be indexed. This index identifies all the documents that comprise the record file and lists those documents that do not have to be present in the record file because of their voluminous nature (raw data for example), but which are considered part of the record. The index will give the location of such documents. Since the index is part of the record file, it must be available at each location.

Finally, interested parties should be able to easily find the documents they need. Documents in the administrative record file should be well organized. Following initiation of the response action, public interest in background information other than the ROD or RI/FS may wane. However, the statutory provisions for judicial review and deadlines for filing cost recovery actions are reasons to keep the record file publicly available.

Where there is ongoing or possible litigation, the record file in the Regional Office or other central location should be available at least until the litigation is over.

Community involvement and administrative record staff should coordinate with the State in closing information repositories and record files at the end of operation and maintenance and following a five-year review. The record file continues to serve as a historical record of the response selection, even after the statute of limitations for cost recovery action has passed. Where there is considerable public interest, making the record file available for public viewing in the local repository is advisable.

# Appendix C
# Excerpts from the 2010 Defense Environmental Programs Annual Report to Congress

# FY10 Defense Environmental Programs Annual Report to Congress

## Final Report

July 2011

Prepared by the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics

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# Executive Summary

Each year, the Department of Defense (DoD) submits an annual report to Congress on its Defense Environmental Programs. The Report describes DoD's Conservation, Compliance, Pollution Prevention, and Restoration Programs' accomplishments during the past year. Through these programs, DoD works to protect human health, sustain the resources it holds in the public trust, meet its environmental requirements, and support the military mission.

This is the Fiscal Year (FY) 2010 Defense Environmental Programs Annual Report to Congress (DEP ARC). It outlines how DoD used Congressional funding to meet its environmental program goals in FY10. The FY10 DEP ARC provides a comprehensive review of the Department's environmental programs and illustrates its budget trends from FY06 to FY12. In FY10, DoD obligated approximately $4.5 billion in resources for environmental activities. This report fulfills multiple statutory requirements, including 10 United States Code §2706.

The FY10 DEP ARC includes these chapters and significant FY10 achievements:

- **Defense Environmental Funding:** DoD successfully fulfills its environmental responsibilities through effective program management and appropriate funding. In FY10, DoD obligated approximately $4.5 billion for its environmental programs. This is six percent higher than the previous year.
- **Natural Resources:** DoD's Natural Resources Program provided over $161 million to develop and implement Integrated Natural Resource Management Plans (INRMPs). The percentage of installations with complete INRMPs increased from 74 percent in FY09 to 78 percent in FY10.
- **Cultural Resources:** More than 20,000 National Register-listed and eligible properties and over 100,000 archaeological sites exist on DoD lands. The percentage of installations with completed Integrated Cultural Resource Management Plans increased from 81 percent in FY09 to 87 percent in FY10.
- **Compliance:** DoD's Compliance Program received $1.5 billion in FY10. It provided safe drinking water to 97 percent of DoD's population in the first half of calendar year (CY) 2010 and increased compliant water pollution control permits from 92 percent in FY09 to 93 percent in the first half of CY10. DoD also decreased total fines and penalties assessed by 85 percent in FY10.
- **Pollution Prevention:** DoD's Pollution Prevention Program received $91.2 million in FY10. The Program diverted 43 percent of non-hazardous municipal solid waste and saved $180.9 million using integrated solid waste management practices in FY10. It also reduced hazardous waste disposal by over 6,300 tons in CY09.
- **Restoration:** In FY10, DoD invested $1.6 billion at active installations and Formerly Used Defense Sites. It also invested $666.7 million at Base Realignment and Closure (BRAC) installations to correct environmental damage. In FY10, the Restoration Program achieved remedy in place / response complete status at 86 percent of its Installation Restoration Program (IRP) sites on active installations and at 87 percent of IRP sites on Legacy BRAC and BRAC 2005 installations. The Program also achieved its goal by completing site inspections at 97 percent of munitions response sites on active installations by FY10.

To view the FY10 report online or to access other editions of the DEP ARC, please visit: *http://www.denix.osd.mil/arc*

# 1 Defense Environmental Funding

The Department of Defense (DoD) funds its environmental programs through effective planning, programming, budgeting, and execution processes that allocate financial resources where they are needed. These budget and review processes ensure that the DoD Components—Army, Navy, Marine Corps, Air Force, and the Defense agencies—identify and request adequate funding to meet their mission, legal, and regulatory environmental requirements.

The DoD Components build their Environmental Restoration budgets from the site level, but they develop their Natural and Cultural Resources, Compliance, and Pollution Prevention budgets from the installation level. These site- and installation-level estimates form the basis of the environmental budget, which is included in the overall Defense budget the President submits to Congress.

Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

### Defense Environmental Funding at a Glance

Fiscal Year (FY) 2010 Funding:
**$4.5 billion** obligated

FY10 Funding Highlights:

- Increased by **$251.9 million** between FY09 and FY10
- Estimated **$4.2 billion** for environmental programs in FY11
- Requested **$4.2 billion** for environmental programs in FY12

## Program Summary

Here is how the Department of Defense (DoD) obligated approximately $4.5 billion among the following six environmental programs in FY10 (Figure 1-1):

- $437.4 million for Natural and Cultural Resources
- $1.5 billion for Compliance
- $91.2 million for Pollution Prevention
- $1.6 billion for Environmental Restoration (ER) at active installations and Formerly Used Defense Site (FUDS) properties
- $666.7 million for environmental activities at Base Realignment and Closure (BRAC) installations
- $255.8 million for Environmental Technology

Although all of DoD's environmental programs work toward the same goal—maintaining readiness while protecting human health and the environment—each program has a unique focus and different funding needs. Despite annual funding fluctuations within the different program areas, the Department's level of investment remains stable.

This report shows funding for both nonrecurring (i.e., one-time projects) and recurring activities. Recurring activities include routine tasks that an installation conducts in support of its environmental programs such as:

- Manpower
- Education and training
- Permits and fees
- Sampling, analysis, and monitoring
- Travel and supplies
- Data management and reporting
- Waste disposal
- Updates to environmental management plans

## Funding Appropriations for Environmental Programs

DoD funds its various environmental programs from eight funding appropriations (Figure 1-2):

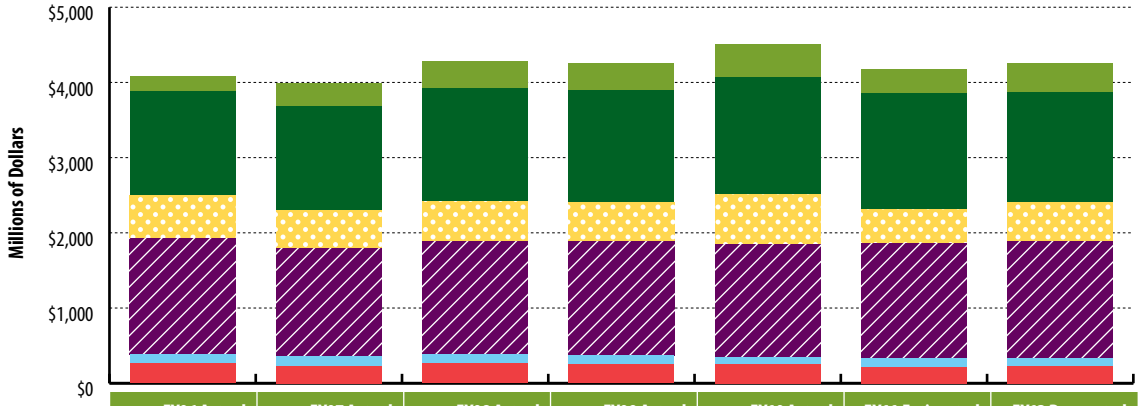
- BRAC
- ER
- Defense Working Capital Fund (DWCF)
- Military Construction (MilCon)
- Operations and Maintenance (O&M)
- Procurement (PROC)
- Research, Development, Testing, and Evaluation (RDT&E)
- Other DoD Appropriations

Most funding for DoD's Natural and Cultural Resources, Compliance, and Pollution Prevention Programs comes from the O&M appropriations in the DoD Appropriations Act. DoD also uses funds obtained through the MilCon, Military Quality of Life, and Veteran's Affairs Appropriations Acts to build necessary facilities like wastewater treatment plants. Other notable DoD Appropriations Act funding includes PROC, RDT&E, and the DWCF.

Special programs also provide funding for natural resources management through the sale of forest products, the lease of land for agriculture and grazing, and the sale of licenses for hunting, fishing, and trapping.

The Compliance Program (and to a lesser degree, the Natural and Cultural Resources and Pollution Prevention

**Figure 1-1** DoD Environmental Funding by Program Area*

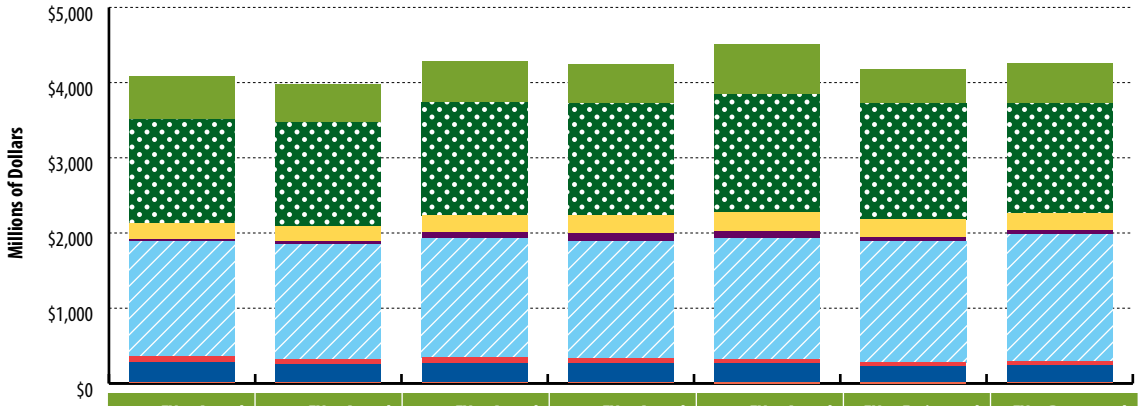



| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Natural and Cultural Resources | $204.1 | $299.6 | $352.8 | $350.0 | $437.4 | $325.4 | $379.8 |
| ER† | $1,376.7 | $1,383.0 | $1,508.2 | $1,494.2 | $1,564.9 | $1,539.4 | $1,467.3 |
| BRAC | $573.5 | $512.5 | $538.9 | $526.5 | $666.7 | $457.8 | $520.8 |
| Compliance | $1,542.5 | $1,430.8 | $1,494.2 | $1,513.2 | $1,492.4 | $1,529.4 | $1,550.6 |
| Pollution Prevention | $125.2 | $130.2 | $121.3 | $114.4 | $91.2 | $114.8 | $104.2 |
| Environmental Technology | $261.3 | $227.8 | $263.6 | $252.5 | $255.8 | $213.2 | $226.8 |
| **Total** | **$ 4,083.3** | **$3,983.9** | **$4,279.0** | **$4,250.8** | **$ 4,508.4** | **$ 4,179.9** | **$ 4,249.5** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Includes funding for FUDS properties.

**Figure 1-2** DoD Environmental Funding by Appropriation (Includes Environmental Technology)*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| BRAC | $573.5 | $512.5 | $538.9 | $526.5 | $666.7 | $457.8 | $520.8 |
| ER† | $1,376.7 | $1,383.0 | $1,508.2 | $1,494.2 | $1,564.9 | $1,539.4 | $1,467.3 |
| DWCF | $207.8 | $199.3 | $217.6 | $227.3 | $250.8 | $242.5 | $231.5 |
| MilCon | $37.7 | $43.2 | $82.9 | $117.3 | $94.3 | $47.5 | $53.9 |
| O&M | $1,530.9 | $1,525.2 | $1,585.5 | $1,554.3 | $1,611.6 | $1,614.7 | $1,679.8 |
| PROC | $74.6 | $68.7 | $68.5 | $61.6 | $52.2 | $55.0 | $55.1 |
| RDT&E | $268.8 | $240.1 | $265.2 | $256.9 | $254.6 | $208.4 | $228.7 |
| Other | $13.2 | $11.9 | $12.2 | $12.6 | $13.4 | $14.5 | $12.4 |
| **Total** | **$4,083.3** | **$3,983.9** | **$4,279.0** | **$4,250.8** | **$4,508.4** | **$4,179.9** | **$4,249.5** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Includes funding for FUDS properties.

Programs) includes funding for environmental activities at overseas installations. This funding includes activities such as those required to comply with existing treaties, laws, and other agreements (i.e., Final Governing Standards). DoD also funds activities within the Defense Environmental Restoration Program through the ER and BRAC accounts. The ER accounts also fund cleanup activities at active installations and FUDS properties within the United States and its territories. Separate BRAC appropriations fund cleanup activities at closing installations and address closure-related environmental cleanup, planning, and compliance activities. The Department funds restoration activities outside the United States through the Compliance Program.

## Natural and Cultural Resources

*During FY10, DoD invested:*

- ***$437.4 million*** *for natural and cultural resources*
- ***$87.4 million*** *more compared to FY09*

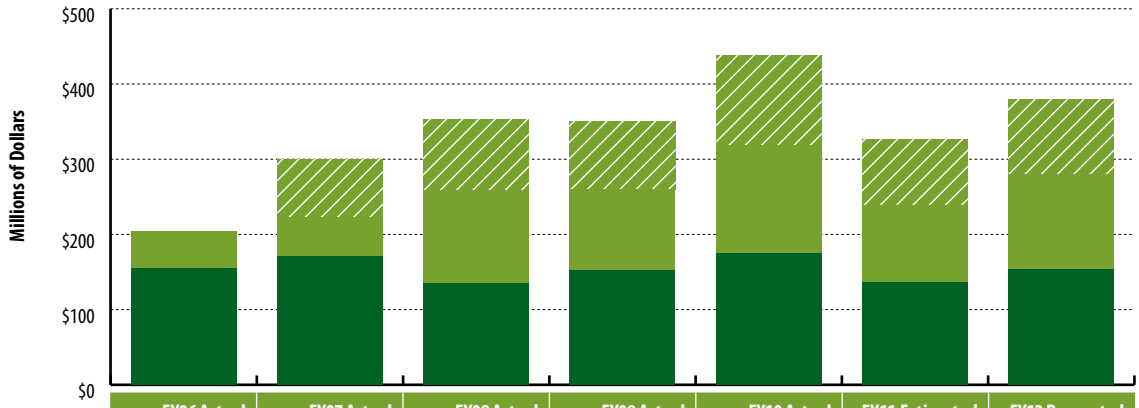
DoD conserves, protects, and restores natural and cultural resources located on and near its installations, which also enhances and protects the military's mission. Recurring funds for the Natural and Cultural Resources Programs finance continuous management activities, such as:

- Preparing, implementing, and updating integrated natural and cultural resources management plans
- Coordinating with conservation regulatory agencies
- Monitoring threatened, endangered, and at-risk species
- Continuing protection of archaeological sites
- Controlling invasive species
- Ongoing erosion control measures
- Completing surveys, inventories, and monitoring requirements

Nonrecurring activities are divided into two subcategories: natural resources, and historical and cultural resources. Examples of nonrecurring natural resources activities include:

- Consultation activities under the Endangered Species Act
- Mitigation for specific actions
- Habitat restoration or creation
- Volunteer and partnering programs
- Wetlands protection
- Projects identified in Integrated Natural Resources Management Plans

**Figure 1-3** DoD Natural and Cultural Resources Recurring and Nonrecurring Funding*

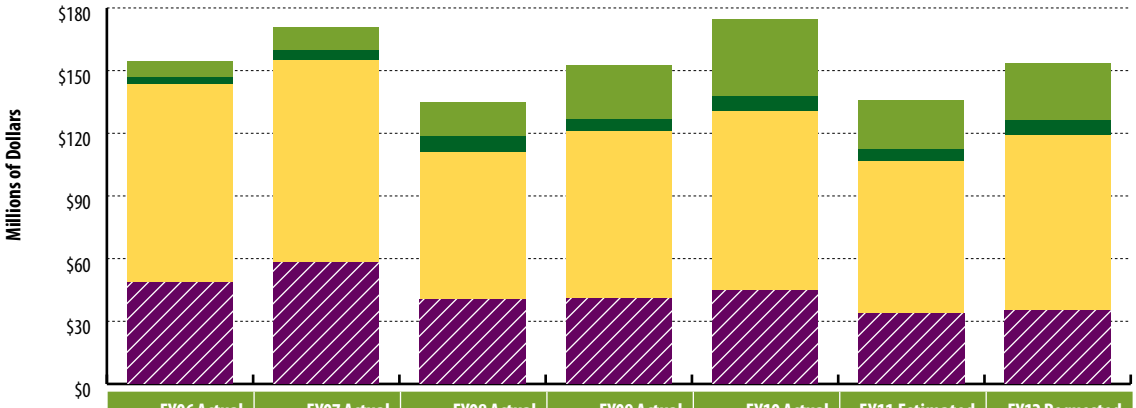



| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Manpower and Education & Training† | $0.0 | $77.0 | $93.4 | $89.9 | $118.6 | $87.3 | $99.2 |
| Recurring (excluding Manpower and Education & Training) | $49.7 | $51.7 | $124.4 | $107.3 | $144.4 | $102.1 | $127.1 |
| Nonrecurring | $154.4 | $170.9 | $135.0 | $152.8 | $174.4 | $136.0 | $153.4 |
| **Total** | **$204.1** | **$299.6** | **$352.8** | **$350.0** | **$437.4** | **$325.4** | **$379.8** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

**Figure 1-4** DoD Natural and Cultural Resources Nonrecurring Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Threatened & Endangered Species | $7.5 | $11.0 | $16.5 | $26.1 | $36.9 | $23.8 | $27.4 |
| Wetlands | $3.6 | $4.7 | $7.7 | $5.9 | $7.0 | $5.3 | $6.9 |
| Other Natural Resources | $94.6 | $97.1 | $70.6 | $80.0 | $85.8 | $73.2 | $84.0 |
| Cultural Resources | $48.7 | $58.1 | $40.2 | $40.8 | $44.8 | $33.6 | $35.1 |
| **Total** | **$154.4** | **$170.9** | **$135.0** | **$152.8** | **$174.4** | **$136.0** | **$153.4** |

* Due to rounding, subtotals may not equal fiscal year totals.

Examples of nonrecurring cultural resources are:

- Baseline inventories of historic buildings
- Initial archaeological materials curation
- Consultations with Native American groups
- Projects identified in Integrated Cultural Resources Management Plans

The DoD Components obligated $437.4 million for natural and cultural resources in FY10, $87.4 million more than FY09 (Figure 1-3). More than 39 percent of these funds was for nonrecurring, one-time projects. The funding growth that occurred between FY09 and FY10 was mostly due to additional Army recurring activities. However, funding decreased in FY11 because of a reduction in Army activities. DoD Components have requested $379.8 million for FY12 due to an increase in Army recurring efforts and overall increases at the Department of the Navy and the Readiness and Environmental Protection Initiative (REPI) Program.

DoD budgeted $36.9 million in FY10 funding to protect and manage threatened and endangered species in compliance with the Endangered Species Act (Figure 1-4).

Chapters 2 and 3 describe the Department's performance within the Natural and Cultural Resources Programs, respectively. Appendix D, Section 1 contains Natural and Cultural Resources funding data by DoD Component.

## Compliance

*During FY10, DoD invested:*

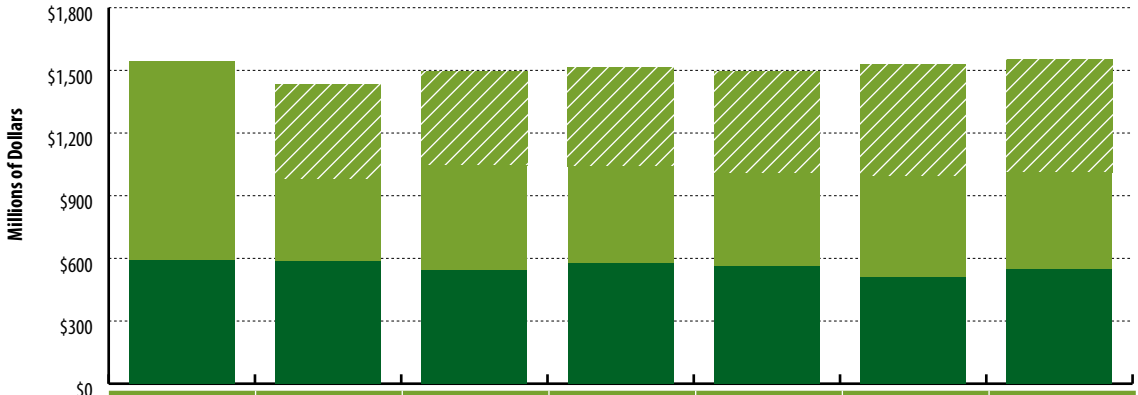
- ***$1.5 billion*** *for compliance activities*
- ***$20.8 million*** *less compared to FY09*

DoD uses these resources to fund recurring and nonrecurring compliance activities. The Department must perform recurring activities because they are essential for DoD to comply with federal, state and local environmental laws and regulations.

Recurring compliance activities include:

- Sampling and analysis of discharges to air and water
- Maintaining permits for regulated environmental activities
- Disposing of regulated wastes
- Maintaining and submitting required environmental plans and reports
- Conducting environmental self-assessments and audits

**Figure 1-5** DoD Compliance Recurring and Nonrecurring Funding*

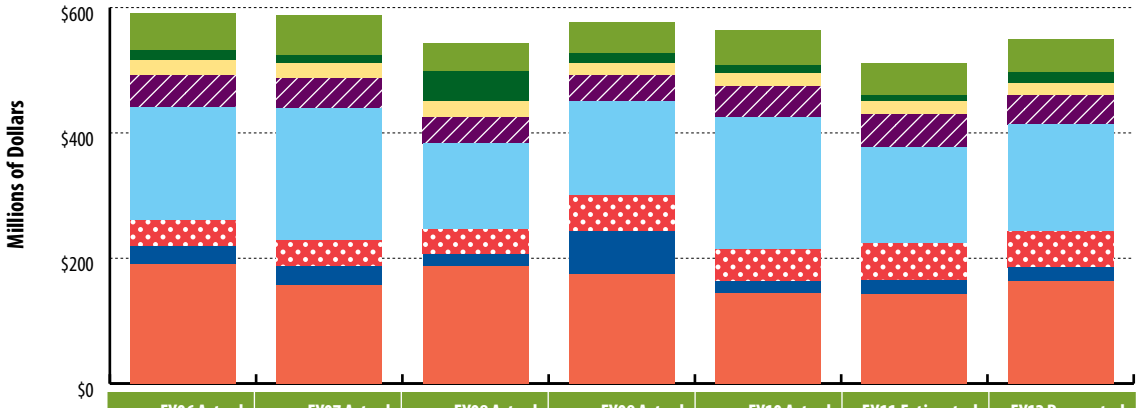



| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Manpower and Education & Training† | $0.0 | $454.4 | $450.3 | $473.5 | $485.7 | $537.8 | $541.0 |
| Recurring (excluding Manpower and Education & Training) | $951.2 | $388.1 | $499.9 | $462.8 | $443.0 | $479.8 | $460.4 |
| Nonrecurring | $591.3 | $588.4 | $544.0 | $576.9 | $563.8 | $511.7 | $549.3 |
| **Total** | **$1,542.5** | **$1,430.8** | **$1,494.2** | **$1,513.2** | **$1,492.4** | **$1,529.4** | **$1,550.6** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Beginning in FY07, DoD reported Manpower and Education & Training funds under the appropriate program areas.

**Figure 1-6** DoD Compliance Nonrecurring Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Hazardous Waste | $60.0 | $64.8 | $46.0 | $50.1 | $56.1 | $51.4 | $52.6 |
| Solid Waste | $15.4 | $12.2 | $48.4 | $15.8 | $13.0 | $9.8 | $17.2 |
| Underground Storage Tanks | $24.6 | $24.5 | $25.8 | $19.4 | $21.0 | $20.4 | $19.5 |
| Clean Air Act | $49.8 | $47.4 | $40.7 | $40.8 | $48.9 | $52.8 | $46.0 |
| Clean Water Act | $181.8 | $211.1 | $137.7 | $150.9 | $211.1 | $154.1 | $170.9 |
| Planning | $40.5 | $42.3 | $38.2 | $56.8 | $50.9 | $57.8 | $57.7 |
| Safe Drinking Water Act | $28.4 | $28.9 | $20.3 | $68.6 | $18.5 | $23.0 | $21.9 |
| Other | $190.7 | $157.3 | $186.9 | $174.5 | $144.4 | $142.3 | $163.6 |
| **Total** | **$591.3** | **$588.4** | **$544.0** | **$576.9** | **$563.8** | **$511.7** | **$549.3** |

* Due to rounding, subtotals may not equal fiscal year totals.

DoD also uses these resources to fund nonrecurring compliance activities such as projects to upgrade wastewater treatment facilities or to install air pollution controls to meet existing standards.

DoD obligated $1.5 billion for the Compliance Program in FY10 (Figure 1-5), consistent with previous years. In FY10, Defense Logistics Agency military construction projects at Point Loma Annex and Jacksonville International Airport contributed to a $60.2 million net increase in CWA funding (Figure 1-6). However, the Department decreased nonrecurring funds for other compliance activities (e.g., radon and asbestos investigations and mitigation, spill response plans, action to prevent pollution from ships, and addressing munitions constituents on operational ranges). In FY08, DoD increased solid waste funding for Marine Corps military construction projects—like the landfills at Camp Lejeune and Twentynine Palms. Also, Safe Drinking Water Act funding more than tripled in FY09 because of a military construction project at Camp Pendleton.

Chapter 4 describes DoD's performance within the Compliance Program. Appendix D, Section 1 contains Compliance funding data for each DoD Component.

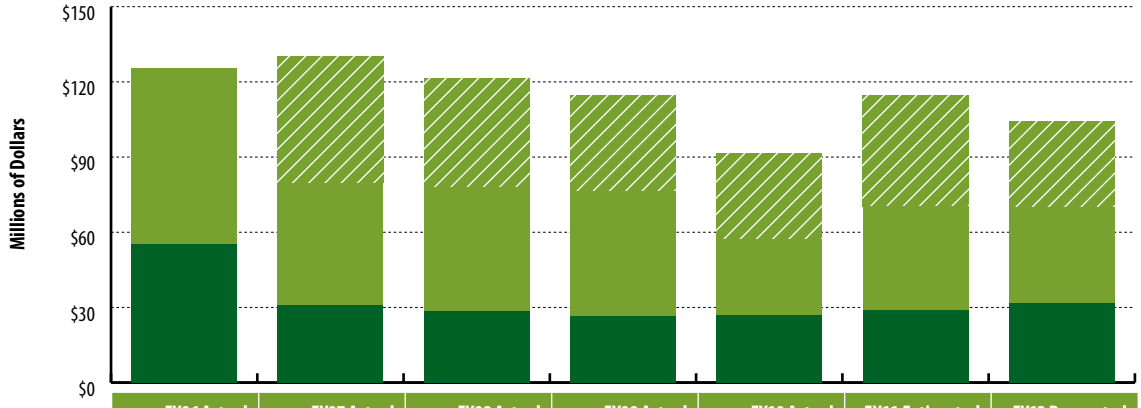
## Pollution Prevention

*During FY10, DoD invested:*

- ***$91.2 million*** *for pollution prevention activities*
- ***$23.1 million*** *less compared to FY09*

DoD employs pollution prevention efforts to both minimize health and safety risks to its personnel and the residents of nearby communities, and to reduce its operating and compliance costs. The Pollution Prevention Program also enhances the military's operating capacity by minimizing the infrastructure required to manage hazardous materials used in support of the Department's mission. As a result, DoD's pollution prevention investments have the potential to reduce costs Department-wide.

**Figure 1-7** DoD Pollution Prevention Recurring and Nonrecurring Funding*

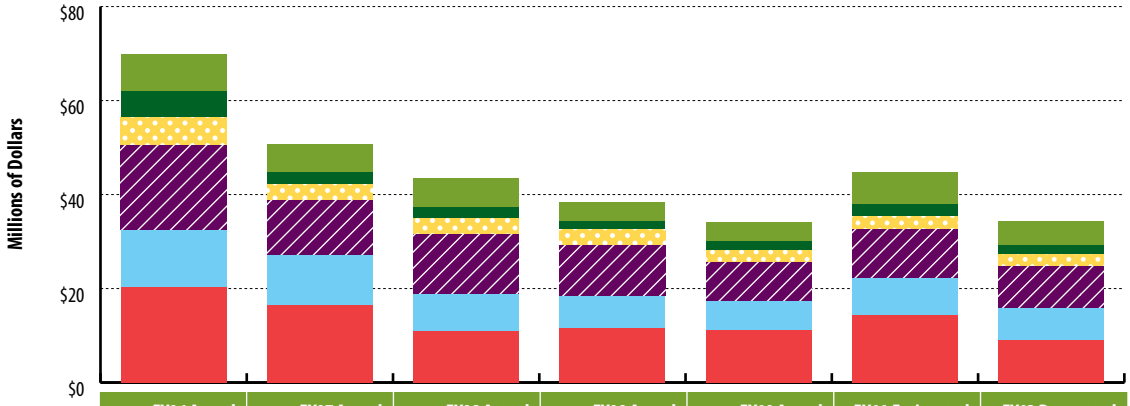



| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Manpower and Education & Training† | $0.0 | $31.1 | $28.5 | $26.5 | $26.9 | $29.0 | $31.7 |
| Recurring (excluding Manpower and Education & Training) | $55.4 | $48.6 | $49.4 | $49.7 | $30.2 | $41.1 | $38.4 |
| Nonrecurring | $69.8 | $50.5 | $43.3 | $38.3 | $34.2 | $44.6 | $34.1 |
| **Total** | **$125.2** | **$130.2** | **$121.3** | **$114.4** | **$91.2** | **$114.8** | **$104.2** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

**Figure 1-8** DoD Pollution Prevention Nonrecurring Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Hazardous Waste | $7.8 | $5.8 | $6.0 | $3.9 | $4.1 | $6.8 | $4.9 |
| Solid Waste | $5.5 | $2.6 | $2.5 | $1.8 | $1.8 | $2.5 | $2.0 |
| Clean Air Act | $6.1 | $3.5 | $3.4 | $3.3 | $2.7 | $2.9 | $2.5 |
| Clean Water Act | $17.8 | $11.7 | $12.6 | $10.8 | $8.3 | $10.3 | $9.1 |
| HazMat Reduction | $12.3 | $10.5 | $8.0 | $6.9 | $5.9 | $7.8 | $6.6 |
| Other† | $20.2 | $16.5 | $10.9 | $11.6 | $11.2 | $14.4 | $9.1 |
| **Total** | **$69.8** | **$50.5** | **$43.3** | **$38.3** | **$34.2** | **$44.6** | **$34.1** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Includes Safe Drinking Water Act.

Recurring pollution prevention investments include:

- Manpower
- Education and Training
- Supplies
- Travel
- Data Management
- Toxics Release Inventory
- Other reporting activities

Hazardous material reduction and CWA requirements are the priorities within the nonrecurring budget. These nonrecurring projects are significant drivers in reducing compliance costs. Other nonrecurring activities may include efforts to prepare and implement an acquisition strategy for alternative-fuel vehicles (excluding vehicle purchases or leases) and to convert regular vehicles to use alternative fuels.

DoD obligated $91.2 million for the Pollution Prevention Program in FY10 (Figure 1-7), a 20 percent decrease from the previous year. This decrease is due to fewer Army, Navy, and Air Force recurring requirements. The FY11 funding estimate increased to $114.8 million primarily because of an influx in Army and Navy recurring and Air Force recurring and nonrecurring activities.

The funding request of $104.2 million for FY12 will continue to support efforts that target hazardous materials, solid waste, toxic releases, air emissions, and water pollution at the source. These activities are part of DoD's overall sustainability strategy, recognizing that significant cost savings and beneficial environmental outcomes can result from such endeavors.

Chapter 5 describes the Department's performance within the Pollution Prevention Program. Appendix D, Section 1 contains Pollution Prevention funding data by DoD Component.

## Restoration

*During FY10, DoD invested:*

- ***$1.6 billion*** *in ER funding for environmental restoration activities at active installations and FUDS properties*
- ***$666.7 million*** *for environmental activities at closing installations under BRAC*

Of the $2.2 billion obligated for restoration activities, $1.6 billion funded cleanup of hazardous substances and pollutants or contaminants from past DoD activities through the Installation Restoration Program (IRP). The Military Munitions Response Program (MMRP) funded $460.2 million for the cleanup of unexploded and discarded munitions. The remaining obligations funded planning and compliance activities at BRAC installations.

### ER Account Funding

The ER accounts fund environmental restoration activities at active installations and FUDS properties. In FY10, $1.6 billion was obligated for ER activities.

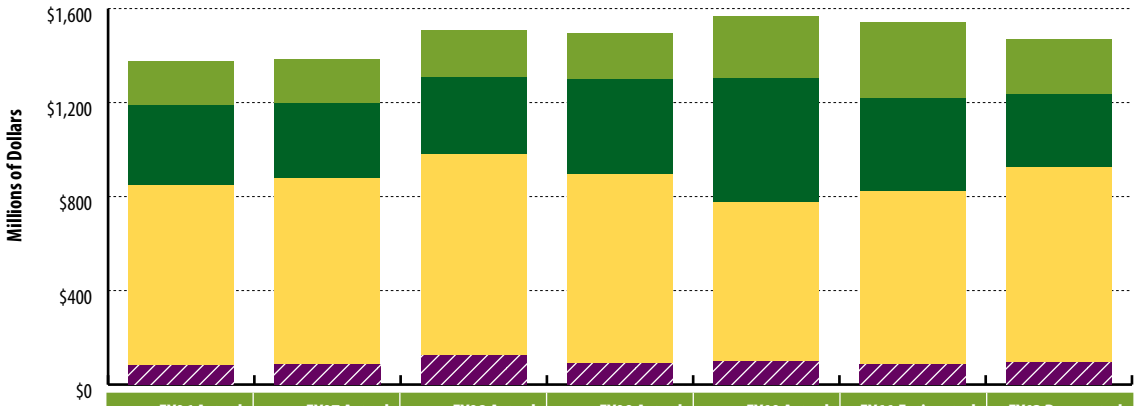
DoD continues to invest a significant portion of ER funding in cleaning up its remaining sites. The amount of ER funding dedicated to cleanup increased from $677.2 million in FY10 to $737.4 million in FY11 and increases to $833.9 million in FY12 (Figure 1-9).

DoD addresses both the IRP and the MMRP in the Defense Environmental Restoration Program. As shown in Figure 1-10, funding for these two programs remains relatively stable.

Of the $1.6 billion obligated for ER activities in FY10, $1.1 billion funded restoration activities under the IRP. The remaining $416.0 million funded restoration under the MMRP (Figure 1-10). New requirements for addressing emerging contaminants (e.g., perchlorate, naphthalene, and 1, 4-dioxane) also drive investments in cleanup. DoD will continue to modify its plans and programs to address these challenges and adjust total cleanup cost-to-complete estimates accordingly.

Chapter 6 describes the Department's performance within the Restoration Program. Appendix D, Section 1 contains ER funding data by DoD Component.

**Figure 1-9** DoD ER Funding by Cleanup Phase*†



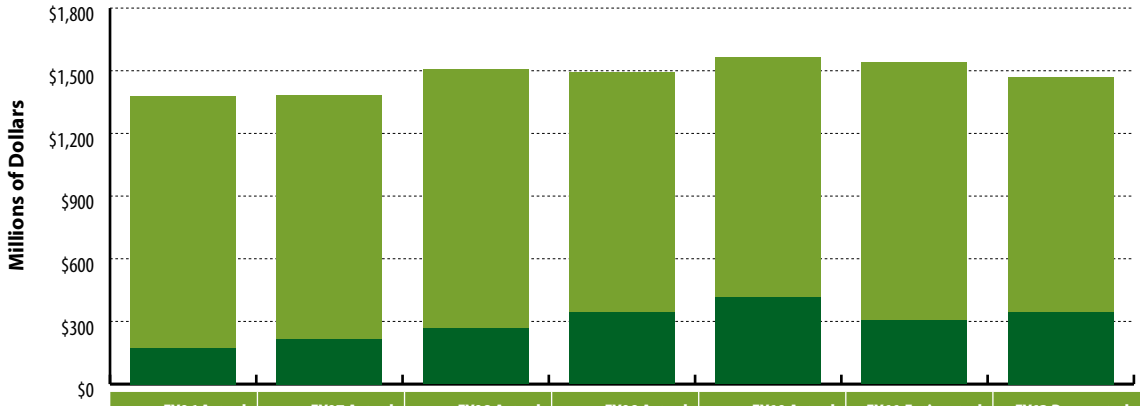

| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Management | $186.5 | $186.1 | $201.7 | $195.9 | $260.3 | $319.6 | $230.8 |
| Investigation | $339.7 | $319.2 | $325.3 | $404.3 | $528.9 | $398.2 | $309.5 |
| Cleanup‡ | $769.6 | $793.0 | $858.1 | $805.7 | $677.2 | $737.4 | $833.9 |
| Long-term Management | $80.9 | $84.7 | $122.9 | $88.3 | $98.4 | $84.2 | $93.3 |
| **Total** | **$1,376.7** | **$1,383.0** | **$1,508.0** | **$1,494.2** | **$1,564.9** | **$1,539.4** | **$1,467.3** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Includes funding for FUDS properties.

‡ Includes funding for Building Demolition/Debris Removal (BD/DR) sites.

**Figure 1-10** DoD ER IRP† and MMRP Funding‡ *



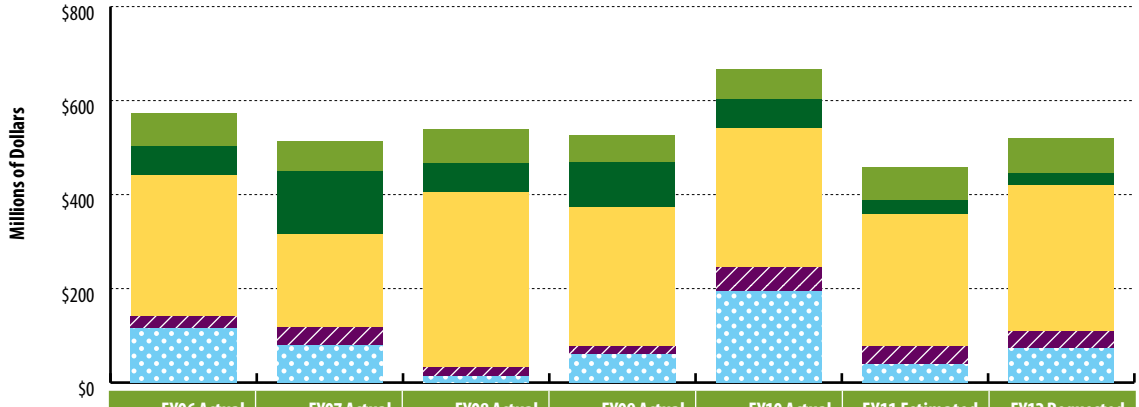

| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| IRP | $1,203.9 | $1,167.2 | $1,241.7 | $1,149.7 | $1,148.8 | $1,234.2 | $1,122.1 |
| MMRP | $172.8 | $215.8 | $267.0 | $344.5 | $416.0 | $305.3 | $345.2 |
| **Total** | **$1,376.7** | **$1,383.0** | **$1,508.2** | **$1,494.2** | **$1,564.9** | **$1,539.4** | **$1,467.3** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Includes funding for BD/DR sites.

‡ Includes funding for FUDS properties.

**Figure 1-11** DoD BRAC Restoration Funding by Cleanup Phase*

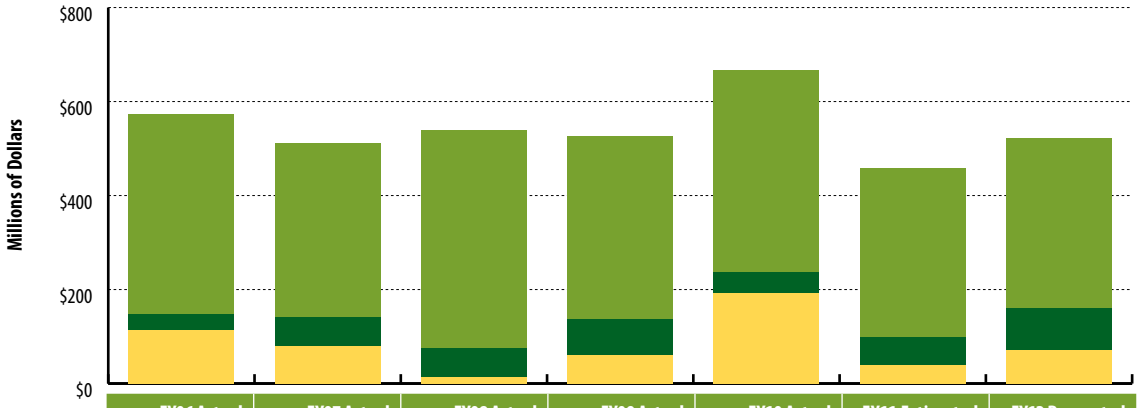



| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Management | $71.0 | $62.8 | $72.8 | $57.7 | $63.6 | $69.7 | $76.1 |
| Investigation | $60.1 | $133.6 | $61.2 | $94.8 | $61.7 | $29.4 | $24.6 |
| Cleanup | $302.0 | $197.9 | $372.2 | $296.8 | $297.5 | $282.1 | $311.3 |
| Long-term Management | $25.9 | $39.2 | $19.0 | $16.9 | $50.5 | $37.8 | $36.9 |
| Planning, Compliance, and Other† | $114.5 | $79.0 | $13.7 | $60.3 | $193.4 | $38.7 | $71.9 |
| **Total** | **$573.5** | **$512.5** | **$538.9** | **$526.5** | **$666.7** | **$457.8** | **$520.8** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Other may include revenue gained from land sales or execution of prior year funding. Negative values indicate years in which revenue or the execution of prior year funding exceeds funding for planning and compliance activities.

**Figure 1-12** DoD BRAC IRP and MMRP Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| IRP | $426.5 | $371.7 | $464.4 | $390.2 | $429.0 | $358.7 | $360.3 |
| MMRP | $32.3 | $61.8 | $60.8 | $75.9 | $44.3 | $60.4 | $88.6 |
| Planning, Compliance, and Other† | $114.5 | $79.0 | $13.7 | $60.3 | $193.4 | $38.7 | $71.9 |
| **Total** | **$573.5** | **$512.5** | **$538.9** | **$526.5** | **$666.7** | **$457.8** | **$520.8** |

* Due to rounding, subtotals may not equal fiscal year totals.

† Other may include revenue gained from land sales or execution of prior year funding. Negative values indicate years in which revenue or the execution of prior year funding exceeds funding for planning and compliance activities.

### BRAC Environmental Funding

The BRAC accounts provide funding for restoration, closure-related compliance, and planning activities at closing military installations in the United States and its territories. Unlike other appropriations, Congress provides BRAC funding according to BRAC rounds. As such, funding remains available until expended; BRAC funds do not expire. Revenue gained from the sale of property at closing installations can be used to fund cleanup requirements.

The FY10 funding of BRAC environmental activities totaled $666.7 million (Figures 1-11 and 1-12). However, DoD estimates $457.8 million in funding for FY11 and requests $520.8 million for FY12. Of the $666.7 million obligated for BRAC activities in FY10, $429.0 million funded restoration activities under the IRP and $44.3 million funded restoration under the MMRP (Figure 1-12). The remaining obligations funded planning and compliance activities. DoD funding for environmental activities at closing installations increased by 25 percent in FY10 because of an increase in Army Legacy BRAC and Army BRAC 2005 funding.

Chapter 6 describes DoD's performance within the Restoration Program. Appendix D, Section 1 contains BRAC funding data by DoD Component.

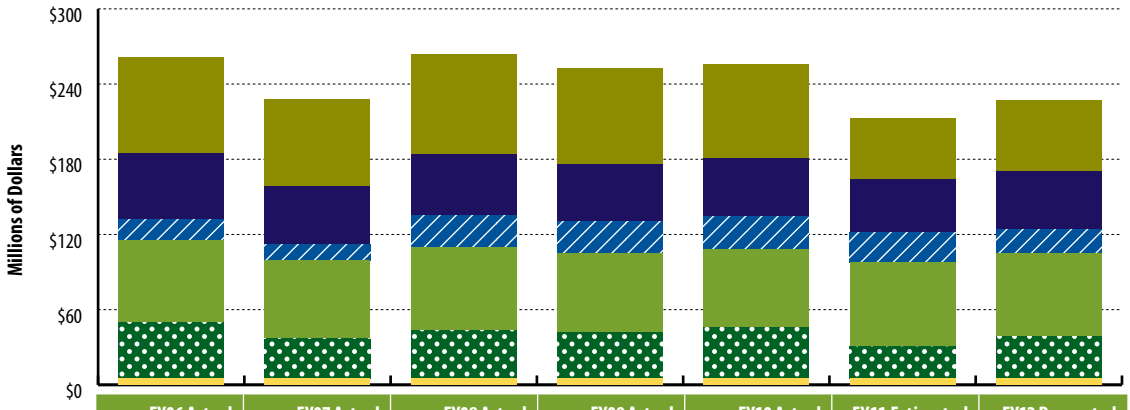
## Environmental Technology

*During FY10, DoD invested:*

- ***$255.8 million*** *for environmental technology*
- ***$62.3 million*** *for the Strategic Environmental Research and Development Program (SERDP) and* ***$41.0 million*** *for the Environmental Security Technology Certification Program (ESTCP)*

The Office of the Secretary of Defense (OSD) administers SERDP and ESTCP. DoD's environmental technology programs provide new and improved methods, equipment, materials, and protocols to meet military readiness needs. For example, these programs produced increased efficiency in paint application and metal plating, resulting in less hazardous waste and lower associated treatment costs. The DoD Environmental Technology Annual Report to Congress covers this area in more detail, fulfilling Congressional reporting

**Figure 1-13** DoD Environmental Technology Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Army | $76.2 | $69.2 | $79.6 | $76.0 | $75.0 | $49.2 | $56.4 |
| Navy | $53.3 | $46.9 | $48.7 | $46.2 | $46.6 | $42.6 | $46.7 |
| Air Force | $16.6 | $12.3 | $25.8 | $25.6 | $26.1 | $24.0 | $18.5 |
| SERDP | $65.5 | $62.2 | $65.8 | $63.1 | $62.3 | $66.5 | $66.4 |
| ESTCP | $44.7 | $32.3 | $38.8 | $36.6 | $41.0 | $25.8 | $33.6 |
| DWFP | $5.0 | $5.0 | $5.0 | $5.0 | $4.8 | $5.1 | $5.2 |
| **Total** | **$261.3** | **$227.8** | **$263.6** | **$252.5** | **$255.8** | **$213.2** | **$226.8** |

* Due to rounding, subtotals may not equal fiscal year totals.

requirements. Environmental technology is only included in this section of the report to ensure completeness of the environmental budget discussion.

SERDP and ESTCP focus on the highest priority environmental technology needs that apply to more than one DoD Component and help avoid duplication among the Components. A portion of environmental technology funding is also invested in Defense Warfighter Protection (DWFP). DoD obligated $255.8 million in environmental technology in FY10 (Figure 1-13). The Department estimates $213.2 million for these activities in FY11 and requests $226.8 million in FY12. The increase in funding from FY11 to FY12 is primarily due to an increase in Army and ESTCP funding.

## Overseas Environmental Activities

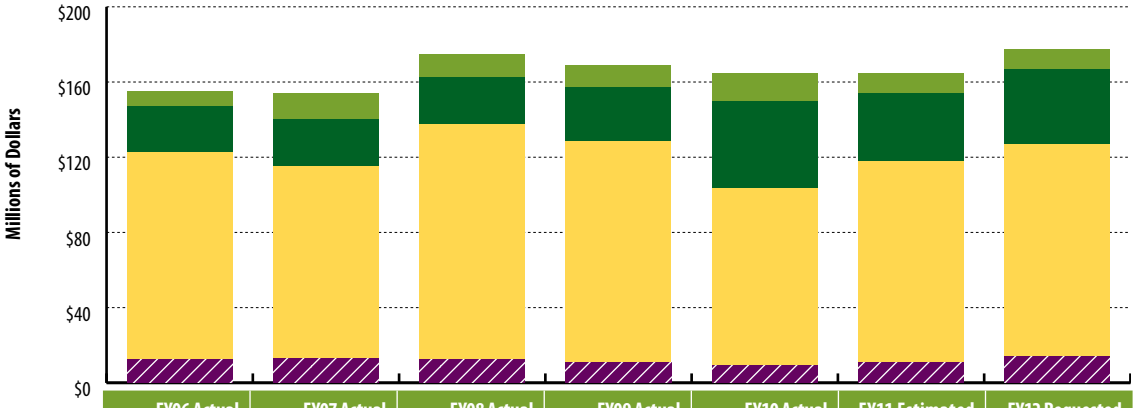
*During FY10, DoD invested:*

- ***$164.8 million*** *for environmental activities at overseas installations*
- ***63 percent*** *more funding for Restoration cleanup at overseas locations than in FY09*

DoD complies with the environmental requirements of international agreements, country-specific Final Governing Standards, DoD 4715.05-G "Overseas Environmental Baseline Guidance Document," and DoD Instruction 4715.8 "Environmental Remediation for DoD Activities Overseas." Investments in overseas environmental programs are necessary to continue the use of, and access to, the infrastructure and natural resources needed to meet the military mission. Although overseas environmental funding is included in the Natural and Cultural Resources, Compliance, and Pollution Prevention funding charts, it is also displayed separately in Figure 1-14. Funding for cleanup activities abroad is included in the overseas compliance activities budget.

Appendix D, Section 1 contains overseas funding data by DoD Component.

**Figure 1-14** DoD Overseas Environmental Funding*




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| Natural and Cultural Resources | $8.3 | $14.3 | $12.2 | $11.9 | $14.6 | $10.9 | $10.2 |
| Restoration | $24.1 | $25.1 | $25.5 | $28.6 | $46.7 | $36.4 | $39.8 |
| Compliance | $110.2 | $102.2 | $125.1 | $117.9 | $94.2 | $106.2 | $113.1 |
| Pollution Prevention | $12.6 | $12.7 | $12.2 | $10.6 | $9.3 | $10.6 | $14.0 |
| **Total** | **$155.3** | **$154.4** | **$175.1** | **$169.0** | **$164.8** | **$164.0** | **$177.1** |

* Due to rounding, subtotals may not equal fiscal year totals.

## Miscellaneous Environmental Programs

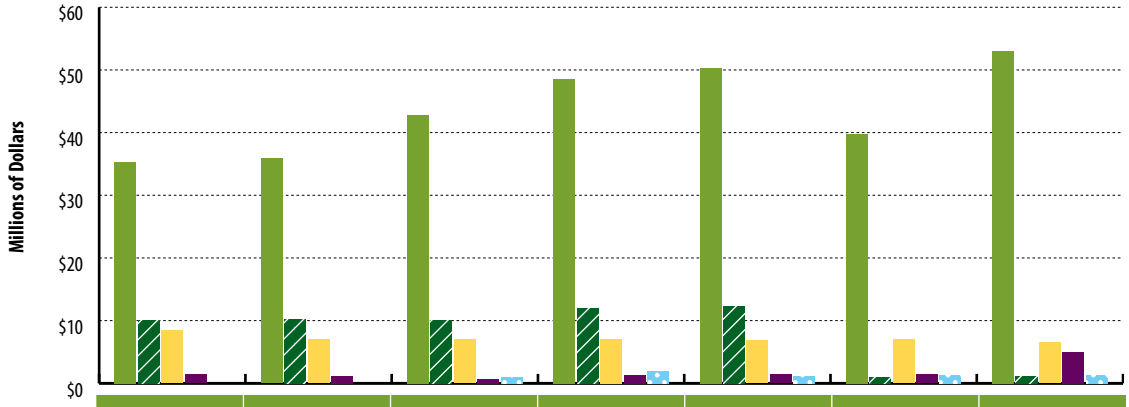
*During FY10, DoD invested:*

- ***$50.3 million*** *for the Readiness and Environmental Protection Initiative (REPI) Program*
- ***$12.2 million*** *for the Native American Lands Environmental Mitigation Program (NALEMP)*
- ***$6.8 million*** *for the Legacy Resource Management Program*
- ***$9.3 million*** *for the Defense Environmental International Cooperation (DEIC) Program*
- ***$1.1 million*** *for the Emerging Contaminants Program*

OSD administers several miscellaneous environmental programs to support the military mission while protecting human health and the environment.

- The REPI Program protects installations and ranges from encroachment by working with surrounding communities and organizations to secure buffer lands and habitats.
- DoD developed NALEMP to gather, document, and mitigate environmental impacts on American Indian and Alaska Native lands in response to a Congressional mandate.
- The Legacy Resource Management Program, also required by Congress, attempts to balance the use of DoD lands for military testing and training with the need to protect natural and cultural resources.
- The DEIC Program serves as a forum to:
  - Share environmental information across national boundaries
  - Counter the proliferation of weapons of mass destruction
  - Partner to maintain access to resources for training and readiness
  - Promote regional cooperation
  - Foster a global military environmental ethic
  - Improve interagency processes, focus, and integration
- The Emerging Contaminants Program tracks and analyzes changes to environmental standards for hazardous substances that have the potential to impact DoD military operations and environmental activities.

**Figure 1-15** DoD Miscellaneous Environmental Programs Funding




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| REPI | $35.3 | $35.9 | $42.8 | $48.6 | $50.3 | $39.8 | $53.0 |
| NALEMP | $10.0 | $10.1 | $10.0 | $11.9 | $12.2 | $0.2 | $0.2 |
| Legacy Resource Management | $8.4 | $7.0 | $7.0 | $7.1 | $6.8 | $7.0 | $6.5 |
| DEIC Program | $1.4 | $1.2 | $0.7 | $1.3 | $1.4 | $1.4 | $5.0 |
| Emerging Contaminants | $0.0 | $0.0 | $0.9 | $1.9 | $1.1 | $1.2 | $1.2 |

Funding for these miscellaneous environmental programs is included in the Natural and Cultural Resources, Compliance, and Pollution Prevention funding charts; however, it is also displayed separately in Figure 1-15.

# 6 Restoration

The Department of Defense (DoD) began environmental restoration in 1975 under the Installation Restoration Program (IRP). In 2001, DoD established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program to address munitions-contaminated sites. The IRP and MMRP enable the Department to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund. CERCLA requires responsible parties to clean up hazardous substances released to the environment. This chapter satisfies the National Defense Authorization Act for Fiscal Year (FY) 2007 §313 reporting requirement to provide an annual update to the MMRP Comprehensive Plan, including cleanup progress updates, adjustments to the MMRP goals, and funding estimates through FY10.

This chapter summarizes IRP and MMRP requirements, evaluation criteria, and performance trends for the Department's:

- Active installations
- Base Realignment and Closure installations
- Formerly Used Defense Site properties

This chapter also summarizes the program status of two initiatives that support the DERP:

- Cost Recovery
- Restoration Partnerships

### Restoration at a Glance

Environmental Restoration fiscal year (FY) 2010 funding: **$1.6 billion**

Base Realignment and Closure (BRAC) FY10 funding: **$666.7 million**

Installation Restoration Program (IRP) Accomplishments

- Achieved remedy in place/response complete at **86 percent** of IRP sites on active installations through FY10
- Transferred **14,298 acres** under BRAC Early Transfer Authority in FY10

Military Munitions Response Program (MMRP) Accomplishments

- Achieved a statutory goal by completing site inspections at **97 percent** of munitions response sites on active installations through FY10
- Decreased the cost-to-complete estimate for the MMRP by **11 percent** in FY10

## Requirements

The Department of Defense (DoD) conducts cleanup in accordance with these requirements:

- 10 United States Code §§2700–2710, "Environmental Restoration"
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Defense Base Closure and Realignment Act of 1990
- National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2002
- NDAA for FY07 §313
- Superfund Amendments and Reauthorization Act (SARA)
- Executive Order 12580, "Superfund Implementation"
- 32 Code of Federal Regulations (CFR), Part 179, "Munitions Response Site Prioritization Protocol"
- 32 CFR, Part 202, "The Restoration Advisory Board (RAB) Rule"
- DoD Instruction 4715.7, "Environmental Restoration Program"
- Defense State Memorandum of Agreement/ Cooperative Agreements Program Guide
- RAB Rule Handbook

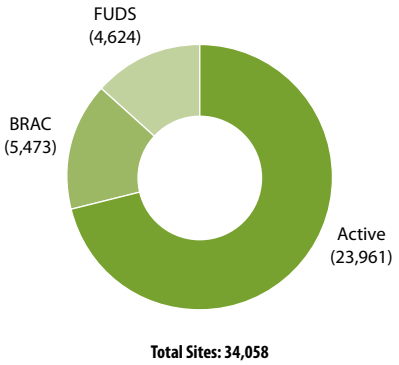
## Program Summary

### DERP Applicability

DoD conducts cleanup on these three types of properties in the United States, District of Columbia, and U.S. territories (Figure 6-1):

- **Active installations** are bases where DoD conducts training and operations.
- **Base Realignment and Closure (BRAC) installations** are bases that have been identified for realignment or closure under one of the five Congressionally-approved BRAC rounds. Congress authorized four rounds of BRAC in 1988, 1991, 1993, and 1995, commonly referred to as Legacy BRAC; a fifth round in 2005 is called BRAC 2005. DoD uses different tools to transfer BRAC property to other parties. For example, DoD can use its Early Transfer Authority (ETA) to transfer property before cleanup is complete. ETA requires approval by the U.S. Environmental Protection Agency (EPA) Administrator and the state governor for properties listed on EPA's National Priorities List (NPL). For non-NPL properties, ETA only requires the state governor's approval.
- **Formerly Used Defense Site (FUDS) properties** are lands that were under DoD's jurisdiction, but transferred out of DoD control before SARA was signed on October 17, 1986. The Secretary of Defense designated the Army as the Executive Agent to manage environmental cleanup on FUDS properties. The U.S. Army Corps of Engineers performs program

**Figure 6-1** Total Number of Restoration Sites by Property Type




management and execution of cleanup on FUDS properties in consultation with current landowners, stakeholders, local communities, and regulators. FUDS cleanup is unique because DoD no longer owns these properties and has very limited control over the actions of non-DoD landowners. For properties where DoD held jurisdiction at the time of contamination, the Department determines who is responsible for the existing environmental and health hazards. If another party is partially responsible for the contamination, DoD may negotiate a settlement for the other party to conduct or partially fund the cleanup.

DoD conducts cleanup at its facilities on the NPL as well as non-NPL sites. For DoD facilities on the NPL, an Interagency Agreement (IAG) is signed between EPA and DoD under CERCLA Section 120(e). DoD has signed IAGs at 137 out of 141 DoD facilities on the NPL. For the four remaining IAGs, DoD and EPA did not reach an agreement within the required time period. See the Restoration Narratives in Appendix F for further information about specific IAGs.

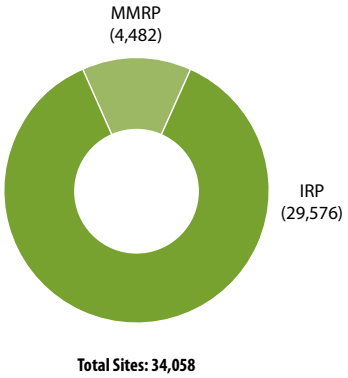
## Defense Environmental Restoration Program (DERP) Process

The DERP includes the following program areas (Figure 6-2):

- **Installation Restoration Program (IRP)** governs cleanup (i.e., identification, investigation, removal actions, remedial actions, or a combination of removal and remedial actions) to address the release of hazardous substances and pollutants or contaminants; petroleum, oil, or lubricants; DoD unique materials; hazardous wastes or hazardous waste constituents; explosive compounds released as a result of ammunition or explosives production, or manufacturing at ammunition plants; and unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC) that are incidental to an IRP site.
- **Military Munitions Response Program (MMRP)** directs cleanup at locations where UXO, DMM, or MC are known or suspected to be present. DoD refers to these locations as munitions response sites (MRSs). The MMRP applies to all locations with the exception of operational ranges, locations outside of the United States, operating storage and manufacturing facilities, and where munitions result from combat.
- **Building Demolition/Debris Removal (BD/DR)** demolishes and removes unsafe buildings and structures at facilities or sites that meet specific criteria. Due to the program's small size (408 sites), BD/DR sites are included in IRP site counts unless otherwise indicated.

DoD funds cleanup of IRP sites and MRSs at active installations and FUDS properties through five Environmental Restoration (ER) accounts: Army, Navy, Air Force, Defense-wide, and FUDS. The Department funds cleanup at closing installations through two BRAC accounts: Legacy BRAC and BRAC 2005. DoD funds cleanup at realigning installations through its ER accounts.

**Figure 6-2** Total Number of Restoration Sites by Program



## Risk Management and Prioritization

DoD prioritizes funding to first clean up sites that pose the greatest threat to safety, human health, and the environment. DoD uses these tools to determine a site's risk relative to other sites:

- **The Relative Risk Site Evaluation (RRSE)** prioritizes IRP sites into three categories: high, medium, or low relative risk. The rating is based on the nature and extent of the site's contamination, the likelihood that contaminants will migrate, and the potential impacts of contamination on populations and ecosystems.
- **The Munitions Response Site Prioritization Protocol (MRSPP)** consists of three separate modules to evaluate hazards associated with explosives, chemical warfare materiel, MC, and other incidental environmental contaminants. Based on relative risk in these hazard areas, DoD gives each MRS a numeric score or an alternative rating. Beginning in FY08, the Secretary of Defense required the DoD Components to begin reporting MRSPP scores. Through FY10, the Department assigned numeric scores to 630 MRSs and alternative ratings to 3,852 MRSs.

The scores yielded from the RRSE and MRSPP affect how DoD sequences IRP sites and MRSs for cleanup. In addition to relative risk, DoD considers other factors such as economic, programmatic, and stakeholder concerns, as well as reuse and redevelopment plans in prioritizing sites for cleanup.

In FY10, six MRSs were sequenced for cleanup ahead of higher priority MRSs. Of these six sites, three sites are being addressed out of order due to concerns expressed by regulators and stakeholders; two sites are being addressed out of order due to the availability of funding, equipment, and personnel; and one site is being addressed out of order based on special considerations due to health, safety, and ecological risk assessments.

## Cost Recovery

DoD uses cost recovery to recoup or share cleanup costs when contamination at an installation is either partially or wholly caused by another party's activities. Cost recovery helps the DoD Components increase funding and resources available for cleanup. As such, the DoD Components do the following to recoup cleanup costs:

- Establish policies to identify other public and private parties potentially responsible for contamination
- When cost-effective, pursue the other potentially responsible party to either take responsibility for environmental restoration or contribute to the cost of response actions
- Pursue recovery for costs of $50,000 or more whenever cleanup on DoD property is required and cooperation could not be negotiated in advance

## Restoration Partnerships

DoD participates in various partnerships to further the DERP. DoD invests considerable resources in these two partnerships.

- **Restoration Advisory Boards (RABs)** are community-oriented forums that encourage and facilitate communication between citizens and installation decision-makers regarding cleanup at active installations, BRAC installations, and FUDS properties. Participants may include representatives from the community; installation; state, local, or tribal governments and regulatory agencies; local activist organizations; or the business community. Installation Commanders gauge community interest and evaluate criteria to establish a RAB every two years. RABs are funded through DoD administrative support, Technical Assistance for Public Participation (TAPP) Grants, and EPA Technical Assistance Grants.

- **The Defense State Memorandum of Agreement (DSMOA)** Program is a partnership between the Office of the Secretary of Defense and states (or territories). It is designed to expedite environmental cleanup. DSMOAs provide a framework for DoD to openly coordinate with state regulators to help achieve cleanup goals. Under the DSMOA Program, states may apply for funding from DoD for any eligible restoration services they perform. After signing a DSMOA with DoD, the state must apply for a Cooperative Agreement (CA) to receive financial assistance for cleanup activities at DoD facilities. The CA outlines the planning and funding structure for a two-year period. The FY10 DEP ARC reports on the FY08 through FY10 DSMOA funding period. The Department may reimburse states under DSMOA when states demonstrate the proposed cleanup is:
  - DoD's responsibility under DERP
  - Sought by DoD, and not imposed by the state
  - Associated with a specific installation
  - On the Joint Execution Plan, which is a planning document for the coordination of resources

The Secretary of Defense designated the Army as the Executive Agent to manage DSMOA. For more information about existing DSMOAs and CAs, please go to: *https://dsmoa.usace.army.mil*

For more information on the Restoration Program, please go to: *http://www.denix.osd.mil/derp/*

## Evaluation Criteria

DoD measures progress toward specific goals for IRP sites and MRSs at active installations, BRAC installations, and FUDS properties. The DoD Components use the goals to help guide investment decisions and set restoration targets for each FY.

**IRP Goals:** DoD currently tracks progress against remedy in place (RIP), which occurs when cleanup systems are constructed and operational, and response complete (RC), which occurs when the site has achieved the agreed upon cleanup standards (though it may still be monitored due to restricted property use). DoD developed specific IRP goals with target time lines for achieving risk reduction and RIP/RC (Figure 6-4).

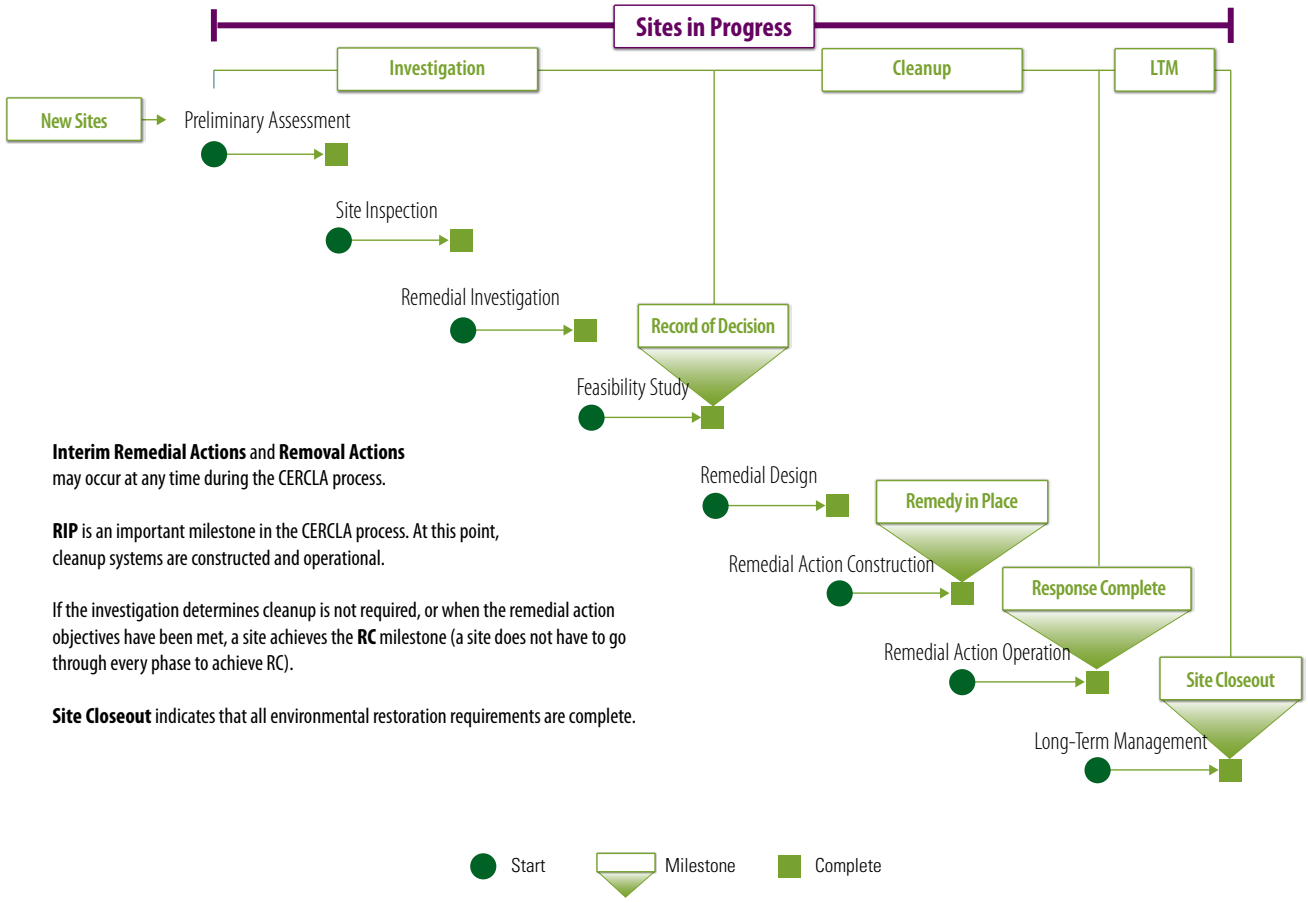
**MMRP Goals:** The NDAA for FY07 §313 established the following goals for DoD to clean up MRSs:

- Complete preliminary assessments (PAs) at all active installations and FUDS properties by the end of FY07
- Achieve RIP/RC at all Legacy BRAC MRSs by the end of FY09
- Complete site inspections (SIs) at all active installations and FUDS properties by the end of FY10
- Establish a RIP/RC goal at active installations, BRAC 2005 installations, and FUDS properties

DoD developed RIP/RC goals for MRSs at active installations and BRAC 2005 installations. As the MMRP evolves, DoD will develop RIP or RC goals for FUDS properties that are both reasonable and challenging (Figure 6-4).

**Cost-to-Complete (CTC):** CTC estimates are the anticipated funds needed to complete cleanup at IRP sites and MRSs. The CTC estimates are derived from site-level funding information and can be impacted by prioritization, input from regulators and other stakeholders, the complexity of the cleanup, and the technologies that are available and chosen. DoD uses CTC estimates to ensure it employs cost-effective cleanup strategies at active installations, BRAC installations, and FUDS properties. CTC estimates that decrease as restoration sites move through the phases of cleanup and achieve program goals indicate DoD is making progress.

**Figure 6-3** DoD CERCLA Environmental Restoration Phases and Milestones




**Restoration Phases and Milestones:** The DoD Components monitor cleanup progress and risk reduction at sites by aligning cleanup status with five phases and milestones in the CERCLA process (Figure 6-3):

1. Investigation completed, underway, or planned
2. Cleanup completed, underway, or planned
3. RIP achieved
4. RC achieved
5. Long-term management (LTM) completed, underway, or planned.

The Department strives for consistency and transparency when evaluating cleanup. As such, DoD and EPA continue to participate in the Joint Measures Harmonization Work Group to address inconsistencies between DoD and EPA data when reporting progress. The Work Group's objectives are to review both agencies' goals and performance metrics and to develop a transparent, consistent approach to reporting the progress of DoD's cleanup program.

## Performance Summary

### Installation Restoration Program

*DoD:*

- *Achieved RIP/RC at **86 percent** of IRP sites on active installations through FY10*
- *Transferred **14,298** acres through ETA at BRAC installations in FY10*
- *Achieved RIP/RC at **72 percent** of IRP sites on FUDS properties through FY10*

#### Active Installations

Through FY10, DoD identified 21,528 IRP sites on active installations.

Between FY06 and FY10, DoD increased the percentage of high relative risk sites achieving RIP/RC from 83 percent to 94 percent (Figure 6-4). While DoD did not achieve RIP/

**Figure 6-4** DoD Restoration Performance Goals and Progress*

| Installation Restoration Program | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Active Installations | | | | | |
| Reduce risk or achieve RIP/RC at all high relative risk IRP sites by the end of FY07† | 83% | 92% | 93% | 94% | 94% |
| Reduce risk or achieve RIP/RC at all medium relative risk IRP sites by the end of FY11† | 52% | 58% | 65% | 70% | 75% |
| Reduce risk or achieve RIP/RC at all low relative risk IRP sites by the end of FY14† | 59% | 65% | 69% | 74% | 77% |
| Achieve RIP/RC at all IRP sites by the end of FY14 | 85% | 89% | 90% | 86% | 86% |
| BRAC Installations | | | | | |
| Achieve RIP/RC at all Legacy BRAC IRP sites by the end of FY15 | 86% | 86% | 87% | 88% | 88% |
| Achieve RIP/RC at all BRAC 2005 IRP sites by the end of FY14 | 66% | 62% | 47% | 54% | 61% |
| FUDS Properties | | | | | |
| Reduce risk or achieve RIP/RC at all high relative risk IRP sites by the end of FY07 | 48% | 50% | 54% | 55% | 59% |
| Reduce risk or achieve RIP/RC at all medium relative risk IRP sites by the end of FY11 | 43% | 46% | 50% | 52% | 52% |
| Reduce risk or achieve RIP/RC at all low relative risk IRP sites by the end of FY20 | 44% | 43% | 52% | 56% | 58% |
| Achieve RIP/RC at all IRP sites by the end of FY20 | 67% | 68% | 70% | 71% | 72% |
| **Military Munitions Response Program** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Active Installations | | | | | |
| Complete PAs at all MRSs by the end of FY07† | 70% | **96%** | **95%** | **97%** | **96%** |
| Complete SIs at all MRSs by the end of FY10† | 24% | 29% | 51% | 72% | **97%** |
| Achieve RIP/RC at all MRSs by the end of FY20 | 17% | 23% | 34% | 43% | 38% |
| BRAC Installations | | | | | |
| Achieve RIP/RC at all Legacy BRAC MRSs by the end of FY09 | 38% | 63% | 67% | 68% | 70% |
| Achieve RIP/RC at all BRAC 2005 MRSs by the end of FY17 | 0% | 20% | 27% | 33% | 39% |
| FUDS Properties | | | | | |
| Complete PAs at all MRSs by the end of FY07 | **99%** | **99%** | **99%** | **96%** | **98%** |
| Complete SIs at all MRSs by the end of FY10 | 34% | 45% | 58% | 67% | 84% |

* The Department considers a goal to be met when it achieves a 95 percent completion rate

† New sites added to the inventory after FY08 are not subject to the relative risk reduction or PA and SI completion goals

RC at all high relative risk sites by FY07 as planned, it is still working aggressively to reduce risk at the remaining sites. These sites generally pose significant challenges due to their complexity.

DoD strives to reduce risk by achieving RIP/RC at all medium relative risk sites by the end of FY11 and at all low relative risk sites by the end of FY14. DoD increased the percentage of sites achieving RIP/RC at medium relative risk sites from 52 percent in FY06 to 75 percent in FY10. DoD also increased the percentage of sites achieving RIP/RC at low relative risk sites from 59 percent in FY06 to 77 percent in FY10 (Figure 6-4).

The Department is successfully moving sites through the investigation and cleanup phases. This is evidenced in FY10 by DoD increasing the number of sites achieving RC by 455 (Figure 6-5).

DoD is working toward achieving RIP/RC at all active IRP sites by the end of FY14. Between FY09 and FY10, the Department made progress reducing risk and achieving RIP/RC at medium and low relative risk sites. The overall percentage of sites achieving RIP/RC remained at 86 percent because new sites, some of which were not evaluated using the RRSE, were added to the inventory in FY10.

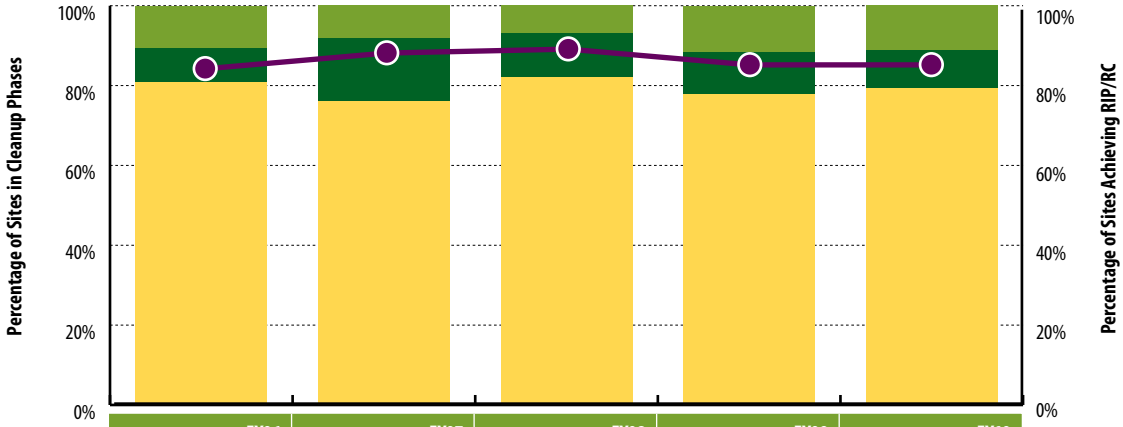
Appendix D, Section 6 contains IRP performance data at active installations by DoD Component.

### BRAC Installations

Through FY10, DoD identified 5,127 IRP sites on BRAC installations.

DoD's goal is to achieve RIP/RC at all Legacy BRAC IRP sites by the end of FY15. Between FY06 and FY10, DoD

**Figure 6-5** DoD IRP Site Status at Active Installations by Cleanup Phase

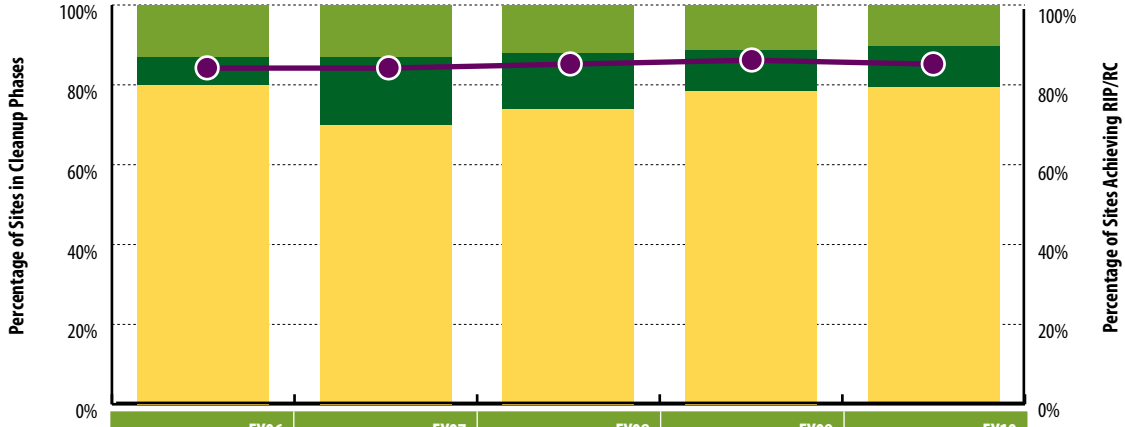



| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 2,127 | 1,606 | 1,360 | 2,457 | 2,392 |
| Cleanup Planned or Underway | 1,664 | 3,135 | 2,223 | 2,276 | 2,083 |
| (Remedy in Place)* | (811) | (2,505) | (1,667) | (1,671) | (1,530) |
| Response Complete | 16,035 | 15,097 | 16,260 | 16,600 | 17,053 |
| (LTM Underway)† | (709) | (638) | (758) | (829) | (905) |
| Percent of Sites Achieving RIP/RC | 85% | 89% | 90% | 86% | 86% |
| **Total** | **19,826** | **19,838** | **19,843** | **21,333** | **21,528** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure 6-6** DoD IRP Site Status at Legacy BRAC and BRAC 2005 Installations by Cleanup Phase




| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 646 | 673 | 621 | 578 | 533 |
| Cleanup Planned or Underway | 333 | 833 | 728 | 524 | 529 |
| (Remedy in Place)* | (244) | (750) | (636) | (411) | (396) |
| Response Complete | 4,031 | 3,572 | 3,753 | 4,024 | 4,065 |
| (LTM Underway)† | (381) | (385) | (423) | (408) | (403) |
| Percent of Sites Achieving RIP/RC | 85% | 85% | 86% | 87% | 87% |
| **Total** | **5,010** | **5,078** | **5,102** | **5,126** | **5,127** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure 6-7** DoD IRP Site Status at FUDS Properties by Cleanup Phase

| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 673 | 602 | 547 | 491 | 492 |
| Cleanup Planned or Underway | 340 | 386 | 383 | 366 | 319 |
| (Remedy in Place)* | (6) | (10) | (14) | (14) | (7) |
| Response Complete | 2,008 | 2,046 | 2,114 | 2,022 | 2,110 |
| (LTM Underway)† | (21) | (32) | (38) | (45) | (50) |
| Percent of Sites Achieving RIP/RC | 67% | 68% | 70% | 71% | 72% |
| **Total** | **3,021** | **3,034** | **3,044** | **2,879** | **2,921** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

increased the percentage of Legacy BRAC sites at RIP/RC from 86 percent to 88 percent (Figure 6-4).

Through FY10, DoD achieved RIP/RC at 61 percent of all BRAC 2005 sites, an increase from 54 percent in FY09. Despite this progress, the proportion of BRAC 2005 sites achieving RIP/RC fell from 66 percent in FY06 (Figure 6-4). The reason for this decrease is that between FY06 and FY10, the BRAC 2005 inventory increased by 79 sites, or 33 percent. The actual number of sites achieving RIP/RC between FY06 and FY10 did not decrease.

DoD has been aggressively moving Legacy BRAC and BRAC 2005 sites through the cleanup process. This means that sites moved through the investigation and cleanup phases to achieve RIP/RC. Between FY06 and FY10, DoD increased the number of Legacy BRAC and BRAC 2005 IRP sites achieving RIP/RC by 186 sites (Figure 6-6).

Another noteworthy achievement is the transfer of BRAC property through ETA. In FY10, the Army transferred a total of 14,298 acres through ETA at the Lone Star Army Ammunition Plant in Texas. Through FY10, the Department has transferred over 30,000 acres through ETA.

Appendix D, Section 6 contains IRP performance data at BRAC installations by DoD Component.

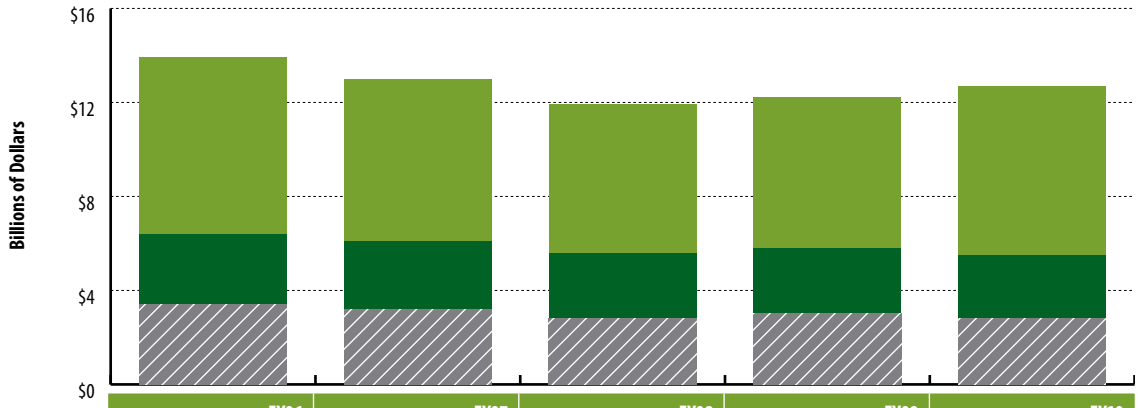
## FUDS Properties

Through FY10, DoD identified 2,921 IRP sites on FUDS properties.

Between FY06 and FY10, the Department increased the percentage of high relative risk sites achieving RIP/RC from 48 percent to 59 percent (Figure 6-4). While DoD did not achieve RIP/RC at all high relative risk sites by FY07 as planned, it is still working to reduce risk at the remaining sites. These sites generally pose significant challenges due to their complexity.

DoD is effectively moving sites on FUDS properties through the investigation and cleanup phases to achieve RIP/RC. Between FY06 and FY10, DoD decreased the percentage of sites in the investigation phase from 22 percent to 17 percent. During the same period, the Department also

**Figure 6-8** DoD IRP CTC Estimates at Active Installations, BRAC Installations, and FUDS Properties (Billions of Dollars)†




| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Active | $7.5 | $6.9 | $6.3 | $6.4 | $7.2 |
| BRAC | $3.0 | $2.9 | $2.8 | $2.8 | $2.7 |
| FUDS | $3.4 | $3.2 | $2.8 | $3.0 | $2.8 |
| **Total*** | **$13.9** | **$13.1** | **$11.9** | **$12.2** | **$12.8** |

* Subtotals may not add to total due to rounding.

† Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.

increased the percentage of sites achieving RIP/RC from 67 percent to 72 percent. Between FY09 and FY10, DoD increased the number of sites achieving RIP/RC on FUDS properties by 88 sites (Figure 6-7).

Appendix D, Section 6 contains IRP performance data at FUDS properties.

### CTC

In FY10, DoD estimated the CTC to be $12.8 billion for IRP cleanup.

Between FY09 and FY10, DoD increased the CTC estimates for IRP cleanup by five percent. Despite this increase, DoD decreased the CTC estimates by eight percent since FY06 (Figure 6-8). This downward trend in IRP CTC estimates reflects DoD's success in moving sites through the cleanup phases to achieve RIP/RC.

Appendix D, Section 6 contains IRP CTC data by DoD Component.

## Military Munitions Response Program

*DoD:*

- *Achieved its goal by completing site inspections at **97 percent** of MRSs at active installations by FY10*
- *Decreased the MMRP CTC estimates on active installations, BRAC installations, and FUDS properties by **11 percent***
- *Increased the percentage of MRSs on FUDS properties achieving RIP/RC from **29 percent** in FY06 to **38 percent** in FY10*

### Active Installations

Through FY10, DoD identified 2,433 MRSs on active installations, a 33 percent increase from FY09 (Figure 6-9). In FY10, the number of MRSs increased because:

- the Army added the National Guard Bureau non-DoD owned, non-operational defense sites to its MRS inventory
- the Air Force is conducting an additional inventory of its MMRP, which resulted in the identification of new MRSs
- the Air Force is also splitting MRSs into smaller sites to put uncontaminated sites back to use

**Figure 6-9** DoD MRS Status at Active Installations by Cleanup Phase

| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 1,076 | 1,198 | 1,097 | 1,013 | 1,329 |
| Cleanup Planned or Underway | 8 | 15 | 23 | 96 | 199 |
| (Remedy in Place)* | (0) | (12) | (11) | (60) | (31) |
| Response Complete | 226 | 337 | 550 | 718 | 905 |
| (LTM Underway)† | (3) | (2) | (2) | (9) | (7) |
| Percent of Sites Achieving RIP/RC | 17% | 23% | 34% | 43% | 38% |
| **Total** | **1,310** | **1,550** | **1,670** | **1,827** | **2,433** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

DoD's MMRP goals include completing PAs at all MRSs by the end of FY07 and completing SIs at all MRSs by the end of FY10. Through FY10, DoD completed PAs at 96 percent of MRSs. Between FY09 and FY10, DoD increased the percentage of SIs completed at MRSs from 72 percent to 97 percent, achieving its goal (Figure 6-4).

Between FY06 and FY10, DoD continued moving sites through the investigation and cleanup phases to achieve RIP/RC. During this time, the Department increased the percentage of MRSs achieving RIP/RC from 17 percent to 38 percent at active installations (Figure 6-9).

Between FY09 and FY10, the number of sites achieving RIP/RC increased by 158 sites; however, the percentage of sites achieving RIP/RC decreased because the MRS inventory increased.

Appendix D, Section 6 contains MMRP performance data at active installations by DoD Component.

## BRAC Installations

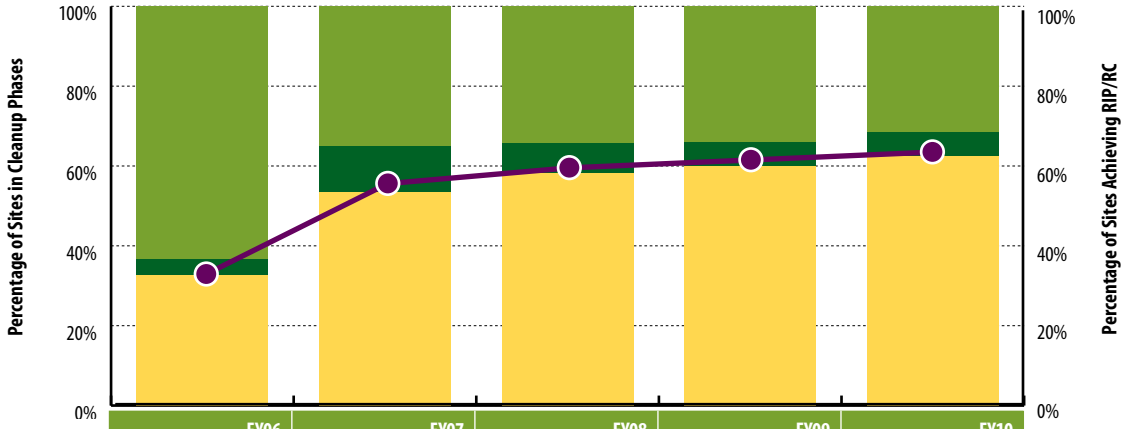
Through FY10, DoD identified 346 MRSs on BRAC installations.

Between FY06 and FY10, DoD increased the percentage of sites achieving RIP/RC at Legacy BRAC MRSs from 38 percent to 70 percent (Figure 6-4). DoD did not achieve RIP/RC at all Legacy BRAC MRSs by the end of FY09 as planned. While the Department did not meet this goal, it continues working to reduce risk at these sites, which pose challenges due to their complexity.

DoD's goal is to achieve RIP/RC at all BRAC 2005 MRSs by the end of FY17. Between FY09 and FY10, DoD increased the percentage of MRSs achieving RIP/RC from 33 percent to 39 percent at BRAC 2005 installations (Figure 6-4). DoD is showing continual progress toward meeting its goal in the next seven years.

Between FY06 and FY10, DoD demonstrated it is successfully moving MRSs through the investigation and cleanup phases at Legacy BRAC and BRAC 2005 installations. During this time, the Department decreased the percentage of MRSs

**Figure 6-10** DoD MRS Status at Legacy BRAC and BRAC 2005 Installations by Cleanup Phase

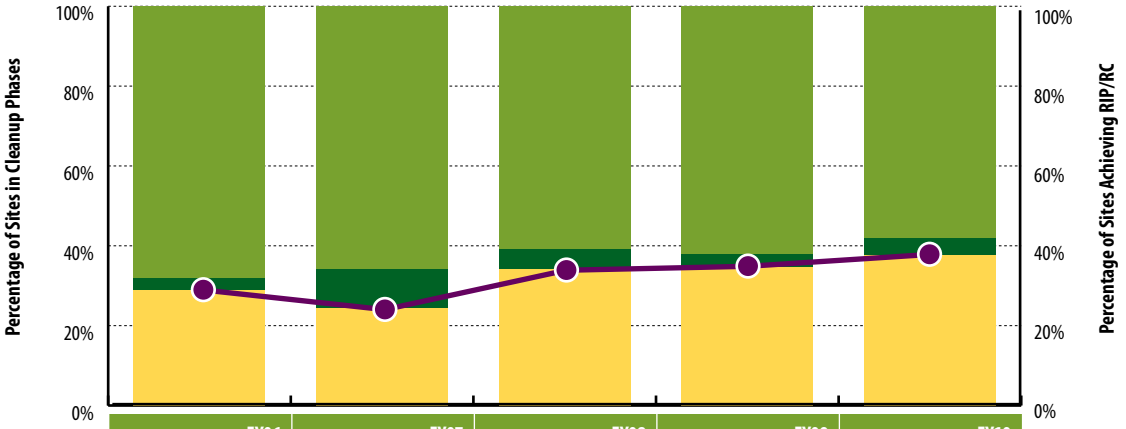



| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 237 | 118 | 118 | 117 | 108 |
| Cleanup Planned or Underway | 14 | 39 | 25 | 21 | 23 |
| (Remedy in Place)* | (0) | (8) | (6) | (6) | (9) |
| Response Complete | 122 | 180 | 200 | 206 | 215 |
| (LTM Underway)† | (11) | (17) | (17) | (20) | (20) |
| Percent of Sites Achieving RIP/RC | 33% | 56% | 60% | 62% | 65% |
| **Total** | **373** | **337** | **343** | **344** | **346** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure 6-11** DoD MRS Status at FUDS Properties by Cleanup Phase

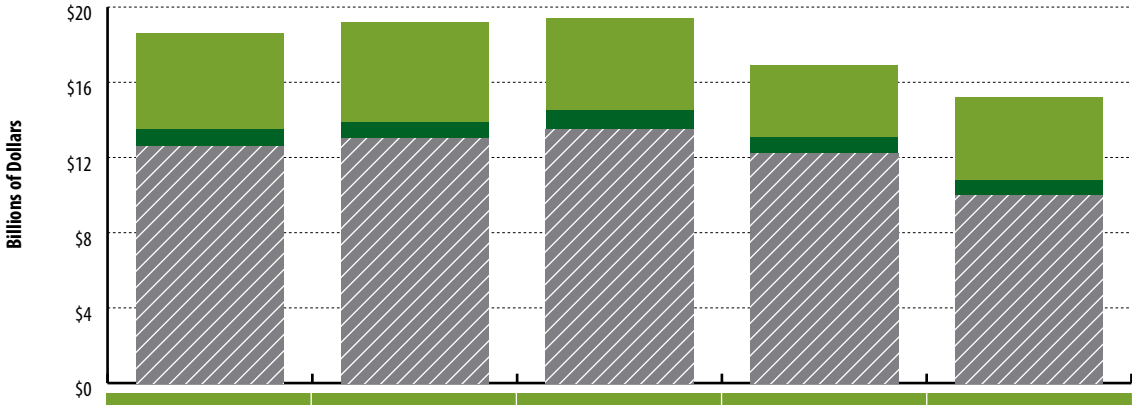



| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 1,112 | 1,088 | 1,014 | 999 | 990 |
| Cleanup Planned or Underway | 48 | 159 | 79 | 52 | 73 |
| (Remedy in Place)* | (0) | (0) | (0) | (0) | (0) |
| Response Complete | 473 | 403 | 568 | 561 | 640 |
| (LTM Underway)† | (12) | (15) | (17) | (18) | (20) |
| Percent of Sites Achieving RIP/RC | 29% | 24% | 34% | 35% | 38% |
| **Total** | **1,633** | **1,650** | **1,661** | **1,612** | **1,703** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† LTM is a subset of Response Complete.

**Figure 6-12** DoD MMRP CTC Estimates at Active Installations, BRAC Installations, and FUDS Properties (Billions of Dollars)†




| | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Active | $5.1 | $5.3 | $4.9 | $3.8 | $4.4 |
| BRAC | $0.9 | $0.9 | $1.0 | $0.9 | $0.8 |
| FUDS | $12.6 | $13.0 | $13.5 | $12.2 | $10.0 |
| **Total*** | **$18.7** | **$19.2** | **$19.4** | **$17.0** | **$15.2** |

* Subtotals may not add to total due to rounding.

† Funding represents site-level data and does not include management and support costs not directly attributable to specific sites.

in the investigation phase from 64 percent to 31 percent. This corresponds to an increase in the percentage of MRSs achieving RIP/RC from 33 percent to 65 percent during the same time period (Figure 6-10).

Appendix D, Section 6 contains MMRP performance data at BRAC installations by DoD Component.

## FUDS Properties

Through FY10, DoD identified 1,703 MRSs on FUDS properties.

DoD completed PAs at 98 percent of MRSs on FUDS properties to date. Between FY09 and FY10, DoD increased the percentage of SIs completed from 67 percent to 84 percent (Figure 6-4). However, DoD did not meet its goal of completing SIs at all MRSs on FUDS properties by the end of FY10. The FUDS inventory has significantly increased since this goal was established in FY04. The additional MRSs, as well as the challenging task of obtaining rights of entry from current land owners, have caused a delay in meeting the goal. In an effort to complete SIs at the remaining MRSs in the current inventory, the Army established an internal timeline to ensure that it completes SIs at FUDS properties by FY13.

DoD is making progress cleaning up MRSs on FUDS properties. Between FY06 and FY10, DoD decreased the percentage of MRSs in the investigation phase from 68 percent to 58 percent. During this same period, DoD increased the percentage of MRSs achieving RIP/RC from 29 percent to 38 percent (Figure 6-11).

Appendix D, Section 6 contains MMRP performance data at FUDS properties.

## CTC

In FY10, DoD estimated the CTC for MMRP cleanup to be $15.2 billion.

Between FY09 and FY10, DoD decreased the CTC estimates for MMRP cleanup by 11 percent. DoD has decreased the CTC estimates by 19 percent since FY06 (Figure 6-12). This downward trend in MMRP CTC estimates reflects DoD's success in moving sites through the cleanup phases to achieve RIP/RC.

Appendix D, Section 6 contains MMRP CTC performance data by DoD Component.

### Technology

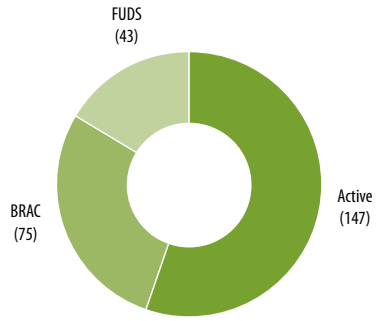
Technology is an important part of the MMRP. The application of innovative, effective environmental technologies can improve cleanup efficiency, resulting in reduced risk and accelerated completion of the program. DoD supports research and development programs focusing on technologies to improve the safety, efficiency, and cost-effectiveness of munitions cleanup. Information on the specific technologies to advance the MMRP can be found at the Strategic Environmental Research and Development Program and Environmental Security Technology Certification Program Web site: *http://serdp-estcp.org/*

## Cost Recovery

Installations report the amount of cleanup costs recovered in the reporting year and the amount recovered cumulatively through FY10. DoD recovered $20.3 million in cleanup costs in FY10. The Department has recovered approximately $578 million cumulatively through FY10.

Appendix D, Section 6 contains Cost Recovery data by DoD Component.

**Figure 6-13** Total Number of RABs




**Total RABs: 265**

## Restoration Partnerships

### RABs

DoD currently maintains 265 RABs on active installations, BRAC installations, and FUDS properties (Figure 6-13). DoD has supported a consistent number of RABs since it established the program in FY94. In FY10, DoD established three RABs and adjourned one RAB at Fort Richardson, Alaska (Figure 6-14).

In FY10, DoD spent $3.5 million to support RABs, which represents an 18 percent increase since the previous year. Expenditures vary from year to year, based on community interest and participation, as well as cleanup requirements.

**Figure 6-14** RABs Established and Adjourned in FY10

| Installation Name | FFID | DoD Component | Established/Adjourned |
|---|---|---|---|
| Yuma Proving Ground | AZ921412099100 | Army | Established |
| NSA Andersen Guam | GU917309951900 | Navy | Established |
| San Diego Naval Training Center | CA917002320200 | Navy | Established |
| Fort Richardson, AK | AK021452215700 | Army | Adjourned |

**Figure 6-15** RABs Awarded TAPP Funding in FY10 (Actual Dollars)

| Installation Name | FFID | TAPP Amount |
|---|---|---|
| Army | | |
| Picatinny Arsenal | NJ221382070400 | $20,672 |
| Navy | | |
| Calverton NWIRP | NY217002379400 | $24,950 |
| Formerly Used Defense Sites | | |
| Kinchloe AFB | MI59799F226000 | $24,300 |
| **Total** | | **$69,922** |

**Figure 6-16** FY10 RAB Community Membership (Participation by Category)

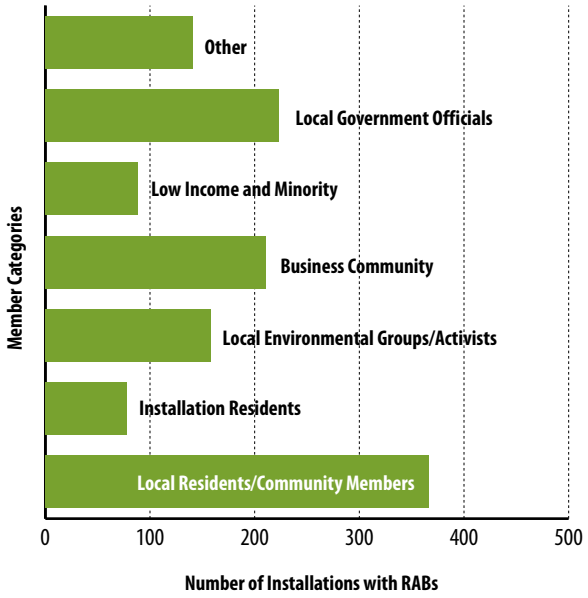
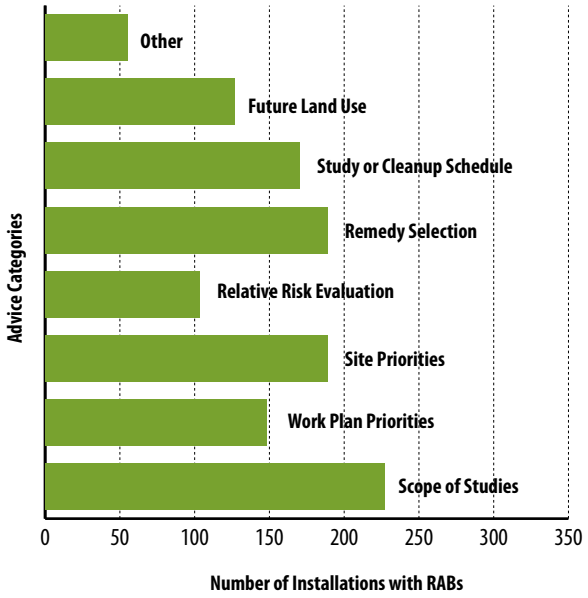



**Figure 6-17** FY10 Advice Provided by RABs (Participation by Category)




DoD may provide TAPP Grants to support technology assessments, relative risk site evaluations, health risk evaluations, and technical training and other support. In FY10, two DoD installations and one FUDS property received TAPP grants for their respective RABs, totaling $69,922 (Figure 6-15).

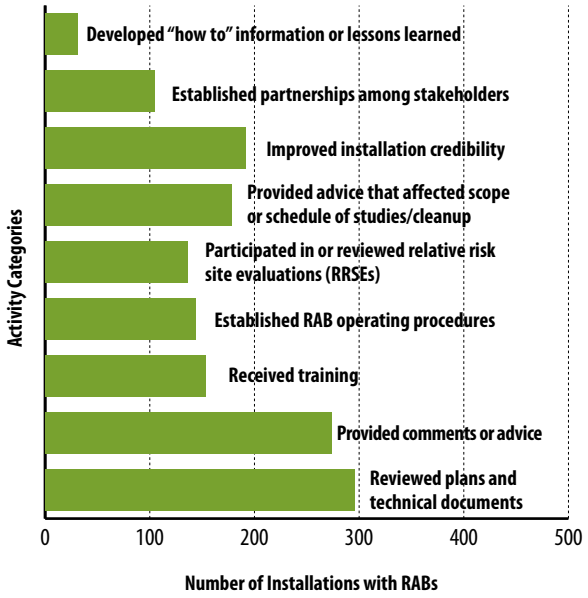
In FY10, local residents, local government officials, and business community members made up a majority of RAB participants (Figure 6-16). The DoD Components report that most RABs advised DoD on the scope of environmental or public health studies. RABs also commonly provided input to prioritizing sites and selecting cleanup activities (Figure 6-17). RABs review plans and technical documents, and provide comments or advice as their two primary activities, a similar trend to FY09 (Figure 6-18).

Appendix D, Section 6 contains data on the number of RABs by DoD Component.

## DSMOA

Since 1986, DoD signed 53 DSMOAs with 48 states, 4 U.S. territories, and the District of Columbia. Only Arkansas, North Dakota, and the Virgin Islands have not signed DSMOAs. Of the 53 eligible partners, 52 have signed CAs for the FY08-FY10 funding period. The Navy signed two CAs, with California and West Virginia, outside the DSMOA program for the FY08-FY10 period.

**Figure 6-18** FY10 Primary RAB Activities (Participation by Category)




In FY10, DoD reimbursed $27 million through DSMOA (Figure 6-19). An overview of FY10 DSMOA reimbursements by state and U.S. territory appears in Figure 6-20.

**Figure 6-19** DSMOA and Cooperative Agreement Status (Actual Dollars)

| State/Territory | DSMOA Signed (mm/dd/yy) | CA Application Signed (mm/dd/yy) | FY10 DSMOA Reimbursements |
|---|---|---|---|
| Alabama | 5/29/90 | 5/10/10 | $1,772,355 |
| Alaska | 6/4/90 | 5/10/10 | $2,142,157 |
| American Samoa | 7/10/91 | N/A | $0 |
| Arizona | 3/13/91 | 5/6/10 | $541,291 |
| Arkansas | N/A | N/A | N/A |
| California | 5/31/90 | 5/10/10 | $5,920,045 |
| Colorado | 10/18/93 | 4/21/10 | $424,439 |
| Connecticut | 4/23/98 | 5/10/10 | $0 |
| Delaware | 2/26/90 | 4/22/10 | $0 |
| District of Columbia | 5/9/94 | 5/6/10 | $599,062 |
| Florida | 6/14/90 | 4/22/10 | $739,474 |
| Georgia | 5/8/90 | 4/29/10 | $597,648 |
| Guam | 11/27/91 | 4/29/10 | $60,823 |
| Hawaii | 9/10/91 | 4/16/10 | $263,761 |
| Idaho | 2/6/91 | 4/21/10 | $188,910 |
| Illinois | 12/17/92 | 4/19/10 | $1,312,153 |
| Indiana | 4/17/91 | 5/11/10 | $105,780 |
| Iowa | 2/1/08 | 4/19/10 | $36,915 |
| Kansas | 8/6/92 | 4/11/10 | $317,794 |
| Kentucky | 6/6/91 | 4/20/10 | $109,792 |
| Louisiana | 11/13/91 | 4/20/10 | $62,528 |
| Maine | 6/24/91 | 4/22/10 | $457,210 |
| Maryland | 11/26/90 | 4/16/10 | $672,444 |
| Massachusetts | 10/18/91 | 5/6/10 | $901,935 |
| Michigan | 8/27/92 | 4/22/10 | $980,622 |
| Minnesota | 6/29/91 | 5/4/10 | $332,542 |
| Mississippi | 10/13/89 | 5/11/10 | $200,075 |
| Missouri | 5/22/91 | 4/26/10 | $704,745 |
| Montana | 4/17/98 | 4/20/10 | $76,197 |
| Nebraska | 9/29/92 | 4/19/10 | $158,084 |
| Nevada | 9/12/90 | 4/16/10 | $330,345 |
| New Hampshire | 1/22/93 | 4/16/10 | $201,231 |
| New Jersey | 4/3/92 | 5/12/10 | $561,810 |
| New Mexico | 6/12/90 | 4/21/10 | $125,277 |
| New York | 6/6/91 | 4/20/10 | $603,459 |
| North Carolina | 6/6/91 | 4/20/10 | $620,977 |
| North Dakota | N/A | N/A | N/A |
| Northern Mariana Islands | 10/18/91 | 5/28/10 | $0 |
| Ohio | 10/6/92 | 4/20/10 | $516,330 |
| Oklahoma | 12/28/92 | 4/19/10 | $165,279 |
| Oregon | 6/30/04 | 5/6/10 | $50,325 |
| Pennsylvania | 4/14/94 | 5/3/10 | $144,452 |
| Puerto Rico | 2/4/91 | 5/11/10 | $370,830 |
| Rhode Island | 9/26/91 | 4/29/10 | $252,340 |

**Figure 6-19, cont.** DSMOA and Cooperative Agreement Status (Actual Dollars)

| State/Territory | DSMOA Signed (mm/dd/yy) | CA Application Signed (mm/dd/yy) | FY10 DSMOA Reimbursements |
|---|---|---|---|
| South Carolina | 5/8/91 | 4/20/10 | $1,169,751 |
| South Dakota | 10/25/91 | 4/15/10 | $105,029 |
| Tennessee | 6/2/92 | 4/21/10 | $232,812 |
| Texas | 4/8/91 | 4/20/10 | $562,477 |
| Utah | 11/11/98 | 4/21/10 | $376,494 |
| Vermont | 6/22/90 | 5/10/10 | $29,218 |
| Virgin Islands | N/A | N/A | N/A |
| Virginia | 8/31/90 | 4/19/10 | $634,623 |
| Washington | 2/3/94 | 1/1/10 | $0 |
| West Virginia | 5/24/90 | 5/10/10 | $8,894 |
| Wisconsin | 7/22/92 | 4/19/10 | $126,732 |
| Wyoming | 6/27/90 | 4/20/10 | $196,510 |
| **Total** | | | **$27,063,976** |

**Figure 6-20** FY10 DSMOA Reimbursements by State and U.S. Territory

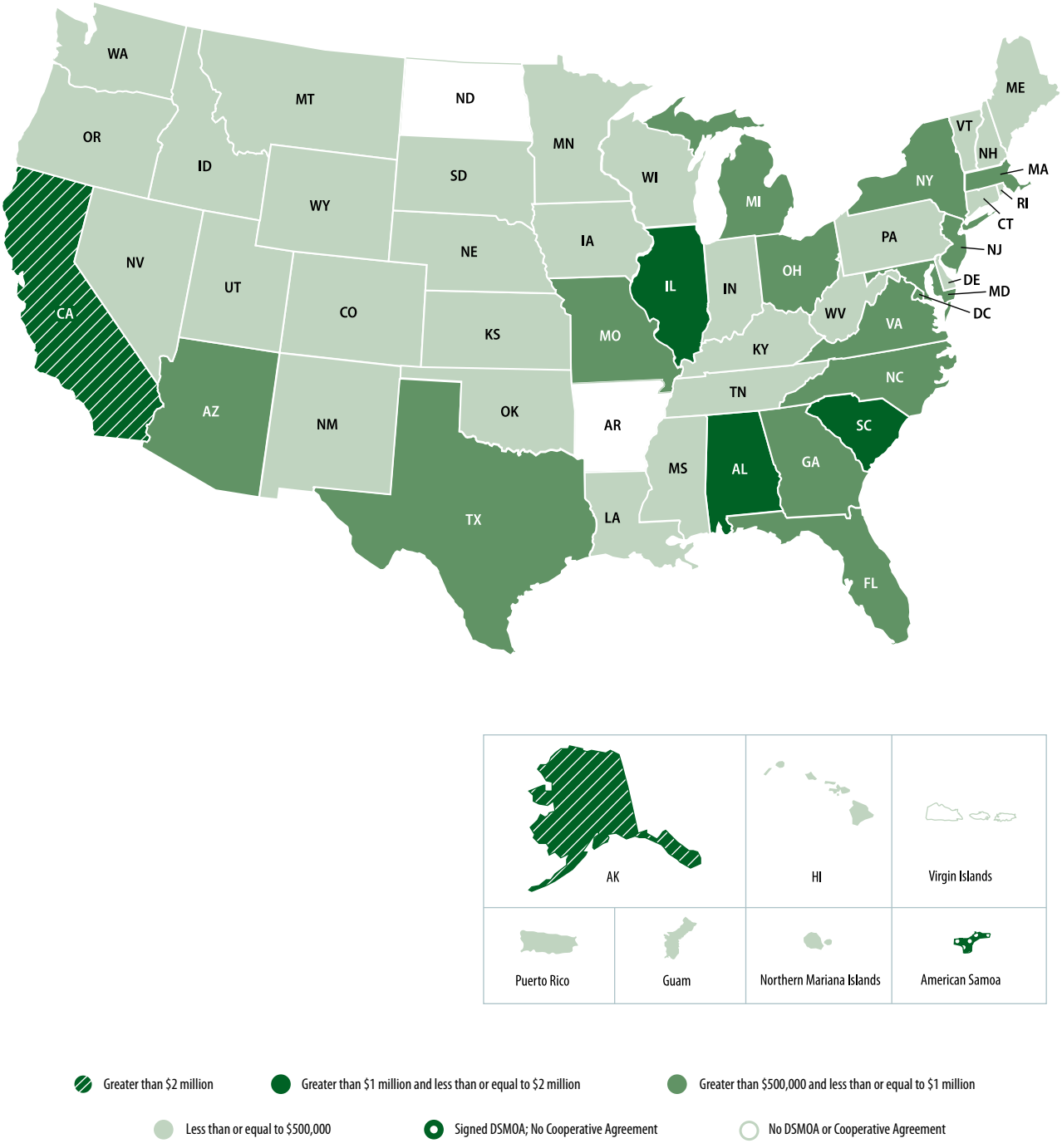
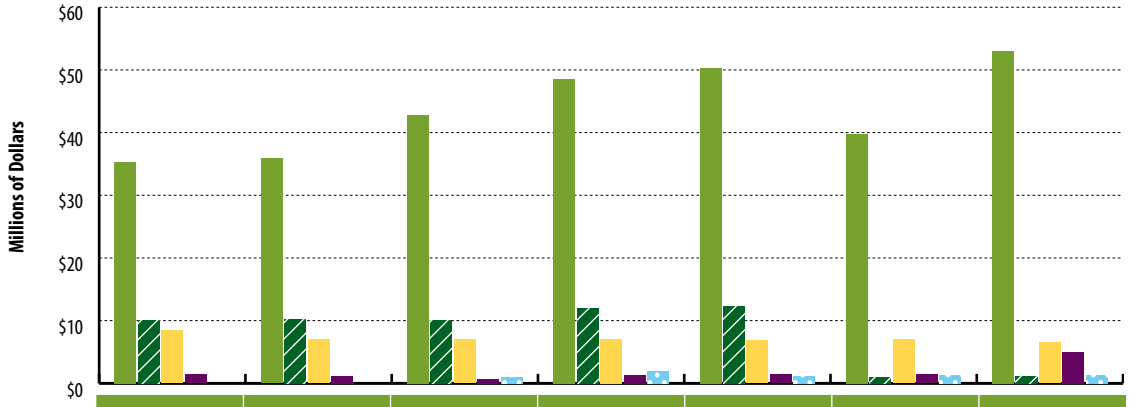


**Figure 1-15** DoD Miscellaneous Environmental Programs Funding




| | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated | FY12 Requested |
|---|---|---|---|---|---|---|---|
| REPI | $35.3 | $35.9 | $42.8 | $48.6 | $50.3 | $39.8 | $53.0 |
| NALEMP | $10.0 | $10.1 | $10.0 | $11.9 | $12.2 | $0.2 | $0.2 |
| Legacy Resource Management | $8.4 | $7.0 | $7.0 | $7.1 | $6.8 | $7.0 | $6.5 |
| DEIC Program | $1.4 | $1.2 | $0.7 | $1.3 | $1.4 | $1.4 | $5.0 |
| Emerging Contaminants | $0.0 | $0.0 | $0.9 | $1.9 | $1.1 | $1.2 | $1.2 |

Funding for these miscellaneous environmental programs is included in the Natural and Cultural Resources, Compliance, and Pollution Prevention funding charts; however, it is also displayed separately in Figure 1-15.

| | | | | | |
|---|---|---|---|---|---|
| **FFID:** | NC417302726100 | **Contaminants:** | SVOCs, explosives, propellants, VOCs, PCBs, petroleum hydrocarbons, solvents, heavy metals | **Five-Year Review Status:** | Completed and planned |
| **Location (Size):** | Cherry Point, North Carolina (29,139 acres) | **Media Affected:** | Groundwater, Surface Water, Sediment, Soil | **IRP/MMRP Status Table:** | Refer to page E-6-123 |
| **Mission:** | Maintain and operate support facilities; provide services and materials for marine aircraft | **Funding to Date:** | $ 97.1 million | | |
| **HRS Score:** | 70.71; placed on NPL in December 1994 | **Est. CTC (Comp Year):** | $ 95.6 million (FY2042) | | |
| **IAG Status:** | FFA signed in January 2005 and January 2008 | **IRP Sites (Final RIP/RC):** | 108 (FY2017) | | |
| | | **MMRP Sites (Final RIP/RC):** | 3 (FY2019) | | |

## Introduction

Cherry Point Marine Corps Air Station (MCAS) provides services and materials for marine aircraft. Military activities have resulted in environmental contamination at the installation. The potential risk to human health and the environment was significant enough for EPA to place the installation on the NPL in December 1994. DoD and EPA signed federal facility agreements (FFAs) in FY05 and FY08 to outline how they were going to proceed with cleanup. In 2005, the BRAC Commission recommended Cherry Point MCAS for realignment. Formed in FY91, the installation converted its technical review committee responsible for communicating cleanup progress with the community into a Restoration Advisory Board in FY95. In FY93, the installation formed two information repositories, and in FY95, completed a community relations plan. Cherry Point MCAS finalized its community involvement plan in FY05. To ensure continuous monitoring and improvement, the installation completed five-year review reports for eight sites in FY03 and FY08.

To date, the installation has completed 10 Records of Decision (RODs), which selected cleanup actions for 15 sites and determined that no further cleanup actions were necessary for 5 sites. In FY02, the installation conducted an inventory of all sites suspected to contain munitions contamination for the Military Munitions Response Program (MMRP); MMRP sites were identified.

## FY10 IRP Progress

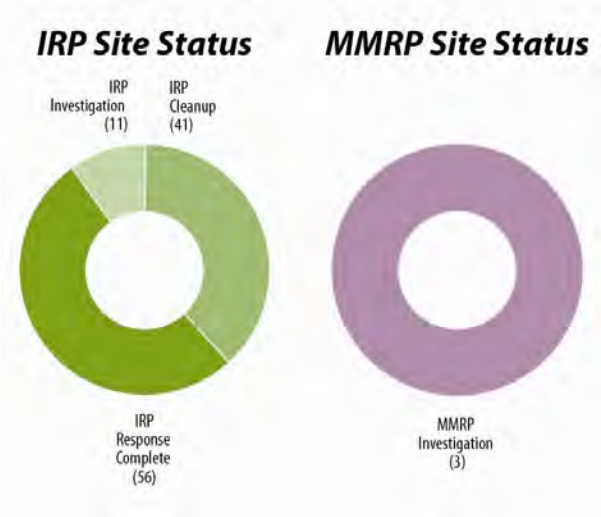
Cherry Point MCAS began design and started cleanup operations at Operable Unit (OU) 14 (Site 90). The installation also completed RODs determining that no further cleanup actions were necessary for OU 1 (Sites 14, 15, 17, 18, and 40). Cherry Point MCAS also completed a draft feasibility study (FS) to evaluate cleanup alternatives for the central groundwater plume at OU 1. The installation also completed Phase I of the vapor intrusion investigation for OU 1.

Administrative issues delayed the optimization study to identify opportunities for streamlining cleanup for groundwater at OU 2.

## FY10 MMRP Progress

Cherry Point MCAS completed the site inspections (SIs) at Unexploded Ordnance (UXO) Sites 1 and 3.

Administrative issues delayed the completion of the SI at UXO Site 2.




## Plan of Action

Plan of action items for Cherry Point Marine Corps Air Station are grouped below according to program category.

### IRP

- Complete optimization study for groundwater at OU 2 in FY11.
- Finalize the FS and proposed plan for the central groundwater plume at OU 1 in FY11.
- Finalize the FS for OU 1 (Sites 16 and 83) in FY11.
- Complete proposed cleanup plan, revised ROD, and cleanup design for OU 2 (Site 10) in FY11.
- Perform Phase II of the vapor intrusion study and implement treatability study at OU 1 in FY11.
- Complete proposed cleanup plan and ROD for OU 1 (Sites 16 and 83) in FY12.

### MMRP

- Complete the final focused remedial investigation, including surface removal, at Site 1 in FY11.
- Conduct watershed contaminant source pilot investigation at UXO Site 2 in FY11.
- Complete SI for UXO Site 2 in FY11.

# A Acronyms

| | |
|---|---|
| **AAP** | Army Ammunition Plant |
| **AD** | Army Depot |
| **AFB** | Air Force Base |
| **AFP** | Air Force Plant |
| **AFRPA** | Air Force Real Property Agency |
| **ANG** | Air National Guard |
| **AOC** | Area of Concern |
| **ARB** | Air Reserve Base |
| **ARC** | Annual Report to Congress |
| **ARS** | Air Reserve Station |
| **AST** | Aboveground Storage Tank |
| **BD/DR** | Building Demolition and Debris Removal |
| **BIA** | Bureau of Indian Affairs |
| **BRAC** | Base Realignment and Closure |
| **BTEX** | Benzene, Toluene, Ethylbenzene, and Xylene |
| **C&D** | Construction and Demolition |
| **CA** | Cooperative Agreements |
| **CAA** | Clean Air Act |
| **CAP** | Corrective Action Plan |
| **CD** | Chemical Depot |
| **CERCLA** | Comprehensive Environmental Response, Compensation and Liability Act |
| **CFC** | Chlorofluorocarbon |
| **CFR** | Code of Federal Regulations |
| **CMI** | Corrective Measures Implementation |
| **CMS** | Corrective Measures Study |
| **CO** | Carbon Monoxide |
| **$CO_2$** | Carbon Dioxide |
| **CON/HTRW** | Containerized Hazardous, Toxic and Radioactive Waste |
| **CTC** | Cost-to-Complete |
| **CWA** | Clean Water Act |
| **CWM** | Chemical Weapons Materiel |
| **CY** | Calendar Year |
| **DD** | Decision Document |
| **DDD** | Defense Distribution Depot |
| **DDT** | Dichlorodiphenyltrichloroethane |
| **DEIC** | Defense Environmental International Cooperation |
| **DENIX** | Defense Environmental Network and Information eXchange |
| **DEP** | Defense Environmental Programs |
| **DEP ARC** | Defense Environmental Programs Annual Report to Congress |
| **DESC** | Defense Energy Support Center |
| **DLA** | Defense Logistics Agency |
| **DMM** | Discarded Military Munitions |
| **DNAPL** | Dense Nonaqueous Phase Liquid |
| **DNE** | Determined not eligible for listing |
| **DNR** | Designation rescinded for NHLI/NHLC/NREI/NREC National Registry property |
| **DNSC** | Defense National Stockpile Center |
| **DoD** | Department of Defense |
| **DoDD** | Department of Defense Directive |
| **DoDI** | Department of Defense Instruction |
| **DOE** | Department of Energy |
| **DOI** | Department of the Interior |
| **DOJ** | Department of Justice |
| **DON** | Department of the Navy |
| **DP** | Disposal Pit |
| **DPG** | Defense Planning Guidance |
| **DRMO** | Defense Reutilization and Marketing Office |
| **DSC** | Defense Supply Center |
| **DSMOA** | Defense State Memorandum of Agreement |
| **DTRA** | Defense Threat Reduction Agency |
| **DWCF** | Defense Working Capital Fund |
| **DWFP** | Defense Warfighter Protection |
| **ECP** | Environmental Condition of Property |
| **EE/CA** | Engineering Evaluation and Cost Analysis |
| **ELPA** | Eligible for the purposes of a program alternative |
| **EMS** | Environmental Management System |
| **E.O.** | Executive Order |

| | |
|---|---|
| **EPA** | Environmental Protection Agency |
| **EPCRA** | Emergency Planning and Community Right-to-Know Act |
| **ER** | Environmental Restoration |
| **ESA** | Endangered Species Act |
| **ESCA** | Environmental Services Cooperative Agreement |
| **ESI** | Expanded Site Inspection |
| **ESOH** | Environmental, Safety, and Occupational Health |
| **ESS** | Explosives Safety Submission |
| **ESTCP** | Environmental Security Technology Certification Program |
| **ETA** | Early Transfer Authority |
| **EU** | European Union |
| **FAA** | Federal Aviation Administration |
| **FAR** | Federal Acquisition Regulation |
| **FFA** | Federal Facility Agreement |
| **FFID** | Federal Facility Identifier |
| **FFS** | Focused Feasibility Study |
| **FGS** | Final Governing Standards |
| **FISC** | Fleet Industrial Supply Center |
| **FMR** | Financial Management Regulation |
| **FOSL** | Finding of Suitability to Lease |
| **FOST** | Finding of Suitability to Transfer |
| **FP** | Fire Pit |
| **FPTA** | Fire Pit Training Area |
| **FS** | Feasibility Study |
| **FT** | Fire Training |
| **FTA** | Fire Training Area |
| **FUDS** | Formerly Used Defense Site |
| **FY** | Fiscal Year |
| **GIS** | Geographic Information System |
| **HAP** | Hazardous Air Pollutant |
| **HAZMAT** | Hazardous Material |
| **HQMC** | Headquarters, Marine Corps |
| **HRS** | Hazard Ranking System |
| **HTRW** | Hazardous, Toxic, and Radioactive Waste |
| **IAG** | Interagency Agreement |
| **ICRMP** | Integrated Cultural Resource Management Plan |
| **INPR** | Inventory Project Report |
| **INRMP** | Integrated Natural Resource Management Plan |
| **IRA** | Interim Remedial Action |
| **IRP** | Installation Restoration Program |
| **ISWM** | Integrated Solid Waste Management |
| **JGEnvAtt** | Joint Group on Environmental Attributes |
| **LF** | Landfill |
| **LTM** | Long-term Management |
| **LUC** | Land Use Control |
| **MC** | Munitions Constituents or Mission Critical |
| **MCAS** | Marine Corps Air Station |
| **MCB** | Marine Corps Base |
| **MCL** | Maximum Contaminant Level |
| **MCLB** | Marine Corps Logistics Base |
| **MCRAD** | Military Cultural Resources Analysis Database |
| **MDA** | Missile Defense Agency |
| **MDNC** | Mission Dependent, Not Critical |
| **MEC** | Munitions and Explosives of Concern |
| **MEK** | Methyl Ethyl Ketone |
| **MilCon** | Military Construction |
| **MMRP** | Military Munitions Response Program |
| **MNA** | Monitored Natural Attenuation |
| **MOA** | Memorandum of Agreement |
| **MOU** | Memorandum of Understanding |
| **MRA** | Munitions Response Area |
| **MRS** | Munitions Response Site |
| **MRSPP** | Munitions Response Site Prioritization Protocol |
| **MTBE** | Methyl Tertiary Butyl Ether |
| **NAF** | Naval Air Facility |
| **NALEMP** | Native American Lands Environmental Mitigation Program |
| **NAS** | Naval Air Station |
| **NASA** | National Aeronautics and Space Administration |
| **NAVFAC** | Naval Facilities Engineering Command |
| **NAWC** | Naval Air Warfare Center |

| | |
|---|---|
| **NAWS** | Naval Air Weapons Station |
| **NCAW** | Net Chemical Agent Weight |
| **NCE** | Non-contributing element of NHL/NRL/NRE district |
| **NCS** | Naval Communication Station |
| **NDAA** | National Defense Authorization Act |
| **NEPA** | National Environmental Policy Act |
| **NEV** | Not yet evaluated |
| **NFRAP** | No Further Remedial Action Planned |
| **NHLC** | Contributing element to a national historic landmark district |
| **NHLI** | Individually listed national historic landmark |
| **NHO** | Native Hawaiian Organizations |
| **NHPA** | National Historic Preservation Act |
| **NIM** | Natural Infrastructure Management |
| **NHPA** | National Historic Preservation Act |
| **$NO_X$** | Nitrogen Oxide |
| **NPDES** | National Pollution Discharge Elimination System |
| **NPL** | National Priorities List |
| **NRC** | Nuclear Regulatory Commission |
| **NREC** | Eligible as a contributing element to an eligible National Register district |
| **NREI** | Individually eligible for the National Register |
| **NRLC** | Contributing element to a National Register district |
| **NRLI** | Individually-listed on the National Register |
| **NS** | Naval Station |
| **NSWC** | Naval Surface Warfare Center |
| **NSY** | Naval Shipyard |
| **NTC** | Naval Training Center |
| **NWIRP** | Naval Weapons Industrial Reserve Plant |
| **NWS** | Naval Weapons Station |
| **O&M** | Operations and Maintenance |
| **$O_3$** | Ozone |
| **OB/OD** | Open Burning/Open Detonation |
| **OSD** | Office of the Secretary of Defense |
| **OU** | Operable Unit |
| **PA** | Preliminary Assessment |
| **PAH** | Polyaromatic Hydrocarbons |
| **Pb** | Lead |
| **PBC** | Performance-Based Contracting |
| **PCB** | Polychlorinated Biphenyl |
| **PM** | Particulate Matter |
| **POL** | Petroleum, Oil, and Lubricants |
| **POTW** | Publicly Owned Treatment Works |
| **PP** | Proposed Plan |
| **PRAP** | Proposed Remedial Action Plan |
| **PROC** | Procurement |
| **PRP** | Potentially Responsible Party |
| **QRP** | Qualified Recycling Program |
| **RAB** | Restoration Advisory Board |
| **RAC** | Remedial Action Construction |
| **RA-C** | Risk Assessment Code |
| **RACR** | Remedial Action Completion Report |
| **RA-O** | Remedial Action Operation |
| **RAP** | Remedial Action Plan |
| **RC** | Response Complete |
| **RCRA** | Resource Conservation and Recovery Act |
| **RDT&E** | Research, Development, Testing, and Evaluation |
| **RDX** | Royal Demolition eXplosive |
| **REPI** | Readiness and Environmental Protection Initiative |
| **RFA** | RCRA Facility Assessment |
| **RFI** | RCRA Facility Investigation |
| **RI** | Remedial Investigation |
| **RIP** | Remedy in Place |
| **ROD** | Record of Decision |
| **RRSE** | Relative Risk Site Evaluation |
| **RSE** | Removal Site Evaluation |
| **SAIA** | Sikes Act Improvement Act |
| **SARA** | Superfund Amendments and Reauthorization Act |
| **SDWA** | Safe Drinking Water Act |

| | |
|---|---|
| **SERDP** | Strategic Environmental Research and Development Program |
| **SI** | Site Inspection |
| **$SO_2$** | Sulfur Dioxide |
| **SS** | Spill Site |
| **SSPP** | Strategic Sustainability Performance Plan |
| **SVE** | Soil Vapor Extraction |
| **SVOC** | Semivolatile Organic Compounds |
| **SWMU** | Solid Waste Management Unit |
| **TCE** | Trichloroethylene |
| **TNT** | Trinitrotoluene |
| **TRI** | Toxics Release Inventory |
| **TSCA** | Toxic Substances Control Act |
| **USACE** | U.S. Army Corps of Engineers |
| **U.S.C.** | United States Code |
| **USDA** | U.S. Department of Agriculture |
| **USD(AT&L)** | Under Secretary of Defense for Acquisition, Technology, and Logistics |
| **USFWS** | U.S. Fish and Wildlife Service |
| **USGS** | U.S. Geological Survey |
| **UST** | Underground Storage Tank |
| **UXO** | Unexploded Ordnance |
| **VOC** | Volatile Organic Compound |
| **WP** | Waste Pit |

# D DoD Components Backup Data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2. **Natural Resources Program Performance / Sikes Act Improvement Act** ..... D-21
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5. **Pollution Prevention Program Performance** ..... D-48
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# Section 1. Defense Environmental Funding

**Figure D-1.1** Natural and Cultural Resources Budget Summary (Millions of Dollars)*

| Army | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | N/A | $53.0 | $63.2 | $60.1 | $88.8 | $54.3 | $64.0 |
| Education and Training† | N/A | $0.0 | $0.6 | $0.9 | $1.4 | $1.0 | $1.1 |
| Other Recurring | $12.5 | $16.1 | $78.3 | $67.0 | $98.7 | $57.4 | $69.3 |
| **Total** | **$12.5** | **$69.1** | **$142.1** | **$128.0** | **$188.9** | **$112.7** | **$134.4** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $3.0 | $3.7 | $10.8 | $20.6 | $30.6 | $16.2 | $20.3 |
| Wetlands | $1.8 | $2.3 | $2.9 | $3.2 | $4.7 | $2.5 | $3.1 |
| Other Natural Resources | $41.0 | $45.6 | $9.6 | $12.4 | $18.4 | $9.7 | $12.2 |
| Historical & Cultural Resources | $33.4 | $45.9 | $11.8 | $16.2 | $24.5 | $14.1 | $17.2 |
| **Total** | **$79.2** | **$97.5** | **$35.0** | **$52.4** | **$78.2** | **$42.5** | **$52.8** |
| **Total Recurring** | **$12.5** | **$69.1** | **$142.1** | **$128.0** | **$188.9** | **$112.7** | **$134.4** |
| **Total Nonrecurring** | **$79.2** | **$97.5** | **$35.0** | **$52.4** | **$78.2** | **$42.5** | **$52.8** |
| **Total** | **$91.7** | **$166.6** | **$177.1** | **$180.4** | **$267.1** | **$155.2** | **$187.3** |

| Navy | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | $0.0 | $0.0 | $2.6 | $2.8 | $3.0 | $3.3 | $3.3 |
| Education and Training† | $0.0 | $0.0 | $0.1 | $0.1 | $0.1 | $0.1 | $0.1 |
| Other Recurring | $10.7 | $11.6 | $11.0 | $12.9 | $19.8 | $16.9 | $32.6 |
| **Total** | **$10.7** | **$11.6** | **$13.7** | **$15.7** | **$22.9** | **$20.2** | **$36.0** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $1.2 | $0.6 | $1.9 | $1.4 | $3.2 | $3.5 | $3.6 |
| Wetlands | $0.7 | $0.3 | $0.4 | $0.4 | $0.8 | $0.9 | $2.4 |
| Other Natural Resources | $1.1 | $0.8 | $1.8 | $1.8 | $2.8 | $6.9 | $4.9 |
| Historical & Cultural Resources | $1.0 | $0.9 | $4.5 | $4.8 | $4.6 | $4.6 | $4.7 |
| **Total** | **$4.1** | **$2.6** | **$8.7** | **$8.5** | **$11.4** | **$16.0** | **$15.7** |
| **Total Recurring** | **$10.7** | **$11.6** | **$13.7** | **$15.7** | **$22.9** | **$20.2** | **$36.0** |
| **Total Nonrecurring** | **$4.1** | **$2.6** | **$8.7** | **$8.5** | **$11.4** | **$16.0** | **$15.7** |
| **Total** | **$14.7** | **$14.2** | **$22.4** | **$24.2** | **$34.3** | **$36.2** | **$51.7** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

**Figure D-1.1, cont.** Natural and Cultural Resources Budget Summary (Millions of Dollars)*

| Marine Corps | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | $0.0 | $7.7 | $8.7 | $7.7 | $7.4 | $7.4 | $9.9 |
| Education and Training† | $0.0 | $0.1 | $0.1 | $0.1 | $0.2 | $0.2 | $0.2 |
| Other Recurring | $4.9 | $5.2 | $8.7 | $4.7 | $4.4 | $4.3 | $4.2 |
| **Total** | **$4.9** | **$13.1** | **$17.5** | **$12.5** | **$12.0** | **$11.9** | **$14.3** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $2.3 | $5.9 | $2.8 | $2.2 | $2.6 | $2.6 | $2.6 |
| Wetlands | $0.7 | $0.3 | $0.1 | $0.3 | $0.5 | $0.5 | $0.5 |
| Other Natural Resources | $3.6 | $2.6 | $2.7 | $2.5 | $3.0 | $3.1 | $3.2 |
| Historical & Cultural Resources | $2.9 | $3.8 | $4.8 | $2.5 | $2.5 | $2.3 | $2.6 |
| **Total** | **$9.5** | **$12.6** | **$10.4** | **$7.6** | **$8.5** | **$8.4** | **$8.9** |
| **Total Recurring** | **$4.9** | **$13.1** | **$17.5** | **$12.5** | **$12.0** | **$11.9** | **$14.3** |
| **Total Nonrecurring** | **$9.5** | **$12.6** | **$10.4** | **$7.6** | **$8.5** | **$8.4** | **$8.9** |
| **Total** | **$14.4** | **$25.7** | **$27.9** | **$20.1** | **$20.5** | **$20.4** | **$23.2** |

| Air Force | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | N/A | $15.0 | $17.3 | $17.4 | $17.1 | $20.3 | $19.9 |
| Education and Training† | N/A | $1.1 | $0.8 | $0.8 | $0.8 | $0.8 | $0.7 |
| Other Recurring | $21.4 | $18.4 | $26.2 | $22.2 | $20.7 | $22.8 | $20.7 |
| **Total** | **$21.4** | **$34.6** | **$44.3** | **$40.3** | **$38.5** | **$44.0** | **$41.3** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $0.5 | $0.6 | $0.5 | $1.5 | $0.3 | $0.9 | $0.6 |
| Wetlands | $0.3 | $1.8 | $3.7 | $1.9 | $1.0 | $1.4 | $0.8 |
| Other Natural Resources | $5.9 | $7.1 | $8.3 | $9.4 | $6.4 | $8.4 | $6.0 |
| Historical & Cultural Resources | $9.2 | $4.9 | $16.9 | $14.8 | $10.9 | $10.2 | $8.5 |
| **Total** | **$16.0** | **$14.3** | **$29.4** | **$27.6** | **$18.6** | **$20.9** | **$15.8** |
| **Total Recurring** | **$21.4** | **$34.6** | **$44.3** | **$40.3** | **$38.5** | **$44.0** | **$41.3** |
| **Total Nonrecurring** | **$16.0** | **$14.3** | **$29.4** | **$27.6** | **$18.6** | **$20.9** | **$15.8** |
| **Total** | **$37.3** | **$48.9** | **$73.7** | **$67.9** | **$57.2** | **$64.9** | **$57.2** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

**Figure D-1.1, cont.** Natural and Cultural Resources Budget Summary (Millions of Dollars)*

| DLA | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | N/A | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Education and Training† | N/A | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Other Recurring | $0.0 | $0.1 | $0.0 | $0.0 | $0.0 | $0.1 | $0.1 |
| **Total** | **$0.0** | **$0.1** | **$0.0** | **$0.0** | **$0.0** | **$0.1** | **$0.1** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $0.1 | $0.2 | $0.4 | $0.3 | $0.1 | $0.3 | $0.3 |
| Wetlands | $0.0 | $0.0 | $0.5 | $0.1 | < $0.05 | < $0.05 | < $0.05 |
| Other Natural Resources | $0.1 | $0.1 | $0.1 | $0.1 | $0.1 | $0.2 | $0.1 |
| Historical & Cultural Resources | $0.1 | $0.1 | $0.1 | $0.4 | $0.2 | $0.2 | $0.2 |
| **Total** | **$0.3** | **$0.4** | **$1.2** | **$0.8** | **$0.4** | **$0.7** | **$0.6** |
| **Total Recurring** | **$0.0** | **$0.1** | **$0.0** | **$0.0** | **$0.0** | **$0.1** | **$0.1** |
| **Total Nonrecurring** | **$0.3** | **$0.4** | **$1.2** | **$0.8** | **$0.4** | **$0.7** | **$0.6** |
| **Total** | **$0.3** | **$0.5** | **$1.2** | **$0.8** | **$0.4** | **$0.8** | **$0.7** |

| Other Defense-wide (excluding DLA) | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | N/A | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Education and Training† | N/A | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Other Recurring | $0.2 | $0.3 | $0.2 | $0.6 | $0.7 | $0.6 | $0.1 |
| **Total** | **$0.2** | **$0.3** | **$0.2** | **$0.6** | **$0.7** | **$0.6** | **$0.1** |
| **Nonrecurring** | | | | | | | |
| Threatened & Endangered Species | $0.2 | < $0.05 | < $0.05 | < $0.05 | < $0.05 | $0.3 | < $0.05 |
| Wetlands | $0.1 | < $0.05 | $0.1 | < $0.05 | < $0.05 | < $0.05 | < $0.05 |
| Other Natural Resources | $42.8 | $40.9 | $48.1 | $53.7 | $55.1 | $44.8 | $57.6 |
| Historical & Cultural Resources | $2.1 | $2.5 | $2.1 | $2.1 | $2.0 | $2.2 | $2.0 |
| **Total** | **$45.4** | **$43.4** | **$50.3** | **$55.9** | **$57.2** | **$47.4** | **$59.6** |
| **Total Recurring** | **$0.2** | **$0.3** | **$0.2** | **$0.6** | **$0.7** | **$0.6** | **$0.1** |
| **Total Nonrecurring** | **$45.4** | **$43.4** | **$50.3** | **$55.9** | **$57.2** | **$47.4** | **$59.6** |
| **Total** | **$45.5** | **$43.7** | **$50.5** | **$56.5** | **$57.9** | **$47.9** | **$59.7** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

**Figure D-1.2** Compliance Budget Summary (Millions of Dollars)*

| Army | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | $224.4 | $177.4 | $150.3 | $159.2 | $150.2 | $178.0 | $169.9 |
| Education and Training† | $11.6 | $11.1 | $15.5 | $14.1 | $14.7 | $17.5 | $17.0 |
| Permits & Fees | $7.9 | $8.3 | $20.5 | $11.5 | $10.6 | $13.0 | $12.1 |
| Sampling, Analysis, Monitoring | $14.5 | $15.0 | $13.4 | $14.2 | $13.2 | $15.7 | $15.2 |
| Waste Disposal | $16.9 | $17.6 | $32.1 | $30.0 | $28.9 | $34.2 | $32.9 |
| Other Recurring Funding | $27.9 | $24.8 | $115.8 | $94.6 | $103.2 | $116.4 | $113.6 |
| **Total** | **$303.2** | **$254.2** | **$347.6** | **$323.6** | **$320.7** | **$374.7** | **$360.7** |
| **Nonrecurring** | | | | | | | |
| Hazardous Waste | $26.0 | $26.8 | $2.7 | $5.9 | $5.7 | $6.3 | $6.0 |
| Solid Waste | $7.1 | $7.5 | $1.6 | $1.3 | $1.4 | $1.7 | $1.6 |
| Underground Storage Tank | $10.5 | $11.0 | $9.4 | $1.5 | $1.3 | $1.4 | $1.4 |
| Clean Air Act | $7.3 | $7.7 | $2.3 | $2.8 | $2.5 | $3.0 | $2.8 |
| Clean Water Act | $37.7 | $65.2 | $10.0 | $6.2 | $5.8 | $6.7 | $6.4 |
| Planning | $19.2 | $19.4 | $9.3 | $3.6 | $3.7 | $4.3 | $4.3 |
| Safe Drinking Water Act | $18.1 | $17.5 | $1.2 | $1.8 | $1.7 | $2.0 | $1.9 |
| Other | $111.8 | $84.7 | $91.4 | $62.7 | $58.3 | $68.8 | $71.3 |
| **Total** | **$237.6** | **$239.8** | **$127.9** | **$85.8** | **$80.4** | **$94.2** | **$95.8** |
| **Total Recurring** | **$303.2** | **$254.2** | **$347.6** | **$323.6** | **$320.7** | **$374.7** | **$360.7** |
| **Total Nonrecurring** | **$237.6** | **$239.8** | **$127.9** | **$85.8** | **$80.4** | **$94.2** | **$95.8** |
| **Total** | **$540.8** | **$494.0** | **$475.4** | **$409.4** | **$401.1** | **$469.0** | **$456.5** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

# Section 6. Restoration Program Performance

**Figure D-6.1** IRP Site Status at Active Installations by Cleanup Phase

| Army | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 594 | 497 | 437 | 590 | 572 |
| Cleanup Planned or Underway | 289 | 286 | 270 | 357 | 346 |
| (Remedy in Place*) | 102 | 170 | 190 | 222 | 212 |
| Response Complete | 9,568 | 9,704 | 9,775 | 9,918 | 9,976 |
| (Long-term Management Underway†) | 268 | 268 | 331 | 403 | 434 |
| **Total Sites** | **10,451** | **10,487** | **10,482** | **10,865** | **10,894** |
| **Navy and Marine Corps** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 651 | 541 | 505 | 449 | 438 |
| Cleanup Planned or Underway | 381 | 1,958 | 1,107 | 1,075 | 909 |
| (Remedy in Place*) | 229 | 1,853 | 1,001 | 947 | 756 |
| Response Complete | 2,672 | 1,217 | 2,111 | 2,204 | 2,495 |
| (Long-term Management Underway†) | 156 | 34 | 54 | 48 | 64 |
| **Total Sites** | **3,704** | **3,716** | **3,723** | **3,728** | **3,842** |
| **Air Force** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 879 | 565 | 414 | 1,414 | 1,378 |
| Cleanup Planned or Underway | 976 | 871 | 829 | 828 | 811 |
| (Remedy in Place*) | 470 | 469 | 463 | 490 | 547 |
| Response Complete | 3,471 | 3,854 | 4,049 | 4,151 | 4,255 |
| (Long-term Management Underway†) | 274 | 317 | 351 | 362 | 386 |
| **Total Sites** | **5,326** | **5,290** | **5,292** | **6,393** | **6,444** |
| **DLA** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 3 | 3 | 4 | 4 | 4 |
| Cleanup Planned or Underway | 18 | 20 | 17 | 16 | 17 |
| (Remedy in Place*) | 10 | 13 | 13 | 12 | 15 |
| Response Complete | 324 | 322 | 325 | 327 | 327 |
| (Long-term Management Underway†) | 11 | 19 | 22 | 16 | 21 |
| **Total Sites** | **345** | **345** | **346** | **347** | **348** |
| **DoD Total** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 2,127 | 1,606 | 1,360 | 2,457 | 2,392 |
| Cleanup Planned or Underway | 1,664 | 3,135 | 2,223 | 2,276 | 2,083 |
| (Remedy in Place*) | 811 | 2,505 | 1,667 | 1,671 | 1,530 |
| Response Complete | 16,035 | 15,097 | 16,260 | 16,600 | 17,053 |
| (Long-term Management Underway†) | 709 | 638 | 758 | 829 | 905 |
| Percent of Sites Achieving RIP/RC | 85% | 89% | 90% | 86% | 86% |
| **Total Sites** | **19,826** | **19,838** | **19,843** | **21,333** | **21,528** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† Long-term Management Underway is a subset of Response Complete.

**Figure D-1.2, cont.** Compliance Budget Summary (Millions of Dollars)*

| Navy | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | $113.6 | $108.8 | $118.8 | $131.8 | $138.1 | $142.4 | $147.1 |
| Education and Training† | $3.9 | $3.7 | $4.3 | $3.1 | $3.7 | $4.5 | $4.9 |
| Permits & Fees | $4.0 | $3.6 | $3.8 | $4.1 | $3.9 | $4.3 | $5.6 |
| Sampling, Analysis, Monitoring | $13.6 | $12.7 | $27.0 | $13.7 | $13.7 | $14.4 | $15.2 |
| Waste Disposal | $40.0 | $43.7 | $41.1 | $41.5 | $41.1 | $44.7 | $46.8 |
| Other Recurring Funding | $91.4 | $88.3 | $89.6 | $88.0 | $59.4 | $77.0 | $72.7 |
| **Total** | **$266.5** | **$260.7** | **$284.6** | **$282.2** | **$259.8** | **$287.3** | **$292.2** |
| **Nonrecurring** | | | | | | | |
| Hazardous Waste | $4.4 | $4.4 | $7.1 | $7.6 | $9.8 | $7.6 | $8.5 |
| Solid Waste | $1.6 | $1.1 | $28.7 | $0.8 | $0.9 | $1.3 | $2.3 |
| Underground Storage Tank | $2.7 | $3.4 | $2.3 | $2.7 | $1.3 | $1.5 | $2.1 |
| Clean Air Act | $29.7 | $27.7 | $19.6 | $24.0 | $27.1 | $27.3 | $22.9 |
| Clean Water Act | $25.0 | $15.0 | $19.3 | $31.9 | $16.5 | $15.1 | $39.2 |
| Planning | $5.0 | $6.2 | $4.9 | $6.0 | $6.4 | $4.2 | $8.9 |
| Safe Drinking Water Act | $1.1 | $1.6 | $0.9 | $2.0 | $1.5 | $2.2 | $2.9 |
| Other | $25.4 | $29.6 | $26.8 | $33.3 | $13.6 | $12.8 | $17.4 |
| **Total** | **$95.0** | **$89.0** | **$109.7** | **$108.1** | **$77.2** | **$72.1** | **$104.3** |
| **Total Recurring** | **$266.5** | **$260.7** | **$284.6** | **$282.2** | **$259.8** | **$287.3** | **$292.2** |
| **Total Nonrecurring** | **$95.0** | **$89.0** | **$109.7** | **$108.1** | **$77.2** | **$72.1** | **$104.3** |
| **Total** | **$361.5** | **$349.6** | **$394.3** | **$390.3** | **$337.0** | **$359.4** | **$396.5** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

**Figure D-1.2, cont.** Compliance Budget Summary (Millions of Dollars)*

| Marine Corps | FY06 Actual | FY07 Actual | FY08 Actual | FY09 Actual | FY10 Actual | FY11 Estimated‡ | FY12 Requested |
|---|---|---|---|---|---|---|---|
| **Recurring** | | | | | | | |
| Manpower† | $33.4 | $17.0 | $22.8 | $26.3 | $28.7 | $28.2 | $28.5 |
| Education and Training† | $1.4 | $1.2 | $2.4 | $2.0 | $2.6 | $2.5 | $2.2 |
| Permits & Fees | $1.7 | $1.5 | $1.3 | $1.4 | $1.6 | $1.5 | $1.4 |
| Sampling, Analysis, Monitoring | $5.0 | $4.7 | $4.1 | $4.5 | $4.9 | $5.8 | $4.9 |
| Waste Disposal | $6.4 | $6.3 | $6.1 | $6.0 | $7.4 | $8.4 | $7.9 |
| Other Recurring Funding | $7.2 | $13.9 | $9.7 | $10.6 | $12.2 | $13.2 | $16.6 |
| **Total** | **$55.1** | **$44.6** | **$46.4** | **$50.8** | **$57.4** | **$59.5** | **$61.5** |
| **Nonrecurring** | | | | | | | |
| Hazardous Waste | $2.3 | $8.4 | $10.1 | $10.4 | $7.7 | $8.6 | $11.2 |
| Solid Waste | $3.6 | $1.3 | $14.7 | $11.4 | $7.3 | $2.7 | $9.9 |
| Underground Storage Tank | $1.4 | $0.6 | $2.3 | $2.3 | $2.3 | $2.6 | $2.7 |
| Clean Air Act | $1.2 | $0.6 | $4.4 | $3.1 | $3.3 | $3.3 | $1.8 |
| Clean Water Act | $64.1 | $57.2 | $15.0 | $19.1 | $17.4 | $19.0 | $17.8 |
| Planning | $0.9 | $0.5 | $0.8 | $26.4 | $17.0 | $16.7 | $17.2 |
| Safe Drinking Water Act | $1.4 | $3.7 | $8.7 | $59.0 | $6.5 | $6.5 | $6.6 |
| Other | $3.9 | $10.3 | $6.2 | $6.5 | $6.2 | $6.5 | $7.5 |
| **Total** | **$78.8** | **$82.7** | **$62.3** | **$138.2** | **$67.6** | **$65.8** | **$74.7** |
| **Total Recurring** | **$55.1** | **$44.6** | **$46.4** | **$50.8** | **$57.4** | **$59.5** | **$61.5** |
| **Total Nonrecurring** | **$78.8** | **$82.7** | **$62.3** | **$138.2** | **$67.6** | **$65.8** | **$74.7** |
| **Total** | **$133.9** | **$127.3** | **$108.7** | **$189.0** | **$125.0** | **$125.3** | **$136.1** |

* Subtotals may not add to totals due to rounding.

† Prior to FY07, DoD reported all Manpower and Education & Training funds under the Compliance Program.

‡ Because of the lack of Appropriations Acts, the Comptroller estimated the Fiscal Year (FY) 2011 amounts based on the FY11 President's Budget request, with an adjustment to match the annualized Continuing Resolution funding level by appropriation.

**Figure D-6.5** MRS Status at Active Installations by Cleanup Phase

| Army | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Investigation Planned or Underway | 655 | 631 | 509 | 397 | 715 |
| Cleanup Planned or Underway | 3 | 0 | 3 | 2 | 2 |
| (Remedy in Place*) | 0 | 0 | 0 | 0 | 0 |
| Response Complete | 127 | 195 | 384 | 552 | 678 |
| (Long-term Management Underway†) | 2 | 2 | 2 | 9 | 6 |
| **Total Sites** | **785** | **826** | **896** | **951** | **1,395** |
| **Navy and Marine Corps** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 181 | 194 | 198 | 188 | 188 |
| Cleanup Planned or Underway | 5 | 14 | 16 | 65 | 49 |
| (Remedy in Place*) | 0 | 12 | 11 | 59 | 30 |
| Response Complete | 35 | 31 | 43 | 21 | 76 |
| (Long-term Management Underway†) | 1 | 0 | 0 | 0 | 1 |
| **Total Sites** | **221** | **239** | **257** | **274** | **313** |
| **Air Force** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 240 | 373 | 390 | 428 | 426 |
| Cleanup Planned or Underway | 0 | 1 | 4 | 29 | 148 |
| (Remedy in Place*) | 0 | 0 | 0 | 1 | 1 |
| Response Complete | 64 | 111 | 123 | 145 | 151 |
| (Long-term Management Underway†) | 0 | 0 | 0 | 0 | 0 |
| **Total Sites** | **304** | **485** | **517** | **602** | **725** |
| **DLA** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | DLA does not have Munitions Response Sites (MRSs) | | | | |
| Cleanup Planned or Underway | | | | | |
| (Remedy in Place*) | | | | | |
| Response Complete | | | | | |
| (Long-term Management Underway†) | | | | | |
| **Total Sites** | | | | | |
| **DoD Total** | **FY06** | **FY07** | **FY08** | **FY09** | **FY10** |
| Investigation Planned or Underway | 1,076 | 1,198 | 1,097 | 1,013 | 1,329 |
| Cleanup Planned or Underway | 8 | 15 | 23 | 96 | 199 |
| (Remedy in Place*) | 0 | 12 | 11 | 60 | 31 |
| Response Complete | 226 | 337 | 550 | 718 | 905 |
| (Long-term Management Underway†) | 3 | 2 | 2 | 9 | 7 |
| Percent of Sites Achieving RIP/RC | 17% | 23% | 34% | 43% | 38% |
| **Total Sites** | **1,310** | **1,550** | **1,670** | **1,827** | **2,433** |

* Remedy in Place is a subset of Cleanup Planned or Underway.

† Long-term Management Underway is a subset of Response Complete.

**Figure D-6.10** BRAC Early Transfer Authority Acreage in FY10

| DoD Component | Installation Name | Date Transferred | Conveyance | Number of Acres Transferred |
|---|---|---|---|---|
| Army | Lone Star Army Ammunition Plant | 10/1/10 | Economic Development Conveyance | 8,874 |
| Army | Lone Star Army Ammunition Plant | 10/1/10 | Negotiated Sale | 5,424 |
| | | | **Total** | **14,298** |

**Figure D-6.11** Total Number of RABs at Active and BRAC Installations and FUDS Properties

| DoD Component | Active RABs | BRAC RABs | Total RABs |
|---|---|---|---|
| Army | 31 | 20 | **51** |
| Navy and Marine Corps | 52 | 24 | **76** |
| Air Force | 63 | 29 | **92** |
| DLA | 1 | 2 | **3** |
| FUDS | N/A | N/A | **43** |
| | | **Total Number of RABs** | **265** |

**Figure D-6.12** RAB Expenditures by DoD Component (Millions)*

| DoD Component | FY06 | FY07 | FY08 | FY09 | FY10 |
|---|---|---|---|---|---|
| Army | $0.5 | $0.4 | $0.4 | $0.4 | $0.3 |
| Navy and Marine Corps | $1.2 | $1.4 | $1.5 | $1.2 | $1.9 |
| Air Force | $0.3 | $0.3 | $1.1 | $0.8 | $0.5 |
| DLA | $0.6 | $0 | $0 | $0 | $0 |
| FUDS | $0.4 | $0.4 | $0.5 | $0.5 | $0.8 |
| **Total** | **$3.1** | **$2.5** | **$3.4** | **$3.0** | **$3.5** |

* Subtotals may not add to totals due to rounding.

## DoD Component - Installation / FFID / NPL or Proposed NPL / BRAC Year / RAB / CTC Delta from FY09*

# North Carolina

### NAVY - CAMP LEJEUNE MCB / NC417302258000 / NPL / RAB / C-TECH

| IRP Sites and MRSs by Classification | | | | | | Phase | Completed IRP | Completed MMRP | Underway IRP | Underway MMRP | Future IRP | Future MMRP | FY10 Schedule Impact** IRP | FY10 Schedule Impact** MMRP | Costs Through FY10 ($000) IRP | Costs Through FY10 ($000) MMRP | FY10 Funds Obligated ($000) IRP | FY10 Funds Obligated ($000) MMRP | FY11 Execution Planned ($000) IRP | FY11 Execution Planned ($000) MMRP | FY12 Planning Estimate ($000) IRP | FY12 Planning Estimate ($000) MMRP | Estimated Costs ($000) Fiscal Year | Estimated Costs ($000) IRP | Estimated Costs ($000) MMRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Response Complete | 147 | Response Complete | 6 | | | Study | 186 | 6 | 3 | 12 | 7 | 4 | | | $49,569 | $4,674 | $408 | $909 | $628 | $2,182 | $0 | $2,487 | FY13 | $4,285 | $2,338 |
| High | 6 | MRSPP-1 | 0 | MRSPP-7 | 0 | IRA | 23(23) | 0(0) | 0(0) | 0(0) | | | | | $31,655 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY14 | $3,373 | $3,137 |
| Medium | 0 | MRSPP-2 | 0 | MRSPP-8 | 2 | Design | 37 | 4 | 0 | 0 | 1 | 16 | | | $4,553 | $0 | $11 | $0 | $112 | $0 | $0 | $0 | FY15 | $3,372 | $1,697 |
| Low | 0 | MRSPP-3 | 1 | Evaluation Pending | 5 | RA-C | 34 | 4 | 5 | 0 | 10 | 16 | | | $34,935 | $0 | $2,150 | $0 | $2,429 | $0 | $979 | $0 | FY16 | $13,250 | $3,412 |
| Not Evaluated | 10 | MRSPP-4 | 4 | No Known/Suspected | 5 | RA-O | 42 | 3 | 13 | 0 | 6 | 0 | | | $48,990 | $0 | $3,688 | $0 | $2,455 | $0 | $1,845 | $0 | FY11-Comp. IRP | | $102,872 |
| Not Required | 33 | MRSPP-5 | 3 | No Longer Required | 1 | LTM | 13 | 3 | 21 | 0 | 23 | 16 | | | $3,858 | $0 | $476 | $0 | $1,040 | $0 | $833 | $0 | FY11-Comp. MMRP | | $85,156 |
| Total IRP Sites | 196 | MRSPP-6 | 1 | Total MRSs | 22 | | | | | | | | | Total | $173,560 | $4,674 | $6,733 | $909 | $6,664 | $2,182 | $3,657 | $2,487 | FY11-Complete | | $188,028 |

IRP Final RC: FY 2057 MRS Final RC: FY 2057

Five-Year Review Underway

**IRP Progress in FY10:** Refer to Page F-31.

**IRP Progress Planned for FY11-FY12:** Refer to Page F-31.

**MMRP Progress in FY10:** Refer to Page F-31.

**MMRP Progress Planned for FY11-FY12:** Refer to Page F-31.

### NAVY - CHERRY POINT MCAS / NC417302726100 / NPL / RAB

| IRP Sites and MRSs by Classification | | | | | | Phase | Completed IRP | Completed MMRP | Underway IRP | Underway MMRP | Future IRP | Future MMRP | FY10 Schedule Impact** IRP | FY10 Schedule Impact** MMRP | Costs Through FY10 ($000) IRP | Costs Through FY10 ($000) MMRP | FY10 Funds Obligated ($000) IRP | FY10 Funds Obligated ($000) MMRP | FY11 Execution Planned ($000) IRP | FY11 Execution Planned ($000) MMRP | FY12 Planning Estimate ($000) IRP | FY12 Planning Estimate ($000) MMRP | Estimated Costs ($000) Fiscal Year | Estimated Costs ($000) IRP | Estimated Costs ($000) MMRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Response Complete | 56 | Response Complete | 0 | | | Study | 97 | 0 | 0 | 3 | 11 | 0 | | | $22,931 | $2,835 | $0 | $491 | $0 | $306 | $0 | $421 | FY13 | $3,430 | $517 |
| High | 1 | MRSPP-1 | 0 | MRSPP-7 | 0 | IRA | 26(35) | 0(0) | 0(0) | 0(0) | | | | | $7,924 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY14 | $5,059 | $526 |
| Medium | 0 | MRSPP-2 | 2 | MRSPP-8 | 1 | Design | 29 | 0 | 1 | 0 | 0 | 3 | | | $7,892 | $0 | $903 | $0 | $93 | $0 | $0 | $0 | FY15 | $8,977 | $1,131 |
| Low | 0 | MRSPP-3 | 0 | Evaluation Pending | 0 | RA-C | 30 | 0 | 1 | 0 | 10 | 3 | | | $19,811 | $0 | $230 | $0 | $1,113 | $0 | $1,996 | $0 | FY16 | $5,680 | $452 |
| Not Evaluated | 11 | MRSPP-4 | 0 | No Known/Suspected | 0 | RA-O | 17 | 0 | 25 | 0 | 12 | 3 | | | $33,258 | $0 | $3,450 | $0 | $2,763 | $0 | $2,917 | $0 | FY11-Comp. IRP | | $57,428 |
| Not Required | 40 | MRSPP-5 | 0 | No Longer Required | 0 | LTM | 4 | 0 | 4 | 0 | 12 | 1 | | | $2,450 | $0 | $120 | $0 | $109 | $0 | $134 | $0 | FY11-Comp. MMRP | | $38,152 |
| Total IRP Sites | 108 | MRSPP-6 | 0 | Total MRSs | 3 | | | | | | | | | Total | $94,266 | $2,835 | $4,703 | $491 | $4,078 | $306 | $5,047 | $421 | FY11-Complete | | $95,580 |

IRP Final RC: FY 2042 MRS Final RC: FY 2040

Five-Year Review Completed and Planned for Future

**IRP Progress in FY10:** Refer to Page F-37.

**IRP Progress Planned for FY11-FY12:** Refer to Page F-37.

**MMRP Progress in FY10:** Refer to Page F-37.

**MMRP Progress Planned for FY11-FY12:** Refer to Page F-37.

### FORMERLY USED DEFENSE SITES - BULL BAY / NC49799F971700

| IRP Sites and MRSs by Classification | | | | | | Phase | Completed IRP | Completed MMRP | Underway IRP | Underway MMRP | Future IRP | Future MMRP | FY10 Schedule Impact** IRP | FY10 Schedule Impact** MMRP | Costs Through FY10 ($000) IRP | Costs Through FY10 ($000) MMRP | FY10 Funds Obligated ($000) IRP | FY10 Funds Obligated ($000) MMRP | FY11 Execution Planned ($000) IRP | FY11 Execution Planned ($000) MMRP | FY12 Planning Estimate ($000) IRP | FY12 Planning Estimate ($000) MMRP | Estimated Costs ($000) Fiscal Year | Estimated Costs ($000) IRP | Estimated Costs ($000) MMRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Response Complete | 0 | Response Complete | 0 | | | Study | 0 | 0 | 0 | 1 | 0 | 0 | | | $0 | $125 | $0 | $12 | $0 | $0 | $0 | $0 | FY13 | $0 | $0 |
| High | 0 | MRSPP-1 | 0 | MRSPP-7 | 0 | IRA | 0(0) | 0(0) | 0(0) | 0(0) | | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY14 | $0 | $0 |
| Medium | 0 | MRSPP-2 | 0 | MRSPP-8 | 0 | Design | 0 | 0 | 0 | 0 | 0 | 1 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY15 | $0 | $0 |
| Low | 0 | MRSPP-3 | 0 | Evaluation Pending | 1 | RA-C | 0 | 0 | 0 | 0 | 0 | 1 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY16 | $0 | $0 |
| Not Evaluated | 0 | MRSPP-4 | 0 | No Known/Suspected | 0 | RA-O | 0 | 0 | 0 | 0 | 0 | 0 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY11-Comp. IRP | | $0 |
| Not Required | 0 | MRSPP-5 | 0 | No Longer Required | 0 | LTM | 0 | 0 | 0 | 0 | 0 | 1 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | FY11-Comp. MMRP | | $52,561 |
| Total IRP Sites | 0 | MRSPP-6 | 0 | Total MRSs | 1 | | | | | | | | | Total | $0 | $125 | $0 | $12 | $0 | $0 | $0 | $0 | FY11-Complete | | $52,561 |

IRP Final RC: FY - MRS Final RC: FY 2062

**IRP Progress in FY10:** No IRP sites identified.

**IRP Progress Planned for FY11-FY12:** No IRP sites identified.

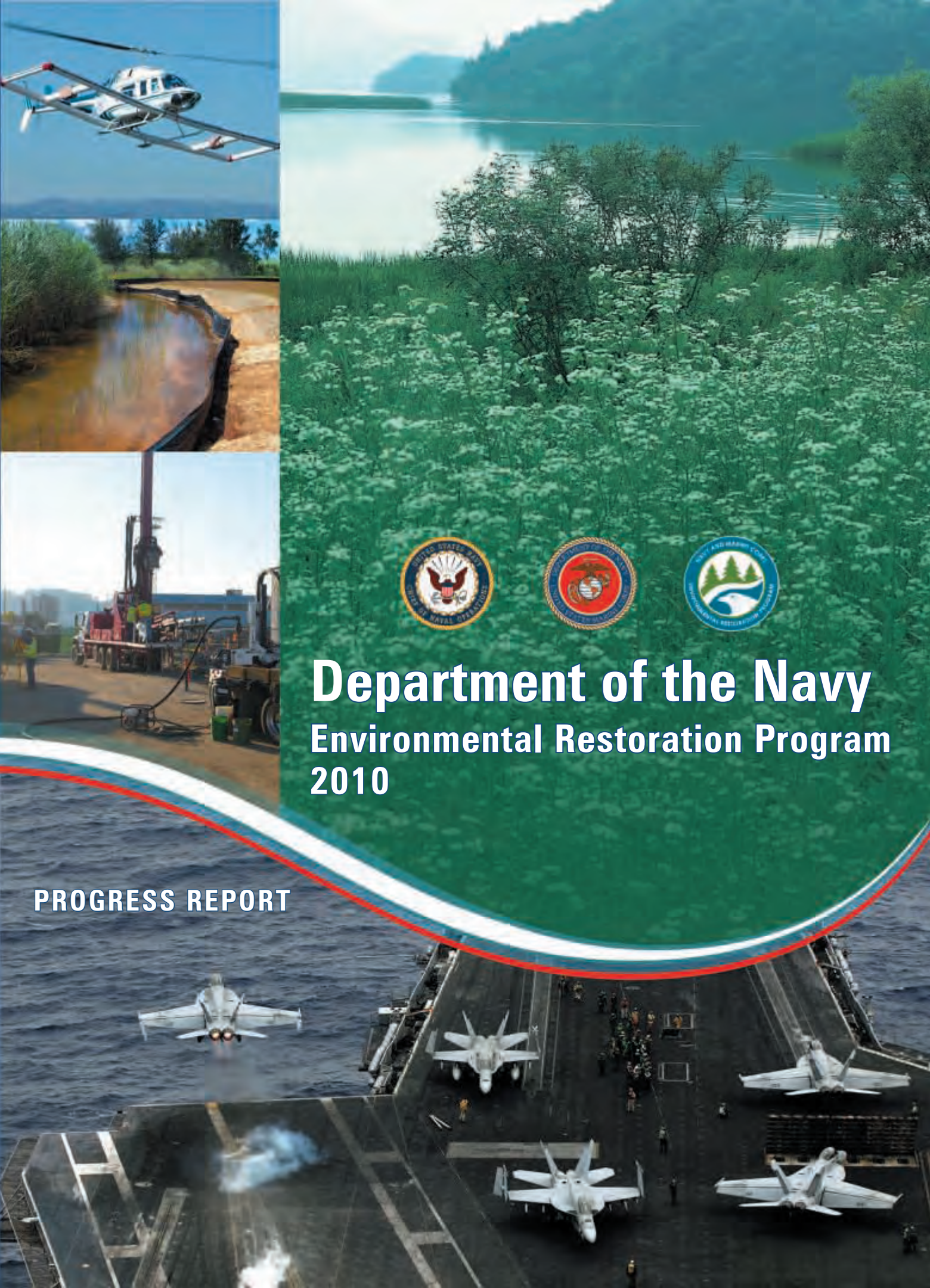
**MMRP Progress in FY10:** Completed MMRP SI Investigation

**MMRP Progress Planned for FY11-FY12:** Finalize MMRP SI report and close SI phase.
Prioritize future work when all other MMRP SIs are complete.

*CTC Delta Reason: C-TECH-Technical Issues, C-REG-Regulatory Issues, C-EST-Estimating Criteria **Schedule Impact Reason: TECH-Technical, CONT-Contracting, PERS-Personnel, REG-Regulatory, FUND-Funding

Note: Totals reflect installation project funding allocated to individual sites and do not include program management and other support costs.

# Appendix D
# Excerpts from the Navy Environmental Restoration Program Progress Report (2010)



# Department of the Navy

## Environmental Restoration Program 2010

PROGRESS REPORT

# Foreword

The Department of the Navy (DON) is working diligently through the Environmental Restoration (ER) Program to clean up releases of contaminants to the environment, most of which occurred prior to the 1980s. The DON Environmental Restoration Program Progress Report provides an overview of DON's progress in environmental cleanup and highlights new initiatives to improve the effectiveness and efficiency of this program. The Progress Report, which is issued biannually, provides the status of cleanup at the end of 2009 and outlines our plans for completing Installation Restoration (IR) and Munitions Response (MR) projects in the future. The Progress Report also serves as a primer for understanding the process of cleaning up past contamination at DON installations and is a valuable source of information on the overall progress and success the program has achieved.

The DON ER Program supports Navy and Marine Corps mission requirements by ensuring that impacted lands meet strict environmental and safety standards when response actions are complete and by making remediated properties available for reuse to the maximum extent practicable. To ensure that environmental cleanup actions address the most significant sites first, they are prioritized based on relative risk to human health and the environment for the IR Program, and based on the Munitions Response Site Prioritization Protocol (MRSPP) for the MR Program.

The Progress Report summarizes information on the number of sites, funding, and status of completion for the ER Program and highlights success stories where innovative approaches have been used to achieve cleanup and avoid unnecessary costs. The success stories also highlight the importance of effective communication, interagency partnering, and community involvement to the cleanup process.

Since the last progress report was issued in 2008, the most significant change in the ER Program is the elimination of the eligibility cutoff dates. As a result, certain sites where releases occurred after 1986 are now eligible for inclusion in the ER Program. The development of green and sustainable remediation practices that will conserve energy and other resources and reduce the environmental impacts of remediation activities has also occurred. These sustainability efforts fit well with our ongoing commitment to optimization of remediation efforts.

The IR Program continues to make tremendous progress in remediating sites. By the end of Fiscal Year 2009, 3,182 of 3,734 sites requiring response actions, or 85%, had remedies in place (RIP) or were "response complete" (RC). On the MR Program side, 278 munitions response sites had been identified. Site investigations continue at many of the MR Program sites and 81 sites (29%) have reached RIP/RC.

The DON will continue working toward the goal of a clean and healthy environment that supports mission requirements without repeating past practices. For additional information or to download an electronic version of this report, please visit the Navy Green Fleet Web site at http://greenfleet.dodlive.mil/home/ or the Naval Facilities Engineering Command (NAVFAC) Web Portal at https://portal.navfac.navy.mil/go/erb. We encourage interest in our ongoing cleanup projects and invite your participation.

***Rear Admiral Philip Cullom***

***Director, Energy and Environmental Readiness Division***

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*The Triad Approach was successfully used at NAS Jacksonville, FL, to delineate a groundwater contaminant plume beneath the St. Johns River. Success Story on page 23.*

# Environmental Restoration Program



The Department of the Navy (DON) manages extensive facilities and lands to support its mission of maintaining, training, and equipping a world-class, combat-ready Naval fleet. Over the years, releases of hazardous materials have occurred at these facilities, in many cases stemming from past activities that occurred before the environmental hazards were recognized and before adequate control mechanisms were in place. The DON is committed to cleaning up these releases in a timely manner that restores and preserves environmental quality for future generations. DON looks for innovative solutions to often complex environmental problems and works to use cleanup methods that are effective, efficient, and environmentally sustainable.

The DON's Environmental Restoration (ER) Program was initiated in the early 1980s in response to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (also known as Superfund). At the outset, the cleanup program focused on chemical contamination. This part of the program, referred to as the Installation Restoration Program (IRP), includes more than 3,700 sites and has made significant progress toward cleanup at bases across the country. With the IRP well underway, the DON also recognized the need for cleanup of sites having issues related to munitions and explosives of concern (MEC) and munitions constituents (MC). Thus, in 2001, a second phase of the ER Program was initiated to address these contaminants. This program, referred to as the Munitions Response Program (MRP), currently includes more than 270 sites, most of which are in the investigative stages.

This report presents the status of progress on the ER Program as of the end of fiscal year (FY) 2009. It also describes policies and guidance on environmental remediation that have been issued recently. Success stories from the program are provided to illustrate innovative and efficient approaches that have been implemented to accomplish environmental cleanup at diverse sites throughout the country.

*Remedial investigation and time-critical removal action for discarded military munitions/ material potentially presenting an explosive hazard at former trash-burning mound, Bremerton, WA. Success Story on page 38.*

# The Environmental Restoration Process

Environmental cleanup requires a process to identify sites where chemicals or MEC may have been released into the environment and then survey these sites to determine whether the contaminants or MEC are actually present. The process must assess where the contaminants or MEC are located and at what concentrations or densities; whether they cause unacceptable risk to human health or the environment; and, finally, how best to remove or treat the contaminants or MEC. To accomplish cleanup, the DON ER Program generally follows the steps developed for CERCLA response actions. This process is used at most IRP and MRP sites and provides a comprehensive approach from site identification through cleanup and closeout.

Some DON sites impacted by past treatment, storage, and disposal practices for hazardous substances follow the Resource Conservation and Recovery Act (RCRA) regulatory framework for corrective actions. Also, cleanup at most petroleum-contaminated sites is guided by State underground storage tank (UST) programs.

*Several actions have been taken to reduce contamination at Camp Lejeune, NC, including soil mixing using ZVI. Success Story on page 31.*

**The DON ER Program follows the CERCLA response action process for most IRP and MRP sites. This process provides a comprehensive cleanup approach from site identification and investigation through cleanup and closeout.**

**Preliminary Assessment (PA)** reviews existing information and determines the probability of and possible locations of potentially contaminated areas.

**Site Inspection (SI)** includes a physical inspection of potential sites and may include limited soil, surface water, and/or groundwater sampling.

**Remedial Investigation (RI)** fully characterizes the nature and extent of contamination at a site, determines the regulatory requirements, assesses baseline risk to human health and the environment, and develops cleanup alternatives.

*Early Response Action is taken if significant contamination is discovered that poses an immediate threat to human health or the environment that cannot wait until the final remedy is selected.*

**Feasibility Study (FS)** identifies and assesses potential technologies for remediation, then develops a proposed plan. A Decision Document or Record of Decision (ROD) is written to document the remediation decisions.

**Remedial Design (RD)** consists of designing the selected remedial system to meet the remedial objectives described in the Decision Document or ROD.

**Remedial Action (RA)** is the actual cleanup work. RA construction covers the construction of the remedial solution to be used for cleanup. The RA operation covers the period of time that the remedial system must operate to achieve cleanup objectives in the ROD or Decision Document. The remedy may include Land Use Controls (LUCs), e.g., fences, signs, landfill caps, pumping and treating groundwater, zoning changes, deed restrictions, and other ways to limit site access or contain contamination.

**Remedy in Place (RIP)** is achieved when the construction of the remedy is complete and the remedy is operating as planned in the RD.

**Response Complete (RC)** is achieved once all cleanup goals specified in the ROD or Decision Document are met.

**Long-Term Management (LTM)** and monitoring may be required to ensure that the site continues to meet cleanup goals after RC.

**Site Closeout (SC)** is reached when the DON has completed active management and monitoring and the site can safely be returned to unrestricted use and unlimited access.

Remedial Action ▶ Remedy in Place ▶ Response Complete ▶ Long-Term Management ▶ *Site Closeout*

# Installation Restoration Program

The Installation Restoration Program (IRP) was designed to identify and clean up past contamination from hazardous substances, pollutants, and contaminants in order to protect human health and safety, and the environment on property under Navy and Marine Corps stewardship. The IRP combines aggressive policies; technical training; innovative technologies; partnering with stakeholders; and proactive, dedicated personnel to accomplish cleanup.

The IRP has been in place since the early 1980s following the passage of CERCLA. The DON systematically reviewed all installations to identify potential areas of chemical contamination, and additional sites have been added as they are discovered. Currently, there are more than 3,700 cleanup sites in the IRP. The DON has made significant progress toward implementing cleanup actions, and the majority of sites have achieved Remedy In Place/ Response Complete (RIP/RC). It is the DON's goal to complete cleanup in a cost-effective manner consistent with Defense Environmental Restoration Program requirements while minimizing impacts to the military mission. The DON operates in partnership with the federal, state, and local regulatory agencies and members of the community.

*Wetland Area Excavation and Revegetation. Naval Forces Marianas, Guam. Success Story on page 27.*

# Munitions Response Program

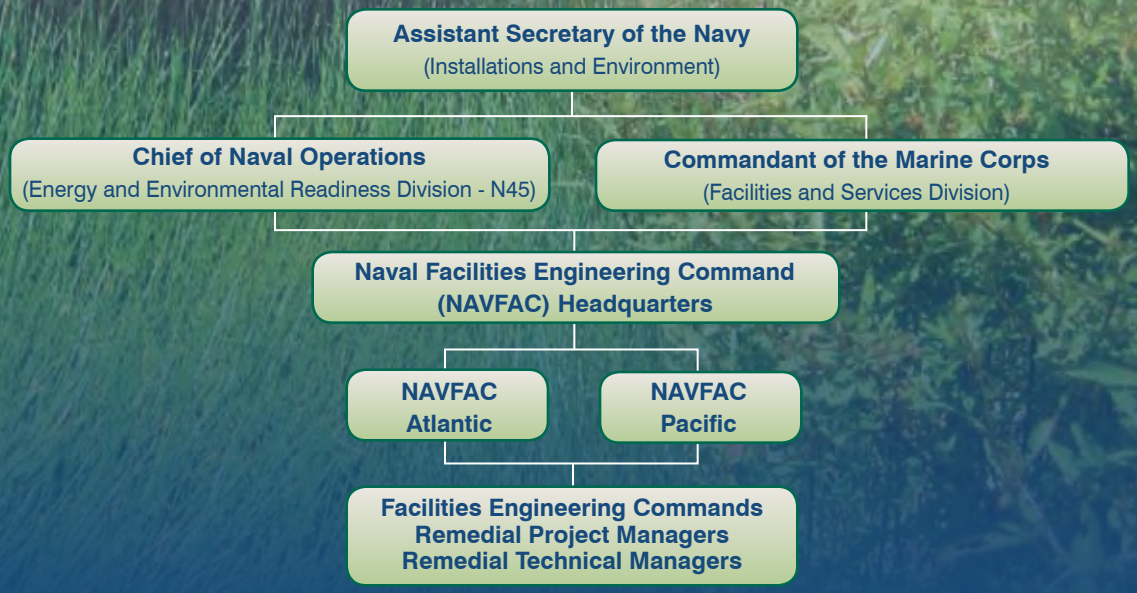
The MRP was initiated in 2001 after Congress directed the Department of Defense (DoD) to identify and then prioritize its munitions response sites. The MRP is designed to clean up discarded military munitions, unexploded ordnance (UXO), and their chemical residues at closed ranges and munitions disposal sites. It does not include range cleanup and sustainability activities at operational ranges. The DON's MRP is modeled after the IRP and is implemented using the process developed for cleanup under the CERCLA legislation. However, the MRP also must address the unique explosive safety hazards associated with MEC at Navy and Marine Corps locations not designated as operational ranges. Although the MRP is considered to be part of the Navy's ER Program, its funding and cleanup status are uniquely identified. Currently, 278 MRP sites have been identified.

*MEC Removal at Naval Auxiliary Landing Field Cabaniss, Corpus Christi, TX. Success Story on page 37.*

# Organization and Teamwork Achieve Success

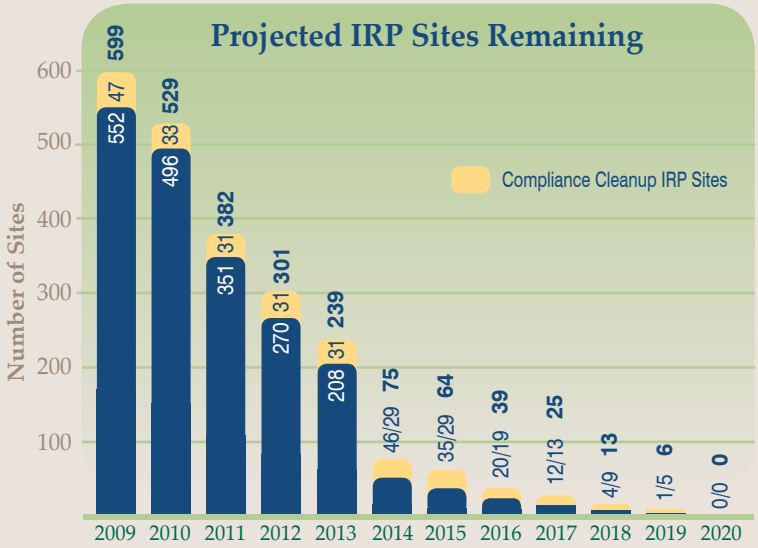
The DON's ER Program operates under the supervision of the Assistant Secretary of the Navy (Installations and Environment). Under the ASN (I&E), the primary responsibility for overseeing and implementing the ER Program is given to the Chief of Naval Operations Energy and Environmental Readiness Division (N45), the Commandant of the Marine Corps Facilities and Services Division, and the Naval Facilities Engineering Command (NAVFAC). Each of the NAVFAC Facilities Engineering Commands (FECs) are assigned to execute cleanup at the sites within their specific geographic region. The FECs report to one of the two NAVFAC commands: NAVFAC Atlantic in Norfolk, VA, or NAVFAC Pacific in Pearl Harbor, HI. Within the FECs, a Remedial Project Manager (RPM) is assigned to manage each of the cleanup sites.

In addition to the DON's internal organization, an important component that contributes to successful cleanup is the involvement of the regulators and the community. Partnering with these groups throughout the decision-making process allows cleanup to proceed more smoothly and often prevents delays at later phases of the restoration process. The primary mechanism for involving the public throughout the ER Program's cleanup process is the establishment of Restoration Advisory Boards (RABs). RABs are made up of DON installation representatives, local citizens, regulators, and other government agencies. The members meet face-to-face to discuss the restoration project, develop plans, and review results. Navy and Marine Corps installations have formed RABs at all major installations where sufficient, sustained community interest exists.



# Installation Restoration Program Status

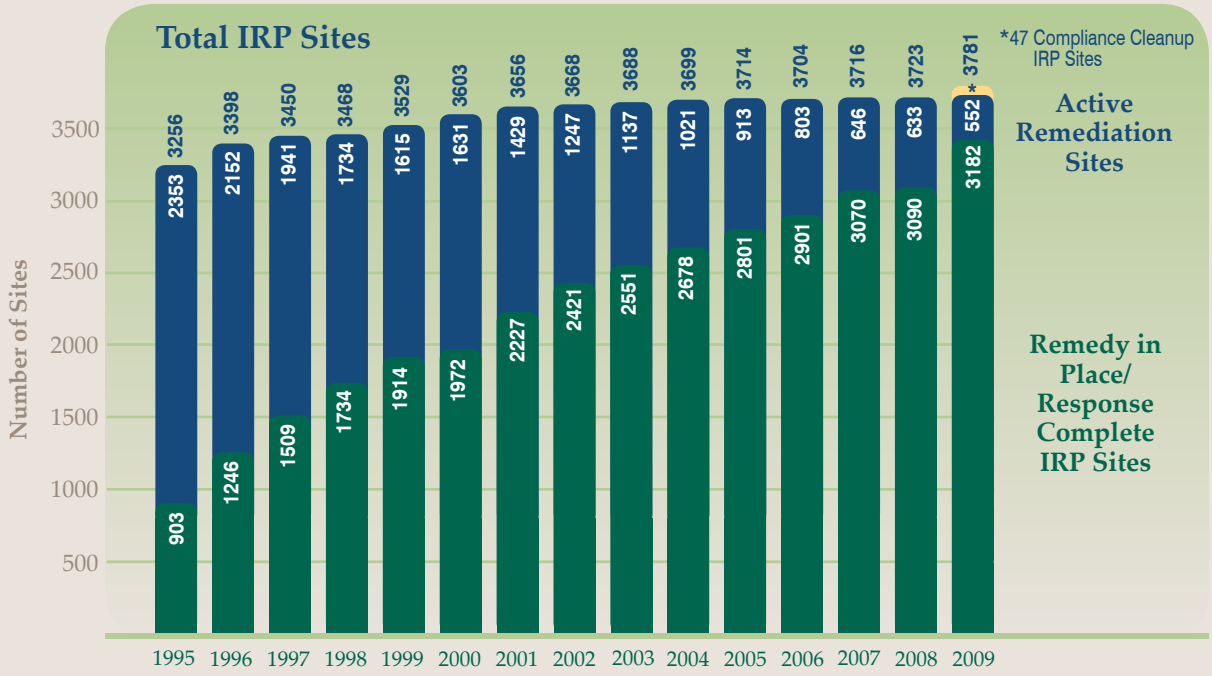
The IRP continues to make progress toward cleaning up and closing sites. However, the total number of IRP sites continues to increase as new sites are identified. In addition, the Office of the Secretary of Defense (OSD) issued its "Interim Policy on Defense Environmental Restoration Program (DERP) Eligibility" on December 29, 2008. This policy eliminated the 1986 cutoff date for the IR and MR sites, expanded eligibility guidance, and developed a process to identify the newly eligible sites. The sites identified as a result of the OSD policy are referred to here as "compliance cleanup" sites.




From the baseline of 3,256 sites in FY 1995, the number of regular IRP sites has increased to 3,734 sites at the end of FY 2009. Eighteen regular sites have been added in the two years since the last Environmental Restoration Progress Report was issued. In addition to the 3,734 regular sites, 47 compliance cleanup sites were added following implementation of the OSD policy consisting of 40 Navy sites and 7 Marine Corps sites.

Through implementation of the IRP, the number of sites achieving RIP/RC has continued to grow. At the end of FY 2009, 3,182 regular IRP sites were considered RIP/RC, while 552 regular sites and 47 compliance cleanup sites remain to be completed.

In the past, the long-term goal of the IRP was to have RIP/RC at all IRP sites by the end of FY 2014. However, a more recent assessment of completion estimates indicates that there are 46 regular IRP sites and 29 compliance cleanup sites that will require additional time to achieve RIP/RC. It is currently estimated that all sites will achieve RIP/RC by 2020.

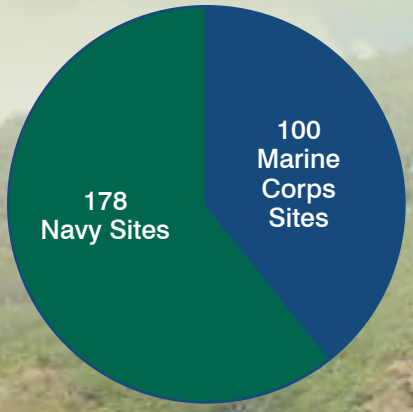


# Munitions Response Program Status

The MRP has continued to develop, and additional sites have been identified and added to the program. The program has grown from a baseline of 196 sites in 2002 to a total of 278 MRP sites at the end of FY 2009. Of these, the Navy has 178 sites at 64 installations (7 new sites in FY 2009) and the Marine Corps has 100 sites at 11 installations (14 new sites in FY 2009).

The PAs have been completed for all MRP sites identified previously, and basewide PAs have been initiated at four installations that were not included in the initial inventory. The DON had established a goal of completing all SIs by end of year 2010, and all SIs are underway for the sites that were in the initial inventory. However, this goal may not be met for those sites recently added and the bases not included in the original inventory. Sixty-seven percent of the SIs had been completed at the end of 2009. The Munitions Response Site Prioritization Protocol (MRSPP) will be used in FY 2010 to prioritize the RI work.

The DON had previously established a goal of having all MRP sites RIP/RC by 2020. Currently, 81 (29%) of the sites have achieved RIP/RC and it is projected that all MRP sites except the Vieques sites will meet the 2020 goal. Forty MRP sites have achieved SC, 22 MRP sites have achieved RC, and 19 MRP sites are RIP.

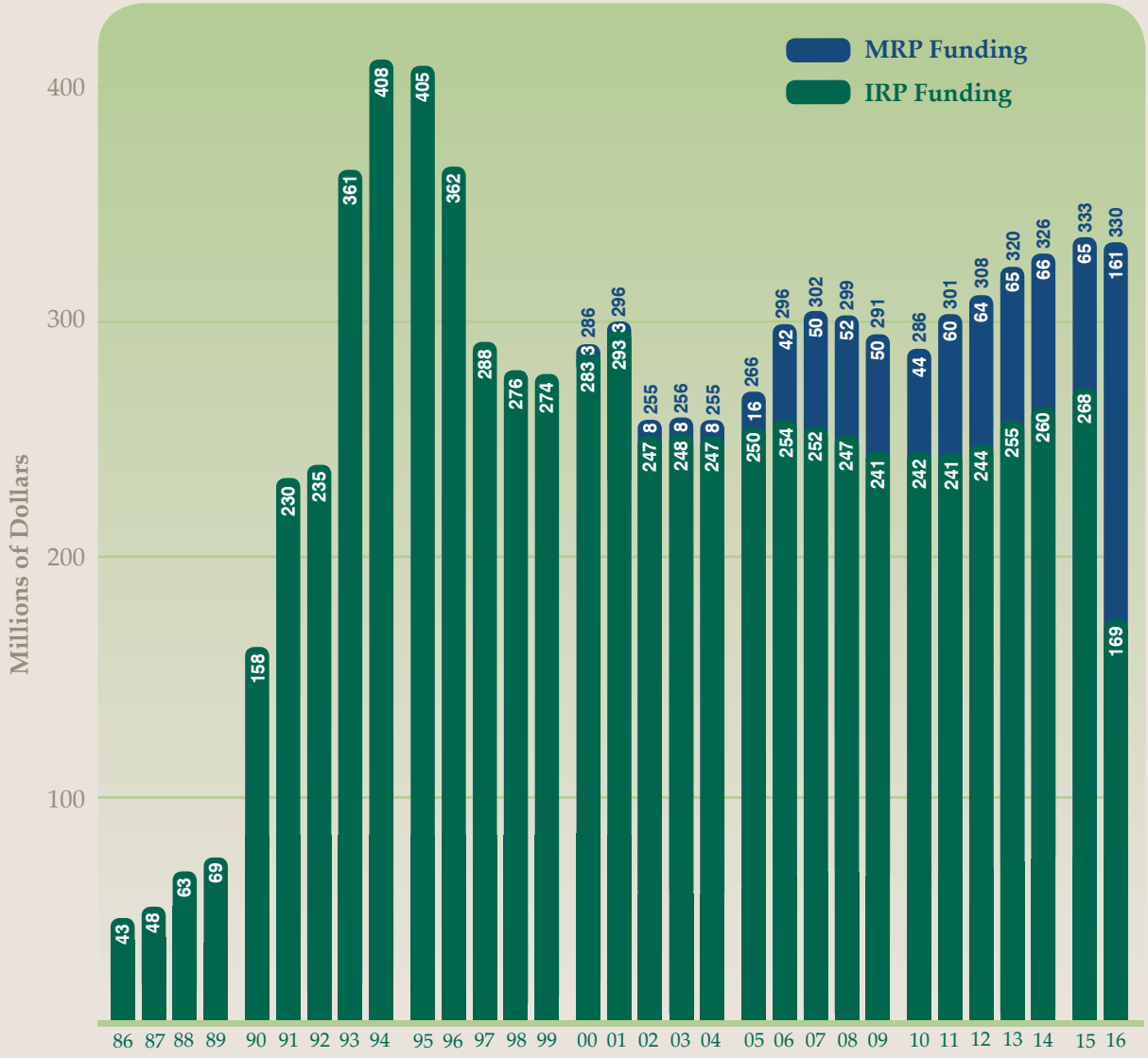



Total 278 Munitions Response Program Sites

# Funding History and Projections

The funding source for cleanup at all active installations is Environmental Restoration, Navy (ER,N) funding. Funding for the DON's IRP projects reached its peak at $408 million in FY 1994 after which it dropped in recent years to approximately $250 million per year. The IRP budget for FY 2009 was $241 million. The Navy's commitment to partnering with stakeholders, finding innovative ways to optimize treatment systems, instituting stable funding, and incorporating risk management into remedial decisions has been essential to keeping funding requirements under control. However, the addition of 47 new sites resulting from the December 2008 OSD policy will likely require some increases to address these additional sites.

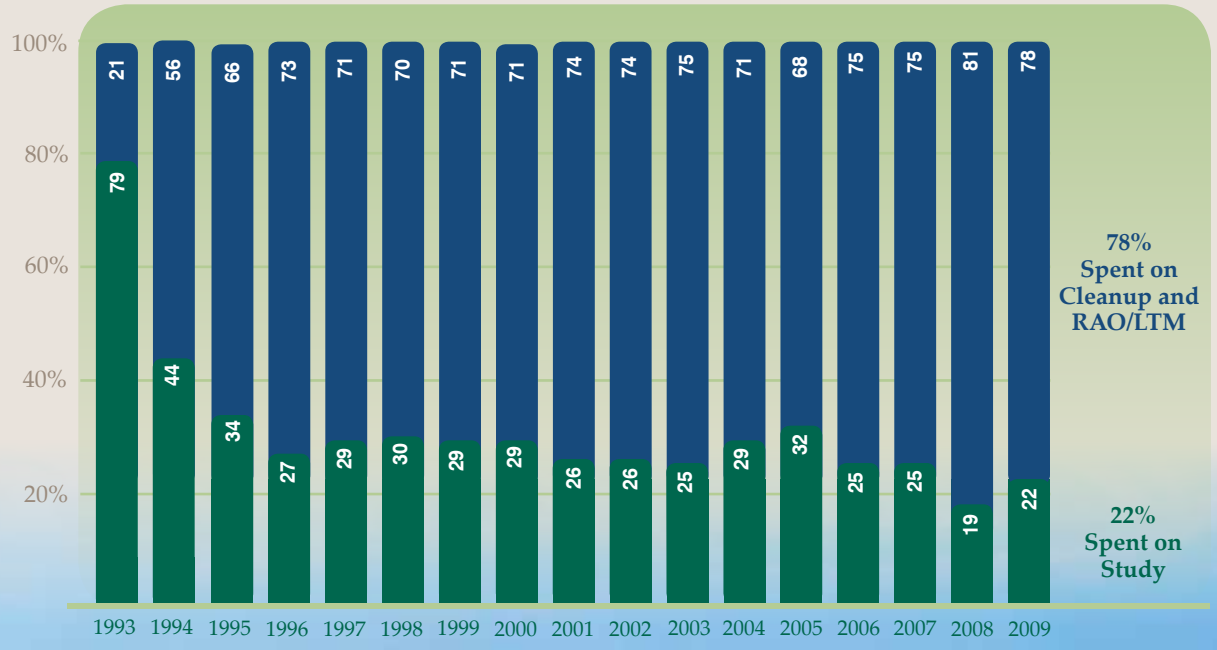
The MRP began receiving funding for site remediation in FY 2000. Funding for this program in FY 2009 was $50 million. MRP funding for FY 2010 through FY 2016 is projected to be $525 million.



# Environmental Restoration, Navy Spending

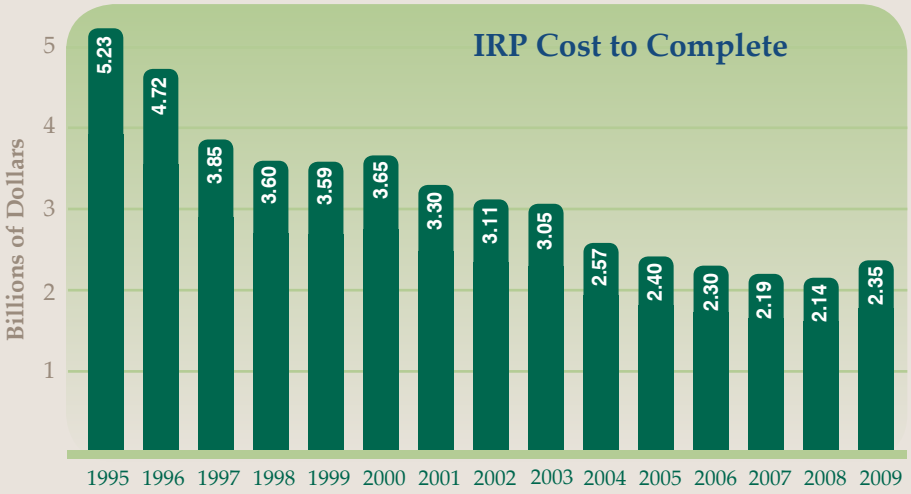
ER,N funding is broken into two main cost categories: studies and cleanup. At the outset of the IRP, the DON spent most of its budget on the studies needed to locate potential sites and determine the levels of contamination. Over time, the DON has developed new study techniques and strategies that focus efforts on the areas of greatest concern and reduce costs. Although site characterization and pilot studies continue today, over the past 10 years the DON has placed an increasing emphasis on performing actual cleanups to reduce the risk of exposure to hazardous contaminants. Once sites achieve RIP, there are often costs to operate remediation systems and perform long-term monitoring. This is referred to as remedial action operations/long-term management (RAO/LTM), and these costs are included in cleanup.

During FY 1993, 21% of funds were devoted to cleanup. From 1996 to the present, the percent dedicated to cleanup and RAO/LTM has increased to approximately 80%.

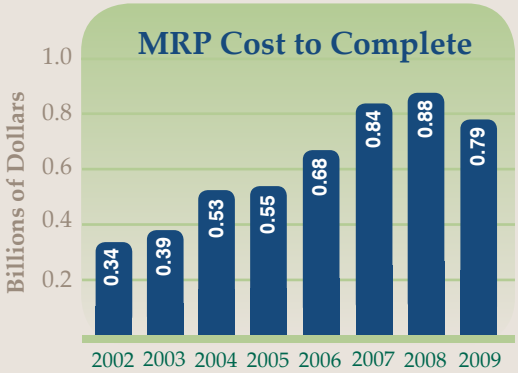


# Cost to Complete and Cost Avoidance

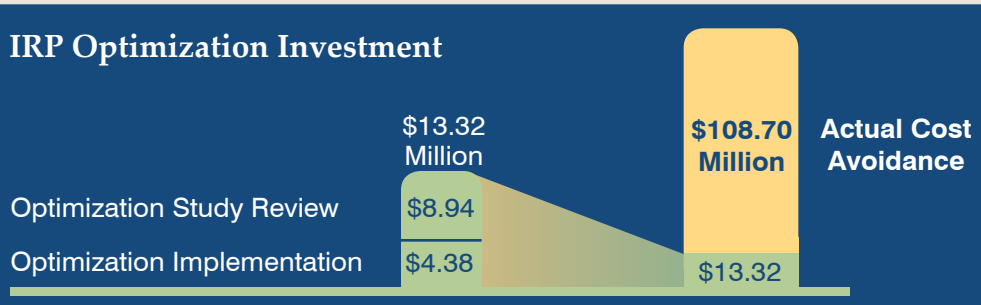
The estimated cost for implementing the entire IRP generally was on a decreasing trend through the end of year 2008, as funds were spent for cleanup and as sites achieved RIP/RC status. However, for 2009, the estimated total cost to complete for the IRP increased by $209 million to $2.35 billion. This increase was attributable to a number of factors, including new sites being discovered; addition of sites due to the December 2008 OSD policy; growth in RAO/LTM costs; and changes due to joint basing, required inflation estimates, and other cost to complete growth.




The MRP costs to complete were increasing through the end of 2008 as the program developed and additional sites were being added. In 2009, the estimated cost to complete decreased due largely to the transfer of bases away from the Navy. Thus, the cost to complete for the MRP in 2009 was estimated at $0.79 billion, a decrease of $90 million compared with 2008.




In addition to the focus on bringing IRP sites to completion, the DON is continually looking for ways to improve efficiency and avoid costs through optimization of processes, thus further reducing the cost to complete. In 2004, the DON issued an optimization policy that requires the selected remedies to be continually reviewed and evaluated to assure that these remedies continue to operate efficiently. To date, the IRP has spent $8.94 million for optimization studies and cost review and $4.38 million to implement the optimization recommendations. These expenditures for study, review, and implementation have resulted in a cost avoidance estimated at $108.70 million, which represents a return on investment of 8.2. This cost avoidance allows these funds to be used at other sites to further reduce risk.



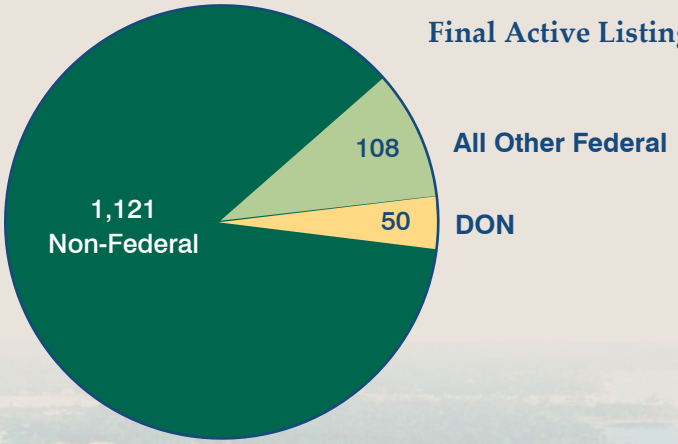
# National Priorities List Sites

The U.S. Environmental Protection Agency's (EPA's) National Priorities List (NPL) identifies the CERCLA sites that are believed to present the greatest risk to human health and the environment on a nationwide basis, including federal and non-federal sites. There are 1,279 final listings on the NPL and 61 proposed for listing. Of these, the EPA has 50 DON installations listed on the NPL, all of which are final. The last Navy site to be added to the NPL was the Atlantic Fleet Training Area, Island of Vieques, Puerto Rico, which was added to the final list on February 11, 2005.

After all cleanup requirements at an NPL installation are met, the installation is eligible for delisting. Two DON installations have been delisted, and one has been partially delisted. The Naval Magazine Indian Island at Port Hadlock, WA, was delisted from the NPL on June 14, 2005; and Sabana Seca, Puerto Rico, was delisted in 1998. Naval Air Station Whidbey Island (Seaplane) Base, WA, was partially delisted in 1995.

**Total National Priorities List Sites**

**Final Active Listings**



*Naval Support Activity in Panama City, FL, achieved basewide RIP. Several innovative initiatives resulted in significant cost avoidance. Success Story on page 43.*

# Policies and Guidance

## DoD Vapor Intrusion Handbook

The DoD Vapor Intrusion Handbook was released as a final document on April 3, 2009. The Handbook was developed by the Tri-Service Environmental Risk Assessment Work Group (TSERAWG) to serve as a resource for RPMs who may need to investigate the vapor intrusion (VI) pathway at DoD sites. The Tri-Services include the DON and Departments of Air Force and Army.

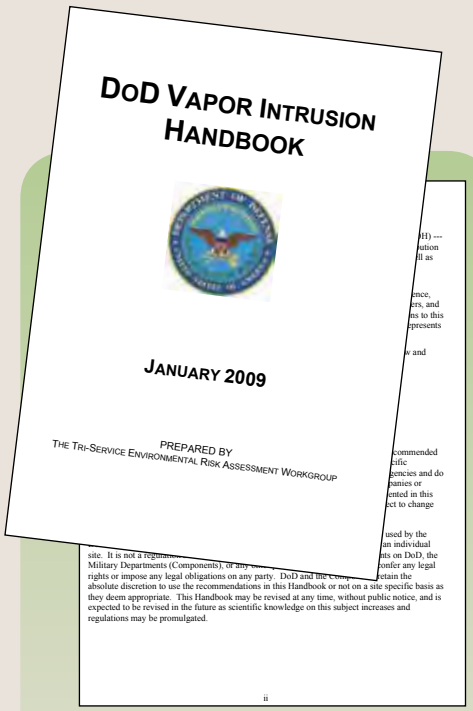
VI is the migration of volatile chemicals from the subsurface into the indoor air of buildings located above the contamination. The Handbook is intended to provide a general framework for conducting VI investigations under the Defense Environmental Restoration Program (DERP). Both residential and occupational exposure scenarios are discussed since both groups can be affected by VI.

The Handbook discusses various technical approaches associated with evaluating the VI pathway. It includes information and references to the most current knowledge that exists relative to VI at the time it was prepared. Because the scientific understanding of VI is rapidly evolving as more information and experience are gained in this area, users are encouraged to balance the information contained in the Handbook with the most current technical information available.

The Handbook presents information that is specific to military facilities and therefore is not necessarily addressed by other VI guidance documents. This includes exposure settings that differ from standard default exposures, such as:

- Residential exposures both on-base and off-base
- Occupational exposure settings
- VI concerns on undeveloped property
- Potential indoor sources
- Property transferred to other entities.

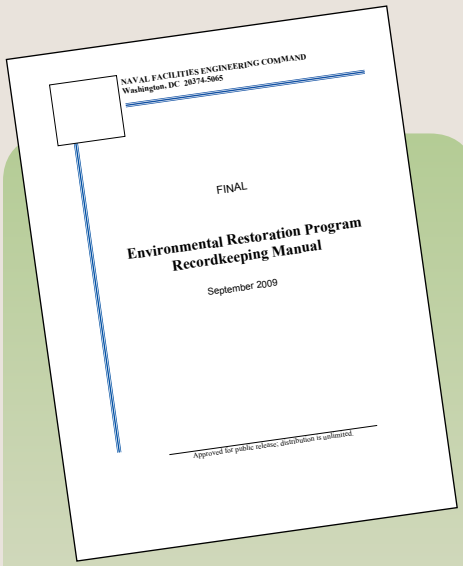
The Handbook also recommends strategic considerations for VI investigations at military sites that will help RPMs make better decisions.




https://www.denix.osd.mil/portal/page/portal/denix/environment/cleanup/WN/DoD%20VI%20Handbook%20Final%20Jan%2009.pdf

http://www.ert2.org/VaporIntrusion.aspx#tool=VaporIntrusion&page=Introduction

## ER Program Recordkeeping Manual


NAVAL FACILITIES ENGINEERING COMMAND
Washington, DC 20374-5065

FINAL

Environmental Restoration Program
Recordkeeping Manual

September 2009

Approved for public release; distribution is unlimited.

https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_nfesc_pp/environmental/erb/resourceerb/rkm_9-1-09.pdf

DON released new guidance in September 2009 on the creation and maintenance of all records required as part of NAVFAC's execution of the ER Program. The "Environmental Restoration Program Recordkeeping Manual" was developed to provide guidance on the ER Program's recordkeeping requirements and to reflect the implementation of the Naval Installation Restoration Information Solution (NIRIS) as the standard system to manage these records. The intended audiences for this new document are Environmental Records Managers, Navy Project Managers, contractor project managers, and data entry personnel. This new guidance supersedes the previous Administrative Records Management System (ARMS) User's Guide.

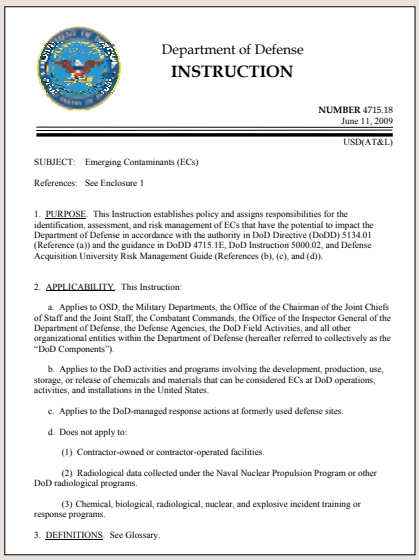
The Manual defines the various types of files, including Administrative Record Files, Post Decision Files, and Site Files, and provides a list of typical documents suitable for inclusion in each file. It also defines project manager and records manager roles and responsibilities and provides guidance on how to compile, maintain, and store the files utilizing NIRIS.

## DoD Instruction on Emerging Contaminants

On June 11, 2009, DoD issued "Instruction 4715.18 – Emerging Contaminants (ECs)" to establish policy and assign responsibilities for identification, assessment, and risk management of ECs that have potential to impact the DoD. DoD defines an emerging contaminant as a contaminant that has a reasonably possible pathway to enter the environment; presents a potential unacceptable human health or environmental risk; and does not have regulatory standards based on peer-reviewed science or the regulatory standards are evolving due to new science, detection capabilities, or pathways. For DoD, ECs are identified and assessed exclusively through a three-tiered process called "scan-watch-action." Examples of ECs include such compounds as perchlorate, 1,4-dioxane, and beryllium. Instruction 4715.18 establishes the policy that

- ECs used by DoD shall be identified as early as possible;
- Risks to people, the environment, and DoD missions, programs, and resources shall be assessed and, when appropriate, actions taken to reduce risks related to development, use, or release;
- DoD, where necessary, will perform sampling, conduct site-specific risk assessments, and take response actions for ECs released from DoD facilities; and
- DoD will cooperate/collaborate with regulatory agencies, industry, and academia on EC issues and initiatives.

The Instruction also sets forth responsibilities within DoD for various aspects of ECs such as providing oversight and guidance for early identification, assessment, and mitigation of risks from ECs and setting up an EC program. Procedures are provided for using provisional toxicity values and initiation of actions related to releases of ECs to the environment.


Department of Defense
INSTRUCTION

NUMBER 4715.18
June 11, 2009

USD(AT&L)

SUBJECT: Emerging Contaminants (ECs)

References: See Enclosure 1

1. PURPOSE. This Instruction establishes policy and assigns responsibilities for the identification, assessment, and risk management of ECs that have the potential to impact the Department of Defense in accordance with the authority in DoD Directive (DoDD) 5134.01 (Reference (a)) and the guidance in DoDD 4715.1E, DoD Instruction 5000.02, and Defense Acquisition University Risk Management Guide (References (b), (c), and (d)).

2. APPLICABILITY. This Instruction:

a. Applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as the "DoD Components").

b. Applies to the DoD activities and programs involving the development, production, use, storage, or release of chemicals and materials that can be considered ECs at DoD operations, activities, and installations in the United States.

c. Applies to the DoD-managed response actions at formerly used defense sites.

d. Does not apply to:

(1) Contractor-owned or contractor-operated facilities.

(2) Radiological data collected under the Naval Nuclear Propulsion Program or other DoD radiological programs.

(3) Chemical, biological, radiological, nuclear, and explosive incident training or response programs.

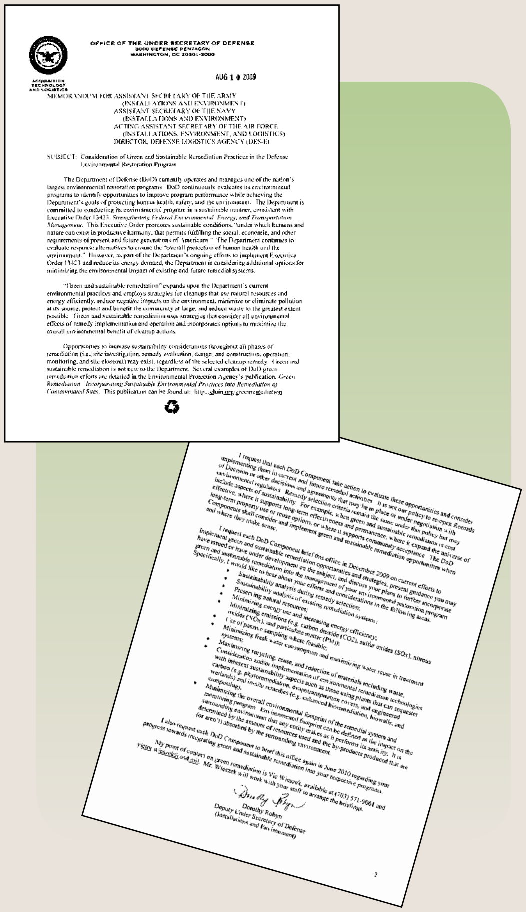
3. DEFINITIONS. See Glossary.

http://www.dtic.mil/whs/directives/corres/pdf/471518p.pdf

# Policies and Guidance, *continued*

## OSD Memorandum on Green and Sustainable Remediation Practices

The Office of the Secretary of Defense (OSD) issued a memorandum on August 10, 2009, “Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program.” This memorandum establishes DoD’s commitment to conducting its environmental program in a sustainable manner consistent with Executive Order (EO) 13423, “Strengthening Federal Environmental, Energy, and Transportation Management.” EO 13423 promotes sustainable conditions “under which humans and nature can exist in productive harmony, that permits fulfilling social, economic, and other requirements of present and future generations of Americans.” Green and sustainable remediation (GSR) expands upon DoD’s current environmental restoration practices and employs strategies for cleanups that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize and eliminate pollution at its source, protect and benefit the community at large, and reduce waste to the greatest extent possible. It employs strategies that consider all environmental effects of remedy implementation and operation and incorporates options to maximize the overall environmental benefit of cleanup actions. The OSD memo requests that DoD components evaluate opportunities for sustainable remediation and consider implementing them in current and future remedial activities. The intent is not to reopen RODs or other agreements that are in place or in progress, but rather to encourage consideration and implementation of GSR when and where it makes sense – e.g., when it is cost effective, where it supports long-term effectiveness and permanence, where it expands the universe of long-term property use or reuse options, or where it supports community acceptance.



OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION TECHNOLOGY AND LOGISTICS

AUG 10 2009

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND ENVIRONMENT)
ACTING ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS, ENVIRONMENT, AND LOGISTICS)
DIRECTOR, DEFENSE LOGISTICS AGENCY (DES-E)

SUBJECT: Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program

The Department of Defense (DoD) currently operates and manages one of the nation's largest environmental restoration programs. DoD continuously evaluates its environmental programs to identify opportunities to improve program performance while achieving the Department's goals of protecting human health, safety, and the environment. The Department is committed to conducting its environmental program in a sustainable manner, consistent with Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. This Executive Order promotes sustainable conditions, "under which humans and nature can exist in productive harmony, that permits fulfilling the social, economic, and other requirements of present and future generations of Americans." The Department continues to evaluate response alternatives to ensure the "overall protection of human health and the environment." However, as part of the Department's ongoing efforts to implement Executive Order 13423 and reduce its energy demand, the Department is considering additional options for minimizing the environmental impact of existing and future remedial systems.

"Green and sustainable remediation" expands upon the Department's current environmental practices and employs strategies for cleanups that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at its source, protect and benefit the community at large, and reduce waste to the greatest extent possible. Green and sustainable remediation uses strategies that consider all environmental effects of remedy implementation and operation and incorporates options to maximize the overall environmental benefit of cleanup actions.

Opportunities to increase sustainability considerations throughout all phases of remediation (i.e., site investigation, remedy evaluation, design, and construction, operation, monitoring, and site closeout) may exist, regardless of the selected cleanup remedy. Green and sustainable remediation is not new to the Department. Several examples of DoD green remediation efforts are detailed in the Environmental Protection Agency's publication, *Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites*. This publication can be found at: http://cluin.org/greenremediation

I request that each DoD Component take action to evaluate these opportunities and consider implementing them in current and future remedial activities. It is not our policy to re-open Records of Decision or other decisions and agreements that may be in place or under negotiation with environmental regulators. Remedy selection criteria remain the same under this policy but may include aspects of sustainability. For example, when green and sustainable remediation is cost effective, where it supports long-term effectiveness and permanence, where it expand the universe of long-term property use or reuse options, or where it supports community acceptance. The DoD Components shall consider and implement green and sustainable remediation opportunities when and where they make sense.

I request each DoD Component brief this office in December 2009 on current efforts to implement green and sustainable remediation opportunities and strategies, present guidance you may have issued or have under development on the subject, and discuss your plans to further incorporate green and sustainable remediation into the management of your environmental restoration program. Specifically, I would like to hear about your efforts and considerations in the following areas:

- Sustainability analysis during remedy selection;
- Sustainability analysis of existing remediation systems;
- Preserving natural resources;
- Minimizing energy use and increasing energy efficiency;
- Minimizing emissions (e.g. carbon dioxide ($CO_2$), sulfur oxides (SOx), nitrous oxides (NOx), and particulate matter (PM));
- Use of passive sampling where feasible;
- Minimizing fresh water consumption and maximizing water reuse in treatment systems;
- Maximizing recycling, reuse, and reduction of materials including waste;
- Consideration and/or implementation of environmental remediation technologies with inherent sustainability aspects such as those using plants that can sequester carbon (e.g. phytoremediation, evapotranspiration covers, and engineered wetlands) and in-situ remedies (e.g. enhanced bioremediation, biowalls, and composting);
- Minimizing the overall environmental footprint of the remedial system and monitoring program. Environmental footprint can be defined as the impact on the surrounding environment that any entity makes as it performs its activity. It is determined by the amount of resources used and the by-products produced that are not absorbed by the surrounding environment.

I also request each DoD Component to brief this office again in June 2010 regarding your progress towards integrating green and sustainable remediation into your respective programs.

My point of contact on green remediation is Vic Wieszek, available at (703) 571-9061 and victor.wieszek@osd.mil. Mr. Wieszek will work with your staff to arrange the briefings.

Dorothy Robyn
Deputy Under Secretary of Defense (Installations and Environment)

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http://www.ert2.org/t2gsrportal/docs/DoD%20Green%20and%20Sustainable%20Remediation%20Memorandum.pdf

## Green and Sustainable Remediation Fact Sheet

Even before the OSD memo, DON had undertaken efforts to include GSR principles in its environmental restoration projects by minimizing the environmental footprint of a project, while maximizing the overall net benefit of cleanup actions. To increase awareness of GSR concepts and encourage their use, the NAVFAC Optimization Work Group prepared a GSR Fact Sheet in Fall 2009. The Fact Sheet helps to define GSR, describe why it is important, and provide general approaches that can be used to employ GSR at remedial action sites. The Fact Sheet includes sustainability metrics, methods for environmental footprint assessment, how to incorporate GSR practices into the environmental restoration process, and examples of footprint reduction methods.

NAVFAC

Green and Sustainable Remediation Fact Sheet

Introduction to GSR (What, Why, How)

**What is Green and Sustainable Remediation?**
Sustainable practices are those that consider economic and natural resources, ecology, human health and safety, and quality of life. Although the terms green and sustainable are sometimes used interchangeably, green remediation can be considered as having a focus on environmental factors, whereas green and sustainable remediation (GSR) is of a more holistic view and considers not only environmental factors, but social responsibility (e.g., minimizing risk to surrounding communities) aspects as well.

GSR expands upon current environmental practices and employs strategies for cleanups that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at the source, protect and benefit the community at large, and reduce waste to the greatest extent possible, thereby minimizing the environmental “footprint” and maximizing the overall benefit of cleanup actions. The term environmental footprint refers to the impacts on environmental media and society that are a direct or indirect consequence of performing the remedial action.

Opportunities to increase sustainability can be considered throughout all phases of remediation (i.e., site investigation, remedy selection, remedy design and construction, operation, monitoring, and site closeout) regardless of the selected cleanup remedy. However, it is anticipated that the greatest opportunities to reduce the footprint of the Navy Environmental Restoration Program (NERP) are associated with the remedy selection process. While it must be emphasized that meeting the traditional requirements of remediation (e.g., protection of human health and the environment and compliance with applicable or relevant and appropriate requirements) is still of primary importance, there are significant differences in the environmental footprint among alternatives that meet these requirements, and those remedies with the lesser footprint should be viewed more favorably.

**Why now?**
Consideration of sustainable practices is becoming increasingly important throughout the remediation community and this emphasis is now being reflected in policy and guidance. Executive orders (EOs) 13514 released on October 8, 2009 and 13423 released on January 26, 2007 mandate inclusion of sustainability and sustainable practices in all the activities of federal agencies. Furthermore, a memorandum released by the Department of Defense (DoD) in August of 2009 states that the DoD is committed to conduct its environmental program in a sustainable manner, in line with EO 13423. The memorandum requests every DoD component to apprise the office of Under Secretary of Defense by December 2009 about the initiatives undertaken by all the DoD components for implementing green and sustainable options in their environmental restoration programs. In addition, Department of the Navy (DON) Environmental Strategy lays out a vision for “Sustaining our Environment, Protecting our Freedom,” which links accomplishing the Navy’s war fighting mission with its responsibility to safeguard the natural systems upon which the nation’s quality of life depends. Furthermore, regulatory agencies are beginning to request that sustainability be considered during remedy implementation. The Navy remedial project manager (RPM) that applies GSR is able to show compliance with EOs 13423 and 13514, DoD GSR Memorandum, and the DON Environmental Strategy, as well as reduced life-cycle costs and improved community and regulatory acceptance of remedies with lower overall impacts.

**How do I apply GSR to my site?**
Although the remediation industry is placing an emphasis on GSR and various relevant publications have been produced (a listing of references is provided in the spring 2009 NAVFAC RPM newsletter), no accepted protocols currently exist for implementing GSR. GSR should be considered during (a) evaluation of remedies during the remedy selection process, (b) the remedial design phase, and (c) optimization of remedial actions during the remedial action operation phase. The DON Optimization Workgroup is developing a strategy for applying GSR to the remediation process as part of the optimization program. Until guidance is available, an RPM may consider the following general approach:
- Determine which sustainability metrics should be considered for the site;
- Establish and apply a methodology to quantify or characterize each metric;
- Obtain consensus regarding how metrics are weighed against each other and against traditional criteria in selecting the remedial approach;
- Identify methods to reduce environmental footprint of remedy components; and
- Prioritize, select, and document what footprint reduction methods should be implemented with consideration of the overall net environmental benefit and available funding.

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http://www.ert2.org/t2gsrportal/docs/gsr_fact_sheet.pdf

# Arsenic Background Study

## Naval Station Mayport, Jacksonville, FL

Naval Station (NAVSTA) Mayport conducted a study to establish background concentrations of arsenic in soils at the base. The Arsenic Background Study resulted in immediate benefit and cost avoidance for the Navy by establishing a regulator-approved allowable arsenic concentration, eliminating the need for remediation of or land use controls (LUCs) associated with naturally occurring arsenic.

Soils at NAVSTA Mayport are predominantly composed of material dredged from the ship turning basin since 1942. Sporadically high concentrations of arsenic in soils had been detected fairly consistently throughout the facility's solid waste management units (SWMUs), including areas that did not seem to be associated with operations at the SWMUs. As a result of the apparently high levels of naturally occurring arsenic in the area, the Navy proposed a study to determine background arsenic concentrations at NAVSTA Mayport.

Past investigations at NAVSTA Mayport SWMUs included collection of more than 800 soil samples from surface and subsurface soil intervals. The surface soil depth interval is 0 to 1 foot below ground surface (bgs); depths below 1 foot represent subsurface soil. Arsenic concentrations detected in soils at the facility range from 0.006 to 15.6 milligrams per kilogram (mg/kg). The Soil Cleanup Target Levels (SCTLs) identified by the Florida Department of Environmental Protection (FDEP) for arsenic are 2.1 mg/kg for residential exposure and 12 mg/kg for industrial exposure. Thus, based on comparisons to these SCTLs, the levels of arsenic found at many NAVSTA Mayport SWMUs would have resulted in either soil remediation or institution of LUCs.

The data sets for the background study included surface and subsurface soil sampling results available via the Environmental Geographic Information System database for NAVSTA Mayport. Arsenic was detected in 416 surface soil samples and 395 subsurface samples collected at the facility. To fulfill study sampling objectives, 40 areas were identified for collection of additional samples to provide adequate spatial coverage for statistical determination of NAVSTA Mayport basewide arsenic concentrations in soil. Two soil samples were collected at each location, one from 0 to 1 foot bgs and one at depths ranging from 2 to 13 feet bgs.

Based on statistical analysis of arsenic concentrations in surface and subsurface soil from contaminated and uncontaminated areas, the naturally occurring concentration of arsenic in soil at NAVSTA Mayport was determined to be 13.70 mg/kg. The maximum detected arsenic concentration was 13.75 mg/kg; therefore, all detected concentrations of arsenic in soil at the facility at concentrations less than 13.75 mg/kg are considered to represent local background conditions.

Characterization of site-specific background concentrations is typically performed for environmental investigation. RCRA and risk assessment guidance allows for chemical concentrations to exceed screening and regulatory criteria if they are within naturally occurring background concentrations of those chemicals and if they were not the result of a release associated with operational activities. Navy policy is that chemicals at RCRA units that are present due to anthropogenic non-site-related sources are not considered to be contamination.

Developing the NAVSTA Mayport-specific background arsenic concentration allows naturally occurring arsenic to remain on site without restrictions. As a result, No Action was approved for one SWMU and one Area of Concern that would have required LUCs based on comparison of arsenic concentrations to FDEP SCTLs. Cost avoidance for each site is about $109,000 in current dollars over 30 years. The LUC footprints at two additional SWMUs were also reduced due to this change. The smaller LUC footprints reduce restrictions on the use of the property, which can then reduce impacts to mission capability. The Arsenic Background Study will result in future cost avoidance by reducing future investigations of arsenic present at concentrations greater than regulatory limits but less than the naturally occurring background concentration.

Developing site-specific background concentrations can result in significant cost avoidance and limit the need for unnecessary remediation and LUCs.

*Cleared Area at SWMU 4*

*Vegetation at SWMU 4*

*Sample Locations*

# Oxygen Releasing Compound and Monitored Natural Attenuation Used Successfully at UST Site 14

## Naval Air Station, Pensacola, FL

Naval Air Station (NAS) Pensacola, FL, used injection of Oxygen Release Compound (ORC®) to accelerate the natural attenuation of petroleum hydrocarbons at Underground Storage Tank (UST) Site 14. Using this innovative technology along with good communication and partnering resulted in a no further action (NFA) designation and significant cost avoidance.

Site 14 consists of USTs 681 and 682 at the former NAS Pensacola petroleum storage facility. Installed in December 1943, each cut-and-cover tank had a storage capacity of about 1.1 million gallons and was used to store marine diesel fuel. The two tanks were taken out of service and closed in place by filling them with sand and capping them with concrete in April 1995. Assessment activities were completed for the site between January 2000 and April 2002, and the final recommendation of using monitored natural attenuation (MNA) for remediation was approved by the Florida Department of Environmental Protection (FDEP) in the Monitoring Only Plan (MOP) dated July 2, 2002. MNA is a proven remedial option for UST sites, using natural processes to degrade the hydrocarbons.

Early quarterly groundwater monitoring results at Site 14 suggested that natural attenuation had been ineffective in reducing site contaminant concentrations. Therefore, it was decided to expedite the process by using ORC® injection, followed by MNA as a "polishing remedy." Adding oxygen to the subsurface can accelerate aerobic biodegradation and enhance the rates of natural attenuation of contaminants. ORC® is designed to release its full amount of oxygen (10% by weight) over 12 months. Using a patented Controlled Release Technology (CRT™), the oxygen is released consistently, avoiding problems sometimes associated with single-release chemicals. Injection of ORC® slurry increases the mass destruction rates of the petroleum-related compounds in the groundwater by creating environmental conditions that promote aerobic degradation by microorganisms.

A treatability study for ORC® injection to enhance biodegradation at UST Site 14 was conducted in 2003 and 2004. Following the treatability study, supplemental assessment of site soils and groundwater, including installing additional monitoring wells, was conducted in June and July 2005. Assessment results indicated that concentrations of petroleum hydrocarbons in site groundwater were decreasing and that geochemical trends indicated an increase in oxidizing conditions, suggesting the potential for ongoing and future degradation.

Quarterly groundwater natural attenuation monitoring was reinstated in January 2006 and continued until contaminant concentrations were less than Florida Groundwater Cleanup Target Levels (GCTLs) for two consecutive quarters.

Project challenges included overhead power lines that limited access to on-site sampling locations and the steepness of downgradient off-site topography, which precluded installation of off-site monitoring wells. Communications on this project were the key to success. The partnering team held quarterly meetings, supplemented with monthly conference calls and on-board reviews to evaluate progress, set future actions, and assess remedy effectiveness.

Seven quarters of MNA sampling were conducted following the initial approval of the MOP; however, one or more samples exceeded Florida GCTLs in each sampling event. In 2008, two consecutive quarters of sampling were completed in which no analytes were detected above Florida GCTLs. As a result of the declining concentrations of monitored analytes and the consecutive quarters of attainment of Florida GCTLs, the site was recommended for a Site Rehabilitation Completion Order (SRCO) for NFA without controls. On September 11, 2008, FDEP approved the SRCO for NFA at UST Site 14, NAS Pensacola. Successful implementation of ORC® and subsequent MNA enabled the site team to avoid cost of about $600,000 compared with more conventional remediation techniques.

At some sites, such as NAS Pensacola, natural attenuation may be insufficient to degrade hydrocarbons in a timely manner. In such cases, stimulation of the aquifer through the release of oxygen will help native aerobic microbes flourish, resulting in an acceleration of hydrocarbon attenuation.

***Collection of Groundwater Samples at Plume Boundary***

***Collection of Groundwater Samples at Downgradient Perimeter Well (Point of Compliance Location)***

***Low Flow Sampling Methodology Being Used to Sample Groundwater***

# Wetland Sediment Treatment Using Lead Stabilization Amendments, Sites 1/12 OU-2

## Naval Air Station Patuxent River, MD

At Naval Air Station (NAS) Patuxent River, MD, lead stabilization amendments were used to allow disposal of lead-impacted soil as nonhazardous waste and to prevent leaching of lead to wetlands. The use of these soil amendments avoided costs that would have been required for disposing of the soil as hazardous waste and reduces future dissolved-lead concentrations in wetland surface water so that ambient water quality criteria (AWQC) can be met.

***Excavation Within the Wetland***

***Overexcavation of the Impact Berm***

***Post-Excavation Stabilization of Grids (Apatite Stabilization Product in White Bags)***

***Stabilization of Excavated Soil for Nonhazardous Disposal***

Site 1 (Fishing Point Landfill) and Site 12 (Landfill Behind the Rifle Range) are former landfills adjacent to the Patuxent River. Operable Unit 2 (OU 2) consists of surface water and soil in the wetland adjacent to these landfills. A former rifle range located southeast of OU 2 is the source of lead detected in the wetland. The former range included an impact berm and a low-lying area between the berms that contained lead-impacted soil. Remedial investigation results indicated that dissolved-lead concentrations in surface water exceeded the applicable AWQC and thus posed a potential risk to aquatic biota and the wetland ecosystem. To address the lead-impacted soil/sediment, NAVFAC Washington implemented the remedy selected in the OU 2 Record of Decision, which consisted of the following:

- Excavation of soil from upland and wetland areas with lead concentrations greater than 400 mg/kg
- In-situ amendment of sediment to bind lead to nonbioavailable forms
- Stabilization of excavated materials to allow for nonhazardous off-site disposal
- Stabilization of select areas to prevent continued leaching of residual lead
- Surface water monitoring to verify reduction of dissolved-lead concentrations below the adjusted AWQC.

Prior to the implementation of the selected remedy, laboratory bench-scale testing and field pilot testing were conducted to evaluate the percentages of a commercial apatite-based stabilization product needed to stabilize lead in the soil/sediment. Results of the bench-scale testing showed the amendment decreased dissolved-lead concentrations after brief mixing and contact time with the soil/sediment. However, the pilot study data also suggested that application of the apatite-based amendment as an alternative to excavation was not appropriate in areas with high lead concentrations or in wetland sediments and indicated this amendment could negatively impact the wetland through phosphorus loading.

About 10,000 tons of lead-impacted soil/sediment were excavated, amended with two commercial stabilization products to bind leachable lead, and disposed off-site as nonhazardous waste. Amendments were also placed in the bottom of numerous soil excavation grids to prevent leaching of residual lead. However, amendments were not applied to wetland excavation areas to avoid potentially negative impacts from phosphorus.

This cleanup approach with bench and pilot testing avoided negative impacts on ecosystem quality and costly hazardous disposal of lead-impacted soil. The wetland was to be treated in-situ; but, while bench testing supported this approach, pilot testing determined that it would cause more issues than it solved. Adjustments to the remedial plan were made to excavate sediment for disposal rather than treating the soil in-situ. Other challenges included preparing and obtaining regulatory approval of an erosion and sediment control plan and developing a wetland mitigation plan prior to design and implementation to address temporary impacts to the wetland. Also, slope stability and soil loss evaluations for the impact berm were necessary to ensure sufficient stability and erosion control.

Several successes were achieved by this remediation project. Surface water sampling immediately after and 8 months following completion of remedial action showed no detectable dissolved lead in wetland surface water and minimization of exposure of aquatic ecological receptors to lead in excess of the lead AWQC. More than 10,000 tons of lead-impacted soil were excavated and disposed off-site as nonhazardous waste due to stabilization. The lead source area was removed, and application of the apatite-based product to upland soils with residual lead has greatly reduced potential leaching of lead into the wetland. Also, the remedy-related impacts to existing wetlands were minimized, and the wetlands were restored with greater plant diversity. In conclusion, bench-scale and pilot testing were worth the time and up-front costs to avoid potential negative impacts that could have resulted from direct application of the apatite-based product to the wetland as a soil amendment as well as potential future costs to address those negative impacts. In this case, excavation of shallow lead contamination in a wetland proved to be a more expedient and effective remedy than in-situ binding/stabilization.

# Soil Mixing Using Zero-Valent Iron (ZVI) at Camp Lejeune Site 89

## Marine Corps Base Camp Lejeune, Jacksonville, NC

*ZVI*

*Site 89 Air Sparging*

*Site 89 Permeable Reactive Barrier*

*Site 89 ERD-EVO*

Marine Corps Base (MCB) Camp Lejeune is a 236-square-mile facility located in Jacksonville, NC, whose primary mission is to maintain combat-ready units for expeditionary deployment. After numerous investigations at MCB Camp Lejeune IR Program Site 89, the former Defense Reutilization and Marketing Office (DRMO) has been identified as the most contaminated site on the base. A dense non-aqueous phase liquid (DNAPL) source area was identified, and an extensive dissolved-phase chlorinated volatile organic compound (VOC) plume is present. To reduce risks to human health and environment, the Partnering Team, including the Navy and its contractor, EPA Region 4, and the North Carolina Department of Environment and Natural Resources, worked together to implement several treatability studies and a soil-mixing action in FY 2008. These studies and actions significantly decreased the amount of contamination to be addressed in the upcoming feasibility study (FS).

Historical records for Site 89 indicate that the Base Motor Pool operated on-site until 1988. It reportedly used solvents (acetone, trichloroethene, and methyl ethyl ketone) for parts cleaning. After 1988, the site was used as the DRMO until 2000 for storage of items such as scrap and surplus metal, electronic equipment, vehicles, and rubber tires. In the early 1990s, fuel bladders, used in training exercises for helicopter refueling, were placed on-site. The bladders were reportedly emptied on the ground, cleaned with solvents, re-emptied on the ground, capped, and shredded; during this shredding process, liquids were observed. The site has not been used since the DRMO relocated in 2000.

A remedial investigation (RI) has been completed at Site 89, and several actions have been taken to reduce contamination levels prior to the FS. A treatability study approach was developed to identify the best technology that balances contaminant reduction and cost for full-scale implementation to address the 10-acre dissolved-phase chlorinated VOC plume in the FS.

Four innovative remedial technologies were evaluated, including enhanced reductive dechlorination (ERD) by injecting a combination of sodium lactate and emulsified vegetable oil (EVO), chemical reduction via zero-valent iron (ZVI) injection using pneumatic fracture, air sparging via a horizontal well, and a permeable reactive barrier using mulch/compost as backfill. The overall effectiveness of each technology was evaluated in terms of reducing the chlorinated VOCs while balancing the technology's cost and ease of implementation. While air sparging and ERD reduced contaminant mass for a similar cost per volume treated, air sparging was the most practical technology for full-scale implementation. The results of the studies will be used to develop a better exit strategy for the site and to provide options for future treatment train approaches.

Over 37,000 pounds of chlorinated solvents, including 1,1,1,2-tetrachloroethane and its breakdown products, have been detected at elevated concentrations (up to 440,000 parts per billion) indicative of DNAPL. To address the source areas, a non-time-critical removal action (NTCRA) was conducted to reduce risks from contaminants in groundwater discharging to an adjacent creek. Five alternatives were evaluated, and soil mixing with ZVI-clay addition was selected due to its successful implementation at another IR Site (Site 88) at Camp Lejeune with similar contaminants. A public meeting was held to solicit community input on the NTCRA. Costs for this technology were $3 million to $5 million less than the others. A bench-scale study was conducted to determine the optimal mixture of ZVI and clay for treatment. The area treated was 32,000 square feet at a depth of 25 feet, resulting in a total treated volume of 30,000 cubic yards. Since implementation, VOC concentrations have been significantly reduced in the adjacent creek. Based on the preliminary results, the NTCRA will result in significant reduction of risks to human health and the environment.

*Site 89 Before Soil Mixing*

*Site 89 During Soil Mixing*

*Site 89 After Soil Mixing*

# Basewide Vapor Intrusion Investigation

## Marine Corps Base Camp Lejeune, Jacksonville, NC

Vapor intrusion (VI) into occupied buildings as a pathway of potential concern is becoming an increasingly hot topic within the DoD and the regulatory community. To address this concern, Marine Corps Base (MCB) Camp Lejeune conducted a basewide VI evaluation to ensure the protection of human health for personnel working or living on the base. This large-scale evaluation is the first of its kind conducted by the Navy, encompassing thousands of structures over the 236-square-mile facility and about 150,000 receptors, including military personnel, retirees, dependents, and civilians.

MCB Camp Lejeune is located in Jacksonville, NC. The primary mission is to maintain combat-ready units for expeditionary deployment. The base provides housing, training facilities, and logistical support for Fleet Marine Force Units and other assigned units. About 47,000 military personnel are stationed at the base. The base is a major economic presence for the community and maintains a close relationship to ensure quality living for both military and civilians throughout the area. An active RAB, composed of members of the community, civic and business organizations, and civilian employees, meets quarterly.

The VI evaluation was conducted in six areas of the base where groundwater contamination is known to exist. A tiered approach following recent DoD policy and draft EPA VI guidance was developed for the assessment. The general steps included identification of volatile organic compounds (VOCs) in the subsurface within 100 feet of buildings; risk-based contaminant screening; collection of groundwater, soil vapor, subslab soil gas, and/or indoor air sampling; and multiple lines of evidence (MLE) evaluation. In the initial screening step, about 170 buildings of interest were identified within 100 feet of a groundwater plume. Of these, 50 buildings of interest were retained for the sampling phase. Groundwater, exterior soil vapor, subslab soil gas, and/or indoor air samples were collected at these 50 buildings for use in the evaluation. Then, each building of interest was evaluated using MLE to determine whether VI may result in unacceptable risks for building occupants.

MLE evaluation was used to develop a conceptual site model for each building of interest in accordance with DoD and EPA guidance. The lines of evidence included site history; historical groundwater data; building survey results; existing remediation and/or vapor mitigation systems; the potential presence of non-aqueous phase liquid (NAPL); the magnitude, correlation, and spatial (horizontal and vertical) distribution of historical groundwater, exterior soil gas, interior subslab soil gas, indoor air and/or outdoor air data; chemical product and use inventory; pressure differential measurements; preferential pathways; and modeling results. Data collected during the field events were compared with EPA's Regional Screening Levels, adjusted using EPA's default attenuation factors. In addition, colocated subslab soil gas and indoor air sample data were used to develop base-specific soil gas screening levels. These levels were two orders of magnitude higher than those calculated using EPA's default parameters, resulting in more realistic screening values for use in the MLE.

The Basewide VI Evaluation Report was submitted in 2009. The MLE evaluation indicated that VI is not currently a significant pathway of concern. Further investigation is planned in FY 2010 to confirm that there is no concern based on temporal variability and preferential pathways. Findings will be incorporated into IRP site-specific evaluations and considered during remedial planning and the Five-Year Review. The base will continue to ensure protection of marines and workers by working with base planning and evaluating VI pathways as building uses change and new information is obtained.

The basewide VI evaluation approach and results were presented to the regulatory agencies at partnering meetings and the community at RAB meetings throughout the process. Positive feedback was provided from reviewers:

"… an excellent evaluation of the potential vapor intrusion and indoor air impacts to human health. The State concurs with the conclusions and recommendations of each area building evaluated." – North Carolina Department of Environment and Natural Resources

"The documents present a clear evaluation of buildings that may be impacted by vapor intrusion and is an excellent data source that should be included in the appropriate remedial investigations." – EPA

*Subslab Sampling*

*Basewide VI Study Areas*

# Implementing the Uniform Federal Policy for Quality Assurance Project Plans at Installations Within NAVFAC Southeast Area of Responsibility

In August 2007, NAVFAC conveyed to its Comprehensive Long-Term Environmental Action Navy (CLEAN) contractors and several other Navy organizations the importance of, and strategy for, implementing the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPPs). Within NAVFAC, this policy is commonly known as the UFP for Sampling and Analysis Plans or UFP-SAPs. Since that time, the CLEAN contractor for NAVFAC Southeast has been producing UFP-compliant SAPs. SAP preparation and documentation continue to be streamlined, and the CLEAN contractor has worked closely with NAVFAC to ensure that SAPs for individual projects meet the needs of NAVFAC. NAVFAC provides oversight in the form of a government chemist review of all UFP-based SAPs.

DoD, EPA, and DOE developed the UFP-QAPP to standardize the format of environmental data collection plans. The policy requires use of a systematic planning process; the standardized format addresses all aspects of project planning, implementation, assessment, and reporting, except for health and safety activities. Compliance with UFP-QAPP requirements guarantees compliance with EPA requirements. When appropriate, bases with active community groups may be involved in the planning process.

Upfront technical planning meetings are an essential collaborative component of the process, ensuring that all participants understand the technical issues and also resulting in streamlined comment resolution during the review process. Key components of the planning include site visits; development of accurate conceptual site models (CSMs) that support project decisions; and establishment of data quality objectives (DQOs) to define data needed, inputs to the sampling design, and the decision-making method.

Maintaining a standard format and consistency from project to project has been and will continue to be a challenge because of the breadth of projects covered by the UFP-QAPP. The CLEAN contractor participates in teleconferences and other communications with NAVFAC to ensure that consistency is achieved and continually improves. Scheduling all relevant stakeholders to participate in planning meetings has been challenging and is expected to remain so. Nevertheless, the planning teams continually demonstrate resourcefulness in overcoming this challenge through video teleconferencing and other forms of communications.

The use of UFP-SAP–based planning documents is expected to result in accelerated project completion schedules and reduced overall costs. Some reductions have been realized, e.g., improved cooperation between regulators and NAVFAC has reduced regulator review times. In some cases, work has been re-scoped to eliminate unnecessary activities and reduce costs.

Successes of implementing the UFP-QAPP process include the following:

- Unnecessary work has been eliminated on some projects, e.g., the need for an additional SAP was eliminated for the Pensacola Operable Unit 1 project. At Camp Moffett, the scope of a remedial investigation (RI) was reduced to that of a site investigation (SI) until the presence of contamination is confirmed.
- The systematic planning process used most frequently in conjunction with UFP-SAPs is EPA's DQO process. The involvement of relevant stakeholders in the project planning process improves cooperation among them.
- NAVFAC actively solicits individual state acceptance of UFP-SAPs, and adoption has been widespread.
- The use of UFP-SAPs is increasing the scientific basis for, and defensibility of, environmental investigations.

UFP-SAPs were designed primarily to support the review cycle by the Navy and regulatory community, but their standardized format is already helping to improve the quality of planning document preparation.

*Planning Meeting at Naval Support Activity Panama City*

*DQO Facilitation Meeting, Marine Corps Recruit Depot Parris Island Team*

# Naval Installation Restoration Information Solution (NIRIS)

Ensuring easy, cost-effective access to high-quality ER Program spatial data and records has been a challenge. With the adoption of new technologies and heavy focus on implementation of interoperable enterprise solutions within DoD, the Navy developed the Naval Installation Restoration Information Solution (NIRIS) for managing ER Program information. NIRIS allows users to easily find, view, analyze, and manage ER data, documents, and records.

IRP and MRP projects accumulate thousands of spatial data points and associated documents and records. Initially, no **central system** existed for maintaining these data. Important site-level data such as analytical results, land use control (LUC) information, and reports were dispersed internally among remedial project managers (RPMs) and externally among an increasing number of contractors. NIRIS, a Web-based geographic information system (GIS), with applications, and other resources available for use by Navy RPMs, contractors, and other stakeholders is the **central system**. In 2008, Navy policies were issued for both the ER and BRAC Programs requiring RPMs to use NIRIS to manage ER and BRAC Program data and documents for Navy and Marine Corps installations.

Use of NIRIS ensures stakeholder teams can quickly and easily access quality data at ER sites, facilitating decision making. Benefits of NIRIS include the following:

**Stakeholder Access to High-Quality Data and Documents:** NIRIS provides RPMs, contractors, and other stakeholders easy and instant access to data, documents, and records that were formerly difficult to obtain or dispersed among various sources and locations. NIRIS also ensures data quality by putting data through various stages of verification before they can be loaded.

**Applications:** NIRIS provides various standardized tools for visualization, analysis, modeling, and querying/reporting of data, which help to streamline the decision-making process. NIRIS applications are standard throughout NAVFAC, which reduces the learning curve for RPMs and contractors switching between ER sites. Tools include the following:

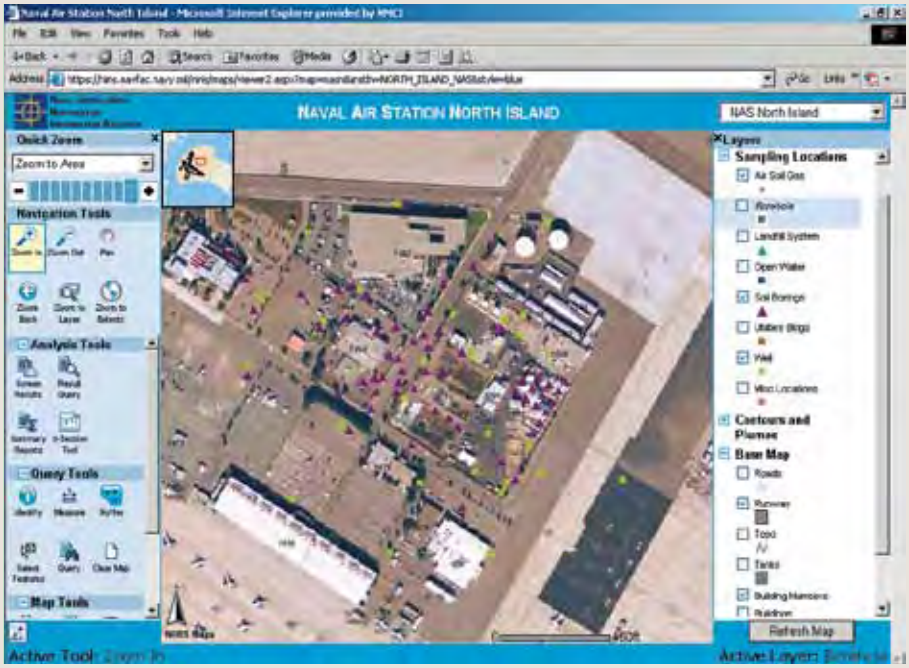
- WebGIS, a simple-to-use GIS with a wide range of standard and customized tools
- Desktop GIS via Citrix, a full-function GIS with advanced analysis tools
- Query Tools to find, view, extract, and report data
- LUC Tracker to manage LUCs
- Environmental Document Management System (EDMS) to find, view, and download documents and records
- Advanced analysis and visualization tools such as Groundwater Modeling System, an advanced groundwater analysis suite of tools.

**Maintaining Institutional Knowledge:** Institutional knowledge is maintained and easily shared with NIRIS. The central database prevents loss of information due to staff turnover and allows RPMs, contractors, and other end users to view site maps and data records of other projects within the Navy and Marine Corps.

**Interoperability within NAVFAC, Navy, and DoD:** NIRIS is compliant with DoD Spatial Data Standard for Facilities, Infrastructure, and Environment (SDSFIE) and is centrally hosted by the NAVFAC Information Technology Center (NITC) under the NAVFAC Web Portal, facilitating sharing and leveraging of data, information, and infrastructure.

**Cost Avoidance Measures:** By integrating centralized Navy-supported GIS and Web-based applications, NIRIS helps to reduce software investment costs. Development costs are minimized because an application developed by one FEC is usable by all.

Over 700 users, representing all NAVFAC FECs, are using NIRIS to manage their data. Over 8 million analytical data entries have been made and over 33,000 reports and documents loaded. The usefulness of NIRIS will continue to increase as historic data loading progresses and new data are loaded to NIRIS. Tools and applications are being developed to enhance the usability of NIRIS, transitioning the system into an overall project management application.




*NIRIS WebGIS Interface Showing Locations of Soil Borings and Wells. Standard Navigation Tools, and Customized Analysis and Query Tools are on the Left.*

# Appendices

**The data presented in the Appendices provide the status of the Installation Restoration Program (IRP) and Munitions Response Program (MRP) as of 30 September 2009.**

### Appendix A – Installation Restoration Program Status

This appendix presents IRP phase data by state and under each state by installation. This appendix includes the IRP sites that were included in the program under the previous site eligibility requirements prior to issuance of the Office of the Secretary of Defense's (OSD's) "Interim Policy on Defense Environmental Restoration Program Eligibility."

### Appendix B – Munitions Response Program Status

This appendix presents MRP phase data by state and under each state by installation.

### Appendix C – Installation Restoration Program Status - Compliance Cleanup Sites

This appendix presents IRP phase data by state and under each state by installation for the 47 Compliance Cleanup sites. These sites were added to the IRP as a result of the OSD's "Interim Policy on Defense Environmental Restoration Program Eligibility" which eliminated the 1986 cutoff dates for site eligibility.

### Appendix D – Environmental Restoration Program Totals

This appendix presents a summary of the total number of sites in various phases of environmental restoration under the IRP (including Compliance Cleanup sites) and MRP.

### Appendix E – Environmental Restoration (IRP and MRP) Installation Summaries

This appendix presents details of the cleanup plans by individual installation for the Navy and Marine Corps bases. The appendix is organized by state then installation and includes both IRP and MRP sites, but not the Compliance Cleanup sites.

### Appendix F – Compliance Cleanup Installation Summaries

This appendix presents details of the cleanup plans for the 47 Compliance Cleanup sites. The appendix is organized by state and under each state by installation.

### Appendix G – Installations Inspected and No Sites Identified

This appendix lists the Navy and Marine Corps installations for which a preliminary assessment (or an initial assessment study) was completed and no sites were identified that required further study or cleanup.

### Appendix H – Installations with All IRP or All MRP Sites Achieving Remedy in Place (RIP) or Response Complete (RC)

This appendix provides a list of all installations where cleanup (RIP/RC achieved) of IRP sites is 100% complete and those where cleanup of MRP sites is 100% complete.

# Acronym List for Appendix

| | |
|---|---|
| **C** | Completed, number of sites with the phase completed |
| **C (ACT)** | Completed, number of sites with IRAs completed (number of interim actions completed at the sites) |
| **CA** | RCRA Corrective Action program |
| **CAP** | Corrective Action Plan (RCRA Underground Storage Tank program) |
| **CERCLA** | Comprehensive Environmental Response, Compensation and Liability Act of 1980 |
| **CMI** | Corrective Measures Implementation (RCRA Corrective Action program) |
| **CMO** | Corrective Measures Operation (RCRA Corrective Action program) |
| **CMS** | Corrective Measures Study (RCRA Corrective Action program) |
| **DES** | Design (RCRA Corrective Action and UST program) |
| **ER,N** | Environmental Restoration, Navy funding |
| **F** | Future, number of sites with phase to be started in the future |
| **FS** | Feasibility Study (CERCLA program) |
| **FY** | Government Fiscal Year (ending 30 September) |
| **IMO** | Implementation Operation (RCRA UST program) |
| **IMP** | Implementation (RCRA Underground Storage Tank program) |
| **IRA** | Interim Remedial Action (CERCLA program) also includes removal actions |
| **IRP** | Installation Restoration Program |
| **LTM** | Long-Term Management |
| **MRP** | Munitions Response Program |
| **NPL** | National Priorities List |
| **Non-NPL** | Sites that are not listed on the National Priorities List |
| **PA** | Preliminary Assessment (CERCLA program) |
| **RA** | Remedial Action |
| **RAC** | Remedial Action Construction (CERCLA program) |
| **RAO** | Remedial Action Operation (CERCLA program) |
| **RC** | Response Complete, all cleanup actions completed |
| **RCRA** | Resource Conservation and Recovery Act |
| **RD** | Remedial Design (CERCLA program) |
| **RFA** | RCRA Facility Assessment (RCRA Corrective Action program) |
| **RFI** | RCRA Facility Investigation (RCRA Corrective Action program) |
| **RI** | Remedial Investigation (CERCLA program) |
| **RIP** | Remedy in Place |
| **SA** | Site Assessment (RCRA UST program) |
| **SI** | Site Inspection (CERCLA program) |
| **U** | Underway, number of sites with phase underway |
| **U (ACT)** | Underway, number of sites with IRAs underway (number of interim actions underway at the sites) |
| **UST** | RCRA Underground Storage Tank program |

**Names of installations are abbreviated in Appendices A, B, and C.**
**Complete names are provided in Appendices E and F.**

# APPENDIX A – Installation Restoration Program Status

| | Total # of Sites | On NPL | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
| **ALASKA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amchitka FSSC Det 1 | 11 | | 11 | | | 4 | 2 | | | | 4 | | | 7 | | | 6 | | 1 | | | | | 1 | 10 |
| Cape Prince of Wales NCCOSC | 3 | | 3 | | | | 3 | | | | | | | 3 | | | 3 | | | | | 3(4) | | | 3 |
| Point Barrow NARL | 13 | | 13 | | | 1 | 12 | | | 2 | 5 | | | 9 | 1 | | 6 | | 3 | 1 | | 7(8) | | | 9 |
| St. Lawrence NCCOSC | 4 | | 4 | | | | 4 | | | | | | | 4 | | | 4 | | | | | 4(5) | | | 4 |
| Tin City NCCOSC | 1 | | 1 | | | | 1 | | | | | | | 1 | | | 1 | | | | | 1(4) | | | 1 |
| **TOTAL** | **32** | | **32** | | | **5** | **22** | | | **2** | **9** | | | **24** | **1** | | **20** | | **4** | **1** | | **15(21)** | | **1** | **27** |
| **ARIZONA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flagstaff NOS | 2 | | 2 | | | 2 | | | | | | | | | | | | | | | | | | | 2 |
| Sentinel NCCOSC | 3 | | 3 | | | 2 | 1 | | | | | | | 1 | | | 1 | | | | | 1(2) | | | 3 |
| Yuma MCAS | 25 | Yes | 25 | | | 1 | 24 | | | 13 | 3 | | | 11 | | | 7 | 3 | 1 | | 3 | 1(1) | | | 23 |
| **TOTAL** | **30** | | **30** | | | **5** | **25** | | | **13** | **3** | | | **12** | | | **8** | **3** | **1** | | **3** | **2(3)** | | | **28** |
| **CALIFORNIA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alameda NMCRC | 2 | | 1 | | | | 2 | | | | | | | 1 | | 1 | 1 | | | | | | | | |
| Azusa NCCOSC Morris Dam Facility | 2 | | 1 | 1 | | 1 | | | | | | | | | | | | | | | | 1(1) | 1(1) | | 1 |
| Barstow MCLB | 43 | Yes | 41 | | | | 41 | | 1 | 31 | 9 | | | 10 | 1 | 1 | 8 | | 2 | | | 9(9) | | 5 | 32 |
| Bridgeport MCMWTC | 18 | | 18 | | | 3 | 14 | | | 6 | 8 | | | 9 | | | 4 | 4 | 1 | | 4 | 5(5) | | 5 | 12 |
| Camp Pendleton MCB | 209 | Yes | 168 | 25 | 2 | 62 | 112 | 24 | 4 | 59 | 17 | | 15 | 21 | 10 | 28 | 15 | 5 | 4 | 7 | 5 | 9(9) | | 8 | 90 |
| Centerville Beach NAVFAC | 10 | | 10 | | | 4 | 6 | | | 4 | | | | 1 | | | 1 | 1 | | | 1 | 3(13) | | | 6 |
| China Lake NAWS | 89 | | 74 | 6 | 8 | 36 | 23 | 2 | 10 | 4 | 11 | 2 | 11 | 16 | | 13 | 1 | 14 | 6 | 3 | 14 | 7(7) | 1(1) | 9 | 10 |
| Chocolate Mountain AGR | 7 | | 7 | | | 6 | | | | | | | | 1 | | | 1 | | | | | 2(3) | | | 7 |
| Concord NWS | 53 | Yes | 43 | | | 29 | 24 | | | 4 | 11 | | 1 | 12 | 2 | 6 | 2 | 9 | 1 | | 9 | 5(5) | | 9 | |
| Corona NOC NWAD | 2 | | 2 | | | 1 | 1 | | | 1 | | | | | | | | | | | | | | | 2 |
| Coronado NAB | 6 | | 6 | | | 2 | | 4 | | | | | | | | 1 | | | | 1 | | | | | 2 |
| Daly City EFA West | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | 1(1) | | | 1 |
| Dixon NRTF | 4 | | 4 | | | | 4 | | | 3 | | | | | | | | | | 1 | | 1(1) | | 1 | |
| El Centro NAF | 22 | | 21 | | | 14 | 4 | 2 | 2 | | 3 | | 2 | 3 | 1 | 4 | 1 | 2 | | | 2 | 13(13) | 1(1) | 2 | 14 |
| Fallbrook NOC, Pac Div Det | 12 | | 5 | 2 | 5 | 3 | 2 | | | 1 | | | 1 | | | 1 | | | | 1 | | | | | 1 |
| Imperial Beach OLF | 5 | | 2 | 3 | | | | 1 | 3 | | | | 3 | | | 3 | | | | 1 | | 2(2) | 2(4) | | |
| Lemoore NAS | 19 | | 16 | | | | 18 | 1 | | 14 | 6 | | | 5 | | | 3 | 1 | | 1 | 1 | 4(4) | | 5 | 11 |
| Long Beach NS San Pedro | 3 | | | 3 | | | | | 1 | | | | 1 | | | | | | | 1 | | | | | |
| Los Angeles NMCRC | 1 | | 1 | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 | 1 |
| Miramar MCAS | 18 | | 14 | 4 | | 7 | 3 | 1 | 2 | | | | | 4 | 2 | 1 | 4 | | 1 | 1 | | 6(6) | 1(1) | | 11 |
| Monterey NPGS | 3 | | 3 | | | 2 | 1 | | | | 1 | | | 1 | | | 1 | | | | | 1(1) | | | 3 |
| North Island NADEP | 1 | | 1 | | | | | | | | | | | 1 | | | 1 | | | | | | | | 1 |
| North Island NAS | 24 | | 22 | 1 | | 7 | 10 | 6 | | 7 | 1 | 1 | 2 | 1 | 4 | 2 | | | 1 | 5 | | 8(20) | 2(2) | 7 | 6 |

| | Total # of Sites | On NPL | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
| **OREGON** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coos Head NAV Ocean Processing FAC | 1 | | 1 | | | | 1 | | | | | | | 1 | | | 1 | | | | | | | | 1 |
| Portland NMCRRC | 1 | | 1 | | | | | | | | | | | 1 | | | | 1 | | | 1 | 1(1) | | | 1 |
| Salem NMCRC | 1 | | 1 | | | | | | | | | | | 1 | | | 1 | | | | | | | | 1 |
| **TOTAL** | **3** | | **3** | | | | **1** | | | | | | | **3** | | | **2** | **1** | | | **1** | **1(1)** | | | **3** |
| **PENNSYLVANIA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mechanicsburg SPCC | 15 | Yes | 14 | | | 3 | 9 | 1 | | 6 | 3 | 1 | | 4 | | 2 | 3 | | 1 | | | 4(5) | | 1 | 12 |
| Philadelphia ASO | 1 | | 1 | | | | 1 | | | | | | | 1 | | | | | 1 | | | | | 1 | |
| Philadelphia NSWC-CD | 10 | | 9 | | | 2 | 8 | | | 4 | 2 | | | 3 | 1 | | 3 | | | | | | | | 5 |
| Willow Grove NAS | 9 | Yes | 9 | | | 4 | 2 | | | 1 | 1 | | | 4 | | | 3 | 1 | | | 1 | 3(3) | | | 9 |
| Wyoming MCRC | 2 | | 2 | | | | | | | | | | | 2 | | | 2 | | | | | 1(1) | | | 1 |
| **TOTAL** | **37** | | **35** | | | **9** | **20** | **1** | | **11** | **6** | **1** | | **14** | **1** | **2** | **11** | **1** | **2** | | **1** | **8(9)** | | **2** | **27** |
| **PUERTO RICO** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Roosevelt Roads Camp Garcia | 12 | Yes | 1 | | | | 6 | 6 | | 4 | | | 3 | | | 3 | | | | 1 | | | 1(1) | | 4 |
| Roosevelt Roads NS | 59 | | 41 | | | 23 | 36 | | | 32 | 1 | | | 2 | | | 2 | 2 | | | 2 | | | | |
| Sabana Seca NSGA | 8 | | 8 | | | | 8 | | | 7 | 1 | | | 1 | | | 1 | | | | | 3(6) | | | |
| San Juan SUPSHIP | 3 | | 3 | | | 3 | | | | | | | | | | | | | | | | | | | |
| Vieques West | 16 | Yes | | | | | 11 | 5 | | 10 | | 1 | | | 2 | | | | 1 | | | 3(3) | 2(2) | | 10 |
| **TOTAL** | **98** | | **53** | | | **26** | **61** | **11** | | **53** | **2** | **1** | **3** | **3** | **2** | **3** | **3** | **2** | **1** | **1** | **2** | **6(9)** | **3(3)** | | **14** |
| **RHODE ISLAND** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Newport NETC | 29 | Yes | 26 | | | 8 | 8 | 13 | | 1 | 3 | 1 | 10 | 7 | | 12 | 5 | | 2 | 6 | | 10(13) | 1(1) | 1 | 12 |
| **TOTAL** | **29** | | **26** | | | **8** | **8** | **13** | | **1** | **3** | **1** | **10** | **7** | | **12** | **5** | | **2** | **6** | | **10(13)** | **1(1)** | **1** | **12** |
| **SOUTH CAROLINA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Beaufort MCAS | 44 | | 37 | 1 | | 20 | 13 | 5 | 3 | 3 | 3 | | | 5 | | 1 | 1 | 2 | 8 | 1 | 2 | 4(4) | 2(2) | 2 | 20 |
| Charleston NWS | 68 | | 62 | | | 19 | 31 | 8 | 9 | 22 | 2 | | | 8 | 1 | | 4 | 6 | | | 6 | 17(17) | 2(2) | 9 | 37 |
| Parris Island MCRD | 26 | Yes | 25 | | | 9 | 7 | 7 | 1 | 2 | 3 | | | 5 | 1 | | 4 | 2 | | 2 | 2 | 7(7) | 3(3) | 4 | 10 |
| **TOTAL** | **138** | | **124** | **1** | | **48** | **51** | **20** | **13** | **27** | **8** | | | **18** | **2** | **1** | **9** | **10** | **8** | **3** | **10** | **28(28)** | **7(7)** | **15** | **67** |
| **TENNESSEE** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bristol NWIRP | 9 | | 8 | | | 4 | 5 | | | 5 | | | | | | | | | | | | 4(5) | | 3 | 9 |
| Knoxville NMCRC | 1 | | | | | | 1 | | | | 1 | | | 1 | | | 1 | | | | | | | | |
| Mid-South NSA | 42 | | 41 | | | 15 | 27 | | | 21 | | | | 3 | | | 3 | | 3 | | | 13(13) | | | 1 |
| **TOTAL** | **52** | | **49** | | | **19** | **33** | | | **26** | **1** | | | **4** | | | **4** | | **3** | | | **17(18)** | | **3** | **10** |

# B APPENDIX B – Munitions Response Program Status

| | Total # of Sites | On NPL | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
| **ARIZONA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yuma MCAS | 7 | Yes | 7 | | | 2 | | | 5 | | | | | | | 4 | | | | | | | | | |
| **TOTAL** | **7** | | **7** | | | **2** | | | **5** | | | | | | | **4** | | | | | | | | | |
| **CALIFORNIA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridgeport MCMWTC | 1 | | | | 1 | | | | | | | | 1 | | | 1 | | | | | | | | | |
| China Lake NAWS | 2 | | 1 | 1 | | | | | 2 | | | | | | | 1 | | | | | | | | | |
| Concord NWS | 4 | Yes | 1 | 3 | | 1 | | | 3 | | | | 3 | | 1 | 2 | | | | | | | | | |
| Coronado NAB | 1 | | | 1 | | | | | 1 | | | | | | | | | | | | | | | | |
| Dixon NRTF | 1 | | | 1 | | | | | 1 | | | | | | | | | | | | | | | | |
| El Centro NAF | 4 | | 4 | | | | | 1 | 3 | | | | 1 | | | 4 | | | | | | | | | |
| Fallbrook NOC, Pac Div Det | 7 | | 3 | 4 | | | | 2 | 5 | | | | | | | | | | | | | | 1(1) | | |
| Miramar MCAS | 15 | | 14 | | 1 | 6 | | 3 | 4 | | | | 1 | | | 7 | | | | | | | | | |
| North Island NAS | 1 | | | 1 | | | | | 1 | | | | 1 | | | 1 | | | | 1 | | | | | |
| San Clemente Island NALF | 1 | | 1 | | | | 1 | | | | 1 | | | 1 | | | 1 | | | | | | | | 1 |
| San Diego NCCOSC | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| San Diego NS | 2 | | 1 | 1 | | | 1 | | 1 | 1 | | | | | | 1 | | | | | | | | 1 | |
| San Diego SPASURFLDSTA | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| Seal Beach NWS | 6 | | 4 | 2 | | 3 | | | 3 | | | | 1 | | | 1 | | | | | | | | | |
| Stockton NCS | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| Twentynine Palms MCAGCC | 2 | | | | 2 | | | | | | | | | | | | | | | | | | | | |
| Ventura County NB Point Mugu | 4 | | 1 | 3 | | | | | 3 | | | | | | | 3 | | | | | | | | | |
| Ventura County NB Port Hueneme | 2 | | 2 | | | | | | 2 | | | | | | | 2 | | | | | | | | | |
| **TOTAL** | **56** | | **34** | **18** | **4** | **12** | **2** | **6** | **29** | **1** | **1** | | **8** | **1** | **1** | **23** | **1** | | | **1** | | | **1(1)** | **1** | **2** |
| **COLORADO** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lowry AFB ARMFORAITC | 1 | | 1 | | | | | 1 | | | | | | | | | | | | | | | | | |
| **TOTAL** | **1** | | **1** | | | | | **1** | | | | | | | | | | | | | | | | | |
| **DISTRICT OF COLUMBIA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anacostia NS | 2 | | 2 | | | 2 | | | | | | | | | | | | | | | | | | | |
| Washington Navy Yard | 1 | Yes | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Washington NRL | 5 | | | 5 | | | | 2 | 3 | | | | | | | | | | | | | | | | |
| **TOTAL** | **8** | | **2** | **6** | | **2** | | **2** | **3** | | | | | | | | | | | | | | | | |

| | Total # of Sites | On NPL | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
| **TENNESSEE** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid-South NSA | 1 | | | 1 | | | | | 1 | | | | | | | | | | | 1 | | | | | |
| **TOTAL** | **1** | | | **1** | | | | | **1** | | | | | | | | | | | **1** | | | | | |
| **TEXAS** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corpus Christi NAS | 4 | | 3 | 1 | | | | 2 | 2 | | | | 2 | | | 2 | | | | | | | | | |
| **TOTAL** | **4** | | **3** | **1** | | | | **2** | **2** | | | | **2** | | | **2** | | | | | | | | | |
| **VIRGINIA** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chesapeake NSGA NWEST | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| Little Creek NAB | 1 | Yes | 1 | | | | | 1 | | | | | | | | | | | | | | | | | |
| Oceana NAS | 1 | | | 1 | | | | | 1 | | | | | | | | | | | | | | | | |
| Quantico MCB | 29 | Yes | 15 | 8 | 4 | 15 | | | 11 | | | | 6 | | | 9 | | | | | | | | | 6 |
| St. Juliens Creek Annex | 1 | Yes | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Yorktown NWS | 2 | Yes | 2 | | | 1 | | | 1 | | | | | | | | | | | | | | | | |
| Yorktown NWS Cheatham Annex | 1 | Yes | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| **TOTAL** | **36** | | **20** | **10** | **4** | **18** | | **1** | **13** | | | | **6** | | | **9** | | | | | | | | | **6** |
| **WASHINGTON** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bangor NSB | 1 | Yes | 1 | | | | | 1 | | | | | | | 1 | | | | | | | | | | |
| Indian Island Naval Magazine | 1 | No | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| Jim Creek NAVRADSTA | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | |
| Puget Sound NAVHOSP Bremerton | 1 | Yes | 1 | | | | 1 | | | | | 1 | | | | 1 | | | | | | 1(1) | | | |
| Puget Sound NSY | 2 | Yes | 2 | | | | 1 | 1 | | | | 1 | | | 1 | 1 | | | | 2 | | 1(1) | | | |
| Whidbey Island NAS | 4 | Yes | 3 | 1 | | 1 | | | 3 | | | | | | | 3 | | | | | | | | | |
| **TOTAL** | **10** | | **9** | **1** | | **3** | **2** | **2** | **3** | | | **2** | | | **2** | **5** | | | | **2** | | **2(2)** | | | |
| **GRAND TOTAL** | **278** | | **180** | **81** | **9** | **69** | **14** | **37** | **129** | **5** | **7** | **3** | **40** | **6** | **7** | **111** | **3** | **3** | **0** | **8** | **3** | **6(6)** | **3(3)** | **3** | **19** |

# D APPENDIX D – Environmental Restoration Program Totals



## Totals – IRP by Regulation

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI | | | | RI/FS | | | | RD | | | RAC | | | | RAO | | | | IRA | | TOTAL | |
| CERCLA | 2432 | 2085 | 65 | 34 | 863 | 1181 | 164 | 95 | 634 | 335 | 25 | 121 | 428 | 48 | 189 | 262 | 110 | 153 | 137 | 110 | 609(766) | 49(52) | 151 | 1491 |
| | | RFA | | | | RFI/CMS | | | | DES | | | CMI | | | | CMO | | | | IRA | | TOTAL | |
| RCRA CA | 632 | 555 | 27 | 1 | 222 | 320 | 48 | 19 | 199 | 50 | 2 | 23 | 68 | 13 | 36 | 47 | 25 | 31 | 12 | 25 | 124(155) | 9(9) | 43 | 291 |
| | | SA | | | | CAP | | | | DES | | | IMP | | | | IMO | | | | IRA | | TOTAL | |
| UST | 670 | 623 | 4 | 8 | 158 | 380 | 9 | 10 | 122 | 145 | 2 | 11 | 293 | 8 | 17 | 160 | 111 | 85 | 10 | 111 | 149(160) | 0(0) | 37 | 421 |
| **TOTAL** | **3734** | **3263** | **96** | **43** | **1243** | **1881** | **221** | **124** | **955** | **530** | **29** | **155** | **789** | **69** | **242** | **469** | **246** | **269** | **159** | **246** | **882(1081)** | **58(61)** | **231** | **2203** |

## Totals – IRP by NPL

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
| NPL | 1519 | 1349 | 18 | 8 | 481 | 844 | 98 | 45 | 455 | 272 | 21 | 75 | 286 | 38 | 124 | 174 | 67 | 118 | 90 | 66 | 417(510) | 21(22) | 84 | 991 |
| Non-NPL | 2215 | 1914 | 78 | 35 | 762 | 1037 | 123 | 79 | 500 | 258 | 8 | 80 | 503 | 31 | 118 | 295 | 179 | 151 | 69 | 180 | 465(571) | 37(39) | 147 | 1212 |
| **TOTAL** | **3734** | **3263** | **96** | **43** | **1243** | **1881** | **221** | **124** | **955** | **530** | **29** | **155** | **789** | **69** | **242** | **469** | **246** | **269** | **159** | **246** | **882(1081)** | **58(61)** | **231** | **2203** |

## Totals – MRP by NPL

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
| NPL | 132 | 86 | 35 | 5 | 29 | 8 | 11 | 67 | 1 | 5 | 3 | 23 | 4 | 7 | 69 | 1 | 3 | 0 | 5 | 3 | 2(2) | 1(1) | 1 | 7 |
| Non-NPL | 146 | 94 | 46 | 4 | 40 | 6 | 26 | 62 | 4 | 2 | 0 | 17 | 2 | 0 | 42 | 2 | 0 | 0 | 3 | 0 | 4(4) | 2(2) | 2 | 13 |
| **TOTAL** | **278** | **180** | **81** | **9** | **69** | **14** | **37** | **129** | **5** | **7** | **3** | **40** | **6** | **7** | **111** | **3** | **3** | **0** | **8** | **3** | **6(6)** | **3(3)** | **3** | **20** |

## GRAND TOTAL – Installation Restoration Program and Munitions Response Program

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GRAND TOTAL** | **4012** | **3443** | **177** | **52** | **1312** | **1895** | **258** | **253** | **960** | **537** | **32** | **195** | **795** | **76** | **353** | **472** | **249** | **269** | **167** | **249** | **888(1087)** | **61(64)** | **234** | **2223** |

## Totals – IRP Compliance Cleanup by Regulation

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI | | | | RI/FS | | | | RD | | | RAC | | | | RAO | | | | IRA | | TOTAL | |
| CERCLA | 22 | 0 | 1 | 9 | 0 | 1 | 0 | 14 | 0 | 0 | 0 | 10 | 5 | 0 | 10 | 0 | 0 | 0 | 5 | 0 | 0(0) | 0(0) | 0 | 0 |
| | | RFA | | | | RFI/CMS | | | | DES | | | CMI | | | | CMO | | | | IRA | | TOTAL | |
| RCRA CA | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0(0) | 0(0) | 0 | 0 |
| | | SA | | | | CAP | | | | DES | | | IMP | | | | IMO | | | | IRA | | TOTAL | |
| UST | 23 | 3 | 0 | 6 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 7 | 8 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 1(1) | 0(0) | 0 | 0 |
| **TOTAL** | **47** | **3** | **2** | **16** | **0** | **1** | **3** | **20** | **0** | **0** | **0** | **18** | **13** | **0** | **12** | **0** | **0** | **0** | **12** | **0** | **1(1)** | **0(0)** | **0** | **0** |

## Totals – IRP Compliance Cleanup by NPL

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
| NPL | 18 | 3 | 0 | 5 | 0 | 0 | 3 | 11 | 0 | 0 | 0 | 9 | 4 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 1(1) | 0(0) | 0 | 0 |
| Non-NPL | 29 | 0 | 2 | 11 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 9 | 9 | 0 | 4 | 0 | 0 | 0 | 8 | 0 | 0(0) | 0(0) | 0 | 0 |
| **TOTAL** | **47** | **3** | **2** | **16** | **0** | **1** | **3** | **20** | **0** | **0** | **0** | **18** | **13** | **0** | **12** | **0** | **0** | **0** | **12** | **0** | **1(1)** | **0(0)** | **0** | **0** |

## Totals – MRP Compliance Cleanup by NPL

| | Total # of Sites | C | U | F | RC | C | U | F | RC | C | U | F | C | U | F | RC | C | U | F | RC | C(ACT) | U(ACT) | LTM | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PA/SI/RFA/SA | | | | RI/FS/RFI/CMS/CAP | | | | RD/DES | | | RAC/CMI/IMP | | | | RAO/CMO/IMO | | | | IRA | | TOTAL | |
| NPL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0(0) | 0(0) | 0 | 0 |
| Non-NPL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0(0) | 0(0) | 0 | 0 |
| **TOTAL** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0(0)** | **0(0)** | **0** | **0** |

## GRAND TOTAL – All IRP and MRP Compliance Cleanup Sites

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GRAND TOTAL** | **47** | **3** | **2** | **16** | **0** | **1** | **3** | **20** | **0** | **0** | **0** | **18** | **13** | **0** | **12** | **0** | **0** | **0** | **12** | **0** | **1(1)** | **0(0)** | **0** | **0** |

## GRAND TOTAL OF ALL SITES

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GRAND TOTAL** | **4059** | **3446** | **179** | **68** | **1312** | **1896** | **261** | **273** | **960** | **537** | **32** | **213** | **808** | **76** | **365** | **472** | **249** | **269** | **179** | **249** | **889(1088)** | **61(64)** | **234** | **2223** |

# E APPENDIX E – Environmental Restoration (IRP and MRP) Installation Summaries



Appendix E presents the details of projected cleanup plans for individual Navy and Marine Corps installations with sites in the Installation Restoration Program (IRP) and Munitions Response Program (MRP). This information is presented in tabular form with the installations organized by state. The states are presented in alphabetical order, with the installations in alphabetical order under them.

For each installation, a brief description of the mission of the particular installation is provided along with an icon depicting the type of mission. In some instances, the installation has a secondary mission and will have two icons, one for the primary mission and one for the secondary mission. An explanatory legend for the icons is given on page E-2.

An explanation of each of the columns in the table is provided below.

## NPL

The EPA's National Priorities List (NPL) includes installations receiving an EPA Hazard Ranking System score greater than 28.5. The NPL column indicates whether or not the installation is listed on the NPL.

## IRP

The IRP column indicates the number of sites that the installation has in the Installation Restoration Program.

## MRP

The MRP column indicates the number of sites that the installation has in the Munitions Response Program.

## Sites with Remedy in Place in Place or Response Complete #(%)

These columns show the cumulative number of sites (and percent of sites) that will reach Remedy in Place (RIP) or Response Complete (RC) status by the end of each year. RIP status indicates that construction of the final remedy has been completed and it is operating as designed. RC status indicates that all cleanup actions for the site have been completed.

## Maximum RIP/RC FY

The Maximum RIP/RC FY column indicates the projected fiscal year that all sites at the installation will be RIP/RC for those sites that have projected completion beyond 2014.

## Funding to Date

The Funding to Date amounts reflect the total amount of money spent on study and cleanup at each installation through September 2009.

## Cost to Complete

The Cost to Complete funding amount reflects the total amount of money estimated to be needed to complete all cleanup work at the installation beginning with the year FY 2000.

## Phase

These columns present the number of sites at each installation in various program phases. The Study phase includes the preliminary assessment (PA), site inspection (SI), and remedial investigation/feasibility study (RI/FS) phases. The Cleanup phase includes sites in the remedial design (RD) and remedial action (RA) phases as well as sites that have their final remedy in place (RIP). The Response Complete (RC) is a count of all sites where all cleanup actions have been completed.

## Explanation of Mission Icons

### Aircraft
Installations whose main mission is operating Naval or Marine Corps aircraft.

### Amphibious
Installations whose main mission is operating amphibious equipment and forces.

### Communications
Installations whose main mission is operating communications-type equipment.

### Helicopter
Installations whose main mission is operating Navy or Marine Corps helicopters.

### Housing
Installations whose main mission is providing housing for Navy and Marine Corps personnel and their families.

### Medical
Installations whose main mission is operating medical or dental facilities.

### Research
Installations whose main mission is research, development, test and evaluation.

### Reserves/Recruits
Installations whose main mission is supporting and training reserve units and new recruits.

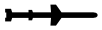
### Service/Supply/Support
Installations whose main mission is providing supplies, services and support to the fleet and operating forces.

### Ships
Installations whose main mission is operating surface ships.

### Submarines
Installations whose main mission is operating submarines.

### Ships/Submarines
Installations whose main mission is operating both ships and submarines.

### Training
Installations whose main mission is training.



### Weapons - General
Installations whose main mission is operating a facility for producing, developing, testing or operating general weapons systems.

### Weapons - Aircraft
Installations whose main mission is operating a facility for producing, developing, testing or operating aircraft weapons systems.

### Weapons - Ship/Surface
Installations whose main mission is operating a facility for producing, developing, testing or operating ships weapons systems.

### Weapons - Submarine
Installations whose main mission is operating a facility for producing, developing, testing or operating submarine weapons systems.

# E APPENDIX E – Environmental Restoration (IRP and MRP) Installation Summaries

| | NPL | IRP | MRP | Sites with Remedy in Place or Response Complete #(%) 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Maximum RIP/RC FY | Funding to Date | Cost to Complete | Phase: Study | Cleanup | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALASKA** | | | | | | | | | | | | | | | |
| **Amchitka Fleet Surveillance Support Command Detachment 1**<br>Previously provided wide area air surveillance using relocatable, over-the-horizon radar; radar facilities were moved to Chesapeake, VA. | No | 11 | 0 | 11 (100%) | 11 (100%) | 11 (100%) | 11 (100%) | 11 (100%) | 11 (100%) | N/A | $8,913,000 | $238,000 | 0 | 1 | 10 |
| **Cape Prince of Wales Naval Command Control and Ocean Surveillance Center**<br>Conducts arctic experiments and gathers weather information. | No | 3 | 0 | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | N/A | $5,886,000 | $0 | 0 | 0 | 3 |
| **Point Barrow Naval Arctic Research Laboratory**<br>Conducts arctic research. | No | 13 | 0 | 12 (92%) | 12 (92%) | 12 (92%) | 12 (92%) | 12 (92%) | 12 (92%) | 2016 | $48,202,000 | $8,283,000 | 0 | 4 | 9 |
| **St. Lawrence Naval Command Control and Ocean Surveillance Center**<br>Provided telecommunications link to desolate parts of Alaska; currently inactive. | No | 4 | 0 | 4 (100%) | 4 (100%) | 4 (100%) | 4 (100%) | 4 (100%) | 4 (100%) | N/A | $5,998,000 | $0 | 0 | 0 | 4 |
| **Tin City Naval Command Control and Ocean Surveillance Center**<br>Provided telecommunications link to desolate parts of Alaska; currently inactive. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $1,269,000 | $0 | 0 | 0 | 1 |
| **ARIZONA** | | | | | | | | | | | | | | | |
| **Flagstaff Naval Observatory Station**<br>Provides, analyzes, and interprets astrometric and photometric dark sky observations, data for navigation, positioning and communications; conducts research to improve observational methods and accuracy of astronomical data required by the Navy and DoD. | No | 2 | 0 | 2 (100%) | 2 (100%) | 2 (100%) | 2 (100%) | 2 (100%) | 2 (100%) | N/A | $0 | $0 | 0 | 0 | 2 |
| **Sentinel Naval Command Control and Ocean Surveillance Center**<br>Supports wave propagation projects and surveys; plans, designs, and constructs very low frequency antennas for communication with satellites. | No | 3 | 0 | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | 3 (100%) | N/A | $196,000 | $0 | 0 | 0 | 3 |
| **Yuma Marine Corps Air Station**<br>Provides aerial weapons training and tactical aircrew combat training for the Atlantic and Pacific Fleet Marine Forces and Navy, and aviation base for Marine Corps. | Yes | 25 | 7 | 27 (84%) | 27 (84%) | 27 (84%) | 27 (84%) | 27 (84%) | 27 (84%) | 2019 | $51,503,000 | $14,181,000 | 5 | 4 | 23 |
| **CALIFORNIA** | | | | | | | | | | | | | | | |
| **Alameda Naval and Marine Corps Reserve Center**<br>Closed; NAVFAC is caretaker until transfer. Previously maintained and operated facilities and provided services and material support operations for Naval aviation activities and operating forces. | No | 2 | 0 | 1 (50%) | 1 (50%) | 2 (100%) | 2 (100%) | 2 (100%) | 2 (100%) | N/A | $1,135,000 | $487,000 | 0 | 2 | 0 |

| | NPL | IRP | MRP | Sites with Remedy in Place or Response Complete #(%) | | | | | | Maximum RIP/RC FY | Funding to Date | Cost to Complete | Phase | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | | | | Study | Cleanup | RC |
| **NEW YORK, continued** | | | | | | | | | | | | | | | |
| **Fishers Island Naval Underwater Systems Center Annex**<br>Provides Research, Development, Test and Evaluation (RDT&E) center for underwater surveillance, communications, and navigation systems. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $200,000 | $0 | 0 | 0 | 1 |
| **Floyd Bennett Field Naval and Marine Corps Reserve Center**<br>Provides training and administrative support to Navy, Marine Corps, and Army Reserve Units. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $0 | $0 | 0 | 0 | 1 |
| **Syracuse Marine Corps Reserve Training Center**<br>Provides training and administrative support and mobilizes Marine Corps Reserve Units. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $222,000 | $0 | 0 | 0 | 1 |
| **Watertown Naval Reserve Center**<br>Provides training and administrative support for Navy Reserve Units. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $91,000 | $0 | 0 | 1 | 0 |
| **NORTH CAROLINA** | | | | | | | | | | | | | | | |
| **Camp Lejeune Marine Corps Base**<br>Provides training facilities, logistical and administrative support, and certain administrative supplies for Fleet Marine Corps Units and other assigned units; conducts specialized training in combat, amphibious, urban, riverine, and special operations, and international training exercises. | Yes | 177 | 21 | 174 (88%) | 176 (89%) | 179 (90%) | 179 (90%) | 179 (90%) | 183 (92%) | 2020 | $170,592,000 | $151,410,000 | 18 | 51 | 129 |
| **Cherry Point Marine Corps Air Station**<br>Maintains and operates support facility and provides services and materials for Marine Corps aircraft wing. | Yes | 97 | 3 | 95 (95%) | 96 (96%) | 96 (96%) | 96 (96%) | 96 (96%) | 96 (96%) | 2019 | $91,907,000 | $93,419,000 | 3 | 43 | 54 |
| **Wilmington Naval Reserve Center**<br>Provides training support for administrative, logistics, and mobilization of Navy Reserve Units. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $61,000 | $0 | 0 | 1 | 0 |
| **OHIO** | | | | | | | | | | | | | | | |
| **Toledo Naval Weapons Industrial Reserve Plant**<br>Government-Owned Contractor-Operated (GOCO) production facility providing research and development, design engineering, and testing of advanced weapons systems. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $1,327,000 | $0 | 0 | 1 | 0 |
| **OKLAHOMA** | | | | | | | | | | | | | | | |
| **Broken Arrow Naval and Marine Corps Reserve Center**<br>Provides training and reserve center support to the Navy, Marine Corps, and Army Reserve Units. | No | 1 | 0 | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | 1 (100%) | N/A | $69,000 | $0 | 0 | 1 | 0 |

**Chief of Naval Operations**

**Energy and Environmental Readiness Division**

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# Appendix E
# Excerpts from the 2012 MCAS Cherry Point Community Involvement Plan

# Community Involvement Plan

## Marine Corps Air Station
## Cherry Point, North Carolina

**Contract Task Order 114**

**August 2012**

Prepared for

**Department of the Navy**
**Naval Facilities Engineering Command Mid-Atlantic**

Under the

**NAVFAC CLEAN 1000 Program**
**Contract N62470-08-D-1000**

Prepared by

CH2MHILL

**Chantilly, Virginia**

# Executive Summary

Marine Corps Air Station (MCAS) Cherry Point is a military installation located in the City of Havelock, midway between New Bern and Morehead City, North Carolina, approximately 90 miles west–southwest of Cape Hatteras. The Air Station, commissioned in 1942, provides training, support, and supplies for the Fleet Marine Force Atlantic aviation units.

In 1994, MCAS Cherry Point was added to the National Priorities List (NPL) maintained by the United States (U.S.) Environmental Protection Agency (EPA). Under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," the Navy is investigating potentially contaminated soil, groundwater, surface water, and sediment at MCAS Cherry Point under a Navy program called the Installation Restoration Program (IRP).

The Navy is also investigating old munitions sites under the Munitions Response Program (MRP), in accordance with the Department of Defense (DoD) 2005 *Munitions Response Site Prioritization Protocol* (MRSPP, the Protocol) and following the CERCLA process. Together, the IRP and the MRP make up the Environmental Restoration Program.

The purpose of this Community Involvement Plan (CIP) is to outline how MCAS Cherry Point will continue to meet the needs of the local community for information about and participation in the ongoing investigation and remediation processes at the Air Station.

This update of the MCAS Cherry Point CIP is based on community interviews conducted in September-October 2011. The plan will be updated again in approximately 5 years, or if a significant event in the IRP or MRP occurs. This CIP will be made available to the public as part of the Administrative Record File for MCAS Cherry Point via the Environmental Restoration Program public Web site.

Environmental investigations began at MCAS Cherry Point in the early 1980s. Subsequent investigations identified 25 sites, defined as discrete areas where hazardous substances or wastes have been deposited, stored, disposed of, or placed. Ten of these 25 sites have achieved Remedy Complete status (Sites 1, 2, 6, 7, 12, 14, 15, 17, 18, and 82). Eight sites (Sites 4, 10, 19, 21, 44B, 46, 76, and 90) have been included in final Records of Decision (RODs), describing the selected remediation approach for soil and groundwater. At eight sites (Sites 16, 42, 47, 51, 52, 83, 92, and 98), interim actions to treat soil or groundwater have been implemented and additional studies are ongoing.

In 2008, Site Inspections began for two munitions response sites. One of these sites (Former Skeet and Trap Range #1 and Surface Danger Zone) is located within and adjacent to MCAS Cherry Point and is included in the NPL listing. Stakeholder involvement for this site is included in the community involvement activities described in this CIP.

The other munitions site, Former Bomb Target 2 (BT-2) and the associated historical Surface Danger Zone, is located in Bogue Sound, approximately 15 miles from the Air Station. Because BT-2 is not part of the NPL listing at MCAS Cherry Point, stakeholder involvement for that munitions site is not addressed by this CIP, but rather by a separate Public Involvement Plan.

Community concerns were identified by interviews conducted with 15 local residents in 1995, 29 local residents and officials in 2003, and 14 residents and local officials in 2011. In general, interviews reflected a good relationship between MCAS Cherry Point and local residents, including a general trust in the military's ability to clean up the sites. Most interviewees agreed that the community as a whole knows little about the environmental cleanup, not because MCAS Cherry Point fails to communicate the information, but because most people are not interested unless they feel they are directly affected.

The Restoration Advisory Board (RAB) is considered an important conduit through which the community is informed and invited to participate in decision-making. However, less than half of all 2011 interviewees were aware of the RAB. Those who were aware of it generally believe it is beneficial to both the Air Station and the

community. RAB members who were interviewed in 2003 agreed that more information about the cleanup program should be communicated to the public, either through meetings with groups or through the media. RAB members who were interviewed in 2011 agreed that MCAS Cherry Point was doing a good job of keeping the members informed. To increase public awareness, RAB members recommended inviting local politicians to RAB and public meetings and sending out information through local media.

Section 4 describes the community involvement activities implemented to date and planned for the future, in response to feedback received in interviews. MCAS Cherry Point will continue those activities that have been found to be effective, including (but not limited to) activities that are required by law or regulation.

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SECTION 3

# Community Background

## 3.1 Community Setting

MCAS Cherry Point is located in an area that was historically used for farming, timber production, and tar and turpentine production. The demand for tar and turpentine waned with the demise of wooden ships. From the late 1800s until the 1930s, the Havelock area was a haven for hunters and fishermen, and it remains attractive to people who enjoy sailing, hunting, and outdoor recreation.

During the 1970s, intense commercial and residential development occurred around MCAS Cherry Point, particularly within the City of Havelock. In 1980, the City of Havelock annexed Cherry Point and became Craven County's largest city by population. Other population centers in the vicinity of Cherry Point are the City of New Bern (approximately 19 miles northwest) in Craven County, Newport (approximately 10 miles south), Morehead City (approximately 19 miles southeast), and Beaufort (approximately 24 miles southeast) in Carteret County. The areas between population centers are fairly rural in nature.

Beyond Havelock and some adjoining residential areas, such as Carolina Pines and North Harlowe in Craven County, the majority of the land surrounding the Air Station consists of the Croatan National Forest. The area of Pamlico County across the Neuse River to the north of the facility contains woodlands, small farms, and small residential areas such as Minesott Beach, Bayboro, Oriental, and Stonewall. Atlantic Ocean beaches and resorts are located approximately 20 miles east and south of MCAS Cherry Point. Fresh and salt water fishing, swimming, golfing, boating, campsites, historical sites, shopping centers, churches, and schools are available near the Air Station.

### 3.1.1 Character of Nearby Cities and Towns

Participants in the 2011 community interviews described Havelock as a middle-class, military town that is growing towards a community with a substantial population of retired military personnel and some transient younger Marines.

New Bern was described as becoming a retirement community, primarily middle class on a fixed income, with many transplants to whom rivers and the natural environment are important. People who enjoy the water are moving there to retire because of the area's natural beauty. The city has a more diverse population than the surrounding region, becoming more "cosmopolitan" with transplanted retirees.

The town of Minnesott Beach(directly across the river from the Air Station) was described as a bedroom community, with a population that is predominantly middle-class and retired.

The eastern portion of Craven County was described as being largely military, while the western portion is more agricultural; there is some industry, but it is a predominantly a tourism-based service economy.

### 3.1.2 Demographic Profile

Approximately 78 percent of the military and civilian personnel employed by MCAS Cherry Point live in Craven County. Residents of Carteret County east of the Air Station and Pamlico County north of the Air Station also contribute to the Air Station's workforce and are part of the "local" community.

At the 2000 Census, there were 22,442 residents in the City of Havelock. In 2010, Census figures revealed a population decrease of 1,700 (8 percent). The City of Havelock remains the one of the largest population centers in Craven, Carteret, and Pamlico Counties. At the 2010 Census, only New Bern had a slightly higher population of 29,524 (Table 3-1).

TABLE 3-1
Socioeconomic Profile of Surrounding Jurisdictions
*MCAS Cherry Point Community Involvement Plan*

| Jurisdiction | Total Persons | White (%) | Black (%) | American Indian, Alaska Native (%) | Asian (%) | Hawaiian, Pacific Islander (%) | Other race (%) | Two or more races (%) | Hispanic or Latino[a] (%) | Minority % | Limited English (%) | Poverty[b] (%) | Median age (years) | 19 years or under (%) | Bachelor's degree or higher (%) | Average house-hold size | Median household Income | Unem-ploy-ment[c] (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Havelock | 20,735 | 70.0 | 17.4 | 0.7 | 2.9 | 0.3 | 4 | 4.7 | 11.6 | 36.0 | 3.5 | 14.6 | 23.5 | 31.8 | 11.9 | 2.76 | $52,421 | 11.0 |
| City of New Bern | 29,524 | 57.9 | 33.2 | 0.4 | 3.6 | 0.1 | 2.5 | 2.4 | 5.8 | 44.5 | 3.3 | 24.1 | 38.8 | 25.1 | 24.6 | 2.25 | $50,894 | 12.2 |
| Craven County | 103,505 | 70.0 | 22.4 | 0.5 | 2.0 | 0.1 | 2.3 | 2.7 | 6.1 | 32.9 | 2.7 | 16.0 | 36.2 | 26.0 | 21.3 | 2.45 | $58,260 | 9.5 |
| Carteret County | 66,469 | 89.3 | 6.1 | 0.5 | 0.9 | 0.1 | 1.2 | 2.0 | 3.4 | 12.6 | 1.9 | 12.2 | 47.2 | 21.0 | 23.8 | 2.27 | $60,178 | 8.6 |
| Pamlico County | 13,144 | 76.3 | 20.0 | 0.6 | 0.4 | 0.1 | 1.2 | 1.4 | 3.1 | 25.2 | 2.5 | 10.7 | 48.3 | 20.0 | 17.5 | 2.27 | $54,375 | 6.9 |

**Sources**: United States Bureau of the Census, 2010 Census; 2006-2010 American Community Survey 5-Year Estimates (Tables S1701, DP-1, DP-2, DP-3);

**Notes**:

a. Hispanic origin refers to ethnicity and language, not race, and includes persons whose heritage is Puerto Rican, Cuban, Mexican, and Central or South American, and who are also counted in one of the preceding columns.

b. The Poverty Rate values shown are Census Bureau estimates of percent of persons with 2009 household incomes below the poverty threshold, based on family size.

Approximately one-third of the population of Craven and Carteret counties live in urbanized areas, and two-thirds live in rural areas. All of Pamlico County is considered rural by Census definitions. Outside of the larger towns, most of the communities in the area are small in population but large geographically, due to the prevalence of farming and forestry.

According to the 2010 Census, Havelock's population is generally quite young and is similar to a college community with a median age of 23.5 years old, compared to a median age of 39 years in New Bern, and 47 and 48 years in Carteret County and Pamlico County, respectively. This reflects the impact that MCAS Cherry Point has on Havelock's demographics, as well as the attraction of the waterfront areas to active military and civilian retirees.

Havelock also has a larger percentage of school-age children (32 percent) and the average number of persons per household in Havelock is 2.76, which is higher than the surrounding jurisdictions and also shows the influence of a relatively younger military population.

The City of New Bern has the highest percentage of college-educated people in the tri-county area (24.6 percent), considerably higher than the City of Havelock (11.9 percent), which again reflects the comparatively young population of the Air Station.

The highest median household income is found in Carteret County ($60,178), followed by Craven County ($58,260). The City of New Bern has a median household income of $50,894, but also meets the definition of a "poverty area" (20 percent or more of the population living in households with income below the poverty threshold). Three of the block groups to the south of MCAS Cherry Point (within a 3-mile radius from the center of the Air Station) slipped below the statistical poverty threshold between the 2000 Census and 2010 Census. The poverty rate in the more rural block groups to the east and west of the Air Station rose above the poverty threshold during the decade (Figure 3-1).

The 2010 Census established the following demographic breakdown for the City of Havelock: approximately 70 percent white and 36 percent minority, including 17 percent black/African-American and 11.6 percent Hispanic (Table 3-1). The unincorporated North Harlowe community, just east of the Air Station, is a predominately black/African-American community. Other areas with a minority population of 30 to 40 percent are located within a 3-mile and 5-mile radius of the Base (Figure 3-2).

### 3.1.3 Economic Growth and Development

MCAS Cherry Point is a major economic engine in the tri-county area. One Havelock public official interviewed in 2003 described the relationship between MCAS Cherry Point and the city as "symbiotic – there is no need for Havelock without Cherry Point."

MCAS Cherry Point significantly contributes to the region's economic health. Overall, the livelihoods of approximately 59,800 individuals are directly or indirectly associated with the Air Station. This includes active military, retired military, civilians who work at the Air Station, and the family members of these individuals. The Air Station's military and civilian workforce alone totaled 15,200 in FY 2010. Military and civilian salaries surpassed $755 million, with military retirees contributing another $140 million. The total economic impact of MCAS Cherry Point and tenant commands totaled $1.7 billion in FY 2010, including salaries, procurement, construction and maintenance contracts, utilities, education and training, health and medical, and revenue opportunities for private businesses (such as restaurants) authorized to operate on the Air Station (source: "FY10 Economic Impact MCAS Cherry Point" brochure).

Although MCAS Cherry Point is the region's largest single employer, Craven County government, the Craven County Medical Center, and private sector companies such as BSH Home Appliances, Wal-Mart, Moen, and Weyerhauser also employ a significant number of area residents. The majority of the commercial sector is composed of small businesses. Beach- and water-related tourism is an important part of the local economy, along with forestry and farming.

# 3.2 Community Issues and Concerns

## 3.2.1 Community Interviews

In late 1995, during establishment of the RAB (see section 4.2.2), the Air Station conducted interviews with 15 community leaders and potentially affected residents to ascertain their level of interest in the facility, major concerns, and information needs. The results of those interviews were used to develop a Community Relations Plan[1] in 1996. In 2003, Air Station and EPA representatives interviewed 29 individuals, seven of whom were RAB members, to update the 1996 plan as a CIP.

In 2011, Navy and Air Station representatives interviewed 14 individuals, who (as before) included local residents and business owners, government officials, environmental group members, and Air Station employees and residents. Surveys were distributed to all RAB members; three RAB members completed surveys. The results of the 2011 interviews, including surveys, have been used to update this CIP.

This section summarizes the information gathered from the 2011 interviews and (where relevant) compares them to the results of interviews conducted in 1995 and 2003. A more detailed compilation of the interview results is presented in **Appendix B**.

## 3.2.2 Summary of Responses

### 3.2.2.1 General Awareness and Interest

Since the inception of the Community Relations Program in the late 1980s and its subsequent evolution into the Community Involvement Program, MCAS Cherry Point's relationship with the community has been good, as reflected in community interviews in 1995, 2003, and 2011.

Most of the interviewees agreed that the community as a whole knew very little about the environmental cleanup, not because MCAS Cherry Point did not communicate this information, but because the public is not interested unless the contamination or cleanup directly affects them. One 2011 respondent said that, while communication could be improved, the community perception is that the Air Station is doing a better job environmentally than 50 years ago.

In the 2011 interviews and RAB surveys, most respondents (86 percent) stated that community members are aware of and concerned about environmental issues in general. Several noted that the level of concern depends on whether an issue affects people personally; for example, if they enjoy water-based recreation or benefit financially from water-based tourism.

In the 1995, 2003, and 2011 interviews, the community's consistently greatest environmental concern was about surface water contamination.

### 3.2.2.2 Environmental Restoration Concerns

Most of those interviewed in 1995, 2003, and 2011 (except RAB members) had little specific knowledge about environmental cleanup actions taken by the Air Station. Throughout the interviews, however, there was a sense of respect and confidence in MCAS Cherry Point's management of the environment.

Most of the 2011 interviewees (64 percent of non-RAB members) said they were aware of environmental restoration activities on the Air Station, although not in much detail, and most (79 percent) felt that other community members probably know a little about the program. One respondent noted that retired military residents are likely to be more aware than others are. Most (78 percent) felt that community members are somewhat interested and a few (22 percent) felt that they are very interested.

[1] The term "Community Relations Plan" was changed to "Community Involvement Plan" in 2002 with publication of EPA's Superfund Community Involvement Handbook.

Both 1995 and 2011 interview respondents stressed the importance of a common-sense approach and cost-effectiveness in conducting environmental restoration, reflecting an overall concern about government expenditures of taxpayer dollars.

Air Station employees who were interviewed reported that people are more aware of proper environmental practices now than they were 15 to 20 years ago, due to required meetings and training.

Some (36 percent) of the respondents said they believed they were affected directly or indirectly by the cleanup program; two specified that they are benefitted by the cleanup of the environment: “this is my environment.” One of these noted that the MCAS Cherry Point cleanup program could be a positive way to show the public that things can be cleaned up and that the process can be applied to other issues.

The 2011 interview respondents reported these concerns about environmental and munitions sites on MCAS Cherry Point:

- Surface water (57 percent)
- None (29 percent)
- Groundwater (29 percent)
- Health issues (29 percent)
- Disposal of investigation-derived waste (14 percent)
- Risk versus cost: “money for cleanup needs to be spent wisely” (14 percent)
- Property values (14 percent)
- Munitions-related contaminants (7 percent)
- Safe drinking water supply (7 percent)
- Wildlife (7 percent)

#### 3.2.2.3 Unrelated Environmental Concerns

Most of the specific environmental concerns expressed by interview respondents had to do with issues on the Air Station that were not directly related to the Environmental Restoration Program, or with issues outside of the Air Station:

- The MCAS Cherry Point Industrial Wastewater Treatment Plan discharges to the river, which is a concern for the health of the river. Air Station employees understand that the plant cannot treat everything and are more aware of what they put into the drains than they used to be.
- Whether an explosives safety arc from the active munitions storage area on the Air Station could extend onto a nearby road
- Effects of training at active range BT-11 on water quality and fishing
- The old Phoenix landfill (construction debris, not on or related to the Air Station) just outside of Havelock, which has become an open dumping site since it was abandoned 10 years ago, is considered a potential threat to the safety of Tucker Creek Middle School students (0.5 mile away) and to water quality in Tucker Creek and Slocum Creek
- Municipal wastewater spills into the river
- Runoff of wastes from large hog and chicken raising operations in the area that could affect the river and be the underlying cause of fish kills that are attributed to low dissolved oxygen

#### 3.2.2.4 Environmental Organizations

When asked about environmental or citizen/action groups that are especially active in the community, respondents mentioned:

- Neuse River Keeper Foundation

- North Carolina Coastal Federation, a citizen/action group that is especially active in the community, with an emphasis on coastal restoration and education
- Craven County Clean Sweep Committee (North Carolina Cooperative Extension for Craven County), which works to eliminate littering and promote recycling
- Sierra Club
- North Carolina Coastal Land Trust
- North Carolina Interfaith Power and Light
- Cross Roads

#### 3.2.2.5 Effectiveness of Community Involvement Program

During the 1995 and 2003 interviews, RAB members and non-RAB members expressed the opinion that more work should be done to increase public awareness of the Environmental Restoration Program at MCAS Cherry Point. While most of the 2003 interviewees said that efforts to keep the RAB informed are yielding positive results, the Community Involvement Program should focus more on the community at large.

Only two of the 2011 interview respondents (non-RAB members) had participated in RAB meetings, and only one had participated in public meetings held by MCAS Cherry Point to discuss environmental restoration issues. Less than half (36 percent) of the non-RAB members were aware of the RAB's existence.

These results reinforce previous interview findings about the need for other means besides RAB meetings of keeping the community informed.

RAB members expressed appreciation for the way they are being kept informed and the "excellent work being conducted by very competent staff."

All of those who had attended RAB or public meetings were satisfied with the information presented. Suggestions for improving meetings were:

- Speaking in layman terms and using fewer acronyms
- Emailing an agenda prior to meetings, with links to background information about the topics that will be discussed
- Inviting local politicians

Suggestions for increasing awareness of the Environmental Restoration Program included:

- Send meeting notices and announcements to organizations that could forward them through their mailing lists, such as the Town of Havelock, the Chamber of Commerce, and the Neuse River Foundation (via the Neuse RiverKeeper).
- Post notices on community bulletin boards, for example, the Masonic Lodge, Rotary Club, Moose Lodge, Elks Club, or local yacht clubs.
- Announce meetings on marquees at the Air Station and the Tourist Center (meetings are announced on these marquees).
- Use Facebook or other social media to publicize meetings or other announcements (the Air Station, FRC-East and the City of Havelock have Facebook pages).
- Set up a booth or display at Neuse River Day event, held in New Bern (in June) by the Neuse River Foundation.
- Provide more newspaper coverage.
- Provide monthly or weekly updates on Channel 10.
- Provide notices on public radio, which most of the people active in environmental issues listen to.

#### 3.2.2.6 Information Needs and Resources

Only four of the 2011 interview respondents had visited either the Environmental Restoration Program Web site or the public information repository. Three of those found the information useful.

Suggestions for increasing the use of these resources were:

- Put a link to the Environmental Restoration Program Web site on MCAS Cherry Point's official home page.
- Place a copy of the information repository in the Havelock Town Hall.

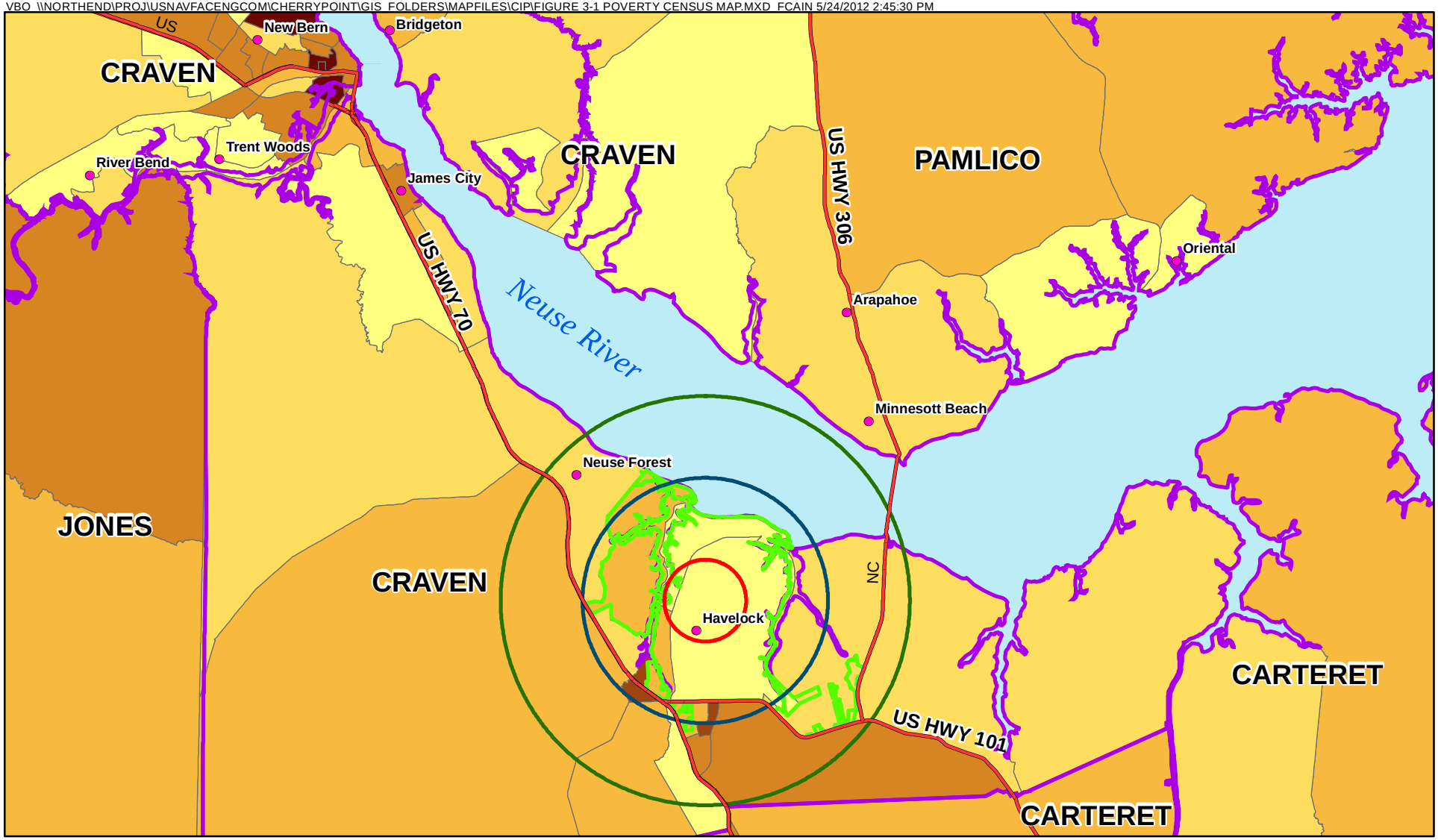
When asked whom they would contact with questions about the Environmental Restoration Program, most of the 2011 respondents (non-RAB members) knew they could contact someone in Public Affairs, the Community Plans and Liaison Office, or the Environmental Affairs Department.

Most of those who expressed interest in being informed of meetings and environmental restoration progress preferred to receive e-mails (73 percent), but some saw value in attending meetings (27 percent).

Topics of interest include:

- Anything that could affect water quality
- Progress on cleaning up environmental restoration sites
- How the program concludes that a site is ready to be closed out

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\CIP\FIGURE 3-1 POVERTY CENSUS MAP.MXD FCAIN 5/24/2012 2:45:30 PM




**Legend**

- Towns/Places
- 1 Mile Radius
- 3 Mile Radius
- 5 Mile Radius
- MCAS Cherry Point

**Percentages of Individuals Living in Poverty by Census Block Group**

- 0.00 - 4.99
- 5 - 9.99
- 10 - 19.99
- 20 - 29.99
- 30 - 39.99
- 40 - 100

Notes:
For comparison, the 2010 Census American Community Survey poverty rate for the State of North Carolina was 17.5%

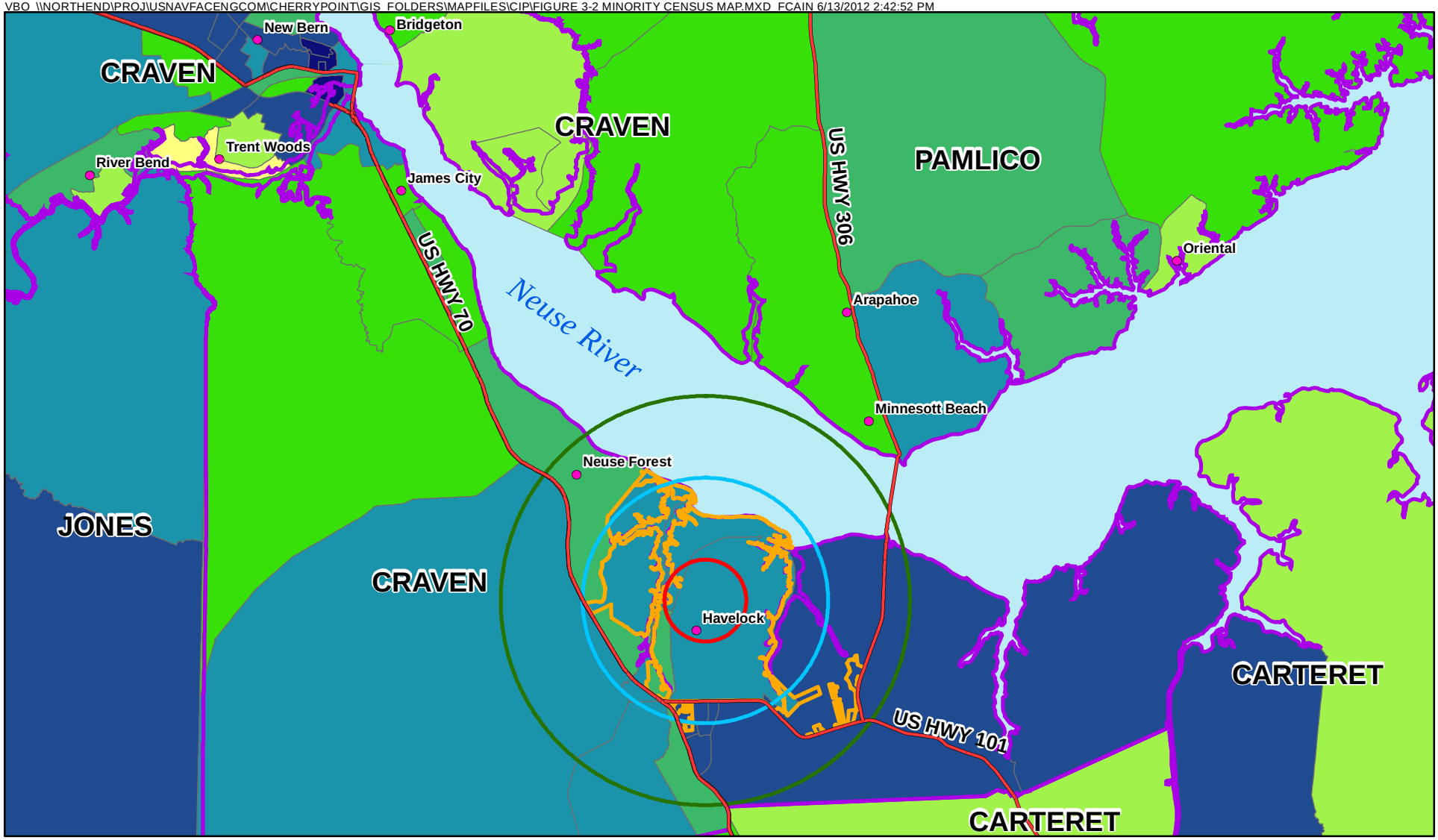
N
W E
S

0 3.5 7
Miles

CH2MHILL

Figure 3-1
Low-Income Communities Map
MCAS Cherry Point
North Carolina

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\CHERRYPOINT\GIS_FOLDERS\MAPFILES\CIP\FIGURE 3-2 MINORITY CENSUS MAP.MXD FCAIN 6/13/2012 2:42:52 PM




**Legend**

- Towns/Places
- 1 Mile Radius
- 3 Mile Radius
- 5 Mile Radius
- MCAS Cherry Point

**Precentages of Minority Population by Census Block Group**

- 0.00 - 5.00
- 5.00 - 10.00
- 10.00 - 20.00
- 20.00 - 30.00
- 30.00 - 40.00
- 40.00 - 70.00
- 70.00 - 100.00

Note:
For comparison, the Census 2010 data showed 35% for the State of North Carolina

N
W E
S

0 3.5 7 Miles

Figure 3-2
Minority Communities Map
MCAS Cherry Point
North Carolina

CH2MHILL

SECTION 4

# The Community Involvement Program

The overall goal of the CIP for MCAS Cherry Point is to promote communication between the Air Station, Navy, and community members throughout the life of the Environmental Restoration Program. Through community interviews (Section 3.2) and ongoing community involvement activities, MCAS Cherry Point has identified the information and methods of communication that community members would prefer. This section provides details of the community involvement activities currently ongoing or those that will be conducted for MCAS Cherry Point.

MCAS Cherry Point encourages public participation in its Environmental Restoration Program. The keystone of the Community Involvement Program is the RAB. Environmental Restoration Program staff awareness of community interests and concerns has been advanced through the participation of RAB members.

Specific elements of the MCAS Cherry Point Community Involvement Program are described in this section. These elements are organized by two broad categories of community needs:

- Keeping the community informed
- Providing opportunities for community involvement

For each activity, a description, the goal, methods for implementation, and anticipated timing is provided.

## 4.1 Keeping the Community Informed

### 4.1.1 Designate Point of Contact

The MCAS Cherry Point Public Affairs Office serves as the point of contact for inquiries from the public and the media.

| Public Affairs Office | |
|---|---|
| Marine Corps Air Station<br>PSC Box 8013<br>Cherry Point, NC 28533-0013 | Phone: (252) 466-4241<br>Fax: (252) 466-5201<br>E-mail: chpt.jpao.omb@usmc.mil |

### 4.1.2 Maintain the Administrative Record File

**Description:** The Administrative Record File is a collection of documents used by the MCAS Cherry Point Partnering Team in reaching decisions about the NPL site and its cleanup. The contents of this file include technical plans and studies, proposed cleanup plans, health and ecological risk evaluations, DDs, significant correspondence among government agencies, records of notifications to and participation by the public, and responses made by the Navy to public comments. CERCLA requires that an Administrative Record File documenting the selection of a response action be established at or near the facility.

**Goal:** To provide access to site-specific information so that the public may make informed comments on the selection of environmental restoration actions at MCAS Cherry Point.

**Method:** The official MCAS Cherry Point Administrative Record File is maintained by NAVFAC Mid-Atlantic. An electronic copy of the Administrative Record File is maintained on the Environmental Restoration Program Web site (http://go.usa.gov/TZO). For those without internet access at home, the Havelock-Craven County Public Library has a computer prioritized for Web access to the Administrative Record File. (See Section 4.1.3 and Table 4-1 for details.)

**Timing**: The Administrative Record File was opened as soon as Site Inspections (SIs) began at MCAS Cherry Point, and it will remain open until the last ROD has been signed for MCAS Cherry Point. The electronic Administrative Record database is continuously updated with copies of new documents.

| NAVFAC contact for questions about the Administrative Record File | |
|---|---|
| NAVFAC Mid-Atlantic<br>Public Affairs Office<br>9742 Maryland Avenue<br>Norfolk, VA 23511-3095 | Phone: 757-341-1410<br>E-mail: NAVFACML_PAO@navy.mil |

### 4.1.3 Maintain the Public Information Repository

**Description:** The Information Repository is required to be at a convenient location where community members can access the Administrative Record File and can read and print official documents about the status of the Environmental Restoration Program at MCAS Cherry Point.

**Goal:** To provide community members with convenient access to the Administrative Record File and other site-related information.

**Method:** As environmental restoration progresses at MCAS Cherry Point, representatives of the Navy and MCAS Cherry Point will continue to place relevant information on the public Web site. The Havelock-Craven County Public Library has a computer prioritized for web access to the MCAS Cherry Point Administrative Record File.

In addition to web access, hard copies of documents are usually placed at the library during public comment periods. Table 4-1 lists the address of the Havelock-Craven County Library and the MCAS Cherry Point Web site.

Each public notice published in the newspapers to announce public comment periods includes information on how to find the documents issued for public comment.

**Timing:** An information repository was established in January 1993 at the Havelock-Craven County Library in Havelock. In 2006, MCAS Cherry Point converted the information repository from paper copies to an electronic version, thereby reducing the demand on limited shelf space in the public library.

TABLE 4-1
**Information Repositories**
*MCAS Cherry Point Community Involvement Plan*

| Repository | Location | Hours | Contact |
|---|---|---|---|
| Havelock-Craven County Public Library | 301 Cunningham Blvd.<br>Havelock, NC 28532 | Monday-Wednesday<br>10 a.m. to 8 p.m.<br>Thursday-Friday<br>10 a.m. to 6 p.m.<br>Saturday 10 a.m. to 4 p.m. | (252) 447-7500<br>http://newbern.cpclib.org |
| MCAS Cherry Point Web site | http://go.usa.gov/TZO | | |

### 4.1.4 Provide Information on the Internet

**Description:** Internet technology allows information to be made available quickly and to be delivered in a user-friendly manner.

**Goal:** To provide resources for searching and listing both general and specific information about Superfund and hazardous waste issues, thus enabling people to obtain information about the MCAS Cherry Point Environmental Restoration Program at their own convenience and without incurring any expenses.

**Method:** The MCAS Cherry Point Environmental Restoration Program Web site (http://go.usa.gov/TZO) provides interested members of the public with a concise overview of the history and status of each OU and site, with links to the Site Management Plan for additional details, as well as information about the RAB.

The primary purpose of the Web site is to provide access to the Administrative Record File. Links to individual documents that are released for public review are posted on the web page where they can easily be found, so that readers do not have to search the Administrative Record for them.

All public notices and fact sheets and newsletters will include the address of the Environmental Restoration Program Web site.

TABLE 4-2
Web Sites
*MCAS Cherry Point Community Involvement Plan*

| Web Site Contents | Address |
|---|---|
| MCAS Cherry Point Environmental Restoration Program | http://go.usa.gov/TZO |
| Official MCAS Cherry Point Web site | http://www.marines.mil/unit/mcascherrypoint |
| EPA Region 4 summary of MCAS Cherry Point NPL site | http://www.epa.gov/region4/waste/npl/nplnc/cherptnc.htm |
| General information about EPA and Superfund | http://www.epa.gov/superfund/ |
| General information about NCDENR's Superfund Section | http://portal.ncdenr.org/web/wm/sf |

The NAVFAC Portal hosts public Web sites and electronic Administrative Record files for all Navy and Marine Corps bases in the NAVFAC Washington, Mid-Atlantic, and Atlantic regions, providing a central Web site address and consistent format for information about the Environmental Restoration Program. The main Environmental Restoration page provides general information about the environmental restoration process, as well as links to other Web sites with guidance and policy documents.

The local community has responded favorably to the Web site in the past. To increase public awareness and acceptance of the MCAS Cherry Point Web site, the following measures were recommended by 2003 and 2011 interview respondents:

- Publish the Web site address in all public notices and fact sheets
- Periodically demonstrate the Web site to the RAB, especially when new features are added
- Put a link to the Environmental Restoration Program Web site on the MCAS Cherry Point home page

**Timing**: A Web site for the MCAS Cherry Point IRP was developed in 1998. In 2009, the MCAS Cherry Point Environmental Restoration Program Web site migrated to the NAVFAC Portal. The Environmental Restoration Program Web site is updated as documents are published. Descriptions of IRP sites and status are updated annually, when the Site Management Plan is released.

### 4.1.5 Publish Notices in Local Newspapers

**Description:** A concise announcement of upcoming public meetings and other events related to the Environmental Restoration Program.

**Goal**: To notify interested persons about events and activities related to MCAS Cherry Point's Environmental Restoration Program.

**Method:** MCAS Cherry Point and the Navy will continue to place paid public notices (as display advertisements) in the *Windsock, Sun Journal*, *Havelock News*, and (Carteret County) *News-Times*. Notices will announce RAB meetings, public meetings, and public comment periods for environmental restoration documents such as

Proposed Plans for remedial actions, EE/CAs for removal actions, Five-Year Reviews, and prioritizing and sequencing munitions removal sites. Contact information for these newspapers is provided in **Appendix C.**

One development since the 2003 CIP is the increased use of electronic access to news media. An increasing number of people do not subscribe to print editions, so printed public notices might not reach that segment of the community.

Most newspapers have Web sites that display news stories and web-only advertisements, but not all advertisements from the print edition. (Public notices are not visible unless purchased as online advertisements for additional cost.) The *Windsock, Sun-Journal,* and *News-Times* and have full online editions, which look exactly like the print versions of the newspaper, where public meeting notices are visible. The *Windsock* online edition is free, but the others require a paid online subscription.

As recommended by 2011 interview and survey respondents, MCAS Cherry Point will consider posting meeting announcements and links to public meeting notices on the Facebook pages maintained by the Air Station, FRC-East, and the City of Havelock.

Local public access cable television and some local newspapers will accept "Community Calendar" (public service) announcements via e-mail or Web site forms, which provide another economical way to publicize RAB and public meetings to the community. **Appendix C** provides additional information about online resources in the local media.

**Timing:** Public notices are placed quarterly to advertise RAB meetings, and as needed to advertise public meetings and public comment periods on environmental restoration documents. Public notices issued to date are listed in **Appendix D**.

### 4.1.6 Maintain a Contact List of Interested Parties

**Description:** A list of persons known or anticipated to be interested in Cherry Point's environmental restoration and munitions response activities.

**Goal**: To provide information directly to stakeholders about Environmental Restoration Program activities**.**

**Method:** MCAS Cherry Point does not currently maintain a mailing list, but will consider establishing an e-mail list to provide meeting notices and occasional updates to interested persons. The e-mail list will include persons who expressed interest during community interviews or at future public meetings, as well as contacts who can forward announcements to other existing mailing lists: City of Havelock (via the City Public Information Coordinator), the Chamber of Commerce, and the Neuse River Foundation (via the Neuse RiverKeeper).

Any interested citizens and groups will be added to the list upon request. Persons on the list will periodically receive public notices, newsletters, and other information as appropriate.

A list of additional key contacts is found in **Appendix E.** To protect privacy, the names and e-mail or mailing addresses of individuals are not published.

**Timing**: As needed.

### 4.1.7 Prepare and Distribute Fact Sheets

**Description**: Fact sheets and newsletters are concise documents (typically 1 to 4 pages for a fact sheet, more for a newsletter) written to summarize information from key documents, such as RIs and Proposed Plans, and to update the public about the status of the Environmental Restoration Program. They are written for non-technical audiences and use straightforward graphics to describe technical issues.

**Goal:** To provide stakeholders with accurate, easy-to-understand information and promote understanding of the issues and approaches to MCAS Cherry Point's environmental investigations and munitions response activities.

**Method:** MCAS Cherry Point will continue to develop and distribute periodic fact sheets focusing on cleanup milestones, such as Five-Year Reviews, at specific environmental or munitions sites.

In addition to the e-mail list of interested persons, copies of fact sheets may be distributed at public meetings, placed in the library, and provided to environmental and other interested civic groups for distribution to their memberships.

**Timing:** In 1995, a fact sheet was developed to accompany RAB membership applications, providing information on becoming a RAB member and outlining the responsibilities and requirements of a RAB.

Fact sheets with a brief overview of the IRP and MRP were provided to respondents during the 2003 and 2011 CIP community interviews. In February 2008, a fact sheet was developed to summarize the findings of the Five-Year Review of ongoing environmental cleanup actions at OUs 1, 2, 3, 4, 5, 6, and 13. A similar fact sheet will be developed during the next Five-Year Review process in 2013.

**Appendix D** provides examples of fact sheets developed for MCAS Cherry Point's Environmental Restoration Program.

### 4.1.8 Establish Media Relations

**Description:** Providing local print and broadcast journalists with timely, relevant information about the Environmental Restoration Program and public involvement opportunities available to stakeholders.

**Goal:** Reach a wide audience of stakeholders with information about the Environmental Restoration Program and public involvement opportunities.

**Method:** MCAS Cherry Point's Public Affairs Office works with local and regional newspapers that are read by both military personnel and civilian employees and in the community to provide news about Air Station activities.

These newspapers include *The Windsock*, which is the facility's bi-weekly publication; the *Sun Journal*, which is the primary local newspaper serving the New Bern and Havelock area, the *Havelock News*, and the *News-Times* serving Carteret County; as well as the *Jacksonville Daily News*, the major regional newspaper. A list of these and other local media contacts is included in **Appendix C**.

At present, public interest and concern about the IRP does not warrant press briefings. Public meetings are sparsely attended and have not been covered by the media in recent years.

The MCAS Cherry Point Public Affairs Office will assess the need for any future press briefings. If a press briefing should become necessary, the Public Affairs Office would coordinate the event, with informational content provided by the MCAS Cherry Point Environmental Affairs Department, such as the following:

- History of the facility investigations
- Issues and concerns
- Results of the IRP or MRP and actions currently being evaluated
- Process for public comment and review
- Point of contact for more information
- Location of information repository
- How to access the MCAS Cherry Point Environmental Restoration Program Web site

**Timing**: As needed.

# 4.2 Providing Opportunities for Community Involvement

## 4.2.1 Community Involvement Plan

**Description**: A written plan of action that provides for interaction with the public, elected officials, and environmental groups, including obtaining their input at appropriate points during the environmental restoration and munitions response process.

**Goal:** To provide a foundation for establishing two-way communication with the public to create an understanding of environmental restoration and related actions, to ensure public input into decision-making processes related to affected communities, and to make certain that the Navy and Marine Corps are aware of and responsive to public concerns.

**Method:** The MCAS Cherry Point CIP is based on interviews with local officials, community groups, interested community members, Air Station employees, and family housing residents. A summary of the interview results is included in **Appendix B**. For privacy and confidentiality, the names of people interviewed are not published.

The CIP will be made available to the public in the information repository at the Havelock-Craven County Library and on the MCAS Cherry Point Environmental Restoration Program Web site (Table 4-2).

**Timing:** A Community Relations Plan was initially prepared for MCAS Cherry Point in 1996. A CIP (new terminology) was prepared in August 2005 and was updated in November 2009. This CIP was prepared in 2012 and will be updated again in approximately 5 years.

## 4.2.2 Restoration Advisory Board

**Description:** The RAB is an advisory group for the restoration process, with members from the local community, the Air Station, the Navy, environmental regulatory agencies, and other interested parties. RAB community members reflect the diverse interests within the local community and should live or work in the affected community or be directly affected by the Environmental Restoration Program. The RAB is considered a key resource in efforts to communicate openly and effectively with the community at large.

**Goal:** To serve as a forum for effective communication among community members, the Navy, and regulatory agencies to represent the interests of the general public and to serve as a community point of contact for questions and concerns about the Environmental Restoration Program.

**Method:** MCAS Cherry Point will continue to enlist the support and cooperation of the RAB members by providing regular updates and actively seeking the RAB's input on remedial decisions, in accordance with the DoD “RAB Rule” at 32 CFR Part 202. The Navy and Marine Corps also will continue to provide updates about munitions response activities to the RAB. If the priority or sequencing of the Former Skeet and Trap Range Number 1 munitions site is changed in annual reviews, a public notice will announce that this munitions site is to be discussed at the RAB meeting so that stakeholders can participate, as required by the Protocol.

The MCAS Cherry Point RAB currently consists of 11 members, seven of which are community members and four of which are agency representatives from the Tier I Partnering Team (the Air Station’s Environmental Department, NAVFAC Mid-Atlantic, EPA, and NCDENR). These regulatory agency members are a technical resource for the community members of the RAB and receive feedback from RAB community members. The RAB is jointly co-chaired by the appointed Air Station representative and an elected community member.

The RAB’s community membership includes members of environmental and community service organizations, people involved in water-based recreation, a local college professor, a former environmental remediation professional, retired military service members and business people, and Craven County’s Environmental Health Director. Community members live in Oriental, New Bern, Morehead City, Beaufort, and Havelock. Collectively, these RAB members have contributed over 50 years of service to the community. Capsule biographies of the RAB members are presented in **Appendix F**.

Based on the 2003 and 2011 community interviews, it appeared that the frequency, time of day, and location of the RAB meetings were appropriate. There were no complaints or suggestions for changes in the current RAB meeting schedule.

RAB meetings are usually held at the Havelock Tourist and Event Center and are always open to the public.

**Havelock Tourist and Event Center**
201 Tourist Center Drive
Havelock, NC 28532
Phone: (252) 444-4348

MCAS Cherry Point will continue to invite the public to attend RAB meetings by paid display advertisements in local newspapers, as required by the RAB Rule. The public is encouraged to contact the Public Affairs Office for dates of upcoming RAB meetings.

RAB minutes are available in the Administrative Record File, which is maintained on the public Web site (see Section 4.1.2). Minutes are not verbatim records; they are prepared to summarize information and discussions. Documents that are shared at RAB meetings are also available for public review in the Administrative Record File.

**Timing:** The MCAS Cherry Point RAB meets several times per year, when new information is available or as needed to keep members informed about the current progress of the cleanup program. RAB meetings are generally held at 7:00 p.m.

A Technical Review Committee (TRC) was established at MCAS Cherry Point in 1988. In June 1995, the MCAS Cherry Point TRC began the transition to a RAB. Six new community members were added to the group and the first RAB meeting was held in January 1996.

In March 2002, EPA, NCDENR, and the Air Station held a RAB Recognition Day event, officially recognizing the RAB's outstanding service to the local community by serving as "the community's eyes and ears" for environmental restoration activities at MCAS Cherry Point. In December 2005, the MCAS Cherry Point RAB celebrated a "Decade of Success." In September 2011, the RAB celebrated a 15-year anniversary.

In May 2006, DoD published the "RAB Rule" at 32 CFR Part 202. The regulation provides a framework for participation in the environmental restoration process, including:

- Activities that can be performed by a RAB
- Establishing a RAB
- RAB operating procedures
- Responsibilities of RAB members
- Steps to adjourn a RAB
- Steps to dissolve a RAB

The MCAS Cherry Point RAB's operating procedures were revised after publication of the RAB Rule.

MCAS Cherry Point introduced the MRP to the RAB on May 6, 2008. That RAB meeting included training on the prioritization process and the initial priority scoring of the Air Station's munitions sites. The Work Plan for a Site Inspection of Skeet and Trap Range Number 1 was presented to the RAB and interested members of the public during the July 29, 2008, RAB meeting.

### 4.2.3 Provide Technical Assistance for Public Participation

**Description:** On February 2, 1998, DoD published a final rule establishing a program called Technical Assistance for Public Participation (TAPP) (*Federal Register* Volume 63, Number 21).

**Goal:** Provides a mechanism for RABs to obtain technical assistance to help them better understand and provide input into Environmental Restoration Programs.

**Method:** Since the rule was published in 1998, the Navy has trained personnel in the TAPP process and produced presentation materials. The RAB may request TAPP presentations or training through their installation co-chair. The RAB can define a proposed TAPP project and prepare a TAPP request. NAVFAC will then prepare a Statement of Work and procure a qualified provider of technical assistance. The RAB may be asked to assist by commenting on potential providers.

Examples of TAPP projects include reviewing restoration documents and proposed remedial technologies, interpreting environmental health effects, participating in relative risk ranking exercises (which are used to prioritize restoration activities at a facility), and certain types of technical training. Funding is provided for up to $25,000 per year or 1 percent of the total restoration cost, whichever is less, with a limit of $100,000 total over the life of the program at any one facility.

**Timing:** To date, the MCAS Cherry Point RAB has not identified a need for technical assistance or any TAPP projects. Although the RAB has not expressed interest, the Air Station will continue to monitor the RAB's information needs and provide information about the TAPP to RAB members as warranted.

### 4.2.4 Provide Technical Assistance Grant Information

**Description:** Administered by EPA, the Technical Assistance Grant (TAG) program is an avenue by which grants are made available to any group of individuals who may be affected by a release or threatened release at any facility on the NPL. On October 2, 2000, EPA published a final rule to streamline the TAG program by simplifying application and management procedures (Federal Register Volume 65, Number 191).

**Goal:** To provide resources for community groups to hire technical advisors who can assist them in interpreting technical information about the site.

**Method:** A TAG may be used to obtain technical assistance in interpreting information about the nature of the hazard, the RI/FS/ROD/RD phases and documents, selection and construction of the RA, operations and maintenance, or removal action at a facility. EPA has specific guidelines for groups that apply for and administer TAG grants, and the value can be up to $50,000 for a single recipient.

Because MCAS Cherry Point is listed on the NPL, the RAB or another community group is eligible to apply for a TAG. After the MCAS Cherry Point RAB was established in 1996, EPA representatives presented information about the TAG program to the RAB.

**Timing:** To date, no group has applied for a TAG for the MCAS Cherry Point NPL process.

### 4.2.5 Provide Comment Periods and Responsiveness Summaries

**Description:** Public comment periods lasting a minimum of 30 days are held to solicit public input on major decisions in the MCAS Cherry Point Environmental Restoration Program, primarily the selection of removal actions or final cleanup remedies. At the conclusion of a public comment period, a Responsiveness Summary is prepared, summarizing comments received and the Navy and Marine Corps responses to major comments.

**Goal:** Public comment periods provide community members with an opportunity for meaningful involvement in the process and provide the Navy and Marine Corps with valuable information for use in making decisions. Responsiveness Summaries document how the Navy and Marine Corps has considered those comments during the decision-making process.

**Method:** The Navy and Marine Corps provide the public an opportunity to comment on removal actions and remedial actions during an announced formal public comment period, as required by CERCLA. MCAS Cherry Point will make each EE/CA report or Proposed Plan describing these planned activities available for public review and will announce a 30-day public comment period by publishing a notice in the *Sun Journal* (New Bern), *The Havelock News*, *Windsock* (Cherry Point), and *The News-Times* (Carteret County). To promote higher visibility, public notices will be placed as display advertisements in the main section of each newspaper (not in legal notices or the classified section).

**Timing:** Comment periods will be announced as appropriate. A comment period is required in conjunction with the announcement of each Proposed Plan and lasts a minimum of 30 days. The public comment period can be extended an additional 30 days if requested by the public. Public meetings are held within the public comment period (Section 4.2.6).

The Navy and Marine Corps issue the Responsiveness Summary as part of the ROD that follows a Proposed Plan, or the Action Memorandum that follows an EE/CA. The ROD and Action Memorandum are made available for public review prior to the start of the cleanup action and placed in the Administrative Record File.

### 4.2.6 Hold Public Meetings

**Description:** A public meeting is a gathering where Navy and Marine Corps personnel can hear the public's views and concerns about an action or proposal and provide the public with updated information on the progress of the cleanup process. Public meetings must be held upon request whenever a formal public comment period is required under CERCLA regulations.

**Goal:** To provide information to the community about environmental restoration activities, provide a forum for the community to ask questions, and allow the community to voice any concerns they may have**.**

**Method:** Meetings will be scheduled at times to encourage the greatest possible participation, and will focus on soliciting comments from the public. Whenever feasible, public meetings will be combined with regularly scheduled RAB meetings.

MCAS Cherry Point will implement the following procedures for public meetings:

- Announce public meetings approximately 2 weeks before the meeting date by publishing a notice as a display advertisement in the *Sun Journal* (New Bern), *The Havelock News*, *Windsock* (Cherry Point), and *The News-Times* (Carteret County).
- Register meeting participants, including names, city and state, and affiliation. If attendance is large (which has not been the case in recent meetings), arrange for meeting attendees who wish to present comments to do so on a “first come, first served” basis.
- Prepare slides and, when appropriate, visual displays to provide another means of information about the issue under discussion.
- Prepare a verbatim transcript when a meeting is held as part of public comment periods. The transcript will become a part of the Administrative Record File, which is available to the public on the Environmental Restoration Program Web site.
- Develop Responsiveness Summaries as a formal response by the Navy to public comments made at public meetings or otherwise submitted during public comment periods (see section 4.2.5). Responsiveness Summaries are reviewed and approved by the EPA and NCDENR.

Public meetings are held in Havelock at locations that offer a well-equipped meeting room, are convenient to both MCAS Cherry Point employees and local community residents, and do not require entry to the Air Station through security checkpoints. Locations include:

**Havelock Tourist and Event Center**
201 Tourist Center Drive
Havelock, NC 28532
Phone: (252) 444-4348

**City of Havelock Auditorium**
1 Governmental Avenue
Havelock, NC 28532

**Havelock High School Auditorium**
101 Webb Boulevard
Havelock, NC 38532

**Timing**: The Air Station will continue to hold public meetings whenever a formal public comment period is required; for example, upon completion of Proposed Plans, and whenever an environmental restoration or munitions response activity is planned that would be expected to generate public interest or concern.

Table 4-3 summarizes the public meetings that have been held to date.

TABLE 4-3
**Public Meetings to Date**
*MCAS Cherry Point Community Involvement Plan*

| Date | Topics Discussed |
|---|---|
| 27 April 2011 | Proposed Plan to amend Record of Decision for OU2 Site 10, Hot Spot 2 |
| 20 April 2010 | Proposed Plan for OU1 Sites 14, 15, 17, 18, and 40 |
| 21 May 2009 | Proposed Plan for OU14 Site 90 |
| 29 July 2008 | Munitions Site Inspection of Skeet and Trap Range Number 1 (at RAB meeting) |
| 6 February 2008 | Engineering Evaluation/Cost Analysis for Sandy Branch Tributary 2 OU1 |
| 9 May 2006 | Proposed Plan for OU6 Site 12 |
| 3 November 2005 | Proposed Plan for OU5 Sites 1 and 2 |
| 22 March 2005 | Proposed Plans for OU4 and OU 13 |
| 3 Feb 2004 | Site tour conducted for RAB members and students from North Carolina State and Duke Marine Lab. Sites visited included OU1 Site 16, OU3 Site 7, and OU6 Site 12. |
| 13 Feb 2003 | Site tour conducted for students from North Carolina State and Duke Marine Lab. Sites visited included OU1 NADEP Pump and Treat System, OU1 Site 16 Air Sparging/Soil Vapor Extraction System, OU 2 Site 10 Soil Vapor Extraction System, and OU 3 Site 7 Air Sparging System. |
| 23 Oct 2002 | Proposed Remedial Action Plan for OU15 |
| 14 Feb 2002 | Site tour conducted for students from North Carolina State and Duke Marine Lab Ecotoxicological and Pollution Class. Sites visited included OU1 Industrial Waste Treatments Plant, OU1 Site 16, OU2 Site 10, and OU3 Site 7. |
| 18 Dec 2001 | Site tour conducted for RAB members. Sites visited included OU1 Industrial Waste Treatments Plant, OU1 Site 16, OU2 Site 10, and OU3 Site 7. |
| 29 Jul 1997 | Proposed Remedial Action Plan for OU2 |
| 22 Aug 1996 | Interim Proposed Remedial Action Plan for OU3 , Site 6 and Site 7 |
| 18 June 1996 | Interim Proposed Remedial Action Plan for OU1 , NADEP Central Hot Spot Area Groundwater |
| 13 Apr 1996 | Site tour of various OUs |
| July 1995 | Site 16 Public Meeting |

## 4.3 Timing of Community Involvement Activities

The community involvement activities associated with potential environmental restoration activities are presented in Table 4-4.

TABLE 4-4
**Timing of Community Involvement Activities**
*MCAS Cherry Point Community Involvement Plan*

| Activity | Community Involvement Plan | Restoration Advisory Board | Information Repository, Administrative Record File | Web Site | Fact Sheet | Public Notice | Public Comment Period | Public Meeting | Responsiveness Summary |
|---|---|---|---|---|---|---|---|---|---|
| Preliminary Assessment/ Site Inspection (PA/SI) | | | | | | | | | |
| Munitions Response only: Initial prioritization | | ● | | | | ● | | | |
| Munitions Response only: Change in prioritization or scheduling | | ● | | | | | | | |
| Remedial Investigation/ Feasibility Study (RI/FS) | ● | ● | ● | ○ | | | | | |
| Proposed Remedial Action Plan (Proposed Plan) | ▦ | ▬ | ▬ | ▬ | ● | ● | ● | ● | |
| Record of Decision (ROD) | ▦ | ▬ | ▬ | ▬ | | ● | | | ● |
| Remedial Design/ Remedial Action (RD/RA) | ▦ | ▬ | ▬ | ▬ | ○ | ○ | | | |
| Removal Actions (6 months planning) | ▦ | ▬ | ▬ | ▬ | ○ | ● | ● | | |
| Engineering Evaluation/ Cost Analysis (EE/CA) | ▦ | ▬ | ▬ | ▬ | ○ | ● | ● | ○ | ● |
| No Further Response Action Planned Decision Document | ▦ | ▬ | ▬ | ▬ | ○ | ○ | | | |
| Five-Year Review | ▦ | ▬ | ▬ | ▬ | ○ | ● | ○ | | |

a. Proposed Plans are typically developed in a fact sheet format to meet this requirement.

▦ Periodic updates

▬ Ongoing activity

● Required activity

○ Discretionary activity (determined by level of community interest)

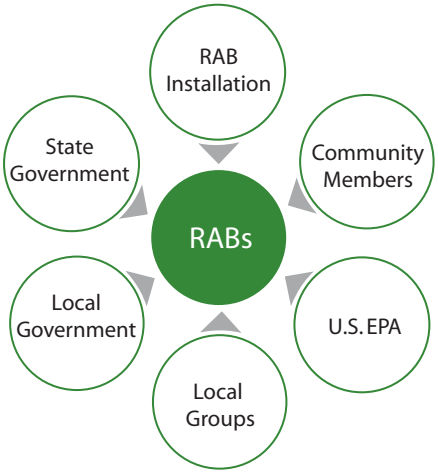
# Appendix F
# Final Restoration Advisory Board Rule

# The Restoration Advisory Board Rule—Fact Sheet

The Department of Defense (DoD) recently published a regulation addressing Restoration Advisory Boards (RABs), 71 Federal Register 27610 (May 12, 2006) with technical corrections at 71 Federal Register 30719 (May 30, 2006) and 71 Federal Register 42756 (July 28, 2006). In accordance with statutory requirements (10 U.S.C. 2705(d)(2)(A)), the RAB Rule addresses the establishment, characteristics, composition, and funding of RABs.

## What is a RAB?

A RAB is a forum to discuss and exchange information about DoD's environmental restoration program, identify issues of concern, and establish a direct line of communication between DoD, communities, and regulators.




## What is the significance of the Rule?

The RAB Rule provides communities or individuals affected by an installation's environmental restoration activities with a framework for participating in the environmental restoration process. The RAB Rule discusses:

- Activities that can be performed by a RAB,
- Establishing a RAB,
- RAB operating procedures,
- Responsibilities of RAB members,
- Steps to adjourn a RAB,
- Steps to dissolve a RAB.

## Who should read the Rule?

The RAB Rule is written for anyone who is currently, or may be affected by environmental restoration activities at an installation:

- Installation Commanders
- Co-Chairs
- Community members
- Family members of military and civilian personnel
- Local and state governments
- Tribes and indigenous people
- Current landowners
- Environmental Protection Agency

## Where is the Rule available?

The RAB Rule is available on the Defense Environmental Network and Information eXchange (DENIX) at: https://www.denix.osd.mil/denix/Public/News/OSD/RAB/rabrule.html.

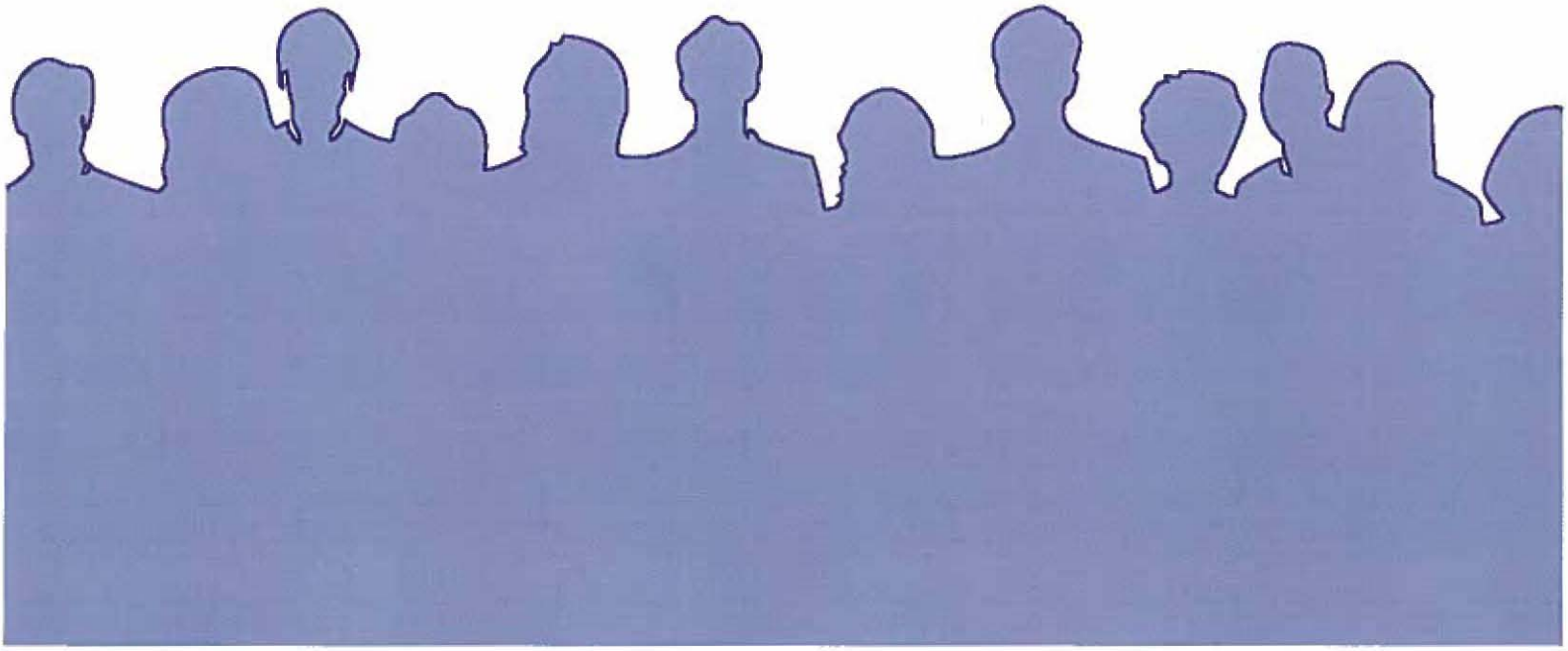
## What guidance will be available to RABs?

DoD is currently developing guidance to assist Components to implement the rule. Following this publication the Components will release guidance to help RAB communities and installations interpret the rule.

# Restoration Advisory Board Rule Handbook

## Office of the Secretary of Defense

March 2007



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## Executive Summary

The Department of Defense (DoD) encourages community involvement in the environmental restoration process through Restoration Advisory Boards (RABs). Since 1994, RABs have been established at over 300 military installations and properties in the United States and its territories to encourage communities and installations to identify and discuss potential environmental restoration issues. By facilitating open communication and understanding, RABs serve as a forum for discussion among the parties involved in the Defense Environmental Restoration Program (DERP) at affected sites and installations. RABs provide a collaborative forum for the community, government agencies, tribes, and installation decision makers to discuss and identify the most efficient and productive means to restore the environment.

DoD developed this handbook as an accompaniment to the RAB Rule, which was issued on May 12, 2006 *(71 Federal Register 27610)*. The handbook is intended to supplement the rule. It is written to be flexible enough to guide individual RABs in addressing their own unique concerns and to offer suggestions to the communities and members involved in the RAB.

This handbook follows the structure of the RAB Rule using a question and answer format designed to serve as a quick reference manual for major topics that may be discussed by RABs and local communities. The RAB Handbook is composed of the following nine chapters:

1. What is a RAB?
2. How is a RAB established?
3. Who can participate in a RAB?
4. What are the roles and responsibilities of RAB participants?
5. How does a RAB operate?
6. How does a community or installation know when a RAB has completed its work and is no longer needed?
7. What happens if a RAB becomes ineffective?
8. Can an adjourned or dissolved RAB be reestablished?
9. What happens to RABs at installations that are closing or have been closed under BRAC?

**DENIX RAB Rule Web site**

Please refer to the RAB Rule for specific requirements of RABs. The rule may be found at: https://www.denix.osd.mil/denix/Public/News/OSD/RAB/rabrule.html or at *32 Code of Federal Regulations Part 202*.

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# 1 What is a Restoration Advisory Board?

Each military installation is part of a community, and actions the installation undertakes in environmental restoration may impact its neighbors. Environmental restoration on DoD installations requires local community input and exchange of information. A RAB provides a forum for this input and exchange at operating and closing installations as well as formerly used defense sites (FUDS). Additionally, having a RAB at an operational installation often helps to ease the concern that neighbors might feel when an installation is undergoing environmental restoration.

## What is a RAB?

A RAB is a stakeholder group that meets on a regular basis to discuss environmental restoration at a specific property that is either currently or was formerly owned by DoD, but where DoD oversees the environmental restoration process. RABs enable people interested in the environmental cleanup at a specific installation to exchange information with representatives of regulatory agencies, the installation, and the community. While the general public can comment on DoD's environmental restoration program, RABs offer a focused and interactive opportunity to participate in the environmental restoration process.

In most cases, a RAB addresses cleanup activities at one particular installation; however, there is no prohibition on convening a RAB to address cleanup activities at multiple installations, especially when the same community members are involved. A decision to have a RAB address multiple installations should include input from the communities involved as well as the installations and regulators.

## What is the purpose of a RAB?

A RAB provides the community with the opportunity to become involved in the environmental restoration process at DoD installations either as a RAB member or through attendance at RAB meetings. RABs offer members the opportunity to influence cleanup decisions through discussion and to provide input to the installation decision makers. Because representatives of the environmental agencies overseeing cleanup participate in the RAB, the RAB offers members and the public the opportunity to share their questions, concerns, and ideas with agencies involved in the cleanup.

# What is a Restoration Advisory Board?

**Can a RAB's mission statement and goals be amended?**

Establishing a RAB's mission statement and goals should be one of the first undertakings of a RAB. A mission statement and goals help to focus the RAB and give it direction. Since the RAB members generate the mission statement and goals, they have the ability to change them. The process for changing the mission statement and goals should be one of the items addressed by the operating procedures of the RAB. In all cases, the decision to change these items should be joint. If, after consultation, the installation and community co-chairs determine there is a valid need to alter the mission and goals, then these items may be amended using the process outlined in the operating procedures.

**What issues do RABs address?**

RABs may only address issues associated with environmental restoration activities. Funding for RABs is received from the Service's Environmental Restoration accounts; therefore, RABs may only discuss environmental restoration topics. If another issue of community interest arises in the course of a RAB's discussions, then the RAB installation co-chair should refer the issue to the appropriate offices or individuals at the installation. Limiting the RABs to discussions of environmental restoration helps to ensure that RABs remain focused and provides maximum opportunity to discuss issues related to environmental restoration activities.

**What if I want to discuss other issues?**

Individuals hoping to discuss activities other than environmental restoration, such as noise or water quality concerns, should contact the RAB installation co-chair. The co-chair will identify the point of contact (POC) or office responsible for handling the issues of interest and pass along the names of inquirers to the appropriate offices for resolution.

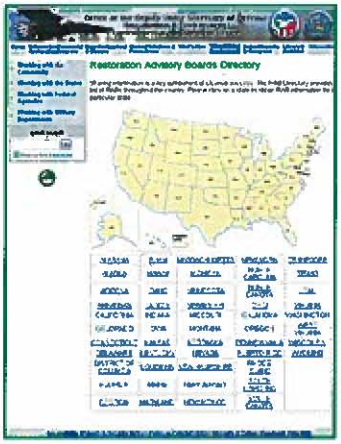
**What activities can RABs undertake?**

Examples of activities a RAB may undertake are:

- Reviewing and commenting on environmental restoration documents and activities;
- Providing information to the community;
- Receiving input from the community; and
- Obtaining information regarding the schedule, type, and status of environmental restoration activities.

**How can I find out about a RAB's activities?**

The RAB directory is located on DENIX at https://www.denix.osd.mil/denix/Public/Library/Cleanup/CleanupOfc/stakeholder/rabdirectory.html




DoD maintains records of RAB activities, procedures, and meeting minutes in an information repository (IR). This repository is publicly available and can be found in a local library or other community location. The location of the information repository should be based on information provided by the community. It should be accessible and convenient for the community. To find out where the RAB maintains its IR, contact the POC or co-chairs by browsing the RAB directory online.

In some cases, RAB activities are documented in meeting minutes posted on project web sites on the World Wide Web. The POC or RAB co-chairs can provide those Web sites to interested parties.

**Are RABs required?**

RABs fulfill a statutory requirement for DoD to establish, whenever possible and practical, a committee to review and comment on DoD actions and proposed actions regarding environmental restoration. DoD strongly encourages RABs at installations where environmental restoration activities occur and where there is community interest in establishing a RAB. Technical Review Committees (TRCs) satisfy the same statutory requirements as a RAB, but RABs are the preferred forum. If the community is not interested in establishing a RAB at the installation, then a RAB is not required; however, DoD must make the opportunity to establish a RAB available if the community becomes interested and must assess community interest every 24 months while environmental restoration activities are still ongoing.

**Are RABs decision making bodies?**

RABs provide valuable input to the installation and environmental agencies on environmental restoration decisions, but RABs are not decision making bodies.

**Is consensus necessary for a RAB?**

No, consensus is not necessary. The Department of Defense is trying to make decisions based on input from as many constituencies as possible and appreciates advice from individuals.

**Must an installation follow RAB recommendations?**

The installation decision makers will listen closely to and consider the input RAB members provide regarding environmental restoration activities; however, the installation is not required to follow RAB recommendations. A RAB is a community stakeholder group that meets on a regular basis to discuss environmental restoration at a specific property that is either currently or was formerly owned by DoD, but where DoD oversees the environmental restoration process. RABs enable persons interested in the environmental cleanup at a specific installation to exchange information with representatives of regulatory agencies, the installation, and the community. While the general public can comment on DoD's environmental restoration program, RABs offer a focused and interactive opportunity to participate in the environmental restoration process.

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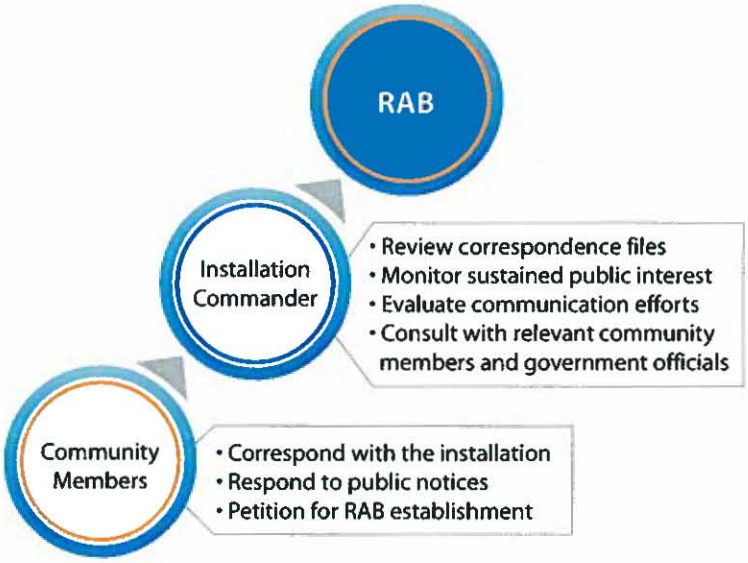
# 2 How is a RAB established?

The Department of Defense defined a process for establishing RABs to ensure consistency and fairness among communities and installations. This process defines authority to determine the need to establish a RAB, the criteria by which the need for a RAB is determined, and the actions necessary to form a RAB. A RAB ensures interested individuals and groups from the community have an opportunity to thoughtfully participate in the decision making process of environmental restoration activities in a timely manner.

**Who determines the need to establish a RAB?**

The public plays a vital role in determining whether a RAB should be established, as sufficient and sustained community interest is a threshold criterion for establishing a RAB. The Installation Commander reviews and considers input and sustained interest from the public when evaluating whether the criteria for establishing a RAB are met.




**If I live near an installation without a RAB, how can I help establish one?**

When environmental restoration activities at installations where there is no RAB are of interest to members of the public, they should contact the installation POC or Public Affairs (PA) Office. The Installation Commander will review community interest to establish a RAB at least every 24 months.

**What can I do if I am only one of a few people interested in environmental restoration at the installation?**

Individuals interested in environmental restoration at the installation should contact the installation POC or PA Office to express their interest in obtaining more information. Interested persons may also consider requesting a copy of the Community Relations Plan (CRP). Each installation is responsible for developing a CRP to outline cleanup actions and ways the community can participate. Through this plan, the public and community may become active participants in the environmental restoration process.

Interested individuals may also become involved by asking the installation whether a RAB or TRC is currently operating at an installation. If neither exist at an installation, an individual may contact the installation and ask about opportunities for involvement.

# How is a RAB established?

**What are the criteria for establishing a RAB?**

The installation will form a RAB when there is sufficient and sustained community interest and one of the following criteria is met:

- The installation is closing and transferring property to the community;
- At least 50 local citizens have petitioned for a RAB;
- Federal, tribal, state, or local government representatives have requested a RAB; or
- The installation has determined the need for a RAB.

**What if I live in a small community and less than 50 people are interested in establishing a RAB?**

The installation will determine whether any of the criteria for establishing a RAB are met by reviewing media files, reviewing correspondence with the installation, and consulting with potential stakeholders and government officials.

If an individual lives in a less populated area but sustained interest exists to establish a RAB, the community may still petition for the creation of a RAB. Those who are interested may contact the installation POC or PA Office expressing the desire to establish a RAB and ask about alternative opportunities for involvement. They may also contact EPA, the tribe with jurisdiction over the property (if any), or the state environmental regulatory agency.

**Can circumstances require reevaluating the decision against establishing a RAB?**

If an event occurs (e.g., a feature on the local news) to suddenly increase community interest at an installation where the decision has already been made not to establish a RAB, then the Installation Commander will determine whether to reevaluate the criteria. The Installation Commander will also examine whether the sudden increase in community interest is likely to be sustained or temporary.

**Will evaluation depend on quantity, quality or both?**

Both the number and content of correspondences will be evaluated against the establishment criteria. Sustained interest shows commitment from the community and is an important factor when deciding if a community is prepared to maintain a RAB during an installation's environmental restoration activities.

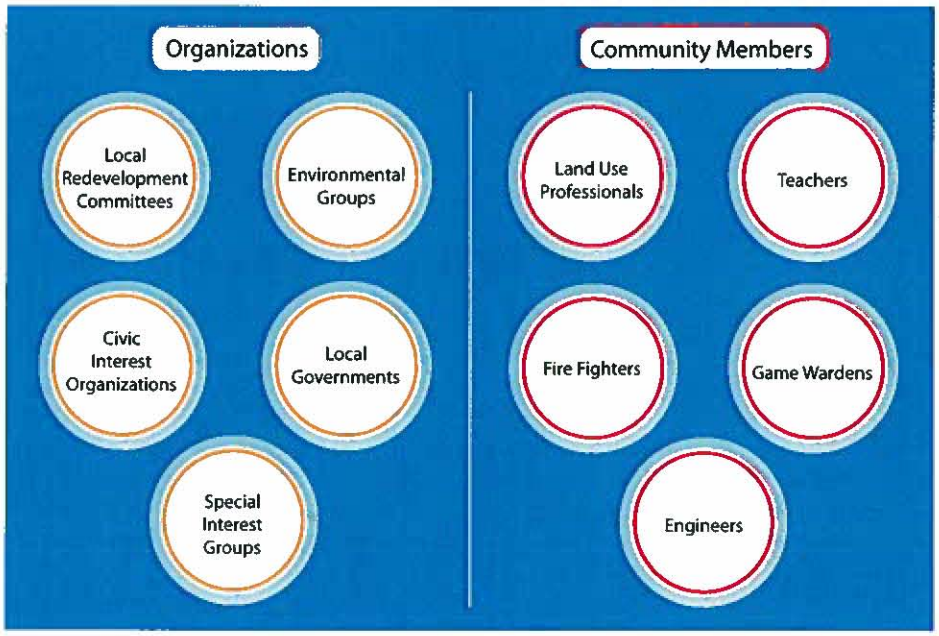
**How often does the installation review community interest when a determination has been made not to establish a RAB?**

An Installation Commander is required by the RAB Rule to evaluate criteria to establish a RAB at least once every 24 months while environmental restoration activities are still ongoing. However, there may be a need to review this criteria on a shorter schedule (e.g., if the installation's cleanup status significantly changes). The public can submit a petition for establishment at any time. Regulatory agencies may also recommend the installation review public interest or convene a RAB at any time.

# How is a RAB established?

**When establishing a RAB how will the base know which local community members to consult?**

When an installation is preparing to establish a RAB, it will consult with individuals who were interviewed during the development of the CRP, as well as others who were identified within the community as interested in participating. The installation should also consult with individuals who served on the RAB selection panel. Former CRP participants and proposed panel members should represent a cross-section of community members and organizations. Examples may include:



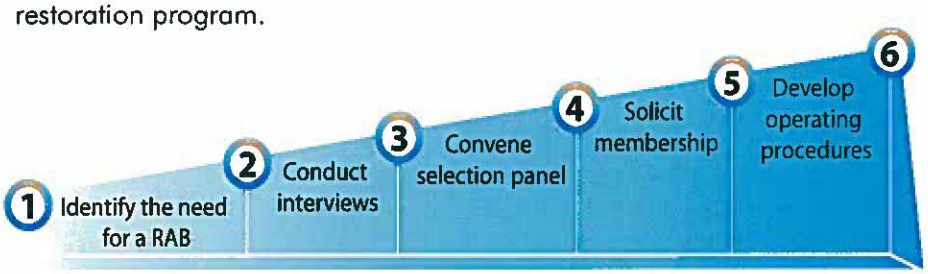

**How will the installation contact community members for consultation?**

The installation will consult with community members through personal face-to-face meetings whenever possible. If geographic barriers limit personal interaction, it may be necessary to conduct consultation through electronic mail or phone interviews. An installation may post a notice in a local newspaper informing the community of its intent to contact community members for consultation purposes. The installation may also benefit from contacting the media prior to conducting interviews to give notice to the local community. This notice can provide the community with an overview of RAB establishment procedures and the goals the installation hopes to achieve with its RAB.

# How is a RAB established?

**What is the timeline for establishing a RAB — e.g., how long does an installation have to assess sufficient and sustained community interest, as measured from the triggering event?**

There is no timeline for RAB establishment. Typically, it may take the installation four to six weeks to notify the community, approve membership, and create operating procedures, but each installation may take a different amount of time to complete these steps. DoD recommends an installation begin the steps to establish a RAB as soon as possible following the discovery that the installation will be conducting cleanups under the environmental restoration program.




**Steps to establish a RAB**

**How will the installation prepare for establishing a RAB?**

To prepare for establishing a RAB, the installation will issue fact sheets, press releases, public notices, public service announcements or newspaper ads to:

- Educate the community on a RAB's purpose;
- Inform the community of membership opportunities; and
- Discuss how the RAB relates to the installation's community involvement program.

In addition, the installation will solicit community input, interview affected community members, and consult with government agencies in the planning phase of the RAB. Regardless of whether or not the installation has a RAB, the installation should have a proactive, long term, and comprehensive community involvement program in place. The community involvement program details the activities the installation intends to undertake with help from the community and may also suggest community involvement methods. The installation will also sponsor an initial meeting to introduce RAB concepts to the community and begin the process of soliciting members.

**Who will establish the RAB?**

Once the evaluation is complete, the Installation Commander is responsible for establishing a RAB.

**How does a RAB acquire members?**

Once RAB establishment has been announced, the installation begins soliciting community members for participation. The installation will provide a person to fill the role of the RAB installation co-chair and begin the process of convening the selection panel to nominate individuals for membership on the RAB. EPA and tribal, state and local governments are also encouraged to participate in convening the selection panel as well as nominating representatives to the RAB.

**How does a RAB solicit members at establishment?**

The Installation Commander will consult with the regulatory community and key local government officials to form a selection panel to identify community leaders and representatives for RAB membership. These potential members

should represent the community based on diverse interests. The selection panel will consult the Community Relations Plan, correspondence, and media coverage to identify potential members. The panel will also evaluate interest forms from the community to determine the level of interest and diversity among the candidates. It is recommended that members of the selection panel not be selected as RAB members.

**How does a potential new member indicate interest in belonging to a previously established RAB?**

A potential new member to an established RAB may contact the remedial project manager (RPM), installation co-chair, PA Office, or other member of the RAB to inquire about membership. The RAB should discuss the mechanism for adding new members early in the process and outline the mechanism in the RAB's operating procedures.

**If I live near an installation with a RAB, how can I become involved?**

RAB meetings are open to public participation and RABs welcome suggestions, concerns, or questions. If an individual lives and/or works in an area affected by the installation he/she may be eligible for membership. Individuals should contact the RAB or the installation co-Chair or PA office to inquire about the possibility of becoming a member.

**What might be appropriate circumstances for a RAB to solicit new members?**

A RAB may need to solicit new members when major changes affect the installation or the environmental restoration activities at the installation, or when changes in the community result in a new constituency. Examples might include the addition of Military Munitions Response Program sites, the installation's placement on the National Priorities List (NPL) or a base realignment and closure (BRAC) list, new residential or commercial development, or the need to replace members who have moved away. In these cases, new members may be needed to ensure that diversity on the RAB is maintained. DoD should limit its representation to one member, who should be the DoD co-chair. Other DoD experts or specialists may attend meetings as necessary.

**How will the RAB solicit new members?**

During an update the RAB will solicit new members in accordance with its operating procedures. To maintain RAB diversity, replacement members will generally be sought from the same constituency as the former member.

**How are regulatory members selected?**

The regulatory agency with environmental restoration oversight responsibility at the installation will provide one representative to participate in the RAB. At NPL sites, EPA and tribal, state, and local governments each will have one representative. At non-NPL sites, EPA will generally not be represented, although representatives may participate if they desire.

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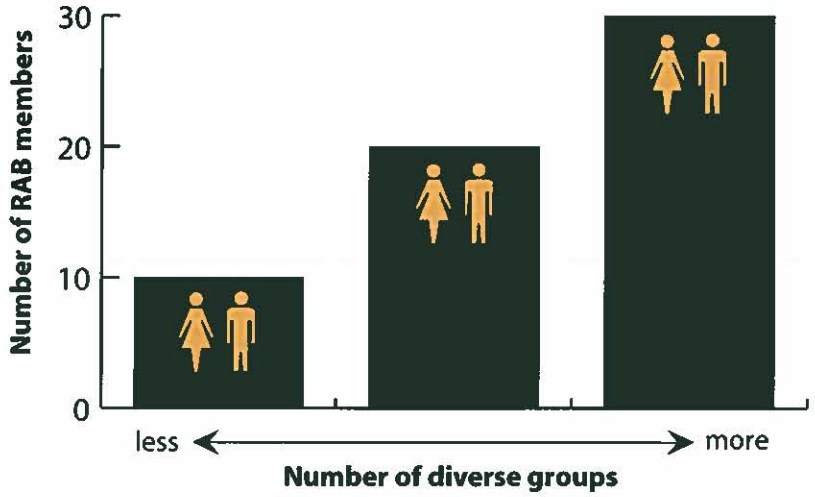
# 3 Who can participate in a RAB?

RABs are comprised of individuals from the community who are affected by the installation's environmental restoration activities because they live and/or work in close proximity to the installation. Anyone interested in restoration activities and willing to dedicate their time may participate in RAB meetings, although they may not actually be a RAB member. RABs also include representatives from the installation and regulatory agencies that oversee cleanup at the installation.

**How big can a RAB be?**

RAB size is an installation-specific issue and should be determined in the operating procedures unique to each RAB. Factors influencing the number of members are a reflection of diverse interests, issues affecting the surrounding communities, community interests, and population of the surrounding community.

To maintain a constructive dialogue, the Department suggests the RAB be no larger than 30 individuals, but not so small that diverse interests are not adequately represented. A RAB member may represent more than one group or interest.




**How does the installation ensure that diverse interests are represented and that members fairly represent the local community?**

The selection panel, which is made up of community members with varying backgrounds and interests, evaluates the candidates. The selection panel seeks out members using methods intended to reach a diverse audience. For example, the panel may post newspaper ads, distribute fliers in locations throughout the community, and have announcements made on the radio, in churches, schools, and community centers. Diversity determination is based on a candidate's responses to the evaluation forms, involvement in outside community groups and organizations, occupation, interests, and dedication to cleanup progress at the installation. The Commanding Officer of the installation will make the final judgment on the diversity of the candidates. He or she may reject the entire slate recommended by the selection panel based on the lack of diversity, but cannot reject individuals.

**How are community interest forms distributed to the community?**

RAB interest forms may be announced and distributed through several methods to ensure as many people as possible in the community are provided with the opportunity to respond. Installations can publish the forms in local newspapers and community newsletters; post them on the installation Web site, provide copies at local libraries and recreation centers; provide copies to local schools for children to take home to parents; make announcements at city hall meetings and during church services; or provide an information phone line at the installation.

**Can I provide input into the selection criteria of new members if I am already a RAB member?**

RAB members may provide input into the selection criteria of new RAB members to replace members who are leaving. This process is defined in the RAB's operating procedures. Each RAB's unique operating procedures should specify the nomination and selection process for replacement members.

The selection panel generally exists only once—during the creation of a new RAB or in some cases when an adjourned or dissolved RAB is reinstated. In these cases, former RAB members will generally not be involved in the creation of the new RAB.

**Do I need to have environmental restoration experience to serve as a co-chair or community RAB member?**

No. Environmental restoration experience may be beneficial, but is not required of either community co-chairs or community RAB members. Training is provided to RAB members to help explain environmental restoration processes and site-specific issues. A potential co-chair or member's interest in the community and environment, and commitment to dedicate time to the process are important factors. The selection panel will place greater emphasis on the diversity an individual would bring to the RAB, and the individual's expressed commitment toward achieving the RAB's goals, than to experience.

# 4 What are the roles and responsibilities of RAB participants?

The following chapter outlines the roles and responsibilities of each RAB participant.

| RAB Participant | Roles and Responsibilities |
|---|---|
| **Installation Commander** | • Establish a RAB when appropriate and periodically reevaluate community interest.<br>• Approve RAB operating procedures, based on recommendation of co-chairs.<br>• Periodically monitor RAB meetings.<br>• Arbitrate disputes, if necessary.<br>• Determine when and if the RAB should be adjourned, dissolved, or reestablished. |
| **Installation co-chair** | • Coordinate with the community co-chair to prepare and distribute agendas for meetings.<br>• Ensure that DoD participates in an open, honest, constructive manner.<br>• Discuss environmental matters in a manner that will ensure that lay members of the RAB can understand.<br>• Attend all RAB meetings.<br>• Ensure RAB members have the opportunity to provide input.<br>• Ensure community issues and concerns related to restoration are addressed when raised.<br>• Ensure documents distributed to the RAB are written in layman's terms when possible.<br>• Ensure documents distributed to the RAB are made available to the general public.<br>• Ensure an accurate list of interested parties is developed and maintained.<br>• Provide relevant policies and guidance documents to the RAB.<br>• Ensure that adequate administrative support is provided to the RAB.<br>• Refer issues not related to restoration to the appropriate officials.<br>• Report back to the commanding officer of the installation.<br>• Ensure that RAB members receive necessary training. |
| **Community co-chair** | • Coordinate with installation co-chair and community members to prepare agendas.<br>• Ensure that all RAB community members have the opportunity to participate in an open, honest, and constructive manner.<br>• Ensure that community issues and concerns related to restoration are raised.<br>• Coordinate with installation co-chair to ensure that periodic training assessments are conducted and training needs are met.<br>• Assist with dissemination of information to the general public.<br>• Report back to the community, and coordinate with other RAB members to ensure that they are adequately representing segments of the community at RAB meetings.<br>• Serve without compensation on the RAB. |

# What are the roles and responsibilities of RAB participants?

| RAB Participant | Roles and Responsibilities |
|---|---|
| **Community members** | • Attend meetings.<br>• Provide individual input in an open, honest, and constructive manner.<br>• Represent and communicate community concerns to the RAB.<br>• Act as a conduit for exchange of information.<br>• Review, evaluate and comment on documents and other materials related to restoration.<br>• Represent and communicate RAB issues to the community.<br>• Serve without compensation on the RAB. |
| **Local and State government members** | • Attend meetings.<br>• Serve as a referral and resource on restoration.<br>• Review documents and other materials related to restoration.<br>• Ensure that state and local environmental standards and regulations are identified and addressed by the installation.<br>• Facilitate flexible and innovative resolutions of environmental issues and concerns.<br>• Assist in education and training for RAB members. |
| **Tribal government members** | • Attend meetings.<br>• Serve as a referral and resource on restoration.<br>• Review documents and other materials related to restoration.<br>• Ensure that tribal environmental standards and regulations are identified and addressed by the installation.<br>• Facilitate flexible and innovative resolutions of environmental issues and concerns.<br>• Educate RAB members regarding tribal sovereignty, tribal laws and their application to the property.<br>• Participate in the RAB without replacing the government-to-government relationship with the Federal government.<br>• Assist in education and training for RAB members. |
| **EPA member** | • Attend meetings.<br>• Serve as a referral and resource on restoration.<br>• Review documents and other materials related to restoration.<br>• Facilitate flexible and innovative resolutions of environmental issues and concerns.<br>• Ensure that federal environmental standards and regulations are identified and addressed by the installation.<br>• Assist in education and training for RAB members. |
| **Public** | • Participate in community RAB meetings.<br>• Observe rules and operating procedures when participating at RAB meetings or interacting with RAB members.<br>• Ask questions to ensure understanding of RAB activities and impact on the community. |

# What are the roles and responsibilities of RAB participants?

**How will the RAB handle a co-chair or other RAB member who is not committed to the RAB's goals and objectives, or is not meeting their responsibilities?**

Each RAB's operating procedures should provide guidelines for how to handle situations that hinder open participation and communication. The RAB's objective is to create a forum for discussion that facilitates completing environmental restoration activities at an installation in an open and cooperative environment. In cases where communication becomes tangled and members doubt the sincerity of one another, the best solution is to discuss these concerns within the RAB, in accordance with the operating procedures.

**How can a RAB resolve disputes if an impasse cannot be broken within the operating procedures?**

An independent facilitator may be brought to the RAB to explore disputes within the group. A meeting facilitator can be a useful tool to help RAB members focus on their goals for the installation.

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# 5 How does a RAB operate?

Each RAB develops its own unique set of operating procedures based on the needs of the RAB and the installation. However, the RAB Rule does provide certain requirements. These requirements include, but are not limited to, developing a mission statement, providing training to members, and updating RAB information in the administrative record.

**What is a RAB's mission statement?**

A RAB's mission statement details the RAB's goals and describes its purpose. It also provides a focus for environmental restoration discussions to help the RAB stay on track during meetings.

**Why should a RAB develop operating procedures?**

RABs are encouraged to develop operating procedures to guide the RAB members during operation and make the RAB an effective and functioning advisory board. Operating procedures establish rules and guidelines for issues the RAB may address relating to goals and objectives, membership, participation, restoration, training, roles and responsibilities, and reporting requirements.

**Is there a standard outline for developing operating procedures?**

The RAB Rule outlines standard operating procedures that could apply to all RABs regardless of geographic location or environmental restoration activities. Individual RABs are encouraged to develop their own unique and installation-specific operating procedures.

**When should a RAB develop operating procedures?**

A RAB should develop operating procedures as soon as it is officially formed. Official formation is complete when co-chairs and members have been selected from the community and appropriate government agencies.

**How often should a RAB meet?**

A RAB should meet as often as necessary. RAB members should decide on a schedule when they establish the RAB's operating procedures, and then add or delete meetings from the schedule as necessary. There are times when a flurry of activity occurs in planning or conducting environmental restoration and RABs may want to meet more often to review and provide input on relevant documents and ensure that they stay abreast of the activities. There are other times when the RAB may determine that infrequent meetings are adequate.

**How does my RAB receive funding to operate?**

Installations use their Environmental Restoration (ER) accounts to support RAB activities. The RAB itself will not receive funding for its activities.

| Funded Activities | Non-Funded Activities |
|---|---|
| RAB establishment | Transportation costs |
| Membership selection | Compensation for volunteer time |
| Site-specific and relevant training | Meals and beverages at meetings |
| Meeting announcements, facilities, and facilitators | RAB member business cards |
| Mailing list maintenance and distribution | Computers, offices and other office/business materials |
| Meeting agenda materials | Member stationary |

**Are Web sites eligible administrative expenses?**

RABs may include information on an installation- or Service-sponsored Web site, but may not claim Web sites or their maintenance as eligible administrative expenses.

**How often can my RAB receive training?**

RABs and community members can receive training whenever necessary. Installations should provide training during RAB orientation to provide information on what is expected of a RAB and to assist RAB members in gaining an understanding of installation-specific environmental and health issues. Other training should be tailored to site-specific issues and provided as necessary.

**What are examples of training my RAB could receive?**

RABs may receive training specific to environmental restoration activities at the installation.

| RAB Training Locations | Examples of RAB Training |
|---|---|
| Meetings | Processes and vocabulary |
| Workshops | Prioritization |
| Briefings | Technology |
| Tours | Environmental restoration issues |

**Is there a training budget?**

There is no dedicated funding source specific to RAB training. Any training that RABs receive from the installation is based on the availability of funds received from the Service's ER account. RABs seeking additional support could potentially qualify for a Technical Assistance Grant (TAG) or Technical Assistance for Public Participation (TAPP) or technical advice from EPA's Technical Outreach Services for Communities.

**What are the purposes of TAGs and TAPP?**

TAGs and TAPP are two separate programs that can provide communities with independent technical assistance to interpret scientific or engineering issues related to an installation's environmental restoration.

**Are TAGs and TAPP available to all RABs?**

TAGs are provided by the EPA and are only available at NPL sites. TAPP is provided by DoD and may be available to community members of the RAB at installations participating in the DERP. TAPP must be requested by a majority of community members of the RAB.

### How do RABs receive TAGs and TAPP?

Visit the EPA Web site for more information on TAGs at http://www.epa.gov/superfund/tools/tag/

DoD's TAPP information is available on the DENIX Web site at https://www.denix.osd.mil/denix/Public/Library/Cleanup/CleanupOfc/Documents/RAB/tapp_brochure.html

A RAB must follow an application process to apply for either a TAG or TAPP before either one can be obtained.

Before applying for a TAG, a group must first confirm its eligibility to receive funding from EPA. The following table highlights the groups who are eligible and not eligible to receive TAGs. If a group is eligible they must submit a letter of intent to EPA.

| Eligible Groups for TAGs | Non-Eligible Groups for TAGs |
|---|---|
| Groups living near an NPL site | Potentially responsible parties |
| Groups affected by a release or threatened release of contaminants | Academic Institutions |
| Groups whose economic well-being, health, or enjoyment of the environment are threatened | City or county governments |
| All groups must be non-profit or working toward non-profit status | Groups established or supported by the government |

Each group of TAG applicants must acknowledge dedication of time, resources, and management of its future TAG. Additionally, groups applying for TAGs must justify how the funds will be used once the TAG is awarded and establish an accounting system for reporting costs to EPA.

TAPP applicants should notify the installation of their intent to apply for TAPP. The RAB community members must demonstrate that the technical expertise gained through TAPP is not available through another government agency and that it will benefit the community's understanding of environmental restoration activities. The RAB must agree and certify by majority to apply for TAPP before the application can be considered. Once the request has been formally submitted to the Installation Commander, the TAPP project must be reviewed to ensure it meets eligibility requirements. The following table highlights eligible and non-eligible TAPP activities.

| Eligible Activities for TAPP | Non-Eligible Activities for TAPP |
|---|---|
| Interpreting technical documents | Lawsuits or other legal activities |
| Assessing technologies | Political activities or lobbying |
| Participating in relative risk site evaluations | Collecting new data samples |
| Reviewing health risks | Epidemiological testing |
| Training | Community outreach efforts |

### Are there funding ceilings on TAG and TAPP monies?

Yes, there are funding ceilings on TAG and TAPP monies. Each RAB is eligible for funding up to $100,000 or 1% of estimated restoration costs with a maximum of $25,000 allowed per year. EPA should be contacted for more specific information regarding TAGs.

# How does a RAB operate?

**Why do RABs keep records of their activities?**

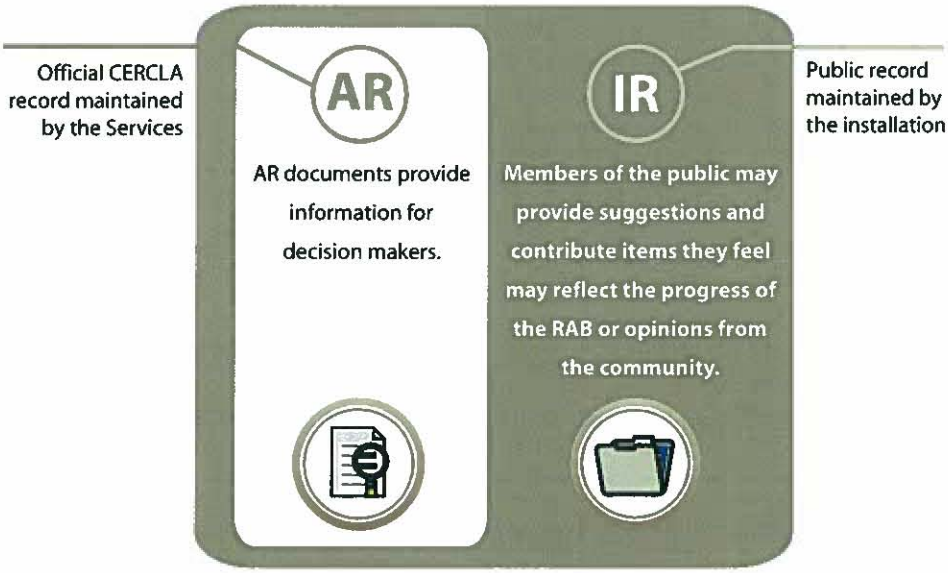
RABs keep records of their activities for historical purposes and to keep the community informed of their progress at the installation. Each year, the Office of the Secretary of Defense reports to Congress activities performed by RABs, advice they have provided, how much each RAB received for TAPP, and funds used by RABs for administrative support, which are all recorded in the administrative record and the information repository.

**What is the difference between the administrative record and the information repository?**

The administrative record (AR) is the official record of documents that form the basis for selecting a response action required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The information repository (IR) is the public record maintained by the installation that includes information beyond what is included in the AR. Members of the public may contribute comments, newspaper articles, or other items.

The IR and a copy (or copies) of the AR are generally made available at publicly accessible locations, such as libraries.




**How often are the AR and IR updated?**

The AR and IR are updated with relevant information as such information becomes available.

**Who updates and reviews the AR and IR?**

The AR is reviewed and maintained by the Component responsible for environmental restoration. Frequently the RPM is responsible for the AR. The IR is also maintained by the Component responsible official.

# 6 How does a community or installation know when a RAB has completed its work and is no longer needed?

A RAB's work is complete when there are no longer any environmental restoration activities at an installation because the installation has either reached a remedy in place or response complete, or when the community is no longer sufficiently interested. At that time the RAB should complete the documentation of its activities and begin the process of adjournment.

**What is an example that may lead a RAB to adjourn?**

An example of a situation that may lead a RAB to adjourn may include, but is not limited to, the completion of environmental restoration activities at the installation.

**How long can a RAB be adjourned?**

A RAB is considered permanently adjourned unless new conditions are discovered, which could lead a RAB to reestablish itself. Examples of these conditions are a change in the environmental restoration remedy or renewed community interest. For more information on reestablishment, please see Chapter 8: *Can an adjourned or dissolved RAB be reestablished?*

**Does a RAB have to adjourn when land is transferred to a non-DoD entity?**

If DoD relinquishes control of the cleanup and property, such as through property transfer to a non-DoD entity, then DoD will also relinquish support of the RAB. If the community wishes to continue its involvement, an independent group may be formed to continue the functions of the RAB or the community may work with EPA or the state environmental regulatory agency to establish a group equivalent to a RAB. DoD will not provide representatives to serve on these groups, nor the resources to support them when the Department is no longer involved in environmental restoration at the installation.

**Can a RAB continue operating after environmental restoration activities are complete?**

Under certain circumstances, it may be appropriate for a RAB to continue operating after environmental restoration activities are complete at an installation. For example, the RAB may meet to review the outcome of a CERCLA five-year review, or meet to discuss long-term management of land use controls implemented in connection with the environmental restoration activities at the installation.

**What do community and installation members do if a RAB has to be adjourned because there is no sustained interest, but environmental restoration activities are ongoing?**

Persons interested in ongoing environmental restoration activities should contact the installation POC to express their interest and seek information on any other community involvement programs available at the installation. Continued stakeholder feedback is important to the progress of restoration activities at installations, especially when they are ongoing. Following the decision to adjourn, the Installation Commander will also continue to evaluate community interest at least every 24 months while environmental restoration activities are still ongoing.

**Does a RAB have to be formally adjourned?**

No. A RAB may stop meeting without any formal adjournment if a community loses interest. However, the Department recommends that the RAB formally adjourn to provide community members an opportunity to participate in the decision to adjourn. Formally adjourning a RAB provides all parties with a sense of closure.

# How does a community or installation know when a RAB has completed its work and is no longer needed?

**RAB adjournment table**

| An installation may... | |
|---|---|
| **Adjourn a RAB if...** | • Record of Decision is signed for all sites,<br>• Response complete at all sites,<br>• All remedies in place,<br>• Achieved RAB goals<br>• Land transferred to a non-DoD entity, or<br>• No longer sufficient and sustained community interest. |
| **And the Installation Commander...** | Consults with, and considers all comments provided by:<br>• Community,<br>• EPA,<br>• States,<br>• Tribes, and<br>• RAB members. |
| **Then the Installation Commander may...** | Adjourn the RAB. |
| **And the Installation Commander shall...** | • Notify RAB members and the public of the decision through writing and publication in a local newspaper.<br>• Describe other ongoing public involvement opportunities.<br>• Document the rationale for adjournment in a memorandum for inclusion in the administrative record. |

# 7 What happens if a RAB becomes ineffective?

A RAB can stop its activities in one of two ways—either by adjourning or dissolving. Dissolution is appropriate when the RAB has become ineffective and is no longer fulfilling the intended purposes of advising and providing community input to the installation and decision makers on environmental restoration projects.

**What could lead a RAB to dissolve?**

RABs dissolve when members are no longer able to offer input because the RAB has developed irreconcilable issues and cannot provide input in a constructive manner as intended. Dissolution may be necessary if RAB meetings are spent discussing unrelated issues or if members are unable to collectively discuss the environmental restoration activities affecting the installation and community.

**Is dissolution permanent?**

Dissolution of a RAB may be, but is not necessarily, permanent. A RAB may be reestablished if community interest increases or if environmental restoration activities are ongoing or reoccur. If a RAB was dissolved because of irreconcilable issues, it may be reestablished if the cause for dissolution has been resolved.

**What does the community and installation do if a RAB is dissolved, but environmental restoration activities are ongoing?**

Persons interested in ongoing environmental restoration activities should contact the installation POC to express their interest and seek information on other community involvement programs available at the installation. Continued stakeholder feedback is important to the restoration progress at installations, especially when restoration activities are ongoing. The Installation Commander will continue to evaluate community interest at least every 24 months following a RAB's dissolution. If the community interest in a RAB is reignited and sustainable, it is possible for a RAB to be reestablished. (See Chapter 8 for more details on reestablishing a RAB.)

**Can a RAB receive conflict resolution support before deciding to dissolve?**

Yes. Dissolution should be a last resort to resolve a RAB's ineffectiveness. The Installation Commander should explore means to resolve the conflict such as by hiring a professional facilitator or mediator, directly addressing membership issues, or involving the installation's PA Officer.

**Is professional conflict resolution available and funded by DoD?**

Yes. An installation may provide a professional facilitator to facilitate its RAB. Facilitators are paid with environmental restoration funding.

# What happens if a RAB becomes ineffective?

**RAB dissolution table**

| An installation may... | |
|---|---|
| **Dissolve a RAB if...** | RAB no longer fulfills purpose and responsibility. |
| **And the Installation Commander...** | • Notifies co-chairs, Deputy Assistant Secretary (DAS), and ODUSD(I&E) in writing.<br>• Provides 30 day public comment period for RAB members and the public.<br>• Consults with:<br>  • Community,<br>  • EPA,<br>  • States,<br>  • Tribes, and<br>  • RAB members.<br>• Reviews comments,<br>• Provides supporting documents and recommends dissolution to the DAS. |
| **And the DAS...** | Notifies ODUSD(I&E) of the decision and rationale to approve or disapprove the dissolution request. |
| **Then the DAS may...** | Dissolve the RAB. |

# 8 Can an adjourned or dissolved RAB be reestablished?

RABs may be reestablished if they have been adjourned or dissolved. Reestablishment reflects community interest in an installation's environmental restoration activities and provides continued interaction between DoD and communities.

**Can inactivity lead a RAB to never be reestablished?**

No. It is always possible for an adjourned or dissolved RAB to be reestablished no matter how long it remained inactive. As long as there is sustained community interest and DoD continues to have control of the cleanup and/or property a RAB may always be reestablished.

**How is membership determined when a RAB is reestablished?**

The length of time the RAB has been adjourned or dissolved may affect how membership terms will be decided at reestablishment.

If a RAB is being reestablished following a short-term hiatus, the installation, community, and RAB may benefit from contacting former members and gauging their interest in resuming their positions with the RAB.

If there are members who choose not to return to the RAB following a short- or long-term break, or if the Installation Commander is no longer able to identify or contact former co-chairs and members, then the Installation Commander should follow the operating procedures and RAB Rule to establish new members and/or co-chairs. This process will follow membership procedures as if a new RAB were being established.

**How are operating procedures affected when an adjourned or dissolved RAB is reestablished?**

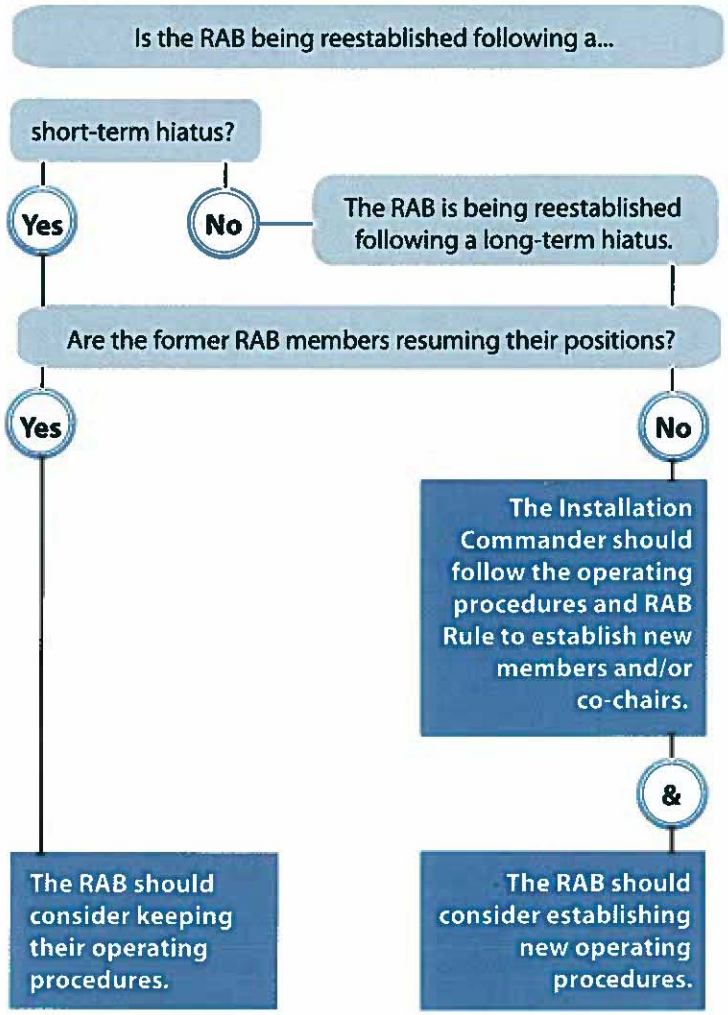
If a RAB is being reestablished following a short-term adjournment and the former RAB members will resume their positions, then the RAB should consider keeping their prior operating procedures. This will allow the RAB to resume responsibilities in the same capacity as when the RAB adjourned. If former RAB members are not interested in resuming their positions and new members are recruited into the RAB, then the new RAB members should develop new operating procedures.

If a RAB is being reestablished following a long-term adjournment with either new or former members, the RAB may want to consider if it is necessary to establish new operating procedures based on the length of time the RAB was adjourned.

If a RAB is reestablished following either a short- or long-term dissolution, it may be necessary for the RAB to develop new operating procedures once membership is determined. The RAB may want to consider inserting language into the operating procedures that will help prevent the issues that caused dissolution to occur within the original RAB.

The following flow chart provides a summary of these determinations:

# Can an adjourned or dissolved RAB be reestablished?




**Should a RAB be reestablished if dissolution conditions still exist?**

No, a RAB should not be reestablished if the dissolution conditions still exist. Reestablishing a dissolved RAB requires approval from the Component's Environmental DAS. (Please refer to Chapter 7 for conflict resolution support and availability.)

**How will the community know if there are activities that may require reestablishment at a formerly dissolved or adjourned RAB?**

The community should be informed of new activities or requirements through the community relations process. In addition, the Installation Commander will continue to evaluate community interest at least every 24 months following the decision to dissolve or adjourn a RAB. The installation will also provide status reports through mailings or local information repositories on issues that may interest the community and prompt reestablishment.

# 9 What happens to RABs at installations that are closing or have been closed under base realignment and closure (BRAC)?

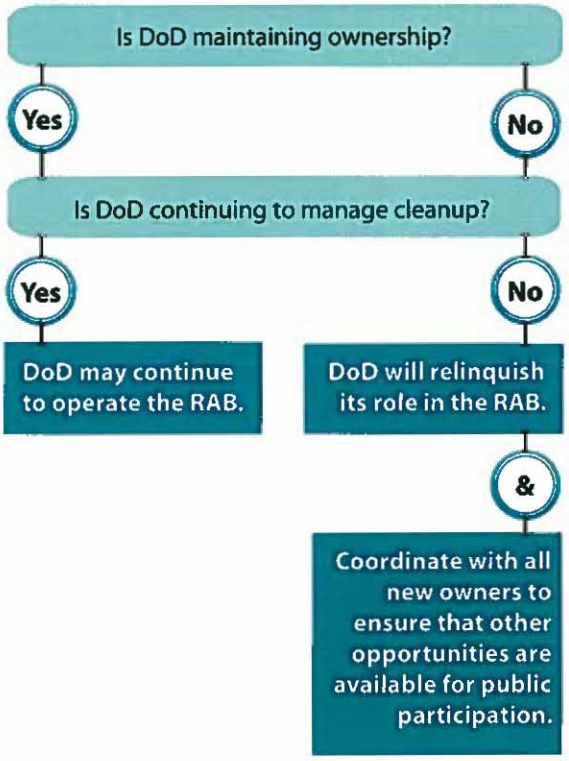
An installation may be closed or slated for closure under BRAC. When chosen for closure, DoD generally will transfer ownership of the installation to another person or entity at some point in the future. Because RABs are funded and supported by DoD, the transfer of the installation to a non-DoD entity will affect the continued existence and operation of the RAB.

**Will the RAB on a closing installation continue to operate?**

If a RAB exists at an installation that is closing under BRAC, DoD may continue to operate the RAB as long as DoD maintains ownership of the property and continues managing cleanup activities. Once the installation is transferred out of DoD control and DoD is no longer responsible for cleanup activities, DoD will relinquish its role in the RAB. DoD will work with the new owner, EPA, the tribe with jurisdiction over the property (if any), and the state environmental regulatory agency to encourage the availability of opportunities for members of the community if the community desires to continue to participate in the process.

**Can the RAB on a closed installation continue to operate if DoD transfers the installation to a new owner under early transfer and continues to conduct the cleanup?**

If DoD transfers the property but continues to manage the cleanup, DoD will continue to support the RAB. Community members should contact the new owner, EPA, the tribe with jurisdiction over the property (if any), and the state environmental regulatory agency for opportunities to provide input.



# What happens to RABs at installations that are closing or have been closed under BRAC?

**How can I provide input on environmental restoration activities after DoD has transferred ownership and cleanup responsibility?**

Once DoD has transferred ownership and environmental restoration responsibility of the installation, community members who are interested in any ongoing environmental restoration activities at the former installation should contact the installation's new owner, EPA, the tribe with jurisdiction over the property (if any), and the state environmental regulatory agency to find out about opportunities to provide input and participate in the cleanup process. For example, the new owner may agree to meet with community members on a regular basis for their input or the EPA, tribe with jurisdiction over the property (if any), or the state environmental regulatory agency may decide to continue a forum similar to the RAB.

**Can I form a group to provide input if DoD is no longer involved?**

The Department will neither sanction nor support community groups interested in providing input for environmental restoration activities once it has withdrawn from active involvement at an installation. However, there may be other venues that interested community members can use.

**Can I reestablish a RAB on a closed installation?**

A RAB that has adjourned or dissolved may not be reestablished at a closed installation if it is no longer owned by or being actively cleaned up by DoD. However, if the installation is closing and DoD still owns the property and is carrying out environmental restoration activities at the installation, then a RAB may be reestablished.

See Chapter 8: *Can an adjourned or dissolved RAB be reestablished?* for membership and operating procedure questions regarding reestablishment of a RAB.

**Can RABs be reestablished at installations that have been transferred out of DoD control?**

A RAB may be reestablished at installations that have been transferred out of DoD control only if DoD reacquires the installation or continues to perform day-to-day environmental restoration response activities.

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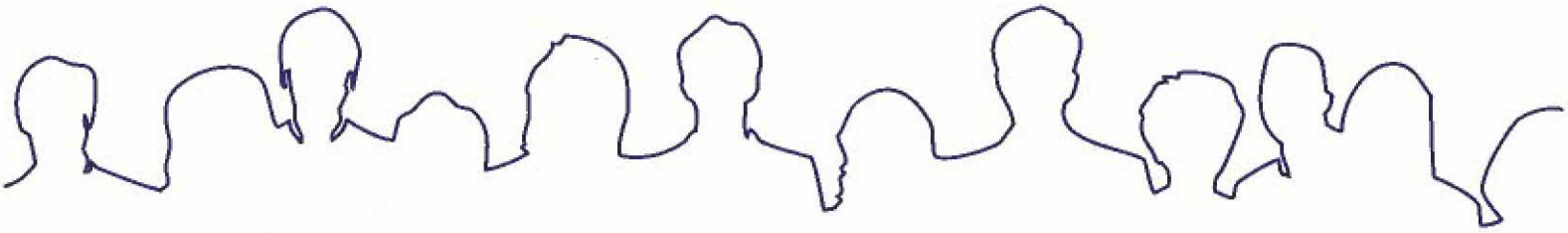
# Restoration Advisory Board Rule Handbook

Office of the Secretary of Defense

March 2007



**21 CFR Chapter I**

## PART 1271—HUMAN CELLS, TISSUES, AND CELLULAR AND TISSUE-BASED PRODUCTS

■ 1. The authority citation for 21 CFR part 1271 continues to read as follows:

**Authority:** 42 U.S.C. 216, 243, 263a, 264, 271.

■ 2. Section 1271.3 is amended by adding paragraph (d)(8) to read as follows:

### § 1271.3 How does FDA define important terms in this part?

* * * * *

(d) * * *

(8) Blood vessels recovered with an organ, as defined in 42 CFR 121.2, that are intended for use in organ transplantation and labeled ''For use in organ transplantation only.''

* * * * *

**42 CFR Chapter I**

## PART 121—ORGAN PROCUREMENT AND TRANSPLANTATION NETWORK

■ 3. The authority citation for 42 CFR part 121 continues to read as follows:

**Authority:** Sections 215, 371–376 of the Public Health Service Act (42 U.S.C. 216, 273–274d); and sections 1102, 1106, 1138, and 1871 of the Social Security Act (42 U.S.C. 1302, 1306, 1320b–8 and 1395hh).

■ 4. Section 121.2 is amended by adding a sentence at the end of the definition of ''Organ'' to read as follows::

### § 121.2 Definitions.

* * * * *

*Organ* * * * Blood vessels recovered from an organ donor during the recovery of such organ(s) are considered part of an organ with which they are procured for purposes of this part if the vessels are intended for use in organ transplantation and labeled ''For use in organ transplantation only.''

* * * * *

■ 5. Section 121.7 is amended by redesignating paragraph (e) as paragraph (f) and by adding paragraph (e) to read as follows:

### § 121.7 Identification of organ recipient.

* * * * *

(e) *Blood vessels considered part of an organ.* A blood vessel that is considered part of an organ under this part shall be subject to the allocation requirements and policies pertaining to the organ with which the blood vessel is procured until and unless the transplant center receiving the organ determines that the blood vessel is not needed for the transplantation of that organ.

Dated: April 10, 2006.

**Elizabeth M. Duke,**

*Administrator, Health Resources and Services Administration.*

Dated: February 8, 2006.

**Jeffrey Shuren,**

*Assistant Commissioner for Policy, Food and Drug Administration.*

[FR Doc. 06–4369 Filed 5–11–06; 8:45 am]

BILLING CODE 4160–01–S

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## DEPARTMENT OF DEFENSE

## Office of the Secretary

## 32 CFR Part 202

**[DoD–2006–OS–0077; 0790–AG31]**

## Department of Defense Restoration Advisory Boards

**AGENCY:** Department of Defense.

**ACTION:** Final rule.

**SUMMARY:** The Department of Defense (DoD) is promulgating the Restoration Advisory Board (RAB) rule regarding the scope, characteristics, composition, funding, establishment, operation, adjournment, and dissolution of RABs. This rule implements the requirement established in 10 U.S.C. 2705(d)(2)(A), which requires the Secretary of Defense to prescribe regulation regarding RABs. This rule is based on DoD's current policies for establishing and operating RABs, as well as the Department's experience over the past ten years.

**DATES:** This rule is effective May 12, 2006.

**FOR FURTHER INFORMATION CONTACT:** For specific questions or to request an opportunity to review the docket for this rulemaking, please contact Ms. Patricia Ferrebee, Office of the Deputy Under Secretary of Defense (Installations & Environment), 703–571–9060. This final rule, along with relevant background information, is available on the World-Wide Web at the Defense Environmental Network and Information eXchange Web site at *https://www.denix.osd.mil/rabrule.*

**SUPPLEMENTARY INFORMATION:**

**Preamble Outline**

I. Authority
II. Background
III. Summary of Significant Changes to the Final Rule
IV. Response to Comments
V. Administrative Requirements
A. Regulatory Impact Analysis Pursuant to Executive Order 12866
B. Regulatory Flexibility Act
C. Unfunded Mandates
D. Paperwork Reduction Act
E. National Technology Transfer and Advancement Act
F. Environmental Justice Requirements Under Executive Order 12898
G. Federalism Considerations Under Executive Order 13132

### I. Authority

This rule is being finalized under the authority of Section 2705 of Title 10, United States Code (U.S.C.).

### II. Background

The Department of Defense (DoD) published the Restoration Advisory Board (RAB) rule in the **Federal Register** as a proposed rule on January 28, 2005 (70 FR 4061) in 32 U.S. Code of Federal Regulations (CFR) Part 202. The public comment period for the proposed rule ended March 29, 2005. Thirty-four commenters submitted comments on the proposed rule. The preamble to this final rule consists mainly of an explanation of the Department's responses to these comments. Therefore, both this preamble and the preamble to the proposed rule should be reviewed should a question arise as to the meaning or intent of the final rule. Unless directly contradicted or superseded by this preamble to the rule or by the rule, the preamble to the proposed rule reflects DoD's intent for the rule.

The preamble to the final rule provides a discussion of each proposed rule section on which comments were received. Revisions to the proposed rule that are simply editorial or that do not reflect substantive changes are not addressed in this preamble. All comments the Department received are presented in a ''Response to Comments'' document, which has been placed in the docket for this rulemaking.

DoD recognizes the importance of public involvement at military installations. For the purposes of this rule, the term installation means operating and closing DoD installations and formerly used defense sites (FUDS) that reacquire environmental restoration. DoD has developed community involvement policies to ensure that local communities are provided the opportunity as early as possible to obtain information about, and provide input to, the decisions regarding environmental restoration activities at military installations. It is DoD policy to provide the public with the ability to participate in these activities through the establishment of RABs, among other public involvement opportunities.

Based on statutory and regulatory requirements for community

involvement and recommendations from the Federal Facilities Environmental Restoration Dialogue Committee (FFERDC), DoD has strengthened its community involvement efforts, including the RAB initiative, under its environmental restoration program. DoD believes that working in partnership with local communities and addressing the concerns of those communities early in the restoration process has enhanced its efforts under, and increased the credibility of, the environmental restoration program. The Department remains committed to involving communities near DoD installations in environmental restoration decision-making processes that may affect human health, safety and the environment.

RABs have become a significant component of DoD's efforts to increase community involvement in the environmental restoration program. RABs provide a continuous forum through which members of affected communities can provide input to an installation's ongoing environmental restoration activities. RAB members provide recommendations regarding environmental restoration to DoD. RABs are not Federal Advisory Committees and are specifically excluded from the requirements of the Federal Advisory Committee Act (10 U.S.C. 2705(d)(2)), however, DoD does meet its substantive requirements.

On September 27, 1994, DoD and the Environmental Protection Agency (EPA) jointly issued guidelines for the formation and operation of RABs (''Restoration Advisory Board Implementation Guidelines''). The guidelines describe how to implement the DoD RAB policy and identify each stakeholde's role within the RAB. The guidelines also state that existing Technical Review Committees (TRCs) or similar groups may be expanded or modified to become RABs, and that RABs may fulfill the statutory requirements for establishing TRCs (10 U.S.C. 2705(d)(1)) at installations undergoing environmental restoration).

As of September 30, 2004, DoD reported the existence of 310 active RABs across all of the Military Component's installations. Over the past several years, the number of RABs has remained fairly consistent, although the number fluctuates as some RABs adjourn and others form. RABs are one part of DOD's and the Military Components' extensive community outreach and public participation activities, which include compliance with the public notice and participation requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act, and other Federal and state environmental laws, as well as considerable consultation with DoD partners at Federal, state, and local government agencies.

A RAB may only address issues associated with environmental restoration activities under the Defense Environmental Restoration Program (DERP) at DoD installations, including activities conducted under the Military Munitions Response program (MMRP) to address unexploded ordnance, discarded military munitions, and the chemical constituents of munitions. If a RAB already exists at an installation and MMRP sites are identified, the RAB may be expanded to consider additional issues related to the MMRP sites. If the current RAB or DoD installation decides that it is necessary to involve new stakeholders, the installations should notify potential stakeholders of its intent to expand the RAB and solicit new members who have an interest in issues related to the MMRP. If there is no current RAB active at the installation and MMRP sites are identified, the installation will follow the prescribed guidance for determining sufficient community interest in forming a RAB.

The Secretary of Defense is required to ''prescribe regulations regarding the establishments, characteristics, composition, and funding of Restoration Advisory Boards'' (10 U.S.C. 2705(d)(2)(A)). DoD's issuance of the RAB rule is not, however, a precondition to the establishment of RABs (10 U.S.C. 2705(d)(2)(B)). Therefore, DoD provides the RAB rule regarding the scope, characteristics, composition, funding, establishment, operation, adjournment, and dissolution of RABs. DoD recognizes that each RAB established will be a unique organization dealing with installation-specific issues. This rule is consistent with the recommendations set forth in the FFERDC's Final Report and reflects over ten years of experience in establishing and operating RABs throughout the United States. DoD has structured this proposal to maximize flexibility for RAB members and installations nationwide.

## III. Summary of Significant Changes to the Final Rule

The Department of Defense has made no significant changes to the RAB final rule.

## IV. Response to Comments

The Department received many comments on the proposed rule. Many comments were supportive of the proposed rule and the role of RABs in public participation. In particular, commenters believed that the rule provides standards that are comprehensive yet flexible enough to address the 310 active RABs operating at DoD installations across the nation. This section contains the Department's responses to the comments received on the proposed rule, organized by the structure of the proposed and final rules.

### *A. 202.1 Purpose, Scope, Definitions, and Applicability*

The Department received several comments requesting that the scope of RABs be modified to include additional community concerns outside of environmental restoration activities under the DERP. Although RABs have been identified as a successful forum for public discussion of community concerns, DoD funds RABs with money dedicated to supporting environmental restoration activities under the DERP. The Department cannot justify the discussion of issues outside the activities of the DERP with this same funding source. DoD continues to encourage installations to assist the RABs in finding the proper venue to support a broader scope of issues. One commenter requested that the text in the preamble regarding the scope of RABs be included in the rule to clarify that RABs may address only issues associated with environmental restoration activities under the DERP. The Department has modified the rule for clarification.

The Department received one comment requesting that the definition of ''environmental restoration'' be modified to include addressing detection and disposal of unexploded ordnance and demolition and removal of unsafe buildings and structures. These activities are currently included by definition as part of environmental restoration.

The Department received three additional comments regarding definitions. One commenter requested that the definition of ''stakeholder'' be revised to include current landowners of FUDS properties. The Department has incorporated this comment into the Rule. DoD also received two comments requesting that munitions and explosives of concern (MEC) be added to the definition of environmental restoration. MEC are included in the Department's environmental restoration program, specifically, they are addressed through the MMRP. The Department has incorporated language regarding the MMRP into the final rule.

The Department received many comments in support of the purpose and scope of this rule. Two commenters agreed with the Department regarding its encouragement of open public participation. One commenter agreed with DoD's approach that the rule applies to all RABs, regardless of when they were formed.

*B. 202.2. Criteria for Establishment*

The Department received several comments requesting that the number of petitioners required to establish a RAB be reduced from 50 to 25 or 30. The Department clarifies that 50 petitioners is not the only way to establish a RAB. The petition is one of four proposed mechanisms to initiate the establishment of the RAB. Specifically, as found in § 202.2(a) of the final rule, ''a RAB should be established when there is sufficient and sustained community interest and any of the following criteria are met—the closure of an installation involves the transfer of property to the community; at least 50 local citizens petition for a RAB; Federal, state, tribal, or local government representatives request the formation of a RAB; or the installation determines the need for a RAB.'' If 25 citizens petition for a RAB in a rural or less populated area, it is reasonable to conclude that the installation would determine the need or that Federal, state, tribal, or local government representatives would request formation of a RAB.

Several commenters requested that the statement ''sufficient and sustained community interest'' be further clarified. For RABs to operate, it is necessary that there be a voluntary investment of public participation. This public willingness to be involved in a voluntary group and invest the time and energy is not found in all communities. The statement ''sufficient and sustained community interest'' indicates that there is enough willingness from the community to adequately maintain a RAB for a continued period of time. DoD recognizes that installations nationwide are unique and has avoided inflexible standards that do not meet the needs of this program. In Section 202.2 of this rule, rather than providing specific standards, the Department has outlined several tools for Installation Commanders to use in the evaluation of ''sufficient and sustained community interest'' including reviewing correspondence files and media coverage; consulting local community members and relevant government officials; and evaluating responses to communication efforts, such as notices placed in local newspapers, and, if applicable, announcements on the installation's website. Once a RAB has been established, a decline in sufficient and sustained community interest should be evident when the public has withdrawn from a role of active involvement, such as a lack of attendance at scheduled meetings.

The Department received two comments requesting modified language regarding the conversion of existing TRCs or groups that provide advice to RABs. These commenters requested that, where TRCs or similar advisory groups already exist, the TRC or similar advisory group should be incorporated or converted into a RAB, provided there is sufficient and sustained interest within the community. The Department agrees with this statement and § 202.2(c) of the final rule reflects this position.

Several commenters requested that the Installation Commander reassess community interest annually rather than bi-annually. The Department would like to make clear that the reassessment of interest conducted by the Installation Commander is not the sole mechanism to prompt the establishment or reestablishment of a RAB. This assessment is part of a layering strategy to ensure that where a community has sufficient interest, a RAB will be established; therefore, the Department has decided against making this change. Additional mechanisms found in § 202.2(a) that prompt RABs to be established or reestablished include the closure of an installation that involves the transfer of property to the community; at least 50 local citizens petition the installation for creation of a RAB; Federal, state, tribal, or local government representatives request the formation of a RAB; or the installation determines the need for a RAB based on correspondence files, media coverage, consultation of community members and relevant government officials, and responses to communication efforts, such as notices placed in local newspapers.

Two commenters suggested that local, state, and Federal agencies be involved in the Installation Commanders' biennial reassessments of the community's interest in RAB formation. The Department understands that local, state, and Federal agencies are also considered part of an installation's community, and as such, would be part of the Installation Commander's reassessment of community interest.

*C. 202.4. Composition of a RAB*

The Department received a few comments requesting further clarification and description of potential conflict of interest rules for RAB membership. DoD encourages these commenters to review the referenced documentation, the Federal Acquisition Regulation (FAR), for more information. The description provided in the rule is based on the FAR, which is the primary regulation for use by all Federal Executive Agencies in their acquisition of supplies and services with appropriated funds. The FAR can be reviewed online at *http://www.arnet.gov/far/.*

The Department received several comments requesting additional guidelines on the selection of RAB members. Conversely, several comments indicated that the guidelines provided on the selection of RAB members were too burdensome and descriptive. Recognizing that the process for selecting RAB members is sensitive in nature, DoD provided RABs with a process for selecting these members. The Department expects that specific procedures developed by the selection panel will be established by each RAB and included in its operating procedures.

The Department received several conflicting comments requesting that specific individuals be required as members of RABs and opposing comments requesting that those same individuals not be allowed membership. The Department would like to clarify that RABs are part of DoD's stakeholder involvement prgram, where all interested stakeholders are invited to participate, including individuals, health officials, tribal members, local governments, state officials, and Federal representatives. The Department does not have the authority to require officials, agencies, or individuals that are non-DoD personnel to publicly participate or requrie their membership in RABs.

Several commenters requested that the Department expand RAB membership opportunities to those individuals that do not live or work in the affected communities. This comment was not incorporated because membership is restricted to those individuals that live or work in the affected communities. RAB meetings are widely publicized and open to all for participation. Representatives of organizations and agencies who live and work outside the affected area are certainly encouraged to voice their opinions and actively participate at RAB meetings. Another commenter requested that the Department further define the term ''affected community.'' DoD encourages each RAB to define the term ''affected community'' as appropriate, and to include this term in its operating procedures for selecting RAB members.

One commenter requested revised language to transfer the role of appointing community RAB members from the Installation Commanders to community RAB members. The Department did not modify the role of the Installation Commander in this process. If the process outlined in § 202.4(a)(2)(i) of the final rule is followed, the community selects a panel of members and the Installation Commander accepts or rejects all.

One commenter recommended that the RAB member selection panel not announce the list of RAB nominees, but instead transmit the list of nominees to the Installation Commander for appointment. The Department has incorporated this comment as suggested.

One comment recommended the addition of specific criteria to be used by the Installation Commander in determining what ''fairly represents the local community.'' The Installation Commander should be able to find information on the representation of the community in each installation's community Relations Plan (CRP).

One commenter agreed that RABs should have only one representative from each government agency to prevent an inordinate representation by government and DoD officials.

*D. 202.5. Creating a Mission Statement*

One commenter indicated that the language regarding a RAB's mission statement in the preamble was inconsistent with the language provided in the proposed rule. The Department reviewed the rule and noted that the language is consistent.

*E. 202.6. Selecting Co-Chairs*

One commenter requested that the rule allow for the flexibility of multiple community co-chairs. The Department did not incoroporate this language in the rule, but recognizes that RABs are unique. One commenter asserted that it is appropriate for the community co-chair to be selected by the community RAB members as required in § 202.6(b).

*F. 202.7. Developing Operating Procedures*

One commenter stated that references to goals and objectives were inconsistent within the proposed rule. A few commenters stated that it is inappropriate for the installation co-chair to determine the goals and objectives of the RAB. The Department updated information on goals and objectives in the final rule. The rule states that, ''Clearly defiend goals and objectives for the RAB, as determined by the co-chairs in consultation with the RAB,'' should be addressed. the preamble of the proposed rule provided further detail on the type of consultation that should take place, including that, ''the DoD installation co-chair will listen to, consider, and provide specific responses to the RAB members' comments before finalizing the goals and objectives.'' The language provided clearly indicates that the RAB as a whole participates in the development of goals and objectives.

One commenter requested that there not be a requirement to publish and submit public notice of RAB meetings. This rule reflects Congressional requirements regarding public notices (see Sec. 317, Pub. L. 136–108, 117 Stat. 1393 (10 U.S.C. 2705(d)(2)); these notices may be purchased through ads in local newspapers.

One commenter requested further clarification regarding a RAB member's function to provide feedback to other community members and to keep the public informed about the proceedings of the RAB. Reaching out to the broader community is an important role of community members. Clarification of a RAB member's function could be provided in the RAB's operating procedures.

One commenter requested that RAB meetings be held off base due to increased security measures and the difficulty for some members to gain access to military installations. The Department considers additional language unnecessary because Section 202.9(a)(2) explicitly states that, ''Each RAB meeting shall be held * * * in a manner or place reasonably accessible.'' It is recommended that additional language regarding meeting locations be incorporated in the RAB's operating procedures. Another comment was received requesting child care and transportation for RAB meetings. Child care and transportation will not be provided for RAB meetings. The Department recognizes that this is a burden that RAB participants bear and appreciates their involvement despite these factors. It is important that participant involvement continue without DoD providing services that could be perceived as creating the potential for biased opinions regarding environmental restoration at DoD sites.

Another commenter stated that all actions performed by a RAB should be available for public comment to ensure an open process. The Administrative Record provides the public with an open process for reviewing the actions performed by a RAB. Also, RAB meetings are open to public participation.

One commenter recommended that public participants be afforded the opportunity to provide comments at RAB meetings. The Department has incorporated this recommendation in § 202.9(a)(3) to read, ''Open solicitation of public comments shall be permitted, and members of the public will have a designated time on the agenda to speak to the RAB committee as a whole.''

One commenter stated that the preamble and proposed rule were inconsistent in their descriptions regarding the role of the RAB in developing operating procedures. DoD has incorporated language to state that each RAB develops its own operating procedures and that the co-chairs are responsible for carrying them out.

One commenter stated that copies of all materials presented at RAB meetings, including readable maps, should be available for RAB members and the public. The Department encourages the distribution of presentation materials to RAB meeting participants and requires that these materials be included in the information repository or administrative record as appropriate and when security concerns allow.

One commenter requested that a RAB be able to exercise its authority to change or reduce the frequency of the meeting schedule as needed through its operating procedures. The Department agrees with the commenter and would like to call attention to Section 202.7(a)(5) which indicates that the operating procedures will address meeting frequency and location.

One commenter requested a specific timeframe for the distribution of meeting agendas. Another commenter requested clarification that community members play a key role in the development of the meeting agenda. The Department recommends that if a RAB is facing difficulty distributing meeting agendas, specific recommendations for a timeframe to distribute meeting agendas be made in that RAB's operating procedures. It is impractical and inflexible to set out a specific timeframe for RABs to distribute meeting agendas. The Department agrees that the community should play a key role in the development of the meeting agenda, and for this reason, this language was included as a discussion item in the RAB's operating procedures § 202.7(a)(13).

Several commenters offered supportive statements on the provisions for developing operating procedures. One commenter felt that the operating procedures would work well for existing RABs. In addition, commenters felt that it is appropriate for a RAB to develop specific operating procedures tailored to the needs of that individual RAB.

*G. 202.8. Training RAB Members*

Several comments were received pertaining to training for RAB members. A few commenters suggested that training for RABs has been inadequate. The rule has been modified to incorporate comments received that suggest improved language relevant to training. One commenter stated that training that is ''unique to and mutually benefits'' RABs is not a workable standard. The text was revised to indicate that training would be site-specific and beneficial to RAB members. The Department also expanded this section to recommend training for RAB members that includes clarification of the purpose and responsibilities of RABs, familiarization with cleanup technologies, chemicals of concern, sampling protocols, and information about the availability of independent technical advice and document review through EPA's Technical Assistance Grant (TAG) program and DoD's Technical Assistance for Public Participation (TAPP) program.

*H. 202.9. Conducting RAB Meetings*

One commenter stated that copies of all materials presented at RAB meetings, including readable maps, should be available to RAB members and the public. The Department encourages the distribution of presentation materials and readable maps to all RAB meeting participants as appropriate. However, it may not be appropriate in all cases for maps to be distributed to the community due to increased security measures at many installations.

The Department received several comments regarding the RAB voting practices. DoD would like to make clear that voting or polling members is not a requisite action of RABs. comments stated that DoD members of the RAB should not be allowed to vote and that only RAB community members should have voting privileges. The Department has modified the language in the rule to assert that each RAB member may provide advice as an individual; however, when a RAB decides to vote or poll for consensus, only community members should participate. The Department will not be obligated by votes or consider voting results to be more important than the advice of an individual RAB member.

One commenter requested clarification on whether publications listed on Web sites would meet the requirements of ''publishing meeting notices in a local newspaper of general circulation.'' The Department clarifies that publicizing meeting notices on Web sites would not meet the requirements of publishing notices in local newspapers. Posting meeting notices on Web sites is a good practice, but should be done in addition to local newspaper requirements.

The Department received a few comments regarding the procedures for recording, approving, and distributing meeting minutes. One commenter requested that transcription services be provided to record RAB meeting minutes. Another commenter requested that the rule set out a specific timeframe for the preparation and distribution of meeting minutes. In recognition of the fact that this final rule was developed to maximize flexibility for RAB members and installations nationwide, the Department has modified the language in the operating procedures Section 202.7(a)(4), recommending that each RAB develop a procedure for recording, approving, and distributing meeting minutes. Specific regulations for recording, approving, and distributing meeting minutes for all RABs nationwide were not included in this rule.

*I. 202.10. RAB Adjournment and Dissolution*

The Department received many comments regarding RAB adjournment. Many commenters disagreed with the Installation Commander having the authority to adjourn a RAB. One commenter recommended that the entire RAB agree in writing before it would be adjourned. RAB members are provided multiple opportunities for input should adjournment be considered. The Department would like to clarify that, as stated in § 202.10(a)(2)(i) of the final rule, the Installation Commander shall, ''Consult with EPA, state, tribes, RAB members, and the local community, as appropriate, regarding adjourning the RAB and consider all responses before making a final decision.'' The Installation Commander, as the responsible, accountable Department of Defense contact, will have the authority to adjourn a RAB. The requirement for consultation protects the RAB from unilateral decisions made by DoD personnel.

One commenter requested that ''with input from the community'' be added to the statement, ''an Installation Commander may adjourn.'' The Department agrees with this recommendation and has incorporated the language into § 202.10(a)(1) of the final rule.

Several other comments were received stating that RABs should not be considered for adjournment when records of decision (RODs) are signed or all remedies are in place. A commenter recommended that it would be better to adjourn when all sites reach the status of operating properly and successfully. The Department recognizes a RAB may not adjourn when all RODs are signed or all remedies are in place. Meetings should not need to be held as often, but additional input from the community may be necessary or helpful. RABs may want to decide in their operating procedures when it is appropriate or necessary to hold RAB meetings after all RODs are signed or all remedies are in place. It is not expected or required that a RAB adjourn at this time. The Department's experience has shown that after RODs are signed, communities may lose interest in the RAB. The Department provided a list of various circumstances that may lead an Installation Commander, in consultation with EPA, state, tribes, RAB members, and the local community, to adjourn a RAB.

Several commenters requested that RABs not be adjourned when the installation is transferred or cleanup privatized. The Department believes that it may be impractical for DoD to continue to operate RABs at former installations that have been transferred out of DoD control and restoration responsibilities assumed by the transferee. In such cases, after inviting input from the community and consulting with EPA (at NPL sites) and State officials, DoD will endeavor to arrange to have the transferee provide an appropriate means for the public to review and comment upon post-transfer restoration response decisions.

One commenter was concerned that decline in interest during long-term management (LTM) would lead to RAB adjournment, suggesting that the RAB may decide to meet less frequently instead of adjourning. Although lack of interest during LTM may be lead to RAB adjournment, it would not be required, and a change in meeting frequency may be sufficient. The Department recommends that RABs describe in their operating procedures when it is appropriate or necessary to hold RAB meetings during LTM. Stakeholders are also encouraged to utilize their installation's point of contact (POC) for environmental restoration activities and the installation's Community Relations Plan (CRP) to remain involved, regardless of the status of a RAB. Information regarding environmental restoration activities will be shared with the public, (e.g., local media, public meetings, and Web sites) and the POC and CRP may assist interested stakeholders in accessing this information. If the RAB is adjourned

and the community becomes interested again, the RAB can be reestablished.

A few comments were received stating that the process of adjournment and dissolution should be consistent. These processes were not made consistent, because they are employed in different situations, requiring different responses.

The Department received many comments on RAB dissolution. Most of these commenters disagreed with the Installation Commander's role in the dissolution process. The commenters requested that a RAB only be dissolved through a collective decision-making process. The Department would like to clarify that the Installation Commander does not dissolve a RAB. The decision to dissolve a RAB is raised to the Military Component's Deputy Assistant Secretary for Environment or Environment, Safety and Occupational Health. The Installation Commander's role in dissolution includes multiple consultation and notification requirements with EPA, state, tribes, RAB members, and the local community, as appropriate, before providing a recommendation to the Military Component's Deputy Assistant Secretary for Environment or Environment, Safety and Occupational Health. One commenter requested that the notification process require a fact sheet and public meeting. These actions may be taken, but are not specific requirements. Another commenter stated that the Installation Commander should provide ''responses to EPA and the state.'' The Installation Commander is required on multiple occasions to consult with EPA and the state, as appropriate.

One commenter requested that after a RAB is adjourned or dissolved, Installation Commanders should continue to reassess community interest in RAB formation not only when environmental restoration activities are ongoing, but also when these activities may start up again. This comment is incorporated in the rule § 202.10(c).

One commenter stated that the process for reestablishing a previously adjourned or dissolved RAB is too time-intensive for communities that identify immediate health or environmental concerns. The Department would like to clarify that RABs are only one component of an installation's community outreach program. CERCLA (42 U.S.C. 9601, et seq.) and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300) require additional community involvement activities; therefore, an installation's RAB would not be a community's only method of addressing immediate health or environmental concerns. If an installation identifies immediate health or environmental concerns, the installation should engage appropriate stakeholders by notifying them and holding public meetings.

*J. 202.12. Administrative Support and Eligible Expenses*

The Department received several comments regarding the funding of RABs. A few commenters opposed language stating that RABs are ''subject to the availability of funds.'' Another commenter stated that the Department should be required to report in local papers eligible expenses that are requested for RAB formation and operation that are not provided. One commenter requested that the Department clarify who pays for a RAB's administrative cost. Another commenter requested that the Department add informational materials relating to cleanup to the eligible administrative expenses. Regarding the comments that RABs should not be ''subject to the availability of funds,'' it should be clarified that the Department is authorized funding from Congress. DoD relies on this funding to support all programs; therefore, RABs remain ''subject to the availability of funds.'' The Department does not require RABs to report in local papers eligible expenses that are provided for the operation and formation of RABs. This type of discussion is more appropriately conducted at RAB meetings. To clarify the responsibility for a RAB's administrative costs, the Department refers this commenter to § 202.12(a) which states that the ''installation shall provide administrative support to establish and operate a RAB.'' The Department directs the next commenter to § 202.12(b)(7) which states that eligible administrative expenses include, ''preparation of meeting agenda materials,'' which addresses the request for eligible expenses, to include creating information materials for RAB members as it relates to the cleanup.

*K. 202.13. Technical Assistance for Public Participation*

One commenter stated that there was insufficient text regarding TAPP and suggested that section 202.13 be moved forward in the rule. The Department published a rule on TAPP that is located in 32 CFR Part 203; DoD did not expand section 202.13 or reorganize the RAB rule. Another commenter recommended that the reference to ''in-house assistance to discuss technical issues'' be removed from the TAPP section and placed in the training section. The Department agrees and removed this language from the TAPP section. A final comment regarding the TAPP section suggested that its language was misleading and vague, because it was not identical to EPA's Technical Assistance Grant program. The Department's TAPP program is intended to be a different program; they are not identical.

*L. 202.14. Documenting and Reporting Activities and Expenses*

The Department received two comments requesting a change in language where it is stated that the information repository be available at a ''single, publicly accessible location.'' The basis for this comment was that many installations may be located in more than one town, city, or county. The Department agrees that the language in the proposed rule was limiting and has removed the reference to a ''single'' location in the final rule.

A few commenters requested that copies of each RAB's activities and administrative expenses be provided to the RAB directly or be maintained in the information repository. RAB minutes should be maintained in the information repository. The Military Components are required to track and report this information to fulfill statutory annual reporting requirements established in 10 U.S.C. 2706(a)(2)(j). This Annual Report to Congress is made publicly available. Individuals seeking installation-specific data should request this information from the installation co-chair. If the installation co-chair is not responsive, the request can be referred to the Installation Commander.

*M. Web sites*

Several commenters stated that the final rule should include language encouraging the use of Web sites as a communication tool for RABs. The Department agrees that Web sites are a valid and useful communication tool. Throughout the rule, DoD included language to reflect our encouragement and acceptance of this method of communicating. One commenter stated that each RAB should be required to set up and maintain a Web site. Although the Department encourages the use of Web sites in RAB communications, the Department declined to require that each RAB set up and maintain a Web site.

*N. Role of an Installation Co-chair*

The Department received several comments regarding the role of installation co-chairs in RABs. One commenter suggested that the concept of co-chairs was impractical and that the ''installation co-chair'' be replaced with

an ''installation representative.'' One commenter stated that the installation co-chairs had too much control in the formation and operation of RABs. Another commenter felt that it was inappropriate for the delegation of the installation co-chair role to go down the chain of command to civilian staff. Another commenter requested clarification on whether contractors could act on behalf of the installation co-chair. The concept of co-chairs is not considered impractical based on RABs functioning appropriately with community and installation co-chairs for the last 10 years. Although some have stated that the role of an installation co-chair unfairly exceeds that of a community co-chair, great lengths have been taken not only to ensure fairness, but also to clarify the important balance between the installation and community co-chair. Government officials are responsible and must be the ones to make cleanup decisions for action on government lands.

*O. Consistency*

The Department received several comments requesting that language provided in the preamble be consistent with language in the rule. The Department has reviewed and updated the final rule as appropriate.

*P. Consideration of Comments*

The Department received several comments regarding a RAB's process for considering comments. One commenter requested additional language to discuss ''careful consideration.'' Another commenter recommended that language be added for comments to be considered as a consensus, as well as from individual RAB members. One commenter stated the installation be required to respond to all comments. This rule does not preclude any of the suggested comments. Recognizing that RABs are unique to each installation, the Department advises that RABs develop a process for considering comments in their operating procedures. See § 202.7(a)(10). Although collective comments can be considered, the Department will not be obligated by the consensus. Comments will also be considered on an individual basis to ensure that every commenter is recognized.

*Q. Comment Period*

One commenter requested that the comment period be extended in the **Federal Register** to ensure that all RABs were notified when the Register opened. Although the Department did not extend the comment period on the proposed rule, the rule was sent to all RABs prior to being published as a proposed rule. For informational purposes, DoD mailed the draft proposed rule to over 700 RAB co-chairs. Additionally, these 700 RAB co-chairs were provided copies of the proposed rule when it was published in the **Federal Register**.

*R. Accountability*

The Department received many comments requesting that there be a mechanism to ensure the accountability of DoD actions on a RAB, specifically those actions of the installation co-chair. Several commenters stated that they were unaware of any oversight to ensure that the installation co-chairs were ''making a reasonable effort to ensure that a RAB performs its role as effectively as possible.'' Other commenters requested a method of redress should the RAB not be conducted in accordance with the rule. The Department has worked hard to ensure that chairmanship of the RAB is shared by the installation and community. The Department provides oversight for the RAB program, through the chain of command, to each Component's headquarters and to the Deputy Assistant Secretary. If DoD personnel take inappropriate actions, these actions would be addressed through the chain of command.

## V. Administrative Requirements

*A. Regulatory Impact Analysis Pursuant to Executive Order 12866*

Executive Order 12866 (58 FR 51735; October 4, 1993) requires each agency taking regulatory action to determine whether that action is ''significant.'' The agency must submit any regulatory actions that qualify as ''significant'' to the Office of Management and Budget (OMB) for review, assess the costs and benefits anticipated as a result of the proposed action, and otherwise ensure that the action meets the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may (1) have an annual effect on the economy of $100 million or more or adversely effect in a material way the economy, a sector of the economy; productivity; competition; jobs; the environment; public health or safety; or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The Department has determined that the rule is not ''significant'' under Executive Order 12866 because it is not likely to result in a rule that will meet any of the four prerequisites.

(1) The rule will not have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy; a sector of the economy; productivity; competition; jobs; the environment; public health or safety; or state, local, or tribal governments or communities.

(2) The rule will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.

(3) The rule will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.

(4) The rule will not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

*B. Regulatory Flexibility Act*

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), requires that an agency conduct a regulatory flexibility analysis when publishing a notice of rulemaking for any proposed or final rule. The regulatory flexibility analysis determines the impact of the rule on small entities (*i.e.,* small businesses, small organizations, and small governmental jurisdictions). SBREFA amended the Regulatory Flexibility Act to require Federal agencies to state the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

The Department hereby certifies that the rule will not have a significant economic impact on a substantial number of small entities. The primary effect of the RAB rule will be to increase community involvement in DoD's environmental restoration program.

*C. Unfunded Mandates*

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, requires Federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Section 202 of the UMRA requires that, prior to promulgating proposed and

final rules with ''Federal mandates'' that may result in expenditures by state, local, and tribal governments, in the aggregate or by the private sector, of $100 million or more in any one year, the agency must prepare a written statement, including a cost-benefit analysis of the rule. Under Section 205 of the UMRA, DoD must also identify and consider a reasonable number of regulatory alternatives to the rule and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule.

Certain exceptions to Section 205 exist. For example, when the requirements of Section 205 are inconsistent with applicable law, Section 205 does not apply. In addition, an agency may adopt an alternative other than the least costly, most cost-effective, or least burdensome in those cases where the agency publishes the final rule with an explanation of why such an alternative was not adopted. Section 203 of the UMRA requires that the agency develop a small government agency plan before establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments. The small government agency plan must include procedures for notifying potentially affected small governments, providing officials of affected small governments with the opportunity for meaningful and timely input in the development of regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The Department has determined that the rule does not contain a Federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments in the aggregate, or by the private sector in any one year. The term ''Federal mandate'' means any provision in statute or regulation or any Federal court ruling that imposes ''an enforceable duty'' upon state, local, or tribal governments, and includes any condition of Federal assistance or a duty arising from participation in a voluntary Federal program that imposes such a duty. The rule does not contain a Federal mandate because it imposes no enforceable duty upon state, tribal, or local governments.

*D. Paperwork Reduction Act*

The Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.,* prohibits a Federal agency from conducting or sponsoring a collection of information that requires OMB approval, unless such approval has been obtained and the collection request displays a currently valid OMB control number. Nor is any person required to respond to an information collection request that has not complied with the PRA. The term ''collection of information'' includes collection of information from ten or more persons. The Department has determined that the PRA does not apply to this rule because, although the Department will collect information on RABs, it does not mandate that any person supply information. Therefore, the PRA does not apply to the rule.

*E. National Technology Transfer and Advancement Act*

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, Section 12(d) (15 U.S.C. 272 note), directs Federal agencies to use technical standards developed by voluntary consensus standards bodies in its regulatory activities, except in those cases in which using such standards would be inconsistent with applicable law or otherwise impractical. ''Technical standards'' means performance-based or design-specific technical specifications and related management systems practices. Voluntary consensus means that the technical standards are developed or adopted by voluntary consensus standards organizations. In those cases in which a Federal agency does not use voluntary consensus standards that are available and applicable, the agency must provide OMB with an explanation.

The rule does not involve performance-based or design-specific technical specifications or related management systems practices. The rule is therefore in compliance with the NTTAA.

*F. Environmental Justice Requirements Under Executive Order 12898*

Under Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,'' a Federal agency must, where practicable and appropriate, collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, Federal agencies must then use this information to determine whether their activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

At this time, the Department believes that no action will directly result from the rule that will have a disproportionately high and adverse human health and environmental effect on any segment of the population.

*G. Federalism Considerations Under Executive Order 13132*

Executive Order 13132, entitled ''Federalism'' (64 FR 43255; August 10, 1999), establishes certain requirements for Federal agencies issuing regulations, legislative comments, proposed legislation, or other policy statements or actions that have ''Federal implications.'' Under the Executive Order, any of these agency documents or actions have ''Federal implications'' when they have ''substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.'' Section 6 of the Executive Order prohibits any agency from issuing a regulation that has Federal implications, imposes substantial direct compliance costs on state and local governments, and is not required by statute. Such a regulation may be issued only if the Federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or the agency consults with state and local officials early in the process of developing the proposed regulation. Further, a Federal agency may issue a regulation that has federalism implications and preempts state law only if the agency consults with state and local officials early in the process of developing the proposed regulation.

The rule does not have federalism implications because it will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. The statute authorizing the Department's environmental restoration program, 10 U.S.C. 2701, clearly defines the rule and responsibilities of the Department with respect to state and local governments.

**List of Subjects in 32 CFR Part 202**

Administrative practice and procedure, Environmental protection—restoration, Federal buildings and facilities, Organization and functions (government agencies).

■ Title 32 of the Code of Federal Regulations, Chapter I, Subchapter M, is

amended by adding part 202 to read as follows:

## PART 202—RESTORATION ADVISORY BOARDS

### Subpart A—General Requirements

Sec.
202.1 Purpose, scope, definitions, and applicability.
202.2 Criteria for establishment.
202.3 Notification of formation of a restoration advisory board.
202.4 Composition of a RAB.

### Subpart B—Operating Requirements

202.5 Creating a mission statement.
202.6 Selecting co-chairs.
202.7 Developing operating procedures.
202.8 Training RAB members.
202.9 Conducting RAB meetings.
202.10 RAB adjournment and dissolution.
202.11 Documenting RAB activities.

### Subpart C—Administrative Support, Funding, and Reporting Requirements

202.12 Administrative support and eligible expenses.
202.13 Technical assistance for public participation.
202.14 Documenting and reporting activities and expenses.

**Authority:** 5 U.S.C. 551 *et seq* and 10 U.S.C. 2705

## Subpart A—General Requirements

### § 202.1 Purpose, scope, definitions, and applicability.

(a) *Purpose.* The purpose of this part to establish regulations regarding the scope, characteristics, composition, funding, establishment, operation, adjournment, and dissolution of Restoration Advisory Boards (RABs).

(b) *Purpose and scope of responsibilities of RABs.* The purpose of a RAB is to provide:

(1) An opportunity for stakeholder involvement in the environmental restoration process at Department of Defense (DoD) installations. Stakeholders are those parties that may be affected by environmental restoration activities at the installation.

(2) A forum for the early discussion and continued exchange of environmental restoration program information between DoD installations, regulatory agencies, tribes, and the community.

(3) An opportunity for RAB members to review progress, participate in a dialogue with, and provide comments and advice to the installation's decision makers concerning environmental restoration matters. Installations shall give careful consideration to the comments provided by the RAB members.

(4) A forum for addressing issues associated with environmental restoration activities under the Defense Environmental Restoration Program (DERP) at DoD installations, including activities conducted under the Military Munitions Response program (MMRP) to address unexploded ordnance, discarded military munitions, and the chemical constituents of munitions. Environmental groups or advisory boards that address issues other than environmental restoration activities are not governed by this regulation.

(c) *Definitions.* In this section:

(1) *Community RAB member* shall mean those individuals identified by community members and appointed by the Installation Commander to participate in a RAB who live and/or work in the affected community or are affected by the installation's environmental restoration program.

(2) *Environmental restoration* shall include the identification, investigation, research and development, and cleanup of contamination from hazardous substances, including munitions and explosives of concern, and pollutants and contaminants.

(3) *Installation* shall include active and closing DoD installations and formerly used defense sites (FUDS).

(4) *Installation Commander* shall include the Commanding Officer or the equivalent of a Commanding Officer at active installations; the Installation Commander or other Military Department officials who close the facility and are responsible for its disposal at Base Realignment and Closure (BRAC) installations; or the U.S. Army Corps of Engineers Project Management District Commander at FUDS.

(5) *Public participants* shall include anyone else who may want to attend the RAB meetings, including those individuals that may not live and/or work in the affected community or may not be affected by the installation's environmental restoration program but would like to attend and provide comments to the RAB.

(6) *Stakeholders* are those parties that may be affected by environmental restoration activities at an installation, including family members of military personnel and civilian workers, local and state governments and EPA for NPL properties, tribal community members and indigenous people, and current landowners, as appropriate.

(7) *Tribes* shall mean any Federally-recognized American Indian and Alaska Native governments as defined by the most current Department of Interior/Bureau of Indian Affairs list of tribal entities published in the **Federal Register** pursuant to Section 104 of the Federally Recognized Tribe Act.

(8) *RAB adjournment* shall mean when an Installation Commander, in consultation with the Environmental Protection Agency (EPA), state, tribes, RAB members, and the local community, as appropriate, close the RAB based on a determination that there is no longer a need for a RAB or when community interest in the RAB declines.

(9) *RAB dissolution* shall mean when an Installation Commander, with the appropriate Military Component's Environmental Deputy Assistant Secretary's approval, disbands a RAB that is no longer fulfilling the intended purpose of advising and providing community input to an Installation Commander and decision makers on environmental restoration projects. Installation Commanders are expected to make every reasonable effort to ensure that a RAB performs its role as effectively as possible and a concerted attempt is made to resolve issues that affect the RAB's effectiveness. There are circumstances, however, that may prevent a RAB from operating effectively or fulfilling its intended purpose.

(d) *Other public involvement activities.* A RAB should complement other community involvement efforts occurring at an installation; however, it does not replace other types of community outreach and participation activities required by applicable laws and regulations.

(e) *Applicability of regulations to existing RABs.* The regulations in this part apply to all RABs regardless of when the RAB was established.

(f) *Guidance.* The Office of the Deputy Under Secretary of Defense for Environment shall issue guidance regarding the scope, characteristics, composition, funding, establishment, operation, adjournment, and dissolution of RABs pursuant to this rule. The issuance of any such guidance shall not be a precondition to the establishment of RABs of the implementation of this part.

### § 202.2 Criteria for establishment.

(a) *Determining if sufficient interest warrants establishing a RAB.* A RAB should be established when there is sufficient and sustained community interest, and any of the following criteria are met:

(1) The closure of an installation involves the transfer of property to the community,

(2) At least 50 local citizens petition the installation for creation of a RAB.

(3) Federal, state, tribal, or local government representatives request the formation of a RAB, or

(4) The installation determines the need for a RAB. To determine the need for establishing a RAB, an installation should:

(i) Review correspondence files,

(ii) Review media coverage,

(iii) Consult local community members,

(iv) Consult relevant government officials, and

(v) Evaluate responses to communication efforts, such as notices placed in local newspapers and, if applicable, announced on the installations Web site.

(b) *Responsibility for forming or operating a RAB.* The installation shall have lead responsibility for forming and operating a RAB.

(c) *Converting existing Technical Review Committees (TRCs) to RABs.* In accordance with 10 U.S.C. 2705(d)(1), a RAB may fulfill the requirements of 10 U.S.C. 2705(c), which directs DoD to establish TRCs. DoD recommends that, where TRCs or similar advisory groups already exist, the TRC or similar advisory group be considered for conversion to a RAB, provided there is sufficient and sustained interest within the community.

### § 202.3 Notification of formation of a Restoration Advisory Board.

Prior to establishing a RAB, an installation shall notify potential stakeholders of its intent to form a RAB. In announcing the formation of a RAB, the installation should describe the purpose of a RAB and discuss opportunities for membership.

### § 202.4 Composition of a RAB.

(a) *Membership.* At a minimum, each RAB shall include representatives from DoD and the community. RAB community membership shall be well balanced and reflect the diverse interests within the local community.

(1) *Government representation.* The RAB may also include representatives from the EPA at the discretion of the Regional Administrator of the appropriate EPA Regional Office, and state, tribal, and local governments, as appropriate. At closing installations where BRAC Cleanup Teams (BCT) exist, representatives of the BCT may also serve as the government representative(s) of the RAB. The Department encourages individuals and agencies involved with BRAC to participate in RABs at closing installations.

(2) *Community representation.* Community RAB members should live and/or work in the affected community or be affected by the installation's environmental restoration program. While DoD encourages individual tribal members to participate on RABs, RABs in no way replace or serve as a substitute forum for the government-to-government relationship between DoD and Federally-recognized tribes.

(i) To support the objective selection of community RAB members, installations will use a selection panel comprised of community members to nominate community RAB members. The Installation Commander, in consultation with the state, tribal, and local governments and EPA, as appropriate, will identify community interests and solicit names of individuals who can represent these interests on the selection panel. The panel will establish the procedures for nominating community RAB members, the process for reviewing community interest, and criteria for selecting community RAB members. The panel will transmit the list of RAB nominees to the Installation Commander for appointment.

(ii) Following the panel nominations, the Installation Commander, in consultation with the state and EPA, as appropriate, will review the nominations to ensure the panel fairly represents the local community. The Installation Commander will accept or reject the entire list of RAB nominees for appointment.

(b) *Chairmanship.* Each RAB established shall have two co-chairs, one representing the Dod installation and the other the community. Co-chairs shall be responsible for directing and managing the RAB operations.

(c) *Compensation for community members of the RAB.* The community co-chair and community RAB members serve voluntarily. DoD will not compensate them for their participation.

## Subpart B—Operating Requirements

### § 202.5 Creating a mission statement.

The installation and community co-chair, in conjunction with the RAB members, shall determine the RAB mission statement in accordance with guidance provided by the DoD Components.

### § 202.6 Selecting co-chairs.

(a) *DoD installation co-chair.* The DoD installation co-chair shall be selected by the Installation Commander or equivalent, or in accordance with Military Component-specific guidance.

b. *Community co-chair.* The community co-chair shall be selected by the community RAB members.

### § 202.7 Developing operating procedures.

Each RAB shall develop a set of operating procedures and the co-chairs are responsible for carrying them out. Areas that should be addressed in the procedures include:

(a) Clearly defined goals and objectives for the RAB, as determined by the co-chairs in consultation with the RAB,

(b) Meeting announcements,

(c) Attendance requirements of members at meetings,

(d) Development, approval and distribution procedures for the minutes of RAB meetings,

(e) Meeting frequency and location,

(f) Rules of order,

(g) The frequency and procedures for conducting training,

(h) Procedures for selecting or replacing co-chairs and selecting, replacing, or adding RAB members,

(i) Specifics on the size of the RAB, periods of membership, and co-chair length of service,

(j) Review of public comments and responses,

(k) Participation of the general public,

(l) Keeping the public informed about proceedings of the RAB,

(m) Discussing the agenda for the next meeting and issues to be addressed, and

(n) Methods for resolving disputes.

### § 202.8 Training RAB members.

Training is not required for RAB members. It may be advisable, however, to provide RAB members with some initial orientation training regarding the purpose and responsibilities of the RAB, familiarization on cleanup technologies, chemicals of concern, and sampling protocols, as well as informing them of the availability of independent technical advice and document review through EPA's Technical Assistant Grant program and DoD's Technical Assistance for Public Participation (TAPP) program, to enable them to fulfill their responsibilities. Training should be site-specific and beneficial to RAB members. The DoD installation may also provide in-house assistance to discuss technical issues. Funding for training activities must be within the scope of administrative support for RABs, as permitted in § 202.12.

### § 202.9 Conducting RAB meetings.

(a) *Public participation.* RAB meetings will be open to the public.

(1) The installation co-chair shall prepare and publish a timely public notice in a local newspaper of general circulation announcing each RAB meeting. If applicable, it is recommended that the meeting also be announced on the installation's Web site.

(2) Each RAB meeting shall be held at a reasonable time and in a manner or

place reasonably accessible to and usable by all participants, including persons with disabilities.

(3) Presentation materials and readable maps should be provided to all meeting participants as appropriate.

(4) Interested persons shall be permitted to attend, appear before, or file statements with any RAB, subject to such reasonable rules or regulations as may be prescribed. Open solicitation of public comments shall be permitted and members of the public will have a designated time on the agenda to speak to the RAB committee as a whole.

(b) *Nature of discussions.* The installation shall give careful consideration to all comments provided by individual RAB members. Group consensus is not a prerequisite for RAB input. Each member of the RAB may provide advice as an individual; however, when a RAB decides to vote or poll for consensus, only community members should participate.

(c) *Meeting minutes.* The installation co-chair, in coordination with the community co-chair, shall prepare the minutes of each RAB meeting.

(1) The RAB meeting minutes shall contain a record of the persons present; a complete and accurate description of matters discussed and comments received; and copies of all reports received, issued, or approved by the RAB. The accuracy of all minutes shall be certified by the RAB co-chairs. RAB minutes should be kept in the information repository; however, if the RAB minutes reflect decision-making, copies should also be documented in the Administrative Record.

(2) The records, reports, minutes, appendixes, working papers, drafts, studies, agenda, or other documents that were made available to or prepared for or by each RAB shall be available for public inspection and copying at a publicly accessible location, such as the information repositories established under the installation's Community Relations Plan, a public library, or in the offices of the installation to which the RAB reports, until the RAB ceases to exist.

**§ 202.10 RAB adjournment and dissolution.**

(a) *RAB adjournment.*—(1) *Requirements for RAB adjournment.* An Installation Commander may adjourn a RAB with input from the community when there is no longer a need for a RAB or when community interest in the RAB no longer exists. An Installation Commander may consider adjourning the RAB in the following situations:

(i) A record of decision has been signed for all DERP sites on the installation,

(ii) An installation has achieved response complete at all sites and no further environmental restoration decisions are required,

(iii) An installation has all remedies in place,

(iv) The RAB has achieved the desired end goal as defined in the RAB Operating Procedures,

(v) There is no longer sufficient, sustained community interest, as documented by the installation with RAB community members and community-at-large input, to sustain the RAB. The installation shall continue to monitor for any changes in community interest that could warrant reactivating or reestablishing the RAB, or

(vi) The installation has been transferred out of DoD control and day-to-day responsibility for making restoration response decisions has been assumed by the transferee.

(2) *Adjournment procedures.* If the Installation Commander is considering adjourning the RAB, the Installation Commander shall:

(i) Consult with EPA, state, tribes, RAB members, and the local community, as appropriate, regarding adjourning the RAB and consider all responses before making a final decision.

(ii) Document the rationale for adjournment in a memorandum in a memorandum for inclusion in the Administrative Record, notify the public of the decision through written notice to the RAB members and through publication of a notice in a local newspaper of general circulation, and describe other ongoing public involvement opportunities that are available if the Installation Commander decides to adjourn the RAB.

(b) *RAB dissolution.*—(1) *Requirements for RAB dissolution.* An Installation Commander may recommend dissolution of a RAB when a RAB is no longer fulfilling the intended purpose of advising and providing community input to an Installation Commander and decision makers on environmental restoration projects as described in § 202.1(b).

(2) *Dissolution procedures.* If the Installation Commander is considering dissolving the RAB, the Installation Commander shall:

(i) Consult with EPA, state, tribal and local government representatives, as appropriate, regarding dissolving the RAB.

(ii) Notify the RAB community co-chair and members in writing of the intent to dissolve the RAB and the reasons for doing so and provide the RAB members 30 days to respond in writing. The Installation Commander shall consider RAB member responses, and in consultation with EPA, state, tribal and local government representatives, as appropriate, determine the appropriate actions.

(iii) Notify the public of the proposal to dissolve the RAB and provide a 30-day public comment period on the proposal, if the Installation Commander decides to proceed with dissolution. At the conclusion of the public comment period, the Installation Commander will review the public comments, consult with EPA, state, tribal and local government representatives, as appropriate, and, if the Installation Commander still believes dissolution is appropriate, render a recommendation to that effect.

(iv) Send the recommendation, responsiveness summary, and all supporting documentation via the chain-of-command to the Military Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval. The Military Component's Environmental Deputy Assistant Secretary (or equivalent) shall notify the Office of the Deputy Under Secretary of Defense (Installations & Environment) (or equivalent) of the decision to approve or disapprove the request to dissolve the RAB and the rationale for that decision.

(v) Document the recommendation, responsiveness summary, and the rationale for dissolution in a memorandum for inclusion in the Administrative Record, notify the public of the decision through written notice to the RAB members and through publication of a notice in a local newspaper of general circulation and describe other ongoing public involvement opportunities that are available, once the Military Component's Environmental Deputy Assistant Secretary (or equivalent) makes a final decision.

(c) *Reestablishing an adjourned or dissolved RAB.* An Installation Commander may reestablish an adjourned or dissolved RAB if there is sufficient and sustained community interest in doing so, and there are environmental restoration activities still ongoing at the installation or that may start up again. Where a RAB is adjourned or dissolved and environmental restoration activities continue, the Installation Commander should reassess community interest at least every 24 months. When all environmental restoration decisions have been made and required remedies are in place and are properly operating

at an installation, reassessment of the community interest for reestablishing the RAB is not necessary. When additional environmental restoration decisions have to be made resulting from subsequent actions, such as long-term management and five-year reviews, the installation will reassess community interest for reestablishing the RAB. Where the reassessment finds sufficient and sustained community interest at previously adjourned or dissolved RABs, the Installation Commander should reestablish a RAB. Where the reassessment does not find sufficient and sustained community interest in reestablishing the RAB, the Installation Commander shall document in a memorandum for the record the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation. If there is interest in reestablishment at a previously dissolved RAB, but the Installation Commander determines that the same conditions exist that required the original dissolution, he or she will request, through the chain-of-command to the Military Component's Deputy Assistant Secretary, an exception to reestablishing the RAB. If those conditions no longer exist at a previously dissolved RAB, and there is sufficient and sustained interest in reestablishment, the Installation Commander should recommend to the Deputy Assistant Secretary that the RAB be reestablished. The Deputy Assistant Secretary will take the Installation Commander's recommendation under advisement and may approve that RAB for reestablishment.

(d) *Public comment.* If the Installation Commander intends to recommend dissolution of a RAB or reestablish a dissolved RAB, the Installation Commander shall notify the public of the proposal to dissolve or reestablish the RAB and provide a 30-day public comment period on the proposal. At the conclusion of the public comment period, the Installation Commander shall review public comments; consult with EPA and state, tribal, or local government representatives, as appropriate; prepare a responsiveness summary; and render a recommendation. The recommendation, responsiveness summary, and all supporting documentation should be sent via the chain-of-command to the Military Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval. The Installation Commander shall notify the public of the decision.

**§ 202.11 Documenting RAB activities.**

(a) The installation shall document information on the activities of a RAB in the Information Repository. These activities shall include, but are not limited to:

(1) Installation's efforts to survey community interest in forming a RAB,

(2) Steps taken to establish a RAB where there is sufficient and sustained community interest,

(3) How the RAB related to the overall community involvement program, and

(4) Steps taken to adjourn, dissolve, or reestablish the RAB.

(b) When RAB input has been used in decision-making, it should be documented as part of the Administrative Record.

## Subpart C—Administrative Support, Funding, and Reporting Requirements

**§ 202.12 Administrative support and eligible expenses.**

(a) *Administrative support.* Subject to the availability of funding, the installation shall provide administrative support to establish and operate a RAB.

(b) *Eligible administrative expenses for a RAB.* The following activities specifically and directly associated with establishing and operating a RAB shall qualify as an administrative expense of a RAB:

(1) RAB establishment.

(2) Membership selection.

(3) Training if it is:

(i) Site specific and benefits the establishment and operation of a RAB.

(ii) Relevant to the environmental restoration activities occurring at the installation.

(4) Meeting announcements.

(5) Meeting facilities.

(6) Meeting facilitators, including translators.

(7) Preparation of meeting agenda materials and minutes.

(8) RAB-member mailing list maintenance and RAB materials distribution.

(c) *Funding.* Subject to the availability of funds, administrative support to RABs may be funded as follows:

(1) At active installations, administrative expenses for a RAB shall be paid using funds from the Military Component's Environmental Restoration accounts.

(2) At BRAC installations, administrative expenses for a RAB shall be paid using BRAC funds.

(3) At FUDS, administrative expenses for a RAB shall be paid using funds from the Environmental Restoration account for the Formerly Used Defense Sites program.

**§ 202.13 Technical assistance for public participation.**

Community members of a RAB or TRC may request technical assistance for interpreting scientific and engineering issues with regard to the nature of environmental hazards at the installation and environmental restoration activities conducted, or proposed to be conducted, at the installation in accordance with 10 U.S.C. 2705(e) and the TAPP regulations located in 32 CFR Part 203.

**§ 202.14 Documenting and reporting activities and expenses.**

The installation at which a RAB is established shall document the activities and meeting minutes and record the administrative expenses associated with the RAB in the information repository at a publicly accessible location. Installations shall use internal department and Military Component-specific reporting mechanisms to submit required information on RAB activities and expenditures.

Dated: May 1, 2006.

**L.M. Bynum,**

*OSD Federal Register Liaison Officer, Department of Defense.*

[FR Doc. 06–4246 Filed 5–11–06; 8:45 am]

BILLING CODE 5001–06–M

## DEPARTMENT OF HOMELAND SECURITY

## Coast Guard

## 33 CFR Part 165

**[CGD09–06–024]**

**RIN 1625–AA00**

## Safety Zone; Rockets for Schools, Sheboygan, WI

**AGENCY:** Coast Guard, DHS.

**ACTION:** Temporary final rule.

**SUMMARY:** The Coast Guard is establishing a temporary safety zone in Sheboygan, WI, for the Rockets for Schools model rocket launch. This safety zone is needed to protect personnel and property from hazards associated with the storage, preparation, launching and recovery of model rockets, as well as for protection of the general public and vessels near where the rockets are being launched. Entry into this zone is prohibited unless authorized by the Captain of the Port or his duly appointed representative.

**DATES:** This rule is effective from 8 a.m. (local) on May 13, 2006 through 5 p.m. (local) on May 13, 2006.

# Appendix G
# Newsletters and Fact Sheets

# MCAS Cherry Point Fact Sheets

4/1/08 - 05365

# Environmental Cleanup at Marine Corps Air Station Cherry Point

## Five-Year Review

April 2008

This fact sheet describes the Department of Defense's (DoD's) environmental cleanup program at Marine Corps Air Station Cherry Point.

Specifically, the DoD, working in partnership with the U.S. Environmental Protection Agency and the North Carolina Department of Environment and Natural Resources, has just completed a five-year review of ongoing environmental cleanup actions. The purpose of the five-year review is to ensure that current cleanup activities are effectively protecting human health and the environment.

This fact sheet provides an overview of the five-year review and how you can learn more about the cleanup program.

## Introduction

Marine Corps Air Station (MCAS) Cherry Point is a military installation near Havelock, North Carolina. The Air Station provides training and support for the Fleet Marine Force Atlantic aviation units and serves as a primary aviation supply point.

In more than 60 years of operation since MCAS Cherry Point was commissioned in 1942, a variety of wastes have been generated. Past spills and formerly-acceptable use and disposal practices have resulted in soil and groundwater contamination at various "sites" on the installation.

The Department of Defense (DoD) is responsible for identifying, assessing, and cleaning up contamination resulting from past handling, storage, and disposal of these potentially hazardous wastes. This investigation and cleanup is being conducted under the Navy's Installation Restoration Program (IRP) and under provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly referred to as "Superfund."

## Five-Year Review

The Navy, the U.S. Environmental Protection Agency (USEPA), and the North Carolina Department of Environment and Natural Resources (NCDENR) have completed a five-year review of ongoing environmental cleanup actions at MCAS Cherry Point. The purpose of the five-year review is to ensure that the cleanup actions are continuing to protect human health and the environment. Seven "operable units," covering 26 sites, were evaluated in this five-year review.

The next five-year review for MCAS Cherry Point will be completed by March 2013.

*An Operable Unit (OU) is a group of sites that are treated together during initial investigations, often because of proximity to each other, similar cleanup requirements, or historical use.*

## Operable Unit 1

### Site Overview

Operable Unit 1 is an industrial area in the southern portion of the installation. It consists of 12 sites, grouped because of their proximity to each other in the industrialized portion of the base. Seven of these sites have been identified as sources of groundwater contamination near and under Building 133. The primary contaminants of concern are volatile organic compounds (usually solvents).

### Cleanup Activities

**Soil.** An air sparge/soil vapor extraction system began operation in September 1998 to remove volatile organic compounds from the soil. However, evaluation of the system indicated that it was not effectively cleaning up the soil and was not cost effective. Therefore, the system was shut down in February 2005.

*Soil vapor extraction (SVE) systems remove harmful chemicals, in the form of vapors, from the soil above the water table. Vapors are the gases that form when chemicals evaporate. The vapors are removed from the ground by applying a vacuum to pull them out.*

**Groundwater.** A pump-and-treat system began operation in February 1998 to remove volatile organic compounds from groundwater. However, detailed analysis revealed that it was not performing effectively, and continued operation could interfere with future studies that would address the entire area of groundwater contamination. Therefore, the pump-and-treat system was shut down in February 2005. Other technologies to clean up the groundwater contamination at OU1 are being evaluated.

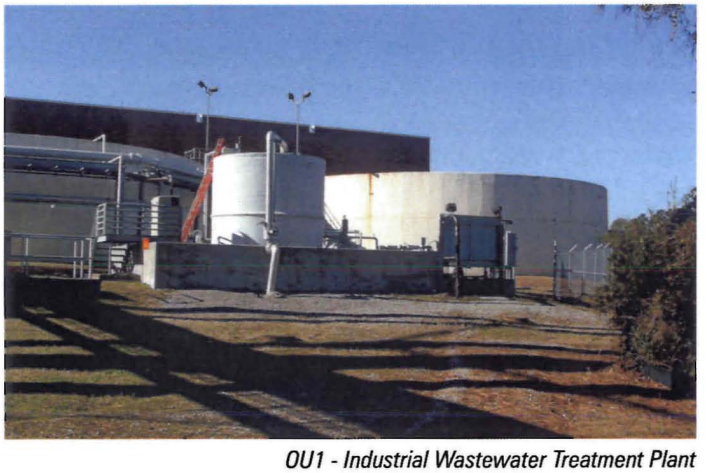
*Pump-and-treat (P&T), a common method for cleaning up groundwater, involves using pumps to bring contaminated groundwater to the surface where it can be treated, often using carbon filtration. Cleaned water is then released away from the contaminated area, either in surface ponds or below-ground.*

## Protection of Human Health and the Environment

In the short-term, human health and the environment are protected by "institutional controls" (e.g., fences, restrictions on groundwater use or construction, etc.). These institutional controls prevent exposure to contaminated groundwater. However, for the remedy to be protective in the long-term, a final cleanup alternative covering the entire OU groundwater contamination area will be selected.

## Next Steps

Ongoing investigations to determine the extent of groundwater contamination and alternatives for cleanup are underway. Cleanup alternatives will be evaluated and the best alternative will be selected and documented in a Record of Decision (ROD), which is scheduled to be completed by 2010.



*OU1 - Industrial Wastewater Treatment Plant*

**Sites in Operable Unit 1**

**Site 15** is a drainage ditch and the area behind the Fleet Readiness Center where wastes were washed down floor drains.

**Site 42** is the Industrial Wastewater Treatment Plant where waste streams from the Industrial Area Sewer System (Site 47) are discharged.

**Site 47**, the Industrial Area Sewer System, is a system of underground pipes and aboveground drains that convey industrial wastewater to the treatment plant (Site 42).

**Site 51 (Building 137)** is a former plating shop where a 3-foot-deep sump was located to contain spills and tank overflows.

**Site 52 (Building 133)** is a former plating shop and drainage ditch where a 2.5-foot-deep sump was located to contain spills and tank overflows.

**Site 92** includes a part of the groundwater plume near the Stripper Barn portion of Building 137, where paint is removed from aircraft.

**Site 98** includes a part of the groundwater plume southeast of the Industrial Wastewater Treatment Plant, near Building 4032.

**Site 16**, the Sandy Branch Landfill, was also identified as contributing to the groundwater plume; however, these contributions are minimal and are not a primary source of groundwater contamination at OU1.

# Operable Unit 2

## Site Overview

OU2 is located in the west-central part of the installation. It consists of four sites, grouped because of their proximity to the old sanitary landfill (Site 10). Investigations reveal soil and groundwater are contaminated from prior disposal practices at Site 10. The primary contaminants of concern are volatile organic compounds.

**Sites in Operable Unit 2**

**Site 10** is approximately 40 acres and served as the primary disposal site at MCAS Cherry Point between 1955 and the mid-1980s.

**Site 44A** is a relatively small area within the boundary of Site 10 where sludge from the sewage treatment plant was applied.

**Site 46** consists of two inactive, unlined ponds that served as aeration basins for wastewater from the sewage treatment plant.

**Site 76** consists of a building and parking lot where personal vehicles are repaired.

## Cleanup Activities

**Soil.** A soil vapor extraction system was installed in 1998 to clean up soil at OU2. The system was designed to treat four areas of soil contamination, known as "Hotspots" 1-4.

An evaluation of the soil vapor extraction system revealed that contaminants were reduced below cleanup levels at Hotspots 1, 3, and 4, but contamination remained at Hotspot 2. Therefore, the system was shut down in 2005, and other technologies to clean up remaining contamination at Hotspot 2 are currently being evaluated.

**Groundwater.** Monitored natural attenuation was selected as the cleanup alternative for groundwater at OU2. Annual long-term monitoring began in January 2002. In 2007, groundwater sampling was increased from yearly to quarterly, to better evaluate seasonal and long-term changes in concentrations of contaminants.

*Monitored natural attenuation (MNA) relies on natural processes to clean up or "attenuate" contaminated soil and groundwater. Natural attenuation occurs at most sites; however, the right conditions must exist underground for natural attenuation to clean sites adequately. Scientists "monitor" or test these conditions to make sure natural attenuation is working.*

## Protection of Human Health and the Environment

The remedy at OU2 currently protects human health and the environment in the short term because institutional controls are preventing exposure to contaminated soil and groundwater.

## Next Steps

Groundwater monitoring will continue at OU2 to ensure that monitored natural attention is effectively cleaning up groundwater. In addition, other technologies are being evaluated to clean up soil at Hotspot 2.

*OU2 - Soil Vapor Extraction System Emission Stack*

# Operable Unit 3

## Site Overview

OU3 is located in the west-central part of MCAS Cherry Point. It consists of two sites (Sites 6 and 7) that were grouped because of their proximity and common waste types. Investigations at OU3 indicate that the soil and groundwater are contaminated from prior disposal practices. The primary contaminants of concern are volatile organic compounds, polycyclic aromatic hydrocarbons, metals, and pesticides.

**Sites in Operable Unit 3**

**Site 6** consists of three former unlined ponds where fly ash and cinders from the former power plant were disposed from the 1940s to 1970.

**Site 7** was an incineration and open-burning ground used from the 1940s until approximately 1955.

## Cleanup Activities

**Soil.** In 2000, an air sparging system was installed in-place ("in situ") to treat soil contaminated with volatile organic compounds, primarily benzene. Evaluation of the system indicated that benzene concentrations were effectively reduced and were not leaching down toward groundwater; therefore, the air sparging system was shut down in 2003.

*Air sparging (AS) uses air to help remove harmful vapors from contaminated soil and groundwater below the water table. When air is pumped underground, the chemicals evaporate faster, which makes them easier to remove.*

**Groundwater.** Monitored natural attention was selected as the cleanup alternative for groundwater at OU3. Annual long-term monitoring began in October 2002. In 2007, groundwater sampling was increased from yearly to quarterly, to better evaluate seasonal and long-term changes in concentrations of contaminants.

Based on groundwater sampling results, monitored natural attention has been effective in reducing contaminants of concern.

## Protection of Human Health and the Environment

The soil cleanup action at OU3 is protective of human health and the environment because the system effectively cleaned up soil contaminants. The monitored natural attenuation remedy for groundwater is expected to protect human health and the environment when completed. In the short-term, institutional controls are preventing exposure to contaminated soil and groundwater.

## Next Steps

Groundwater monitoring will continue to ensure that monitored natural attention is effectively cleaning up groundwater.

*OU3 - Fencing and Sign Restricting Site Access*

# Operable Unit 4

## Site Overview

OU4 is located in the northwest-central portion of the base. It consists of two sites, Areas A and B. Investigations indicate that the groundwater is contaminated from prior disposal activities at Area A. The primary contaminant of concern is benzene.

**Sites at Operable Unit 4**

**Area A includes Site 4**, the borrow pit/landfill north of Runway 14L and includes areas where soil was excavated for use as fill material at another location.

**Area B** was used for farming prior to the construction of the Air Station and was later developed into a lined drum storage area.

## Cleanup Activities

**Groundwater.** Monitored natural attention was selected as the cleanup alternative for groundwater at OU4. Semi-annual long-term monitoring began in May 2006. In 2007, groundwater sampling was increased from semi-annually to quarterly, to better evaluate seasonal and long-term changes in concentrations of contaminants.

Based on groundwater sampling results, monitored natural attention has been effective in reducing contaminants of concern.

## Protection of Human Health and the Environment

The monitored natural attenuation remedy for groundwater is expected to protect human health and the environment when completed. In the short-term, institutional controls are preventing exposure to contaminated groundwater.

## Next Steps

Groundwater monitoring will continue to ensure that monitored natural attention is effectively cleaning up groundwater.

*OU4 - Monitoring Wells*

# Operable Unit 5

## Site Overview

OU5 is located in the northeastern portion of the base. It consists of two sites, Sites 1 and 2, grouped because of their proximity, history, and common waste types. Investigations indicate that the groundwater is contaminated from prior disposal practices at Site 2. The primary contaminants of concern are volatile organic compounds.

**Sites at Operable Unit 5**

**Site 1**, currently wooded, was reportedly a former borrow pit/landfill.

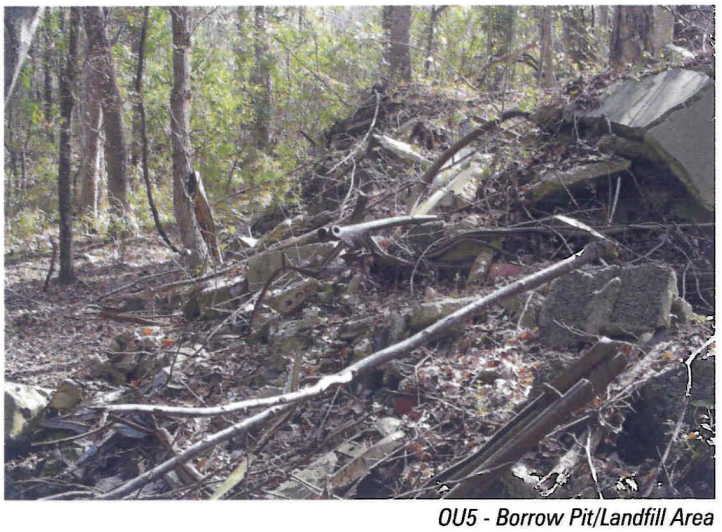
**Site 2**, currently wooded, was also a borrow/pit landfill.

Some chemical waste is reported to have been disposed of at both sites. Wastes found at both sites consisted of rubble, trash, vehicle batteries, crushed 55-gallon drums, and construction debris.

## Cleanup Activities

**Groundwater.** Monitored natural attention was selected as the cleanup alternative for groundwater at OU5. Semi-annual long-term monitoring began in May 2006. In 2007, groundwater sampling was increased from semi-annually to quarterly, to better evaluate seasonal and long-term changes in concentrations of contaminants.

Based on results from recent groundwater sampling, the only contaminant exceeding the remediation goal is vinyl chloride. However, concentrations appear to be decreasing over time.



*OU5 - Borrow Pit/Landfill Area*

## Protection of Human Health and the Environment

The monitored natural attenuation remedy for groundwater is expected to protect human health and the environment when completed. In the short-term, institutional controls are preventing exposure to contaminated groundwater.

## Next Steps

Groundwater monitoring will continue to ensure that monitored natural attention is effectively cleaning up groundwater.

# Operable Unit 6

## Site Overview

OU6 is the eastern portion of Runway 28, located along the eastern edge of MCAS Cherry Point. It consists of one investigation area, Site 12. Primitive burn-pits (Burn Pits A through E) were identified in historical aerial photographs. Investigations at OU6 indicate that the soil and groundwater are contaminated from prior activities at Site 12, primarily beneath former Burn Pit E. The primary contaminants of concern are volatile organic compounds, semi-volatile organic compounds, and metals.

**Sites at Operable Unit 6**

**Site 12** currently consists of one active, modern burn pit with a concrete lining and drains to collect fire-fighting water used during training exercises.

## Cleanup Activities

**Soil.** Contaminated soil beneath the former location of Burn Pit E was excavated and disposed of off-site at a permitted disposal facility. This "remedial action" was completed in March 2007.

**Groundwater.** Monitored natural attenuation was selected to treat groundwater at OU6. Long-term monitoring as part of monitored natural attention began in June 2007 and will be conducted quarterly.

Voluntary groundwater monitoring began at OU6 in May 2005. All organic contaminants of concern are currently below selected criteria, indicating natural degradation is occurring. However, arsenic remains above selected criteria, indicating that attenuation of this metal will be a longer process.

*OU6 - Backfilling after Excavation*

## Protection of Human Health and the Environment

The soil removal at OU6 has protected human health and the environment by effectively removing contaminated soil and eliminating the potential source for ongoing groundwater contamination.

Monitored natural attenuation is expected to protect human health and the environment when completed. In the short-term, institutional controls are preventing exposure to contaminated groundwater.

## Next Steps

Groundwater monitoring will continue to ensure that monitored natural attention is effectively cleaning up groundwater

# Operable Unit 13

## Site Overview

OU13 is located in the southeastern portion of the base near Runway 32. It consists of three sites (Sites 19, 21, and 44B), grouped because of their proximity. Investigations indicate that the groundwater is contaminated from prior disposal practices at all three sites. The primary contaminants of concern are volatile organic compounds.

**Sites in Operable Unit 13**

**Sites 19 and 21** are borrow pit/landfill areas that were used for waste disposal between the 1950s and the 1960s. Fly ash and wastes from the Air Station may have been disposed of at these sites. **Site 44B** was used for the application of sludge from the Air Station sewage treatment plant in the 1980s.

## Cleanup Activities

Monitored natural attenuation was selected to treat groundwater at OU13. Long-term monitoring began in May 2006 and will be conducted semi-annually.

Sampling results indicate that monitored natural attenuation is working. In three of the seven monitoring wells, contaminants of concern were not detected for at least four consecutive rounds of sampling. Overall, concentrations of volatile organic compounds in the groundwater have decreased.

## Protection of Human Health and the Environment

Monitored natural attenuation is expected to protect human health and the environment when completed. In the short-term, institutional controls are preventing exposure to contaminated groundwater.

## Next Steps

Groundwater monitoring will continue at the remaining four monitoring wells to ensure that monitored natural attention is effectively cleaning up groundwater.

*OU13 - Monitoring Wells*

# For More Information

More information about environmental cleanup at MCAS Cherry Point can be found online at:

**http://public.lantops-ir.org/sites/public/cherrypoint/default.aspx**

The web sites includes a brief historical overview of the installation, information about environmental sites, maps, glossaries of terms and acronyms, links to other useful sites, and more information about the environmental restoration process.

Similar information can also be found at:

**Havelock-Craven County Public Library**
301 Cunningham Boulevard
Havelock, NC 28532
Phone: (252) 447-7500

The Administrative Record, which is the legal record of all the information reviewed and considered to make site cleanup decisions, can be viewed online at:

**http://public.lantops-ir.org/sites/public/cherrypoint/AdminRecord.aspx**

For more information, please contact:

Ms. Janice Nielsen
Naval Facilities Engineering Command Mid-Atlantic
Code OPNCEV
9742 Maryland Avenue
Norfolk, VA 23511-3095
Phone: (757) 322-8339
Fax: (757) 322-4805

# MCAS Cherry Point Environmental Restoration Program

Marine Corps Air Station (MCAS) Cherry Point is a military installation located in the City of Havelock, midway between New Bern and Morehead City, North Carolina, approximately 90 miles west–southwest of Cape Hatteras. The Air Station, commissioned in 1942, provides training, support, and supplies for the Fleet Marine Force Atlantic aviation units.

## Environmental Restoration Program

The Navy is investigating potentially-contaminated soil, groundwater, surface water, and sediment at MCAS Cherry Point under a program called the Installation Restoration Program (IRP). The Navy is also investigating old munitions sites under the Munitions Response Program (MRP). Together, the IRP and the MRP make up the Environmental Restoration Program.

Environmental investigations began at MCAS Cherry Point in the early 1980s. In 1994, MCAS Cherry Point was added to the U.S. Environmental Protection Agency's National Priorities List. In 2005, the Navy, Environmental Protection Agency, and North Carolina Department of Environmental and Natural Resources negotiated a Federal Facility Agreement, under which all work at IRP sites and potential sites is reviewed and a course of action for each site is developed.

IRP sites are defined as discrete areas where hazardous substances or wastes have been deposited, stored, disposed of, or placed. The sites are grouped into Operable Units, as shown on page 2. The history and current status of each site is available through the Site Descriptions webpage at http://go.usa.gov/TZO.

## Community Involvement Plan

The purpose of a Community Involvement Plan is to outline how MCAS Cherry Point will continue to meet the needs of the local community for information about and participation in the ongoing investigation and remediation processes at the Air Station. The Community Involvement Plan is based on information gathered from interviewing local resident and community leaders.

## Administrative Record

An Administrative Record File has been established for the Environmental Restoration Program at MCAS Cherry Point. The Administrative Record is a compilation of all documents that the DoD uses to select a remedial action or removal action for a site. The Administrative Record will also serve as the basis for any future legal review of decisions made by the DoD concerning remedial action taken at a site.

A copy of the MCAS Cherry Point administrative record file is available for review through the Administrative Record webpage at http://go.usa.gov/TZO and can be accessed at the public library in Havelock, North Carolina.

## Restoration Advisory Board

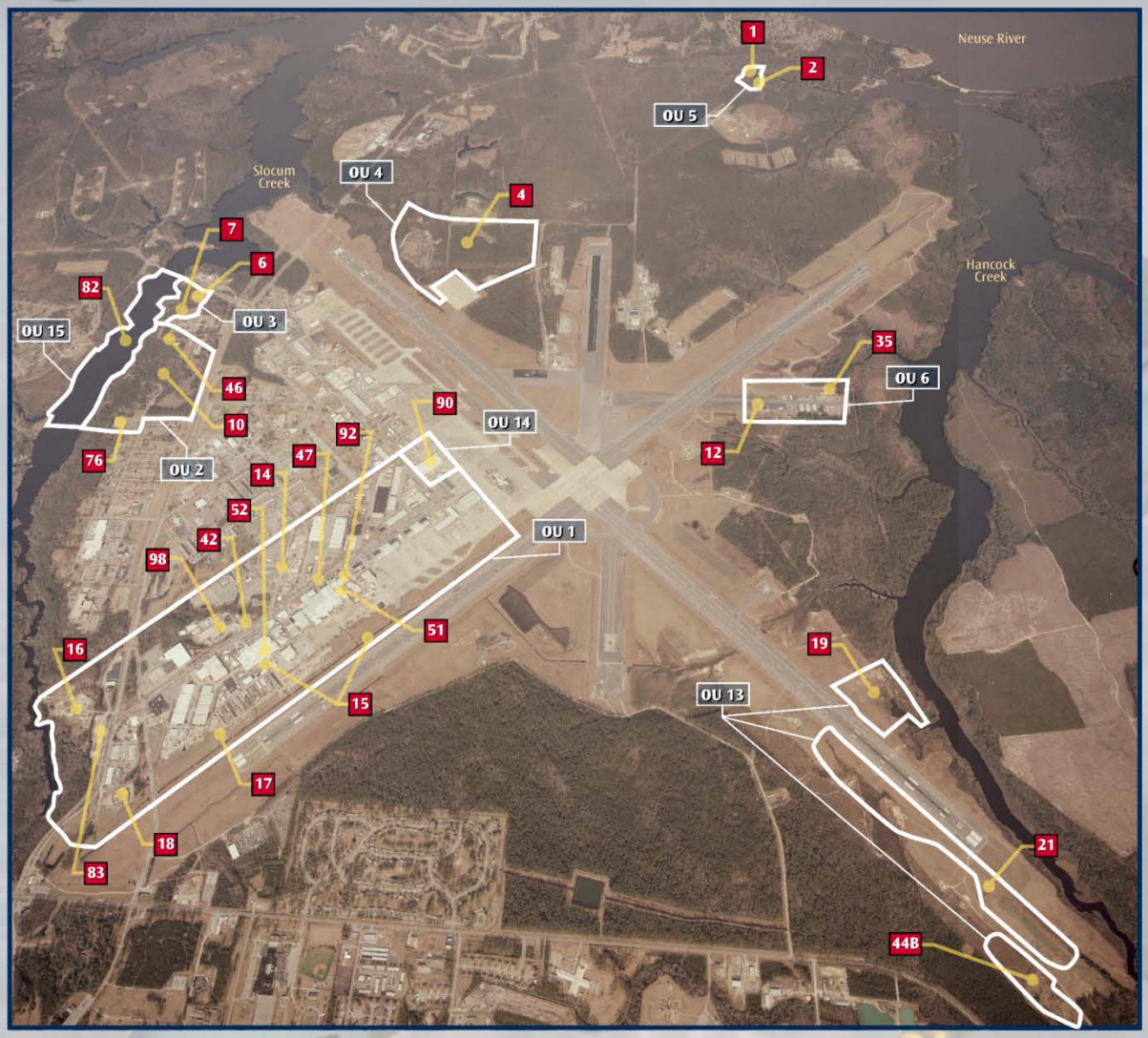
The MCAS Cherry Point Restoration Advisory Board was established in 1995 and is comprised of local community members, environmental regulators, local government representatives, Navy representatives, and other interested parties. The Restoration Advisory Board assists the Navy in developing cleanup priorities and acts as a focal point for the exchange of information between the base and local community on matters relating to MCAS Cherry Point's environmental cleanup program.

The Restoration Advisory Board meets on quarterly at the Havelock Tourist and Event Center. Meetings are advertised in the Havelock News, Windsock, Carteret County News Times, and Sun Journal. RAB meetings are always open to the public. For more information about the MCAS Cherry Point Restoration Advisory Board contact:

Mr. William Potter
Installation Co-Chair
Installation Restoration Program Manager
252-466-5376

Ms. Patricia McClellan-Green
Community Co-Chair
Restoration Advisory Board
252-222-6367

# MCAS Cherry Point
# Installation Restoration Program




| OU1 | Site | Description |
|---|---|---|
| | 14 | Motor Transportation |
| | 15 | Ditch and Area Behind NADEP |
| | 16 | Landfill at Sandy Branch |
| | 17 | DRMO Drainage Ditch |
| | 18 | Facilities Maintenance Compound |
| | 42 | Industrial Wastewater Treatment Plant (IWTP) |
| | 47 | Industrial Area Sewer System |
| | 51 | Building 137 Plating Shop |
| | 52 | Building 133 Plating Shop and Ditch |
| | 83 | Building 96 Former Pesticide Mixing Area |
| | 92 | VOCs in Groundwater Near the Stripper Barn |
| | 98 | VOCs in Groundwater Near Building 4032 |

| OU2 | Site | Description |
|---|---|---|
| | 10 | Old Sanitary Landfill |
| | 46 | Polishing Ponds No. 1 and No. 2 |
| | 76 | Vehicle Maintenance Area (Hobby Shop) |

| OU3 | Site | Description |
|---|---|---|
| | 6 | Fly Ash Ponds |
| | 7 | Old Incinerator and Adjacent Area |

| OU4 | Site | Description |
|---|---|---|
| | 4 | Borrow Pit/Landfill (North of Runway 14) |

| OU5 | Site | Description |
|---|---|---|
| | 1 | Borrow Pit/Landfill |
| | 2 | Borrow Pit/Landfill |

| OU6 | Site | Description |
|---|---|---|
| | 12 | Crash Crew Training Area |
| | 35 | MAG 14 Accumulation Area |

| OU13 | Site | Description |
|---|---|---|
| | 19 | Borrow Pit/Landfill (North of Runway 32) |
| | 21 | Borrow Pit/Landfill (South of Runway 32) |
| | 44B | Former Sludge Application Area |

| OU14 | Site | Description |
|---|---|---|
| | 90 | Building 130 Area Chlorinated VOC-Contaminated Groundwater |

| OU15 | Site | Description |
|---|---|---|
| | 82 | Slocum Creek in the Vicinity of OU2 and OU3 |

# MCAS Cherry Point Hotspots Newsletter

**Restoration Advisory Board**
MCAS Cherry Point

# Hotspots

September, 2005

***"Yesterday's Pollution, Today's Solution"***

# Restoration Advisory Board
# A Decade of Success

The Marine Corps Air Station (MCAS) Cherry Point Restoration Advisory Board (RAB) is approaching a decade of continuous service as community liaisons between MCAS Cherry Point and surrounding communities in the environmental restoration process at Cherry Point.

The U.S. Department of Defense (DoD) initiated an environmental cleanup program at military installations known as the Installation Restoration Program (IRP); the DoD equivalent to the U.S. Environmental Protection Agency (USEPA) "Superfund" program. The purpose of the IRP is to identify, evaluate, and cleanup past environmental contamination at DoD facilities. A fundamental aspect of the IRP is the involvement of the community and the establishment of the RAB provides a forum for community involvement in the restoration process. Through the RAB, the community is provided the opportunity to learn more about the restoration process, ask questions about the procedures for cleanup, and advise those responsible for the restoration. RAB members serve in an advisory capacity and meet on a regular basis with Navy, Marine Corps, USEPA, and State representatives to review and discuss restoration issues at MCAS Cherry Point.

Established in December 1995 with the selection of six area community members, the MCAS Cherry Point RAB is comprised of interested and concerned community members who reflect the diverse interest of the local community. Designed to serve as a focal point for the exchange of information between MCAS Cherry Point and the community regarding current and future environmental restoration activities, the RAB reviews progress and provides input into current investigations and ongoing remedial cleanup projects as well as future studies and remediation.

Of the eight present-day RAB members, Patricia McClellan-Green (Co-Chair), Grace Evans (Past Co-Chair), and Neil Scarborough were selected as part of the initial RAB and have served for the entire 10-year existence of the Cherry Point RAB. Four members, William "Bill" Smart, Georgiana Bircher, James "Jim" Berry, and Ray Silverthorne have served six years each with Robert Meadows, the newest member, serving nearly three years. The present-day RAB has contributed over 50 years of service to the community.

In addition to RAB meetings, members attend public meetings on proposed remedial actions at select restoration sites at Cherry Point, sponsor and attend cleanup sites tours for RAB members and Duke University Marine Lab students, and attend Navy RAB conferences. In March 2002, the USEPA, NCDENR, and the Air Station, in a RAB Recognition Day event, officially recognized the RAB's outstanding service to the local community by serving as the community's eyes and ears in environmental restoration activities at Cherry Point.

Come December 2005, the MCAS Cherry Point Restoration Advisory Board will have accomplished their "Decade of Success".

Jeff Christopher
Environmental Engineer
Installation Restoration Program
Marine Corps Air Station,
Cherry Point

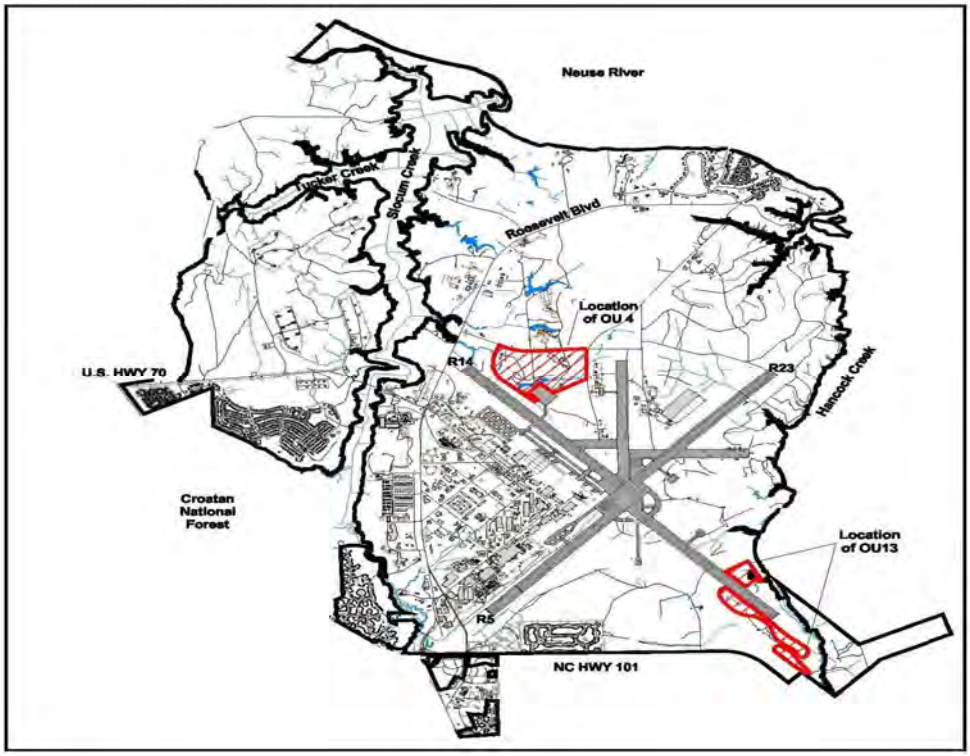
## Records of Decision Signed

In August/September 2005, MCAS Cherry Point signed and the USEPA and State of North Carolina concurred with the Records of Decision (RODs) for Operable Unit 4 (OU4) and Operable Unit 13 (OU13). The RODs formalizes the selection of a fully protective yet cost effective long-term solution at four MCAS Cherry Point's Installation Restoration Program (IRP) Sites: Site 4 (OU4), Borrow Pit/Landfill north of Runway 14R; Site 19 (OU13), Borrow Pit/Landfill north of Runway 32L; Site 21 (OU13), Borrow Pit/Landfill south of Runway 32L; and Site 44b (OU13), Former Sludge Application Area. These are the fourth and fifth RODs promulgated at MCAS Cherry Point and represent a major accomplishment for the Cherry Point restoration team. Because OU4 and OU13 experienced similar disposal practices and chemical releases, the remedy selection process for those OUs have progressed together and are very similar.

The RODs rely heavily upon institutional controls, implementation of which was made possible by execution of the Federal Facility Agreement in May 2005 and the Land Use Control Assurance Plan in May 1999, to ensure that land use assumptions made in developing the remedy will remain valid throughout the life of the cleanup effort. This approach allowed the selection of monitored natural attenuation (MNA), a slower acting but far less costly alternative, as the remedy for groundwater water. The selected remedy's three major components are briefly described below:

- MNA is the selected remedy for groundwater contamination. The remedial goal is to reduce the current levels of contamination in the groundwater to meet the North Carolina 15A NCAC 02L Groundwater Standards; more commonly know as the NC 2L Standards.
- Monitoring will be implemented to evaluate the effectiveness of the natural attenuation process. Monitoring will also serve to demonstrate that remedial goals have been achieved and the remedy is complete.
- Institutional controls (ICs) include prohibitions against intrusive activities below the groundwater table and use of surficial aquifer groundwater. ICs will be utilized to ensure that the land use assumptions utilized in developing the remedy will remain valid for the duration of the remedial effort.

The remedy will be considered complete and closure requested when contaminant levels are reduced to below the NC 2L Groundwater Standards. It is estimated that the remedy will take 5 years to complete.




**Locations of:**
**Operable Unit 4 and Operable Unit 13 aboard MCAS Cherry Point**

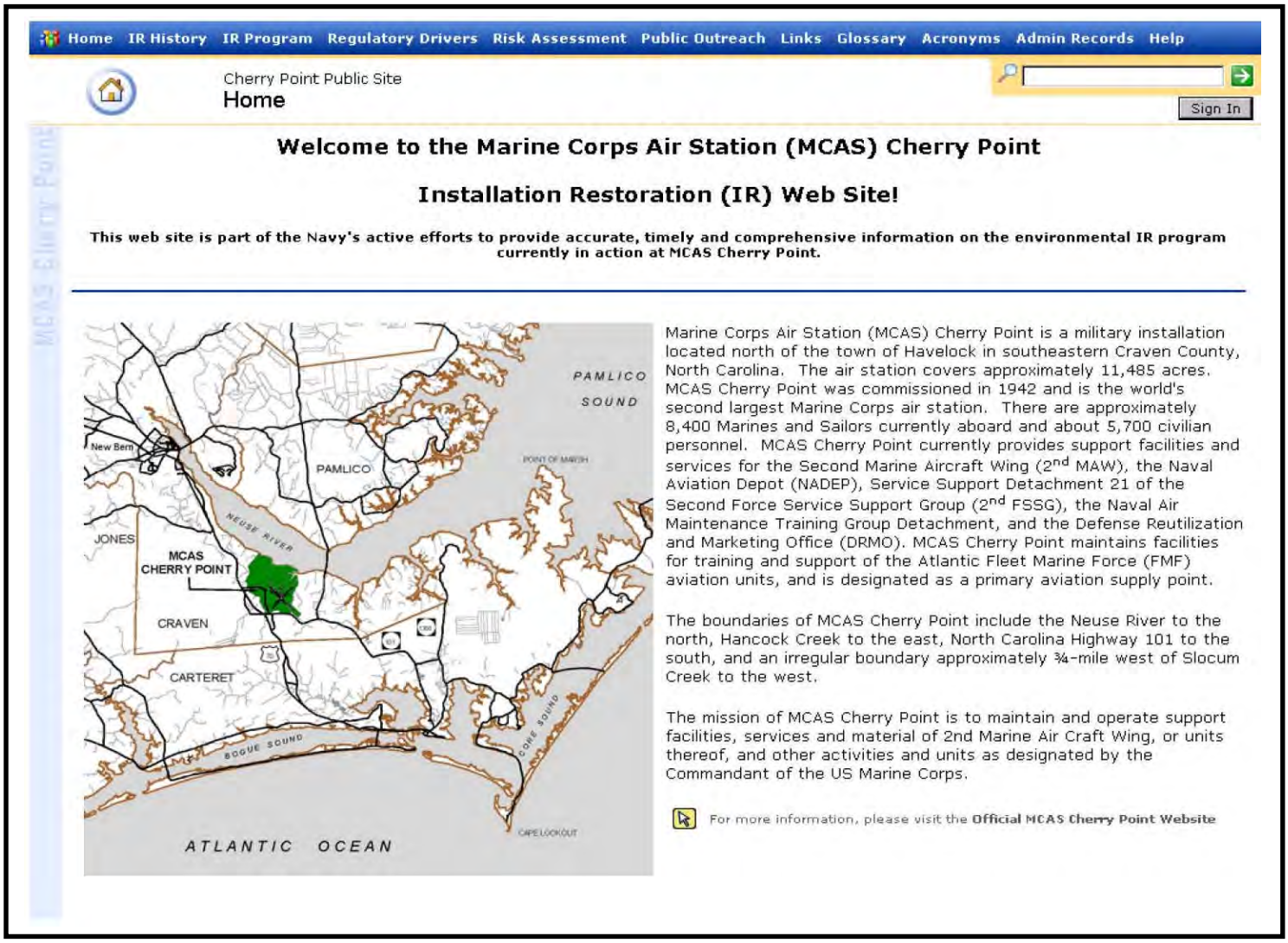
## New Installation Restoration Website

The Navy has recently implemented a new "Enterprise" website for MCAS Cherry Point as part of an active effort to provide the public with accurate, timely, and comprehensive information on the environmental Installation Restoration Program (IRP) at many of the Navy and Marine Corps installations on the east coast. One of ten Navy/Marine Corps IRP sites either currently or soon to be on-line, the MCAS Cherry Point site was recently made available to the general public in August 2005.

Located at:
http:// public.lantops-ir.org/sites/public/cherrypoint, the new IRP website is simpler to navigate, contains up-to-date information, and provides a multitude of links leading to more detailed cleanup or environmental information.

The website provides information on MCAS Cherry Point IR program such as a description of the site, history of the environmental cleanup program, an overview of the IR program, information on regulatory drivers, risk assessment, public outreach (restoration advisory board), detailed glossary, the administrative record file listing, and many Marine Corps, regulatory, and environmental links.

Community members and the general public are encouraged to visit the new website and browse around. A username or password is not required.




**MCAS Cherry Point webpage at http://public.lantops-ir.org/sites/public/cherrypoint**

## Soil Remediation Accomplished

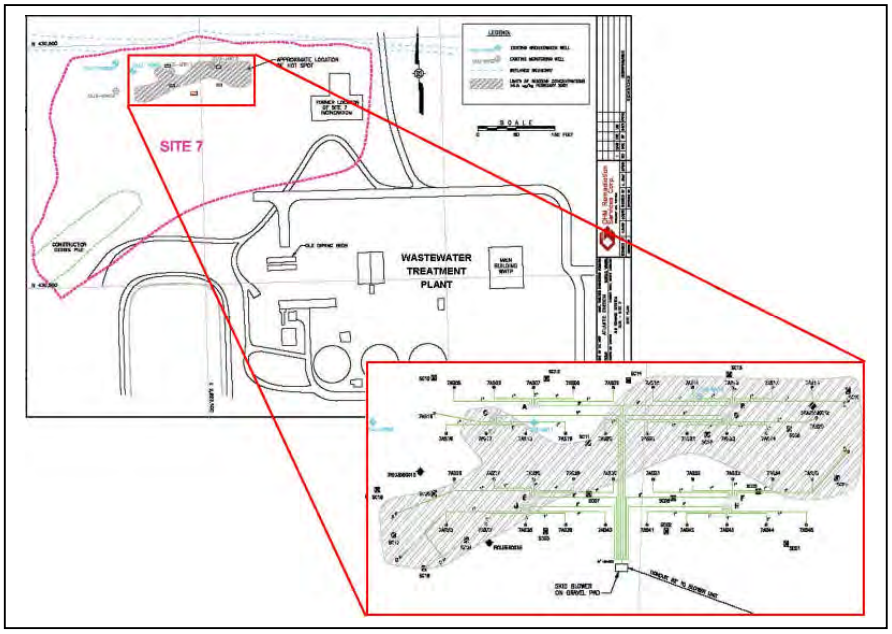
The air sparge (AS) soil treatment system installed at MCAS Cherry Point in January 2000 has successfully remediated high levels of benzene in soils at Operable Unit 3, Site 7, a five-acre area formerly used as an incinerator site and open burning ground.

Site 7 soil impacted with benzene, a fuel related compound, required the use of an enhanced in-situ (or in-place) bioremediation treatment system to effectively remove the benzene to below the performance standard of 5.6 µg/kg (microgram per kilogram) established in the Record of Decision (ROD) signed September 2000. A direct benefit to the cleanup is to reduce potential groundwater contamination from benzene in the soil.

Consisting of 41 air sparge wells set to depths of 15 feet below ground surface, the AS system injects low pressure air into the soil promoting biological reduction of benzene by native bacteria in the soil. The reliability of the system is high and designed to operate continuously, 24 hours per day, seven days per week, and operated nearly continuously.

Recent soil sampling efforts conducted at Site 7 revealed no measurable detection of benzene at the site and indication are that the AS treatment system has exceeded the soil performance standard set in the ROD. As the primary objective of the remediation system to remove benzene contamination from the soil has been achieved, the Navy, USEPA, and State of North Carolina, have reached consensus to discontinue operation of the AS remediation system and have approved decommissioning of the system.

**Air Sparge treatment system compressor and aboveground piping**




**Location of Air Sparge treatment system at Site 7 with detailed system layout diagram**

## Installation Restoration (IR) Program Reports to be Submitted in the Next 12 Months

| *Title of Report* | *Expected* | *Description* |
|---|---|---|
| **Remedial Design (RD)[1] Report, Operable Unit 4** | January 2006 | - Report presenting technical details of the proposed groundwater monitoring program and land use controls that form the selected remedy for OU4. |
| **Remedial Action (RA)[2] Report, Operable Unit 4** | September 2006 | - Report documenting the implementation of the groundwater monitoring program and land use controls that form the selected remedy for OU4. |
| **Remedial Investigation (RI)[3] Report, Operable Unit 5** | November 2005 | - Report presenting the results of the RI at OU5, which consists of two borrow pit sites where disposal of construction and other types of debris occurred. |
| **Focused Feasibility Study (FS)[4] Report, Operable Unit 5** | November 2005 | - Report evaluating various remedial alternatives to address contaminants of concern identified in the RI for OU5. |
| **Proposed Remedial Action Plan (PRAP)[5], Operable Unit 5** | November 2005 | - Report presenting rationale for a preferred remedy to address contaminants of concern at OU5 and soliciting public comment on that proposed remedy. |
| **Record of Decision (ROD)[6], Operable Unit 5** | June 2006 | - Report documenting the selected remedy to address contaminants of concern in groundwater at OU5 and providing legal basis for remedy selection. |
| **Remedial Design (RD)[1] Report, Operable Unit 5** | October 2006 | - Report presenting the technical details of the proposed remedy for OU5. |
| **Remedial Investigation (RI)[3] Report, Operable Unit 6** | December 2005 | - Report presenting the results of the RI at Operable Unit 6, which consists of a burn pit associated with crash crew training activities. |
| **Feasibility Study (FS)[4] Report, Operable Unit 6** | March 2006 | - Report evaluating various remedial alternatives to address contaminants of concern identified in the RI for OU6. |
| **Proposed Remedial Action Plan (PRAP)[5], Operable Unit 6** | March 2006 | - Report presenting rationale for a preferred remedy to address contaminants of concern at OU6 and soliciting public comment on that proposed remedy. |
| **Record of Decision (ROD)[6], Operable Unit 6** | July 2006 | - Report documenting the selected remedy to address contaminants of concern at OU6 and providing the legal basis for remedy selection. |
| **Remedial Design (RD)[1] Report for Operable Unit 13** | January 2006 | - Report presenting technical details of the proposed groundwater monitoring program and land use controls that form the selected remedy for OU13. |
| **Remedial Action (RA)[2] Report, Operable Unit 13** | September 2006 | - Report documenting the implementation of the groundwater monitoring program and land use controls that form the selected remedy for OU13. |
| **Remedial Investigation (RI)[3] Report, Operable Unit 14** | June 2006 | - Report presenting the results of the RI at Operable Unit 14, which consists of a chlorinated volatile organic compound (VOC) plume in groundwater beneath Hangar 130 and the adjacent flight line area. |
| **Site Management Plan (Fiscal Year 2006)** | November 2005 | - Report summarizing descriptions of the sites at MCAS Cherry Point and the history of previous investigation and remediation activities. In addition to site status information, the SMP also contains schedules for future activities. |

[1]*Remedial Design (RD) – the phase in Superfund site cleanup where the technical specifications for cleanup remedies and technologies are designed in accordance with the Record of Decision (ROD).*

[2]*Remedial Action (RA) – follows the remedial design phase and involves the actual construction or implementation phase of Superfund site cleanup in accordance with the ROD.*

[3]*Remedial Investigation (RI) – an investigation to collect the data necessary to assess risks to human health and the environment and to support the development, evaluation, and selection of remedial alternatives.*

[4]*Feasibility Study (FS) – the development, screening, and detailed evaluation of alternative remedial actions.*

[5]*Proposed Remedial Action Plan (PRAP) – written expressly to solicit public comment, this document describes all remedial alternatives that were evaluated and identifies and explains the rationale for the preferred alternative.*

[6]*Record of Decision (ROD) – follows the PRAP and documents the selected remedy and serves as legal certification that the remedy was selected in accordance with Superfund regulations.*

## Upcoming RAB Meetings

RAB meetings are held quarterly at the Havelock Tourist and Event Center in Havelock, North Carolina, and are always open to the public.

Upcoming meetings are scheduled for December 6th (6:00 pm) and March 28th (7:00 pm). A Public Meeting for Operable Unit 5 Proposed Remedial Action Plan (PRAP) is scheduled for November 3rd (from 6:00 - 8:00 pm) at the Havelock High School Library [location is tentative].

For further information, please contact the MCAS Public Affairs Office Monday through Friday, 8:00 a.m. to 4:00 p.m. at
(252) 466-4241.

## Information Repositories

Information on the Cleanup Program has been placed in the following repositories for public review:

**Havelock-Craven County Public Library**
301 Cunningham Boulevard,
Havelock, NC 28532
(252) 447-7509

**MCAS Library**
Building 298, E Street
MCAS Cherry Point, NC 28532
(252) 466-3552

HOTSPOTS
The RAB
Commanding General
MCAS
PSC Box 8006
Cherry Point, NC 28533-0006

# Hotspots

**Restoration Advisory Board**
MCAS Cherry Point

March 2003


**"Yesterday's Pollution, Today's Solution"**

## A message from the Restoration Advisory Board

Over the years, the majority of newspapers and professional literature articles regarding environmental cleanup at Superfund sites have emphasized the enormous time and expense associated with legal contests between regulatory agencies and parties liable for cleanups. Assuming the regulatory agency prevailed, the time span between the initial bang of the gavel and the first shovel of dirt removed was often measured in years.

In 1989, the Cecil Field Naval Air Station in Jacksonville, Florida was added to the National Priority List under the Superfund statute for environmental cleanup. Three agencies involved were the Navy, the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection. Each of these agencies possessed the knowledge, money, and influence to conduct environmental cleanup activities. Three years later and over a million dollars spent, these three agencies were not ready to address the basic question: where do we start?

This lack of progress was not uncommon. For years, environmental remediation at military installations was characterized by mistrust among the agencies involved. The military viewed the regulating agencies as trying to assert excessive authority and requiring the military to spend excess money. On the other hand, the regulators perceived the military as being unconcerned with the environment and trying to pinch pennies at the expense of environmental cleanup. The lack of progress forced the agencies to take a fresh look at the process of facilitating environmental cleanup activities at military installations.

Enter the "partnering" approach where agencies learn to work cooperatively verse keeping each other at arms length. Partnering works by building a relationship of trust among the agencies and contractors involved in the cleanup process. While a major goal of partnering is to avoid time-consuming and costly disputes, when a dispute does arise, as it inevitably will, the partnering process establishes steps to resolve the dispute thereby overcoming a potential major roadblock in the remedial cleanup effort.

The MCAS Cherry Point Partnering Team has fully embraced the partnering process as an effective method to facilitate cleanup efforts at the Air Station while being protective of human health and the environment.

Consisting of representatives from each agency including the Navy, EPA, North Carolina Department of Environment and Natural Resources (DENR), and MCAS Cherry Point, the partnering team has been able to resolve several contentious issues and eliminated a document backlog that had developed over the previous years. Some highlights of the many agreements reached include final approval of the remedial investigation reports for three operable units including the massive *Remedial Investigation Report for Operable Unit 1*. Consensus was also achieved with the handling of low-level dioxin contamination at two operable units; a highly contentious issue that had stalled approval of the remedial investigation reports for both units for 12 months.

By adhering to the partnering process, the MCAS Cherry Point environmental cleanup program has been able to move forward at a relatively brisk pace while remaining cost effective and more importantly, being protective of human health and the environment.


Jeff Christopher
Environmental Engineer
Installation Restoration Program
Marine Corps Air Station,
Cherry Point

## RAB Recognition Day

The EPA, State of North Carolina, and the Navy recently honored the MCAS Cherry Point Restoration Advisory Board (RAB) community members for their outstanding service and commitment as members of the RAB. During the March 13, 2002 RAB Meeting, Mr. Dale McFarland, Past DoD Co-Chair, presented each RAB member with a framed certificate recognizing the time and effort provided by each member as community liaisons in the Air Station's remediation efforts and their significant contribution to the community.

Additionally, Ms. Stephanie Yvette Brown, EPA Region 4, Economic Redevelopment and Community Involvement Branch, presented the RAB with a group plaque in "Recognition of Outstanding Service and Commitment to the Community and Environment".

Left to Right: Dale McFarland, Jim Berry, Bill Smart, Neil Scarborough, Grace Evans, Patricia McClellan-Green, Ray Silverthorne, Jr., Jeff Christopher, Georgiana Bircher (not pictured).

## The RAB

A Restoration Advisory Board (RAB) is established at installations where there is sufficient community interest and participation. The purpose of the RAB is to act as a forum for discussion and exchange of restoration program information between the installation decision makers and the community and is comprised of members of the local community, representatives of the installation, EPA, state regulatory agencies, or local government. A representative of the local community and the installation chairs the RAB jointly.

RAB members are provided with the opportunity to review progress, participate in dialogue with and provide recommendations to the installation's decision makers. Because the Federal Advisory Committee Act (FACA) requirements are not intended to apply to a RAB, consensus is not a prerequisite for RAB recommendations. Each individual provides advice as an individual and not as a group. RAB meetings are open to the public and generally take place quarterly. A RAB may only address issues associated with environmental restoration activities under the Defense Environmental Restoration Program. Environmental groups or advisory boards that address issues other than environmental restoration activities are not RABs.

Currently the RAB consist of seven community members and representatives from the EPA, North Carolina Department of Natural Environmental Resources (NCDENR), MCAS Cherry Point, and the Navy.

***Ms. Patricia McClellan-Green, Ph.D.***, is currently serving as the RAB Community Co-Chair. Patricia resides in Morehead City and has lived in the area for 13 years with her husband and two children. She is an Assistant Research Professor with the Department of Environmental and Molecular Toxicology at NC State University and holds a joint appointment as a Research Scientist and Adjunct Assistant Professor at the Duke University Marine Laboratory, Beaufort, NC. She is an active member of the Society of Environmental Toxicology and Chemistry, the N.C. Society of Toxicology, and the American Society of Biochemistry and Molecular Biology. Her work focuses on the effects of natural and man-made toxins on marine species.

***Ms. Grace Evans*** has served as the past RAB Community Co-Chair and has lived in the Oriental area for 27 years. Currently retired, Grace is an active member of the Neuse River Foundation and St. Thomas Church and has owned and taught at sailing schools for 12 years.

***Mr. James "Jim" Berry*** resides outside the village of Oriental in Pamlico County and has lived in the area for five years. Jim is a retired naval officer and aviator from the fighter aircraft community and most recently a Product Operations Director for Northrop Grumman Corporation in Long Island, NY. Although retired from the business world, Jim is still active in the Oriental Rotary Club, St. Thomas Episcopal Church in Oriental, and various community affairs.

***Ms. Georgiana Bircher*** resides in New Bern on Brice's Creek and has lived in the area for five years. Currently employed as the vice president and membership director for the New Bern Area Chamber of Commerce, Georgiana also works as the executive director for the Neuse River Foundation and the Lower Neuse Initiative. Georgiana is an avid boater and water skier, a member of Garber United Methodist Church, and serves as a board

member for the North Carolina Watershed Coalition and the Association of Membership Executives of the Carolinas.

***Mr. Neil Scarborough*** resides in Havelock and has lived in the area for 29 years. Neil is retired from the United States Marine Corps and serves as an active member of the Craven County Clean Sweep Commission.

***Mr. Ray Silverthorne, Jr., RS/REHS***, resides in New Bern and has lived in the area for 45 years. Currently employed as the Environmental Health Director with the Craven County Health Department, Ray has been an active member of numerous public health and environmental associations throughout North Carolina.

***Mr. William "Bill" Smart*** has lived in Havelock nearly 40 years since retirement from the United States Marine Corps in June 1964 and has served three tours at MCAS Cherry Point beginning in 1943. Bill is a member of St. Christopher's Episcopal Church and has served as the Church Treasurer for some ten years and other positions on the Vestry including Junior and Senior Wardens. After retirement, he majored in accounting at East Carolina University and has had an accounting business in Havelock for nearly thirty years. Bill helped form the first Havelock Merchants Association, the Havelock Chamber of Commerce, and the Havelock Regional Development Corporation (aimed at development of industry in the Havelock area). He is a Lifetime Member of the Havelock Chamber of Commerce, has served as Trustee of the Library Board, and is a member of the Havelock Board of Adjustments.

***Ms. Michelle Thornton*** serves as the USEPA Remedial Project Manager in the Federal Facilities Branch/Waste Division, Region 4, Atlanta, GA. Before joining EPA's Waste Division, Michelle served as the Regional Coordinator for the Chemical Accidental Releases, Risk Management Program for five years. Michelle received a B.S. Degree in Biology/Chemistry from Morris Brown College and a M.S. Degree in Public Administration & Environmental Management from Troy State University. Michelle enjoys participating in 5k and 10k charity walks.

***Mr. George Lane*** serves as the State of North Carolina's Remedial Project Manager for MCAS Cherry Point. Born in Guilford County, NC, George has resided for the past eight years in Greensboro, NC. Prior to retiring from the U.S. Air Force in 1994 at the rank of Lt. Colonel, he served for four years as the Installation Restoration Director at Vandenberg AFB, CA. He has over 10 years experience in the environmental field in both the public and private sectors. George received a B.S. Degree in Engineering from NC State University, a Masters Degree in Business Management from Central Michigan University, and a Masters Level Certificate of Environmental Management from West Coast University in Los Angeles, CA.

***Mr. Rodger Jackson, P.E.,*** serves as the U.S. Navy Remedial Project Manager for MCAS Cherry Point's Installation Restoration Program. Born and raised in Richmond, VA, Rodger has lived in the Hampton Roads area for the last five years and currently resides in Chesapeake, VA. While in Hampton Roads, he worked as the Navy Technical Representative in the Wastewater Compliance Division, Naval Facilities Engineering Command's Atlantic Division. Rodger received a B.S. Degree in Civil Engineering from Virginia Tech in 1993 and is pursuing a M.S. Degree in Engineering Management from ODU University.

***Mr. Jeff Christopher*** serves as the Installation Restoration Remedial Project Manager for MCAS Cherry Point and the RAB Installation Co-Chair. Born and raised in Florida, Jeff currently reside in New Bern and has lived in the area for three years. He has served in the U.S. Navy's F-14 fighter aircraft community as an avionics technician. Initially assigned to the Compliance Division, Jeff assumed the Installation Restoration program in 2001. Jeff attended the University of South Florida in Tampa where he received a B.S. Degree in Industrial Engineering in 1991 and a Masters Degree in Environmental Engineering in 1997.

## Operable Unit 15 Proposed Remedial Action Plan

The Navy, with the support of the U.S. Environmental Protection Agency (EPA) and the North Carolina Department of Environmental and Natural Resources (NCDENR), has issued the Proposed Remedial Action Plan (PRAP) for Operable Unit 15 as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Superfund Law.

The PRAP describes the proposed no-action decision for OU15 and provides the rationale for this decision. Based on remedial investigations, no remedial action is needed to protect human health and the environmental as there are no unacceptable risks to human health or ecological receptors. Therefore, the Navy, with EPA and State concurrence, is proposing that a "no-action" decision be the selected remedy for OU15.

The Navy, in consultation with EPA and NCDENR, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. During this period, public comments received at the public meeting held at Havelock City Hall on October 23, 2002 will be addressed and incorporated into the ROD in the form of a responsiveness summary. No additional comments were submitted other than those received at the public meeting. The Navy, in consultation with EPA and NCDENR, may modify the no-action decision based on new information or public comments. The final ROD is expected to be issued in early 2003.

## Cherry Point Implements Successful Innovative Source Reduction Treatability Assessment

MCAS Cherry Point has successfully implemented an innovative contaminant source reduction treatability assessment in the Building 137 Stripper Barn source area. Because the stripper barn's chlorinated solvent plume is located beneath a large building in the highly congested Naval Aviation Depot, applying conventional treatment technologies such as pump-and-treat or air sparging posed numerous technical problems that could be overcome only at very high cost. Rather than allow these problems to slow the clean-up effort, the Cherry Point project team instead chose to examine innovative source reduction technologies. The team ultimately chose to implement enhanced in-situ bioremediation using injected Hydrogen Releasing Compound, or HRC®. "In-situ bioremediation" is a method to remediate contaminated media (e.g. soil, groundwater) left "in place" by employing microorganisms to convert harmful chemical compounds to less harmful chemical compounds. HRC® was chosen as it slowly dissolves into the aquifer and provides a food source for indigenous bacteria that co-metabolize and de-chlorinate the solvents. In the year since the HRC® was injected, chlorinated contaminant levels have decreased by as much as 95 percent, proving that the technology is effective and cost efficient. The team will examine other contaminant source areas for potential applicability.

## Long Term Monitoring at OU2 and OU3

In October 2002, MCAS Cherry Point conducted the initial round of sampling in support of long-term monitoring (LTM) at Operable Units 2 (OU2) and 3 (OU3). The field team collected 33 groundwater samples, 9 surface water samples, and 9 sediment samples over the course of several days.

The purpose of LTM is to monitor the groundwater remedial action remedies at OU2 and OU3 by assessing the progress of natural attenuation in meeting the North Carolina groundwater performance standards and confirming site contaminants are not migrating into the environment. This is accomplished by collecting and analyzing groundwater samples from the surficial and Yorktown aquifers (these aquifers extend to 30-50 feet below ground surface with the surficial overlaying the Yorktown) and surface water and sediment sampling from Slocum Creek, Luke Rowes Gut, and Turkey Gut.

Details of the monitoring are contained in the long-term monitoring work plans developed with Federal and State concurrence and are designed to satisfy the requirements of the Record of Decisions for each Operable Unit.

At OU2, groundwater samples were collected from 23 monitoring wells while surface water and sediment samples were collected from five locations (two in Slocum Creek, two in Turkey Gut, and one at the mouth of Turkey Gut). At OU3, groundwater samples were collected from 10 monitoring wells while surface water and sediment samples were collected from four locations (one in Slocum Creek, two in Luke Rowes Gut, and one at the mouth of Luke Rowes Gut). Samples will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and metals, along with field measurements such as dissolved oxygen (DO), pH, and temperature.

Sampling will be conducted annually for both Operable Units. During the first year of the LTM period, the 10 monitoring wells at OU3 will also be sampled quarterly for VOCs using passive diffusion bags (PDBs). The use of PDBs reduce cost associated with groundwater monitoring, equipment decontamination, and purge water treatment as well as avoiding potential turbidity problems associated with the conventional low-flow purging technique.



Hotspots

## Installation Restoration Program Reports to be Submitted in the Next 12 Months

| *Title of Report* | *Expected* | *Description* |
|---|---|---|

| | | |
|---|---|---|
| Record of Decision (ROD)* for Operable Unit 15 | April 2003 | -Documents the selected remedy for OU15. |
| Long-Term Monitoring Report for Operable Unit 2 Groundwater | June 2003 | -Annual Report presenting the findings of the October 2002 long-term monitoring activities associated with the groundwater remedy. Includes the results of groundwater, surface water, and sediment sampling. |
| Long-Term Monitoring Report for Operable Unit 3 Groundwater | June 2003 | -Annual Report presenting the findings of the October 2002 long-term monitoring activities associated with the groundwater remedy. Includes the results of groundwater, surface water, and sediment sampling. |
| Step 3A Addendum to the Ecological Risk Assessment for Operable Unit 1 | July 2003 | -Addendum to the OU1 Ecological Risk Assessment containing additional refinement of receptor exposure scenarios and more detailed delineation of the source and spatial extent of potential risks to ecological receptors. This is being prepared to clarify risk issues in advance of the performance of a Feasibility Study for OU1, which includes most of the industrial portions of the Air Station. |
| Remedial Investigation (RI)** Report for Operable Unit 5 | August 2003 | -Report presenting the results of the RI at Operable Unit 5, which consists of 2 borrow pit sites where disposal of construction and other types of debris occurred. |
| Remedial Investigation (RI)** Report for Operable Unit 6 | September 2003 | -Report presenting the results of the RI at Operable Unit 6, which consists of a burn pit associated with crash crew training activities. |

**Record of Decision (ROD) – documents the selected remedy, explains the extent of human health or environmental risks posed by the site, provides a plan for site design, and serves as legal certification that the remedy was selected in accordance with CERCLA program requirements.*
***Remedial Investigation (RI) – an investigation to collect the data necessary to assess risks to human health and the environment and to support the development, evaluation, and selection of remedial alternatives.*

## Community Relations Mailing List

The MCAS Cherry Point Installation Restoration Program (IRP) has recently updated the Community Relations Mailing List in an effort to maintain a current and up-to-date listing of concerned citizens and local government officials who wish to receive information on installation restoration efforts at MCAS Cherry Point.

The effort resulted in the addition and removal of individuals who have either moved from the area or no longer wish to remain on the mailing list. The mailing list is used to provide the MCAS Cherry Point's IRP/RAB Newsletter "Hotspots". The newsletter provides information about the installation's cleanup efforts and related IRP and RAB activities.

The aim of this effort is to facilitate DoD policy to involve the local community in the cleanup effort as early as possible and throughout the IRP process and complies with public participation requirements in the environmental restoration cleanup process as outlined in the Comprehensive Environmental Response, Compensation, and Liability Act
(CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

In addition to updating the mailing list, local government leaders and area citizens were contacted in an effort to solicit community interest in Cherry Point's IR program. Those individuals that were contacted were provided information about the Restoration Advisory Board (RAB) meetings and invited to participate as well as becoming part of the mailing list. Should you wish to have your name added to the Hotspots mailing list, please send your name, job title/organization (if applicable), and complete mailing address to:

Public Affairs Office
(Attn: Community Relations Officer)
Marine Corps Air Station
PSC Box 8013
Cherry Point, NC 28533-0013

## Information Repositories

Information has been placed in the following repositories for public review:

**MCAS Library**
Building 298, E Street
MCAS Cherry Point,
North Carolina 28532
(252) 466-3552

The MCAS Library is open Monday through Thursday 9:00 a.m. to 9:45 p.m., Friday 9:00 a.m. to 4:45 p.m., Saturday 10:00 a.m. to 4:45 p.m., Sunday 1:00 p.m. to 8:45 p.m.

**Havelock-Craven County Public Library**
300 Miller Boulevard
Havelock,
North Carolina 28532
(252) 447-7509

The Havelock-Craven County Library is open Monday & Tuesdays 10:00 a.m.– 9:00 p.m.

## Upcoming RAB Meetings

RAB meetings are held quarterly at 7 pm at the Holiday Inn located in Havelock, North Carolina, and are always open to the public. Upcoming meetings are scheduled for June 3, 2003, and tentatively for August 26, 2003.

For further information, please contact the MCAS Public Affairs Office, Monday through Friday, 8:00 a.m. to 4:00 p.m. at (252) 466-4241

HOTSPOTS
The RAB
Commanding General
Marine Corps Air Station
PSC Box 8013
Cherry Point, NC 28533-0013

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**Restoration Advisory Board**
MCAS Cherry Point

# Hotspots

Summer, 1998

*"Yesterday's Pollution, Today's Solution"*

## A message from the Restoration Advisory Board

Environmental restoration as defined in textbooks and many government fact sheets is the process by which contaminated sites and facilities are identified, characterized, and existing contamination is contained or removed and disposed to allow beneficial reuse of the property. As a community member of the Cherry Point Restoration Advisory Board it has been my goal to learn more about this subject in order to help oversee the improvement of the environment in which my children are growing. As a toxicologist it has been my goal to educate myself in an area of science that is unfamiliar to me. As an individual who grew up on a small rural farm in NC it has been my goal to figure out what in the "heck" they are talking about.

Basically, what I have learned is that once an area of hazardous contamination has been identified remediation options are available that can help reduce or alleviate most problems. If the contamination found to be hazardous to humans is in the sediment it can either be removed, stabilized, capped or treated in-situ (on-site), or "no action" may be taken. What was that again? If you are like I was when I first started this process you have no idea what all this means.

Think of it as moving into an apartment where the former tenants have left a very large bowl of garlic noodle soup in the refrigerator. In most cases you simply remove the bowl of green, fuzzy noodles and place them in the trash which is picked up by the garbage-man and the problem is solved (at least for you). Removal of contaminated materials in the environment involves physically removing and transporting the materials to a permitted off site treatment and disposal facility.

However, if the garlic noodle soup is more broth than noodles you might soak up the liquid with a wad of paper towels before you attempt to move the bowl. This usually saves your sneakers from becoming soaked as you race for the trash can. In much the same fashion the stabilization of environmental contaminants involves injection of a grout, cement or a sealant to eliminate free water from the sediment. The material can then be safely removed and disposed of in an approved facility without creating an increased or additional hazard.

If you are lucky the lid to the soup bowl is lying near the refrigerator and you can just snap it on and the problem is solved. Well the capping of environmental contaminants also involves putting a lid on the problem. Capping involves placing a layer of inert material such as clay over contaminated soil. This is a process that is very similar to the one carried out when a landfill in closed. The area is capped, i.e. covered with a low porosity clay material, and topsoil brought in to complete the process. A lot of these areas can then be used for other activities such as parks or industrial developments. In situ treatment of

environmental contaminants includes either chemical (e.g. solvent extraction) or biological (e.g. microbial degradation) treatment of soil, sediment or groundwater. This is like putting a little cleaner into the bowl of soup in order to kill the bacteria and mold or just letting it sit for a while longer until the bacteria has eaten all of the noodles. Both methods are acceptable but only if you can use the bowl when it's cleaned.

The last alternative, the no-action alternative leaves sediment or soil in-place undisturbed. For environmental contaminants this choice may be appropriate when 1) contaminants do not pose an immediate problem 2) biodegradation may detoxify the contaminants 3) remediation is too costly or 4) remediation might cause more of a problem than doing nothing. In our apartment analogy this would be appropriate if the former tenant is planning to return to clean the apartment and the refrigerator because he made the garlic soup for his aunt. It would also be appropriate if the refrigerator smells to high heavens and will not come clean no matter what method you choose. As a result you close the door and respectively request the landlord provide a new one.

As far as environmental restoration goes the remediation procedure or combination of procedures chosen is site specific and depends on ecological, chemical, physical, engineering, economic, human health and political considerations. As you can see it is more than just cleaning up a contaminated site, it is cleaning up that site in the most appropriate fashion and by a method that is affordable and acceptable to everyone involved. In addition, the source of the contamination must be controlled and continued monitoring must be included with any remediation effort to avoid creation of new problems.
And in case you are wondering, in our case the freon was removed from the refrigerator, the door was removed and it was taken to the local land fill where I am sure it is undergoing a slow process of in-situ treatment via microbial degradation.

Patricia D. McClellan-Green, Ph.D.
RAB Member

# MCAS Cherry Point Innovative Technology

An Innovative Remedial Technology is any new method or procedure, which can be used in the clean up of contamination. These methods or procedures do not lie within the already accepted conventional technologies. For the most part, accepted conventional technologies for the clean up of soil are excavation, soil vapor extraction, land farming, and thermal destruction (also known as incineration). For the clean up of water, technologies include pump and treat systems, pump and treat with the re-injection of treated groundwater, air sparging with soil vapor extraction, and natural attenuation. North Carolina requires that the proposed innovative technology must demonstrate that it can achieve quicker and more cost-effective clean-up results than already accepted conventional methods. Information on this innovative method must also be provided to the appropriate Regional Office and the Innovative Technology Committee for evaluation and pre-approval.

The National Research Council (NRC), part of the National Academy of Sciences, released a report in 1994 that showed pump and treat systems had been unable to achieve groundwater cleanup goals in a large number of situations. In fact only eight of 77 systems reviewed had achieved their remediation goals. And because of this the NRC began a second study to examine strategies for encouraging innovation in groundwater and soil cleanup. A major conclusion of this report was that these types of technologies are limited. However,

several technologies are available for the cleanup of petroleum hydrocarbons (and to

some extent chlorinated solvents) in porous and uniform soil such as sandy soil. The Coastal Plains of North Carolina are mostly uniform and porous. This affords Marine Corps Air Station Cherry Point more of an opportunity to select from established innovative technologies in the pursuit of environmental excellence. In an effort to achieve established clean up goals and to reduce the cost incurred in clean-up efforts, the Air Station will continually strive to employ innovative technologies where appropriate.

Ken Cobb
Environmental Affairs Department

# Removal of Petroleum Products

The Installation Restoration program at MCAS Cherry Point has installed an innovative remedial system for the removal of petroleum product floating underneath an active aircraft hanger located in the industrial area.

Many environmental investigations were performed to determine the extent of contamination at the site. These investigations showed an area of free product, JP-5 aviation fuel, up to 6 feet thick. The amount of fuel in the subsurface was estimated at 250,000 gallons. The primary source of the free product include four nearby petroleum underground storage tanks. These underground storage tanks have since been removed under the Air Station's Underground Storage Tank program.

Traditional methods of remediation were not considered for this location due to the complexity of the site. For instance, the entire surface area is overlain with concrete, asphalt, and industrial buildings. This area also contains large amounts of buried fill material such as tree stumps, old building and runway rubble. In



addition, high production rates associated with daily operations in the building made drilling or excavation inside the hanger area impossible.

Lastly, due to the congested nature of the site, excavation areas left open for extended periods presented potential safety concerns.

As a result of the complexity of the site, horizontal wells were selected as the remedial technology to recover the free floating petroleum product. Until recently, this technology was associated primarily with the oil, gas, and utility industries. However, in recent years it has been employed in the application of remediation of contaminated soil and ground water. Horizontal wells offer a number of distinct advantages over traditional treatment techniques. Specific advantages of horizontal wells include: they are easily installed beneath paved surfaces, buildings and other surface/subsurface obstructions to reach contamination not easily reached by other means and their installation causes minimal interruption to business operations. For this particular site, three 6-inch diameter horizontal wells were installed. Each well has three 2-inch pipes inside that are set at three different depths in order to recover the most fuel.

Construction of the system began in November of 1996. By August of 1997, the system was fully operational and has recovered over 52,000 gallons of fuel to date. Fuel recovery rates for the system average 280 gallons per day. As the free floating petroleum product is recovered, it is stored in a tank where it awaits transfer to the Air Station's central heating plant. The recovered petroleum product is blended and used to operate the steam plant boilers that generate steam heat for the Air Station. By recycling the recovered fuel, the Air Station saves $50-$60 per 100 gallons of fuel. By using the recycled fuel, the Air Station can also burn less coal, which reduces the amount of air emissions associated with burning the coal. This is just one example of how the Air Station's Installation Restoration

Program is working to find creative and cost-effective solutions for a cleaner environment.

Rachel Johnson and Bill Powers
Environmental Affairs Department

## Aggressive Fluid Vapor Recovery

One innovative technology currently utilized aboard the Air Station is Aggressive Fluid Vapor Recovery or AFVR. During AFVR, high vacuum pressures and airflow rates are used to remove petroleum products from the subsurface. In most cases, AFVR has been found to be superior and more cost effective than conventional methods such as 'pump and treat'.

AFVR involves using a mobile, truck-mounted vacuum extraction system to remove petroleum product, contaminated groundwater, and soil vapors. Extraction wells are evacuated of fluids using a vacuum, allowing product to migrate to the extraction wells, exposing the 'smear zone' soil contamination to the effects of vapor extraction. This also introduces oxygen into the ground enhancing degradation of contaminants.

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petroleum products have been removed from the five sites. And an estimated 58,000 gallons of contaminated groundwater has been removed from the surficial aquifer. These efforts have enabled one site to reach the regulatory requirements of product removal. Further analytical groundwater sampling has shown that the aquifer in the immediate area of this site is free of petroleum products. Another two sites are approaching the regulatory requirements, and it is anticipated that the Air Station will be able to complete the remediation of these three sites utilizing natural attenuation.

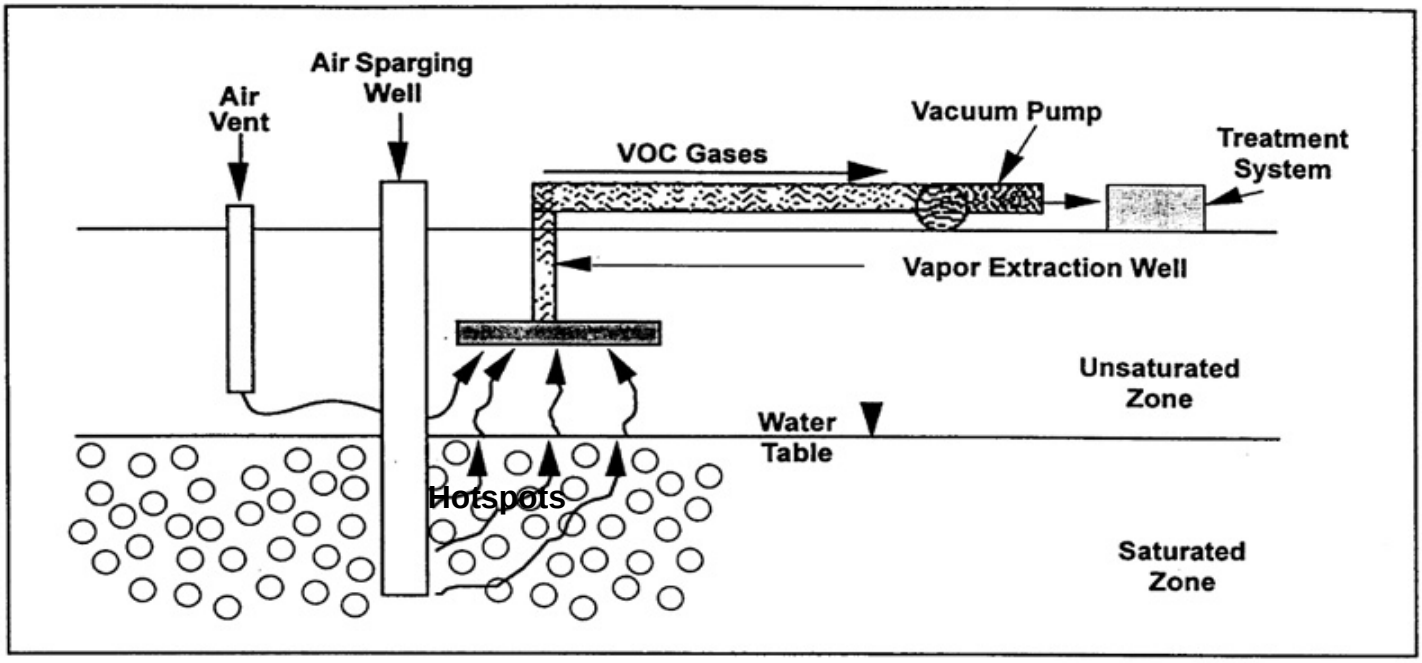
Ken Cobb
Environmental Affairs Department

### For More Information on Innovative Technologies Contact:

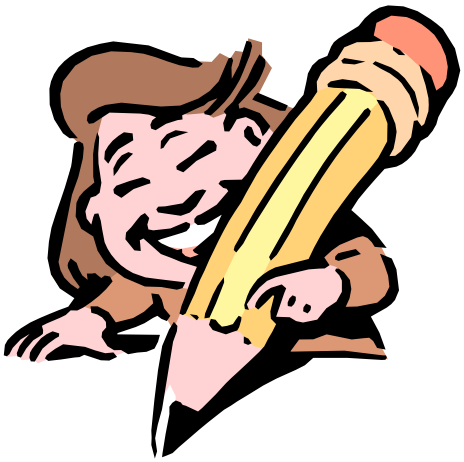
Ms. Rachel Johnson
RAB, Installation Co-Chairman
Environmental Affairs Department
Building 4223 Rifle Range Road
Marine Corps Air Station, Cherry Point
Cherry Point, NC 28533-0006

Mr. Jay Bassett
U.S. Environmental Protection Agency
Region IV
Waste Management Division

**A Combined Soil Vapor Extraction/Air Sparging System**



# Ask Grace?



Please submit questions related to the cleanup or how to become a RAB member at MCAS Cherry Point. Enclose your address and phone number so I can fully understand and discuss your concerns and provide the correct information.

Grace B. Evans
Community Co-Chair

I am still looking for questions from the community.

# Next RAB Meeting

All RAB meetings are open to the public. For further information, please contact the MCAS Public Affairs Office Monday through Friday, 8:00 am to 4:00 p.m. at (919) 466-4241. Additional information on Cherry Point's Installation Restoration Program can be found on the worldwide web at: www.is.ch2m.com/cherrypoint/environmental/home.



# Information Repositories

Information has been placed in the following repositories for public review:

**Havelock-Craven County Public Library**
300 Miller Boulevard
Havelock,
North Carolina 28532

The Havelock-Craven County Library is open Monday & Tuesdays 10:00 a.m.– 9:00 p.m. Wednesday &Thursday 10:00 a.m.- 8:00 p.m. Friday and Saturday 10:00 a.m. – 6:00 p.m., and can be contacted at (252) 447-7509.

**MCAS Library**
Building 298, E Street
MCAS Cherry Point,
North Carolina 28532

The MCAS Library is open Monday through Thursday 9:00 am to 9:45 p.m., Friday 9:00 a.m. to 4:45 p.m., Saturday 10:00 am to 4:45 p.m., Sunday 1:00 p.m. to 8:45 p.m., and can be contacted at (252) 466-3552.

HOTSPOTS
The RAB
Commanding General
MCAS
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# Hotspots

**Restoration Advisory Board**
MCAS Cherry Point

Spring, 1998

*"Yesterday's Pollution, Today's Solution"*


## A message from the Restoration Advisory Board

The Restoration Advisory Board (RAB) of MCAS Cherry Point's Installation Restoration Program has been meeting for three years. These meetings include environmental representatives of the Air Station, North Carolina Department of Environment and Natural Resources, EPA Region IV, as well as environmental engineers from the contractor firm Tetra Tech, NUS.

Each meeting includes a report on what has been accomplished since the previous RAB meeting as well as future activities planned. The meetings are centered around questions from RAB members and the public concerning the status and nature of ongoing or planned cleanup activities. The dialogue is informative and questions that arise needing more explanation become the basis of future meetings. Examples of such meetings have included topics as detailed descriptions of paleo channels beneath the Air Station and the latest developments in soil science. RAB members have toured the "hot spots" to be restored or reclaimed on the Air Station and have been made aware of where the pollution or environmental damages originated. Air Station disposal practices of the past, which were acceptable at that time, have proven to contribute to possible soil or groundwater contaminants, just as similar practices by municipalities, businesses, and individuals are now known to be harmful to the environment.

The Department of Defense must deal with the consequences of past actions at all of the nation's armed forces installations, but as a RAB member for USMC Cherry Point, I feel that the restoration and remediation work taking place at Cherry Point is an open and honest attempt to improve the safety of our surface and ground water and the land. Local universities as well as State and Federal environmental agencies are also involved at the Air Station in researching and experimenting with new techniques to improve the clean up process and provide safer and surer techniques for other groundwater and soil restorations.

To date, there have been few interested local citizens, other than the active RAB members, participating in these meetings. The public is invited to attend and your questions and input are welcome. I would like to encourage you to return the enclosed card and become a part of the solution by either serving on the RAB or being added to our mailing list.

Grace B. Evans
Community Co-Chair

# What is the Installation Restoration Program?

The mission of the Department of Navy Installation Restoration (IR) Program is to identify, assess, characterize, and clean up or control contamination from release of hazardous substances to protect public health, welfare, and the environment at Navy and Marine Corps installations.

### Background

In 1975, the Department of Defense (DoD) began a pilot program to investigate past hazardous waste disposal sites at DoD facilities. In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA). One aspect of RCRA is to manage the present and future disposal of hazardous waste with regard to human health and welfare.

### CERCLA

In 1980 the pilot program was reissued by Congress as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Under CERCLA, additional responsibilities and authority was delegated to the DoD. CERCLA set up the original "Superfund" for cleanups of hazardous waste sites. Sites eligible for cleanup using "Superfund" are those listed by the Environmental Protections Agency on the National Priorities List (NPL). However, federal facilities are not eligible for cleanup funds expended by Superfund.

As a result of CERCLA, the Navy initiated the Navy Assessment and Control of Installation Pollutants (NACIP) program. It involved three phases, an Initial Assessment Study, a Confirmation Study and Remedial Action.

### SARA

In October 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA) which made changes to CERCLA. An important provision of SARA was the inclusion of federal facilities in the Superfund process. The DoD set up the Defense Environmental Restoration Account (DERA) to fund studies and cleanups at military installations.

### Installation Restoration Program

In 1986, the Navy restructured NACIP into the Installation Restoration Program to conform to the Environmental Protection Agency's Superfund procedures. The IR program consists of three phases, the Preliminary Assessment and Site Inspection (PA/SI), Remedial Investigation and Feasibility Study (RI/FS) and Remedial Design and Remedial Actions (RD/RA).

### Preliminary Assessment/Site Inspection

During the PA/SI, an installation is surveyed to determine what activities may have generated hazardous wastes, what those wastes were, and what was done with them. This includes reviews of old records, interviews with current and former employees, and an inspection of the installation. During the PA/SI, specific sites are identified, preliminary soil and water samples are taken, and a determination is made on whether further investigation is warranted. The EPA may, after reviewing the data collected from a Federal facility, list the facility on the National Priorities List. The Defense Restoration Account funds the cleanup for Federal facilities on the NPL.

### Remedial Investigation/Feasibility Study

During the Remedial Investigation, soil and water samples are taken and a health and ecological risk assessment is performed. These studies determine what waste are present, where they are, if they are moving into the groundwater, and if there is a risk to public health and the environment. Sites that pose an imminent threat to public health are cleaned up immediately with removal actions. The Feasibility Study determines the best technology for cleaning up a site.

### Remedial Design/Remedial Action

The Remedial Design/Remedial Action includes the development and implementation of the selected remedy through construction.

### Environmental Cleanup

DoD policy is to cleanup sites as quickly and effectively as possible. In August, 1993, the Navy awarded a five-year Remedial Action Contract (RAC). The RAC is used for the cleanup of environmentally contaminated sites. Using the RAC, the Navy is committed to finding ways to improve timeliness, cost efficiency, and quality for the study and remediation of contaminated sites.

### Community Involvement

Currently the Navy has implemented many community involvement programs. The RAB is just one of the forums the Navy is using for discussing environmental restoration with the community.

# Relationship Between Navy IRP, CERCLA, and RCRA Terminology

## Assessment

Terms

NACIP: Phase I - Initial Assessment Study (IAS); Phase II - Confirmation study (verification step)

CERCLA: Preliminary Assessment Site Investigation (PA/SI)

RCRA: RCRA Facility Assessment RFA

## Investigation

Terms

NACIP: Confirmation Study Characterization Step

CERCLA: Remedial Investigation (RI)

RCRA: RCRA Facility Investigation (RFI)

## Study & Selection

Terms

NACIP: Feasibility Study (FS)

CERCLA: Feasibility Study (FS); Remedy Selection

RCRA: Corrective Measures Study (CMS); Remedy Selection

## Action

Terms

NACIP: Phase III - Corrective Measures Implementation

CERCLA: Remedial Action

RCRA: Corrective Measures

# What Is A RAB?

The RAB is a group established to allow individuals the opportunity to give advice to Marine Corp Air Station (MCAS), Cherry Point on its Installation Restoration program and to act as a focal point for exchanging information between MCAS, Cherry Point and the local community. These members include federal and state regulatory representatives, as well as MCAS, Cherry Point Environmental Affairs Installation Restoration program personnel. The RAB includes members of the public who reflect diverse interests within the local community. These citizens are called community members. Their additional input enables the early and continued two-way flow of information, concerns, values, and needs between the community and MCAS, Cherry Point. The RAB works in partnership with MCAS, Cherry Point on clean-up issues and related matters.

To ensure that RAB community member candidates represent the diversity of the community, the existing RAB members and the installation Commanding Officer, in consultation with the State and EPA, must review and approve candidates. The length of the terms of each RAB member is established by the RAB.

All RAB members must be willing to communicate with the public at large and interest groups concerned with specific Air Station issues. Members serve as a direct and reliable conduit for information to and from the community.

Technical support staff is available to provide information and help explain issues to the RAB members. RAB members are expected to attend all meetings and comment on documents available for review.

# Next RAB Meeting

The next meeting of the RAB will be 7:00 p.m. on April 29, 1998. This meeting will be held at the Havelock City Auditorium located on Hatteras Avenue, Havelock, NC.

All RAB meetings are open to the public so mark your calendars and we hope to see you there.

## RAB Members at MCAS Cherry Point

The RAB currently has five community members serving on their board, they are:

1. Grace B. Evans - Ms. Evans resides in Oriental. She has lived in the area for 23 years and is currently retired. She is an active member of the Neuse River Foundation and St. Thomas Church. Grace owned and taught at sailing schools for 12 years. She is currently serving as the RAB Community Co-Chair.

2. Patricia D. McClellan-Green, Ph.D. – Dr. McClellan-Green resides in Morehead City. Dr. McClellan-Green has lived in the area for 8 years and is currently a Research Assistant Professor at the Duke University Marine Laboratory, School of the Environment. Duke University, Beaufort, NC. She is an active member or the N.C. Society of Toxicology, American Society of Biochemistry and Molecular Biology and is a local Cub Scout Den Leader.

3. Lewis Mitchell – Mr. Mitchell resides in Havelock. He has lived in the area for 25 years and is currently working at MCAS Cherry Point and is an outdoor columnist. He is an active member of the Outdoor Writers Association and Fishing Tackle Retailers Advisory Board.

4. Neil H. Scarborough – Mr. Scarborough resides in Havelock. Mr. Scarborough has lived in the area for 27 years and is currently retired from the United States Marine Corps. He is an active member of the Havelock Appearance Commission and Craven County Clean Sweep Commission.

5. Eugene P. Smith – Mr. Smith resides in Havelock. He has lived in the area 45 years and is currently retired from the North Carolina National Guard. Mr. Smith has previously served as a Havelock City Commissioner.

## Ask Grace?

Do you have questions about the clean up, the government agencies involved, or the information that has been presented in this newsletter? If so, this area of the newsletter is devoted to questions from members of the community. As the RAB Community Co-Chair I will try to answer those questions here or provide you with the information you need to obtain the answers to these questions.

Please submit questions related to the cleanup or how to become a RAB member at MCAS Cherry Point. Please enclose your address and phone number so I can fully understand and discuss your concerns and provide the correct information.

Thanks for your participation and please submit any suggestions for articles or information that you would like to see included in the next edition of the newsletter.

Grace B. Evans

Grace B. Evans
Community Co-Chair

# For More Information

If you would like information about becoming part of the RAB or if you would like to be added to the mailing list, cut out and send the card below.

Name: _____
Address: _____
City: _____ State: ___ Zip: _____
Phone No: _____

Place Stamp Here

Commanding General
MCAS
PSC Box 8013
Cherry Point, NC 28533-0013

_____Yes, I would like to apply to be part of the RAB.
_____Yes, please add me to your mailing list.

# Information Repositories

Information has been placed in the following repositories for public review:

**Havelock-Craven County Public Library**
300 Miller Boulevard
Havelock,
North Carolina 28532

The Havelock-Craven County Library is open Monday & Tuesdays 10:00 a.m. – 9:00 p.m. Wednesday and Thursday 10:00 a.m. – 8:00 p.m. Friday and Saturday 10:00 a.m. – 6:00 p.m., and can be contacted at (919) 447-7509.

**MCAS Library**
Building 298, E Street
MCAS Cherry Point,
North Carolina 28532

The MCAS Library is open Monday through Thursday 9:00 am to 9:45 p.m., Saturday 10:00 am to 4:45 p.m., Sunday 1:00 p.m. to 8:45 p.m., and can be contacted at (919) 466-3552.

For further information, please contact the MCAS Public Affairs Office Monday through Friday, 8:00 am to 4:00 p.m. at (919) 466-4241.

HOTSPOTS
The RAB
Commanding General
MCAS
PSC Box 8013
Cherry Point, NC 28533-0013

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# DoD Fact Sheets

ENVIRONMENTAL RESTORATION

# Vapor Intrusion Mitigation in Existing Buildings Fact Sheet

## Introduction

Vapor intrusion (VI) is the migration of volatile chemicals from subsurface soil and/or groundwater into the indoor air of overlying buildings. Most VI events occur when volatile organic compounds (VOCs) are released into the subsurface from sources such as underground storage tanks, dry cleaners, gasoline stations, or industrial processes such as degreasing metals. VOCs typically associated with VI are chlorinated solvents including carbon tetrachloride, tetrachloroethene (PCE), trichloroethene (TCE), methylene chloride, and gasoline derivatives such as benzene. Hazards presented by these chemicals are typically chronic human health effects such as cancer, organ toxicity, or reproductive effects. Gases, such as methane migrating from landfills, may also present potential explosive hazards. If it is determined that VI is occurring at your site and the contaminant concentrations attributable to VI are above acceptable risk levels, mitigation measures should then be implemented to reduce the indoor air concentrations to below the acceptable threshold.

This fact sheet provides a brief overview of methods that can be used to mitigate VI in existing buildings along with important considerations for selecting and designing an appropriate mitigation system for your site. The methods discussed include sub-slab depressurization, sub-membrane depressurization, building pressurization, and indoor air treatment; however, the focus is on sub-slab depressurization since that is currently the method most frequently used for VI mitigation in existing buildings. Note that this does not mean that sub-slab depressurization is preferred over other mitigation methods or that it will be the best option for every site. More detailed information on VI mitigation systems for existing buildings can be found in the resources listed at the end of this fact sheet.

## Key Factors When Considering VI Mitigation

Developing an effective VI mitigation plan depends on understanding and quantifying the relationship between three key factors that contribute to VI: (1) the properties, concentrations, and locations of the contaminants of concern; (2) the pressure differentials that draw contaminants from the soil gas into the building; and (3) the pathways that allow vapors to pass from soil gas into the building (e.g., cracks, joints, utility penetrations).

### Properties, Concentrations, and Locations of VOCs

The first step in developing a VI mitigation plan is to understand as much as possible about the contaminant plume.

- What are the contaminants and what are their physical characteristics?
- What are the concentrations in groundwater and/or in the soil gas adjacent to or beneath the slab?
- What are the concentrations in the indoor air and ambient air outside of the building?
- Are methane or other explosive gases present? If so, explosion proof equipment will need to be integrated with the diagnostic investigation and mitigation specifications.
- How close is the contaminant plume to the building?
- Are the areas where subsurface vapors are infiltrating the building known? If so, are there mitigation measures that can be taken to reduce infiltration?

It is important that investigations performed prior to mitigation have adequately delineated and characterized the vapor plume and conditions inside the building have been adequately assessed. Also, because materials and products commonly found in buildings can cause false positives in indoor air sampling, a careful survey is needed to catalogue potential background sources of VOCs. DON has developed new guidance on assessing background concentrations for VI, which will be released in the near future.

### Pressure Differentials

It is important to understand the pressure differentials within the building before designing a mitigation system. For some buildings, exhaust blowers mechanically induce significant negative pressure loads on the interior of the building; such blowers often accelerate the rate at which contaminant vapors are drawn into the building. For example, buildings used for industrial processes, laundromats, and restaurants typically exhaust large volumes of air, creating negative pressures throughout the building envelope. Because of their multiple exhaust blowers, strip malls with businesses such as dry cleaners, restaurants, and beauty salons may have multiple negative pressure zones that influence the migration of sub-slab contaminant plumes.

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Temperature differentials affect the pressure between the inside and outside of the building. When warm air inside the building rises, the building undergoes a stack effect, inducing a negative load on the building interior that is applied to the surface of the floor slab. Stack effects are greater during the heating season. Also, wind can produce a complex pressure field around a building, creating a positive pressure on the windward side and a negative pressure on the leeward side. Wind-induced negative pressures can be transferred into the structure, inducing the intrusion of contaminant vapors.

### Completed Pathways

It is also important to try to identify the areas or building characteristics that allow the entry of subsurface vapors into the building. Floor drains, French drains, sumps, cracks and open seams in the floor slab, unfinished slabs, utility penetrations, and open top blocks in the foundation walls are among the most common pathways that allow subsurface vapors to enter buildings.

## Preliminary Mitigation Design Steps

To design effective mitigation measures, it is important to perform both a building inspection and a mechanical investigation.

### Building Inspection

Detailed information about the building construction is required to provide crucial information regarding subsurface characteristics and is a critical component for designing and constructing a mitigation system. For example, if the building was used for industrial processes, there may be very thick concrete machine pads located just beneath the slab, presenting a variety of VI design challenges. Also, in these industrial settings, there may be a combination of active and abandoned utility lines; therefore, an under-slab utility markout identifying the locations of utility lines and areas to be avoided should be completed prior to invasive activities.

The subsurface characteristics may be different under different sections of a building that were built at different times. For example, building additions may have been constructed over a former parking lot or a materials staging yard, resulting in highly compacted soil beneath the slab. It is often valuable to interview active or retired maintenance personnel as they may have valuable information regarding building features.

The walk-through inspection phase is an important part of the investigation. Construction features and building materials should be documented since changes in construction styles and building materials often indicate an addition to the building. The changes indicating additions can be as subtle as a slightly different pattern in the metal roof decking or a small change in a roof truss design. Each addition represents a segmented building foundation and soil conditions from one foundation area to another can be significantly different.

The next step is to carefully catalog all potential contaminant entry points such as slab penetrations, conduit openings, expansion joint openings, floor/wall joint openings, plumbing penetrations, block wall openings, open block tops, slab or wall cracks, or anything that could be considered a soil gas vapor entry point.

Also, the building inspection is an opportune time to assess how the mitigation system can be concealed or blended with its surroundings. For instance, vapor vent pipes may be enclosed behind walls or routed through closets.

### Mechanical Investigation

Heating, ventilation and air conditioning (HVAC) systems generally impact the potential for VI and should be examined prior to designing a mitigation system. Many industrial buildings have a history of multiple uses and may have exhaust equipment no longer in use. All exhaust blowers should be cataloged whether functioning or not, and the cubic feet per minute (CFM) of operating blowers recorded. The supplied air ventilation should be examined and the operational status and location noted so that if contaminant vapors are vented, the air supply system does not pull the vapors back inside the building.

### Mitigation System Design Plan

Before a VI mitigation system is installed, a system design plan should be prepared. The plan may require approval by the state and/or federal regulators, depending on the situation. The mitigation system should be designed conservatively to mitigate the highest concentrations that are reasonably expected to occur. The mitigation plan should include a written scope of work and corresponding drawings. It should be a code compliant, complete, understandable, easy to follow construction document that minimizes the number of requests for information (RFIs) during the construction phase. The written scope should also include a schedule of materials and hardware. The drawings should include a detailed sealing plan and specific details on the planned layout for various features of the system (e.g., piping, vents, blowers, etc., depending on the type of system), mechanical details, and, if necessary, a separate sheet for electrical work. Prior to submittal of design documents to regulatory agencies for approval, all documents should be reviewed and approved by the facility's Department of Public Works or facility resident engineer.

### Sealing VI Pathways

Sealing pathways between the sub-slab soil and the building interior is a basic part of a VI mitigation system (see Figure 1). Sealing makes VI mitigation systems more effective and cost-efficient by limiting the flow of vapor into the building and reducing the loss of conditioned air. Generally, sealing pathways by itself is not an adequate mitigation measure because it does not lower vapor levels significantly or consistently, and sealing does not address the negative pressures that draw soil contaminants into buildings.

Figure 1. Sealing floor cracks.

All areas to be sealed should be addressed in the mitigation plan. A separate plan sheet and cross-sectional detail indicating areas to be sealed should be provided. The method of sealing and sealants should be specified.

## Types of Mitigation Systems

There are several types of mitigation measures available to address VI in existing buildings. These include:

- Sub-slab Depressurization
- Sub-membrane Depressurization
- Building Pressurization
- Indoor Air Treatment

Of these types, sub-slab depressurization (SSD) is the most frequently used and has been shown to be a reliable, cost-effective, long-term solution for lowering VI contaminant concentrations in many situations. Also, SSD systems have been widely used for radon mitigation and, thus have a well-established performance record in that industry. Therefore, this fact sheet provides a more detailed discussion of design considerations for SSD systems, with a brief description of the other mitigation systems and their applications and limitations.

### Sub-Slab Depressurization

SSD (which is sometimes referred to as active soil depressurization) will reverse or mitigate the upward migration of soil gas by creating negative pressure beneath the building floor slab, thereby preventing vapors from entering the building. The SSD system draws contaminants from beneath the slab, through piping, to the exterior of the building where they are vented above the roof line and quickly diluted with ambient air (see Figure 2). An added benefit of an SSD system is that it also improves the overall quality of the indoor air by removing moisture and naturally-occurring radon.

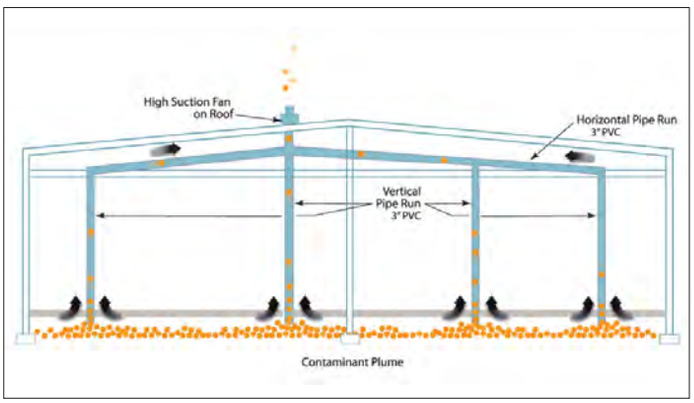



Figure 2. Schematic of an SSD system.

### Pressure Field Extension Testing

In preparation for designing the SSD system, pressure field testing of the soil beneath the slab should first be performed to determine vacuum field extensions; this is accomplished by drilling suction test holes in the slab, auguring out some soil (see Figure 3), and applying vacuum to simulate future vacuum fields. The suction test holes should be located in areas that will be best suited for future suction points. In most cases, the primary hole is drilled just off an interior column pad where soil has the lowest permeability due to compaction during construction activities. Areas along the perimeter typically produce higher air flow but may have limited impact on the more compacted soil near the interior of the building and can have interference from air leakage at the floor-wall joints.

Figure 3. Suction point installation.

The physical characteristics of the sub-slab material should be noted and recorded. Pressure field testing should not be conducted on gusty days and exterior doors throughout the building should be kept closed.

The static vacuum is first measured (see Figure 4) by applying known quantities of vacuum to the test suction hole. Smaller test holes should be drilled through the slab at selected distances from the suction hole and a micro-manometer capable of reading down to 0.0001 inches of water column (in. w.c.) used to measure pressure differential (see Figure 5). By applying different amounts of vacuum to the same suction hole, the relationship between applied vacuum and pressure field extension is established. Pressure testing should be repeated at least once for each separate foundation such as when a building addition has been added.

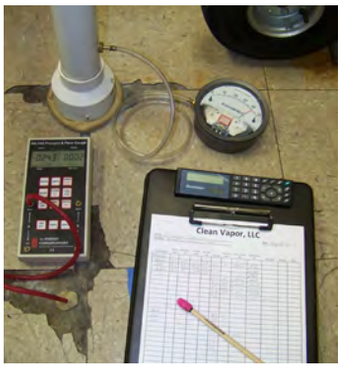



Figure 4. Static vacuum test.

Figure 5. Measuring sub-slab vacuum.

The data from the pressure field testing (in $10^{-4}$ in. w.c.) and the measured volume of exhaust system (in CFM) are then extrapolated to project an expected radius of influence. Once this has been completed, the number of suction points, the types and capacity of suction blowers, and costs are determined. The success of the VI mitigation system and thousands of mitigation dollars depend on correctly and accurately interpreting these data.

### SSD Mitigation System Design

As noted above, all VI mitigation systems should have a design plan prepared before installation. For an SSD system, the drawings should include a detailed sealing plan, suction points, pipe and blowers, mechanical details, and, if necessary, a separate sheet for electrical work. The scope of work should address the following items and any other specifications required by regulators.

- Sealing plan including details of locations and methods for sealing. If sealing is incomplete, building air is drawn into the subslab and then into the mitigation system, which reduces the vacuum available for removing contaminated vapors and increases the loss of conditioned air to the subsurface.
- Suction hole locations, diameter of the holes, method of sealing the suction point to the slab, quantity of soil removed from beneath the slab, and directions for testing and disposing of any removed soil. Cross-section drawings should be provided in the details section.
- Pipe locations, diameter, material (polyvinyl chloride [PVC], cast iron, or steel) including American Society for Testing and Materials (ASTM) specifications, method of joint welding (ASTM method), slope, attachment intervals, balancing and valve installation. Specify methods of controlling smoke or flame spread such as may be appropriate for piping that penetrates a return air plenum.
- Number of roof penetrations and location(s) on a roof plan, the type of roof material, the method of flashing and who is responsible to maintain the roof warranty if one exists.
- Number of blowers, models and manufacturers, location on a plan sheet, performance information, ASTM specifications, and a full materials list including mounting methods and attachment hardware. Figure 6 depicts a standard high-vacuum blower. Also, low pressure sensors should be included for each blower system. They should be placed at locations that are easy to monitor. Figure 7 depicts a mounted low-pressure sensor.
- Wiring specifications including the gauge of wire, conduit shielding, switches, panel locations, and types of breakers. A separate electrical drawing may be necessary.
- Alarm panel locations and design specifications. These panels usually have red and green indicator lights with manual audio shut off alarms. They are activated either by mechanical switches or fully electronic sensors. The fully-electronic versions are more reliable and can also display the power consumed by each blower. They can be equipped with autodialers and integrated with building management systems.

Figure 6. High vacuum blower.

Figure 7. Low-pressure vacuum gauge and sensor.

- Labeling instructions for pipes, sensors and alarms. All vertical riser pipes should be labeled at least once per floor. Horizontal pipes should be labeled in 20-ft intervals and be readable from 3 feet. Low pressure sensors and alarm panels should be placed in accessible locations and labeled with appropriate contact information.

### System Startup and Operations

The person who designed the system should participate in the startup. The following data should be recorded: sub-slab vacuum at the original test holes, riser pipe airflow (see Figure 8) and total system airflow (see Figure 9). The riser pipes should be balanced for maximum distribution of sub-slab vacuum.

Figure 8. Riser pipe airflow test.

Figure 9. Blower exhaust airflow performance testing for total system.

The mitigation design plan should also provide post-mitigation performance evaluation criteria as well as operations and maintenance requirements for the system. Monitoring of low pressure sensors should be integrated with the maintenance schedule. Operations, maintenance, and monitoring should be coordinated with the Department of Public Works or facility maintenance engineer. Where possible, the operations and maintenance functions should be turned over to Base personnel, although it is important that these personnel receive adequate training in the operation of these systems.

## Other VI Mitigation Methods

Although SSD is the most frequently used mitigation method, other types of mitigation may be appropriate for specific conditions where SSD does not work properly (e.g., high water table or a slab poured directly on rock) or as temporary measures until a more permanent system can be designed or fine-tuned.

**Sub-membrane Depressurization** is very similar to SSD; however, it is applied to crawl spaces and basements with earthen floors. An impermeable membrane is applied to cover and seal the exposed soil surface, then suction is applied to depressurize the area below the membrane and vapors drawn through the system are vented to the atmosphere. Design considerations are similar to SSD. It is critical that the membrane be sealed gas tight to the foundation wall and additional care must be taken to maintain the

integrity of the membrane. Sub-membrane depressurization is most commonly used in residential structures.

**Building Pressurization** is applied with SSD systems usually in open finished office spaces where vacuum cannot be sufficiently extended beneath the slab. It is also used in buildings such as daycare facilities where no amount of VI is deemed acceptable. Building pressurization involves adjusting the HVAC system or installing a new system to maintain a positive indoor pressure relative to the sub-slab area. This approach is more commonly used in commercial buildings and can be cost-effective if the existing HVAC already maintains a positive pressure. Increasing the pressure will result in higher energy costs, particularly if significant heating or cooling is required. The interior of most buildings are under negative pressure loads ranging from -0.004 to -0.012 in. w.c. In order to be effective, building pressurization must exceed the forces that induce negative pressures and draw vapors into buildings. Only a select minority of relatively "tight" buildings, with few doors or other openings, would be good candidates for the application of this method and it is not recommended for use in residential structures. Regular maintenance, changing of filters on fresh air intakes, and air balancing is required and appropriate pressure tests and monitoring should be incorporated into the design to ensure that sufficient positive pressures are maintained throughout the areas of the building that might be subject to VI. If the HVAC system is shut off during nights and weekends, the VI impact during the downtime should be evaluated in determining the system's operating requirements.

**Indoor Air Treatment** functions by directing indoor air through air pollution control equipment to remove toxic air contaminants, rather than by preventing their entry into the building. Types include zeolite or granular activated carbon (GAC) filters or photocatalytic oxidation units. Systems can be either in-duct models or portable air cleaners. This generally is not the preferred mitigation method because it does not prevent vapors from entering the building. It encourages the collection of contaminant vapors within the structure and is dependent on the treatment system's uninterrupted performance to protect receptors. However, indoor air treatment may be useful as a temporary solution until another type of mitigation system can be installed. It can also be used in combination with other methods or for treatment of a particular problem room within a building. These systems require periodic maintenance, such as changing the filter cartridges, with frequency depending on the concentrations encountered and on the manufacturer's recommendations. In addition, the high volume of air movement required for these units to be effective is generally not ideal for an office environment (e.g., blowing papers off desks). More frequent indoor air monitoring is required to determine that the system is achieving acceptable indoor air concentrations.

## Final Report

Once the VI mitigation system has been installed and tested, a final report should be prepared. The final report should include the following information: startup documentation, operation and maintenance (O&M) procedures, project documentation, materials cut-sheets, alarm system information, photos, breaker numbers, electric panel locations, as-built drawings, building permit, and electrical inspection documentation.

## Maintaining the VI Mitigation System

Similar to other building systems, VI mitigation systems require monitoring as specified in the written O&M procedures. Monitoring should be done regularly by trained building maintenance personnel with checklists and schedules for documenting system static vacuum gauges and exhaust volumes and testing alarm systems. Depending on their stress load, vapor blowers may need to be replaced every few years.

## Post-Mitigation Building Renovation

Structural modifications, major renovations, or changes in the HVAC systems made after a VI mitigation system has been installed could affect the system's performance and warranties. Information about the mitigation system should be incorporated into the building changes. When the changes are complete, the mitigation system should be re-tested to verify operational effectiveness.

## Design Considerations for Residences

Some design considerations will be different for residences than for commercial/industrial settings. Often the size of the system installed will be smaller and less complex; however, the aesthetics of the system may be more important. Locations for vent piping and blowers should be selected to minimize disturbance to the residents and to be less noticeable, particularly inside the home. The noise of the blower should be considered and may require a cover to minimize the sound. Inspections can be disruptive to residents; therefore, when possible, it may be desirable to mount monitors on the outside of the building to reduce the need to enter the home.

## Costs for VI Mitigation Systems

Costs for VI mitigation systems will depend on the building size and structure, subsurface conditions, and type of system installed. Costs for SSD and sub-membrane depressurization systems are similar and are largely driven by permeability of the underlying soil. Buildings underlain by compacted low permeability soil typically have higher costs than those underlain by a high permeability substrate such as crushed stone. Representative costs for industrial style buildings and strip malls are on the order of \$5/ft$^2$ to \$7/ft$^2$; houses can be up to \$10/ft$^2$; schools and daycare facilities are generally \$7/ft$^2$ to \$8/ft$^2$. However, SSD costs have ranged from as low as \$3/ft$^2$ to as high as \$20/ft$^2$. For building pressurization, there will be no capital costs if the existing HVAC system can be used to achieve positive pressure; however, annual O&M costs are estimated at \$200 to \$750/yr and energy costs for heating and cooling may increase substantially. Indoor air treatment tends to be expensive compared to other types of VI mitigation. Capital costs in the range of \$20,000 and annual operating expenses of \$15,000 to \$20,000 are not uncommon for indoor air treatment.

## Case Study for SSD: Electronics Store in a Shopping Mall

The subject for this case study is a former big-box electronics store downgradient of a dry cleaning operation that spilled tetrachloroethylene (PCE) over a 20-year period through inadequate recapture procedures. The store, now vacant, is approximately 29,000 $ft^2$ total area, with 21,000 $ft^2$ in the original structure and 8,000 $ft^2$ in the addition.

First, the utility markout was completed, the sampling (soil gas, groundwater, and ambient air) was performed, and an access agreement was put in place. Next, the building inspections took place. The sub-slab material beneath the original building is compacted silt clay; the addition consisted of crushed stone beneath the slab. Perimeter foundation walls were block, with interior vertical steel column supports. The ceiling was 20 ft high and constructed of a steel deck and truss system; the roof was constructed of built-up asphalt material.

After the building inspection, the pressure field testing proceeded. Suction hole and vacuum test hole transect locations are shown on Figure 10. Using the vacuum data collected during the pressure field testing, suction blower(s) were specified to achieve the right balance of vacuum and airflow required to develop a negative pressure field sufficient to arrest soil gas attenuation. Once the radius of influence was calculated, the number and location of suction points were determined. The location of suction points, pipe runs and blowers, exhausts, future air handlers and fresh air intakes were planned around the future use of the building.

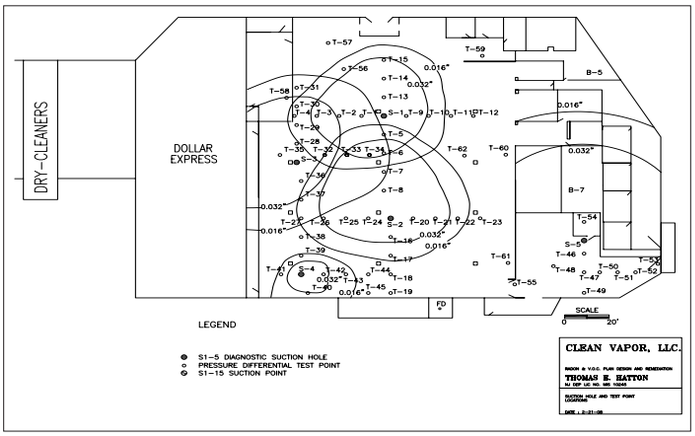



Figure 10. Results of sub-slab pressure field tests.

### System Design

The system designed for this building had 15 suction points and seven blowers (see Figure 11). The tight soils under the original structure required high-vacuum, low-flow blowers, while the more permeable materials under the addition required low-vacuum, high-flow blowers. The design included a custom alarm panel that triggers a visual and audible alarm if a blower is operating out of the desired performance range. The design was later amended to include some trenching and lateral drilling to create a negative pressure field beneath an adjacent store.

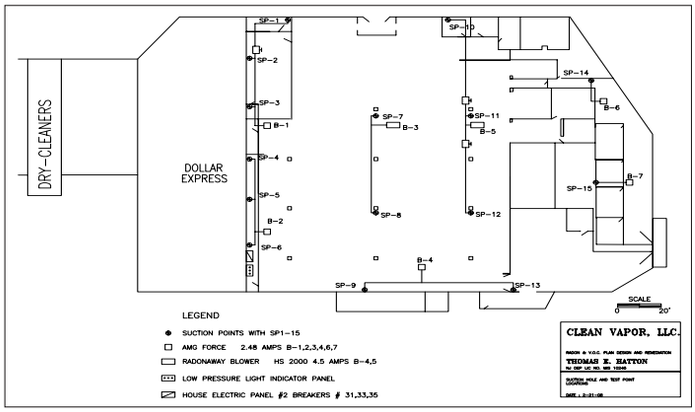



Figure 11. Blower and suction point design.

### System Startup

After the VI mitigation system was installed, the start-up process included adjusting the gate valves at individual riser pipes to balance air flow and the distribution of the sub-slab vacuum. Most of the vacuum field data indicated negative sub-slab pressures greater than -0.01 in. w.c. Sub-slab vacuum readings at one corner of the building were closer to -0.004 in. w.c. An open floor/wall joint behind a sheetrock wall was identified, resulting in leakage responsible for the loss of vacuum pressure. The sheet rock wall was opened, the joint sealed, and the negative pressure field increased.

Post-mitigation indoor air samples were collected using Summa canisters and analyzed by EPA Method TO-15. Indoor air concentrations were below the 3.0 $\mu g/m^3$ indoor, non-residential screening level for PCE in New Jersey where the building is located.

## Resources

Additional information on VI mitigation for existing buildings can be found in the following sources:

California Department of Toxic Substances Control. 2009. Vapor Intrusion Mitigation Advisory.
http://www.dtsc.ca.gov/sitecleanup/upload/VI_Mitigation_Advisory_Apr09.pdf

Interstate Technology and Regulatory Council (ITRC). 2007. Vapor Intrusion: A Practical Guideline.
http://www.itrcweb.org/Documents/VI-1.pdf

U.S. Environmental Protection Agency. 2008. Engineering Issue: Indoor Air Vapor Intrusion Mitigation Approaches. EPA/600/R-08-115.
http://www.clu-in.org/download/char/600r08115.pdf

***Photos and drawings throughout provided courtesy of Clean Vapor, LLC.***

# Munitions Response Site Prioritization Protocol

## Stakeholder Fact Sheet

## Background

For decades, the Department of Defense (DoD) has used military munitions in training and testing to ensure force readiness. Munitions remaining from DoD activities may present explosive, chemical agent, human health, and environmental hazards at active installations, Base Realignment and Closure (BRAC) installations, Formerly Used Defense Sites (FUDS), or other properties no longer under DoD control. Whenever a former range, storage area, or disposal site is put to another use, actions must be taken to ensure remediation of any hazards.

DoD has been responding to properties that were known or suspected to contain munitions hazards for over 30 years. In 2001, the Department established the Military Munitions Response Program (MMRP) to address the hazards posed by past military munitions-related activities. As of September 2006, DoD had identified over 3,300 sites eligible for the MMRP, referred to as munitions response sites (MRSs), that may require response actions (e.g., investigation, removal actions, and remedial actions). To efficiently and effectively expedite response actions at all MRSs, the Department must prioritize these sites based on the potential risk posed to human health and the environment.

| Munitions Reponse Sites (MRSs) as of FY2006 | | |
|---|---|---|
| 1,333 on active installations | 318 on BRAC installations | 1,658 on FUDS properties |

## The Protocol

In the FY2002 National Defense Authorization Act (10 USC 2710), Congress directed DoD to develop a protocol for assigning MRSs a relative priority for response activities. DoD convened a workgroup with personnel knowledgeable in explosive safety and environmental responses to develop the framework for prioritizing MRSs. This workgroup engaged in a collaborative process with the States, American Indian and Alaska Native Tribes, and federal agencies to develop a methodology to assign a relative priority for response activities at each MRS in DoD's inventory (the MRS inventory).

On October 5, 2005, DoD published the Munitions Response Site Prioritization Protocol (referred to as the Protocol) as a Federal Rule, codified at 32 CFR 179. The Protocol requires the DoD Components to apply the prioritization methodology to determine a relative priority for munitions response actions at MRSs. The priority assigned is based on the overall conditions at each MRS.

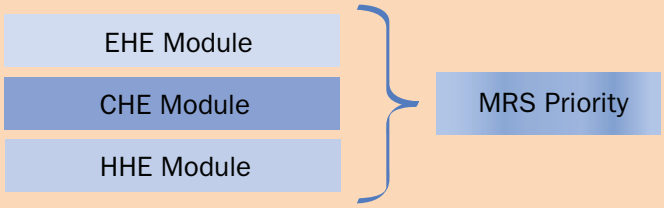
**Web Site**

**The MRS inventory is updated annually and published in the Defense Environmental Programs Annual Report to Congress:**

*http://deparc.egovservices.net/deparc/do/mmrp*

The potential risk posed by past munitions activities at each MRS is determined through the Protocol's central feature, three hazard evaluation modules:

- Explosive Hazard Evaluation (EHE) Module: provides the approach for assigning a relative priority to an MRS where munitions and explosives of concern (MEC) are known or suspected to be present.
- Chemical Warfare Material Hazard Evaluation (CHE) Module: provides the approach for assigning a relative priority to an MRS where CWM hazards are known or suspected to be present.
- Health Hazard Evaluation (HHE) Module: provides the approach for evaluating the relative risk to human health and the environment where munitions constituents and any incidental nonmunitions-related contaminants are known or suspected to be present.




An MRS's relative priority is determined by comparing the results of one or more hazard evaluation modules.

## Sequencing Decisions

After an MRS is prioritized, it must be sequenced for response action. The sequencing for response action is based primarily on the MRS's relative risk, reflected in its priority. As a matter of DoD policy, an MRS with higher relative risks will be addressed before an MRS with lower relative risks. Occasionally, other factors, such as environmental justice, economic development, and programmatic concerns can influence sequencing decisions.

## Stakeholder Involvement

For the purposes of the Protocol, stakeholders include, but may not be limited to, federal agencies, state and local regulatory agencies, tribal governments, community members, and current landowners involved in the Protocol's application. DoD offers all stakeholders opportunities to participate throughout the Protocol's application. DoD believes that if stakeholders are engaged early and often throughout the process, they will gain a better understanding of the Protocol and its application. DoD Components are required to notify stakeholders of the opportunity to participate in the application of the Protocol; publish an announcement requesting participation; consider stakeholders' input in prioritization and sequencing decisions; and document stakeholder input. DoD recognizes that stakeholder involvement is an effective way to identify and address stakeholder concerns about environmental and safety issues related to MRSs.

Once an MRS's relative priority is determined, DoD Components will provide stakeholders with the opportunity to review and comment on how an MRS is sequenced for response actions. DoD believes that a proactive stakeholder involvement program will facilitate the munitions response process and help ensure the protection of human health and the environment.

**Web Site**

**For more information on the MMRP or the Protocol please visit:**

*https://www.denix.osd.mil/denix/Public/Library/Cleanup/CleanupOfc/derp/mmrp.html*

# Other Organization Fact Sheets

United States Environmental Protection Agency

Office of Solid Waste and Emergency Response (5102G)

EPA 542-F-12-023
March 2012

# Green Remediation Best Management Practices: Overview of EPA's Methodology to Address the Environmental Footprint of Site Cleanup

Office of Superfund Remediation and Technology Innovation

Quick Reference Fact Sheet

The U.S. Environmental Protection Agency (EPA) *Principles for Greener Cleanups* outline the Agency's policy for evaluating and minimizing the environmental "footprint" of activities undertaken when cleaning up a contaminated site.[1] Use of the best management practices (BMPs) recommended in EPA's series of green remediation fact sheets can help project managers and other stakeholders apply the principles on a routine basis while maintaining the cleanup objectives, ensuring protectiveness of a remedy, and improving its environmental outcome.

Remediation is underway or planned at thousands of sites across the United States under cleanup programs administered by government agencies and through voluntary efforts of site owners or operators. The activities needed to treat, contain, or otherwise address contaminated soil, water, and other environmental media and restore a site to productive use can collectively leave an environmental footprint. Cleanups involving complex activities may benefit from a detailed footprint analysis to inform decision-making about application of suitable BMPs for greener cleanups. EPA's **Methodology for Understanding and Reducing a Project's Environmental Footprint** identifies metrics associated with this footprint and a specific process to quantify or qualify those metrics.

The methodology adheres to EPA's *Principles for Greener Cleanups*, which involve five core elements:

- Reducing total energy use and increasing the percentage of renewable energy
- Reducing air pollutants and greenhouse gas (GHG) emissions
- Reducing water use and negative impacts on water resources
- Improving materials management and waste reduction efforts, and
- Protecting ecosystem services.

EPA developed the methodology (as documented in EPA report 542-R-12-002) as a means to encourage environmentally friendly behaviors on the part of decision-makers and day-to-day staff involved with site cleanup. It is designed to identify the most significant contributors to a project's environmental footprint and help integrate associated reduction parameters into conceptual design, construction, and operation of the project. EPA does not require environmental footprint analysis of cleanup activities but prefers use of the methodology when an analysis is conducted. Voluntary use of the methodology to varying degrees during any stage of cleanup may improve the project's environmental outcome.

EPA began developing the methodology in 2009 in order to identify a single, comprehensive set of metrics that could apply to most sites. Establishment of the methodology was also a strategic action outlined in the Agency's 2010 *Superfund Green Remediation Strategy*.[2] To test and refine proposed metrics and processes, the Agency conducted multiple pilot studies for RCRA corrective actions and Superfund remedial actions. Detailed information on three studies overseen by EPA Region 9 is available online.[3] In September 2011, the draft methodology also was made available to the public for review and feedback.

The methodology provides a **roadmap** to quantify the project's environmental footprint. The quantified information can then be used to identify opportunities for adjusting the project's operating parameters and applying BMPs in ways that reduce the footprint.

The process for conducting a footprint analysis following the methodology involves seven general steps:

1) Determining the goals and scope of the analysis, which vary with the remedial stage and site-specific factors
2) Gathering information about design, construction, and operation of the site's existing or anticipated remedy
3) Quantifying the onsite materials and waste metrics, which account for the materials used, the recycled content of those materials, various wastes generated, and portions of the waste that are recycled or reused
4) Quantifying the onsite water metrics, which consider the source and amount of water used on site as well as the fate of water after use
5) Using the combined information to quantify energy metrics and air metrics, which jointly consider the total amount of energy used (including the portion from renewable resources) and the air emissions associated with energy usage, onsite activities, and offsite support
6) Qualitatively describing ecosystem services that are affected during remedy implementation, and
7) Presenting results of each previous step and the overall results of analysis.

Access EPA's in-depth methodology report online at:
http://www.clu-in.org/greenremediation/methodology

EPA's methodology report includes sample approaches to reducing environmental footprints of projects involving pump-and-treat, in situ chemical oxidation, and bioremediation technologies or excavation. In addition, its appendices provide:

- Seventeen exhibits containing planning checklists along with user-friendly reference tables on aspects such as common conversion factors, contents of materials frequently used for cleanup, and typical energy demands of equipment deployed in the field
- A series of detailed tables illustrating potential formats for organizing raw data and quantified estimates and for presenting overall results of footprint analysis, and
- Several scenarios illustrating use of the methodology to quantify the environmental footprint of a cleanup.

Based on results of the pilot projects and input from cleanup project managers, EPA selected 22 metrics for estimating the project footprint (as summarized below). Users may wish to supplement this set of metrics with additional ones meeting project or organizational needs and to tailor the presentation of footprint analysis results accordingly. The Agency's rationale for selecting each of these metrics is provided in the methodology report.

**Summary of Environmental Footprint Metrics**

| Core Element | Metric | Unit of Measure |
|---|---|---|
| **Materials & Waste** (M&W) | M&W-1. Refined materials used on site | Tons |
| | M&W-2. % of refined materials from recycled or waste material | % |
| | M&W-3. Unrefined materials used on site | Tons |
| | M&W-4. % of unrefined materials from recycled or waste material | % |
| | M&W-5. Onsite hazardous waste disposed of off site | Tons |
| | M&W-6. Onsite non-hazardous waste disposed of off site | Tons |
| | M&W-7. % of total potential waste recycled or reused | % |
| **Water** (W) | Onsite water used (by source) | |
| | ▪ W-1. Source, use, fate combination #1 | Millions of gallons |
| | ▪ W-2. Source, use, fate combination #2 | Millions of gallons |
| | ▪ W-3. Source, use, fate combination #3 | Millions of gallons |
| | ▪ W-4. Source, use, fate combination #4 | Millions of gallons |
| **Energy** (E) | E-1. Total energy used | MMBtu |
| | E-2. Total energy voluntarily derived from renewable resources | |
| | ▪ E-2A. Onsite generation or use and biodiesel use | MMBtu |
| | ▪ E-2B. Renewable electricity purchase | MWh |
| | ▪ E-2C. Purchase of renewable energy certificates (RECs) | MWh |
| **Air** (A) | A-1. Onsite NOx, SOx, and PM emissions | Pounds |
| | A-2. Onsite HAP emissions | Pounds |
| | A-3. Total NOx, SOx, and PM emissions | Pounds |
| | A-4. Total HAP emissions | Pounds |
| | A-5. Total GHG emissions | Tons $CO_2e$ |
| **Land & Ecosystems** | Qualitative description | |

The series of technical tables appending the methodology report provides potential formats for data management. Use of these formats can help decision-makers understand the relationships among activity-specific data, identify activities with the largest footprints, and map various opportunities to reduce the overall project footprint.

Considerations when interpreting final results of footprint analysis include:

- Goals of the analysis
- Data quality
- Tradeoffs between metrics, and
- Magnitude of the footprint.

[1] U.S. EPA; *Principles for Greener Cleanups;* August 27, 2009; http://www.epa.gov/oswer/greenercleanups
[2] U.S. EPA; Superfund & Green Remediation; http://www.epa.gov/superfund/greenremediation/
[3] U.S. EPA; CLU-IN Green Remediation Focus; Footprint Assessment; http://www.cluin.org/greenremediation/subtab_b3.cfm

Visit Green Remediation Focus online
to learn more about the BMPs:
http://www.cluin.org/greenremediation

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OSWER Office of Superfund Remediation and Technology Innovation
U.S. Environmental Protection Agency

United States Environmental Protection Agency | Office of Research and Development Washington, DC 20460 | National Risk Management Research Laboratory Ada, OK 74820 | EPA/600/F-98/021 May 1999

# Monitored Natural Attenuation of Petroleum Hydrocarbons

## U.S. EPA REMEDIAL TECHNOLOGY FACT SHEET

**Scope of this fact sheet:**

**This fact sheet explains what "monitored natural attenuation" means when the term is used to describe a potential strategy to remediate a contaminated site. It also describes the various physical, chemical and biological processes of natural attenuation that may occur at a site. This fact sheet is written for an audience with little or no scientific background and is meant to aid Federal, State, and local regulators in educating the public on complex environmental issues. Other informational materials are in preparation and will provide more specific details and scientific depth for the evaluation of monitored natural attenuation as a remedy at specific sites.**

### What Is Monitored Natural Attenuation?

The term "monitored natural attenuation," as used by the EPA, refers to the reliance on natural processes to achieve site-specific remedial objectives. Where found to be a viable remedy, monitored natural attenuation may be used within the context of a carefully controlled and monitored site cleanup approach. To be considered an acceptable alternative, monitored natural attenuation would be expected to achieve site remedial objectives within a time frame that is reasonable compared to that offered by other more active methods. Monitored natural attenuation is always used in combination with "source control;" that is, removal of the source of the contamination as far as practicable.

Natural attenuation processes include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or ground water. These processes include biodegradation; dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of contaminants.

Spills and leaks of petroleum hydrocarbons such as gasoline, diesel, motor oils, and similar materials have caused widespread contamination in the environment. Generally these contaminants are present both in NAPL form (non-aqueous phase liquid; the bulk liquid petroleum hydrocarbon) and also as dissolved contaminants in the ground water. Cleanup of both the NAPL and dissolved contamination in soils and ground water using many common remedial techniques is often expensive and slow. However, under the proper conditions at some sites, natural attenuation can contribute significantly to remediation of dissolved petroleum hydrocarbon contamination and may accomplish site remediation goals at a lower cost than conventional remediation technologies, within a similar time frame. Natural attenuation is not expected to remediate NAPL.

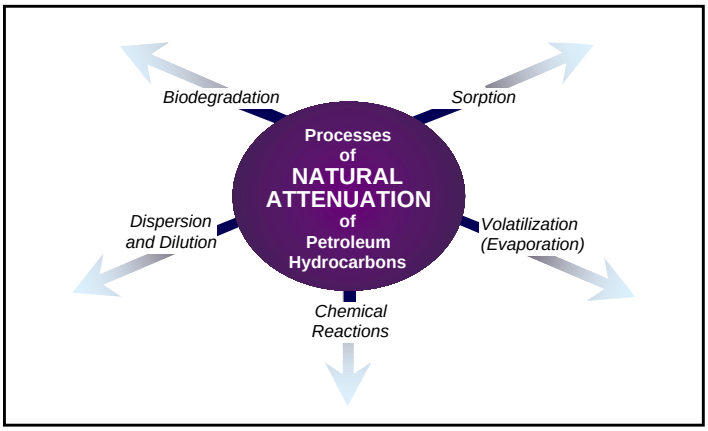


**Figure 1. Processes of natural attenuation of petroleum hydrocarbons.**

### How Does Natural Attenuation Work?

#### *Biodegradation*

One of the most important components of natural attenuation is biodegradation—the change in form of compounds carried out by living creatures such as microorganisms. Under the right conditions, microorganisms can cause or assist chemical reactions that change the form of the contaminants so that little or no health risk remains. Biodegradation is important because many important components of petroleum hydrocarbon contamination can be destroyed by biodegradation, biodegrading microorganisms are found almost everywhere, and biodegradation can be very safe and effective.

Many of the most environmentally significant components of petroleum hydrocarbons such as BTEX (benzene, toluene, ethyl benzene, and the xylenes) and some PAHs (polynuclear aromatic hydrocarbons) can be biodegraded under the proper environmental conditions. However, some PAHs, MTBE (methyl tertiary butyl ether, a gasoline additive) and other components of petroleum hydrocarbons may not readily biodegrade. Generally speaking, the petroleum hydrocarbons that are most mobile in the environment (except for MTBE) are also readily biodegraded. Once the more mobile and easily degradable petroleum hydrocarbons are removed, the remaining hydrocarbons, which are not readily degraded, can still pose a high risk in the immediate vicinity of the area in which they remain.

Microorganisms are most effective at degrading low to moderate concentrations of contaminants. High concentrations and very low concentrations of contaminants may not be biodegradable.

Contaminants in the NAPL phase are not effectively degraded by microorganisms.

As contaminants biodegrade, the products of the degradation process may or may not be less harmful than the original contaminants. Therefore, it is important to investigate the site processes carefully to be sure that biodegradation is making the site safer. Fortunately, petroleum hydrocarbons appear to degrade to less harmful products in almost all cases. Also, under some conditions, the microbial activity involved in degrading the contaminants could cause mobilization of certain materials such as manganese or arsenic which could cause environmental problems. Monitoring for these potential problems is necessary.

### *Sorption*

The soil and sediment particles (sand, silt, clay, organic matter) through which the ground water and dissolved contaminants move can sorb the contaminant molecules onto the particle surfaces, and hold bulk liquids in the pores in and between the particles, thereby slowing or stopping the movement of the contaminants. This process can reduce the likelihood that the contaminants will reach a location (such as a drinking water well or stream) where they would directly affect human or environmental health.

### *Dispersion and Dilution*

As the dissolved contaminants move farther away from the source area, the contaminants are dispersed and diluted to lower and lower concentrations over time. Eventually the contaminant concentrations may be reduced so low that the risk to human and environmental health will be minimal.

### *Chemical Reactions*

Some contaminants degrade by chemical reactions (that are not facilitated by microorganisms). However, most petroleum hydrocarbons are not significantly degraded by chemical reactions in soil or ground water.

### *Volatilization (Evaporation)*

Many petroleum hydrocarbons evaporate readily into the atmosphere, where air currents disperse the contaminants, reducing the concentration. In some cases, this means of natural attenuation may be useful, since the hydrocarbons can be broken down by sunlight. Vapors in contact with soil microorganisms may be biodegraded. Volatilization from NAPL or ground water into soil gas may be an important exposure pathway in a risk analysis.

## Importance of Natural Attenuation Processes

The processes involved in natural attenuation are operating at all contaminated sites, but the contribution of natural attenuation to achieving remediation goals varies in different situations. At some sites natural attenuation may meet all the remedial goals, and at other sites natural attenuation may make little or no contribution. Therefore, before natural attenuation can be selected as a remedial

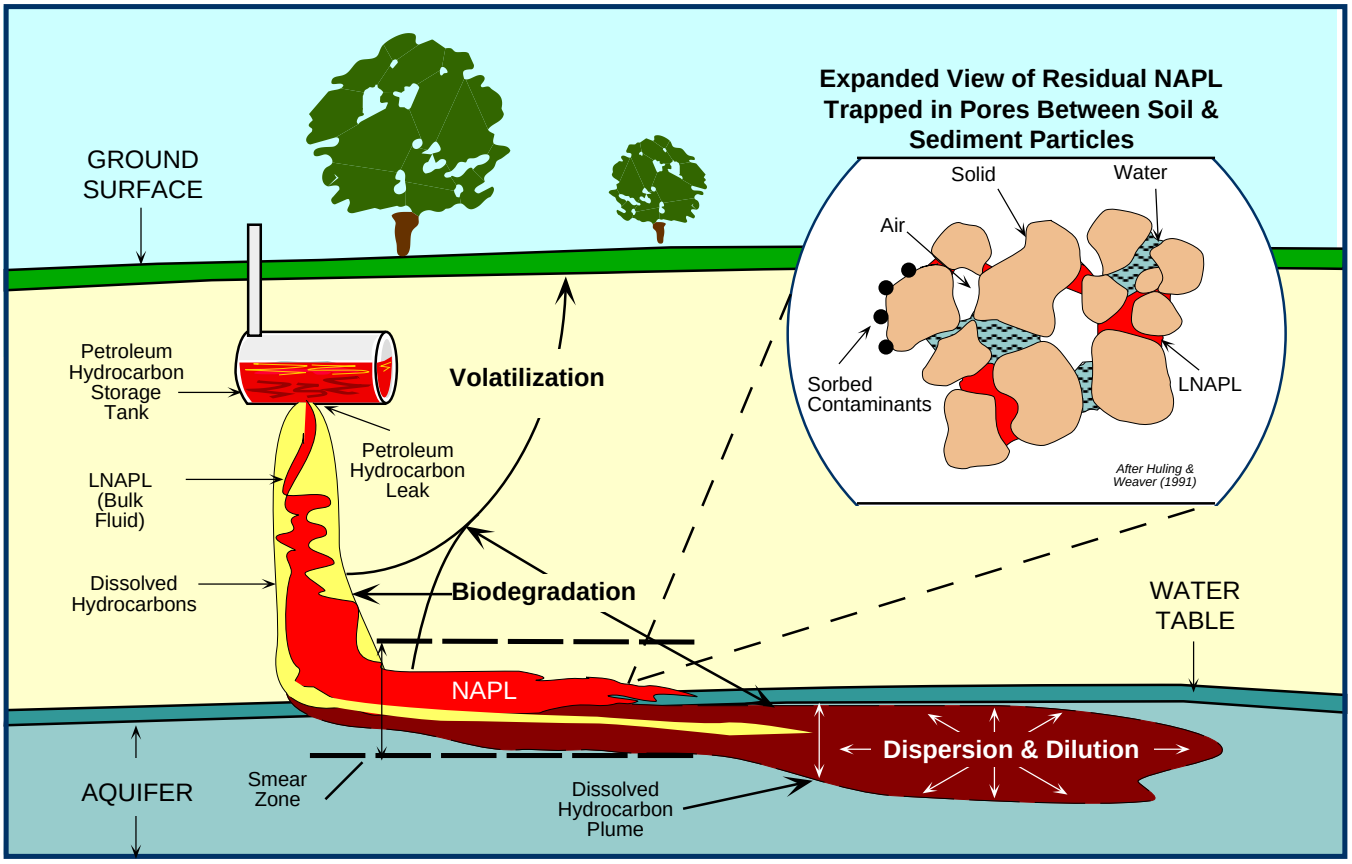


**Figure 2.** **As the bulk hydrocarbon moves through the subsurface, some of the liquid may be trapped in the soil or sediment pores (residual saturation); some may evaporate (volatilization); some may become sorbed to the surface of the soil particles (sorption) and some may dissolve in the ground water (dissolved plume). Since bulk petroleum hydrocarbon liquids are less dense than water, the liquid may float on top of the ground water table, rising and falling as the water table rises and falls through the seasons. This process can create a smear zone of residual saturation. As the dissolved plume moves, the concentration of the dissolved hydrocarbons is lowered by dispersion and dilution effects. Microorganisms may degrade hydrocarbons that are dissolved, volatilized or sorbed.**

alternative, it is necessary to study each contaminated site carefully to determine how effective natural attenuation is for attaining site remediation goals.

Bulk petroleum hydrocarbons–gasoline, diesel, motor oil, etc., in the NAPL form, rather than dissolved in water or sorbed on soil particles–are not readily degraded by microorganisms. Also, dispersion, dilution and sorption of the NAPL is slow. Therefore, it is important to determine where this NAPL may be at a polluted site, in order to remove or contain as much of it as possible, because the processes of natural attenuation would not effectively remediate most of this material in a reasonable time frame. Natural attenuation processes are usually of most significance for the remediation of those contaminants dissolved in water, sorbed on soil particles, or in the vapor form.

## How Is Natural Attenuation Evaluated?

In order to decide what contribution natural attenuation can make to meeting site remediation goals, very detailed site investigations must be carried out. Generally, the investment in site characterization for determining the applicability of natural attenuation is at least as expensive and time consuming, if not more so, than for any other site remediation technology. However, the long-term costs for natural attenuation (if natural attenuation is able to achieve most of the site remediation goals) may be less than for other remedial technologies.

In order to properly evaluate natural attenuation at a site, it is necessary to know the location and concentration of the contaminants, and how the contaminants move in the environment. Since contaminants commonly move dissolved in water, the movement of ground water at the site must be carefully investigated to determine how the water moves, when it moves and where it moves. The subsurface is often very complex in terms of water movement pathways, and determination of these pathways can be expensive.

Also, evaluation of natural attenuation processes may require a detailed understanding of the site geochemistry, especially where biodegradation processes are involved. The compounds that may be associated with microbial activity, such as oxygen, carbon dioxide, nitrate, sulfate, iron, etc., should be measured in order to gain understanding of what processes the microorganisms are using, how fast these processes are occurring, and what the results of these processes are likely to be.

Evaluation of natural attenuation usually involves not only the determination of what processes of natural attenuation are occurring, but also the estimation of what the results of these processes will be in the future. Therefore, use of natural attenuation as part of the site remedial plan will necessarily require that a long-term monitoring plan be instituted. The monitoring plan should provide information to allow regulators to decide if natural attenuation is meeting site objectives, and to verify that there are no changes in conditions affecting natural attenuation. A detection system for early warning of impacts on sensitive receptors, such as drinking water wells, streams and wetlands should be provided. Also, plans must be developed for contingency remedial efforts that can be implemented if natural attenuation processes do not fulfill expectations.

## Summary

Natural attenuation processes occur to varying degrees in all petroleum hydrocarbon contamination sites, and may contribute significantly to site remedial goals. Biodegradation processes can be particularly important for natural attenuation of petroleum hydrocarbons, because microorganisms can degrade most environmentally significant petroleum hydrocarbons. Hydrocarbons dissolved in water or sorbed on soil particles are the most readily subject to natural attenuation processes, but bulk hydrocarbons (NAPLs) are not readily subject to natural attenuation in the short term. The significance of natural attenuation processes at a given site for achieving site remedial goals must be carefully evaluated, and extensive site characterization and monitoring is usually necessary.

## Additional Information:

U.S. EPA. *A Citizen's Guide to Natural Attenuation.* EPA 542-F-96-015. October 1996. http://www.epa.gov/swertio1/download/remed/citguide/natural.html.

U.S. EPA. *Commonly Asked Questions Regarding the Use of Natural Attenuation for Petroleum-Contaminated Sites at Federal Facilities.* http://www.epa.gov/swerffrr/petrol.htm. (20 May 1999).

U.S. EPA. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*. EPA/600/R-98/128. September 1998. http://www.epa.gov/ada/reports.html.

U.S. EPA. *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites.* OSWER Directive 9200.4-17P, April 21, 1999. http://www.epa.gov:80/ordntrnt/ORD/WebPubs/biorem/D9200417.pdf.

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United States
Environmental Protection
Agency

Office of Solid Waste and
Emergency Response
(5102G)

EPA 542-F-01-001
April 2001
www.epa.gov/superfund/sites
www.cluin.org

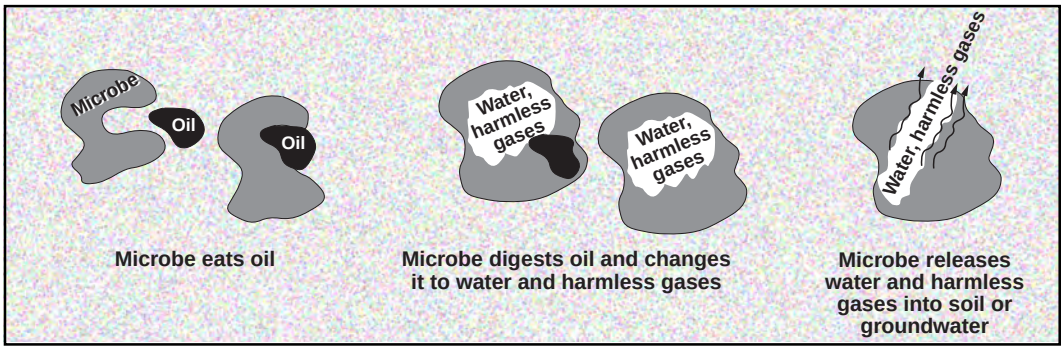
# A Citizen's Guide to Bioremediation

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. Some, like bioremediation, are considered new or *innovative*. Such methods can be quicker and cheaper than more common methods. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What is bioremediation?

Bioremediation allows natural processes to clean up harmful chemicals in the environment. Microscopic "bugs" or *microbes* that live in soil and groundwater like to eat certain harmful chemicals, such as those found in gasoline and oil spills. When microbes completely digest these chemicals, they change them into water and harmless gases such as carbon dioxide.




## How does it work?

In order for microbes to clean up harmful chemicals, the right temperature, nutrients (fertilizers), and amount of oxygen must be present in the soil and groundwater. These conditions allow the microbes to grow and multiply—and eat more chemicals. When conditions are not right, microbes grow too slowly or die. Or they can create more harmful chemicals. If conditions are not right at a site, EPA works to improve them. One way they improve conditions is to pump air, nutrients, or other substances (such as molasses) underground. Sometimes microbes are added if enough aren't already there.

The right conditions for bioremediation cannot always be achieved underground. At some sites, the weather is too cold or the soil is too dense. At such sites, EPA might dig up the soil to clean it above ground where heaters and soil mixing help improve conditions. After the soil is dug up, the proper nutrients are added. Oxygen also may be added by stirring the mixture or by forcing air through it. However, some microbes work better without oxygen. With the right temperature and amount of oxygen and nutrients, microbes can do their work to "bioremediate" the harmful chemicals.

Sometimes mixing soil can cause harmful chemicals to evaporate before the microbes can eat them. To prevent these chemicals from polluting the air, EPA mixes the soil inside a special tank or building where chemicals that evaporate can be collected and treated.

Microbes can help clean polluted groundwater as well as soil. To do this, EPA drills wells and pumps some of the groundwater into tanks. Here, the water is mixed with nutrients and air before it is pumped back into the ground. The added nutrients and air help the microbes bioremediate the groundwater. Groundwater can also be mixed underground by pumping nutrients and air into the wells.

Once harmful chemicals are cleaned up and microbes have eaten their available "food," the microbes die.

## Is bioremediation safe?

Bioremediation is very safe because it relies on microbes that naturally occur in soil. These microbes are helpful and pose no threat to people at the site or in the community. Microbes themselves won't hurt you, but never touch the polluted soil or groundwater—especially before eating.

No dangerous chemicals are used in bioremediation. The nutrients added to make microbes grow are fertilizers commonly used on lawns and gardens. Because bioremediation changes the harmful chemicals into water and harmless gases, the harmful chemicals are completely destroyed. To ensure that bioremediation is working, EPA tests samples of soil and groundwater.

## How long will it take ?

The time it takes to bioremediate a site depends on several factors:

- types and amounts of harmful chemicals present
- size and depth of the polluted area
- type of soil and the conditions present
- whether cleanup occurs above ground or underground

These factors vary from site to site. It can take a few months or even several years for microbes to eat enough of the harmful chemicals to clean up the site.

## Why use bioremediation?

EPA uses bioremediation because it takes advantage of natural processes. Polluted soil and groundwater can be cleaned at the site without having to move them somewhere else. If the right conditions exist or can be created underground, soil and groundwater can be cleaned without having to dig or pump it up at all. This allows cleanup workers to avoid contact with polluted soil and groundwater. It also prevents the release of harmful gases into the air. Because microbes change the harmful chemicals into water and harmless gases, few if any wastes are created.

Often bioremediation does not require as much equipment or labor as most other methods. Therefore, it is usually cheaper. Bioremediation has successfully cleaned up many polluted sites and is being used at 50 Superfund sites across the country.

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**For more information**

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# Bioventing

Oxygen is delivered to contaminated unsaturated soils by forced air movement (either extraction or injection of air) to increase oxygen concentrations and stimulate biodegradation.

Description:

Bioventing is a promising new technology that stimulates the natural in situ biodegradation of any aerobically degradable compounds in soil by providing oxygen to existing soil microorganisms. In contrast to soil vapor vacuum extraction, bioventing uses low air flow rates to provide only enough oxygen to sustain microbial activity. Oxygen is most commonly supplied through direct air injection into residual contamination in soil. In addition to degradation of adsorbed fuel residuals, volatile compounds are biodegraded as vapors move slowly through biologically active soil.

The U.S. Air Force has produced a technical memorandum which summarizes the results of bioventing treatability studies of fuels conducted at 145 US Air Force sites. The memorandum discusses overall study results and presents cost and performance data and lessons learned.

Regulatory acceptance of this technology has been obtained in 30 states and in all 10 EPA regions, and the use of this technology in the private sector is growing rapidly following USAF leadership.

Bioventing is a medium to long-term technology. Cleanup ranges from a few months to several years.

Synonyms:

DSERTS Code: H11 (Bioventing)

Applicability:

Bioventing techniques have been successfully used to remediate soils contaminated by petroleum hydrocarbons, nonchlorinated solvents, some pesticides, wood preservatives, and other organic chemicals.

While bioremediation cannot degrade inorganic contaminants, bioremediation can be used to change the valence state of inorganics and cause adsorption, uptake, accumulation, and concentration of inorganics in micro or macroorganisms. These techniques, while still largely experimental, show considerable promise of stabilizing or removing inorganics from soil.

Limitations:

Factors that may limit the applicability and effectiveness of the process include:

- The water table within several feet of the surface, saturated soil lenses, or low permeability

soils reduce bioventing performance.

- Vapors can build up in basements within the radius of influence of air injection wells. This problem can be alleviated by extracting air near the structure of concern.
- Extremely low soil moisture content may limit biodegradation and the effectiveness of bioventing.
- Monitoring of off-gases at the soil surface may be required.
- Aerobic biodegradation of many chlorinated compounds may not be effective unless there is a co-metabolite present, or an anaerobic cycle.
- Low temperatures may slow remediation, although successful remediation has been demonstrated in extremely cold weather climates.

Data Needs:

Two basic criteria must be satisfied for successful bioventing. First, air must be able to pass through the soil in sufficient quantities to maintain aerobic conditions; second, natural hydrocarbon-degrading microorganisms must be present in concentrations large enough to obtain reasonable biodegradation rates. Initial testing is designed to determine both air permeability of soil and in situ respiration rates.

Soil grain size and soil moisture significantly influence soil gas permeability. Perhaps the greatest limitation to air permeability is excessive soil moisture. A combination of high water tables, high moisture, and fine-grained soils has made bioventing infeasible at some Air Force test locations.

Several soil characteristics that are known to impact microbial activity are pH, moisture, and basic nutrients, ( e.g., nitrogen and phosphorus), and temperature. Soil pH measurements show the optional pH range to be 6 to 8 for microbial activity; however, microbial respiration has been observed at all sites, even in soils that fall outside this optimal range. Optimum soil moisture is very soil-specific. Too much moisture can reduce the air permeability of the soil and decrease its oxygen transfer capability. Too little moisture will inhibit microbial activity. Several Air Force bioventing test sites have sustained biodegradation rates with moisture levels as low as 2 to 5% by weight. However, in extremely arid climates, it may be possible to increase the rate of biodegradation through irrigation, or humidifying the injected air.

Biological activity has been measured at Eielson AFB, Alaska, in soil temperatures as low as 0° C. Bioventing will more rapidly degrade contaminants during summer months, but some remediation occurs in soil temperatures down to 0° C.

Hydrocarbon degradation rates are almost always estimated from oxygen utilization rates using a simple stoichiometric relationship with the implicit assumption that all oxygen loss is due to the mineralization of hydrocarbons by microbes. However, simple stoichiometric relationships do not account for biomass production and inorganic oxidation reactions. Oxygen serves a terminal electron acceptor not only in the degradation of organic matter but also in oxidation of reduced inorganic compounds by microorganisms which obtain energy through chemical oxidation. In situ respiration tests can also be taken. Measurement of oxygen utilization in a nearby uncontaminated

area is used to account for inorganic oxidation reactions. When used with other indicators of increased microbial activity or biodegradation, respiration tests can provide one of several convergent lines of independent evidence to at least qualitatively document biodegradation.

Performance Data:

Bioventing is becoming more common, and most of the hardware components are readily available. Bioventing is receiving increased exposure to the remediation consulting community, particularly its use in conjunction with soil vapor extraction (SVE). The Air Force is sponsoring bioventing demonstrations at 135 sites. As with all biological technologies, the time required to remediate a site using bioventing is highly dependent upon the specific soil and chemical properties of the contaminated media. An overview of this technology, including installation protocols, provided by the Air Force Center for Environmental Excellence (AFCEE) is located at http://www.afcee.brooks.af.mil/er/ert/bioventing.htm.

Cost:

Based on the Air Force Center for Environmental Excellence (AFCEE) and commercial applications of this technology, costs for operating a bioventing system typically are $10 to $70 per cubic meter ($10 to $50 per cubic yard). Factors that affect the cost of bioventing include contaminant type and concentration, soil permeability, well spacing and number, pumping rate, and off-gas treatment. This technology does not require expensive equipment and relatively few personnel are involved in the operation and maintenance of a bioventing system. Periodic maintenance monitoring is conducted. Additional cost information regarding this technology can be found at http://www.frtr.gov/cost/ .

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|---|---|
| **Dual Phase Extraction** | A high vacuum system is applied to simultaneously remove various combinations of contaminated ground water, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. |

Dual-phase extraction (DPE), also known as multi-phase extraction, vacuum-enhanced extraction, or sometimes bioslurping, is a technology that uses a high vacuum system to remove various combinations of contaminated ground water, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. Extracted liquids and vapor are treated and collected for disposal, or re-injected to the subsurface (where permissible under applicable state laws).

In DPE systems for liquid/vapor treatment, a high vacuum system is utilized to remove liquid and gas from low permeability or heterogeneous formations. The vacuum extraction well includes a screened section in the zone of contaminated soils and ground water. It removes contaminants from above and below the water table. The system lowers the water table around the well, exposing more of the formation. Contaminants in the newly exposed vadose zone are then accessible to vapor extraction. Once above ground, the extracted vapors or liquid-phase organics and ground water are separated and treated. DPE for liquid/vapor treatment is generally combined with bioremediation, air sparging, or bioventing when the target contaminants include long-chained hydrocarbons. Use of dual phase extraction with these technologies can shorten the cleanup time at a site. It also can be used with pump-and-treat technologies to recover ground water in higher-yielding aquifers.

The DPE process for undissolved liquid-phase organics, also known as free product recovery, is used primarily in cases where a fuel hydrocarbon lens more than 20 centimeters (8 inches) thick is floating on the water table. The free product is generally drawn up to the surface by a pumping system. Following recovery, it can be disposed of, re-used directly in an operation not requiring high-purity materials, or purified prior to re-use. Systems may be designed to recover only product, mixed product and water, or separate streams of product and water. Dual phase extraction is a full-scale technology.

**Synonyms:** Multi-phase extraction; Vacuum-enhanced extraction; Free product recovery; Liquid-Liquid Extraction.

**DSERTS Code:** F12 (Dual-phase extraction)
F13 (Free product recovery)

**Applicability:** The target contaminant groups for dual phase extraction are VOCs and fuels (e.g., LNAPLs). Dual phase vacuum extraction is more effective

than SVE for heterogeneous clays and fine sands. However, it is not recommended for lower permeability formations due to the potential to leave isolated lenses of undissolved product in the formation.

**Limitations:** Factors that may limit the applicability and effectiveness of the process include:

- Site geology and contaminant characteristics/distribution.
- Combination with complementary technologies (e.g., pump-and-treat) may be required to recover ground water from high yielding aquifers.
- Dual phase extraction requires both water treatment and vapor treatment.

**Data Needs:** Data needs include physical and chemical properties of the product released (e.g., viscosity, density, composition, depth, and solubility in water); soil properties (e.g., capillary forces, effective porosity, moisture content, organic content, hydraulic conductivity, and texture); nature of the release (e.g., initial date of occurrence, duration, volume, and rate); geology (e.g., stratigraphy that promotes trapped pockets of free product); hydrogeologic regime (e.g., permeability, depth to water table, ground water flow direction, and gradient); and anticipated product recharge rate.

**Performance Data:** Once contaminants are detected, the immediate response should include both removal of the source and recovery of product by the most expedient means. Dual Phase Extraction methods will extract contaminated water with the product. It may be necessary to separate water and product prior to disposal or recycling of the product. As a result of the removal of substantial quantities of water during dual pumping operations, on-site water treatment will normally be required. When treatment of recovered water is required, permits will usually be necessary.

**Cost:** Because of the number of variances involved, establishing general costs for dual phase extraction is difficult. Some representative costs are $500 per month for a single phase extraction (hand bailing) system; $1,200 to $2,000 per month for a single phase extraction (skimming) system; and $2,500 to $4,000 per month for a dual pumping system. These costs illustrate the relative magnitudes of the various recovery options available, which are typically less than other types of

remediation.

Key cost factors for the recovery of free product include waste disposal, potential for sale of recovered product for recycling, on-site equipment rental (e.g., pumps, tanks, treatment systems), installation of permanent equipment, and engineering and testing costs.

Estimated cost ranges per site are between $85,000 to $500,000 per site.

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# Electrokinetic Remediation

The Electrokinetic Remediation (ER) process removes metals and organic contaminants from low permeability soil, mud, sludge, and marine dredging. ER uses electrochemical and electrokinetic processes to desorb, and then remove, metals and polar organics. This in situ soil processing technology is primarily a separation and removal technique for extracting contaminants from soils.

Description:

The principle of electrokinetic remediation relies upon application of a low-intensity direct current through the soil between ceramic electrodes that are divided into a cathode array and an anode array. This mobilizes charged species, causing ions and water to move toward the electrodes. Metal ions, ammonium ions, and positively charged organic compounds move toward the cathode. Anions such as chloride, cyanide, fluoride, nitrate, and negatively charged organic compounds move toward the anode. The current creates an acid front at the anode and a base front at the cathode. This generation of acidic condition in situ may help to mobilize sorbed metal contaminants for transport to the collection system at the cathode.

The two primary mechanisms transport contaminants through the soil towards one or the other electrodes: electromigration and electroosmosis. In electromigration, charged particles are transported through the substrate. In contrast, electroosmosis is the movement of a liquid containing ions relative to a stationary charged surface. Of the two, electromigration is the main mechanism for the ER process. The direction and rate of movement of an ionic species will depend on its charge, both in magnitude and polarity, as well as the magnitude of the electroosmosis-induced flow velocity. Non-ionic species, both inorganic and organic, will also be transported along with the electroosmosis induced water flow.

Two approaches are taken during electrokinetic remediation: "Enhanced Removal" and "Treatment without Removal".

"Enhanced Removal" is achieved by electrokinetic transport of contaminants toward the polarized electrodes to concentrate the contaminants for subsequent removal and ex-situ treatment. Removal of contaminants at the electrode may be accomplished by several means among which are: electroplating at the electrode; precipitation or co-precipitation at the electrode; pumping of water near the electrode; or complexing with ion exchange resins. Enhanced removal is widely used on remediation of soils contaminated metals.

"Treatment without Removal" is achieved by electro-osmotic transport of contaminants through treatment zones placed between electrodes. The polarity of the electrodes is reversed periodically, which reverses the direction of the contaminants back and forth through treatment zones. The frequency with which electrode polarity is reversed is determined by the rate of transport of contaminants through the soil. This approach can be used on in-situ remediation of soils contaminated with organic species.

Synonyms:

Electrokinetics; Electromigration.

Applicability:

Targeted contaminants for electrokinetics are heavy metals, anions, and polar organics in soil, mud, sledge, and marine dredging. Concentrations that can be treated range from a few parts per million (ppm) to tens of thousands ppm. Electrokinetics is most applicable in low permeability soils. Such soils are typically saturated and partially saturated clays and silt-clay mixtures, and are not readily drained.

Limitations:

Factors that may limit the applicability and effectiveness of this process include:

- Effectiveness is sharply reduced for wastes with a moisture content of less than 10 percent. Maximum effectiveness occurs if the moisture content is between 14 and 18 percent.
- The presence of buried metallic or insulating material can induce variability in the electrical conductivity of the soil, therefore, the natural geologic spatial variability should be delineated. Additionally, deposits that exhibit very high electrical conductivity, such as ore deposits, cause the technique to be inefficient.
- Inert electrodes, such as carbon, graphite, or platinum, must be used so that no residue will be introduced into the treated soil mass. Metallic electrodes may dissolve as a result of electrolysis and introduce corrosive products into the soil mass.
- Electrokinetics is most effective in clays because of the negative surface charge of clay particles. However, the surface charge of the clay is altered by both charges in the pH of the pore fluid and the adsorption of contaminants. Extreme pH at the electrodes and reduction-oxidation changes induced by the process electrode reactions many inhibit ER's effectiveness, although acidic conditions (i.e., low pH) may help to remove metals.
- Oxidation/reduction reactions can form undesirable products (e.g., chlorine gas).

Performance Data:

There have been few, if any, commercial applications of electrokinetic remediation in the United States. The electrokinetic technology has been operated for test and demonstration purposes at the pilot scale and at full scale at the following sites: (1) Louisiana State University, (2) Electrokinetics, Inc., (3) Geokinetics International, Inc., and (4) Battelle Memorial Institute. Geokinetics International, Inc.(GII) has successfully demonstrated the in situ electrokinetic remediation process in five field sites in Europe.

In 1996, a comprehensive demonstration study of lead extraction at a U.S.Army firing range in Louisiana was conducted by DoD's Small Business Innovative Research Program and

Electrokinetics, Inc. The EPA taking part in independent assessments of the results, found pilot-scale studies have demonstrated that concentrations of lead decreased to less than 300 mg/kg in 30 weeks of electrokinetic processing when the soils where originally contaminated as high as 4,500 mg/kg of lead.

Cost:

Costs will vary with the amount of soil to be treated, the conductivity of the soil, the type of contaminant, the spacing of electrodes, and the type of process design employed. Ongoing pilot-scale studies using "real-world" soils indicate that the energy expenditures in extraction of metals from soils may be 500 kWh/$m^3$ or more at electrode spacing of 1.0m to 1.5m. Direct costs estimates of about \$15/$m^3$ for a suggested energy expenditure of \$0.03 per kilowatt hours, together with the cost of enhancement, could result in direct costs of \$50/$m^3$ or more. A recent study estimated full scale costs at \$117 per cubic meter. If no other efficient in situ technology is available to remediate fine-grained and heterogeneous subsurface deposits contaminated with metals, this technique would remain potentially competitive.

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United States
Environmental Protection
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Office of Solid Waste and
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(5102G)

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www.epa.gov/superfund/sites
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# A Citizen's Guide to Fracturing

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What is fracturing?

Fracturing is a way to crack rock or very dense soil, like clay, below ground. It is not necessarily a cleanup method in itself. Rather, fracturing is used to break up the ground to help other cleanup methods work better. The cracks, which are called *fractures*, create paths through which harmful chemicals can be removed or destroyed.

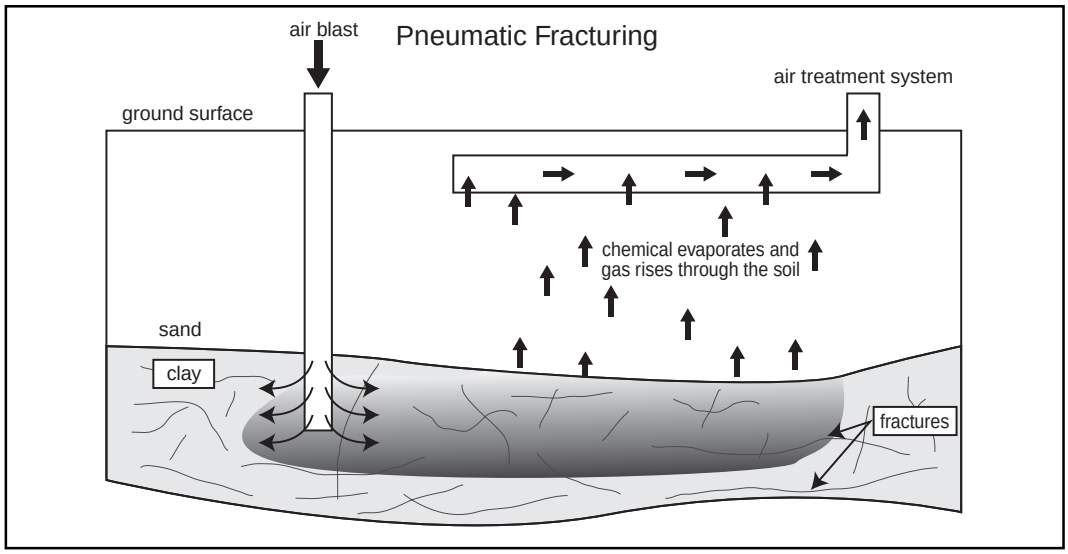
## How does it work?

Harmful chemicals can travel deep below the ground surface. As a result, reaching the chemicals to clean them up can be difficult. Fracturing helps create paths through rock and dense soil to where the chemicals are located. Then the harmful chemicals can be pumped out of the ground through wells and treated (See *A Citizen's Guide to Pump and Treat* [EPA 542-F-01-025]). Or cleanup materials, like microbes and oxidants, can be pumped down into the polluted area to destroy the harmful chemicals (See *A Citizen's Guide to Bioremediation* [EPA 542-F-01-001] and *A Citizen's Guide to Chemical Oxidation* [EPA 542-F-01-013]). There are three ways to fracture soil and rock:

**Hydraulic fracturing** uses a liquid—usually water. The water is pumped under pressure into holes drilled in the ground. The force of the water causes the soil (or sometimes rock) to crack. It also causes existing fractures to grow larger. To fracture soil at greater depths, sand is pumped underground with the water. The sand helps prop the fractures open and keep them from closing under the weight of the soil.

**Pneumatic fracturing** uses air, to fracture soil. It also can help remove chemicals that *evaporate* or change to gases quickly when exposed to air. When air is forced into the soil, the chemicals evaporate and the gases are captured and treated above ground. (See the figure on page 2.)

Air can be forced into the ground at different depths within a hole. When air is forced near the ground surface, the surface around the holes may rise as much as an inch, but will settle back close to its original level. In both pneumatic and hydraulic fracturing, equipment placed underground directs the pressure to the particular zone of soil that needs to be fractured.




**Blast-enhanced fracturing** uses explosives, such as dynamite, to fracture rock. The explosives are placed in holes and detonated. The main purpose is to create more pathways for polluted groundwater to reach wells drilled for pump and treat cleanup.

## Is fracturing safe?

When properly used, fracturing is a safe way to help cleanup methods work better. Before fracturing is used, EPA studies the site and tests the method to confirm it can work. EPA does not conduct fracturing near underground pipelines or above-ground structures that can be damaged.

## How long will it take ?

Fracturing rock and soil does not take very long. It may only take a few days. However, even with the help of fracturing, actual cleanup may take months or years. The time it takes to clean up a site depends on several factors:

- size and depth of the polluted area
- types and amounts of harmful chemicals present
- type of soil or rock
- cleanup method used

## Why use fracturing?

Fracturing is used to help reach chemicals in rock and dense soil so they can be cleaned up faster. It offers a way of reaching pollution deep in the ground where it would be difficult or costly to dig down so far. Fracturing can reduce the number of wells needed for certain cleanup methods, which can save time and reduce cleanup costs. Often fracturing is used to help clean up *non-aqueous phase liquids* or *NAPLs*—chemicals that don't dissolve readily in the groundwater. NAPLs are difficult to clean up where there are few fractures in the ground. Fracturing has been used in cleanups at many sites throughout the country.

### For more information

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United States
Environmental Protection
Agency

Office of Solid Waste and
Emergency Response
(5102G)

EPA 542-F-01-006
April 2001
www.epa.gov/superfund/sites
www.cluin.org

# A Citizen's Guide to Soil Vapor Extraction and Air Sparging

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What are soil vapor extraction and air sparging?

Soil vapor extraction or *SVE* removes harmful chemicals, in the form of *vapors*, from the soil above the water table. Vapors are the gases that form when chemicals evaporate. The vapors are extracted (removed) from the ground by applying a vacuum to pull the vapors out.

**What is the Water Table?**

The water table is the level of groundwater below the ground surface.

Air sparging uses air to help remove harmful vapors from polluted soil and groundwater below the water table. When air is pumped underground, the chemicals evaporate faster, which makes them easier to remove. Like SVE, a vacuum then extracts the vapors. Certain chemicals—like solvents and fuel—evaporate easily. SVE and air sparging work best on these types of chemicals. SVE and air sparging are often used at the same time to clean up both soil and groundwater.

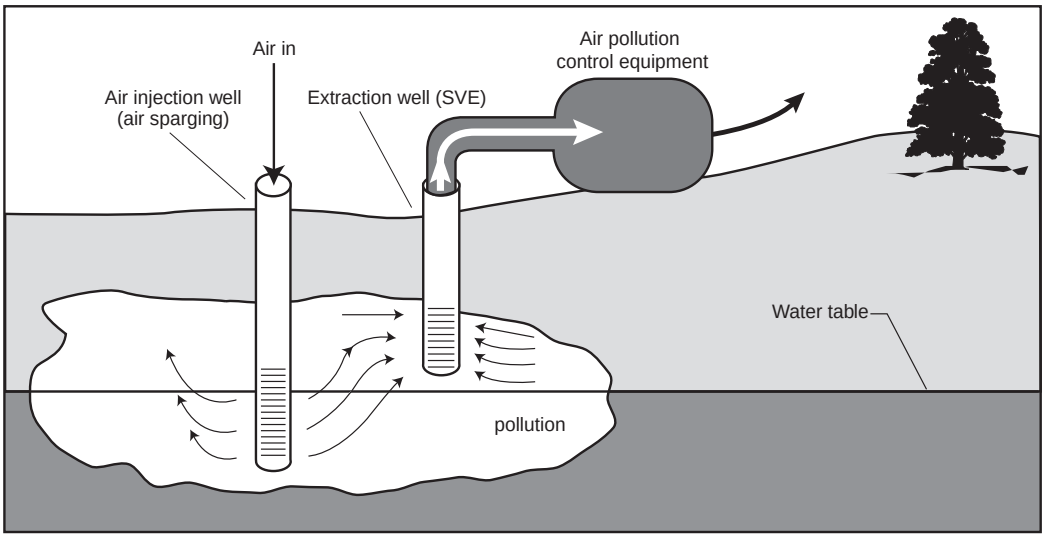
## How do they work?

SVE requires drilling *extraction wells* within the polluted area. These wells are drilled into the soil, but not the groundwater. Attached to the wells is equipment that creates a vacuum, which pulls air and vapors through the soil and up to the surface.

*Air injection wells* can be drilled to help the cleanup. Air injection wells pump air into the ground. The air causes the pollution to evaporate faster. Sometimes air vents are used instead of air injection wells. Air vents don't pump air, but provide a passage for fresh air to enter the ground. The number of air injection and extraction wells can range from one to hundreds, depending on the size of the polluted area.

Once the extraction wells pull the air and vapors out of the ground, special air pollution control equipment collects them. The equipment separates the harmful vapors from the clean air. Then, the vapors *sorb* or stick to solid materials. Or they are condensed to liquids. These polluted solids and liquids are disposed of safely.

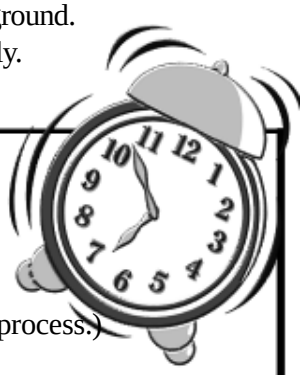
Air sparging works very much like SVE. However, the wells that pump air into the ground are drilled into water-soaked soil below the water table. Air pumped into the wells disturbs the groundwater. This helps the pollution change into vapors. The vapors rise into the drier soil above the groundwater and are pulled out of the ground by extraction wells. The harmful vapors are removed in the same way as SVE.




The air used in SVE and air sparging also helps clean up pollution by encouraging the growth of *microbes*. These tiny bugs are found naturally in soil and can use pollution for food. When microbes completely digest pollution, they can change it into water and harmless vapors. (*A Citizen's Guide to Bioremediation* [EPA 542-F-01-001] describes how microbes work.)

## Are soil vapor extraction and air sparging safe?

When properly designed and operated, SVE and air sparging are safe cleanup methods. No one has to dig up the pollution, and no chemicals—just air—are added to the ground. EPA makes sure that harmful vapors are collected and disposed of properly.



### How long will it take ?

Cleaning up a site using SVE and air sparging can take years. The time depends on several factors:

- size and depth of the polluted area
- type of soil and conditions present (wet or dense soil can slow the process.)
- type and amounts of harmful chemicals present

The air injected into the ground can be heated to speed up the process. The heated soil helps evaporate the chemicals faster. Also, other sources of heat, like steam or hot water can be pumped into the injection wells to heat up the soil. (See *A Citizen's Guide to In Situ Thermal Treatment* [EPA 542-F-01-012].)

## Why use soil vapor extraction and air sparging?

SVE and air sparging are quicker than cleanup methods that rely on natural processes to do the work. In general, the wells and equipment are simple to install and maintain. And they can reach greater depths than methods that involve digging up soil. SVE and air sparging are effective at removing many types of pollution that can evaporate. Both methods can be used with other methods to clean up other types of pollution as well. Both methods work best in loose soils—like sand and gravel. But they both work well under many types of conditions.

SVE and air sparging are often chosen to clean up Superfund sites. EPA has selected SVE for use at approximately196 sites and air sparging for use at roughly 48 sites.

**For more information**

write the Technology Innovation Office at:

U.S. EPA (5102G)
1200 Pennsylvania Ave., NW
Washington, DC 20460

**or call them at**
(703) 603-9910.

Further information also can be obtained at **www.cluin.org** or **www.epa.gov/superfund/sites**.

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EPA 542-F-01-011
May 2001
www.epa.gov/superfund/sites
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# A Citizen's Guide to In Situ Flushing

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. Some, like in situ flushing, are considered new or *innovative*. Such methods can be quicker and cheaper than more common methods. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What is in situ flushing?

In situ flushing is a way to clean up harmful chemicals in polluted soil and groundwater by pumping water or chemicals into the ground. This helps flush the harmful chemicals from the ground by moving them toward wells that pump the chemicals out of the ground. The process works *in situ*, which means the polluted soil is cleaned up in place and does not need to be dug up.

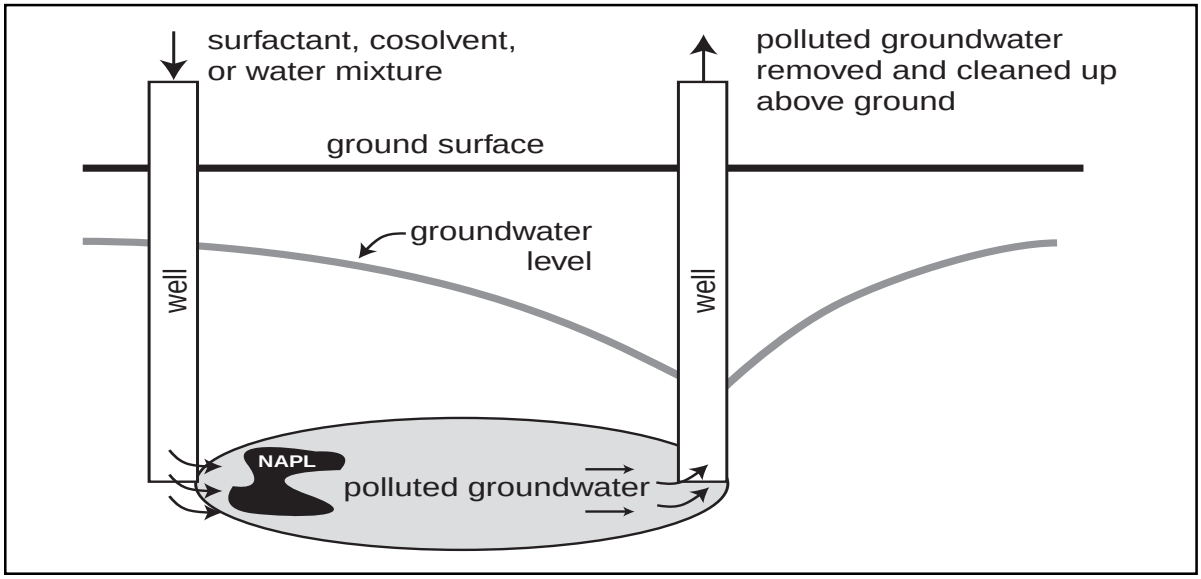
## How does it work?

The goal of in situ flushing is to improve the effectiveness of *pump and treat* cleanup methods. Pump and treat methods pump polluted groundwater up through wells to the ground surface where it is cleaned up. (See *A Citizen's Guide to Pump and Treat* [EPA 542-F-01-025].) When harmful chemicals don't dissolve in the groundwater, they can't easily be pumped out of the ground. Some chemicals like solvents and heating oil exist as liquids but do not dissolve easily in water. They are called *non-aqueous phase liquids* or NAPLs. NAPLs can remain in the soil for many years and slowly dissolve into the groundwater. As a result, they can be a source of groundwater pollution for a long time.

In situ flushing using chemicals like surfactants and cosolvents can help dissolve NAPLs. Surfactants are commonly found in detergents and some food products. Cosolvents are alcohols, like ethanol or methanol. When used for in situ flushing, a surfactant or cosolvent is mixed with water. The mixture is pumped down a well, or several wells, drilled in the polluted area where it helps dissolve the NAPLs. The mixture also can help move the NAPLs toward the wells.

At some sites, the surfactant mixture may stick or *sorb* to the soil. This may increase the amount of surfactant required to remove the NAPL. If this happens, a cosolvent can be added to the surfactants mixture to prevent the surfactant from sorbing to the soil.

In situ flushing works best in soil that is very *permeable*. In other words, groundwater can flow through it easily. In situ flushing also works best if the soil underneath the polluted area is not very permeable, like clay. The clay prevents the surfactant or cosolvent from moving below the polluted area. When a clay layer does not exist, a *surfactant foam* method can be used. In this method, air is pumped underground with the surfactant and water. The air forms a foam that prevents the surfactant from moving beyond the polluted area.




## Is in situ flushing safe?

In situ flushing can be quite safe, but there are some potential hazards. Workers that handle the chemicals pumped down the wells must wear protective clothing. Also, surfactant or cosolvent left behind after cleanup may be harmful. But at some sites, scientists may want to leave small amounts of surfactant or cosolvent in the polluted area to help with bioremediation. (See *A Citizen's Guide to Bioremediation* [EPA 542-F-01-001].)

## How long will it take ?

The time it takes for in situ flushing to clean up a site depends on several factors:

- size and depth of the polluted area
- type and amount of NAPL
- type of soil and conditions present
- how groundwater flows through the soil (How fast? Along what path?)

Cleanup of a site can take months or years using in situ flushing.

## Why use in situ flushing?

In situ flushing is used to help pump and treat groundwater. It is one of the few methods that can help clean up NAPL in place. This avoids the expense of digging up the soil for disposal or cleanup. Depending on the number of wells and the amount of surfactant or cosolvent needed, in situ flushing can be expensive and difficult to use. However, in situ flushing has successfully cleaned up many polluted sites and has been used, or is being used, at 16 Superfund sites across the country.

### For more information

write the Technology Innovation Office at:

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# A Citizen's Guide to Chemical Oxidation

## The Citizen's Guide Series

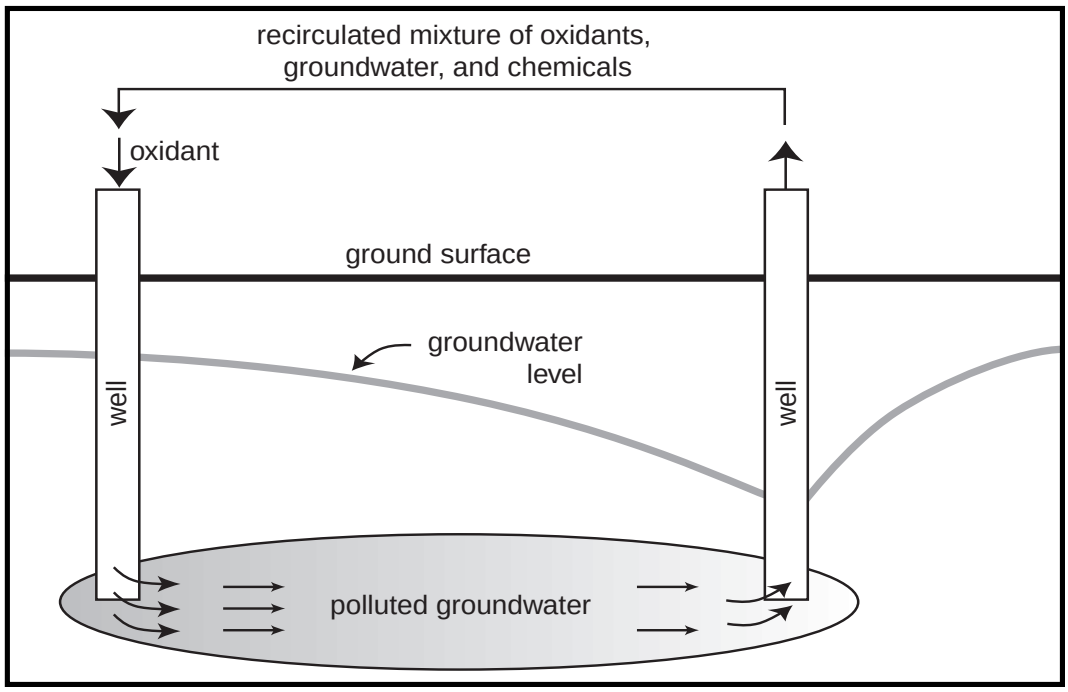
EPA uses many methods to clean up pollution at Superfund and other sites. Some, like chemical oxidation, are considered new or *innovative*. Such methods can be quicker and cheaper than more common methods. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What is chemical oxidation?

Chemical oxidation uses chemicals called *oxidants* to destroy pollution in soil and groundwater. Oxidants help change harmful chemicals into harmless ones, like water and carbon dioxide. Chemical oxidation can destroy many types of chemicals like fuels, solvents, and pesticides.

## How does it work?

Chemical oxidation does not involve digging up polluted soil or groundwater. Instead, wells are drilled at different depths in the polluted area. The wells pump the oxidant into the ground. The oxidant mixes with the harmful chemicals and causes them to break down. When the process is complete, only water and other harmless chemicals are left behind.



To clean up a site faster, oxidants can be pumped in one well and out another well. This approach helps mix the oxidant with the harmful chemicals in the groundwater and soil. After the mixture is pumped out, it is pumped back (*recirculated*) down the first well. As pumping and mixing continues, more polluted soil and groundwater are cleaned up.

It can be hard to pump oxidants to the right spots in the ground. So before drilling starts, EPA must study the conditions underground by testing the soil and groundwater. Where is the pollution? How will the oxidant spread through the soil and groundwater to reach it?

The most common oxidant to clean up pollution is *hydrogen peroxide*. Another is *potassium permanganate*, which is cheaper. Both oxidants are pumped as liquids. And both have advantages depending on the site. Ozone is another strong oxidant, but because it is a gas, it can be difficult to use.

At some sites, a *catalyst* is used with the oxidant. A catalyst is a chemical that increases the strength or speed of a process. For instance, if hydrogen peroxide is mixed with an iron catalyst, it produces a strong chemical called a *free radical*. Free radicals can destroy more harmful chemicals than hydrogen peroxide alone.

Chemical oxidation can create enough heat to boil water. The heat can cause the chemicals underground to *evaporate*, or change into gases. The gases rise through the soil to the ground surface where they are captured and cleaned up.

### How long will it take ?

The time it takes for chemical oxidation to clean up a site depends on several factors:

- size and depth of the polluted area
- type of soil and conditions present
- how groundwater flows through the soil (How fast? Along what path?)

In general, chemical oxidation offers rapid cleanup times compared to other methods. Cleanup times can be measured in months, rather than years.

## Is chemical oxidation safe?

Chemical oxidation can be quite safe to use, but there are potential hazards. Oxidants are *corrosive*, which means they can wear away certain materials and can burn the skin. People who work with oxidants must wear protective clothing. Some oxidants can explode if used under the wrong conditions. Explosions can be prevented, however, through proper design of the chemical oxidation system. EPA makes sure that the system is properly designed. Workers also test the soil, groundwater, and air after chemical oxidation to make sure the site is cleaned up.

## Why use chemical oxidation?

Chemical oxidation is being used at hundreds of sites across the country. It destroys pollution underground without having to dig it up or pump it out for transport to a treatment system. This saves time and money. Often chemical oxidation is used to clean up pollution that other methods can't reach, like pollution deep within the groundwater. Chemical oxidiation can be used to clean up the source of pollution. Most other methods that are used to remove the source are very slow and more expensive.

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| | |
|---|---|
| **In Well Air Stripping** | Air is injected into a double screened well, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn in the lower screen. Once in the well, some of the VOCs in the contaminated ground water are transferred from the dissolved phase to the vapor phase by air bubbles. The contaminated air rises in the well to the water surface where vapors are drawn off and treated by a soil vapor extraction system. |

**Description:**

Air is injected into a double screened well, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn in the lower screen. Once in the well, some of the VOCs in the contaminated ground water are transferred from the dissolved phase to the vapor phase by air bubbles. The contaminated air rises in the well to the water surface where vapors are drawn off and treated by a soil vapor extraction system. This SVE system, in addition to collecting the vapors from within the well, collects vapors from the surrounding vadose zone. The partially treated ground water is never brought to the surface; it is forced into the unsaturated zone, and the process is repeated as water follows a hydraulic circulation pattern or cell that allows continuous cycling of ground water. As ground water circulates through the treatment system *in situ*, contaminant concentrations are gradually reduced. In-well air stripping is a pilot-scale technology.

Modifications to the basic in-well stripping process may involve additives injected into the stripping well to enhance biodegradation (e.g., nutrients, electron acceptors, etc.). In addition, the area around the well affected by the circulation cell (radius of influence) can be modified through the addition of certain chemicals to allow in situ stabilization of metals originally dissolved in ground water.

The duration of in-well air stripping is short- to long-term, depending contaminant concentrations, Henry's law constants of the contaminants, the radius of influence, and site hydrogeology.

***Circulating Wells***

Circulating wells (CWs) provide a technique for subsurface remediation by creating a three-dimensional circulation pattern of the ground water. Ground Water is drawn into a well through one screened section and is pumped through the well to a second screened section where it is reintroduced to the aquifer. The flow direction through the well can be specified as either upward or downward to accommodate site-specific conditions. Because ground water is not pumped above ground, pumping costs and permitting issues are reduced and eliminated, respectively. Also, the problems associated with storage and discharge are removed. In addition to ground water treatment, CW systems can provide simultaneous vadose zone treatment in the form of bioventing or soil vapor extraction.

CW systems can provide treatment inside the well, in the aquifer, or a combination of both. For effective in-well treatment, the contaminants must be adequately soluble and mobile so they can be transported by the circulating ground water. Because CW systems provide a wide range of treatment options, they provide some degree of flexibility to a remediation effort.

**Synonyms:** Vacuum vapor extraction; In-well aeration; Vacuum vaporizer well, ground water circulating wells.

**Applicability:** The target contaminant groups for vacuum vapor extraction are halogenated VOCs, SVOCs, and fuels. Variations of the technology may allow for its effectiveness against some nonhalogenated VOCs, SVOCs, pesticides, and inorganics. Typically, in-well air stripping systems are a cost-effective approach for remediating VOC-contaminated ground water at sites with deep water tables because the water does not need to be brought to the surface.

CW systems are most effective at treating sites with volatile contaminants with relatively high aqueous solubility and strong biodegradation potential, e.g., halogenated and non-halogenated VOCs. CWs operate more efficiently with horizontal conductivities greater that $10^{-3}$ cm/sec and a ratio of horizontal to vertical conductivities between 3 and 10. A ratio of less than 3 indicates short circulation times and a small radius of influence. If the ratio is greater that 10, the circulation time may be unacceptably long.

**Limitations:** The following factors may limit the applicability and effectiveness of the process:

- UVB-type systems only treat the water in the stripping well.
- In general, in-well air strippers are more effective at sites containing high concentrations of dissolved contaminants with high Henry's law constants.
- Fouling of the system may occur by infiltrating precipatation containing oxidized constituents.
- Shallow aquifers may limit process effectiveness.
- Effective CW installations require a well-defined contaminant plume to prevent the spreading or smearing of the contamination. They should not be applied to sites containing NAPLs to prevent

the possibility of smearing the contaminants.

- CWs are limited to sites with horizontal hydraulic conductivities greater that $10^{-5}$ cm/sec and should not be utilized at sites that have lenses of low-conductivity deposits.
- In well air stripping may not be efficient in sites with strong natural flow patterns.

**Performance Data:** A variation of this process, called Unterdruck-Verdampfer Brunner (UVB), has been used at numerous sites in Germany and has been introduced recently into the United States. Stanford University has developed another variation of this process, called NoVOCs, an in-well sparging system, which is currently being evaluated as part of DOE's Integrated Technology Demonstration Program. The Stanford system combines air-lift pumping with a vapor stripping technique. Wasatch Environmental, Inc. has also developed and patented another type of in-well vapor stripping system known as Denstiy Driven Convection (DDC). The DDC system emphasizes the enhancement of bioremediation and involves the dishcharge of extracted vapors into the vadose zone for degradation by naturally-occurring microorganisms. Awareness of this process is limited in the United States but can be expected to increase as development and demonstration of technologies based on the process continue.

**Cost:** Not available.

**References:**

Miller, R. R. and Diane D.S., 1997. ***Technology Overview Report: In-well Vapor Stripping***, GWRTAC Series TO-97-01.00

DOE, 1994. ***Technology Catalogue***, First Edition. February.

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# A Citizen's Guide to Soil Washing

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. Some, like soil washing, are considered new or *innovative*. Such methods can be quicker and cheaper than more common methods. If you live, work, or go to school near a Superfund site, you may want to know more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

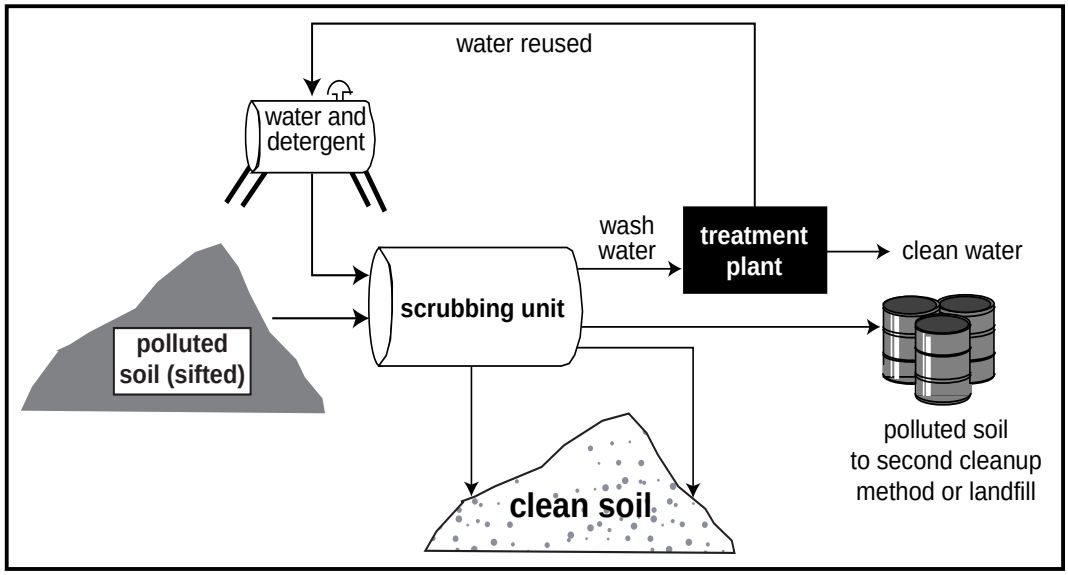
## What is soil washing?

Soil washing "scrubs" soil to remove and separate the portion of the soil that is most polluted. This reduces the amount of soil needing further cleanup. Soil washing alone may not be enough to clean polluted soil. Therefore, most often it is used with other methods that finish the cleanup.

## How does it work?

Chemicals tend to stick or *sorb* to some types of soil more than others. For instance, chemicals sorb more to fine-grained soils like silt and clay than to larger-grained soils like sand and gravel. The silt and clay, in turn, tend to stick to sand and gravel. Soil washing helps separate the silt and clay from the larger-grained, cleaner soils. It works best when the soil contains a much bigger portion of the larger-grained soils than the fine-grained ones. Soil washing can clean up a variety of chemicals, such as fuels, metals, and pesticides, that can sorb to soil.

Before using soil washing, soil dug from the polluted area is sifted to remove large objects, like rocks and debris. The sifted soil is placed in a machine called a *scrubbing unit*. Water,



and sometimes detergents, are added to the polluted soil in the scrubbing unit. The mixture of soil and water is passed through sieves, mixing blades, and water sprays. This washes the silt and clay from the larger-grained soil and separates them. Some of the pollution may dissolve in the water or float to the top. The polluted wash water is removed and cleaned up at a treatment plant. The clean water then can be reused in the scrubbing unit or discharged.

The silt and clay, which contain most of the pollution, are tested for chemicals. Sometimes all of the pollution is removed in the wash water, but most often the silt and clay need further cleanup. The silt and clay may be washed again in the scrubbing unit or cleaned using another method like bioremediation or thermal desorption. (See *A Citizen's Guide to Bioremediation* [EPA 542-F-01-001] or *A Citizen's Guide to Thermal Desorption* [EPA 542-F-01-003].) Another option is to dispose of the polluted soils in a landfill.

The sand and gravel that settle to the bottom of the scrubbing unit also are tested for chemicals. If the sand and gravel are clean, they can be placed back on the site. If pollution is still present, they are washed again in the scrubbing unit. If necessary, another method is used to finish the cleanup.

## Is soil washing safe?

Soil washing is usually performed at the site. This avoids the risks involved with trucking polluted soil from the site to a cleanup facility. During digging and cleanup, air pollution control equipment takes care of dust and other potential air pollution problems. Chemicals are seldom released from the scrubbing unit to the air. However, EPA tests the air at the site to ensure that chemicals are not released in harmful amounts. EPA also tests the soil to be sure it is clean before it is placed back on the site. When properly designed and operated, soil washing is quite safe.

### How long will it take ?

The time it takes to clean up a site using soil washing depends on several factors:

- amount of silt, clay, and debris in the soil
- type and amount of pollution in the soil
- size of scrubbing unit (The largest units can clean up to 100 cubic yards of soil per day.)

Cleanup usually takes weeks to months, depending on the site.

## Why use soil washing?

The greatest advantage of soil washing is that it reduces the amount of soil needing further cleanup. This reduction lowers the cost of cleanup and the cost for disposing of polluted material.

Soil washing can remove many types of pollution. It also works when the soil is very polluted, but may not be cost-effective for small amounts of pollution. It is also not as cost-effective on soils with a large amount of silt or clay. Soil washing is being used at six Superfund sites and other sites across the country.

**For more information**

write the Technology Innovation Office at:

U.S. EPA (5102G)
1200 Pennsylvania Ave., NW
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**or call them at**
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# A Citizen's Guide to Thermal Desorption

## The Citizen's Guide Series

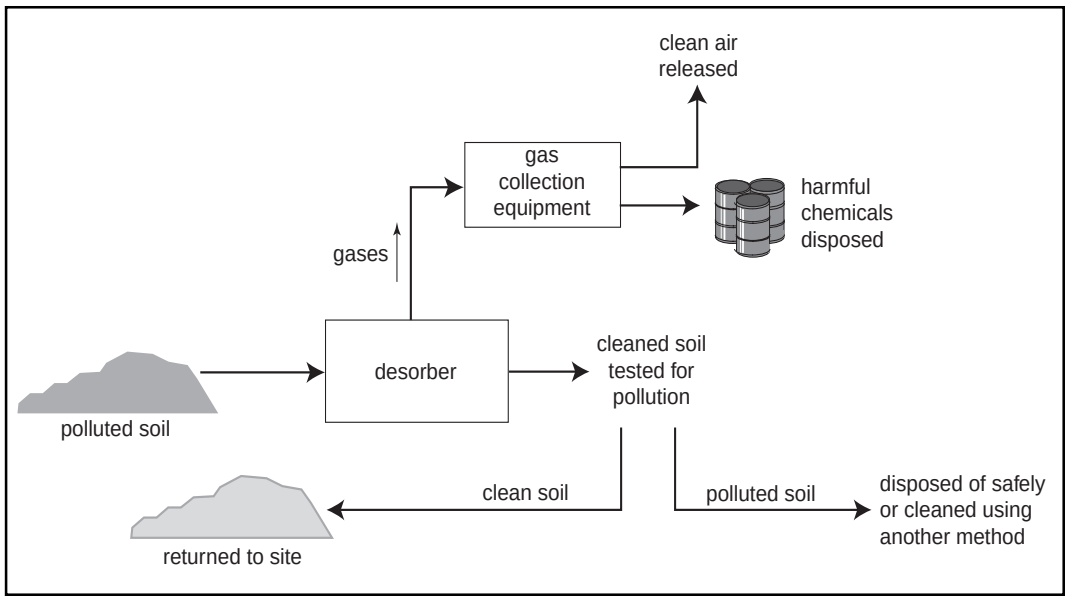
EPA uses many methods to clean up pollution at Superfund and other sites. If you live, work, or go to school near a Superfund site, you may want to know more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What is thermal desorption?

Thermal desorption removes harmful chemicals from soil and other materials (like sludge and sediment) by using heat to change the chemicals into gases. These gases are collected with special equipment. The dust and harmful chemicals are separated from the gases and disposed of safely. The clean soil is returned to the site. Thermal desorption is not the same as incineration, which uses heat to *destroy* the chemicals.

## How does it work?

Thermal desorption uses equipment called a *desorber* to clean polluted soil. Soil is excavated and placed in the desorber. The desorber works like a large oven. When the soil gets hot enough, the harmful chemicals evaporate. To get the soil ready for the desorber, workers may need to crush it, dry it, blend it with sand, or remove debris. This allows the desorber to clean the soil more evenly and easily.



During each step of the process, workers use special equipment to control dust from the soil and collect harmful gases that are released to the air. The polluted gases are separated from the clean air using gas collection equipment. The gases are then changed back into liquids and/or solid materials. These polluted liquids or solids are disposed of safely.

Before returning the cleaned soil to the site, workers may spray it with water to cool it and control dust. If the soil still contains harmful chemicals, workers clean it further by placing it back in the desorber. Or they may try other cleanup methods instead. If the soil is clean, it is returned to the site. If the soil is not clean, it is sent to a landfill.

## Is thermal desorption safe?

Thermal desorption has been used at many sites over the years. EPA makes sure that materials are handled safely at each stage of the process. EPA tests the air to make sure that dust and gases are not released to the air in harmful amounts. EPA also tests the soil to be sure it is clean before it is returned to the site. All equipment must meet federal, state, and local standards.

### How long will it take ?

Thermal desorption systems can clean over 20 tons of polluted soil per hour. The time it takes to clean up a site using thermal desorption depends on:

- the amount of polluted soil
- the condition of the soil (Is it wet or dry? Does it contain a lot of debris?)
- type and amounts of harmful chemicals present

Cleanup can take only a few weeks at small sites with small amounts of chemicals. If the site is large and the chemical levels are high, cleanup can take years.

## Why use thermal desorption?

Thermal desorption works well at sites with dry soil and certain types of pollution, such as fuel oil, coal tar, chemicals that preserve wood, and solvents. Sometimes thermal desorption works where some other cleanup methods cannot—such as at sites that have a lot of pollution in the soil.

Thermal desorption can be a faster cleanup method than most. This is important if a polluted site needs to be cleaned up quickly so it can be used for other purposes. The equipment for thermal desorption often costs less to build and operate than equipment for other cleanup methods using heat. EPA has selected thermal desorption to clean up 59 Superfund sites.

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# A Citizen's Guide to In Situ Thermal Treatment Methods

## The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. Some, like in situ thermal treatment methods, are considered new or *innovative*. Such methods can be quicker and cheaper than more common methods. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

## What are in situ thermal treatment methods?

In situ thermal treatment methods, in general, are ways to move or *mobilize* harmful chemicals through soil and groundwater by heating them. The heated chemicals move through the soil and groundwater toward underground wells where they are collected and piped to the ground surface. There the chemicals can be treated above ground by one of the many cleanup methods available.

## How do they work?

All thermal methods work by heating polluted soil and groundwater. The heat helps push chemicals through the soil toward collection wells. The heat also can destroy or evaporate certain types of chemicals. When they evaporate, the chemicals change into gases, which move more easily through the soil. Collection wells capture the harmful chemicals and gases and pipe them to the ground surface for cleanup. Thermal methods can be particularly useful for chemicals called *non-aqueous phase liquids* or *NAPLs*, which do not dissolve or move easily in groundwater. As a result, they can be a source of groundwater pollution for a long time without proper treatment. In situ thermal methods include:

**Steam injection:** Forces or *injects* steam underground through wells drilled in the polluted area. The steam heats the area and mobilizes, evaporates, and destroys the harmful chemicals.

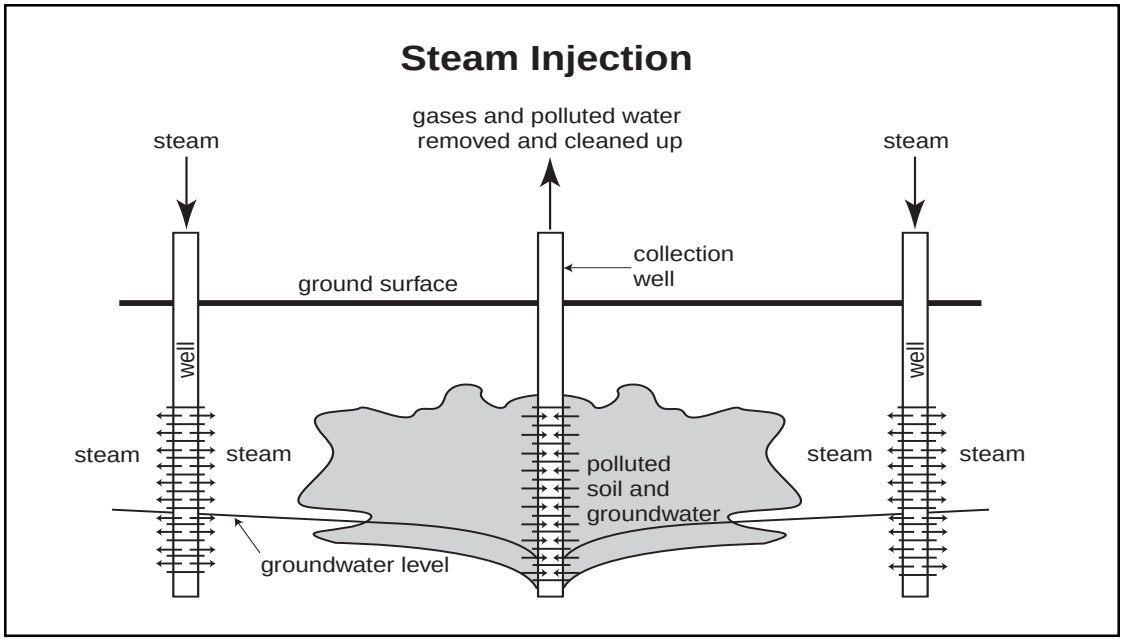
**Hot air injection:** Similar to steam injection except hot air is injected through the wells instead of steam. The hot air heats the soil causing the harmful chemicals to evaporate.

**Hot water injection:** Also similar to steam injection except that hot water is injected through the wells instead of steam. The hot water mobilizes chemicals like NAPLs.

**Electrical resistance heating:** Delivers an electric current underground through wells made of steel. The heat from the current converts groundwater and the water in the soil to steam, which evaporates the harmful chemicals.

**Radio frequency heating:** Typically involves placing an antenna that emits *radio waves* in a well. The radio waves heat the soil causing the harmful chemicals to evaporate.

**Thermal conduction:** Supplies heat to the soil through steel wells or with a blanket that covers the ground surface. As the polluted area heats up, the harmful chemicals are destroyed or evaporated. The blanket is used where the polluted soil is shallow. Steel wells are used when the polluted soil is deep.




## Are in situ thermal treatment methods safe?

In situ thermal treatment methods are safe when properly operated. When there is a chance that gases may pollute the air, a cover is placed over the ground to prevent their escape. And EPA tests the air to make sure that the dust and gases are being captured. Scientists are also studying whether heat can kill microbes or help microbes *bioremediate* chemicals. (See *A Citizen's Guide to Bioremediation* [EPA 542-F-01-001].)

## How long will it take ?

Cleaning soil and groundwater with thermal methods may take only a few months or several years. The time it takes depends on three major factors that vary from site to site:

- type and amounts of chemicals present
- size and depth of the polluted area
- type of soil and conditions present

## Why use in situ thermal treatment methods?

Thermal methods speed the cleanup of many types of chemicals in the ground. Faster cleanups can mean lower cleanup costs. Depending on the number of wells needed, thermal methods can be expensive. However, they are some of the few methods that can help clean up NAPL in place. This avoids the expense of digging up the soil for disposal or cleanup. Thermal methods can work in some soils (such as clays) where other cleanup methods do not perform well. They also offer a way of reaching pollution deep in the ground where it would be difficult or costly to dig. Thermal methods are being used at several dozen sites across the country, including a few Superfund sites.

### For more information

write the Technology Innovation Office at:

U.S. EPA (5102G)
1200 Pennsylvania Ave., NW
Washington, DC 20460

**or call them at**
(703) 603-9910.

Further information also can be obtained at **www.cluin.org** or **www.epa/gov/superfund/sites**.



*NOTE: This fact sheet is intended solely as general guidance and information to the public. It is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States, or to endorse the use of products or services provided by specific vendors. The Agency also reserves the right to change this fact sheet at any time without public notice.*

# Appendix H
# Environmental Restoration and Superfund Glossaries

APPENDIX H

# Environmental Restoration and Superfund Glossaries

**Administrative Record**: A file that is maintained, and contains all information used by the lead agency to make its decision on the selection of a response action under CERCLA. This file is to be available for public review and a copy established at or near the site, usually at one of the information repositories. A duplicate file is held in a central location, such as an EPA Regional Office or State agency.

**Cleanup**: Actions taken to deal with a release or threatened release of hazardous substances that could affect public health or the environment. The term is often used broadly to describe various response actions or phases of remedial responses, such as the RI/FS.

**Closed Range**: A military range that has been taken out of service as a range and that either has been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area. A closed range is still under the control of a DoD component.

**Comment Period**: A time period for the public to review and comment on various documents and EPA actions. For example, a comment period is provided when EPA proposes to add sites to the NPL. A minimum 30-day comment period is held to allow community members to review and comment on a draft RI/FS and Proposed Plan; it must be extended an additional 30 days upon timely request. A comment period is required to amend the ROD. Similarly, a 30-day comment period is provided when EPA proposes to delete a site from the NPL.

**Community Involvement**: A program to inform and involve the public in the Superfund process and respond to community concerns.

**Community Involvement Plan (CIP)**: Formal plan for community involvement activities at a Superfund site. The CIP is designed to ensure citizen opportunities for public involvement at the site, determine activities that will provide for such involvement, and allow citizens the opportunity to learn more about the site.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**: A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The Act created a special tax that goes into a Trust Fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites that are not federally owned. Under the program, EPA can either:

- Pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work
- Take legal action to force parties responsible for site contamination to clean up the site or pay back the federal government for the cost of the cleanup.

Cleanup of NPL sites that are owned or operated by other federal agencies, such as DoD, is funded directly by annual Congressional appropriations, not by the Superfund.

**Defense Sites**: Locations that are or were owned by, leased to, or otherwise possessed or used by DoD. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions.

**Detonation**: A violent chemical reaction within a chemical compound or mechanical mixture evolving heat and pressure. The result of the chemical reaction is exertion of extremely high pressure on the surrounding medium, forming a propagating shock wave that originally is of supersonic velocity. A detonation, when the material is located on or near the ground surface, is normally characterized by a crater.

**Discarded Military Munitions (DMM)**: Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or

military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

**Explosive**: A substance or mixture of substances that can undergo a rapid chemical change without an outside source of oxygen, generating large quantities of energy generally accompanied by hot gases.

**Explosive Hazard:** A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (such as death, injury, and damage) to people, property, operational capability, or the environment.

**Explosive Ordnance Disposal (EOD)**: The detection, identification, onsite evaluation, rendering safe, recovery, and final disposal of unexploded ordnance and of other munitions that have become an impending danger, for example, by damage or deterioration.

**Explosives Safety**: A condition where operational capability and readiness, people, property, and the environment are protected from the unacceptable effects or risks of potential mishaps involving military munitions.

**Federal Facilities Agreement (FFA):** A legal agreement governing the CERCLA administrative process for cleanup, intended to establish roles and responsibilities and to improve communication between all parties. At an NPL site, an FFA outlines the working relationship between the state, EPA, and the Navy to review all work leading up to the selection of a remedial alternative. An FFA will become an Interagency Agreement after a ROD is signed.

**Five-Year Review**: If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at levels that do not allow for unlimited use and unrestricted exposure, the performance of the implemented remedy must be evaluated every 5 years to verify that the remedy remains protective of human health and the environment. The existing remedy may be modified if it is no longer protective of human health and the environment.

**Former Range:** An operational range that was (a) closed by a formal decision made by the Component with administrative control over the range, or (b) was put to a use that was incompatible with its continued use as an operational range. The term includes closed, transferring, and transferred ranges.

**Formerly Used Defense Site (FUDS)**: Real property that was formerly owned, leased, or possessed by, or otherwise under the jurisdiction of, the Secretary of Defense or DoD components, including organizations that predate DoD. Some FUDS properties include areas formerly used as military ranges.

**Groundwater**: Water found beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater occurs in sufficient quantities that it can be used for drinking water, irrigation, and other purposes.

**Hazard Ranking System (HRS)**: A scoring system used to evaluate potential relative risks to public health and the environment from releases or threatened releases of hazardous substances. EPA and states use the HRS to calculate a site score for contamination migration through air, surface water, or groundwater. This score is the primary factory used to decide if a hazardous waste site should be placed on the NPL.

**Hazardous Substance**: Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

**Hydrology**: The science dealing with the properties, movement, and effects of water found on the earth's surface, in the soil and rocks below the surface, and in the atmosphere.

**Information Repository**: A file containing current information, technical reports, reference documents, and TAG application information on a Superfund site. The information repository is usually located in a public building that is convenient for local residents, such as a public school, city hall, or library.

**Installation Restoration Program (IRP):** The DoD program to identify, assess, and clean up contamination resulting from historical handling, storage, and disposal of potentially hazardous wastes. The IRP follows the CERCLA process, whether or not a facility is listed on the NPL.

**Land Use Control (LUC)**: Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property in order to manage risks to human health and the environment. Physical mechanisms include physical barriers to limit access to real property, such as fences or signs, providing potable water, as well as a variety of engineered remedies to contain or reduce contamination. Legal mechanisms include zoning, permits, and deed restrictions on property; for example, allowing only commercial or industrial use of a property where contaminants have not been remediated to residential levels.

**Long-Term Management**: The period of site management (including maintenance, monitoring, record keeping, Five-Year Review, and so forth) that may occur after a removal or remedial action's objectives have been met. This phase is required at sites where hazardous substances, pollutants, or contaminants remain after the Response Complete milestone has been achieved, and are above levels that would allow unlimited use and unrestricted exposure. This situation often arises when a site has been remediated to a level that requires restricted land use (commercial or industrial use but not residential use).

**Monitored Natural Attenuation:** Relies on naturally occurring processes to remove or reduce contaminants in soil and groundwater. Natural attenuation occurs at most polluted sites, but the right conditions must exist underground to clean sites properly. Groundwater and soil at sites are sampled on a regular schedule, as required by EPA, to make sure that natural attenuation is working.

**Monitoring Wells**: Special wells that are drilled at specific locations, on or off a hazardous waste site, where groundwater can be sampled at selected depths and studied to determine the direction of groundwater flow and the types and amounts of contaminants present.

**Military Munitions:** Ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, the U.S. Coast Guard, the U.S. Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and their devices and components.

**Military Range:** A designated land or water area set aside, managed, and used to conduct research on, develop, test, and evaluate military munitions and explosives, other ordnance, or weapon systems, or to train military personnel in their use and handling.

**Munitions and Explosives of Concern**: Specific categories of military munitions that may pose unique explosives safety risks: (A) UXO; (B) discarded military munitions; or (C) munitions constituents (such as trinitrotoluene [TNT] or cyclotrimethylenetrinitramine [RDX]) present in high enough concentrations to pose an explosive hazard.

**Munitions constituents (MC)**: Materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

**Munitions Response Area**: Any area on a defense site that is known or suspected to contain unexploded ordnance, discarded military munitions or munitions constituents). Examples include former ranges and munitions burial areas. A munitions response area is composed of one or more munitions response sites.

**Munitions Response Site**: A discrete location within a Munitions Response Area that is known to require a munitions response.

**Munitions Response Site Prioritization Protocol (MRSPP)**: The federal regulation that guides the Munitions Response Program (MRP).

**Operational Range**. A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or, although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**: The federal regulation that guides the Superfund program. The NCP was revised in February 1990.

**National Priorities List (NPL)**: EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from the Trust Fund. The list is based, primarily, on the score a site receives on the HRS. EPA is required to update the NPL at least once a year.

**Operable Unit (OU):** A collection of sites that will be treated together, often because of similar cleanup requirements. OUs address geographical portions of a facility or site.

**Preliminary Assessment**: The process of collecting and reviewing available information about a known or suspected hazardous waste site or release. EPA or states use this information to determine if the site requires further study. If further study is needed, a site inspection is undertaken.

**Proposed Remedial Action Plan (PRAP, Proposed Plan)**: A public involvement requirement of CERCLA, which summarizes for the public the preferred cleanup strategy, rationale for the preference, alternatives presented in the detailed analysis of the RI/FS, and any proposed waivers to clean up standards. The Proposed Plan may be prepared as a fact sheet or a separate document. In either case, it must actively solicit public review and comment on all alternatives under consideration.

**Record of Decision (ROD)**: A public document that explains which cleanup alternative will be used at NPL sites. The ROD is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns.

**Remedial Action (RA)**: The actual construction or implementation phase that follows the remedial design of the selected clean up alternative at a site on the NPL.

**Remedial Design (RD)**: An engineering phase that follows the ROD when technical drawings and specifications are developed for subsequent remedial action at a site on the NPL.

**Remedial Investigation/Feasibility Study (RI/FS)**: Investigative and analytical studies usually performed at the same time in an interactive, iterative process, and together referred to as the "RI/FS." An RI/FS is intended to:

- Gather the data necessary to determine the type and extent of contamination at a Superfund site
- Establish criteria for cleaning up the site
- Identify and screen cleanup alternatives for remedial action
- Analyze in detail the remedial technology and costs of the alternatives

**Remedial Project Manager (RPM)**: The EPA or state official responsible for overseeing remedial response activities.

**Remedial Response**: A long-term action that stops or substantially reduces a release or threatened release of hazardous substances that is serious but does not pose an immediate threat to public health and/or the environment.

**Removal Action**: An immediate action taken over the short term to address a release or threatened release of hazardous substances.

**Response Action**: A CERCLA-authorized action at a Superfund site involving either a short-term removal action or a long-term response action that may include, but is not limited to, the following activities:

- Removing hazardous materials from a site to an EPA-approved, licensed hazardous waste facility for treatment, containment, or destruction
- Containing the waste safely onsite to eliminate further problems
- Destroying or treating the waste onsite using incineration or other technologies
- Identifying and removing the source of groundwater contamination and halting further movement of the contaminants.

**Responsiveness Summary**: A summary of oral and written public comments received by EPA during a comment period on key EPA documents, and EPA's responses to those comments. The responsiveness summary is a key part of the ROD, highlighting community concerns for EPA decision makers.

**Restoration Advisory Board (RAB):** A group made up of representatives from DoD (Navy and Marine Corps in this case), EPA, state agencies, and community members who meet regularly to exchange information about the investigation and cleanup of sites on a DoD facility. A RAB is co-chaired by an appointed installation representative and an elected community member.

**Resource Conservation and Recovery Act (RCRA)**: A federal law that established a regulatory system to track hazardous substances from their generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent the creation of new, uncontrolled hazardous waste sites.

**Selected Alternative**: The cleanup alternative selected for a site on the NPL based on technical feasibility, permanence, reliability, and cost. The selected alternative does not require choosing the least expensive alternative. It requires that if there are several cleanup alternatives available that deal effectively with the problems at a site, EPA (and the responsible federal agency where applicable) must choose the remedy on the basis of permanence, reliability, and cost.

**Site:** (1) A single area where hazardous substances or wastes have been deposited, stored, disposed of, or placed. An NPL site is also defined as any other location to which contamination from that area has come to be located. (2) A discrete area where suspected contamination has been verified, requiring further response action. A site by definition has been, or will be, entered into the Navy's Restoration Management Information System.

**Site Inspection (SI)**: A technical phase that follows a preliminary assessment designed to collect more extensive information on a hazardous waste site. The information is used to score the site using the HRS to determine whether response action is needed.

**Superfund**: The common name used for CERCLA; also referred to as the Trust Fund.

**Superfund Amendments and Reauthorization Act (SARA)**: Modifications to CERCLA enacted on October 17, 1986.

**Surface Water**: Bodies of water that are above ground, such as rivers, lakes, and streams.

**Technical Assistance Grant (TAG) Program**: An EPA grant program that provides funds for qualified citizens' groups to hire independent technical advisors to help them understand and comment on technical decisions relating to Superfund cleanup actions.

**Technical Assistance for Public Participation (TAPP) Program:** A DoD program that uses a streamline procurement process to obtain technical assistance with projects identified by a RAB, where such assistance will contribute to community understanding and input.

**Unexploded Ordnance (UXO)**: Military munitions that (1) have been primed, fuzed, armed, or otherwise prepared for action; (2) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (3) remain unexploded either by malfunction, design, or any other cause.

**Sources:**

*Community Relations in Superfund: A Handbook.* Appendix E, Superfund Glossary and Acronyms, pages E-1 through E-6. Prepared by the U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. EPA/540/R-92/009. January 1992. Additional Environmental Restoration and Superfund terms acronyms and terms are available at: https://portal.navfac.navy.mil/go/erb and http://www.epa.gov/superfund/about

Unexploded Ordnance Glossary. U.S. Department of Defense Web site - DENIX Portal: UXO Safety Education Program. Additional terms are available at http://www.denix.osd.mil/uxo/UXO411/

# Acronyms and Glossary
# Environmental Restoration Terminology



## Acronyms and Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Select from the alphabetical menu above to look up glossary definitions and acronyms, or select complete A-Z list by clicking on the link below.

Acronyms and Glossary A-Z

ABC DEF GHI JKL MNO PQRS TUV WXYZ

| | |
|---|---|
| A | data qualifiers - method (analytical) qualifier - A |
| A | data qualifiers - organic analysis - A |
| A-106 | Office of Management and Budget Circular #A-106 |
| AA | Atomic Absorption |
| AAQS | Ambient Air Quality Standard |
| ABM | Abrasive Blasting Media |
| ACGIH | American Conference of Governmental Industrial Hygienists |
| ACH | Air Changes per Hour |
| ACHP | Advisory Council on Historic Preservation |
| A-E | Architect-Engineer |
| AF | Soil Adherence Factor to skin, mg/cm2 |
| AFCEE | Air Force Center for Engineering and the Environment |
| Ag | Silver |
| AIRFA | American Indian Religious Freedom Act |
| AL | Action Level |
| Al | Aluminum |
| AM | Action Memorandum |
| ANOVA | Analysis of Variance |
| ANPR | Advanced Notice of Proposed Rulemaking |

| | |
|---|---|
| ANSI | American National Standards Institute |
| AOC | Area of Concern |
| AOU | Accelerated Operable Unit |
| APCD | Air Pollution Control District |
| API | American Petroleum Institute |
| APR | Air Purifying Respirator |
| AQAPS | Automated Quality Assessment Program System |

# Superfund Acronyms - All Acronyms

## All Acronyms

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

| Acronym | Description |
|---|---|
| **ATSDR** | Agency for Toxic Substances and Disease Registry EXIT disclaimer As the lead Agency within the Public Health Service for implementing the health-related provisions of CERCLA, the Agency for Toxic Substances and Disease Registry is charged under the Superfund Act to assess the presence and nature of health hazards at specific Superfund sites, to help prevent or reduce further exposure and the illnesses that result from such exposures, and to expand the knowledge base about health effects from exposure to hazardous substances back to top... |
| **ATSDR-HazDat** | Agency for Toxic Substances and Disease Registry's Hazardous Substance Release/Health Effects Database EXIT disclaimer "HazDat", the Agency for Toxic Substances and Disease Registry's Hazardous Substance Release/Health Effects Database, is the scientific and administrative database developed to provide access to information on the release of hazardous substances from Superfund sites or from emergency events and on the effects of hazardous substances on the health of human populations. back to top... |
| **CAA** | Clean Air Act The Superfund law incorporates those substances listed as hazardous air pollutants under section 112 of the Clean Air Act (CAA) as CERCLA hazardous substances, which is why the CAA is important to Superfund. In addition, Superfund cleanup responses must comply with CAA requirements. The CAA restricts the kinds and amounts of pollutants that may be released into the air and requires permits. back to top... |
| **CAG** | Community Advisory Groups A Community Advisory Group (CAG) is made up representatives of diverse community interests. Its purpose is to provide a public forum for community members to present and discuss their needs and concerns related to the Superfund decision-making process. back to top... |
| **CCL** | Construction Completion List |

EPA has developed a construction completion list (CCL) to simplify its system of categorizing sites and to better communicate the successful completion of cleanup activities. Inclusion of a site on the CCL has no legal significance. back to top...

**CEPPO**

Chemical Emergency Preparedness and Prevention Office
The Chemical Emergency Preparedness and Prevention Office (CEPPO) provides leadership, advocacy and assistance to:

- Prevent and prepare for chemical emergencies;
- Respond to environmental crises; and
- Inform the public about chemical hazards in their community.

To protect human health and the environment, CEPPO develops, implements, and coordinates regulatory and non-regulatory programs. back to top...

**CERCLA**

Comprehensive Environmental Response, Compensation, and Liability Act
The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. back to top...

**CERCLIS**

Comprehensive Environmental Response, Compensation, and Liability Information System
The CERCLA Information System is an EPA database of information about Superfund sites. This information is intended for use by EPA employees for management of the Superfund program. back to top...

**CLP**

Contract Laboratory Program
The Environmental Protection Agency (EPA)'s Contract Laboratory Program (CLP) is a national network of EPA personnel, commercial laboratories, and support contractors whose fundamental mission is to provide data of known and documented quality. The CLP supports the EPA's Superfund effort originally under the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and under the 1986 Superfund Amendments and Reauthorization Act (SARA). back to top...

**CWA**

Clean Water Act
The Superfund law incorporates those substances listed as hazardous water pollutants under section 311 (b)(4) of the Clean Water Act (CWA) as CERCLA hazardous substances. Section 311 of the CWA also addresses pollution from oil and hazardous substance releases, providing EPA and the U.S. Coast Guard with the authority to establish a program for preventing, preparing for, and responding to oil spills and hazardous substance releases that occur in navigable waters of the United States. back to top...

**DED**

Data Element Dictionary
The Data Element Dictionary (DED) is a table in which the data element that you are searching for is located. The information contained in the Superfund Data Element Dictionary includes: element name, table name, common name, and field definition back to top...

**DOD**

Department of Defense EXIT disclaimer
The mission of the Department of Defense (DOD) is to provide the military forces needed to deter war and to protect the security of our country. The Army, Navy, and Air Force are each responsible for environmental restoration of sites under their control. In addition the Army Corps of Engineers supports cleanup actions at Superfund sites. back to top...

**DOE**

Department of Energy EXIT disclaimer
In 1989, the Department of Energy (DOE) created the Office of Environmental Management (EM) to mitigate the risks and hazards posed by the legacy of nuclear weapons production and research, including the environmental legacy of the Cold War. back to top...

**DOT**

Department of Transportation EXIT disclaimer
Established by an act of Congress on October 15, 1966, the Department of Transportation's (DOT) mission is to serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future. back to top...

**EJ**

Environmental Justice
Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. back to top...

**EPA**

Environmental Protection Agency
Environmental Protection Agency (EPA) was established as an independent agency on December 2, 1970 during President Nixon's term in office. The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment air, water, and land upon which life depends. back to top...

**EPCRA**

Emergency Planning and Community Right-to-Know Act
The Emergency Planning and Community Right-to-Know Act (EPCRA), also known as SARA Title III, was enacted in November 1986. This law provides an infrastructure at the state and local levels to plan for chemical emergencies. Facilities that store, use, or release certain chemicals, may be subject to various reporting requirements. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their community. back to top...

| | |
|---|---|
| **ER** | Emergency Response<br>The U.S. EPA's Emergency Response (ER) Program coordinates and implements a wide range of activities to ensure that adequate and timely response measures are taken in communities affected by hazardous substances and oil releases where state and local first responder capabilities have been exceeded or where additional support is needed. back to top... |
| **ERNS** | Emergency Response Notification System<br>The Emergency Response Notification System (ERNS) is a database used to store information on notifications of oil discharges and hazardous substances releases. back to top... |
| **ERT** | Environmental Response Team EXIT disclaimer<br>In 1978, the Environmental Response Team (ERT) was established under Section 311 of the Clean Water Act to provide on-site national expert as required by the National Contingency Plan (NCP) section on Special Forces. back to top... |
| **ET** | Ecotox Thresholds<br>Ecotox Thresholds (ET) are defined as media-specific contaminant concentrations above which there is sufficient concern regarding adverse ecological effects to warrant further site investigation. ETs are designed to provide Superfund site managers with a tool to efficiently identify contaminants that may pose a threat to ecological receptors and focus further site activities on those contaminants and the media in which they are found. back to top... |
| **FAQ** | Frequently Asked Questions<br>On the Superfund Web site, you may search for frequently asked questions by topic or by typing in a keyword or phrase. back to top... |
| **FFRRO** | Federal Facilities Restoration and Reuse Office<br>EPA's Federal Facilities Restoration and Reuse Office's (FFRRO) overall mission is to facilitate faster, more effective, and less costly cleanup and reuse of Federal facilities. By focusing on teamwork, innovation, and public involvement, FFRRO and its Regional counterparts improve environmental cleanup, while protecting and strengthening the conditions of human health, the environment, and local economies. back to top... |
| **FIFRA** | Federal Insecticide, Fungicide, and Rodenticide Act EXIT disclaimer<br>Passed in 1972, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates the manufacture and use of pesticides and allows EPA to restrict or prohibit use of particularly harmful pesticides. back to top... |
| **HRS** | Hazard Ranking System<br>The Hazard Ranking System (HRS) is the principal mechanism EPA uses to place waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations - the preliminary assessment and the site inspection - |

to assess the relative potential of sites to pose a threat to human health or the environment. back to top...

**HSRC**

Hazardous Substance Research Centers EXIT disclaimer
Hazardous Substance Research Centers (HSRC) are a set of national organizations that carry out an active program of basic and applied research, technology transfer, and training involving practical problems relating to hazardous substance management. back to top...

**IEUBK**

Integrated Exposure Uptake Biokinetic Model
Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) and the Technical Review Workgroup for Lead (TRW) is an interoffice workgroup convened by EPA's Office of Emergency and Remedial Response (OERR). Its goal is to support and promote consistent application of the best science in the field of lead (Pb) risk assessment at contaminated sites nationwide. This goal encompasses work to further develop and continue to refine risk assessment tools for Pb, to promote the best use of available scientific data for site assessments, and to serve as an advisor to OERR management on Pb risk assessment concerns. back to top...

**INFOTERRA**

INFOTERRA
INFOTERRA is an international environmental referral and research network made up of about 175 countries coordinated by the United Nations Environment Programme (UNEP) in Nairobi, Kenya. The U.S. National Focal Point INFOTERRA is located at the EPA Headquarters Library and managed by the Office of Information Resources Management. back to top...

**NCP**

National Contingency Plan
The National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan (NCP), is the federal government's blueprint for responding to both oil spills and hazardous substance releases. The National Contingency Plan is the result of our country's efforts to develop a national response capability and promote overall coordination among hierarchy of responders and contingency plans. back to top...

**NFRAP**

No Further Remedial Action Planned
The Archive, or No Further Remedial Action Planned (NFRAP), database contains information on sites which have been removed from the inventory of Superfund sites. Archive status indicates that to the best of the EPA's knowledge, Superfund has completed its assessment of a site and has determined that no further steps will be taken to list that site on the NPL. back to top...

**NIEHS**

National Institute of Environmental Health Sciences EXIT disclaimer
The National Institute of Environmental Health Sciences (NIEHS) Superfund Basic Research Program, provides funding to 18 programs at 70 universities and institutions around the United States to study the human health effects of hazardous substances in the environment, especially those found at uncontrolled, leaking waste disposal sites. back to top...

| | |
|---|---|
| **NPL** | National Priorities List (NPL)<br>Sites are listed on the National Priorities List (NPL) upon completion of Hazard Ranking System (HRS) screening, public solicitation of comments about the proposed site, and final placement of the site on the NPL after all comments have been addressed. The NPL primarily serves as an information and management tool. It is a part of the Superfund cleanup process and is updated periodically. back to top... |
| **NRD** | Natural Resources Damage<br>Natural Resources Damages (NRD) are defined as injury to, destruction of, or loss of natural resources, including land, fish, wildlife, biota, air, water, ground water, drinking water supplies, that are managed by the government. The measure of damages under CERCLA and OPA is the cost of restoring injured resources to their baseline condition, and the reasonable costs of a damage assessment. back to top... |
| **O&M** | Operations and Maintenance<br>Operations and maintenance (O&M) activities protect the integrity of the selected cleanup plan for a Superfund site. O&M measures are initiated by a State after cleanup objectives have been reached, and the site is determined to be operational and functional (O&F) based on the State and Federal agreement. back to top... |
| **OAR** | Office of Air and Radiation<br>EPA's Office of Air and Radiation (OAR) deals with issues that affect the quality of our air and protection from exposure to harmful radiation. OAR develops national programs, technical policies, and regulations for controlling air pollution and radiation exposure. back to top... |
| **OECA** | Office of Enforcement and Compliance Assurance<br>The Office of Enforcement and Compliance Assurance (OECA) is responsible for ensuring the compliance of the regulated community with Federal environmental statutes. To achieve that goal, OECA employs an array of approaches including regulatory enforcement, compliance assistance, and compliance incentives. back to top... |
| **OPA** | Oil Pollution Act<br>The Oil Pollution Act (OPA) was signed into law in August 1990, largely in response to rising public concern following the Exxon Valdez incident. The OPA improved the nation's ability to prevent and respond to oil spills by establishing provisions that expand the federal government's authority, and provide the money and resources necessary to respond to oil spills. The OPA also created the national Oil Spill Liability Trust Fund, which is available to provide up to one billion dollars per spill incident. back to top... |
| **OPP** | Office of Pesticide Programs<br>The Office of Pesticide Programs (OPP) regulates the use of all pesticides in the United States and establishes maximum levels for pesticide residues in food, thereby safeguarding the nation's food |

supply. One non-regulatory effort underway is the Pesticides Environmental Stewardship Program, a voluntary private and public partnership dedicated to reducing pesticide use and risk. back to top...

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**OPPT**

Office of Pollution Prevention and Toxics
The Office of Pollution Prevention and Toxics (OPPT), formerly the Office of Toxic Substances, was formed in 1977 with the primary responsibility for administering the Toxic Substances Control Act (TSCA). This Law covers the production and distribution of commercial and industrial chemicals in the United States, and OPPT has the responsibility for assuring that chemicals made available for sale and use in the United States do not pose any adverse risks to human health or to the environment. back to top...

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**OPPTS**

Office of Prevention, Pesticides and Toxic Substances
EPA's Office of Prevention, Pesticides and Toxic Substance (OPPTS) plays an important role in protecting public health and the environment from potential risk from toxic chemicals for now and for generations to come. OPPTS promotes pollution prevention and the public's right to know about chemical risks. Dealing with emerging issues like endocrine disrupters and lead poisoning prevention are top priorities. back to top...

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**ORD**

Office of Research and Development
The Office of Research and Development (ORD) is the scientific and technological arm of the U.S. Environmental Protection Agency (EPA). Comprised of three headquarters offices, three national research laboratories and two national centers, ORD is organized around a basic strategy of risk assessment and risk management to remediate environmental and human health problems. back to top...

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**OSCP**

Office of Science Coordination and Policy
The Office of Science Coordination and Policy (OSCP), newly created in January of 1999, provides coordination ,leadership, peer review, and synthesis of science and science policy within OPPTS. Program areas under OSCP include biotechnology, endocrine disrupters and the FIFRA Scientific Advisory Panel (SAP). back to top...

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**OSHA**

Occupational Safety and Health Act EXIT disclaimer
The mission of the Occupational Safety and Health Administration (OSHA) is to save lives, prevent injuries and protect the health of America's workers. To accomplish this, federal and state governments must work in partnership with the more than 100 million working men and women and their six and a half million employers who are covered by the Occupational Safety and Health Act of 1970. back to top...

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**OSPS**

Outreach and Special Projects Staff
The Outreach and Special Projects Staff (OSPS) serves to coordinate and implement for the Office of Solid Waste and Emergency Response (OSWER) the agency's principles and new initiatives, such as Brownfields, Environmental Justice (EJ), and the Tribal initiatives, through its unique cross-program perspective. back to top...

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| **OSRTI** | Office of Superfund Remediation and Technology Innovation<br>Office of Superfund Remediation and Technology Innovation (OSRTI) manages the Superfund program. The Superfund program was created to protect citizens from the dangers posed by abandoned or uncontrolled hazardous waste sites. Congress established Superfund in 1980 by passing the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). back to top... |
| **OSW** | Office of Solid Waste<br>The Office of Solid waste (OSW) operates under authority of the Resource Conservation and Recovery Act (RCRA). OSW protects human health and the environment by ensuring responsible national management of hazardous and nonhazardous waste. back to top... |
| **OSWER** | Office of Solid Waste and Emergency Response<br>The Office of the Assistant Administrator for Solid Waste and Emergency Response provides Agency-wide policy, guidance and direction for the Agency's solid waste and emergency response programs. back to top... |
| **PA/SI** | Preliminary Assessment / Site Inspection<br>The Preliminary Assessment (PA) and Site Inspection (SI) are used by EPA to evaluate the potential for a release of hazardous substances from a site. back to top... |
| **PRP** | Potentially Responsible Parties<br>The Superfund law (CERCLA) allows EPA to respond to releases or threatened releases of hazardous substances into the environment. Under CERCLA, potentially responsible parties (PRPs) are expected to conduct or pay for the cleanup. The Superfund enforcement program identifies the PRPs at the site; negotiates with PRPs to do the cleanup; and recovers from PRPs the costs spent by EPA at Superfund cleanups. back to top... |
| **RAGS** | Risk Assessment Guidance<br>Part A of RAGS describes how to conduct a site-specific baseline risk assessment. The information in Part A is necessary background for Part D. Part B provides guidance for calculating risk-based concentrations that may be used, along with applicable or relevant and appropriate requirements (ARARs) and other information, to develop preliminary remediation goals (PRGs) during project scoping. PRGs (and final remediation levels set in the Record of Decision) can be used throughout the analyses in Part C to assist in evaluating the human health risks of remedial alternatives. Part D complements the guidance provided in Parts A, B, and C and presents approaches to standardize risk assessment planning, reporting, and review. Part D guidance spans the CERCLA remedial process from project scoping to periodic review of the implemented remedial action. Part D guidance applies to all Superfund Risk Assessments starting after January 1, 1998. back to top... |
| **RCRA** | Resource Conservation and Recovery Act |

The primary goals of the Resource Conservation and Recovery Act (RCRA) are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner. back to top...

**RD / RA**

Remedial Design/Remedial Action
Remedial Design (RD) is the phase in Superfund site cleanup where the technical specifications for cleanup remedies and technologies are designed. Remedial Action (RA) follows the remedial design phase and involves the actual construction or implementation phase of Superfund site cleanup. The RD/RA is based on the specifications described in the record of decision (ROD). back to top...

**RI / FS**

Remedial Investigation/Feasibility Study
After a site is listed on the NPL, a remedial investigation/feasibility study (RI/FS) is performed at the site. The RI serves as the mechanism for collecting data, while the FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The RI and FS are conducted concurrently. Data collected in the RI influence the development of remedial alternatives in the FS, which in turn affect the data needs and scope of treatability studies and additional field investigations. back to top...

**RMP**

Risk Management Plans
Facilities are required to submit risk management plans (RMP) to EPA. Risk management plans will be available to State and local governments and citizens to help them understand potential local chemical hazards and take steps to prevent accidents. The risk management program is administered by EPA's Chemical Emergency Preparedness and Prevention Office (CEPPO). back to top...

**ROD**

Record of Decision
The Record of Decision (ROD) is a public document that explains which cleanup alternatives will be used to clean up a Superfund site. The ROD for sites listed on the NPL is created from information generated during the RI/FS. back to top...

**SARA**

Superfund Amendments and Reauthorization Act
The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. back to top...

**SCDM**

Superfund Chemical Data Matrix
The Superfund Chemical Data Matrix (SCDM) is a source for factor values and benchmark values applied when evaluating potential National Priorities List (NPL) sites using the Hazard Ranking System (HRS). back to top...

**SDWA**

Safe Drinking Water Act
The Safe Drinking Water Act (SDWA) ensures that our tap water is fit to drink. Passed in 1974, SDWA sets national drinking water standards for public systems that deliver water to the tap. SDWA is used with RCRA and CERCLA to protect and cleanup groundwater by setting water quality standards. back to top...

**SPCC**

Spill Prevention, Control and Countermeasures
In April 1995, EPA conducted a national survey of oil storage facilities potentially subject to its Spill Prevention, Control and Countermeasures (SPCC) regulation (40 CFR Part 112). back to top...

**STROLE**

Superfund Enhanced State and Tribal Role Initiative
The purpose of the Superfund Enhanced State and Tribal Role Initiative (STROLE) is to develop a comprehensive plan that EPA can implement to share Superfund program responsibilities with interested and capable states and tribes, to enable cleanup of more sites. EPA intends for this plan to promote flexibility in the management of contaminated sites consistent with the overall goal of protecting human health and the environment. back to top...

**SUPERJTI**

Superfund Job Training Initiative
The Superfund Job Training Initiative's (SuperJTI) mission is to provide or support job training opportunities for economically disadvantaged citizens living in communities affected by Superfund sites, and encourages their employment in site cleanup activities. back to top...

**TAB**

Technical Assistance to Brownfields Communities EXIT disclaimer
Technical Assistance to Brownfields Communities (TAB) helps communities to clean and redevelop properties that have been damaged or undervalued by environmental contamination. The purpose of these efforts is to create better jobs, increase the local tax base, improve neighborhood environments, and enhance the overall quality of life. back to top...

**TAG**

Technical Assistance Grants
A Technical Assistance Grant (TAG) provides money for activities that help communities participate in decision-making at eligible Superfund sites. An initial grant up to $50,000 is available for any Superfund site that is on the National Priorities List (NPL) or proposed for listing on the NPL and a response action has begun. back to top...

**TIO**

Technology Innovation Office
The Technology Innovation Office (TIO) of the U.S. Environmental Protection Agency was created in 1990 to act as an advocate for new technologies. TIO's mission is to increase the applications of innovative treatment technologies to contaminated waste sites, soils, and groundwater. back to top...

**TOSC**

Technical Outreach for Communities EXIT disclaimer