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EPA Superfund
Record of Decision:

FORT DEVENS-SUDBURY TRAINING ANNEX
EPA ID: MAD980520670
OU 04, 05
SUDBURY, MA
09/30/1996

RECORD OF DECISION
OPERABLE UNITS 4 AND 5
SUDBURY TRAINING ANNEX
MIDDLESEX COUNTY, MASSACHUSETTS

SEPTEMBER 1996

RECORD OF DECISION
OPERABLE UNITS 4 AND 5
SUDBURY TRAINING ANNEX, MASSACHUSETTS

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Operable Units 4 and 5
Sudbury Training Annex
Middlesex County, Massachusetts

STATEMENT OF PURPOSE AND BASIS

This decision document presents the decision for No Action at Operable Units (OUs) 4 and 5, Sudbury Training Annex, Middlesex County, Massachusetts. It was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended, 41 USC §§ 9601 et seq. and the National Oil and Hazardous Substances Pollution contingency Plan (NCP) as amended, 40 CFR Part 300, to the extent practicable. the Sudbury Training Annex Base Realignment and closure (BRAC) Environmental Coordinator; the Installation commander; and the Director of the Office of Site Remediation and Restoration, U.S. Environmental Protection Agency New England (USEPA) have been delegated the authority to approve this Record of Decision.

This decision is based on the Administrative Record that has been developed in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Fort Devens BRAC Environmental Office, Building P12, Fort Devens, Massachusetts, and at the Sudbury, Massachusetts Town Hall.

DESCRIPTION OF THE SELECTED REMEDY: NO ACTION

The U.S. Army and USEPA, with concurrence of the Massachusetts Department of Environmental Protection (MADEP), have determined that No Action under CERCLA is necessary to address contamination at OU 4 and OU 5. However, the Army will close the septic tank behind Building T104 at OU 5 under state regulations.

DECLARATION

The U.S. Army and the USEPA, with concurrence of the MADEP, have determined that no remedial action under CERCLA is necessary at OU 4 and OU5. OU 4, located in the northwestern corner of the Annex and consisting of the two areas P11 and P13, was reportedly used for research and development of military materials such as framed plastic and organic chemicals. OU 5, located in the southeastern corner of the Annex and consisting of the three areas A12, P36, and P37, was reportedly used for research and development of missile guidance and radar systems, and for assembly of electronic equipment. As this is a decision for No Action under CERCLA, the statutory requirements of CERCLA Section 121 for remedial actions are not applicable, and no five-year review will be undertaken.

The foregoing represents the decision for no action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the Commonwealth of Massachusetts Department of Environmental Protection.

Concur and recommend for immediate implementation:

U.S. DEPARTMENT OF THE ARMY
<IMG SRC 0196118>

The foregoing represents the decision for no action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the Commonwealth of Massachusetts Department of Environmental Protection.

Concur and recommend for immediate implementation:

<IMG SRC 0196118A>

The foregoing represents the decision for No Action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the Commonwealth of Massachusetts Department of Environmental Protection.

Concur and recommend for immediate implementation:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
<IMG SRC 0196118B>

SECTION 1

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Sudbury Training Annex (Annex) is a National Priorities List (NPL) site under the Comprehensive Environmental Response, compensation and Liability Act (CERCLA). The Annex is located 20 miles west of Boston, one mile south of Maynard, and two miles northwest of the Town of Sudbury, in Middlesex County, Massachusetts. The installation includes portions of the towns of Maynard, Hudson, Marlborough, Stow, and Sudbury. The installation covers approximately 4.3 square miles (2,292 acres). Hudson Road divides the installation into two equal sections: the larger, northern section, and the smaller, southern section.

There are currently several areas of concern within the Annex under investigation. The areas of concern at the Annex have been organized into Operable Units (OUs) for investigation and remediation purposes. This Record of Decision (ROD) relates to No CERCLA Action at OU 4 and OU 5. OU 4, located in the northern portion of the Annex, consists of adjacent Areas P11 and P13. OU 5, located in the southern portion of the Annex, consists of adjacent Areas A12, P36, and P37 (Figure 1-1).

The Annex was placed on the base closure list in September 1995. Except for an area retained for Army housing, the Annex will be transferred entirely to three federal agencies. The majority of the land has been requested by the U.S. Fish and Wildlife Service (USFWS) and will become part of the Great Meadows Wildlife Refuge. The Air Force and the Federal Emergency Management Agency (FEMA) have also requested small parcels to continue their existing operations.

A more complete description of the Annex can be found in the Final Remedial Investigation (RI) Report, December 1995, Volume I, Subsection 2.2 More complete descriptions of OUs 4 and 5 can be found in the Final RI Report, December 1995, Volume II, Section 3 and Volume III, Section 3, respectively. The RI Report is available for review at the Base Realignment and Closure (BRAC) Environmental Office at Fort Devens, and the town libraries in Hudson, Maynard, Stow, and Sudbury.

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2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 LAND USE AND RESPONSE HISTORY

In 1942, the U.S. government established the Sudbury Annex as a military facility to store surplus ammunition for the World War II war effort. The Annex continued to be used as storage depot until 1950, when it was transferred to the First Army and for two years became a storage and training subinstallation for Fort Devens. From 1952 to 1957, the Annex was principally used for ordnance research and development activities under the Chief of Ordnance.

Fort Devens, located some 15 miles to the northwest of the Annex, received custody of the entire Annex in 1982. Fort Devens' current mission is to command and train the duty units and to support the U.S. Army Security Agency Training Center and School, the U.S. Army Reserves, the Massachusetts National Guard Reserve Officer Training Programs, and the Air Defense sites in New England. Under Public Law 101-510, the Defense Base Closure and Realignment Act of 1990, Sudbury Annex was selected in September 1995 for closure by November 1997. The Annex has been used primarily for personnel training activities for active Army units and the Army Reserve, as well as for Army and Air National Guard troops. Currently, the Annex is a part of the Devens Reserve Forces Training Area (RFTA), itself an installation of Fort McCoy, and includes several areas actively in use by the FEMA and the U.S. Air Force.

2.1.1 OU 4

OU 4 (Areas P11 and P13) is located in the northwestern corner of the Annex, south of the northern intersection of White Pond Road and Patrol Road. An OU 4 site map is shown in Figure 2-1.

OU 4 is located on a gently sloping terrace of glacial outwash sand and gravel, between two hills primarily of glacial till, a drumlin to the east, and a hill of ground moraine with bedrock outcrops to the west. The bedrock in the center of the site is approximately 30 to 60 feet below ground surface.

White Pond Road is the northwest boundary of the site, whereas Puffer Road is the northeast boundary of the site. Forested wetland areas are located on the eastern and southeastern boundaries of the site. Forested areas bound the southern and western sides of the site. Currently, eight buildings are on the site (T404 through 410, and T462), most of which were constructed in 1952.

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Six buildings have been removed from the site leaving only foundations (Buildings T401, T402, T403, T419, T461, and T466). Most of these buildings were demolished in the 1960s. For the most part, these foundations have been obscured and are now overgrown with grass.

The area along White Pond Road has been used extensively by varying units for field test activities, starting in 1952 and continuing until as late as 1991. Probable and confirmed uses of the site include: farming; ordnance research and development; laboratory research on foamed plastics, organic chemicals, flame testing, meteorological projects, and insecticide and rodenticide research; and training of Massachusetts State Police, Massachusetts Air National Guard, Massachusetts Army National Guard, and Massachusetts Fire Fighting Academy (MFFA) units. The area was the location of a farm prior to Army use, and some of the buildings later used by the Army were converted from farm use.

Removal actions at OU 4 were conducted in 1991 and 1992.

1991. The Army removed several empty drums from OU 4 and relocated them to the temporary drum storage area, the former MFFA training area, located at the site's north end.

1992. In 1992, several above ground storage tanks (ASTs) were removed by Fort Devens personnel from near Buildings T406 and T410.

Six underground storage tanks (USTs) were removed by the Army in 1992. In addition to removing the tanks from the ground, the soil surrounding the tanks was tested for the presence of oil and hazardous material. Petroleum-contaminated soil detected in the tank areas was removed.

A more detailed description of OU 4 site history can be found in Volume II, Section 1.0 of the Remedial Investigation Report, December 1995. The RI Report is available for review at the BRAC Environmental Office at Fort Devens, and the town libraries in Hudson, Maynard, Stow and Sudbury.

2.1.2 OU 5

OU 5 (Areas A12, P36, and P37) is located in the southeastern corner of the annex, on the south side of the Old Marlboro Road near the termination of the Diagonal Road. An OU 5 site map is shown in Figure 2-2. The site consists of an area approximately 1,000 feet long by up to 250 feet wide along a northeast to southwest axis along the south side of Old Marlboro road. The site contains two fabricated metal buildings, T104 and T106, which were constructed in 1958. The site formerly contained a 40 foot high metal detection tower that was designated Building T103.

OU 5 is located on the site of a low hill of glacial till identified was a ground moraine or as a drumlin, which slopes gently to a surrounding outwash plain. This layer of outwash material gradually thickens toward the east and the wetlands area to the east-northeast to greater than 21 feet thick. Bedrock was not encountered during any drilling activities at the site; however, it appears that bedrock topography is sub-parallel to surface topography. Bedrock elevations appear to range from approximately 40 to 60 feet below ground surface.

Building T103, the 40 foot metal detection tower, was formerly located approximately 100 feet southeast of Building T104. The tower was disassembled sometime after 1971, although the concrete footings, electrical connections, and various debris from the tower are scattered around its former location.

The likely use of Building T104 was for research and development of missile guidance and radar systems, and the likely use of Building T106 was for the assembly of electronic equipment. Building T104 was also used from sometime prior to 1982 to July 1985 for the staging of transformers.

In July 1985, Fort Devens personnel discovered that a transformer staged near Building T104 had leaked oil-containing polychlorinated biphenyls (PCBs) from a bullet hole puncture. An estimated 100 to 200 gallons of PCB oil were released onto the ground.

That month, the remaining 300 gallons of fluid were removed from the leaking transformer, and 75 tons of visibly contaminated soil were excavated from the release areas. Additional soil removals performed from September through November 1985 and in June and July 1986 increased the total amount of soil removed to over 175 tons.

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In December 1988, the 10,000 gallon UST located near the southeastern corner of Building T104 was removed. This UST had contained No. 2 fuel oil. No visibly contaminated soils or odors were noted.

In December 1988, a 1,000-gallon UST used to store No. 2 Fuel Oil was removed from the northeastern corner of Building T106. Prior to the excavation, 75 gallons of waste oil were removed from the tank. The UST was reported to be in poor condition, with extensive corrosion and a 1-inch hole located in the side of the tank directly below the fill line. The soil surrounding the tank prior to removal was stained and emanated strong petroleum odors. Sixteen cubic yards of soil were removed from the tank pull area.

A more detailed description of OU 5 site history can be found in Volume III, section 1.0 of the Remedial Investigation Report, December 1995. The RI Report is available for review at the BRAC Environmental Office at Fort Devens, and the town libraries in Hudson, Maynard, Stow, and Sudbury.

2.2 ENFORCEMENT HISTORY

Site investigation activities at the Annex have been conducted in accordance with the Inter-Agency Agreement between the United States Army and the USEPA under CERCLA. The USEPA analysis of the Annex was based in part on ongoing Army environmental studies under the Defense Environmental Restoration Program (DERP).

On January 29, 1987, the Annex was classified as a Federal facility under the jurisdiction, custody, and control of the Department of Defense (DoD), within the meaning of Executive Order 12580, 52 Federal Regulations 2923, and within the meaning of the DERP, 10 U.S.C., Section 2701 et seq. The Master Environmental Plan (MEP), a key element in the attainment of DERP goals, was authored by OHM Remediation Services Corp. (OHM) in 1992, and updated by Ecology and Environment, Inc. (E&E) in 1993, and ABB Environmental Services, Inc. (ABB-ES) in 1995.

The Annex was included in the USEPA NPL Update No. 9 in the July 14, 1989 Federal Register. On February 21, 1990, the Annex was placed on the NPL.

NUS Corporation (1985/1987), as a contractor to USEPA, conducted a preliminary assessment/site investigation (PA/SI) at the Annex to fulfill CERCLA requirements. Individual sites comprising the sturdy areas addressed in this ROD were grouped into Areas OU 4 and OU 5 as a result of Phase I Site Investigations (SIs) performed by OHM between 1990 and 1992, and Phase II SIs performed by E&E in 1993 and 1994. Remedial Investigations at OU 4 and OU 5 were carried out by E&E in 1993 and 1994.

3.0 COMMUNITY PARTICIPATION

The Army has held quarterly public Technical Review Committee (TRC) meetings, issued newsletters and press releases, and held a number of public meetings to keep the community and other interested parties informed of activities at the Sudbury Annex.

In April 1992, the Army released, following public review, a community relations plan that outlined a program to address community concerns and keep citizens informed about and involved in remedial activities at Sudbury Annex. As part of this plan, the Army established a TRC, which first met May 13, 1991. The TRC, as required by the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 211 and Army Regulation 200-1, included representatives from USEPA, U.S. Army Environmental Center (USAEC), Fort Devens, MADEP, U.S. Army Corp of Engineers (USCOE), local officials, and the community. The TRC generally met quarterly to review and provide technical comments on schedules, work plans, work products, and proposed activities for the study areas (SAs) at Sudbury Annex. The RI, RI Addendum, and Feasibility Study (FS) reports, proposed plan, and other related support documents were submitted to the TRC for their review and comment.

During the week of August 19, 1996, the Army published a public notice announcing the proposed plan, public informational meeting, and public hearing in the Sudbury Town Crier, the Middlesex News, the Marlborough-Hudson Enterprise, and the Maynard Beacon. the Army also made the proposed plan available to the public at the information repositories at the libraries in Stow, Hudson, Sudbury, and Maynard, and at Fort Devens.

From August 19 to September 18, 1996, the Army held a 30-day public comment period to accept public comments on the proposed plan. On September 11, 1996, the Army held an informal public hearing at the stow Town Building, Stow, Massachusetts to discuss the proposed plan and to accept verbal or written comments from the public. No verbal comments were received. A transcript of this meeting is attached as Appendix A, and public comments and the Army's response to comments are included in the attached Responsiveness Summary (Appendix B).

All supporting documentation for the decision regarding the No Action ROD for OU 4 and OU 5 is contained in the Administrative Record. The Administrative Record is a collection of all the documents considered by the Army in choosing the No Action decision. On March 20, 1994, the army made the Administrative Record

available for public review at the Sudbury Annex BRAC Environmental Office, and at the Sudbury Town Hall, Sudbury, Massachusetts.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The U.S. Army and the USEPA have determined the No Action is required at OU 4 and OU 5. USEPA has the authority to revisit the No Action under CERCLA decision even if the Annex is removed from the NPL. This could occur if future conditions indicate that an unacceptable risk to human health or the environment would result from exposure to contaminants at OU 4 and OU 5.

Areas OU 4 and OU 5 have been investigated by the Army beginning with preparation of the Master Environmental Plan in 1992, and concluding with the Remedial Investigation Report issued in December 1995. During this period, field work and data analyses were performed to characterize surface and subsurface conditions at OU 4 and OU 5. Potential risks to human health and the environment were calculated using data from the investigations. Although risk assessments conducted in 1994 concluded that soil and groundwater at OU 4 and OU 5 may pose a future human health risk, the risk may be overstated because, due to base closure, the new anticipated future land use of the Annex will be a wildlife refuge with limited recreation human exposures after the property is transferred to the USFEW. Further rationale for the No action decision at OU 4 and OU 5 are presented below for the risks posed.

With respect to the exceedance of cancer and non-cancer risks due to consumption of groundwater under a residential scenario, No Action is warranted because arsenic, the contaminant creating the majority of the risk, was detected below its Maximum Contaminant Level (MCL). MCLs are enforceable, human health-based drinking water standards. A comparison of filtered and unfiltered groundwater show that inorganics in groundwater are due to turbidity and not site-related contamination. In addition, groundwater use is unlikely because the Annex will be transferred to other federal agencies, and private homes will not be developed.

As for potential cancer and non-cancer risks due to direct contact with soil at OU 4 and OU 5, No Action is warranted because exposures under recreational use would be much less than residential use. Therefore, the potential cancer and non-cancer risks are qualitatively estimated to be acceptable.

Based on this assessment, No Action at areas OU 4 and OU 5 is warranted under CERCLA. However, the Army will close the septic tank behind Building T104 at OU 5 under state regulations.

5.0 SUMMARY OF SITE CHARACTERISTICS

Site investigations were conducted in 1992 and 1993 to characterize the nature and distribution of contaminants at OU 4 and OU 5. Detailed descriptions of the data are presented in the Phase (Final RI Report (E&E, 1995). The significant findings of the contamination assessments are summarized in the following subsections.

5.1 OU 4

In surface soils, the key contaminants of concern are metals, pesticides, polynuclear aromatic hydrocarbons (PAHs), and PCBs. Pesticide detections are probably related to general pest management practices. In the former area of fire training by the MFFA in the parking lot, there appears to be a limited area of metals, PAH, and pesticide contamination. The metals and PAHs are likely related to former flammable liquid and car fire training by the MFFA. At the former location of the 500 gallon UST northeast of Building T406, the metals may be the result of degradation of galvanized steel in the AST. PCBs may be related to a nearby transformer located immediately north of Building T406, or a spill of waste oil. At the former location of the ASTs east of Building T410, metals may be related to the former ASTs, and PCBs could be the result of a small spill of waste oil.

In subsurface soil, the only contaminant found consistently was total petroleum hydrocarbons (TPHC) in excavations of the former USTs at the site. No contaminants of concern were identified in boring samples from the three wells near Building T405. No pesticides were found in the two soil borings near Building T405. Cadmium was the only detection in the soil from the two test pits excavated in the area west of Building T405.

No groundwater contaminant plumes were identified at the site. For inorganic analytes, discussion of potential contamination has focused only on filtered sampling results, due to the difficulty of assessing unfiltered samples which inevitably contain suspended solids. several metals were detected in multiple sampling rounds above local background levels in one well located just east of Building T405. Pesticides were also found in this well at relatively low levels but only in one of four sampling rounds. Toluene was also found in two of four sampling rounds. The source of the metals is unknown. The pesticides could

potentially be related to pesticide research but may also be related to infiltration of pesticides from the surface due to general pest control practices. The toluene could be related to solvents used in the research, but the infrequent and low concentrations and limited number of detections does not indicate a large-scale spill. These detections appear to be limited to the well east of Building T405, as metals were not elevated above background and no volatile organics or pesticides were found in samples collected from the downgradient well. Low levels of several other pesticides were infrequently detected in several other wells in areas upgradient of Building T405, and the source of these detections is probably general pest control practices. TPHC was detected in several wells at the site. The infrequency and relatively low levels of detection do not indicate extensive TPHC contamination at the site, but may indicate some limited infiltration of petroleum or gasoline from activities at the site.

In general, zinc and the pesticide DDT and/or its degradation products appear to be migrating in surface water off-site, but their concentrations decline sharply with increasing distance from the site, and are below detection limits prior to the drainage entering Honey Brook.

Sediment sampling results indicate a limited presence of metals, pesticides, and TPHC in some of the sediments in the drainage from the central portion of the site and the on-site wetland. The impact on the tributary to Honey Brook decreases as distance from the site increases.

Research activities conducted at the site do not appear to have been sources of significant site contamination.

A complete discussion of OU 4 site characteristics can be found in Section 4.0, Volume II of the RI Report. The RI Report is available for review at the BRAC Environmental Office at Fort Devens, and the town libraries in Hudson, Maynard, Stow, and Sudbury.

5.2 OU 5

In surface soil samples, the sampling data indicate limited concentrations of metals, PCBs, pesticides, and TPHC around Building T104, low levels of PCBs in the former PCB spill/remediation area, and low level PAH and TPHC around Building T106. The pattern of PCB detections points to a potential low-level spill in the asphalt pad area, migration of PCBs from either the transformer staging done in and around Building T104, or from excavated soil associated with the PCB spill remediation in 1985 and 1986.

The metals found at levels above background around Building T104 may be related to the metal debris found around the perimeter of the building, although some could potentially be related to the former research activity conducted in the building. Pesticides were found above background in a few samples from around Building T104 and at the PCB spill/remediaton area. These detections probably indicate the use of pesticides for pest management practices, but the concentrations do not indicated a spill of pesticides affecting soils. No volatile organic compounds (VOCs) were found in surface soil. Semivolatiles detected included trace levels of several PAH compounds in one sample taken near Building T106.

Subsurface soil sampling indicated metals around Building T104, and low levels of TPHC near Buildings T104 and T106. No PCBs or pesticides were found in subsurface soil, including those collected in the PCB spill/remediation area. No VOCs were found. Metals were detected above background levels in the borings at Building T104.

Groundwater sampling did not indicate metals in filtered samples that are likely to be site-related contaminants. The only organic compound found in downgradient wells was TPHC, found above background in one of two rounds of sampling in the monitoring well in the former parking lot and the monitoring well on the northwest side of Building T106. The TPHC detections are likely related to infiltration of petroleum from the parking area and the nearby road, or miscellaneous automobile/truck spills in these areas.

Concentrations of metals above background were detected in two of three Marlboro Brook surface water samples. Some metals are probably due to sources located further upstream.

Metals concentrations found in two of the Marlboro Brook sediment samples were either below or just slightly above background. The likely source of metals in Marlboro Brook sediment is not the site, but sources further upstream. Pesticides were also found in sediment samples. The pattern of detection suggests the source of the pesticides is runoff containing residual pesticides from past pest management practices at the Annex. PAH compounds and TPHC were found only the sediment sample near Moore Road. The likely source of PAHs and TPHC is Moore Road.

A complete discussion of OU 5 site characteristics can be found in section 4.0, Volume II of the RI Report. The RI Report is available for review at the BRAC Environmental Office at Fort Devens, and the town libraries in Hudson, Maynard, Stow, and Sudbury.

6.0 SUMMARY OF SITE RISKS

Risk assessments were conducted to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with soil, sediment, and groundwater at OU 4 and OU 5. Human health risk assessments for OU 4 and OU 5 prepared in 1994 evaluated current and future land use scenarios which included, respectively, site trespassers and site residents. Since then, the future use scenario of the Annex changed from residential to wildlife refuge; however, the risk assessments were not revised and potential future risks under the new future use have been qualitatively evaluated. Under the base closure process, the Annex property will be transferred to three agencies, with the USFWS receiving approximately 2,000 acres of land. Therefore, the residential future use scenario evaluated in the risk assessments provides an overly conservative estimate of risk to site contaminants. Human exposure under a residential use scenario would be more limited, compared to exposure under a residential use scenario.

The human health risk assessment followed a four-step process:

- contaminant identification, which identified those hazardous substances That, given the specifics of the site, were of significant concern;
- exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure;
- toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to the identified hazardous substances; and
- risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including cancer and non-cancer risks.

Excess lifetime cancer risks were determined for each exposure pathway by multiplying the exposure level by the chemical-specific cancer slope factor. Cancer slope factors have been developed by USEPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the predicted risk. The resulting risk estimates are expressed in scientific notation as a probability (e.g., 1x10-6 for 1/1,000,000) and indicated (using this example) that an individual has a one-in-a-million chance of developing cancer as a result of site-related exposure over 70 years to the particular compound at the stated concentration. Current USEPA practice considers cancer risks to be additive when assessing exposure to a mixture of hazardous substances.

The Hazard Quotient (HQ) was also calculated for each pathway as USEPA's measure of the potential for non-cancer health effects. The HQ is calculated by dividing the exposure level by the reference dose (RfD) or other suitable benchmark for non-cancer health effects. RfDs have been developed by USEPA to protect sensitive individuals over the course of a lifetime, and reflect a daily exposure level that is likely to be without an appreciable risk of an adverse health effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. The HQ is often expressed as a single value (e.g., 0.3) indicating the ration of the stated exposure to the RfD value (in this example, the exposure is approximately one-third of an acceptable exposure level for the given compound). HQs are added, resulting in a Hazard Index (HI) for each pathway. If the HI is greater than 1, the predicted intake could potentially cause adverse health effects. This determination is necessarily imprecise because the derivation of dose-response values (i.e., RfDs) involves the use of multiple safety and uncertainty factors. In addition, the HQs for individual compounds should be added only if their target organs or mechanisms of action are identical. Therefore, the potential for adverse effects from a mixture having an HI in excess of 1 must be assessed on a case-by-case basis.

The results of the human health risk assessments are discussed below, followed by a discussion of the ecological risk assessment for OU 4 and OU 5.

6.1 SUMMARY OF RISKS AT OU 4

6.1.1 Human Health Risk Assessment Summary

Contaminants of potential concern (COPCs) at OU 4 listed in Table 6-1 were selected for evaluation in the human health risk assessment of the RI Report. These contaminants of concern were selected to represent potential site-related hazards bases on toxicity, concentration, frequency of detection, and mobility and persistence in the environment. A detailed discussion of the human health risk assessment approach and results is presented in Volume II, section 6.0 of the RI Report.

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
OU 4

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Metals					
Aluminum	X		X	X	X
Antimony			X		X
Arsenic			X	X	X
Barium	X	X	X	X	X
Beryllium			X	X	X
Cadmium	X	X	X		
Calcium	X		X	X	X
Chromium	X		X		X
Cobalt	X		X		X
Copper	X	X	X		X
Iron	X	X	X	X	X
Lead	X		X	X	X
Magnesium	X			X	X
Manganese	X	X	X	X	X
Mercury	X				
Nickel	X		X		X
Potassium	X	X		X	X
Selenium			X		
Silver				X	
Sodium	X				
Vanadium	X		X	X	X
Zinc	X	X	X	X	X

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
OU 4

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Pesticides/PCBs					
alpha-Chlordane		X		X	X
gamma-Chlordane		X			
p,p'-DDD	X			X	
p,p'-DDE	X			X	X
p,p'-DDT	X			X	X
Dieldrin	X				
Endosulfan, B		X			
Endrin					X
Heptachlor	X				
Heptachlor epoxide	X				X
PCB 1254	X				
PCB 1260	X				
Semivolatile Organics					
Bis(2-ethylhexyl)phthalate	X				
Di-n-octylphthalate	X				
Acenaphthene	X				
Benzo(b)fluoranthene				X	
Chrysene	X				
Fluoranthene			X		
2-Methylnaphthylene	X				
Phenanthrene	X				
Pyrene		X		X	

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
OU 4

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Volatile Organics					
Methylene chloride	X				
Methyl ethyl ketone	X				
1,1-Trichloroethane	X				
Toluene	X	X		X	
Trichlorofluoromethane	X				
Other Organics					
Total petroleum hydrocarbons	X		X		X

Note: Groundwater COPC selection is based on unfiltered groundwater data.

Key:

X = Selected as a COPC for the human health risk assessment.

Source: Ecology and Environment, Inc., 1994

Tables 6-2 and 6-3 summarize the human health risks at OU 4 identified in the RI Report. These tables also show which exposure pathways are most responsible for the estimated risks.

Under the current USEPA Superfund policy (USEPA, 1992b), acceptable exposures to carcinogens are those that represent an excess upper bound lifetime cancer risk of between 10-4 to 10-6. For noncarcinogenic effects, acceptable exposure levels are those with an HI of 1.0 or less.

The estimated potential cancer risk for Reasonable Maximum Exposure (RMEs) to contaminants at OU 4 (see Table 6-2) are 4.4x10-7 for the adolescent site trespasser's exposure to soil, and 1.8x10-7 for the adolescent trespasser's exposure to sediment. These are below the acceptable USEPA 10-4 to 10-6 risk range. The RME case assumes that all of a receptor's exposure is to the maximum contaminant concentrations observed at the site, and is therefore a conservative estimate.

HIs for potential reasonable maximum exposures to noncarcinogenic COPCs in soil and sediment are well below USEPA's benchmark value of 1.0.

Under a possible future residential scenario, the estimated potential cancer risks from RMEs to site soil contamination are 6.6x10-5 for adult residents and 4.3x10-5 for children, both within the 10-4 to 10-6 range deemed acceptable by USEPA. The estimated cancer risks for the average exposure case are lower by approximately an order of magnitude. Noncancer HIs associated with residential RMEs to soil contaminants total 0.97 for adults and 3.6 for children; the child's HI is above the acceptable HI of 1.0.

Potential cancer risks to adolescent site residents from exposure to sediments are estimated to be 3.6x10-6 for the RME case and 8.2x10-7 for the average exposure case. Noncancer HIs associated with sediment exposures were well below 1.0, indicating that sediment contaminants are unlikely to cause adverse health effects.

Estimated potential cancer risks from consumption of unfiltered groundwater under the RME case are 8.8x10-4 for adults and 4.1x10-4 for children, above the 10-4 to 10-6 range. Average case risk estimates were approximately one-fifth as great. When metals data from filtered groundwater samples are used to remove the effects of suspended sediment, estimated RME cancer risks drop by two-thirds to 3.1x 10-4 and 1.4x10-4 for adults and children, respectively. The arsenic concentration that is responsible for the latter risk estimates is well below the USEPA's Maximum Contaminant Level (MCL) for arsenic in drinking water of 50 µ/L.

TABLE 6-2
SUMMARY OF EXCESS CANCER RISKS ASSOCIATED WITH OU 4

PATHWAY	CASE	RECEPTOR ADULT	RECEPTOR ADOLESCENT	RECEPTOR CHILDa	RISK CONTRIBUTIONS BY EXPOSURE ROUTEA	RISK CONTRIBUTIONS BY CHEMICALA
Exposure Pathways Potentially Complete Under Current Site Conditions						
Trespasser Soil Contact	RME	--	4.4x10-7	--	Dermal contact - 87%	PCBs - 98%
	Average	--	4.5x10-8	--	Soil Ingestion - 13%	
Trespasser Sediment Contact	RME	--	1.8x10-7	--	Sediment Ingestion -- 100%	Arsenic - 95%
	Average	--	4.1x10-8	--		Beryllium - 4%
Exposure Pathways Potentially Complete Under Possible Future Site Conditions						
Future resident soil contact	RME	6.6x10-5	–	4.3x10-5	Dermal contact - 90%	PCBs - 98%
	Average	4.8x10-6	–	3.2x10-6	Soil ingestion - 10%	
Future resident sediment contact	RME	--	3.6x10-6	--	Sediment Ingestion - 100%	Arsenic - 95%
	Average	--	8.2x10-7	–		Beryllium - 9%
Future residential groundwater usage, unfiltered	RME	8.8x10-4	–	4.1x10-4	Water Ingestion - 100%	Arsenic - 95%
	Average	1.9x10-4	–	8.7x10-5		Beryllium - 9%
Future residential groundwater usage, filtered	RME	3.1x10-4	–	1.4x10-4	Water Ingestion - > 99%	Arsenic - 57%
	Average	1.5x10-4	–	6.7x10-5	Dermal contact - < 1%	Berylliumb - 41%
						Chlordane - 1%
						Heptachlor epoxide - 1%

a Reasonable Maximum Exposure (RME) case for the receptor showing the greatest risk.
b Beryllium was not detected in unfiltered groundwater; its concentration was assumed to be equal to one-half the quantitation limit.

TABLE 6-3
SUMMARY OF ESTIMATED HAZARD INDICES FOR NONCARCINOGENIC EFFECTS ASSOCIATED WITH OU 4

PATHWAY	CASE	RECEPTOR			RISK CONTRIBUTION BY	HAZARD INDICES BY
		ADULT	ADOLESCENT	CHILDa	EXPOSURE ROUTEA	CHEMICALA
Exposure Pathways Potentially Complete Under Current Site Conditions						
Trespasser Soil Contact	RME	–	0.017	–-	Dermal contact - 78%	
	Average	–	0.0017	--	Soil Ingestion - 22%	
Trespasser Sediment Contact	RME	–	0.0021	--	Sediment Ingestion - > 99%	
	Average	–	0.0005	--	Dermal contact - < 1%	
Exposure Pathways Potentially Complete Under Possible Future Site Conditions						
Future resident soil contact	RME	0.97	--	3.6	Dermal contact - 58%	PCB-1254 - 2.7
	Average	0.070	--	0.31	Soil ingestion - 42%	
Future resident sediment contact	RME	--	0.042	--	Sediment Ingestion - > 99%	
	Average	--	0.0098	–	Dermal Contact - < 1%	
Future residential groundwater usage, unfiltered	RME	8.5	--	19	Water Ingestion - 100%	Arsenic - 8.0
	Average	2.0	--	4.4		Manganese - 7.5
						Antimony 2.0
Future residential groundwater usage, filtered	RME	2.9	--	6.7	Water Ingestion - 100%	Manganese - 3.5
	Average	0.75	--	1.7		Arsenic - 1.8

a Reasonable Maximum Exposure (RME) case for the receptor showing the greatest risk.
b Hazard indices for the child were calculated using subchronic RFDs.

Total HIs for noncarcinogenic effects from consumption of groundwater based on data from unfiltered groundwater samples are 8.5 for adults and 19 for children under the RME case; HIs are approximately one-fifth as great for the average exposure case. When the risks are recalculated using metals data from filtered groundwater samples, the total HIs for the RME case drop to 3.1 for adults and 6.7 for children. Total His estimated for the average exposure case were less than 1.0 for both adults and children.

Although estimated potential cancer risks from consumption of groundwater were greater than 10-4, and total HIs from consumption of groundwater were greater than one, action is not warranted. Arsenic, the contaminant creating the majority of the risk, was detected below its MCL. A comparison of unfiltered and filtered groundwater data show that inorganics in groundwater are due to turbidity and not site-related contamination. In addition, groundwater use is unlikely because the Annex will be transferred to other federal agencies, and private homes will not be developed.

Although total HIs from contact with site soil under a future residential scenario is greater than one, action is not warranted. As stated above, No Action is warranted for soil because exposures under recreational use would be much less than residential use.

6.1.2 Ecological Risk Assessment Summary

The following metals were selected as ecological COPCs in surface water, sediments, and surface soils potentially affected by the activities at OU 4:

- Zinc in surface water;
- Arsenic in sediments; and
- Lead and zinc in surface soils.

In this section, ecological risks identified in Volume II, Section 7.0 of the RI Report are summarized. Ecological risk characterization involves two major steps: risk estimation and risk description. The risks are estimated using HQs calculated with estimated exposure and toxicity reference values for each endpoint species.

The wildlife HQs for the average exposure case were all less than 1. These results indicated that the mean concentration of these COPCs are unlikely to pose a risk to the meadow vole, raccoon, white-footed mouse, American robin, or red fox at OU 4. An arsenic HQ slightly greater than 1 was calculated for the RME case for the meadow. vole. Potential risks to aquatic organisms for the average exposure case and the RME case for raccoon, red fox, white-footed mouse, and American robin were less than 1 for all of the COPCs. The results indicate that arsenic, lead, and zinc are unlikely to pose a significant risk to any of these species.

Potential risks to aquatic organisms were calculated for the average exposure case and for the RME case. The average and maximum surface water concentrations of zinc exceed the Toxicity Reference Value (TRV), suggesting that zinc may pose a potential risk to sensitive species of aquatic life. The HQ for arsenic in sediment was less than 1 for the average exposure case and only slightly greater than 1 in the RME case, indicating that this COPC poses no more than a marginal risk to aquatic life at OU 4.

Potential risks to terrestrial vegetation were calculated for the average exposure case and for the RME case. An HQ greater than 1 was calculated for the average concentration of zinc. In addition, the maximum detected concentrations of zinc exceeded the most conservative reference value available for this contaminant (HQ greater than 1).

Metals and organic chemicals in soils, surface water, and sediment at the OU 4 site are not considered to pose significant risks to populations of plants or wildlife. Levels of zinc in soils exceed reference values for plants but primarily for the maximum detected concentration of this chemical. These exceedances are not likely to be ecologically significant due to the limited extent of contamination and the disturbed nature of the habitat. Zinc found in the unfiltered surface water exceeds reference values for sensitive species of aquatic life. However, the zinc Ambient Water Quality Criteria (AWQC) for aquatic life is likely to be overly conservative for the site.

The risk assessment concluded that there is no significant risk to ecological receptors.

TABLE 6-4
CONTAMINANTS OF POTENTIAL CONCERN
OU 5

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Metals					
Aluminum	X	X	X	X	
Antimony	X	X	X		
Arsenic	X		X	X	X
Barium	X	X	X	X	
Beryllium	X	X	X		
Cadmium	X	X	X		
Calcium	X	X	X		
Chromium	X	X	X	X	
Cobalt	X	X	X	X	
Copper	X	X	X		
Iron	X	X	X	X	
Lead	X		X	X	X
Magnesium	X	X	X		
Manganese	X	X	X	X	
Nickel	X	X	X	X	
Potassium	X	X			
Selenium			X		
Silver					
Sodium	X				
Vanadium	X	X	X		
Zinc	X	X	X	X	X

TABLE 6-4
CONTAMINANTS OF POTENTIAL CONCERN
OU 5

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Pesticides/ PCBs					
alpha-BHC			X		
alpha-Chlordane		X			
gamma-Chlordane		X		X	
p,p'-DDD					
p,p'-DDE			X		
p,p'-DDT	X				
Dieldrin					
Endosulfan, B		X		X	
Endrin				X	
Heptachlor					
Heptachlor epoxide			X		
PCB 1254	X				
PCB 1260	X	X			
Semivolatile Organics					
Bis(2-ethylhexyl)phthalate	X				X
Butylbenzylphthalate	X	X			
Di-n-octylphthalate		X			
Acenaphthene					
Benzo(b)fluoranthene		X			
Chrysene					
Fluoranthene	X		X		
2-Methylnaphthylene					
Phenanthrene					
Pyrene		X		X	

TABLE 6-4
CONTAMINANTS OF POTENTIAL CONCERN
OU 5

CHEMICAL	SURFACE SOIL	SUBSURFACE SOIL	SEDIMENT	SURFACE WATER	GROUNDWATER
Volatile Organics					
Toluene			X		
Other Organics					
Total petroleum hydrocarbons	X	X	X		X

Note: Groundwater COPC selection is based on unfiltered groundwater data.

Key:

X = Selected as a COPC for the human health risk assessment.

Source: Ecology and Environment, Inc. 1994.

6.2 SUMMARY OF RISKS AT OU 5

6.2.1 Human Health Risk Assessment Summary

Contaminants of potential concern at OU 5, listed in Table 6-4, were selected for evaluation in the human health risk assessment of the RI Report. These COPCs were selected to represent potential site-related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment. A detailed discussion of the human health risk assessment approach and results is presented in Volume III, Section 6.0 of RI Report.

Tables 6-5 and 6-6 summarize the human health risks at OU 5 identified in the RI Report. These tables also show which exposure pathways are most responsible for the estimated risks.

Under the current USEPA Superfund policy, acceptable exposures to carcinogens are those that represent an excess upper bound lifetime cancer risk of between 10-4 to 10-6. For noncarcinogenic effects, acceptable exposure levels are those with an HI of 1.0 or less.

The estimated potential cancer risk for RMEs to contaminants at OU 5 are 1.1x10-5 for the adolescent site trespasser's exposure to soil and 1.1x10-6 for the adolescent site trespasser's exposure to sediment. These are within the acceptable USEPA 10-5 to 10-6 risk range. The RME case assumes that all of a receptor's exposure is to the maximum contaminant concentrations observed at the site.

HIs for potential reasonable maximum exposures to noncarcinogenic COPCs in soil and sediment are below USEPA's benchmark value to 1.0.

Under a possible future residential scenario, the estimated potential cancer risks from RMEs to site soil contamination are 1.6x10-4 for adult residents and 1.2x10-4 for children, both above the 10-4 to 10-6 range deemed acceptable by USEPA. The estimated cancer risks for the average exposure case are lower by approximately an order of magnitude. Noncancer HIs associated with residential RMEs to soil contaminants total 0.77 for adults and 3.7 for children; the child's HI is above the acceptable HI of 1.0.

Potential cancer risks to adolescent site residents from exposure to sediments are estimated to be 3.8x10-6 for the RME case and 1.7x10-6 for the average exposure case. Noncancer HIs associated with sediment exposures were well below 1.0, indicating that sediment contaminants are unlikely to cause adverse health effects.

Estimated potential cancer risks from consumption of unfiltered groundwater under the RME case are 2.1x10-3 for adults and 9.9x10-4 for children, above the 10-4 to 10-6 range. Average case risk estimates were approximately one quarter as great. When metals data from filtered groundwater samples are used to remove the effects of suspended sediment, estimated RME cancer risks drop by a factor of 50 to 4.5x10-5 and 2.1x10-5 for adults and children, respectively.

Total HIs for non-cancer effects from consumption of groundwater based on data from unfiltered groundwater samples are 9.2 for adults and 21 for children under the RME case; HIs are approximately one-quarter as great for the average exposure case. When the risks are recalculated using metals data from filtered groundwater samples, the total HIs for the RME case drop to 0.29 for adults and 0.34 for children, indicating that non-cancer efforts are unlikely.

Although estimated potential cancer risks from consumption of groundwater were greater than 10-4, and total HIs from consumption of groundwater were greater than one, action is not warranted. Arsenic, the contaminant creating the majority of the risk, was detected below its MCL. A comparison of unfiltered and filtered groundwater data show that inorganics in groundwater are due to turbidity and not site-related contamination. In addition, groundwater use is unlikely because the Annex will be transferred to other federal agencies, and private homes will not be developed.

Although estimated potential cancer risks from contact with site soil were greater than 10-4, and total HIs from contact with site soil were greater than one, action is not warranted. As stated above, no action is warranted for soil because exposures under recreational use would be much less than residential use.

TABLE 6-5
SUMMARY OF EXCESS CANCER RISKS ASSOCIATED WITH OU 5

PATHWAY	CASE	RECEPTOR ADULT	ADOLESCENT	CHILD	RISK CONTRIBUTION BY EXPOSURE ROUTEA	RISK CONTRIBUTIONS BY CHEMICAL A
Exposure Pathways Potentially Complete Under Current Site Conditions						
Trespasser Soil Contact	RME	--	1.1x10-5	--	Dermal Contact - 77%	PCBs - 86%
	Average	--	1.8x10-6	--	Soil Ingestion - 23%	Arsenic - 12%
						Beryllium - 1%
Trespasser Sediment Contact	RME	--	1.1x10-6	--	Sediment Ingestion - 100%	Arsenic - 93%
	Average	--	5.1x10-7	--		Beryllium - 6%
Exposure Pathways Potentially Complete Under Possible Future Site Conditions						
Future Resident Soil Contact	RME	1.6x10-4	--	1.2x10-4	Dermal contact - 82%	PCBs - 89%
	Average	1.8x10-5	--	2.1x10-5	Soil ingestion - 18%	Arsenic - 9%
						Beryllium - 1%
Future Resident Sediment Contact	RME	--	3.8x10-6	--	Sediment ingestion - 100%	Arsenic - 93%
	Average	--	1.7x10-6	--		Beryllium - 6%
Future Residential Groundwater Usage, Unfiltered	RME	2.1x10-3	–	9.9x10-4	Water ingestion - 100%	Arsenic - 100%
	Average	5.0x10-4	--	2.3x10-4		
Future Residential groundwater Usage, Filtered	RME	4.5x10-5	–	2.1x10-5	Water ingestion - 100%	Arsenic - 100%
	Average	2.4x10-5	--	1.1x10-5		

a Reasonable Maximum Exposure (RME) case for the receptor showing the greatest risk.

TABLE 6-6
SUMMARY OF ESTIMATED HAZARD INDICES FOR
NONCARCINOGENIC EFFECTS ASSOCIATED WITH OU 5

PATHWAY	CASE	RECEPTOR ADULT	RECEPTOR ADOLESCENT	RECEPTOR CHILDA	RISK CONTRIBUTION BY EXPOSURE ROUTEB	HAZARD INDEX BY CHEMICALB
Exposure Pathways Potentially Complete Under Current Site Conditions						
Trespasser Soil Contact	RME	–	0.12	--	Dermal Contact - 66%	
	Average	--	0.16	--	Soil Ingestion - 34%	
Trespasser Sediment Contact	RME	–	0.014	--	Sediment Ingestion - > 99%	
	Average	--	0.007	--	Dermal Contact - < 1%	
Exposure Pathways Potentially Complete Under Possible Future Site Conditions						
Future Resident Soil Contact	RME	0.77	--	3.7	Dermal Contact - 63%	PCB-1254 - 1.6
	Average	0.67	--	0.49	Soil Ingestion - 37%	Cadmium - 0.8
Future Resident Sediment Contact	RME	–	0.047	--	Sediment Ingestion - > 99%	
	Average	--	0.022	--	Dermal Contact - < 1%	
Future Residential Groundwater Usage, Unfiltered	RME	9.2	--	21	Water Ingestion - 100%	Arsenic - 21
	Average	2.2	--	5.0		
Future Residential Groundwater Usage, Filtered	RME	0.20	--	0.46	Water Ingestion - 100%	
	Average	0.11	--	0.26		

a Hazard indices for the child were calculated using subchronic RfDs.
b RME case for the receptor showing the greatest risk.
c Hazard indices are based on RfDs taken from MADEP Residential Shortform (MADEP 1992) which are not USEPA approved.

6.2.2 Ecological Risk Assessment Summary

The following metals and organic compounds were selected as ecological COPCs in surface water, sediments, and surface soils potentially affected by the activities at OU 5:

- lead and zinc in surface water;
- arsenic in sediments; and
- cadmium, copper, lead, zinc, and Aroclor 1260 in the surface soils.

In this section, ecological risks identified in Volume III, Section 7.0 of the RI Report are summarized. Ecological risk characterization involves two major steps: risk estimation and risk description. Risks are estimated using HQs calculated with estimated exposure and toxicity reference values for each endpoint species.

The wildlife HQs for the average exposure case were all less than 1, with the exception of a slight exceedance of the arsenic TRV for the meadow vole. These results indicate that the mean concentrations of these COPCs are unlikely to pose a risk to wildlife at OU 5. HQs greater than 1 were calculated for the RME case for the white-footed mouse for cadmium and zinc, for the American robin for zinc, and for the meadow vole for arsenic. These results indicate that, at their maximum concentrations, these metals in surface soil have the potential to result in adverse effects to birds and small mammals residing at the site. The HQs for the RME case for the raccoon and red fox were less than or equal to 1 for all of the COPCs. The results indicated that the COPCs are unlikely to pose a risk to these species.

Potential risks to aquatic organisms were calculated for the average exposure case and for the RME case. The average and maximum surface water concentrations of lead exceed the TRV, suggesting that lead may pose a potential risk to sensitive species of aquatic life. The maximum concentration of zinc exceeded the TRV, but the HQ was less than 1 for the average concentration in surface water. The HQ for arsenic in sediment was less than 1 for the average exposure case and only slightly greater than 1 for the RME case, indicating that this COPC does not pose a risk to aquatic life at OU 5.

Potential risks to terrestrial vegetation were calculated for the average exposure case and for the RME case. The average and maximum detected concentrations of zinc exceeded the reference values available for this contaminant (HQ greater than 1). The average concentrations of the other contaminants in soils were below the toxicity reference values (HQ less than 1), but maximum cadmium and upper concentrations exceeded the TRV. Phytotoxicity reference values were not available for Aroclor 1260 and therefore the potential risk of this COPC to plants was not evaluated. Aroclor 1260 did not pose a risk to any of the other endpoint species; therefore, no risks to plants are anticipated.

Metals and organic chemicals in soils, surface water, and sediment at OU 5 are not considered to pose significant risks to populations of plants or wildlife. Levels of metals in soils exceed reference values for animals and plants but primarily for the maximum detected concentrations of these chemicals. These exceedances are not likely to be ecologically significant due to the limited extent of contamination and the disturbed nature of the habitat. Lead and zinc found in the unfiltered surface water exceeds reference values for sensitive species of aquatic life. However, aquatic life in the vicinity of the site doe not appear to be impacted and the lead and zinc AWQC for aquatic life is likely to be overly conservative for the site.

The risk assessment concluded that there is no significant risk to ecological receptors.

7.0 DESCRIPTION OF THE NO ACTION ALTERNATIVE

Based on the results of the RI and Baseline Risk Assessments, No Action is necessary for OU 4 and OU 5. No five-year site reviews will be conducted.

Although there are no actions associated with the No Action decision, the Army will close the septic tank behind Building T104 at OU 5 under state regulations.

8.0 DOCUMENTATION OF NO SIGNIFICANT CHANGES

The U.S. Army prepared a Proposed Plan for OU 4 and OU 5 (ABB-ES, 1996). The Proposed Plan described the Army's decision to pursue No Action under CERCLA at OU 4 and OU 5. There have been no significant changes made to the No Action under CERCLA decision stated in the Proposed Plan.

9.0 STATE ROLE

The Commonwealth of Massachusetts has reviewed the Proposed Plan and concurs with the decision for No Action at OU 4 and OU 5. The Commonwealth has also reviewed the RI to determine if the decision complies with applicable or relevant and appropriate laws and regulations of the Commonwealth. A copy of the declaration of concurrence is attached as Appendix D.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
AST	above ground storage tanks
AWQC	Ambient Water Quality Criteria
BRAC	Base Realignment and Closure Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPCs	Contaminants of Potential Concern
DDD	2,2-bis(para-chlorophenyl)-1,1-dichloroethane
DDE	2,2-bis(para-chlorophenyl)-1,1-dichloroethene
DDT	2,2-bis(para-chlorophenyl)-1.1,1-trichloroethane
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
E&E	Ecology and Environment, Inc.
FEMA	Federal Emergency Management Agency
FS	Feasibility Study
HI	Hazard Index
HQ	Hazard Quotient
MADEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MEP	Master Environmental Plan
MFFA	Massachusetts Fire Fighting Academy
NCP	National Contingency Plan
NPL	National Priorities List
OHM	OHM Remediation Services Corp.
OU	Operable Unit
PA/SI	preliminary assessment/site investigation
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
ROD	Record of Decision
RfD	Reference Dose
RFTA	Reserve Forces Training Area
RME	Reasonable Maximum Exposure
RI	remedial investigation
SA	study areas
SARA	Superfund Amendments and Reauthorization Act of 1986
SI	site investigation
TPHC	total petroleum hydrocarbons
TRC	Technical Review Committee
TRV	Toxicity Reference Values
µg/L	micrograms per liter
USAEC	U.S. Army Environmental Protection Center
UESCOE	U.S. Army Corp of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tanks
VOC	volatile organic compound

APPENDIX A

TRANSCRIPT OF THE PUBLIC MEETING
(SEPTEMBER 11, 1996)

U.S. ARMY

<IMG SRC 0196118EE>

BASE REALIGNMENT AND CLOSURE

FT. DEVENS SUDBURY TRAINING ANNEX

PUBLIC HEARING

BEFORE: Thomas Strunk, Environmental Coordinator

* * * * *

held at
Stow Town Building
380 Great Road
Stow, Massachusetts
Wednesday, September 11, 1996
7:40 p.m.

(Carol H. Kusinitz, Court Reporter)

P R O C E E D I N G S

MR. STRUNK: This is the formal comment time. If there are any formal comments that anyone wants to make on this plan for no action on these sites, the Army will be glad to respond to you in writing. It requires that now, after Tom's presentation of the information, that if you have any comments you would like to go into the record, please feel free to make them now and we will respond.

(No response)

MR. STRUNK: Okay. Is that sufficient for everyone? Then that's over.

(Whereupon the hearing was concluded at 7:42 p.m.)

C E R T I F I C A T E

I, Carol H. Kusinitz, Registered Professional Reporter, do hereby certify that the foregoing transcript, Volume I, is a true and accurate transcription of my stenographic notes taken on September 11, 1996.

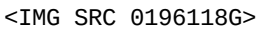
<IMG SRC 0196118F>

DORIS O. WONG ASSOCIATES

PUBLIC HEARING

7:00 P.M. Stow Town Building
Stow, MA
September 11, 1996

SIGN-IN SHEET



APPENDIX B
RESPONSIVENESS SUMMARY

No verbal or written comments on the decision for No Action at Operable Units 4 and 5, Sudbury Training Annex, were received at the public hearing or during the 30-day public comment period. As a result, no responses to comments were necessary and no Responsiveness Summary was prepared.

APPENDIX C
ADMINISTRATIVE RECORD INDEX

Fort Devens - Sudbury Annex

Operable Unit 4 (Areas P11 and P13)
and
Operable Unit 5 (Areas A12, P36, and P37)

Administrative Record File

Index

Prepared by
ABB Environmental Services, Inc
Corporate Place 128, 107 Audubon Road, Wakefield, MA 01880 (617) 245-6606

Introduction

This document is the Index to the Administrative Record File for the Record of Decision for Operable Units (OUs) 4 (Areas P11 and P13) and 5 (Areas A12, P36, and P37) at the fort Devens Sudbury Annex. Section I of the Index lists site-specific documents and Section II lists guidance documents used by U.S. Army in selecting response actions at the site. Some documents in this Administrative Record File Index have been cited but not physically included (for example, draft versions of reports that have been superseded by final reports). In come cases, however, comments were only included as part of the response package.

The Administrative Record File is available for public review at the office of the BRAC Environmental Coordinator, Fort Devens, Massachusetts and at the Sudbury Town Hall, Sudbury, Massachusetts. Questions concerning the Administrative Record should be addressed to the BRAC Environmental Coordinator.

The Administrative Record is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendment and Reauthorization Act (SARA).

ADMINISTRATIVE RECORD FILE INDEX

for

Record of Decision for
Operable Unit 4 (Areas P11 and P13)
and
Operable Unit 5 (Areas A12, P36, and P37)

Fort Devens - Sudbury Annex

Compiled: September 16, 1996

1.0 Pre-Remedial

1.2 Preliminary Assessment

Reports

1. "Installation Assessment NARADCOM Research and Development Laboratory, Massachusetts," EPA Environmental Monitoring Systems Laboratory (March 1982).
2. "Installation Assessment of U.S. Army Natick Research and Development Command - Report No. 170," U.S. Army.
3. "PCB Spill Remediation Report at Building 104, Area A-12."

1.3 Site Inspection

Reports

4. "Phase II Site Investigations Report (Draft Final), Volume I-III, Fort Devens Sudbury Training Annex, Massachusetts," Ecology & Environment, Inc. (July 1994).
5. "Final Phase II Site Investigations Report, Vol. I of III, General Annex Wide Information, Fort Devens Sudbury Training Annex, Massachusetts," Ecology & Environment, Inc. (September 1994).

Comments

6. Comments Dated April 29, 1994 from Lorna Bozeman, Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, Atlanta, Georgia on the "Draft Phase II site Investigation," (Ecology and Environment, Inc.).
7. Comments Dated May 16, 1994 from Robert Lim, USEPA, on the "Draft Phase II Site Investigations Report, Volumes 1-3," Ecology and Environment, Inc. (March 1994).
8. Comments Dated June 14, 1994 from Jay Naparstek, Commonwealth of Massachusetts Department of Environmental Protection on the March 1994 "Phase II Site Investigations Report Vol 1-3, Sudbury Training Annex, Massachusetts," Ecology and Environment, Inc.
9. Comments Dated June 27, 1994 from Robert Lim, USEPA, on the Draft Groundwater Model Report (as included in the Final Phase II Site Investigation Report.
10. Comments Dated August 22, 1994 from Jay Naparstek, Commonwealth of Massachusetts Department of Environmental Protection on the July 1994 "Phase II Site Investigations Report Vols 1-3, Fort Devens Sudbury Training Annex, Massachusetts," Ecology and Environment, Inc.
11. Comments Dated August 23, 1994 from Robert Lim, USEPA, on the July 1994 "Draft Final Phase II Site Investigations Report, Vol 1-3, Fort Devens Sudbury Training Annex," Ecology and Environment, Inc.

Responses to Comments

12. Responses Dated June 1994 from U.S. Army Environmental Center on the Draft Phase II Site Investigations Report, Fort Devens Sudbury Training Annex, Fort Devens, Massachusetts (Ecology and Environment, Inc.).
13. Responses Dated September 1994 from Ecology and Environment, Inc. on the Draft Phase II Site Investigation Report, Fort Devens Sudbury Training Annex (Ecology and Environment, Inc.)

2.0 Removal Response

2.1 Correspondence

1. "Record of Environmental Consideration," (November 9, 1992).

2. "3 Bills of Lading," (May 6, 1993).

2.2 Removal Response Reports

1. "Removal of Underground Storage Tanks," Environmental Application, Inc. (May 1989).
2. "Post Removal Report - Underground Storage Tank Closure UST No. 0097- Building 407 - SA P13," ATEC Environmental Consultants (June 3, 1992).
3. "Post Removal Report - Underground Storage Tank Closure - UST No. 0098- Building 408 - SA P13," ATEC Environmental Consultants (June 3, 1992).
4. "Post Removal Report - Underground Storage Tank Closure UST No. 0093- Building 410 - SA P13 - Gas Station," ATEC Environmental Consultants (June 3, 1992).
5. "Post Removal Report - Underground Storage Tank Closure UST No. 0100- Building 409 - SA P13," ATEC Environmental Consultants (June 8, 1992).
6. "Post Removal Report - Underground Storage Tank Closure - UST No. 0095- Building 405," ATEC Environmental Consultants (November 4, 1992).

3.0 Remedial Investigation (RI)

3.1 Correspondence

1. Letter from Robert Lim, USEPA, to Tom Strunk expressing the approval of the Final Remedial Investigation Report for Sites P11/P13 and A12/P36/P37, Ft. Devens Sudbury Training Annex, MA.

3.6 Remedial Investigation (RI) Reports

1. "Final Remedial Investigations of the Sudbury Annex," Dames & Moore (November 1986).
2. "Draft Phase II Remedial Investigations Report, Sites P11/P13 and A12/P36/P37, Fort Devens Training Annex, Maynard, Massachusetts, Vol I-IV," Ecology & Environment, Inc. (November 1994)
3. "Draft Final Phase II Remedial Investigation Report, Sites P11/P13 and A12/P36/P37, Fort Devens Training Annex, Maynard, Massachusetts, Vol I-IV," Ecology and Environment, Inc. (June 1995)
4. "Final Phase II Remedial Investigations Report, Vol. I-III Sites P11/P13 and A12/P36/P37, Ft. Devens Sudbury Training Annex, MA," Ecology and Environment, Inc. (December 1995).

Comments

5. Comments Dated January 3, 1995 from Robert Lim, USEPA, on the November 1994 " Phase II Draft Remedial Investigation Report - Sites P11/P13 and A12/P36/P37".
6. Comments Dated January 12, 1995 from Jay Naparstek, Commonwealth of Massachusetts Department of Environmental Protection on the "Phase II Remedial Investigations Report, Volumes 1-3 for Sites P11/P13 and P36/A12/P37 for the Sudbury Annex Site".
7. Comments dated August 7, 1995 from Robert Lim, USEPA, on the Draft Final Remedial Investigation Report for Sites P11/P13 and A12/P36/P37, Ft. Devens Sudbury Training Annex.

Responses to Comments

8. Responses Dated February 1995 from U.S. Army Environmental Center on the Draft Phase II Remedial Investigations Report, Fort Devens Sudbury Training Annex, Fort Devens, Massachusetts (Ecology and Environment, Inc.).

Responses to Responses to Comments

9. Rebuttals Dated March 30, 1995 from Robert Lim, USEPA, on the Response to the Army's Response to Comments on the Draft Remedial Investigation Report for Sites P11/P13 and A12/P36/P37 (Ecology and Environment, Inc.).

3.7 Work Plans and Progress Reports

Reports

1. "Draft Master Quality Assurance Project Plan," Ecology and Environment, Inc. (June 1993).
2. "Draft Technical Plan Addenda, Phase II Site Inspections, Remedial Investigations, "Ecology and Environment, Inc. (June 1993).
3. "Final Technical Plan Addenda, Phase II Site Inspections, Remedial Investigations, Fort Devens Sudbury Training, Massachusetts," Ecology & Environment, Inc. (January 1994).

Comments

4. Comments dated July 7, 1993 from Jack McKenna, Metcalf & Eddy on the June 1993 "Draft Technical Plan Addenda, Phase II Site Inspections, Remedial Investigations," Ecology and Environment, Inc. and the June 1993 "Draft Final Addendum to the Final Technical Plans - Phase II Feasibility Study," OHM Remediation Services Corp.
5. Comments Dated July 23, 1993 from Molly J. Elder for D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the June 1993 " Draft Master Quality Assurance Project Plans," Ecology and Environment, Inc.
6. Preliminary Comments Dated July 25, 1993 from Cindy Svec Ruzich of Four Town Focus on the "Technical Plan Addenda, Phase II Site Inspections, Remedial Investigations," Ecology and Environment, Inc.
7. Comments Dated August 5, 1993 from Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the June 1993 "Technical Plans Addenda Phase II Site Inspections, Remedial Investigations, Fort Devens Sudbury Training Annex, Massachusetts," Ecology and Environment, Inc."
8. Comments Dated August 6, 1993 from James P. Byrne, USEPA, on the "Draft Work Plan, Field Sampling Plan, Quality Assurance Project Plan, and Health and Safety Addenda for the Phase II Site Investigations and Remedial Investigations," Ecology and Environments, Inc.

Responses to Comments

9. Responses Dated September 1993 from U.S. Army Environmental Center on the Technical Plan Addenda Phase II Site Investigation/Remedial Investigations, Fort Devens Sudbury Training Annex, Massachusetts (Ecology and Environment, Inc.).

Responses to Responses to Comments

10. Rebuttals Dated November 2, 1993 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the June 1993 "Draft Technical Plan Addenda, Phase II Site Investigation/Remedial Investigation, Sudbury Training Annex," Ecology and Environment, Inc.

4.0 Feasibility Study (FS)

4.9 Proposed Plan for Selected Remedial Action

Reports

1. "Draft Proposed Plan: No Further CERCLA Action at OU4 and OU5, Ft. Devens Sudbury Training Annex," Sudbury Annex BEC (July 1996).
2. "Proposed Plan: No Further CERCLA Action at OU4 (Sites P11/P13) and OU5 (Sites A12/P36/P37) Ft. Devens Sudbury Training Annex, MA," Sudbury Annex BEC (August 1996).

Comments

3. Comments dated August 6, 1996 from Robert Lim, USEPA on Draft Proposed Plan for OU4 (P11/P13) and OU5 (A12/P36/P37), Ft. Devens Sudbury Training Annex, MA (Sudbury Annex BEC, July 1996).

5.0 Record of Decision (ROD)

5.4 Record of Decision

1. "Draft Record of Decision: Operable Units OU4 and OU5, Ft. Devens Sudbury Training Annex, MA", ABB Environmental Services, Inc. (September 1996).

10.0 Enforcement

10.16 Federal Facility Agreements

Reports

The document cited below as entry number 1 may be reviewed, by appointment only, at Fort Devens.

1. "Draft Federal Facility Agreement Under CERCLA Section 120," EPA Region I and U.S. Department of the Army (March 1991).

2. "Final Federal Facility Agreement Under CERCLA Section 120," EPA Region I and U.S. Department of the Army (November 15, 1991).

Comments

3. Comments Dated July 12, 1991 from Edmond G. Benoit, Commonwealth of Massachusetts Department of Environmental Protection on the March 1991 "Draft Federal Facility Agreement Under CERCLA Section 120," EPA Region I and U.S. Department of the Army.

Responses to Comments

4. Response Dated September 5, 1991 from James P. Byrne, EPA Region I to the Comments Dated July 12, 1991 from Edmond G. Benoit, Commonwealth of Massachusetts Department of Environmental Protection on the March 1991 "Draft Federal Facility Agreement Under CERCLA Section 120," EPA Region I and U.S. Department of the Army.

13.0 Community Relations

13.2 Community Relations Plans

Reports

The document cited below as entries 1 and 2 may be reviewed, by appointment only, at Fort Devens.

1. "Draft Community Relations Plan," Dames & Moore (August 1991).
2. "Draft Final Community Relations Plan," Dames & Moore (December 1991).
3. "Final Community Relations Plan," Dames & Moore (April 1992).

Comments

4. Comments Dated September 30, 1991 from Cindy Svec Ruzich and Deborah Schumann, Four Town FOCUS on the August 1991 "Draft Community Relations Plan," Dames & Moore.
5. Comments Dated February 14, 1992 from Cindy Svec Ruzich and Deborah Schumann, Four Town FOCUS on the December 1991 "Draft Final Community Relations Plan," Dames & Moore.
6. Comments Dated March 17, 1992 from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the December 1991 "Draft Final Community Relations Plan," Dames & Moore.
7. Comments from James P. Byrne, EPA Region I on the December 1991 "Draft Final Community Relations Plan," Dames & Moore.
8. Comments Dated May 13, 1992 from James P. Byrne, EPA Region I on the April 1992 "Final Work Plan, Final Field Sampling Plan, Final Heath and Safety Plan, Final Quality Assurance Project Plan," OHM Remediation Corp. and the April 1992 "Final Community Relations Plan," Dames & Moore.

Responses to Comments

9. Response to the EPA Comments on the August 1991 ""Draft Community Relations Plan," Dames & Moore.
10. Response to the Commonwealth of Massachusetts Department of Environmental Protection Comments on the August 1991 "Draft Community Relations Plan," Dames & Moore.

13.11 Technical Review Committee Documents

1. Technical Review Committee Meeting Summary, List of Attendees, and Handouts (May 14, 1991).
2. Technical Review Committee Meeting Summary and List of Attendees (July 31, 1991).
3. Technical Review Committee Meeting Summary and List of Attendees (October 23, 1991).
4. Technical Review Committee Meeting Summary and List of Attendees (January 15, 1992).
5. Technical Review Committee Meeting Summary, Agenda, Handouts, Overheads, and List of Attendees (April 28, 1992).
6. Technical Review Committee Meeting Summary, Agenda, Handouts, Overheads, and List of Attendees (July 14, 1992).
7. Technical Review Committee Meeting Summary, Agenda, Handouts, Overheads, and List of Attendees (October 17, 1992).
8. Agenda and Attendance List for Sudbury Annex Working Meeting (November 23, 1992).
9. Technical Review Committee Meeting Summary, List of Attendees, and Handouts (February 2, 1993).

10. Letter from Richard D. Dotchin, U.S. Army to James P. Byrne, EPA Region I (March 3, 1993). Concerning follow-up to the February 2, 1993 Technical Review Committee Meeting.
11. Technical Review Committee Meeting Summary, List of Attendees, and Handouts (June 9, 1993).

17.0 Site Management Records

17.6 Site Management Plans

The document cited below as entries number 1 and 2 may be reviewed, by appointment only, at the Fort Devens Environmental Management Office.

Reports

1. "Draft Master Environmental Plan," OHM Remediation Services Corp. (May 1991).
2. "Draft Final Master Environmental Plan," OHM Remediation Services Corp. (October 1991).
3. "Final Master Environmental Plan," OHM Remediation Services Corp. (January 1992).
4. "Draft Master Environmental Plan, Fort Devens Sudbury Training Annex, Massachusetts," Ecology & Environment, Inc. (May 1994).
5. "Draft Master Environmental Plan, Ft. Devens Sudbury Training Annex, MA," ABB Environmental Services, Inc. (December 1995).

Comments

6. Comments Dated July 11, 1991 from James P. Byrne, EPA Region I on the May 1991 "Draft Master Environmental Plan," OHM Remediation Services Corp.
7. Comments Dated July 15, 1991 from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the May 1991 "Draft Master Environmental Plan," OHM Remediation Services Corp.
8. Comments from James P. Byrne, EPA Region I on the January 1992 "Final Master Environmental Plan," OHM Remediation Services Corp.
9. Comments Dated June 27, 1994 from Robert Lim, USEPA, on the May 1994 "Master Environmental Plan, Update, Fort Devens Sudbury Training Annex, Massachusetts," Ecology & Environment, Inc.

Responses to Comments

10. Response Dated August 28, 1991 from OHM Remediation Services Corp. to the Comments Dated July 11, 1991 from James P. Byrne, EPA Region I on the May 1991 "Draft Master Environmental Plan," OHM Remediation Services Corp.
11. Response Dated August 28, 1991 from OHM Remediation Services Corp. to the Comments Dated July 15, 1991 from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the May 1991 "Draft Master Environmental Plan," OHM Remediation Services Corp.

Responses to Responses to Comments

12. Response Dated September 12, 1991 from James P. Byrne, EPA Region I to the Response Dated August 28, 1991 from OHM Remediation Services Corp.

17.8 Federal and Local Technical and Historical Records

The document cited below as entry number 1 may be reviewed, by appointment only, at the office of the BRAC Environmental Coordinator, Fort Devens, MA.

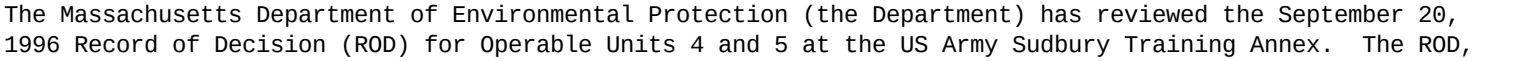
1. "An Intensive Archeological Survey of the Sudbury Training Annex," The Public Archaeology Laboratory, Inc. (April 1985).

GUIDANCE DOCUMENTS

The following guidance documents were relied upon during the Fort Devens - Sudbury Annex cleanup. These documents may be reviewed, by appointment only, at the Environmental Management Office at Fort Devens, Massachusetts.

1. Occupational Safety and Health Administration (OSHA). Hazardous Waste Operation and Emergency Response (Final Rule, 29 CFR Part 1910, Federal Register. Volume 54, Number 42) March 6, 1989.
2. USATHAMA. Geotechnical requirements for Drilling Monitoring Well, Data Acquisition, and Reports, March 1987.
3. USATHAMA. IRDMIS User's Manual, Version 4.2, April 1991.
4. USATHAMA. USATHAMA Quality Assurance Program: PAM-41, January 1990.
5. USATHAMA. Draft Underground Storage Tank Removal Protocol - Fort Devens, Massachusetts, December 4, 1992.
6. U.S. Environmental Protection Agency. Guidance from Preparation of Combined Work/Quality Assurance Project Plans for Environmental Monitoring: OWRS QA-1, May 1984.
7. U.S. Environmental Protection Agency. Office of Research and Development. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans: QAMS-005/80, 1983.
8. U.S. Environmental Protection Agency. Test Methods for Evaluating Solid Waste: EPA SW-846 Third Edition, September 1986.
9. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, (OSWER Directive 9355.5-01, EPA/540/3-89/004), 1986.
10. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Risk Assessment Guidance for Superfund, volume I, Human Health Evaluation manual (Part A), EPA/1-89/002), 1989.
11. U.S. Environmental Protection Agency. Hazardous Waste Management System: Identification and Listing of Hazardous Waste: Toxicity Characteristic Revisions, (Final Rule, 40 CFR Part 261 et al, Federal Register Part V), June 29, 1990.
12. U.S. Army. Environmental Quality - Environmental Protection and Enhancement, (Army Regulation 200-1), April 23, 1990).
13. U.S. Environmental Protection Agency, 1991. Design and Construction of RCRA/CERCLA Final Covers; Office of Research and Development; Washington, DC; EPA/625/4-91/025; May.
14. U.S. Environmental Protection Agency, 1991. Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals) Interim; Office of Emergency and Remedial Response, Washington, DC; Publication 9285.7-01B; October.

APPENDIX D
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
LETTER OF CONCURRENCE

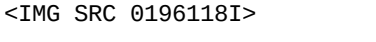


The Massachusetts Department of Environmental Protection (the Department) has reviewed the September 20, 1996 Record of Decision (ROD) for Operable Units 4 and 5 at the US Army Sudbury Training Annex. The ROD, consistent with the recommendations contained in the Proposed Plan, requires no further remedial actions under CERCLA for Study Areas P11/P13 (Operable Unit 4) and Study Areas A12/P36/P37 (Operable Unit 5). These Study Areas were grouped together into these Operable Units due to their proximity to each other.

The Department has reviewed the Army's proposed no action remedy for its consistency with Massachusetts General Law Chapter 21E and the Massachusetts Contingency Plan. Based upon this review, the Department concurs with the selected remedial action. Conditions of these two Operable Units are now, and will remain in the future, protective of human health, welfare, and the environment without additional response actions. The no action decision meets state ARARs and helps facilitate the timely transfer of the property to the US Fish and Wildlife Service.

The Department looks forward to continuing to work with EPA and the Army in this common endeavor and we are pleased to assist in the transfer of Army property in a manner is protective of human health, welfare, and the environment. If you have any questions, please feel free to contact me at (617) 292-5648.

Very truly yours,



SEP.-30'96(MON.) 11:04 DEP-BWSC TEL.:617-292-5530 P.002

cc: Mr. Bob Lim, US EPA
Mr. Stephen Johnson, DEP, BWSC, NERO
Sudbury BOH, Attn: Bob Leopold, 278 Old Sudbury Road, Sudbury MA 01776
Stow Selectman's Office, Attn: Thomas Ruggiero, Town Hall, Stow, MA 01775
Hudson BOH, Attn: Robert Steere, Town Hall, Hudson, MA 01749
Maynard BOH, Attn: Jerry Collins, Town Hall, Maynard, MA 01754
FOCUS, Attn.: Cindy Ruzich, 11 Pleasant Street, Maynard, MA 01754